



Curriculum vitae et studiorum

DR CHRISTIAN ALBERTI

DDS, MSC, CDT, MDT, FIAOMS, FACOMS, FAAOMS

PROFESSORE A CONTRATTO
DI CHIRURGIA ORALE PEDIATRICA E DELL'ETÀ EVOLUTIVA

DIPLOMA DI SPECIALISTA
IN CHIRURGIA ORALE

FELLOW
INTERNATIONAL ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS

FELLOW
AMERICAN ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGERY

FELLOW
AMERICAN COLLEGE OF ORAL AND MAXILLOFACIAL SURGEONS

SOCIO ATTIVO
DELLA SOCIETÀ ITALIANA DI CHIRURGIA ODONTOSTOMATOLOGICA

DIPLOMA DI MASTER UNIVERSITARIO DI 2° LIVELLO
IN IMPLANTOLOGIA ZIGOMATICA

DIPLOMA DI MASTER UNIVERSITARIO DI 2° LIVELLO
IN ODONTOIATRIA DIGITALE

DIPLOMA DI MASTER UNIVERSITARIO DI 2° LIVELLO
IN CHIRURGIA ORTOGNATICA E DELLE MALFORMAZIONI CRANIO-FACCIALI

DIPLOMA DI MASTER UNIVERSITARIO DI 2° LIVELLO
IN CHIRURGIA RICOSTRUTTIVA E IMPLANTOLOGICA DEI MASCELLARI

DIPLOMA DI MASTER UNIVERSITARIO DI 2° LIVELLO
IN IMPLANTOPROTESI

DIPLOMA DI PERFEZIONAMENTO UNIVERSITARIO
IN TRAUMATOLOGIA DENTALE

DIPLOMA DI PERFEZIONAMENTO UNIVERSITARIO
IN POSTUROLOGIA CLINICA

DIPLÔME D'UNIVERSITÉ
IN ANATOMIA CHIRURGICA ED IMPLANTOLOGIA

DIPLOMA DI ALTA FORMAZIONE UNIVERSITARIA
**IN CHIRURGIA PRE-IMPLANTOLOGICA NELLA RIABILITAZIONE
ESTETICA DELLE GRAVI ATROFIE DEI MASCELLARI**



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Informazioni generali e professionali

Nome e Cognome:	Christian Alberti
Indirizzo dello Studio:	Via Zanchetta 5, 36027, Rosà, Vicenza, Italia
Telefono dello Studio:	+39 0424 858991 / +39 393 868 3873 / +39 375 6911253
E-mail personale:	studiodentisticoalberti@gmail.com
E-mail dello Studio:	info@albertistudio.it - amministrazione@albertistudio.it studiodentisticoalberti@pec.it
Sito internet:	www.albertistudio.it
Cittadinanza:	Italiana
Data e Luogo di nascita:	15/09/1979, Bassano del Grappa, Vicenza, Italia
Titoli Accademici Internazionali:	DDS, MSc, CDT, MDT, FIAOMS, FACOMS, FAAOMS Associate Fellow of Foundation for Oral Rehabilitation, -FOR- Active Member of the European Association of Osseointegration, -EAO- Associate Fellow of the International Association of Oral and Maxillo Facial Surgeon -IAOMS- Fellow American Association of Oral and Maxillo Facial Furgery -FAAOMS- Fellow American College of Oral and Maxillo Facial Surgeons -FACOMS- Socio Attivo della Società Italiana di Chirurgia Odontostomatognatica www.scopus.com - Scopus author identifier: 57222015713
Madrelingua:	Italiana
Lingue conosciute:	Inglese, Francese



Titoli di Studio



Dall' Anno Accademico 2020

Professore a Contratto - Adjunt Professor
Titolare dell'insegnamento di CHIRURGIA ORALE PEDIATRICA E DELL'ETÀ EVOLUTIVA
PL004563-PL004564, MED28, CFU: 2



Università degli Studi di Padova
 Scuola di Medicina e Chirurgia
 Dipartimento di Neuroscienze
 Scuola di Specializzazione in Odontoiatria Pediatrica
 Direttore: **Prof. Antonio Gracco**, DDS



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Dal 2023

Fellow American College of Oral and Maxillofacial Surgeons Facoms



International Association of
Oral and Maxillofacial Surgeons

Official member fellow International Association of Oral and Maxillofacial Surgeons

a.a. 2022-2023 - cmu 2

Diploma di Master Universitario di II° Livello
In Odontoiatria digitale

Università degli Studi di Brescia
 Facoltà di Medicina e Chirurgia
 Direttore: **Prof. Antonio Cerutti**, MD, DDS
 Voto finale: 110 su 110 e lode
 CFU: 60

Tesi di Master Universitario di II° Livello in Odontoiatria Digitale:

Valutazione analitica, morfologica e morfometrica dell'anatomia facciale di superficie tramite tecnologia computerizzata. Utilizzo dei sistemi di scansione tridimensionale computer-assistiti per la riproduzione 3D dei tessuti molli del viso.

Relatori: Prof. Antonio Cerutti, MD, DDS
Dr. Nicola Barabanti, DDS

Titoli di Studio



a.a 2019-2022

Diploma di Specialista in Chirurgia Orale



Università degli Studi di Verona
 Scuola di Specializzazione in Chirurgia Orale
 Facoltà di Medicina e Chirurgia
 Dipartimento di Scienze Chirurgiche, Odontostomatologiche e Materno-Infantili
 Clinica Odontoiatrica e di Chirurgia Maxillo-Facciale
 Azienda Ospedaliero Universitaria Integrata di Verona
 Unità Operativa Autonoma di Odontoiatria e Chirurgia Maxillo-Facciale
 Centro di riferimento regionale per la ricostruzione microchirurgica
 del distretto cranio-maxillo-facciale
 Direttore: **Prof. Pier Francesco Nocini**, MD, DDS
 Cattedra di Chirurgia Orale
 Scuola di Specializzazione in Chirurgia Orale
 Direttore: **Prof. Massimo Albanese**, MD, DDS
 Cattedra di Chirurgia Maxillo-Facciale
 Voto finale: 70/70 e lode
 CFU: 180

Tesi di specializzazione, tipologia sperimentale:

Analisi dell'occlusione transizionale nelle procedure Surgery-first.

Valutazione morfologica e morfometrica tridimensionale.

Relatore: Prof. Massimo Albanese, MD, DDS

Correlatore: Prof. Redento Peretta, MD, DDS

Direttore: **Prof. Pier Francesco Nocini**, MD, DDS



a.a. 2018-2019 - cmu 2

Diploma di Master Universitario di II° livello in Chirurgia Ortognatica e delle Malformazioni Cranio-Facciali

Università degli Studi di Torino
 Facoltà di Medicina e Chirurgia - Dipartimento di Scienze Chirurgiche
 Azienda Ospedaliera-Universitaria Ospedale Molinette - Città della Salute e della Scienza di Torino
 Scuola di Specializzazione in Chirurgia Maxillo-Facciale
 Cattedra di Chirurgia Maxillo-Facciale
 Direttore: **Prof. Guglielmo Ramieri**, MD, DDS
 Voto finale: 110/110 e lode, dignità di stampa della tesi e menzione
 CFU: 60

Tesi di Master Universitario di II° livello in Chirurgia Ortognatica
 e delle malformazioni Cranio-Facciali

Pianificazione computerizzata 3d dell'occlusione post-chirurgica nelle procedure Surgery-First

Relatori: **Prof. Guglielmo Ramieri**, MD, DDS; **Prof. Giovanni Gerbino**, MD, DDS

Correlatori: **Prof. Redento Peretta**, MD, DDS; **Prof. Antonio Gracco**, DDS

Titoli di Studio



a.a. 2016-2017

Certificate of Advanced Surgical Implant Training Program

New York University at Buffalo, USA
 School of Dental Medicine
 Department of Oral and Maxillofacial Surgery
 Director: **Prof. Richard Hall**, MD, DMD,
 Chair and Head Department of Oral and Maxillofacial Surgery
 New York University at Buffalo, USA



a.a. 2015-2016 - cmu 2

Diploma di Master Universitario di II° livello in Chirurgia Ricostruttiva ed Implantologica dei mascellari

Università degli Studi di Firenze
 Facoltà di Medicina e Chirurgia - Dipartimento di Chirurgia e Medicina Traslazionale
 Azienda Ospedaliero-Universitaria Careggi
 Centro Ortopedico-Traumatologico Careggi - Cattedra di Chirurgia Maxillo-facciale
 Direttore: **Prof. Roberto Bertolai**, MD, DDS
 Voto finale: 110/110 e lode
 CFU: 69

Tesi di Master Universitario di II° livello in Chirurgia Ricostruttiva ed Implantologica dei mascellari:

La Riabilitazione Implantoprotesica fissa del mascellare edentulo ed atrofico a funzione immediata: opzione terapeutiche e performance a confronto

Relatore: **Prof. Roberto Bertolai**, MD, DDS
 Correlatore: **Dott. Carlo Alessandro Aversa**, MD, DDS



a.a. 2013-2014 - cmu 2

Diploma di Master Universitario di II° livello in Implantoprotesi

Università degli Studi di Genova
 Facoltà di Medicina e Chirurgia
 Azienda Ospedaliero-Universitaria IRCCS San Martino-IST
 Istituto Nazionale per la Ricerca sul Cancro
 Ospedale San Martino, Genova
 Dipartimento di Scienze e Tecnologie Biofisiche, Mediche ed Odontostomatologiche, -DISTBIMO-
 Sezione di Clinica Odontostomatologica
 Servizio di Protesi ed Implantoprotesi
 Cattedra di Riabilitazione Protetica ed Implantoprotesica
 Direttore: **Prof. Paolo Pera**, MD, DDS
 Voto finale: 110/110
 CFU: 60

Tesi di Master Universitario di II° livello in Implantoprotesi:

“La Ricostruzione tridimensionale del volto con tecnica laser: metodologia operativa ed analisi preliminare dei risultati”

Relatore: **Prof. Paolo Pera**, MD, DDS
 Correlatore: **Prof.ssa Maria Menini**, DDS, PHD

Titoli di Studio



a.a. 2013-2014

Diploma Universitario in Anatomia Chirurgica ed Implantologia

Università degli Studi Jacques Lisfranc, Lione, Francia
 Università degli Studi Jean Monnet, Saint-Étienne, Francia
 Facoltà di Medicina e Chirurgia - Dipartimento di Scienze, Tecnologia e Salute
 Laboratorio di Anatomia Micro e Macroscopica
 Associazione Universitaria di Anatomia ed Implantologia
 Direttore: **Prof. André Morin, Prof. Robert Gauthier, Prof. Jean Marie Prades**
 Tesi di Diploma Universitario in Anatomia Chirurgica ed Implantologia:

“Columbus Bridge Protocol: riabilitazione Implantoprotesica fissa del mascellare edentulo a funzione immediata: Biomechanically Advanced Prosthesis”

Relatore: **Prof. Robert Gauthier**, MD, DDS



Chirurgia
Maxillofacciale



Padova

a.a. 2012-2013

Diploma di Alta Formazione Universitaria in Chirurgia Pre-implantologica nella riabilitazione estetica delle gravi atrofie dei mascellari

Università degli Studi di Padova - Facoltà di Medicina e Chirurgia
 Dipartimento di Neuroscienze, Psichiatriche, Sensoriali, Ricostruttive e Riabilitative
 Dipartimento di Specialità Medico-Chirurgiche
 Direttore: **Prof. Domenico d'Avella**, MD
 Sezione di Clinica Odontoiatrica
 Cattedra di Chirurgia Maxillo-facciale
 Unità Operativa Complessa di Chirurgia Maxillo-facciale
 Direttore: **Prof. Giuseppe Ferronato**, MD, DDS
 CFU: 8



a.a. 2010-2011

Diploma di Perfezionamento Universitario in Traumatologia Dentale

Università degli Studi di Verona - Facoltà di Medicina e Chirurgia
 Dipartimento di Scienze Morfologico-Biomediche e Chirurgiche
 Sezione di Clinica Odontoiatrica e Chirurgia Maxillo-facciale
 Cattedra di Odontoiatria Conservatrice e Traumatologia Dentale
 Direttore: **Prof. Pierfrancesco Nocini**, MD, DDS
 Titolare: **Prof. Giacomo Cavalleri**, MD, DDS
 CFU: 10



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

a.a. 2006-2007

Diploma di Perfezionamento Universitario in Posturologia Clinica

Università degli Studi di Modena e Reggio Emilia
 Facoltà di Medicina e Chirurgia
 Dipartimento di Neuroscienze
 Cattedra di Chirurgia Maxillo-facciale
 Unità Operativa Complessa di Odontoiatria e Chirurgia Maxillo-facciale
 Direttore: **Prof. Ugo Consolo**, MD, DDS
 CFU: 10

Titoli di Studio



Chirurgia
Maxillofacciale



Padova

a.a. 2004-2005

Laurea Magistrale a ciclo unico in Odontoiatria e Protesi Dentaria

Sostenendo anche tutti gli esami complementari non obbligatori in corso di studio
Università degli Studi di Padova
voto: 102/110

Tesi di Laurea sperimentale e progetto di ricerca CPDT-033371, approvato e finanziato dall'Università degli Studi di Padova

Indirizzo: Chirurgia Maxillo-facciale
Inizio del progetto: Ottobre 2000, 1° anno di Studi Universitari

“La Ricostruzione tridimensionale del volto in Chirurgia Ortognatica. Comparazione di tre metodi non invasivi di riproduzione tridimensionale dei tessuti molli della faccia: performance a confronto e necessità future in Chirurgia Ortognatica”

Relatori: **Prof. Giuseppe Ferronato**, MD, DDS, Chirurgia Maxillo-facciale, Università degli Studi di Padova
Prof. Redento Peretta, MD, DDS, PHD, IBO, Ortodonzia Pre-chirurgica, Università degli Studi di Padova

Correlatori: **Prof. Gianmaria Concheri**, DAUR-LIN, Università degli Studi di Padova
Prof. Virgilio Ferruccio Ferrario, MD, LAFAS-FARC, Università degli Studi di Milano

Collaboratori: **Dott. Pierfrancesco Galzignato**, MD, DDS, Chirurgia Maxillo-facciale, Università degli Studi di Padova
Ing. Roberto Meneghello, DAUR-LIN, Università degli Studi di Padova
Ing. Daniele Comelli, DAUR-LIN, Università degli Studi di Padova



a.a. 2004-2005

Seconda Sessione, Novembre 2005

Diploma di Stato di Abilitazione alla Professione di Odontoiatra

Università degli Studi di Padova

2006

Iscrizione all'Albo dei Medici-Chirurghi e degli Odontoiatri Provincia di Vicenza n° 00741

a.s. 1997-1998

Diploma di abilitazione all'esercizio della professione di Odontotecnico

a.s. 1997-1998

Diploma di Maturità Professionale per Odontotecnico

Indirizzo: Chirurgia Orale e Maxillo-facciale

Tesi di Maturità:

Chirurgia ricostruttiva cranio-maxillo-facciale e dell'articolazione temporo-mandibolare

a.s. 1995-1996

Diploma di qualifica per Operatore Meccanico Odontotecnico

Esperienze Professionali

14.257 Ore certificate di Assistenza Clinica e Chirurgia Ospedaliera
7.856 Interventi chirurgici come primo, secondo e terzo operatore in regime di Sala Operatoria, Day-Surgery e Day-Hospital (a luglio 2023 compreso)

Dal settembre 2020 a Febbraio 2022

Specializzando in Chirurgia Orale Unità Operativa Dipartimentale di Odontoiatria e Chirurgia Maxillo-Facciale

Azienda Ospedaliera Usl 7 "San Bassiano", Bassano del Grappa

Direttore: **Dr. Michele Garofolin**, MD, DDS



Dal 2019 a Febbraio 2022

Tutor di Chirurgia Orale presso la Scuola di Specializzazione in Chirurgia Orale

Università degli Studi di Verona

Direttore: **Prof. Massimo Albanese**, MD, DDS

Dal 2010 ad oggi

Frequentatore Volontario per lo studio e l'applicazione della Metodologia Operativa di Riabilitazione Implantoprotesica a Carico e Funzione Immediata "Columbus Bridge Protocol"

Clinica Dentale "Valle Belbo", Santo Stefano Belbo, Cuneo, Italia

Direttore: **Prof. Tiziano Tealdo**, DDS, MSC, CDT

Dal 2010 ad oggi

Frequentatore Volontario per lo studio e l'applicazione della Metodologia Operativa di Riabilitazione Implantoprotesica a Carico e Funzione Immediata "Columbus Bridge Protocol"

Università degli Studi di Genova

Facoltà di Medicina e Chirurgia

Servizio e Cattedra di Riabilitazione Protesica ed Implantoprotesi

Direttore: **Prof. Paolo Pera**, MD, DDS

Dal 2010 al 2014

Frequentatore Volontario per lo studio e l'approfondimento delle Tecniche Chirurgico-Protesiche di Riabilitazione Protesica a Carico Immediato

Centro Odontostomatologico "San Luigi", Pavia, Italia

Direttore: **Dott. Gioacchino Cannizzaro**, MD, DDS

Ottobre 2000-Agosto 2009

Frequentatore Volontario per Assistenza Clinico-Chirurgica e di Sala Operatoria

Unità Operativa Complessa di Odontoiatria e Chirurgia Maxillo-facciale

Direttore: **Dott. Paolo Toscano**, MD, DDS

ASL n°3 Bassano del Grappa, Ospedale "San Bassiano"



Dal 1999 al 2007

Frequentatore Volontario

Studio di Odontoiatria e Chirurgia Maxillo-facciale del **Prof. Giuseppe Ferronato**

e del **Prof. Redento Peretta** Padova, Italia

Dal 1999 al 2007

Frequentatore Volontario

Studio di Ortodonzia ed Ortodonzia Pre-Chirurgica del **Prof. Redento Peretta** Vicenza, Italia

Dal 1999 al 2007

Frequentatore Volontario

Cattedra di Chirurgia Maxillo-facciale

Unità Operativa Complessa di Chirurgia Maxillo-facciale

Azienda Ospedaliero-Universitaria di Padova - Policlinico Universitario di Padova

Direttore: **Prof. Giuseppe Ferronato**, MD, DDS



Esperienze Professionali

Da Agosto 2009 a Gennaio 2014

Titolare di Borsa di Studio

Vincitore di Concorso Pubblico per titoli ed esami di Borsa di Studio per la Struttura Semplice Dipartimentale di Odontoiatria e Chirurgia Maxillo-facciale

ASL n°3 Bassano del Grappa, Ospedale "San Bassiano"

Dipartimento di Chirurgia Specialistica

Direttore: **Dott.ssa Simonetta Morselli**, MD



1998

Vincitore per titoli ed esami di Borsa di Studio come partecipante al Corso Tecnico-Pratico di aggiornamento e formazione di perfezionamento "Attacchi Dentali e Metallurgia"

Ditta Cendres & Metaux, Milano, Italia

1997

Vincitore per titoli ed esami di Borsa di Studio come partecipante al corso tecnico-pratico di aggiornamento e formazione di perfezionamento "Fusione e Precisione"

Centro di Formazione Odontoiatrica "Degussa Ag Geschäftsbereich Dental"

Ditta Degussa Defradental, Verona, Italia

Direttore: **Andrea Maleci**, CDT

Partecipazione a 972 Corsi e Congressi di aggiornamento nazionali ed Internazionali

-Vedi allegati in stampa conformi agli originali -

Lettere di Presentazione e Ringraziamento

-Vedi allegati conformi agli originali -

1. **Lettera di presentazione del Prof. Giuseppe Ferronato**
Cattedra ed U.O.C. di Chirurgia Maxillo-facciale, Università degli Studi di Padova
2. **Lettera di presentazione del Prof. Redento Peretta**
Ortodonzia Pre-Chirurgica ed Ortopedia Dento-Maxillo-facciale,
Università degli Studi di Padova
3. **Lettera di presentazione del Prof. Paolo Pera**
Cattedra di Riabilitazione Protesica ed Implantoprotesi,
Università degli Studi di Genova
4. **Lettera di presentazione della Dott.ssa Simonetta Morselli**
Direttore Dipartimento Chirurgia Specialistica,
Ospedale ed Azienda Sanitaria n°3 di Bassano del Grappa, Vicenza
5. **Lettera di presentazione del Prof. Roberto Bertolai**
Cattedra ed U.O.C. di Chirurgia Maxillo-facciale, Università degli Studi Firenze

6. **Lettera di presentazione del Prof. Giovanni Gerbino**
S.c. Chirurgia Maxillo-facciale, A.O.U. Città della Salute e della Scienza di Torino, Università degli Studi di Torino
7. **Lettera di presentazione del Prof. Guglielmo Ramieri**
Direttore di S.C. Chirurgia Maxillo-facciale, A.O.U. Città della Salute e della Scienza di Torino, Università degli Studi di Torino
8. **Lettera di ringraziamento del sig. Renato Minuzzo**
agli operatori del reparto Maxillo-facciale, ULSS 3
9. **Lettera di presentazione del Prof. Paolo Pera** professore emerito Università degli Studi di Genova, Cattedra di Implantoprotesi
10. **Lettera di presentazione del Prof. Roberto Pistilli**
Unità operativa complessa di Chirurgia Maxillo-Facciale, Ospedale S. Camillo Forlanini, Roma

Relatore e Moderatore a Congressi Nazionali e Internazionali

1. **Relatore al 5° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
8-9 Novembre 2013, Santo Stefano Belbo, Cuneo, Italia
2. **Relatore al 6° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
7-8 Novembre 2014, Santo Stefano Belbo, Cuneo, Italia
3. **Relatore al 7° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
6-7 Novembre 2015, Santo Stefano Belbo, Cuneo, Italia
4. **Relatore al 8° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
27-28-29 Ottobre 2016, Santo Stefano Belbo, Cuneo, Italia
5. **Moderatore al Congresso, Tour di Primavera Biomax 3I Zimmer**
"La Costante Centralità del Paziente Implantare nell'evoluzione dell'era digitale"
01 Aprile 2017, Falsia Portopiccolo, Trieste, Italia
6. **Moderatore al 20° Congresso Internazionale di Implantologia Biomax 3I Zimmer**
"Innovazioni e Tecnologia Semplificano Laterapia Implantare"
12-13-14 Ottobre 2017, Palazzo della Gran Guardia, Verona, Italia
7. **Relatore al 9° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
27-28 Ottobre 2017, Santo Stefano Belbo, Cuneo, Italia
8. **Relatore al Congresso Nazionale**
"Protocolli e tecnologie innovative al servizio del paziente implantare di oggi"
17 Febbraio 2018, Vicenza, Italia
9. **Moderatore al 21° Congresso Internazionale di Terapia Implantare, Biomax 3I**
"L'integrazione tra il biotipo ed il sociotipo odontoiatrico:
anamnesi, procedure e indicatori di successo del paziente implantare"
4-6 Ottobre 2018, Verona, Italia
10. **Relatore al 10° Forum Internazionale sulla Metodica "Columbus Bridge Protocol"**
26 - 27 Ottobre 2018, Santo Stefano Belbo, Cuneo, Italia
11. **Moderatore al Congresso, Tour di Primavera Biomax 3I Zimmer**
"Il nuovo Rinascimento odontoiatrico italiano:
Terapie canoniche, digitali e non invasive ad uso quotidiano"
29-30 Marzo 2019, Roma, Italia
12. **Co-Relatore alla Tesi di Laurea in Igiene Dentale - Università degli Studi di Padova**
Titolo: "Protocollo di gestione e di mantenimento delle riabilitazioni Full-Arch Immediate Bridge in igiene orale: studio analitico e stato dell'arte"
Laureanda: Eleonora Rabito, Voto finale: 110/110 e Lode, Anno Accademico: 2018-2019

- 13. Relatore all' 11° Congresso Nazionale sulla Metodica "Columbus Bridge Protocol"**
"Il CBP come unica alternativa nel recupero morfo-funzionale dei pazienti con fallimenti implantoprotetici causati da low cost e del turismo dentale "
25-26 Ottobre 2019, Santo Stefano Belbo, Cuneo, Italia
- 14. Relatore Clinico presso la Scuola di Specializzazione in Odontoiatria Pediatrica. Università degli Studi di Padova. Direttore: Prof. Antonio Gracco**
2 Marzo 2020, Padova, Italia
- 15. Relatore al Congresso Nazionale Biomax 31:**
"Il supporto digitale nelle moderne riabilitazioni implantari: previsualizzazione, finalizzazione protesica, carico immediato con qualità ossea limitata "
18 Aprile 2020, Vicenza, Italia
- 16. Relatore al 1° Forum del Tealdo Total Face Academy**
Columbus Bridge Protocol e Digital Dentistry
"Procedure diagnostiche, operative e sviluppi futuri per l'odontoiatria e per l'odontotecnico"
6 Novembre 2020, Santo Stefano Belbo, Cuneo, Italia
- 17. Relatore Clinico presso la Scuola di Specializzazione in Odontoiatria Pediatrica**
"Chirurgia Orale Pediatrica: approccio al paziente, problematiche diagnostiche e chirurgiche"
Università degli Studi di Padova. Direttore: Prof. Antonio Gracco
2 Marzo 2021, Padova, Italia
- 18. Relatore al Congresso Nazionale dei Docenti di Odontoiatria, presentazione del poster**
Teledentistry for the early detection of oral lesions: a lesson from the COVID-19 pandemic
14 Aprile 2021, Milano, Italia
- 19. Relatore al Master Universitario di 2° livello in Implantoprotesi**
17 Aprile 2021, Genova, Italia
- 20. Relatore al Congresso Nazionale dei Docenti di Odontoiatria, presentazione del poster**
Teledentistry for the early detection of oral lesions: a lesson from the COVID-19 pandemic
27 Aprile 2021, Milano, Italia
- 21. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale**
Tooth-Derived bone obtained from tooth transformer as graft material: a literature review
10 Luglio 2021, Roma, Italia
- 22. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale**
Tooth-Derived bone obtained from tooth transformer as graft material: a literature review - parte 2
10 Luglio 2021, Roma, Italia
- 23. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale**
Implantologia zigomatica iuxta sinusale: la tecnica chirurgica
10 Luglio 2021, Roma, Italia
- 24. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale**
Flusso di lavoro digitale nella riabilitazione del quadrante edentulo e atrofico
10 Luglio 2021, Roma, Italia
- 25. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale**
Trattamento non chirurgico della mucosite peri-implantare tramite strumentazione manuale associata all'utilizzo di un agente antisettico con proprietà igroscopiche
10 Luglio 2021, Roma, Italia
- 26. Relatore al Primo Corso di Dissezione Anatomica "One Day Full Immersion: corso teorico pratico su preparato anatomico, tecniche di chirurgia avanzate nel paziente atrofico con impianti extra orali"**
04 Settembre 2021, Verona, Italia

- 27. Relatore Clinico presso la Scuola di Specializzazione in Odontoiatria Pediatrica.
Università degli Studi di Padova. Direttore: Prof. Antonio Gracco**
2 Novembre 2021, Padova, Italia
- 28. Relatore al Corso Base Chirurgico Protesico: “Il Columbus Bridge nell’evoluzione digitale”**
18-19 Febbraio 2022, Santo Stefano Belbo, Cuneo, Italia
- 29. Relatore al Corso Avanzato Chirurgico Protesico: “Il Columbus Bridge nel paziente atrofico”**
18-19 Marzo 2022, Santo Stefano Belbo, Cuneo, Italia
- 30. Relatore al Corso chirurgico-protetico
“Advanced prosthetic surgical course: digital dentistry, immediate loading
and zygomatic implants”**
5-6-7 Ottobre 2021, Santo Stefano Belbo, Cuneo, Italia
- 31. Relatore al Congresso Nazionale della Società Italiana di Chirurgia Orale
“Ortodonzia chirurgicamente assistita (piezosurgery): studio in vivo pre-clinico e clinico”**
23-24-25 Settembre 2021, Gubbio, Italia
- 32. Relatore al Congresso Internazionale di Terapia Implantare 3i
“Corretto inquadramento delle atrofie severe del mascellare superiore
e possibili alternative terapeutiche”**
22 Ottobre 2021, Verona, Italia
- 33. Relatore al Webinar “La riabilitazione con carico immediato del mascellare superiore”**
27 Ottobre 2021, Vicenza, Italia
- 34. Relatore al Congresso ANDI Piemonte Sezione di Cuneo “Le atrofie ossee: tecniche a confronto”**
19 Febbraio 2022, Cuneo, Italia
- 35. Relatore clinico presso la Scuola di Specializzazione in Odontoiatria Pediatrica,
Università degli Studi di Padova
“La chirurgia orale pediatrica: corretto inquadramento clinico e chirurgico”**
1 Marzo 2022, Padova, Italia
- 36. Relatore al Webinar “Columbus Bridge Protocol: le basi del successo del trattamento
di carico immediato”**
9 Marzo 2022, Vicenza, Italia
- 37. Relatore al Corso di perfezionamento in implantoprotesi computer-assistita
“Riabilitazione dei pazienti atrofici senza innesti ossei: flusso digitale dalla diagnosi estetica
alla riabilitazione full-arch”**
**Università Cattolica del Sacro Cuore, Policlinico Agostino Gemelli,
Cattedra di Chirurgia Maxillo-Facciale**
11 Marzo 2022, Roma, Italia
- 38. Relatore al Congresso Internazionale di Terapia Implantare 3i
“Le attuali aspettative estetiche e riabilitative del paziente adulto”**
22-23-24 Settembre 2022, Verona, Italia
- 39. Relatore al Corso di Chirurgia Implantare Avanzata “Il Columbus Bridge Protocol
nel paziente atrofico”**
6-7-8 Ottobre 2022, Santo Stefano Belbo, Cuneo, Italia
- 40. Relatore alla Scuola di Specializzazione in Odontoiatria Pediatrica**
2 Novembre 2022, Padova, Italia
- 41. Relatore al Corso di Dissezione anatomica e Chirurgia Implantare su preparato anatomico**
5 Novembre 2022, Iclo, Verona, Italia

- 42. Relatore al 1° Forum del Tealdo Total Face Academy “Ulteriori opzioni di trattamento del mascellare atrofico”**
15 Novembre 2022, Santo Stefano Belbo, Cuneo, Italia
- 43. Relatore alla Scuola di Specializzazione in Odontoiatria Pediatrica**
29 Novembre 2022, Padova, Italia
- 44. Relatore al Corso Internazionale Chirurgico-Protesico “Columbus Bridge Protocol: two full days live course”**
27-28 Gennaio 2023, Alba, Cuneo, Italia
- 45. Relatore alla Scuola di Specializzazione in Odontoiatria Pediatrica**
23 Febbraio 2023, Padova, Italia
- 46. Relatore al Corso Chirurgico-Pediatrico “Strategie di trattamento del paziente con dentatura terminale: come trattare con efficacia e sicurezza una nuova fascia di pazienti nella propria pratica clinica”**
17-18 Marzo 2023 Alba, Cuneo, Italia
- 47. Relatore al Corso Chirurgico-Protesico “Il Columbus Bridge Protocol nel paziente atrofico e nei ritrattamenti”**
27-28 Ottobre 2023, Alba, Cuneo, Italia
- 48. Relatore al Congresso Nazionale “Memorial Pino Ferronato”**
4 Marzo 2023, Vicenza, Italia
- 49. Relatore al Corso di dissezione anatomica su preparato cadaverico e chirurgia implantare avanzata**
5 Maggio 2023, ICLO, Verona, Italia
- 50. Relatore al Congresso Nazionale di implantologia avanzata**
12-13 Maggio 2023, Cosenza, Reggio Calabria, Italia
- 51. Relatore al Congresso Internazionale di Terapia Implantare “3i biomax”
Il ripristino delle funzioni oro-facciali**
5-6-7 Ottobre 2023, Verona, Italia

Socio di Società Scientifiche Nazionali e Internazionali

Socio Ordinario dell'Accademia Italiana di Odontoiatria Protesica
 Socio Attivo della Società Italiana di Chirurgia Odontostomatologica
 Associate Fellow of Foundation for Oral Rehabilitation
 Active Member of the European Association of Osseointegration
 Socio Ordinario di Dentist 4
 Socio Ordinario di Slow Dentist
 Socio Ordinario Italian Academy of Osseointegration
 Socio Ordinario della Società Italiana di Chirurgia Orale Pediatrica
 Socio Ordinario della Società Internazionale di Chirurgia Orale e Maxillofacciale
 Fellow American Association of Oral and Maxillofacial Surgery
 Fellow American College of Oral and Maxillofacial Surgeons

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IAO
APOS
IAOMS
FAAOMS
FACOMS

Abbonato a riviste scientifiche

1. European Journal of Oral Implantology
2. Journal of Oral and Maxillofacial Implants
3. Journal of Prosthetic Dentistry

Tesi e suoi contenuti pubblicati nelle riviste Internazionali

1. *PROG. ORTHOD:*

“A3 - Dimensional Facial Morpho-dynamic database in the development of a prediction model in Orthognathic Surgery”

Department of Maxillofacial Surgery, University of Padua

2. *BR. J. ORAL MAXILLOFACIAL SURG:*

“Three-dimensional Facial Morphometry in skeletal class III patients. A non-invasive study of soft-tissue changes before and after Orthognathic Surgery”

Functional Anatomy Research Center - FARC ; Laboratorio di Anatomia Funzionale dell'apparato stomatognatico - LAFAS - Dipartimento di Morfologia Umana, Università degli Studi di Milano

3. *J. PLAST. RECONSTR. AESTHET. SURG:*

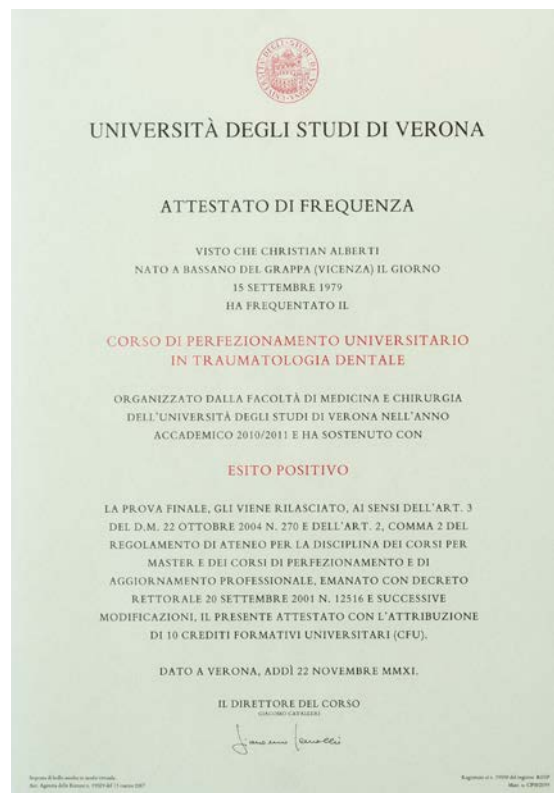
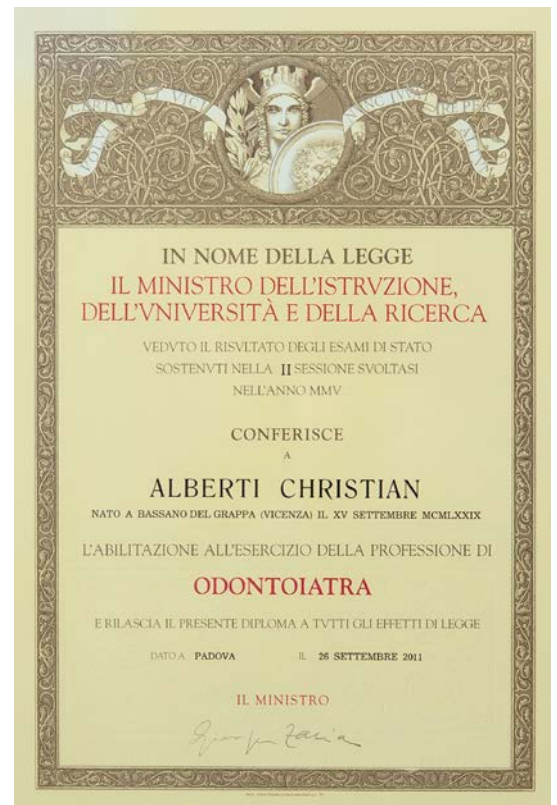
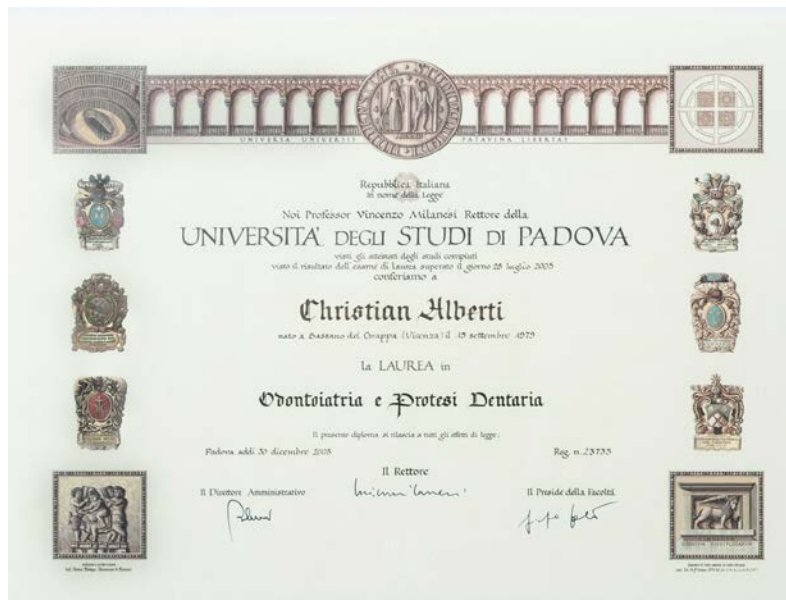
“Soft tissue facial volumes and shape in skeletal class III patients before and after Orthognathic Surgery treatment”

Functional Anatomy Research Center - FARC ; Laboratorio di Anatomia Funzionale dell'apparato stomatognatico - LAFAS - Dipartimento di Morfologia Umana, Università degli Studi di Milano

4. *XIV CONGRESSO NAZIONALE DELLA SOCIETÀ ITALIANA DI CHIRURGIA MAXILLO-FACCIALE, SICMF, PARMA, 09-11 GIUGNO 2005:*

“Valutazione morfometrica tridimensionale del volto pre e post Chirurgia Ortognatica: Landmarks vs Surface Analysis”

Diplomi



**ORDINE PROVINCIALE DEI MEDICI CHIRURGHI
E DEGLI ODONTOIATRI DI VICENZA**

OGGETTO: Riconoscimento della Professionalità.

Egr. Dott. Alberti Christian
e-mail: studieslenticcoalberti@gmail.com

Egregio Dott. Alberti,
in riscontro alla Sua istanza del 19 agosto u.s., prot. n. 3820, vista la regolarità della documentazione presentata a corredo della richiesta, si esprime parere favorevole alla pubblicazione della professionalità in Chirurgia Odontostomatologica (riconoscimento della Professionalità - art. 1 comma 4, Legge n° 175/92).

Cordiali saluti.

IL PRESIDENTE
Dott. Michele Valente

SM/jps

Contrà Paolo Lioy n° 13 - 36100 VICENZA - Tel. 0444 324714 - 0444 543084 - Fax 0444/546552
Codice Fiscale n. 80099230244 E-mail: ordine@medicivicenza.org Sito Web: www.medicivicenza.org

UNIVERSITÀ DEGLI STUDI DI GENOVA

Reg. n. 4206

In nome della legge
Noi Prof. Giacomo Defertari
 Rettore dell'Università degli Studi di Genova

Viòuto il Decreto Ministeriale 22 ottobre 2004, n. 270 art. 3 comma 9
Viòuto il risultato della prova finale superata in questa Università il giorno 20 Settembre 2014 da

Alberti Christian

Nato a Bassano del Grappa (Vicenza) il 15 Settembre 1979

gli conferiamo il
**Master Universitario di II livello in
IMPLANTOPROTESI**

Il presente diploma viene rilasciato a tutti gli effetti di legge.
Dal palazzo dell'Università di Genova, 10 Novembre 2014

Il Rettore (Giacomo Defertari)
Il Presidente del Collegio dei Docenti (Paolo Pera)

Il Direttore Generale (Roberto Gallo)

Impegno a tutela dell'ordine e della serietà: prima pubblicazione nell'Albo della Università di Genova al numero n. 017422 del 4 maggio 1999

Università degli Studi di Torino

Si attesta che

Christian Alberti

Nato a Bassano del Grappa (Vicenza) il giorno 15 Settembre 1979

Ha conseguito in data 28 Febbraio 2019 Cum Laude

il Master di 2° Livello in

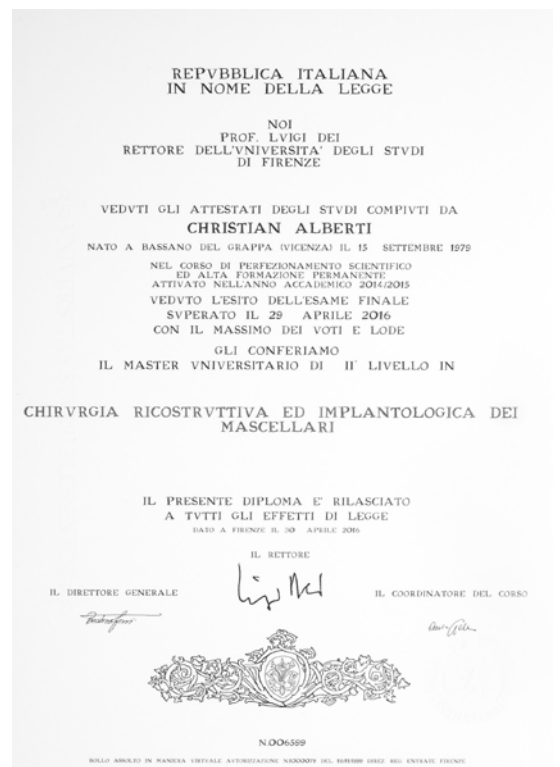
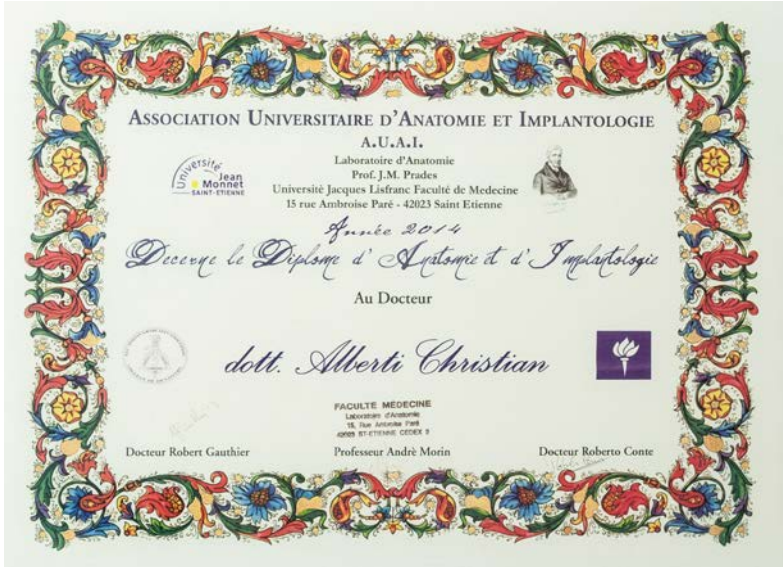
**Chirurgia Ortognatica e delle
Malformazioni Cranio - Facciali**

Data in Torino il giorno 2 Aprile 2019

Il Rettore
La Direttrice Generale

Stampato in Italia secondo le norme UNI EN ISO 9001:2015 - UNI EN ISO 14001:2015 - UNI EN ISO 45001:2018

Diplomi




Ministero della Salute
DIREZIONE GENERALE DELLE PROFESSIONI SANITARIE E DELLE RISORSE UMANE DEL SERVIZIO SANITARIO NAZIONALE
UFFICIO 4

DGPROF/4/2022/339

ATTESTATO

A richiesta dell'interessata e per gli usi consentiti dalla Legge,
dalla documentazione agli atti di questo Ministero, risulta che :
ALBERTI CHRISTIAN nato a Bassano Del Grappa il 15/09/1979
ha conseguito in data 23/02/2022 dopo un corso della durata legale di anni tre,
IL DIPLOMA DI SPECIALISTA IN
CHIRURGIA ORALE
presso l'Università degli Studi di
VERONA

Ministero della Salute
DGPROF
0019070-P-05/04/2022
T. S. n. /2022/339


Il suddetto titolo soddisfa i requisiti di formazione di cui all' articolo 35 della Direttiva 2005/36/CE del 7 settembre 2005 e corrisponde al titolo indicato nell'Allegato V "Riconoscimento in base al coordinamento delle condizioni minime di formazione" di cui al punto 5.3.3 "Titoli di formazione di dentista specialista" della succitata Direttiva.

Roma, **29 MAR 2022**
AM

IL DIRETTORE GENERALE
Dott.ssa Rossana Ugenti




**International Association of
Oral and Maxillofacial Surgeons**



To Whom All these presents may come greeting,
Be it known that the International Association of Oral & Maxillofacial Surgeons
has approved and Accepted
Dr. Alberti Christian
As a
Fellow
These letters being their testimonial that he has met the standards
and qualifications and was granted the rights of Fellow

Original Date of Issue
The 26th of April
Two Thousand and Twenty Two

 Dr. Scott Ferguson
Executive
 Dr. Sushil Nair
Vice President
 Dr. Alejandro Martinez
President
 Dr. Hal Zemanek
Vice President Elect
 Dr. Mitchell Shorack
Executive Director

Annual Renewal Required


REPUBBLICA ITALIANA
UNIVERSITÀ DEGLI STUDI DI VERONA


IL RETTORE

VISTO CHE IL DOTT. CHRISTIAN ALBERTI NATO A BASSANO DEL GRAPPA (VICENZA) IL GIORNO 15 SETTEMBRE 1979 HA COMPIUTO GLI STUDI NELLA SCUOLA DI SPECIALIZZAZIONE IN CHIRURGIA ORALE SUPERANDO L'ESAME FINALE DI DIPLOMA IL GIORNO 23 FEBBRAIO 2022, A NORMA DELLE VIGENTI DISPOSIZIONI LEGISLATIVE IN MATERIA E DELLO STATUTO DI QUESTA UNIVERSITÀ, GLI CONFERISCE IL PRESENTE

DIPLOMA DI SPECIALISTA
IN
CHIRURGIA ORALE

AFFINCHÉ POSSA AVVALERSENE AD OGNI EFFETTO DI LEGGE. DATO A VERONA, ADDÌ 31 DEL MESE DI MARZO DELL'ANNO MMXXII.

IL RETTORE

 IL DIRETTORE GENERALE


Registro di Studi, Livello di studio ordinario.
 Aut. Regione della Basilicata n. 10023 del 05 agosto 2007

Registro di Studi, Livello di studio ordinario.
 Aut. Regione della Basilicata n. 10023 del 05 agosto 2007

SIdC
SOCIETÀ ITALIANA DI CHIRURGIA
ODONTOSTOMATOLOGICA

Si certifica che
Christian Alberti
possedendo i requisiti richiesti, è nominato
SOCIO ATTIVO


Presidente SIdC

 Commissione Soci Attivi
 Gaetano Marenzi


Bandolino, 20 ottobre 2022

Frontespizi tesi

I.P.I.A. " FEDELE LAMPERTICO "



VIA GG.TRISSINO, 30 - 36100, VICENZA

.....

ESAME DI MATURITÀ

CHRISTIAN ALBERTI

**CHIRURGIA RICOSTRUTTIVA
CRANIO-MAXILLO-FACCIALE
E DELL'ARTICOLAZIONE
TEMPORO-MANDIBOLARE**

ANNO SCOLATICO: 1997-1998 CLASSE 5^ODONT SEZ.B



UNIVERSITÀ DEGLI STUDI DI PADOVA

FACOLTÀ DI MEDICINA E CHIRURGIA
CORSO DI LAUREA IN ODONTOIATRIA E PROTESI DENTARIA
DIPARTIMENTO DI SPECIALITÀ MEDICO-CHIRURGICHE
ISTITUTO DI CLINICA ODONTOIATRICA
CATTEDRA DI CHIRURGIA MAXILLO-FACCIALE
AZIENDA OSPEDALIERA UNIVERSITARIA DI PADOVA
UNITÀ OPERATIVA COMPLESSA DI CHIRURGIA MAXILLO-FACCIALE
SCUOLA DI SPECIALIZZAZIONE IN CHIRURGIA MAXILLO-FACCIALE
DIRETTORE: PROF. GIUSEPPE FERRONATO

TESI DI LAUREA SPERIMENTALE

PROGETTO DI RICERCA CPDT-03371 APPROVATO E FINANZIATO
DALL'UNIVERSITÀ DEGLI STUDI DI PADOVA

**LA RICOSTRUZIONE TRIDIMENSIONALE DEL VOLTO IN CHIRURGIA ORTOGNATICA.
COMPARAZIONE DI TRE METODI NON INVASIVI DI RIPRODUZIONE TRIDIMENSIONALE
DEI TESSUTI MOLLI DELLA FACCIA:
PERFORMANCE A CONFRONTO E NECESSITÀ FUTURE IN CHIRURGIA ORTOGNATICA**


RELATORI: CHIR. MO PROF. GIUSEPPE FERRONATO
PROF. REBENTO PERETTA

CORRELATORI: CHIR. MO PROF. GIAN MARIA CONCHERI
CHIR. MO PROF. VIRGILIO F. FERRARIO

COLLABORATORI: DR. PIER FRANCESCO GALZIGNATO
ING. DANIELE COMELLI
ING. ROBERTO MENEGHELLO

LAUREANDO: ALBERTI CHRISTIAN

ANNO ACCADEMICO 2004-2005



Università degli Studi di Genova

Scuola di Scienze Mediche e Farmaceutiche

Master Universitario di II livello in Implantoprotesi

Presidente: Prof. Paolo Pera

**LA RICOSTRUZIONE TRIDIMENSIONALE DEL VOLTO
CON TECNICA LASER:
METODOLOGIA OPERATIVA ED
ANALISI PRELIMINARE DEI RISULTATI**

Candidato: CHRISTIAN ALBERTI

Relatore: PROF. PAOLO PERA
Correlatore: PROF. MARIA MENINI

Anno Accademico 2013-2014




Université "Jean Monnet" Saint Etienne

Faculté de Médecine Jacques Lisfranc

Laboratoire d'Anatomie

15, Rue Amboise Paré, 42, Saint Etienne

Année 2013-2014

DIPLOME UNIVERSITAIRE D'ANATOMIE APPLIQUÉE À L'IMPLANTOLOGIE

Mémoire Présenté par

Mr le Docteur Christian ALBERTI

Titre du Mémoire:

COLUMBUS BRIDGE PROTOCOL™ :


RIABILITAZIONE IMPLANTOPROTESICA FISSA DEL MASCELLARE

EDENTULO A FUNZIONE IMMEDIATA

-BIOMECHANICALLY ADVANCED PROSTHESIS-

Directeur du Mémoire:

Mr Le Docteur Robert Prof. GAUTHIER



UNIVERSITÀ DEGLI STUDI FIRENZE

UNIVERSITÀ DEGLI STUDI DI FIRENZE
 FACOLTÀ DI MEDICINA E CHIRURGIA
 DIPARTIMENTO DI CHIRURGIA E MEDICINA TRASLAZIONALE
 CENTRO TRAUMATOLOGICO ORTOPEDICO CAREGGI
 CATTEDRA DI CHIRURGIA MAXILLO-FACCIALE
 MASTER UNIVERSITARIO DI II° LIVELLO IN
 CHIRURGIA RICOSTRUTTIVA ED IMPLANTOLOGICA DEI MASCELLARI
 DIRETTORE: PROF. ROBERTO BERTOLAI

TESI DI MASTER UNIVERSITARIO DI II° LIVELLO IN
 CHIRURGIA RICOSTRUTTIVA ED IMPLANTOLOGICA DEI MASCELLARI

**LA RIABILITAZIONE IMPLANTOPROTESICA FISSA DEL MASCELLARE
 EDEUNTULO ED ATROFICO A FUNZIONE IMMEDIATA:
 OPZIONI TERAPEUTICHE E PERFORMANCE A CONFRONTO**

RELATORI: PROF. ROBERTO BERTOLAI
 DR. CARLO ALESSANDRO AVERSA

CANDIDATO: DR. CHRISTIAN ALBERTI

ANNO ACCADEMICO: 2015-2016



UNIVERSITÀ DEGLI STUDI DI TORINO

Facoltà di Medicina e Chirurgia
 Dipartimento di Scienze Chirurgiche
 Lingotto School of Dental Medicine
 Azienda Ospedaliero - Universitaria Molinette, Torino
 Città della Scienza e della Salute di Torino
 Cattedra ed U.O.C. di Chirurgia Maxillo-Facciale
 Scuola di Specializzazione in Chirurgia Maxillo-Facciale
 Master Universitario di II Livello in Chirurgia Ortognatica e delle Malformazioni Cranio-Facciali
 Direttore: Prof. Guglielmo Ramieri, MD, DDS

Tesi di Master Sperimentale

**Pianificazione Computerizzata 3D
 dell'Occlusione Post-Chirurgica
 nelle Procedure Surgery First**

Relatori: Prof. Guglielmo Ramieri, MD, DDS
 Prof. Giovanni Gerbino, MD, DDS

Correlatori: Prof. Redento Peretta, MD, DDS, PhD, IBO
 Prof. Antonio L. Gracco, DDS

Masterizzando: Dr. Christian Alberti, DDS, MSc, CDT, MDT

UNIVERSITÀ DI VERONA
 SCUOLA DI MEDICINA E CHIRURGIA
 Scuola di Specializzazione in Chirurgia Orale


Direttore: Prof. Massimo Albanese

TESI DI SPECIALIZZAZIONE
 Analisi dell'Occlusione Transizionale
 nelle Procedure Surgery-First.
 Valutazione Morfologica
 e Morfometrica Tridimensionale.

Relatore: Prof. Massimo Albanese
 Correlatore: Dott. Redento Peretta

Medico Specializzando
 Dott. Christian Alberti

ANNO ACCADEMICO 2019 - 2020



Università degli Studi di Brescia
 Scuola di Medicina e Chirurgia
 Dipartimento di Specialità Medico-Chirurgiche, Scienze Radiologiche e Sanità Pubblica
 Azienda Ospedaliero Universitaria Spedali Civili di Brescia
 Master Universitario di II Livello in Odontoiatria Digitale
 Coordinatore: Prof. Antonio Cerutti
 Scuola di Management ed Educazione Avanzata

Tesi Sperimentale di Master Universitario di II Livello in Odontoiatria Digitale

Valutazione analitica, morfologica e morfometrica
 dell'anatomia facciale di superficie tramite tecnologia computerizzata.
 Utilizzo dei sistemi di scansione tridimensionale computer-assistiti
 per la riproduzione 3D dei tessuti molli del viso.

Relatore: Prof. Antonio Cerutti

Masterizzando:
 Dr. Christian Alberti
 Matricola n. 740305

Abstract delle Pubblicazioni

1 Prog Orthod. 2008; 9(2): 8-19.

A 3-Dimensional Facial Morpho-Dynamic Database in the development of a prediction model in Orthognathic Surgery.

Peretta R., Concheri G., Comelli D., Meneghello R., Galzignato P.F., Ferronato G.

Author information

1 Dep. of Maxillofacial Surgery, University of Padova, Italy

Abstract

Background:

Current methodologies in the prevision of post-surgical features of the face in orthognathic surgery are mainly 2-D. An improvement is certainly given by the introduction of CT, but its acceptance is controversial due to its high biological cost. As an alternative, in this study an effective procedure for the construction of a 3-D textured digital model of the face and dental arches of patients with dentofacial malformations using a 3-D laser scanner at no biological cost is presented.

Methods:

A 3-D Laser scanner Konica-Minolta VIVID 910 is used to obtain multiple scans from different perspectives of the face of patients with dentofacial malocclusions requiring orthognathic surgery. These multiple views are then recombined, integrating also the maxillary and mandibular arch plaster casts, to obtain the 3-D textured model of the face and occlusion with minimal error.

Results:

A viable methodology was identified for the face and occlusal modeling of orthognathic patients and validated in a test case, confirming its effectiveness: the 3-D model created accurately describes the actual features of the patient's face; the proposed methodology can be easily applied in the Clinical routine to accurately record the steps of the surgical treatment and to perform accurate anthropometric analyses of the facial morphology, and thus constitute the necessary database for the development of previsional tools in orthognathic surgery.

Conclusions:

The proposed method is effective in recording all the morphological facial features of patients with dentofacial malformations, to develop a facial modification database and tools for virtual surgery.

2 Br J Oral Maxillofac Surgery 2007 Mar;45(2): 138-44. Epub 2006 Feb 17.

Three-dimensional facial morphometry in skeletal Class III patients. A non-invasive study of soft-tissue changes before and after Orthognathic Surgery.

Sforza C., Peretta R., Grandi G., Ferronato G., Ferrario V.F.

Author information

1 Functional Anatomy Research Center (FARC), Laboratorio di Anatomia Funzionale dell'Apparato Stomatognatico (LAFAS), Dipartimento di Morfologia Umana, via Mangiagalli 31, Università degli Studi di Milano I-20133 Milano, Italy. farc@unimi.it; Cattedra ed U.O.C. di Chirurgia Maxillo-facciale, Università degli Studi di Padova, Direttore: Prof. Giuseppe Ferronato.

Abstract

Nine patients aged between 18 and 35 years who had severe skeletal Class III malocclusion and moderate-to-severe mandibular asymmetry, were assessed by a non-invasive, landmark-based, three-dimensional system before and after mandibular reduction by sagittal split osteotomy and LeFort I maxillary advancement. The three-dimensional coordinates of 50 facial soft tissue landmarks were collected, and a series of anthropometric measurements was calculated and compared with reference values from 240 healthy subjects of similar sex, age, and ethnic group. Patients were more asymmetrical than normal subjects before the operations, particularly in the gonion. Postoperatively, total and lateral asymmetry was considerably reduced. The three-dimensional approach was a valuable complementary diagnostic aid that enabled quantitative evaluation of the final soft-tissue results without invasive procedures.

3 J Oral Maxillofac Surg. 2008 Apr;66(4):691-8. doi: 10.1016/j.joms.2007.06.645.

Soft tissue facial planes and masticatory muscle function in skeletal Class III patients before and after orthognathic surgery treatment.

Sforza C., Peretta R., Grandi G., Ferronato G., Ferrario V.F.

Abstract

Purpose:

To noninvasively assess the facial soft tissues and masticatory muscle function before and after orthognathic surgery.

Patients and Methods:

Eight patients aged 18 to 36 years, all with a skeletal Class III and mandibular asymmetry, were assessed both before (on average, 2 months) and after (on average, 10.5 months) surgical Intervention (mandibular reduction by sagittal split osteotomy and Le Fort I maxillary advancement). From the 3-dimensional coordinates of soft tissue facial landmarks, the inclination of facial planes was calculated. Surface electromyography of the masticatory muscles was performed and indices of muscular activity computed. Data were compared with reference values collected in healthy subjects of the same gender, age, and ethnic group.

Results:

Before surgery, facial planes were significantly less horizontal (frontal plane) than in the reference subjects ($P < .05$). The sagittal projection of the mandibular plane was more inclined relative to the norm ($P < .001$). During teeth clenching, all indices of standardized muscular symmetry, torque, and activity ($P < .05$) were smaller than the reference values. After surgical treatment, the inclinations of facial planes became more homogenous ($P < .05$). The inclination of the frontal and sagittal planes came next to the reference values, but still differed significantly in the patients ($P < .05$). The mean symmetry index of masseter muscle, torque coefficient, and pooled muscle activity increased, but the patient values remained significantly under the reference values ($P < .05$).

Conclusion:

The morphologic and functional approach used in this study proved useful as a complementary diagnostic aid, enabling quantitative evaluation of the final results of surgery, without submitting the patients to invasive procedures.

4 J Plast Reconstr Aesthet Surg. 2007;60(2): 130-8. Epub 2006 Sep 7.

Soft tissue facial volumes and shape in skeletal Class III patients before and after Orthognathic Surgery treatment.

Sforza C., Peretta R., Grandi G., Ferronato G., Ferrario VF.

Author information

1 Functional Anatomy Research Center, Laboratorio di Anatomia Funzionale dell'Apparato Stomatognatico, Dipartimento di Morfologia Umana, Facoltà di Medicina e Chirurgia, Università degli Studi di Milano, Milano, Italy. chiaraella.sforza@unimi.it; Cattedra ed U.O.C. di Chirurgia Maxillo-facciale, Università degli Studi di Padova, Direttore: Prof. Giuseppe Ferronato.

Abstract

Background:

To obtain the best surgical results in orthognathic surgery, treatment planning and the evaluation of results should be performed on measurable three-dimensional reproductions of the face of the patients, and compared to reference subjects.

Methods:

Seven women aged 18-35 years, all with a skeletal Class III and mandibular asymmetry, were assessed both before (on average, 2 months) and after (on average, 10.7 months) surgical Intervention (mandibular reduction by sagittal split osteotomy and LeFort I maxillary advancement). the three-dimensional coordinates of 50 soft tissue facial landmarks (face, eyes, nose, mouth and lips, ears) were collected with a noninvasive, electromagnetic digitizer; facial volumes were estimated, and compared to reference values collected in 87 healthy women of the same age and ethnic group. Inter-individual modifications in facial shape were also assessed.

Results:

Before surgery the patients had smaller faces than the reference women, with larger lower lips and noses. a large within-group variability was found. Surgical treatment significantly reduced total facial volume and mandibular volume, increased total and upper lip volumes (Student's t test, $p < 0.05$), and made all values more homogenous within the group. Shape differences were significantly larger before than after surgery. on average, right side gonion was the landmark that moved the most, closely followed by menton, while the tragi and ala nasi moved the least. the three-dimensional approach used in this study enabled quantitative evaluation of the final soft tissue results of surgery, without submitting the patients to invasive procedures.

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Valutazione morfometrica tridimensionale del volto pre e post chirurgia ortognatica: landmarks versus surface analysis

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Riassunto

La ricostruzione virtuale del viso dei pazienti disgnatici offre al chirurgo facciale la possibilità teorica di utilizzarla a scopo clinico per formulare una diagnosi, programmare una terapia e verificare la prognosi estetica delle manovre chirurgiche programmate. La riproduzione del viso per punti antropometrici ha la sua massima utilità nel momento della diagnosi. Sono disponibili infatti valori di normalità con i quali confrontare le dimensioni facciali dei pazienti e identificare le zone di disequilibrio facciale. La riproduzione dell'intera superficie facciale offre possibilità aggiuntive. Oltre all'identificazione virtuale dei landmarks sulla superficie del viso è possibile una fine analisi delle caratteristiche dei tessuti molli facciali in termini di size, shape and location. Il razionale terapeutico consiste nel programmare una variazione di forma e di posizione dei tessuti duri del paziente allo scopo di ottenere una corretta occlusione e una piacevole estetica facciale. Questa possibilità teorica diventerà realtà solo se sarà realizzato un database di casi trattati dal quale estrapolare un modello di comportamento dei tessuti molli in risposta alla variazione dei tessuti duri. La scansione laser del viso sembra lo strumento più adeguato per poterlo realizzare

Introduzione

La prognosi estetica dei trattamenti chirurgici è possibile solo disponendo di un database di pazienti operati che ci consenta di stabilire un modello

di comportamento dei tessuti molli relativo allo spostamento dei tessuti duri di supporto alle procedure di chirurgia virtuale. La realizzazione di database di queste caratteristiche necessita di mezzi di riproduzione della geometria facciale eticamente e biologicamente accettabili per i pazienti ed efficaci per il clinico. A questo scopo sono state testate tre procedure di riproduzione tridimensionale facciale non invasive (3DNIP) e messe a confronto. La prima 3DNIP (Landmarks) consiste in una penna elettronica da appoggiare al viso del paziente e un sistema di rilevamento delle coordinate tridimensionali di 50 punti antropometrici digitalizzati in sequenza prestabilita ⁽¹⁾. La seconda 3DNIP (Facial Mask) consiste nella riproduzione del viso mediante impronta e colatura di una maschera in gesso e successiva scansione della superficie con un digitalizzatore a braccio meccanico. La terza 3DNIP (Laser Scan) consiste nella riproduzione diretta del viso del paziente mediante scansione con uno scanner laser eseguita prima e dopo chirurgia ⁽²⁾.

Materiali e metodi

Sono stati selezionati in modalità random 18 pazienti affetti da malocclusioni dento-scheletriche che dovevano essere sottoposti a chirurgia ortognatica, il cui tipo di malocclusione era del tutto casuale. Questo gruppo è stato suddiviso in tre sottogruppi. I primi sei sono stati studiati con metodo morfometrico utilizzato dal gruppo di ricerca del LAFAS (Laboratorio di Anatomia Funzionale dell'Apparato Stomatognatico) dell'Istituto di Scienze Morfologiche dell'Università di Milano, conosciuto in letteratura come 3DMFA (three dimensional morphometric facial analysis) ⁽³⁾. Ogni singolo paziente viene studiato marcando sul viso cinquanta punti antropometrici, con la testa bloccata da un craniostato applicato ad una sedia. Un digitalizzatore con penna elettronica e tavoletta ricevente (3Draw, Pholemus Inc, Colchester, VT.) registra le coordinate spaziali di ogni singolo punto. I secondi sei sono stati studiati con riproduzione della superficie facciale mediante impronta del viso che richiedendo accuratezza, necessita di una intelaiatura di fili in acciaio modellati direttamente sul viso del paziente oppure di una garza termoplastica che funga da "cucchiaino individuale" per il materiale da impronta. Da questa viene ricavata una maschera in gesso da scansionare ⁽⁴⁾ con digitalizzatore a contatto di tipo meccanico (Microscribe G2, Immersion Corporation, San José, CA, USA.). L'informazione spaziale è costituita da curve per punti interpolati tipo NURBS gestite da un programma di disegno tridimensionale Rhinoceros. Gli ultimi sei sono stati studiati dall'equipe di disegno industriale della Facoltà di Ingegneria dell'Università di Padova scansionando direttamente il viso con uno scanner laser Minolta, scansionando più viste, lateralmente e frontalmente, e sovrapponendole allo scopo di ottenere una immagine completa e coerente del viso. Il segnale di ingresso è costituito da punti che descrivono

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una vista parziale del volto, dai quali può essere ricavata una superficie sfaccettata. Le tre procedure di riproduzione facciale descritte sono state ripetute per ogni paziente dopo sei mesi circa dall'intervento in corrispondenza della fine del trattamento ortodontico attivo e l'inizio della contenzione. Di ogni metodo impiegato è stato valutato il costo in termini di investimento economico iniziale necessario per l'acquisto dello scanner e del software necessario alla gestione dell'immagine; il tempo medio necessario per la realizzazione del modello facciale a partire dalla preparazione del paziente sino alla fine della processazione dei dati acquisiti. Nella fase di pre-processing è stata valutata l'informazione fornita dalla differente modalità di scansione in termini di natura del dato acquisito (landmarks, curve NURBS, superficie mesh) quantità di punti e dettaglio.

Risultati

L'informazione fornita dalla metodica Landmarks è di tipo puntiforme: fornisce la posizione spaziale di un punto scelto come rappresentativo della struttura che si vuole studiare, ovvero in altri termini una buona informazione sulla location ma nessuna informazione in termini di shape and size della parte del viso rappresentata. La valutazione diagnostica per landmarks consente una valutazione accurata della normalità, secondo statistica, della posizione spaziale dei punti antropometrici analizzati. L'esiguità dei punti, tuttavia, non consente un'analisi della dimensione e della configurazione delle parti del viso, ad esempio delle curvature delle superfici. La riproduzione con maschera è una metodica non applicabile in quanto troppo onerosa in termini di tempo e troppo poco precisa: l'informazione fornita dalla riproduzione per maschera e scansione laser sono concettualmente equiparabili fornendo la possibilità di una valutazione quantitativa più ricca in termini di location, shape and size di ogni parte del viso potendo utilizzare landmarks, curve di sezione, aree e volumi compresi tra superfici. La terza procedura di riproduzione facciale prevede la scansione diretta senza contatto della superficie facciale mediante uno scanner laser. Sulla superficie rappresentata da una mesh di piccoli triangoli, similmente alla superficie da curve, possono essere individuati punti antropometrici di interesse clinico, possono essere determinate curve di intersezione con piani di sezione, aree di zone definite e volumi compresi tra superfici. Contemporaneamente alla scansione lo scanner fotografa il viso del paziente e riallinea i pixel dell'immagine con la superficie corrispondente. L'immagine fotografica del viso è dunque utilizzata come texture della mesh con un effetto fotorealistico finale di grande utilità clinica. L'errore di riproduzione è molto basso nella riproduzione per scansione laser. Possiamo quindi concludere che il contenuto informativo nel modello fornito dalle tre metodiche è rispettivamente basso, medio e alto.

Conclusioni

La rappresentazione con cinquanta landmarks e un sistema di registrazione elettronica delle coordinate spaziale di ogni singolo punto è un sistema economico, veloce e con una curva di apprendimento sufficientemente breve. La maggiore utilità di questo sistema è diagnostica perché è disponibile un database di visi normali ⁽⁵⁾ con il quale è possibile confrontare le misure del paziente in esame ed avere quindi un criterio statistico, cioè quantitativo, di valutazione delle caratteristiche patologiche che si desiderano correggere. La tecnica indiretta utilizzata è quella dell'impronta facciale, la riproduzione mediante maschera di gesso e successiva scansione mediante braccio meccanico. La qualità della riproduzione è buona ma con tempi di lavoro eccessivi per un uso routinario. La riproduzione diretta mediante scansione laser del viso ha mostrato la massima qualità e velocità nella riproduzione facciale con un solo handicap rappresentato dall'alto costo iniziale dello scanner. L'utilizzo clinico è ancora limitato alla valutazione delle variazioni pre-post chirurgia a causa della mancanza di un database di riferimento in fase diagnostica.

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6 Classificazione e revisione della letteratura nella chirurgia dei terzi molari

1° Incontro Nazionale delle Scuole di Specializzazione in Chirurgia Orale

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Scuola di specializzazione in chirurgia orale - Direttore: Prof. Massimo Albanese - Modena, Venerdì 07 giugno 2019

Healing of hard tissues post surgical extraction of the lower third molar: comparison between two different extraction methods. Retrospective study of 300 patients and literature review

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Aim: The aim of this study was to focus on the healing process of hard tissues in post surgical extraction sites of lower third molars in healthy patients.

Methods: A group of 300 patients was treated by two different surgeons (respectively 150 the first and 150 the second), each of whom followed his own standardized surgical protocol. Basic differences were: the first operator did not administer antibiotic prophylaxis and the surgical phase was conducted with significant use of water-rotating instruments, while the second operator provided the use of the antibiotic prophylaxis and a significant use of the lever, despite minimal use of water-based rotary instruments. All other points of the two surgical extraction protocols were similar.

Results: The percentages of delayed healing, alveolitis, osteitis and osteomyelitis of the two groups were compared and a higher percentage of complications was recorded with the First operator than the Second one (14.09% versus 12.08%). From this analysis, subgroups of the population were created based on the risk factors related to the patient most involved in these complications, such as sex, age, smoking and oral contraceptives assumption. The respective percentages of complications were calculated and the data were compared with literature, showing that: the influence of sex and age, despite having obtained conflicting results between the two cohorts, is supported by literature and may be relevant or not. Regarding smokers and women who take contraceptives, in both cohorts a higher percentage of complications was obtained as clearly supported by literature. Once the smoking and contraceptives were defined as two evident risk factors for healing complications, these patients were removed from the initial pools and the complication rates were recalculated for both groups, showing a marked difference of complication rate: 12.75% versus 7.25%. Regarding the surgical protocols, a literature review showed that there is no statistically significant difference on the use of antibiotic prophylaxis in healthy patients to reduce the percentage of hard tissue complications; while the duration of the surgery, in particular the time spent in osteotomy, seems to increase the risk of complications referred to the hard tissues healing. On opposite, the extractions operated with a marked use of the lever (cohort 2) presented a high rate of temporary impairment of sensory function of the NAI and of the lingual nerve as secondary outcome.

Conclusions: The following study allows to conclude that smoking and oral contraceptive are risk factors for the healing of hard tissues that increases the possibility of complications by 2.8 times the first and 1.75 times the second; temperature increase generated by prolonged osteotomy procedure influences the healing capacity of hard tissues after an extraction; the use of strong pressure with the lever increases the risk of temporary paresthesia.

7 Relazione tra le complicanze postoperatorie dell'estrazione dei terzi molari e l'età del paziente: revisione della letteratura

1° Incontro Nazionale delle Scuole di Specializzazione in Chirurgia Orale

G. Capocasale, C. Alberti, G. Causarano, D. Donadello - Università degli Studi di Verona - Clinica odontoiatrica e di chirurgia maxillo-facciale - Scuola di specializzazione in chirurgia orale - Direttore: Prof. Massimo Albanese - Modena, Sabato 08 giugno 2019

NobelGuide™ pilot surgical template: retrospective study on 15 consecutive cases

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Aim: Technological and computer development for guided implantology has enabled the introduction of programs that allow clinicians to plan implant insertion with beneficial prosthetic emergence and produce surgical templates to guide inserting the pilot drill only. Pilot Drill Template implantology is a turning point between flapless surgery and traditional surgery while maintaining the computer guidance in using the first pilot drill and having a direct view of bone tissue. The aim of this study was to evaluate patients who are candidates for the pilot template, thus partially edentulous.

Methods: For each patient a dental impression and a diagnostic wax-up of the areas to be rehabilitated were performed. They were then scanned via Nobel Procera® scanner, and the images were imported into the NobelClinician® software. The SmartFusion algorithm allows the automatic matching of the data deriving from the scan of the stone model with the DICOM files of the patient's CT scan. A pilot drill template was virtually created; it includes the housing of 2 mm diameter bushings for each implant position. After local anesthesia, the surgical template was fitted on the present teeth, and the Guided Twist Drill

Ø 2.0 × (10+) 7-18 mm was used, with a fixed stop at the predetermined length. Once the guided milling was performed, the template was removed, a crestal incision was made, a mucoperiosteal flap was raised and the implant site was prepared according to Nobel Biocare® protocols. A total of 32 implants were placed using 14 surgical templates in 14 partially edentulous patients. Only one patient was excluded from surgery for the inadequate vestibulo-lingual bone thickness.

Results: Patients' average age is 49 years (21-64 years). 9 patients are females (60%) 6 males (40%); they were rehabilitated respectively with 22 (68.75%) and 10 implants (31.25%). 7 rehabilitations were performed on the maxilla (21 implants), and 8 on the jaw (11 implants). The average number of implants placed per patient is 2.286. In 12.5% of cases implants were placed at the incisive level, in 3.12% at the canine level, in 25% at the premolars level and in 59.38% at the molars level. The average length of the 32 implants inserted is 11.19 to 1.10 mm. The average diameter of the 32 implants inserted is 3.82 to 0.29 mm. Of the 32 implants inserted, 6 are Nobel Active® (19%), 7 are Speedy Groovy (22%) and 19 are the Brånemark System® MK III (59%). Of the 32 holes performed with the Guided Twist Drill, 12 were reprepared with the first

Ø 2.0 drill to have a better anatomical and prosthetic position. In 2 cases the therapeutical pathway was modified in the vestibulo-palatal sense, 6 in the mesio-distal sense and 4 in both vestibulo-palatal and mesio-distal senses. In 4 the implant length was changed, in 3 the diameter, in 3 the type, in 6 diameter-length, in 1 type-diameter, in 5 type-length-diameter and in 10 no changes were made.

Conclusions: The advantages of this technique are: a lower loss of keratinized mucosa, the direct vision of bone tissue, a reduction of the degree of bone overheating and a less bulky bushing than the Fully Guided protocols, the possibility of reviewing the planning during surgery with implant parameter changing. Pilot Drill Implant Template implantology is a compromise between flapless and traditional surgery, with the aims of maintaining the advantages of both techniques, overcoming their different limits.

8 Incisional biopsy examination to diagnose oral potentially malignant disorders and oral squamous cell carcinoma: report of 100 cases

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Aim: Oral squamous cell carcinoma (OSCC) is the most common oral and maxillofacial malignancy. If detected at an early stage, survival from oral cancer is higher than 90% at 5 years. OSCC is very often preceded by oral "potentially malignant disorders"; in 2005, the World Health Organization recommended the use of the term oral "potentially malignant disorders" (PMDs) instead of precancerous lesions, having greater potential for malignant transformation than other oral lesions. In these cases, often, patients presented widespread disorders in different sites of the oral cavity and for this they obviously require an incisional biopsy. Indeed, currently, the "gold standard" for the diagnosis of PMDs or OSCC involves three initial steps: a visual recognition of macroscopic features, selection of the most representative sites for biopsy, and histomorphology examination. So the limitations are: the choice of the site, the tendency of PMDs towards field cancerization, artifacts or insufficient tissue, intra- and interobserver variability. Also, patients should be followed-up at regular intervals. Currently, follow-up intervals are not evidence-based and are entirely based on clinicians' subjective assessment of clinical appearance and reported dysplasia in the specimens. The aim of this retrospective study was to determine the accuracy of incisional biopsy examination to diagnose PMDs or OSCC, also during follow-up.

Methods: This retrospective review included a sample 100 patients referred to the Department of Surgery, of Dentistry, Paediatric and Gynecology, University of Verona, during the period from 2007 to 2017, who presented the following oral lesions: leukoplakia (idiopathic or due to smoking), erythroplakia, oral lichen planus, and who also were subjected to incisional biopsy. All data as demographics, habits (smoking and alcohol) and clinical features of the lesions (site, clinical features, morphology and color) were collected in a dataset. For each patient the clinical diagnosis formulated during the first visit was also recorded. The photographic records were collected in order to record not only the clinical features of the lesion, but also for the purpose of recording the site in which biopsy sampling was performed. Simple visual examination is accompanied with adjunctive techniques as toluidine blue for subjective interpretation of dysplastic changes.

Results: Considering the period from 2007 to 2017, 100 patients involved in the study were: 57 females and 43 males; their age range was 27-86 years. The majority of the lesions (n=31) appeared clinically as plaque, 23 were erosive lesions, 30 were papular/reticular, 8 were mixed plaque and erosive lesions, and 8 were ulcerative lesions. The pathological diagnosis identified the presence of 51 cases of Oral Lichen planus, 31 cases of oral leukoplakia, 10 cases of Proliferative verrucous leukoplakia and 8 cases of erythroleukoplakia. No cases were found with insufficient tissue provided in the biopsy specimen or sampling error. Also, during follow-up period, 21 patients were subjected to incisional biopsy (also with toluidine blue); so, 9 cases of OSCC were diagnosed: in 5 cases patients' first diagnosis were oral lichen planus, in 4 cases were erythroleukoplakia.

Conclusions: The data collected indicated a diagnostic concordance with final pathologic results of incisional oral biopsy. The clinical knowledge (in association with the use of adjunctive techniques as toluidine blue), the quality of the samples sent to the pathologists and the communications between oral surgeon and pathologist are important for a correct and timely diagnosis of PMDs or OSCC.

9 Short implant: new horizon in Oral Surgery

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AIM:

To evaluate the survival and success of short and super-short implants in prosthetic restorations, whether with immediate or delayed loading. In this article there are no principles of sectoral exclusion of prosthetic restorations and all types of implants on the market and present in the literature are considered (13 articles in total).

METHODS:

In literature there are numerous articles concerning short and super short implants. In this review, articles from the last 15 years were considered and of these only those free from regenerative or reconstructive techniques were selected.

Short implants were considered according to the following inclusion scheme:

- 1 implant placement in the patient's native bone only, whether maxillary and / or mandibular;
- 2 exclusion of incremental techniques with auto, hetero and homologous bone grafts;
- 3 positioning with flapless versus open technique;
- 4 immediate versus deferred loading;
- 5 implant placement in total maxillary atrophy;
- 6 implant placement after post-reclamation healing;
- 7 implants positioned in various types of skeletal atrophy according to the Kennedy classification;
- 8 definitive restoration with metal-ceramic, composite and/or zirconia crowns;
- 9 connection of the internal and/or external abutment;
- 10 variations in the type of implant surface by macro and micro-structure;
- 11 screw connection according to torque standards with dynamometric selection;
- 12 distinction between fixed and/or removable prosthesis.

Of all the articles present in the literature, 11 publications that meet the requirements have been selected.

RESULTS:

4,334 short implants in a total of 1.932 patients were evaluated and considered, without significant percentage changes in gender or age. Implant placement was performed equally at both maxillary and mandibular levels without significant statistical variation with regard to the surgical positioning technique. In the study, the implants considered have a length between 5 mm and 8.5 mm and a standard diameter ranging between 3.75 mm and 4 mm. From the data obtained we were able to trace only 104 short implants attributable to rough surfaces and 176 implants with machined surfaces. The articles examined consider a variable survival follow-up between 3 years and 16 years. From the data obtained and with a weighted statistical average, the survival rate after masticatory loading, both immediate and delayed, was 96.4%. This percentage indicates an excellent implant survival at 5 years with a stable maintenance of the peri implant bone peaks. No significant data emerged regarding the final prosthetic type of the crowns positioned on the implants at the end of the treatment. Furthermore, there are no data indicating with which torque method the definitive prosthetic abutments were screwed.

CONCLUSIONS:

The results obtained show that short implants are an excellent fixed implant-prosthetic resolution in cases of sectorial and vertical-transverse bone atrophy, with an excellent success rate of definitive prosthetic rehabilitation therapy. However, there are currently no significant results regarding the association between platform switching and short implants. There is also no unambiguous and accepted classification on which is, definitively, the maximum length threshold to define what is now called "short implant".

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Performance of short implants in partial restorations: 3 years follow up of osseointegrated implants

Implants dentistry.

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Short implants as an alternative to crestal sinus lift: a 1 year multicentre randomized controlled trial

Eur j. Oral implantol.

10 Effects of the sander bite jumping appliance in patients with class ii malocclusion before growth peak

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Sander bite jumping appliance (BJA) is a functional appliance used to correct Class II malocclusion in growing patients. The aim of this study was to identify the dento-skeletal effects in patients treated with BJA before growth peak and to compare these effects with the ones obtained in a similar group treated with the Andresen activator (AA). Twenty subjects with class II relationship of the skeletal bases and cervical vertebrae maturation stage 1 or 2 were enrolled in the study and treated with BJA. This group were compared to 14 subjects treated with AA. Cephalometric analyses were carried out using landmarks derived from the analyses of Pancherz, Ricketts, Tweed and Steiner. After treatment with BJA Pg/OLp increase was 7.40 ± 3.81 mm ($P < 0.001$); Pg/OLp+Co/OLp significantly heightened from T0 to T1 (T0: 82.20 ± 4.65 mm vs T1: 89.62 ± 4.27 , $P < 0.001$). Overjet (is/OLp - ii/OLp) significantly decreased from T0 to T1 (T0: 7.40 ± 2.31 mm vs T1: 3.05 ± 1.34 mm, $P < 0.001$). Molar relationship improved passing from 1.46 ± 1.68 mm at T0 to -3.56 ± 2.04 mm at T1 ($P < 0.001$). No statistically significant differences were found between BJA and AA groups at T0 and T1. BJA treatment determined a Class II malocclusion correction in all patients. The correction of molar relationship was mainly due to the increase in mandibular length; the correction of the overjet was due to the increase in mandibular length, to the slight pro-inclination of the lower incisors and the mild retro-inclination of the upper incisors. No significant differences were found in effectiveness between BJA and AA.

Class II malocclusion affect one third of the Italian children (1). Several factors may contribute to the development of Class II malocclusion including skeletal pattern, soft tissues, dental factors and vicious habits. Animal studies showed that a forward positioning of the mandible increased condylar growth (2-3). The functional orthopedic appliances determine an advanced mandibular position by stretching the external pterygoid muscles: which favours mandibular growth (4). Sander bite jumping appliance (BJA) is one of the most used functional orthopedic appliances: the main characteristic of this device is represented by two prongs embedded in the upper plate and positioned to form an angle of 60° with the occlusal plane. These force the patient to posture the mandible

forward (5). In most studies related to the functional orthopedic treatment of Class II malocclusion, the therapy is performed during the patient's growth peak (6). In our experience the treatment performed before growth peak can be beneficial because children are more cooperative than adolescents (7). The objectives of the study were: to identify the skeletal and dentoalveolar effects in patients treated with BJA before growth peak; to compare these effects with the ones obtained in a similar group treated with the Andresen Activator (AA).

MATERIALS AND METHODS:

Twenty patients (11 males and 9 females; mean age: 10.2 ± 1.6 years before treatment, T0) with the following characteristics were enrolled: bilateral class II molar relationship; overjet ± 5 mm; class II skeletal relationship ($ANB > 4^\circ$); mandibular retrusion ($SNB < 78^\circ$); CS1 or CS2 cervical vertebral maturation stage according to Baccetti et al. (8). The exclusion criteria were genetic or endocrine diseases that could affect the treatment; previous orthodontic treatments; skeletal abnormalities (9). The documentation included: study models, extraoral and intraoral photographs, orthopantomography, lateral cephalograms before (T0) and after (T1) treatment. Class II malocclusion was diagnosed through clinical examination, lateral photographs, lateral cephalogram and Frankel maneuver at T0 (10-11). Patients were treated with BJA for a mean period of 12.2 ± 2.3 months and were instructed to wear the appliance for at least 14 hours/day (12). At the end of the treatment dento-skeletal variables on the cephalometric traces of the initial (T0) and final (T1) lateral cephalograms were measured with Dolphin Imaging 11.7 software. Parameters derived from Steiner, Tweed, Ricketts, Pancherz and McNamara cephalometric analyses were measured to gather all the measurement variables often used in the literature (Table I) (13). The obtained data were compared with those of our previous study performed on 14 patients (7 males and 7 females) with Class II malocclusion treated with AA before the growth peak (7). The statistical analysis was performed using STATA software. Mean and standard deviation (SD) were calculated for all cephalometric variables at T0 and at T1. Paired t test was performed for the evaluation of the dento-skeletal changes that occurred during treatment with BJA. Unpaired t test was performed to compare the efficacy of BJA and AA. The p-value was considered statistically significant if less than 0.001.

RESULTS:

Skeletal and dentoalveolar measurements at T0 and T1 and their relative changes over time are reported in Table II. Pg/OLp and Pg/OLp+Co/OLp were significantly higher after BJA treatment (D Pg/OLp: 7.40 ± 3.81 mm, $P < 0.001$; D Pg/OLp+Co/OLp: 8.92 ± 8.67 mm, $P < 0.001$). Overjet (is/OLp - ii/OLp) significantly decreased from T0 to T1 (T0: 7.40 ± 2.31 mm vs T1: 3.05 ± 1.34 mm, $P < 0.001$). Molar relationship improved passing from 1.46 ± 1.68 mm at T0 to -3.56 ± 2.04 mm at T1 ($P < 0.001$). The dento-skeletal effects of BJA patients were compared to those of a group treated with AA. No statistically significant differences were found between BJA and AA groups at T0 and T1 (Table III). Both appliances were effective in correcting overjet and molar relationship. AA determined a greater retraction of the upper incisors (AA D is/OLp - A/OLp: -1.75 ± 3.18 mm vs BJA D is/OLp - A/OLp: 0.10 ± 2.62 mm) and a slight advancement of the lower incisors (AA D ii/OLp - Pg/OLp: -0.22 ± 2.69 mm vs BJA D ii/OLp - Pg/OLp: 0.16 ± 1.77 mm). The dental correction of overjet in BJA and AA groups was 47.4% and 6.1% respectively. In BJA group, the maxillary molars moved distally 1.30 ± 2.79 mm, while they tended to move mesially (0.98 ± 2.92 mm) in AA group. AA determined a greater mesialization of the first lower molars (AA D mi/OLp - Pg/OLp: 1.91 ± 8.47 mm vs BJA D mi/OLp - Pg/OLp: 0.57 ± 3.21 mm). The dental correction of molar relationship was 37.8% in BJA group and 20.1% in AA group. Sagittal mandibular length increased slightly more in BJA group (BJA D Pg/OLp+Co/OLp: 8.92 ± 8.67 mm vs AA D Pg/OLp+Co/OLp: 7.25 ± 4.47 mm), whereas AA determined a slightly greater increase in total mandibular length (BJA D Co-Gn: 9.21 ± 8.57 mm vs AA D Co-Gn: 10.06 ± 5.35 mm). SNA increased slightly in BJA group ($0.77 \pm 1.11^\circ$), whereas it decreased in AA one ($-1.49 \pm 3.43^\circ$). BJA determined a greater increase in SNB than AA (BJA D SNB: $2.52 \pm 2.41^\circ$ vs AA D SNB: $0.82 \pm 2.69^\circ$).

DISCUSSION:

Functional orthopedic treatment is effective in correcting Class II malocclusion in children aged 8-10 years (14-15). According to Martina et al. (5), BJA produced a significant increase in mandibular growth, improving overjet and molar relationship. Nucera et al. reported that functional orthopedic appliances produced a slight narrowing of the maxilla without a significant change of its inclination (16). On the contrary, we noticed that neither BJA nor AA inhibited the sagittal and transverse maxillary growth during the observational period. According to Illing et al. (11) SNA did not change significantly between T0 and T1 ($P = 0.056$). The relationship between the significant increase in maxillary length and the slight increase in SNA angle was explained by the fact that BJA determined the growth of the maxilla by rotating it backward. In fact, U1_SN decreased from T0 to T1 (D U1_SN: $-4.97 \pm 5.23^\circ$; $P = 0.015$). Since no dental variations were observed, we can state that the maxillary growth direction was slightly directed downward and backward. Regarding the mandible, there was a significant increase in the mandibular base position after BJA and AA treatments (BJA D Pg/OLp: 7.40 ± 3.81 mm, $P < 0.001$ vs AA D Pg/OLp: 7.82 ± 9.95 mm, $P < 0.001$). The total mandibular length increase (D Co-Gn: 9.21 ± 8.57 mm; $P = 0.008$) was very similar to that recorded by Giuntini et al. (17) in subjects treated with Twin-Block (TB) during the growth

peak (9.4 ± 3.1 mm; $P < 0.001$). We noticed similar Co-Gn increase between BJA (9.21 ± 8.57 mm) and AA groups (10.06 ± 5.35 mm): these increments were greater than those reported by Tulloch et al. (3.69 ± 1.47 mm; $P < 0.001$) (18). Sagittal mandibular length (Pg/OLp+Co/OLp) showed a mean increase of 8.92 ± 8.67 mm ($P < 0.001$). We can state that BJA significantly influenced the mandibular growth more than TB (5.30 ± 3.60 mm) in the study of Baysal et Uysal (19). This is attributable to the BJA prongs which maintain the mandibular protrusion both day and night (20-26). In fact, it is important that the patients wear the appliance especially during the sleep because there is an increased bone turnover overnight (27-33). Although less marked than in Martina et al. (5), the increase in basal bone was significant as it represented 93.9% of the molar relationship correction. ANB decreased of $-1.66 \pm 1.33^\circ$ ($P = 0.003$). According to Schaefer (34) and Baysal (19), the functional orthopedic treatment with removable appliances leads to a significantly greater increase in the anterior repositioning of the mandible than using fixed appliances. Condylar head position did not change (-0.05 ± 2.82 mm, $P = 0.956$) during treatment with BJA: the mandible was not anteropositioned and the correction of Class II malocclusion occurred mainly thanks to an increase in mandibular length. Therefore, molar relationship correction was more skeletal than dental. Vertical skeletal variables did not change significantly in BJA group. This was probably related to the prongs of BJA, which prevented the clockwise rotation of the jaws (5). The overjet reduction was 4.27 ± 2.05 mm ($P < 0.001$) in BJA group: this result was superimposable to the correction occurred in AA group (4.95 ± 1.96 mm; $P < 0.001$). The dental correction of overjet (given by the retroclination of the upper incisors and the proclination of the lower incisors) represented only 6.1% of the total correction, indicating a significant skeletal growth of the mandible. The slight increase of is/OLp-A/OLp (0.10 ± 2.62 mm) and ii/OLp-Pg/OLp (0.16 ± 1.77 mm) indicated that displacement of the maxillary and mandibular incisors was not significant ($P = 0.621$ and $P = 0.364$). Molar relationship correction was significant between T0 and T1 (4.95 ± 1.96 mm, $P < 0.001$). The distalization of the maxillary first molar was moderate (1.30 ± 2.79 mm; $P = 0.164$) and the mesialization of the mandibular first molar was mild (0.57 ± 3.21 ; $P = 0.787$): this indicated that the dental molar relationship correction was 37.8%, whereas the skeletal one was 62.2% in BJA group. Therefore, Class I occlusion was obtained thanks to an effective increase in mandibular length. IMPA was $3.44 \pm 5.82^\circ$ ($P = 0.094$). Several Authors (35-50) reported statistically significant differences regarding the proclination of the lower incisors by comparing the group with removable functional orthopedic appliances to a control group. In our study we did not find this significant proclination; this could be due to the acrylic coverage of the lower anterior teeth (5). BJA treatment determined a Class I occlusion in all patients. The correction of molar relationship was mainly due to the increase in mandibular length rather than to the distalization of the maxillary first molars and the mesialization of the mandibular ones; the correction of the overjet was due to the increase in mandibular length, to the slight proclination of the lower incisors and the mild retroinclination of the upper incisors. BJA did not determine a significant clockwise rotation of the jaws with effects on the divergence. No significant differences were found in effectiveness between BJA and AA.

11 Platelet rich plasma grafting technique combined with trans-sinusal post-extractive implants placement in the posterior maxilla: a technical report and brief literature review

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The atrophic posterior ridges are usually characterized by poor bone quality and quantity: this situation requires the use of bone regenerative techniques. Other alternative surgical approaches are investigated. Nowadays the use of trans-sinus implants offers some advantages due to its feasibility. Today, bone grafting may be practical, but depends on many factors, such as the type of bone graft used (autogenous, alloplastic, or xenograft), host response, age of the patient, various complications associated with grafting procedures, infection, and, most importantly, the time spent while the grafted material matures and is taken up by the bone. So, this case report describes the feasibility of an alternative surgical technique associated to PRP (Platelet Rich Plasma).

The atrophic posterior ridges are usually characterized by poor bone quality and quantity: this situation requires the use of bone regenerative techniques which range from very simple ones to more complex and investigative as osteo distraction (1) or free vascularized fibula flap (2). Other alternative surgical approaches are investigated such as PRP (Platelet Rich Plasma) combined with implants. Nowadays the use of tilted implants offers some advantages due to its feasibility. Today, bone grafting may be practical, but depends on many factors, such as the type of bone graft used (autogenous, alloplastic, or xenograft) (3), quality and quantity of keratinized tissue (4-6), host response, age of the patient, various complications associated with grafting procedures, infection (7-9), unusual clinical anatomy (10), rare condition (11-20) or and, most importantly, the time spent while the grafted material matures and is taken up by the bone. On the other hand all it needs for using PRP is a blood sample from the person who is undergoing the surgery; that means a higher and better compliance by patients, less procedures, less morbidity, shorter rehabilitation times and costs.

Usually, an atrophic posterior area is characterized by poor bone quality and quantity: this situation requires the use of bone regenerative techniques using or not computer-support (21), such as sinus lifts or short implant insertion (22-23), or bone regeneration with vertical/horizontal crestal onlay grafts. (24-25) Today, bone grafting may be practical, but depends on many factors, such as the type of bone graft used (autogenous, alloplastic, or xenograft) (3), feature of keratinized tissue (4,6,26), inter arch space (27), host response, age of the patient, various complications associated with grafting procedures, infection (7), and, most importantly, the time spent while the grafted material matures and is taken up by the bone. One review revealed that there are few studies providing data on the success rates of dental implants placed in onlay graft augmented ridges and demonstrated, on average, poor methodological quality (28).

A reasonable method to bypass few issues previously mentioned is the PRP (Platelet Rich Plasma) that is an autologous high concentrate of human platelets enclosed in a small volume of plasma (approximately 60% of the same amount of blood) thanks to the elimination of water, buffy coat made by leukocytes, erythrocytes and other low molecular weight substances (29). Within it, various growth factors are kept active (PDGFs, TGFbs, VEGF, EGF) as well as cellular adhesion proteins (fibrin, fibronectin and vitronectin) with osteoconductive activity (30). PRP consequently has the capacity to implement the normal processes of cell differentiation and replication, to stimulate neo angiogenesis, to produce a greater quantity of collagen and therefore a greater neoformation of mature bone tissue and a better healing of wounds (31).

Moreover, the placement of an angulated implant, which avoids both invasive procedures (like a sinus lift) and bone augmentation procedures (32), may be a viable treatment option (33). However, some alternative techniques can also be used, such as implant placement in front of the sinus, or in the intra sinus septa, or palatal to the sinus. Thus, the same amount of bone may allow the insertion of two implants: one axial and another tilted to support a three-element prosthetic fixed unit without a cantilever (34-35). Here, we describe a case report of a maxillary immediate fixed rehabilitation, with axial and tilted transinusal implants supported in the fresh-post extractive sockets combined with PRP technique.

MATERIAL AND METHODS:

An 84-year-old woman was referred to our private clinic (Centro Medico Vesalio, V. Sorio, Padova, Italy) for rehabilitation of her upper left maxilla. Her medical history revealed only one previous episode of ischemia. Clinical observation revealed some caries-destroyed teeth and missing teeth in the upper left maxilla (Fig. 1-3).

Given this clinical situation, a minimally invasive implant surgery was suggested to the patient to avoid bone regenerative techniques, such as a sinus lift (Fig. 4) Thus, tilted implant placement was planned to support an immediate fixed three-unit element prosthesis to restore her upper maxilla. Her treatment goals were to re-establish lost function and esthetics with a fixed prosthesis to minimize the period without teeth and to avoid removable prosthesis. The patient was carefully informed about the possible treatment options: sinus floor elevation with delayed implant placement and prosthetic restoration, or an immediate fixed prosthesis supported by one axial implant and one tilted posterior implant. The patient chose the second option and signed an informed consent form.

After local anesthesia had been administered, a mucoperiosteal flap was raised, exposing the facial bone of the left maxilla. After teeth extraction, starting from the area of the first molar, the implant site was prepared with a 30° mesial inclination passing in front of the sinus cavity and proceeding in the apical portion of the bone, anterior to the sinus (Fig. 5). A tilted implant was inserted (Win6 BioSaFin, Milan, Italy; 15 mm long and 3.8 mm in diameter). Another couple of Win6 BioSaFin fixture (15 mm long and 4.5 mm in diameter) was inserted axially in the socket of the canine and first premolar. Both implants reached a final insertion torque higher than 40 Ncm (Fig. 6).

Then, two 30° multi-unit abutments (MUA) were connected over the posterior and anterior implants (Fig. 7-9). All the grafted Bio-Oss (Geistlich Biomaterial), used to fill up the bone sockets, was subsequently covered by a reinforced membrane and the above mentioned PRP graft (PRGF-Endoret Dental technique following the BTI System Protocol).

After the surgery, a three-unit composite resin interim prosthesis was relined with Combo Lign Bredent (Bz, Italy) and connected to two temporary abutments. Slight contacts in maximum intercuspation were registered and any lateral excursions were removed (Fig. 10-12).

RESULTS:

Here, we present a technique for the immediate fixed restoration of the posterior maxilla in an elderly patient requiring surgical treatment of reduced duration. Mattsson first reported the concept of tilted implants in oral surgery to support a full-arch fixed prosthesis in patients affected by severe maxillary atrophy (36). In 2001, Aparicio applied this concept to rehabilitation, through a fixed implant-supported prosthesis of the posterior maxilla as an alternative to a sinus lift (37). In total, 25 patients received 101 implants: 59 axial implants and 42 tilted implants. After 5 years of follow-up, the success rate was 95.2% for tilted implants and 91.3% for orthogonally placed implants. The marginal bone loss was, on average, 1.21 mm for the tilted implants and 0.92 mm for the axial

implants. Thus, it was concluded that this surgical approach was a valid and practical alternative to a sinus lift in the rehabilitation of the atrophic maxilla. Moreover, in 2005 Calandriello conducted a study of 18 patients, treated with 60 implants supporting fixed partial/total prostheses, and reported a 96.7% success rate (mixed) and bone resorption values of 0.82 mm for axial implants and 0.34 mm for tilted implants (38). No significant difference was found between axial and tilted implants regarding the implant-related prevalence of peri-implant mucositis, peri-implantitis, or implant loss (39). Lekholm reported that a 14 mm distance between the canine bone and the distal implant allowed for rehabilitation of an atrophic maxilla with one axial and one tilted implant without a prosthetic cantilever (40).

The use of longer implants increases the bone-implant contact (BIC) in a low-quality bone region; moreover, it allows the cortical bone to be reached with increased primary stability (41) and, consequently, it is possible to install an immediate load fixed implant-supported prosthesis. In our case, we decided to use a tilted distal implant in the mesial-palatal direction to take advantage of the native bone. Thus, we used two 15-mm long fixtures to reach more cortical bone.

The tilted implant impacted against the mesial sinus cortical margin with its distal surface, such that 'bicorticalism' was achieved, thereby improving primary stability and permitting an immediate load (42). The only risk in this procedure depends on the flexibility of the bone, which could be subjected to excessive stress due to the prosthetic components (43-47). The use of an immediate loaded full-arch prosthesis, supported by two mesial axial implants and two distal tilted implants, is a viable rehabilitation option, considering the lower rate of peri-implant mucositis and peri-implantitis compared with that reported in the literature (39).

Since their first use by Marx in 1998 PRP have been utilized in pre-prosthetic oral surgery for atrophic maxillae rehabilitation using axial and/or tilted implants in association with autologous bone grafting or alloplastic biomaterial (such as coral hydroxyapatite) (29, 48) and with sinus lift elevation (29, 49-50). The greatest advantages of using PRP with coral hydroxyapatite are that the new bone formation processes are equivalent to those obtained with autologous bone grafting (golden standard) (29, 51).

A systematic review of literature has been published recently focused on RCT and CCT studies using PRP in all fields connected to implant dentistry including sinus floor augmentation, socket preservation, ridge augmentation or peri-implantitis.

The aim was to evaluate the current knowledge with respect to the clinical indications of PRP on soft tissue healing and bone regeneration with respect to implant placement (52). PRP was found to provide a higher bone width, higher bone density, and less marginal bone resorption at 9 and 12 months (53). With all the information listed above, the idea was born to experiment the utility of PRP in the insertion of axial and tilted transinusual implants. This technique offers several advantages:

- Stability even with minimum bone volume: longer implants can be used with minimum bone volume to increase BIC and reduce the requirement for vertical bone regeneration.
- Cortical anchorage may be achieved through longer fixtures (18, 20, 25-mm long).
- Good clinical results.
- Stimulation of neo angiogenesis, secretion of collagen, neoformation of mature bone tissue (31).
- Better healing of wounds (31).
- Avoids invasive bone regenerative techniques.
- Can be performed in patients with various systemic conditions that are often contraindications for bone grafting
- Angulations allow implant placements that avoid anatomical structures.
- There is a biomechanical advantage to using tilted distal implants rather than distal cantilever units (54).
- Reduction of the length of cantilevers without performing bone grafting or sinus lifting (55).
- Effective and safe alternative to maxillary sinus floor augmentation procedures and to a pneumatized maxillary sinus (33).
- Distally tilted implants induced better loading transmission than vertical implants (56).
- Excellent prognosis in the short-to-medium term as well as over the long term (57).
- Higher and better compliance by patients.
- Less procedures, less morbidity.
- Shorter rehabilitation times and costs.

However, the technique also has some disadvantages. First, it assumes that the surgeon has biomechanical knowledge and experience in the management of prosthetic immediate loading and is a higher sensitivity surgery. There are several other considerations that should be kept in mind when using this approach: the use of angulated implants should remain confined to situations of favorable bone quality (preferably greater than D3) and angulated implants should only be placed after suitable three-dimensional planning. Greater inclinations of the implants (>30°) lead to increased force at the implant-bone and implantabutment interfaces. Thus, extreme angulation should be avoided. We suggest an inclination between 15° and 30° (10). Cavallaro and Greenstein, after evaluating the proportion of survival and complications (biological and technical) associated with tilted abutment-supported prostheses showed that increased abutment inclination creates a greater amount of tension on the prosthesis and the surrounding bone. However, the increased tension was not associated with any significant reduction in the longevity of the prosthesis. Moreover, it was not

associated with any increase in the incidence of fixation screw loosening (58). A trigonometric ratio was developed to estimate the two-dimensional safe distance between a tilted implant and an adjacent vertical implant. The distance or length between the fixtures can be determined by multiplying the known length of each implant by a constant derived from the sine of the insertion angle. In edentulous maxillae, if the inter-implant distance is increased, the load distribution will be better (59-69).

Moreover, we used an internal hexagonal connection, which offers better force dissipation. The cortical preparation is also reduced due to abutment placement: this helps with the primary stability. In addition, the internal hexagonal connection may be more coronal, which could lead to a reduction in the micro leakage of bacteria (3, 12, 14-15, 70-71). Prosthetically, the internal hexagonal connection has some procedural disadvantages, but it offers a better implant abutment seal, fewer prosthetic complications due to lower pin fixation stress and, finally, the possibility of a better prosthetic finalization of the abutment (16-20, 72-75). Last but not least we should underline that the production of PRP must be carried out by specialized and approved laboratories (76); and also it could be considered expensive using in private practice (quick estimates on web account for spending between 300 and 600 USD).

DISCUSSION

The surgical approach described here is sensitive and useful in patients with atrophic ridges. Long-term studies are required to evaluate its success rate in terms of load distribution, marginal bone loss around the implant, and prosthesis survival, although currently many practitioners are treating patients with this technique. Generally, we can state that rehabilitation using tilted implants combined with PRP offers many advantages versus the use of bone grafts (onlays, sinus lift) and short implants. This type of surgery is faster, safer, more predictable, less expensive and invasive, and allows the application of an immediate load protocol when primary stability is achieved. This case report shows the feasibility of the technique in achieving clinical success, as well as surgeon and patient satisfaction.

12 New trends in adjunctive treatment and diagnosis in Medication-related osteonecrosis of the jaw: A 10-year review

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Medication-related osteonecrosis of the jaw (MRONJ) is a major disease under study for over the last twenty years. Different classifications have been proposed and many therapies for the different stages have been applied. The evolution of treatments lead to an increasingly conservative approach. Numerous adjuvant treatments have been proposed in the last decade. All these complementary treatments have been proposed mainly to resolve or reduce the painful stress, predominantly caused by bacterial infection, simplifying the wound healing process and improving patients' compliance. Nowadays "secondary" treatments, such as autologous platelet concentrates (APCs, more specifically PRP, PRGF or PRF), hyperbaric oxygen (HBO), Auto/tetracycline fluorescence-guided bone surgery (AF-GBS/TF-GBS), medical drugs like teriparatide or the combination between pentoxifylline and tocopherol, fluorodeoxyglucose positron emission tomography (FDG-PET), laser and/or low-laser therapy and ozone therapy are more or less well documented and known considering their clinical effectiveness. The aim of the present review is the evaluation of the quantity and quality of scientific studies concerning this specific topic.

At the beginning of 19th century first scientific publications appeared concerning serious pathologies, named "possy jaw", involving the upper and lower maxillary bone structures in specialized workers in the extraction and/or processing phosphorus (miners and workers in factories used to manufacture matches) (1). Originally noted as early as 2002 (2) the condition was first described in detail in 2003 when Marx et al. (3) published the first paper in which this pathology became known internationally and will be called Osteonecrosis of the Jaw (ONJ). A few years later it highlighted a very high incidence of this pathology (compared to the healthy population) in patients treated for various needs (e.g. osteoporosis, Paget disease, bone metastases, osteopetrosis, multiple myeloma) with bisphosphonates or undergo to radiation therapy. This correlation led scientific community to coin respectively the term Bisphosphonate-Related Osteonecrosis of the Jaws (BRONJ) and Osteo Radionecrosis of the Jaw (ORNJ). Furthermore, recent studies showed as other drugs categories (monoclonal antibody with anti-resorptive activity, anti-angiogenetic drugs (anti-VEGF), tyrosin-Kinasi inhibitors, mTOR inhibitors) can cause the same disease, leading to a modification of the previous acronym in Medication-Related Osteonecrosis of the Jaws (MRONJ) by the American Association of Oral and Maxillofacial Surgeons (AAOMS) (4-5).

The MRONJ refers to a condition characterized by exposure of bone in the mandible or maxilla persisting for more than 8 weeks in a patient treated or in treatment with bisphosphonates with negative history of radiation therapy to the jaws (3-6). Diagnostic criteria for MRONJ were developed based on the pharmacological history as well as clinical and radiographic features (7). The MRONJ staging

system, developed in 2006 by Ruggiero et al. and subsequently update in 2104 by AAOMS (4-5), is reported in Table I.

The classification in a specific stage cannot ignore an extreme accurate intra and extra oral clinical examination and an evaluation with radiographic supports (8); orthopantomography is the first level radiographic diagnostic support, followed by Computerized Tomography (CT) and Cone-Beam CT (CBCT); to obtain high-quality tomographic images, that exhibits a higher resolution in the alveolar bone and the jawbones (9); Magnetic Resonance Imaging (MRI) can be very useful (10-11). Recently the single-photon emission computed tomography (SPECT) has been used for localization of physiological changes in the bone and it appears to be sensitive but not specific (11).

In the assessment of osteoporosis' severity (and consequently the dosage, type and method of administration of the BPs), a quantitative haematic evaluation of two protein markers was introduced: P1NP (procollagen type 1 amino-terminal propeptide) and CTX (cross-linked C-telopeptide of type I collagen). These two parameters are measured before the start of therapy at time 0 and at 3 months, allowing to promptly verify the validity of the therapy and adherence to the treatment (12-13). Other widely used means in index calibration of osteoporosis and osteopenia's therapy with BPs are DEXA scan (dual energy x-ray absorptiometry) which yields to BMD (bone mineral density) values (14-16).

Although there are still no clear guidelines or a unique clinical protocol totally shared by the international scientific community, some operative strategies in osteonecrosis' case are worldwide shared by numerous clinicians. Summarizing in literature are reported: preferred conservative, endodontic maintenance therapies and extreme care of professional and home oral hygiene, avoiding traumatic interventions such as toilet or surgical curettage if possible, less extensive surgeries as possible, avoiding any traumatization for the surrounding structures, intra-operative disinfection with saline solution, accurate management of soft tissues without stress or tension, elimination of sharp edges, closure by first intention with eventual flap passivation, double-layer suture, use of mouthwash and painkillers after surgeries, coverage or double antibiotic coverage variable from 10 days before to 7 days after, weekly follow up. In absence of anamnestic allergy, the first-choice antibiotics are clavulanate amoxicillin and metronidazole (4, 14, 17-23). Aim of the present literature review is the evaluation of the possible utility of adjunctive therapies in the treatment and diagnosis of MRONJ.

MATERIALS AND METHODS

This review study followed the PRISMA statement guidelines (24) and was conducted to analyze all publications related to adjunctive treatments on MRONJ therapy. Focused questions: what are today's additional treatments in the therapy of MRONJ? How many and what types of studies have been conducted on these treatments in the past 10 years? In the light of these data, could a first assessment be made of how much they are known and used in clinical practice by the scientific community?

Information sources: an electronic research was performed through MEDLINE (PubMed) databases. In addition, in order to further increase the number of eligible articles and not to skip potentially relevant publications, an analysis of the reference list of the main literature reviews and studies performed on the topic of interest was carried out. Search strategy: the electronic search was conducted by three independent examiners to minimize reviewer biases, applying the following filters: human studies, date of publication starting 01/01/2010 up to the time of the search (April 2020), and articles exclusively published in English. The first search strategy made use of the following terms: "adjunctive treatment MRONJ" or "adjunctive therapy MRONJ" or "adjunctive treatment ONJ" or "adjunctive therapy ONJ" or "adjunctive treatment BRONJ" or "adjunctive therapy BRONJ".

The first screening directly made on PubMed identified 75 papers, 54 on humans, 53 written in English, 48 published from 1st January 2020, 24 removing the duplicates and by a cross-checking in the different categories (in order to eliminate further duplications) the final result was 20 eligible papers (see Table II).

After removing duplicate and checking their pertinence, the total of evaluable publications was 18 (25-42). All the papers were analyzed by reading the abstract or, if it was not clear or incomplete, the full text. Nine complementary/additional treatments to usual therapy in osteonecrosis of the jaws were identified (see Table III). The adjunctive treatments are:

- APCs (Autologous Platelet Concentrates or hemoderivates, i.e. PRP, PRGF or PRF).
- HBO (Hyperbaric Oxygen).
- AF-GBS/TF-GBS (Auto/Fluorescence-guided bone surgery; Tetracycline/Fluorescence-guided bone surgery).
- Antimicrobial photodynamic therapy.
- Teriparatide.
- FDG-PET (Fluorodeoxyglucose Positron Emission Tomography).
- Pentoxifylline/Tocopherol.
- Laser and/or low-laser therapy.
- Ozone (O₃).

The second step in screening was performed by searching for all 9 correlation items, as previously searched, with the terms "treatment", "MRONJ", "ONJ" and "BRONJ" (Table IV). For a better research about the term "APCs" it has been further divided into 3 subgroups (PRF,

PRP and PRGF) (Table V).

Eligibility criteria

The following inclusion and exclusion criteria were applied to carry out the study selection. Inclusion criteria:

- All kind of publication: Randomized-controlled clinical trials (RCT), Clinical trials (CT); Review (R); Longitudinal study (LS); Retrospective study (RS); Pilot study (PS); Case series (CS) and Case report (CR).
- “in vivo” studies, on humans.
- Date of publications from 01.01.2010.
- Original language English.
- Close relevance to MRONJ therapy (this point was discussed by examiners and accepted only if all 3-examiner agreed).
- Exclusion criteria:
 - “In vitro” studies.
 - Animal studies.
 - Retrospective studies, case reports, case series, and systematic reviews.
 - Date of publication before 01.01.2010.
 - All original language, not in English.

Study selection: titles deriving from the research previously highlighted have been reviewed (identification) by three examiners. In case of disagreement, the three reviewers discussed each case jointly, to get to a final decision concerning inclusion or exclusion. The potentially useful articles through the analysis of the title were only then selected for a deeper investigation by firstly reading the abstract. In the examination of abstract (screening), attention was paid to assess the compliance of the study with the inclusion criteria. The selected studies were downloaded in digital or paper version and submitted to the reading of the full text (eligibility). With this procedure only articles that conformed to the aforementioned criteria were included (included).

The data extraction was performed filling in a table (see Table V) with complementary treatments' name, typology of the study (RCT, CT, R, LS, RS, PS, CS, CR), total number of publication, number of discarded publication (not closely inherent for the purpose of the current study), total useful number of publication. Quality assessment. The following parameters were adopted for the evaluation of risk of bias: random sequence generation and allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), selective reporting (reporting bias), and other possible reasons for bias. Once these articles have been selected, they were further checked according to the same inclusion and exclusion criteria motioned above.

RESULTS

All results are summarized in Table VI and Fig. 3. First of all, in Fig. 1 the observation on how the number of articles concerning the 8 additional treatments under consideration in decreasing order are: laser therapy (twenty-three), teriparatide (twenty two), APCs (twenty), hyperbaric oxygen therapy (thirteen), ozone therapy (twelve), use of pentoxifylline/tocopherol (five), AF-GBS/TF-GBS (four) and FDG-PET (three). This data has the function of understanding passively through publications number whether a treatment has been taken into general scientific community consideration in order of its potential effectiveness.

From this point of view, data can be split into 4 different groups: the first one includes just the laser therapy which is better known and used than other additional treatment in MRONJ. The second one is made of teriparatide and APCs, the third one, progressively less utilized and mentioned in literature, are hyperbaric oxygen and ozone therapy. The last one, the fourth, highlights less known and used procedures to the current state of art in complementary therapy of MRONJ such as pentoxifylline/tocopherol medical drugs, whereas AF-GBS/TF-GBS is used as an aid in the pre-intra surgical phase and FDG-PET in diagnostic phase. Studies such as reviews and case reports (respectively 29 and 18) are more numerous than clinical trials, case series, retrospective studies, longitudinal studies, randomized clinical trials and pilot studies (respectively 9, 9, 7, 4, 2, 2) (Fig. 2).

DISCUSSION

Despite progress in the prevention of BRONJ, a specific widely accepted and utilized treatment protocol to manage MRONJ is still missing, as the literature shows (43-48). Summarizing, the MRONJ treatments are referable to surgical and non-surgical treatments (49-60). In the past, surgical treatments were reserved only for advanced stages of BRONJ, but since 2012, the Italian Society of Oral and Maxillofacial Surgery (SICMF) and the Italian Society of Oral Pathology and Medicine (SIPMO) recommended conservative surgery in lesions belonging to stages 1 and 2. In this regard, from our study we evidenced as, in recent years, an attempt to increasingly adopt a “conservative” approach has been made. Most of the analyzed studies introduced the use of therapy defined as “additional” in association with surgery.

Specifically, additional therapy is referred to as non-invasive treatments, such as cycles of local or systemic antibacterial therapy

combined or not, to low level laser therapy, ozone therapy (O3), HBO (Hyperbaric Oxygen therapy), the use of APCs APCs (Autologous Platelet Concentrates, such as PRP, PRGF or PRF), AF-GBS/TF-GBS (Auto/Fluorescence-guided bone surgery, Tetracycline/Fluorescence-guided bone surgery), Teriparatide, FDG-PET (Fluorodeoxyglucose Positron Emission Tomography) and the administration of Pentoxifylline/Tocopherol. The present study evidence that the most cited additional treatment in the literature is represented by the laser therapy, followed by administration of Teriparatide. The reported clinical outcomes in BRONJ/ONJ/ MRONJ treatments with additional therapies have been shown promising if compared to conventional surgery alone. For example, Vescovi et al. highlighted as the use of laser devices in MRONJ surgery represents a valid therapeutic option and enables the minimally invasive treatment of the early stages of the disease (61). With limits of the eligible study number, the analysis showed how most of the authors pointed out how these additional therapies are not substitutes of existing procedures, but they might be considered as a fundamental pre and/or post-operative steps to improve clinical outcomes and patient's life quality. A wider number of further prospective and retrospective studies, with a larger patients' samples, are needed to confirm this statement to better define the clinical effect of adjunctive therapies in MRONJ.

13 The use of computer-guided flapless dental implant surgery (Nobel guide®) and immediate function to support a fixed full-arch prosthesis in fresh frozen homologous bone grafted patients: a retrospective cohort study with 5 to 8-year follow-up

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The introduction of computer-assisted and guided surgery has radically improved the possibility of using all available bone for implant support, reducing the need for extensive grafting procedures and allowing for better implant placement and restoration. Moreover, fresh frozen homologous bone (FFB) grafts have shown good osteoconductive properties and biocompatibility with results comparable to autologous bone patients. The purpose of this retrospective cohort study was to evaluate the survival and the success rate of implants and related fixed full arch prosthesis at the 5 to 8 years follow-up when performed with immediate function using a flapless surgical procedure and computer-aided technology (NobelGuide®, Nobel Biocare® AB, Goteborg, Sweden) in patients previously treated with FFB grafts; treated at the University of Verona with the NobelGuide® system from January 2007 to December 2012 with at least 5 years follow-up were reviewed. Survival implants and survival prosthesis' percentage reached 95% in a 5 to 8-year period. This study indicates that patients previously augmented with FFB graft for maxillary or mandibular bone atrophy can be safely treated with implant supported prosthesis based on the NobelGuide® protocol, with the aid of computer-generated guide.

The introduction of computer-assisted and guided surgery has radically improved the possibility of using all available bone for implant support, reducing the need of extensive grafting procedures and allowing for better implant placement and restoration, both in grafted and nongrafted sites (1). Indeed, now it is possible to make use of all the available osseous volume during the planning and the surgical phase. This approach allows an accurate placement of implants using a flapless technique under the guidance of a surgical template, generated from the preoperative virtual planning of the implant. In this way, precise implant installation is possible through a thick layer of soft tissues, having the drills and the implants guided by a computer-generated surgical guide.

The planning is also useful to avoid obstacles or structures in the reconstructed bone such as screws, osteotomy sites and discontinuity of bone segments (2). This technique has shown to be as successful as traditional implant surgery with flap access (3-5).

Moreover, the beneficial effect of flapless surgery without exposure of the periosteum may minimize bone resorption (6-19).

However, a major prerequisite for a restoration driven implant surgery remains the availability of bone of adequate length and width, suitable for the proper placement of implants of sufficient length. Physiological resorption of the alveolar processes of the maxillary bones can lead to insufficient bone volume, especially in patients who have been edentulous for a long period of time, making it virtually impossible to place implants (20). Several solutions have been proposed to obviate bone volume deficiency (2, 21-26). The endpoint of most of these techniques is the augmentation of available bone volume with onlay and inlay grafts (27-28).

Recently the use of fresh frozen homologous bone (FFB) grafts have shown good osteoconductive properties and biocompatibility with results comparable to those of autologous bone but with a reduced morbidity, lower surgical risk and shorter operative time (29) without modification of the traditional techniques (30-31). Histological studies have confirmed these results, showing the presence of new bone and osteoclast activity 4 months after grafting, with 80% mature bone observed after 12 months (32). FFB grafts resulted in volumes of bone similar to those obtained with autologous bone grafts, however the amount of residual bone particles seems to be greater, which may indicate a slower remodeling process (33).

FFB is a widely used substitute for autologous bone especially in large reconstructions when block grafts are indicated (34). The behavior of FFB when used in combination with computer guided implant surgery is still not well understood, as studies are absent in the literature. Due to the extended regenerations of the jaws FFB was the first choice and it was used even in the sites where it was not necessary to reduce the differences between the grafted sites. The purpose of this retrospective cohort study was to evaluate the survival and the success rate of implants and related fixed full arch prosthesis at the 5 to 8 year follow-up when performed with immediate function using a flapless surgical procedure and computer-aided technology (NobelGuide®, Nobel Biocare® AB, Goteborg, Sweden) in patients previously treated with FFB grafts.

MATERIALS AND METHODS

Inclusion criteria: clinical charts of patients with edentulous arches treated at the University of Verona with the NobelGuide® system from January 2007 to December 2012 with at least 5 years follow-up were reviewed. Patients' medical history and clinical data were collected, together with panoramic radiographs and CT scans. The inclusion criteria used were the following: medical history negative for pathologies generally contraindicating implant surgery (35-38), initial edentulism and previous pre-prosthetic surgery with application of fresh frozen bone grafts to restore a sufficient bone volume for implant rehabilitation of the jaws (Fig. 1-3). In particular, pre-prosthetic surgical treatment should have been carried out by the following techniques: ridge preservation with filling of the extraction sockets with FFB bone chips (A) (39) posterior bilateral maxillary sinus augmentation with lateral window with bone chips (B) (40-42) together with anterior maxillary bone block veneer surrounded by bone chips (C) (43-44) Le Fort I osteotomy with inlay technique of Keller (D) (29). In addition, all implant/prosthetic treatment and follow-up should have been carried out according to the NobelGuide® protocol (1). All the surgeries were performed by the same operator.

Grafting material: the material used in the pre-prosthetic surgical treatment was FFB. The FFB, obtained from the Veneto Tissue Bank in Treviso (Italy), is a mineralized, non-irradiated and only disinfected, frozen homologous bone. The bone harvesting was obtained from the anterior and posterior iliac crest, in the first 12 hours after donor death. The bone was then disinfected, for at least 72 hours at -4°C, in a polychemotherapeutic solution. The sample was then subdivided into cortico-medullary blocks or morcellized, packed in double sterile casing, and frozen at -80°C (45). **Surgical procedure:** six months after FFB grafts, if plates or osteosynthesis screw were used, these were removed and a temporary total or partial removable acrylic resin prosthesis was made.

NobelGuide® procedure has been described previously for dentate and edentulous patients (46-50). Based on computer planning a fixed metal-acrylic resin complete denture was constructed prior to the implant surgery and was immediately adapted and inserted after surgery. The technician inserted several gutta-percha markers (Hygienic, Coltène/Whaledent Inc. Mahwah, NJ, USA) in small holes with the diameter of 1.5 mm made in the prosthesis, as indicated by the NobelGuide® protocol. The markers are necessary to the software (Procera® or NobelClinician®, Nobel Biocare® AB, Goteborg, Sweden) for coupling two CT scans: one of the patients and one of the prosthesis. Once the modifications on the denture were complete, it was possible to send the patient to a radiological centre where a double CT scan was carried out: one of the patients wearing the prosthesis/radiological guide, correctly inserted, and one of the prosthesis alone. After 3D reconstruction of the CT images in the software, the Procera® or NobelClinician® software allowed us to plan the implant virtually according to the desired prosthetic result (Fig. 4-5). The surgical operations were performed under local regional anesthesia. The implants used were Brånemark System MKIII® (MKIII), Brånemark System Groovy® (Groovy) e NobelSpeedy Groovy® (NobelSpeedy) (Nobel Biocare® AB, Goteborg, Sweden) with an oxidized surface (TiUnite®, Nobel Biocare® AB, Goteborg, Sweden). Once the template was stabilized using a surgical index and three anchor pins, the flapless implants were inserted, according to the drill sequence specific for the type of implant planned. The template was then removed and the correct position of the implants was checked and temporary abutments were screwed in place.

The prosthodontist relined a prefabricated provisional fixed metal-acrylic complete denture, including the temporary abutments in the prosthesis with resin and made it functional by adjusting occlusal contacts. One gram of amoxicillin/clavulanate (GlaxoSmithKline plc., Brentford, Middlesex, United Kingdom) every twelve hours for 6 days was prescribed.

The patients were then dismissed. Sutures were removed after 15 days and the patients were given oral hygiene instructions. The main follow-up appointments were delivery of the final fixed prosthesis (6-12 months), professional oral hygiene every 6 months, and regular control once a year to maintain good oral health and monitor the absence of complications and compliance with oral hygiene instructions. A radiographic evaluation (orthopantomogram or periapical radiograph of the implants) was performed each year. Clinical assessment. Implant survival was considered if these conditions were satisfied (from Malò 2007 modified) (51):

1. Presence of the implant as planned in the NobelGuide® treatment plan after surgery and during follow-up.
2. Clinical stability of the implant in the surrounding peri-implant bone at follow-up (bridge removed and implants individually checked).
3. Satisfactory function without any discomfort to the patient at follow-up.
4. No suppuration or infection present at follow-up.

5. No radiolucent areas around the implants at follow-up.

Implant success defined in the scientific literature as the absence of infectious complications affecting peri-implant soft and hard tissues and the absence of more than 2 mm of peri-implant bone loss (PBL) (52-58) was considered. It was also recorded implants Pocket Probing Depth (PPD), soft tissue dehiscence, Mombelli Plaque Index (mPI) and the Mucosal Plaque Score (59-61). Survival of the prosthesis was considered if all these conditions were met immediately after surgery and during the follow-up:

1. Presence in the mouth of the original prosthesis (in-situ criterion) (62).

2. Presence of at least all the anterior teeth (for aesthetics) and two posterior occlusal units (premolar/molar) for function (59) as planned in the NobelGuide® treatment plan. Clinical assessments were performed from two calibrated operators.

Statistical analysis: the nominal and ordinal variables were tested with Fisher's Exact Test to evaluate association of implant failures due to diabetes or smoking. Peri implants parameter variables clinically and radiologically recorded were described using an Average and Standard Deviation. Bone loss Level (PBL) analysis was performed using Spearman rank to evaluate correlation between keratinized tissue width (67) and bone loss.

The Kruskal-Wallis Test was used to evaluate if the bone loss amount was correlated to the graft type or implants type. The Wilcoxon Mann-Whitney Test was used to evaluate the different bone loss amount surrounding tilted implants or straight ones. We decided to use non parameters Test because PBL variable resulted asymmetrically distributed; moreover the Shapiro-France tests and Shapiro-Wilk are highly significant ($p < 0.001$), suggesting a marked deviation from normality, and also was found a certain instability of variance between the groups in the study.

A possible correlation between keratinized mucosa width and plaque index, bleeding index and probing depth values was made using the Spearman test. The Wilcoxon-Mann-Whitney test was used to highlight differences between the maxillary torque and mandibular torque and maxillary and mandibular bone loss level. The significance for all tests was set at a p-value less than 0.05 (=5%).

RESULTS

Characterization of the population: a total of 45 patients met the criteria of inclusion, receiving a total of 239 implants. NobelSpeedy was inserted significantly more in the maxilla compared to MK III and Groovy ($p < 0.001$). The patients' follow-up ranged from 5 to 8 years (mean 69 months). (Fig. 6-8) The median age was 64 (interquartile range: 59-69) years (minimum 43, maximum 78 years), 9 patients were male (20%) and received 35 implants, 36 were females (80%) and received 204 implants. The median number of implants per prosthesis was 4 (range 4-6). A total of 54 full arch prosthesis were made, 34 in the maxilla and 20 in the mandible. Three patients (6.7%) were smokers (considered as current exposure to smoking at intake) and received a total of 17 implants.

Implant survival: at 5 years was 94.6%. During the 5 to 8-year follow-up 13 failures (5.4%) were detected. Eight failures happened in the first year after NobelGuide® surgery. Seven patients (15.5%) had at least one failure. One patient had 5 failures. The patient with 5 failures was a heavy smoker of up to 60 cigarettes a day treated with ridge preservation (A) but the failure was immediate due to fracture of the complete maxilla during implant placement which precluded the possibility to proceed with the NobelGuide® protocol: the implants had to be removed and the maxilla stabilized with osteosynthesis. Five of the failures were detected at implant placement, due to the fracture of jawbone during surgery, two were detected at 6 months, four at 60 months, and one at 72 months. The low number of failures precluded a detailed analysis of risk factors.

Failures tended to be more frequent in the maxilla (3.3%) than in the mandible (2.1%), but the difference did not reach statistical significance ($p = 0.35$).

However, data showed that failures occurred more frequently in implants placed in smokers than non-smokers ($p = 0.010$, Odds ratio 12.7). Five implants (29.4%) of 17 in smokers (28.5%) failed. Only 8 fixtures out of 222 (3.6%) in non-smokers failed. Implants placed as the distal abutment of the prosthesis were more likely to fail ($p = 0.04$, Odds ratio 3.8). Torque level at implant placement was not related to implant failure ($p = 0.08$). Implant success At the 5-8 year follow up was 85%. Two hundred three implants out of 239 reach success. The mean PBL was 1.86 (dev. St. ± 1.24 range 1.55-2.3). Bone resorption was considerably higher ($p < 0.001$) in the maxilla. PBL was significantly influenced by different grafting procedures ($p < 0.01$), and by different type of fixture ($p < 0.01$) (Fig. 9).

Soft tissues The mean PPD was 2.12mm (dev. St. ± 1.04 range 1-6). The mean mPI was 0.74 (dev. St. ± 0.74 range 0-3). The mean mBI was 0.43 (dev. St. ± 0.55 range 0-2). The mean soft tissue dehiscence around fixtures was 0.35mm (dev. St. ± 0.86 range 0-5). The average MPS was 1.15 (dev. St. ± 0.38 range 0-3). The mean width of KT was 1.23mm (dev. St. ± 1.05 range 0-4) but did not present a significative correlation with mBI, mPI, MPS ($p > 0.01$).

Prosthesis survival

One out of 20 (5%) mandibular full arch fixed metal-acrylic prosthesis failed during the follow-up. Otherwise in the 34 maxillary full arch fixed prosthesis there was not failures. As for implant failure, the low number of prosthetic failures precluded a detailed analysis of risk factors.

Miscellaneous complications

One patient experienced a fracture of the surgical stent in the mandible which was repaired during the surgery. The position of

2 implants in another patient was slightly aberrant from the planned position, resulting in a minor vestibular bone dehiscence at implant placement. The complication did not preclude achievement of sufficient torque, implant integration and a favorable emergence profile for the final prosthesis.

One patient had the fracture of maxillary bone during implant surgery. There was the failure of five implants also, which had been removed and after a 6 month rigid fixation, it was possible to go on with the procedure and deliver a fixed prosthesis to the patient. In the other patients, who had the failure of a single implant, it was possible to maintain the fixed restoration removing the failed implant and inserting another one. There was one prosthetic failure in one patient, who did not accept the restoration. In one patient there was the fracture of a resin tooth of the prosthesis. Three implants (1%) had a positive diagnosis for periimplantitis. A total of 13 implants failed (5%). Table I, Table II, Table III, Table IV and Table V.

DISCUSSION

The cumulative survival rate was 95%. Implant success rate was 85%, 20 implants (8%) did not show signs of inflammation or suppuration but had a PBL value higher than those reported in the success criteria also those were not classified successful. Three implants (1%) had a positive diagnosis for periimplantitis. During the 5 to 8-year follow-up 13 failures (5%) were detected. The low number of failures precluded a detailed analysis of risk factors. Failures had a tendency to be more frequent in the maxilla (3.3%) than in the mandible (2.1%), 8 failures in the maxilla happened in the first years after NobelGuide® surgery, while 5 failures in the mandible happened 4 at 5 years and 1 after 6 years (1). During the follow-up, implants placed in smokers were more likely to fail than implants placed in non-smokers (28.5% vs 3.6%). The lower survival rate of implants placed in smokers has been well documented in the literature (62). In our study survival of implants placed in reconstructed bone with FFB was comparable to those obtained with autologous bone grafts (64), FFB grafts (65) and NobelGuide® treatment on native (1), or fibula reconstructed bone (66). In fact, it has been shown that the use of various dentoalveolar bone grafting procedures to reconstruct deficient implant recipient sites are not an independent risk factor for implant failure (68). Peri-implant soft tissues had been investigated, particularly mBI, mPI and MPS are index to identify different degrees of soft tissue inflammation and condition allowing the clinician to evaluate the need of additional treatments. The values of these index showed an average good condition of soft tissues around implants, which is fundamental for the long-term maintenance of full arch prosthesis implant supported. Peri-implant Bone Loss was evaluated at 1 year and at 5 years after implants load. At 1 year the average PBL values were of 0.66 ± 0.65 mm while at follow up of 1.86 ± 1.24 mm, these data agree with success criteria (51). Bone resorption resulted higher in the upper jaw (58), this is due to the lower quality and minor density of the of maxillary bone. In literature it is even reported a higher risk of failure of implants positioned in the maxilla (69-73).

In this study, it has also been evaluated the Keratinized Tissue (KT) width around dental implants, as a matter of fact this is a variable of emergent interest in implant therapy. In literature there are discordant results about the possible relations between KT and implant health, in our study there was not a significative relationship between Keratinized tissue width surrounding implants and PBL. Implant position did not condition significantly PBL, particularly tilted implants compared to straight did not showed a meaningful major PBL (74-75).

The type of implant and the different grafting procedure influenced significantly bone resorption. Speedy Groovy manifested a higher resorption but this data must be argued because those implants had been used mainly in the maxilla. MK III Groovy showed a lower bone resorption than Speedy Groovy and MK III. The grafting procedures with a significantly greater PBL were sinus lift and Le Fort I inlay still for the same reason of lower quality of maxillary bone. Initial torque level at implant placement was not related to implant failure. Furthermore, torque level may not be a proper measurement of implant primary stability.

In one patient 5 implants failed because of fracture of the basal bone at implant placement. The reason for this is still unclear but it may have speculated that the presence of a surgical stent in an atrophic maxilla may transfer the stress exerted by the implants on basal bone. This, together with the fact that no fracture of grafted bone surrounding the implant occurred in our patients, may indicate that complex implant/surrounding bone is safely stabilized by the stent, but the resulting stress may be exerted outside the ferrule of the stent. One patient experienced a fracture of the surgical stent in the mandible which was repaired during the surgery. Fracture of the surgical stent has already been described as a possible complication which can be related to insufficient thickness or imperfect fitting of the stent in relation to the amount of stress generated by implant insertion (76). In another patient the position of 2 implants deviated slightly from the planned position. This complication did not preclude achievement of sufficient torque, implant integration and a favorable emergence profile for the final prosthesis.

An individual error can occur at each step of the guided surgery protocol, starting from the radiographic guide to the placement of the implant leading to incorrect implant placement (9,77-78). Particularly stereolithographic surgical guide stents have the potential to be dissimilar from the original scan denture. The ISO threshold setting in the conversion software is a very sensitive component of the production process (79-81). The only prosthetic failure occurred in one patient who did not accept the restoration, also it was removed and substituted with a mobile device. In one patient there was the fracture of a resin tooth of the full arch fixed prosthesis,

hence the prosthesis was repaired through the substitution of the broken tooth. Based on the results of our retrospective study, we can conclude that:

1. Survival of implants was high, reaching 95% in a 5 to 8-year period.
2. Survival of the prosthesis was high reaching 95% in a 5 to 8-year period.
3. Factors significantly related to failure of the implants were smoking.
4. Factors significantly related to PBL were implant position (maxillary or mandibular), type of implant and graft procedure.
5. A higher torque level at implant insertion did not correspond to a lower risk of implant failure.

This study indicates that patients previously augmented with FFB graft for maxillary or mandibular bone atrophy can be safely treated with implant supported prosthesis based on the NobelGuide® protocol, with the aid of computergenerated guide. This procedure may be a promising treatment option, offering several advantages to both clinicians and patients, while keeping the same degree of predictability in terms of torque levels, survival and success of the implants and the prosthesis compared with conventional treatment. However, in our study the low number of implants and prosthetic failures precluded a detailed analyses of risk factors associated to these failures. Before drawing any general conclusion, the benefit of the procedure should be further evaluated by prospective clinical trials where the possible endpoints of the treatment should be more thoroughly evaluated and compared with conventional protocols on the same study population.

14 Ketamine in dentistry: a useful way for non-compliant pediatric patients

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The infant, like the young un-cooperative or odontophobic patient, constitute the most complex type of patient to be treated and it is frequent in modern society. The treatment of these patients is necessary to resolve the infectious-antalgic urgency and subsequently to build the patient/doctor relationship for continuing general dental care. Conscious sedation is the only way to approach this type of patient. Where therapeutic success with traditional sedation techniques is not achieved, as frequently happens in these patients, sedation with ketamine is the extreme ratio for the purpose of effective resolution of the dental problem, obviously carried out within facilities authorized for these anesthesiological modalities such as private outpatient surgery structures where, when necessary, it is possible to carry out the treatments also under general anesthesia as well as with ketamine.

Today, despite the fact, that instructions for having good oral health appear traditionally rooted in everyone's life and that the latter are remembered daily through the media, dentistry is still faced with pathologies, even serious ones, in patients of pediatric age (1-3). From 1960 into the years of 2000, the development of the concept of prevention, the evolution of auxiliary technologies and the introduction of toothpaste pastes containing fluorine led to a reduction in the prevalence of carious disease in the population, especially among pediatric patients (4-6). Since the entry into the new millennium, however, the frenetic high speed social globalization without real integration and the establishment of a relative-individualistic culture society oriented to total liberalism have led to the reduction of knowledge and respect for the instructions necessary for maintaining a good oral health mentioned above (7, 8).

Specifically, first, the result of recent ethnic, economic and demographic changes has led to an average impoverished population, superficially educated and consequently apprehensive. Therefore, a worsening oral health conditions was generated, detected as the prevalence of carious pathology is greater in the population segment with reduced economic possibilities (5, 7, 8). Furthermore, secondly, the huge educational differences on an ethnic basis, the lowering of the demographic rate and the exaggerated amount of information provided by the media unfiltered by educational "campaigns" led to a confused and anxious parenting class that transmits the fear of pain to children by generating a reduction in tolerance capacity, even if minimal (9).

The treatment of the pedodontic patient, paradoxically, is therefore nowadays more difficult to deal with; even though the psychological approach techniques are well known (9). This category of patients, moreover, has often had negative experiences that may be due to an emergency intervention following a trauma or to some carelessness and/or lightness due to inexperience. These events generate a real phobia in the small patient, with a consequent refusal to dental care and a tendency to reject any general figure in medical field (3, 10-11). The phobic pedodontic patient (3, 10-11) is a type of patient with whom it now becomes necessary to relate and to be able to aid in case of:

- need to resolve acute pain symptoms;
- need to preserve or restore correct chewing function;
- need to preserve the deciduous teeth in order to reduce orthodontic problems (12-13) by obtaining a physiological exchange;

- need to restore social aesthetics (14-24).

The treatment in the cases mentioned above will be possible, only with the aid of sedation (25-27) on the infant patient as well as on the phobic pedodontic (3), caused by his lack of collaboration. In the same way, the natural maturation of the psychological profile should not be neglected but, in agreement with the parents, also possibly supported with the help of psychotherapy. In fact, the choice of sedation, with ketamine (28), born from the desire to be able to rebuild a relationship with the infant, preserving the integrity of his teeth from caries and his psyche from phobias. The progressive reduction of the use of the sedative aid until the complete elimination of it must be the goal reachable, at the same time as the growth of the patient's psychological profile, in order to avoid all possible side effects (25-29) linked to the execution of the procedure and to repetition of itself.

MATERIALS AND METHODS

Ketamin. Backgrounds (29):

- in 1962 it was synthesized for the first time by Calvin Stevens;
- in 1963 it was patented;
- in 1965 it was defined by the term "dissociative anesthetic" by Edward Domino;
- in 1969, ketamine hydrochloride became available with a prescription under the name Ketalar®.

Pharmacological nodes (30): sedation with ketamine is called "dissociative anesthesia" characterized by catatonia, amnesia and analgesia without real loss of consciousness. The drug is a chemically related ARY cyclohexylamine phencyclidine (PCP), a drug frequently used and abused for its psychoactive properties. The mechanism of action of ketamine can involve blocking the membrane effects of glutamic acid, an excitatory neurotransmitter, at the level of the NMDA receptor subtype (N-methyl-D-aspartate). Ketamine, a highly lipophilic drug, is rapidly distributed in highly vascularized organs, including the brain, and is subsequently redistributed in less perfused tissues, with simultaneous liver metabolism and both urinary and biliary excretion.

In addition to being a powerful analgesic, ketamine is the only intravenous anesthetic that usually produces cardiovascular stimulation. Heart rate, blood pressure and cardiac output have generally increased significantly. The peak of these effects occurs in 2-4 minutes after intravenous injection and the return to normal levels occurs in 10-20 minutes. Furthermore, ketamine produces cardiovascular stimulation by excitation of the central sympathetic nervous system, probably by inhibiting the reuptake of norepinephrine at the level of the sympathetic nerve endings. Increases to adrenaline and norepinephrine plasma levels occur as early as 2 minutes after intravenous administration of ketamine and return to normal levels after 15 minutes, significantly increasing brain blood flow, brain oxygen consumption and intracranial pressure.

Finally, in most patients, ketamine slightly decreases the respiratory rate for 2-3 minutes while allowing the maintenance of the muscular tone and the reflexes of the upper airways. Although it is a desirable anesthetic, the use of ketamine is associated with disorientation, sensory and perceptual illusions and vivid dreams that follow anesthesia, effects that are called "emergence phenomena". Diazepam 0.2-0.3 mg / kg intravenously, 5 minutes before the administration of Ketamine, reduces the incidence of these phenomena.

Dissociative Sedation Technique with ketamine: the technique in question must be performed by an anesthesiologist in a protected environment (24, 28), as we usually carry out in our extra-hospital surgery facility, which has the appropriate authorization and organization to perform general anesthesia indeed. It is indicated in children up to about 6 years with a body weight of 25/30 kg in which milder techniques such as those that use nitrous oxide and/or benzodiazepines have failed. It initially involves an intramuscular injection of a single solution of ketamine 5mg/kg and midazolam 0.1mg/kg. Then the above injection generates the baby falling asleep in 60-90 seconds and allows the intravenous infusion of ketamine 5mg/kg / h (Fig. 1).

Finally, the association of propofol 1-2mg /kg/h reduces the percentage of postoperative vomiting. The laryngo-pharyngeal reflexes of the infant remain intact, therefore even in the presence of liquids in the mouth, swallowing occurs physiologically, protecting the airways spontaneously. For greater safety, the child is positioned on his side and under constant aspiration of his physiological secretions (Fig. 2-3). The sialorrhea produced would be antagonizable with atropine, which however is not administered because the vasoconstrictor is already present in local anesthetic and in ketamine therefore would result in a very constant high heart rate. We recommend 45/90 minutes as maximum intervention duration, thus generating an "anesthesiological tail" of approximately 90 minutes. The "anesthesiological tail" is proportional to the quantity of ketamine administered. Saturation and heart rate should be monitored until awakening (Fig. 4-5).

In conclusion, a safety medication of betamethasone 1.5mg is administered intravenously. Respect for these indications allows the child to be released serene and without short-term memory. Upon awakening of the patient, parents should be informed that nystagmus, diplopia and vomiting can, although not frequently, be present and have no pathological significance by spontaneously regressing and that feeding can be quickly resumed even if with caution.

RESULTS

Ketamine is an effective agent for conscious sedation in pediatric emergencies, with minimal adverse effects and sequelae compared to traditional agents such as benzodiazepines, opioids and hypnotic sedatives. The choice, at the pediatric dental level, stems from the fact that today it is still the only inductor injectable by the intramuscular route and this makes it easier to administer in the infant patient as in the dental phobophobic patient (28). The importance of ketamine in pediatric dentistry is linked to the fact that it leads to relative cardiovascular stability and has limited effects on the respiratory system: in fact it maintains intact the laryngo-pharyngeal reflexes and therefore, even in the presence of liquids in the mouth, allows swallowing physiological by spontaneously protecting the airways (31).

In general, the above-mentioned pharmacological characteristics avoid hospitalization, prevent pain and reduce the discomfort for the pediatric patient while specifically allow to carry out any dental intervention also with the help of the rubber dam, since the infant manages physiologically to control salivary flow. In the post-operative course, the use of ketamine can lead to transient visual disturbances, nausea and vomiting, while side effects are frequent especially in psychiatric patients: realistic dreams, hallucinations, floating sensation, delirium, agitation, dysphoria. Prophylactically associated administration of benzodiazepines (Midazolam) reduces the mentioned phenomena ensuring post-operative retrograde amnesia, useful to reduce the discomfort of the pediatric patient (32).

DISCUSSION

Summarizing, ketamine compared to other categories of drugs commonly used (33-36) determines dissociative sedation leading the patient to a catalytic state characterized by deep analgesia and amnesia with the maintenance of airway protection reflexes, spontaneous breathing, and cardiopulmonary stability. It is therefore excellent for sedation to perform short dental procedures, which would lead to negative pain and emotional aftermath in the pediatric dental phobia patient or in more invasive procedures (37-45). The resolution, through ketamine, of the dental infectious-antalgic urgency will allow the approach to the phobic pedodontic patient (28). Subsequently, it will be possible to reconstruct the "patient/doctor" relationship, to completely overcome the phobia, through progressive pre-treatment psychological therapies and positive dental experiences gradually less supported by the sedative aid (46). In conclusion, ketamine is an effective agent for the conscious sedation of uncooperative pediatric patients and represents the last alternative to an intervention performed under general anesthesia. The comparison with other sedation techniques has no value, as the choice of ketamine must only take place when success has not been achieved through other modalities (33-36). Ketamine must be used by an anesthesiologist with experience in the pediatric field.

15 The rule of hydrogen peroxide long term rinse during a particular alveolar bone healing after ONJ injuries in a patient with periodontal disease: a 4-year radiological follow up report of a mental nerve emergence migration

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Bisphosphonate Related Osteonecrosis of the Jaw (BRONJ) is a pathology initially described in the early 2000s that has become increasingly common in clinical dentistry and maxillofacial practice due to the frequent use of bisphosphonates medical drugs (BPs) to treat various diseases such as osteoporosis, Paget's syndrome, osteomyelitis and in bone metastases secondary to tumors. Supragingival irrigation applied as monotherapy and in combination with root planning or BFs related bone necrosectomy revealed that supragingival irrigation with a variety of agents reduced the gingival microbial load and gingival inflammation. In this 4-year follow-up study we analyze the use of hydrogen peroxide (H₂O₂) as an antimicrobial agent for maintenance periodontal health, improving the longevity of teeth and oral cavity healing process.

Since its first description in 2003, reports of bisphosphonate related osteonecrosis of the jaw (BPNJ) have been accumulated. With the ability to reduce bone turnover through selective inhibition of osteoclasts, Bisphosphonates have been used widespread in treatment of osteoporosis and bony metastases of malignant diseases. They are administered orally or intravenously, whereat the bioavailability of oral bisphosphonates is below 1 % (1). Due to local factors like chewing forces, oral bacteria, the periodontal gap and a thin mucosa, the alveolar bone necessitates an elevated osteoclastdependent bone turnover to maintain integrity (2).

When osteoclasts are diminished by a high local concentration of BPs, the bone is not capable to react to these local factors what may end in necrosis (3). Few bacterial lines are the co-factors in formation of gingival-periodontal diseases (4-10) as well as chronic bone

infection (osteomyelitis) that could conduct as an open exposition of ill bone into the oral cavity.

Fortunately, some studies have shown the effectiveness of supragingival irrigation applied as monotherapy and in combination with root planning or BFs related bone necrosectomy revealed that supragingival irrigation with a variety of agents reduced the gingival microbial load and gingival inflammation, and as a method of maintenance periodontal therapy, it plays an important role in the longevity of teeth or oral cavity healing process (11). This further emphasizes the importance of supragingival irrigation in the treatment of periodontal disease. Hydrogen peroxide (H₂O₂) has a long history of use as an effective antimicrobial agent with a broad spectrum of activity, including activity against bacterial spores and viruses (12) and is extensively used in applications where its decomposition into non-toxic byproducts (water and oxygen) is important (13).

The aim of this case report was to underline the efficacy of long-term weekly supragingival irrigations with aerosolized 0.5% H₂O₂ as maintenance therapy after bone necrosectomy due to BFs administration: its properties had been effective on clinical parameters and on morphological changes in bone tissues healing as this radiological CBCT 4 year follow up revealed.

MATERIALS AND METHODS

An 82-year-old woman returned to our observation clinic after ten years from the last check-up. She only underwent restorative treatments and full mouth hygiene. The previous dental cemented prosthetic rehabilitation did not show any radiological and clinical sign or symptom of endodontic periapical disease. She only referred a slight pain in the right hemi mandibular region: a red mucosal inflammation area was visible surrounding lower right canine and I premolar teeth. There was no bone exposure or mucosal ulceration. Unfortunately, radiologic exam revealed a large radiolucent area corresponding to bone resorption. The area involved was 13mm long and 10 mm high. An OPT confirmed this radiolucent issue and it appeared worse because of its further posterior extension.

The medical history excluded any oncological impairment as a secondary oncological injury. So, it appeared quite clear it was a BRONJ case. In fact, drug history revealed assumption of Alendronate, (ADROVANCE 70 mg one pill every week for 4 years). We considered mandatory an antibiotics prescription (amoxicillin + acid clavulanic 1 g pills every 8 hours for 6 days).

Inexplicably the patient had been denied checkups for six months. After this period, the clinical situation had decidedly got worse. In fact, she referred increased pain, swelling and slight paresthesia. The oral inspection showed an ulcerated mucosal area surrounding 44 teeth. The underlying tissue appeared had a grey necrotic aspect. The radiological exam and OPT confirmed a bigger radiolucent lesion in apical direction involving the mental foramen. The successive CBCT exam showed effective extension of the radiolucent lesion as it was visible in CBCT section 28, 32 and 41. On the 30th of March 2012, the patient was sent to the Rovigo "Santa Maria della Misericordia" Hospital for a surgical debridement toilet. The subsequent histological examination gave the following result: 'Necrotic bone fragments included in purulent-fibrin material incorporate bacterial colonies morphologically consistent with Actinomyces.

For 4 full years, from April 2012 to April 2016, the patient was kept under periodical close medical observation in a private dentist clinic in Legnago (Verona, Italy). Twice a week she underwent careful monitoring of wound healing in concomitance with hydrogen peroxide washing of the affected area. During this period, radiological examinations (CT-Cone Beam and OPT) were carried out at regular intervals to monitor the process and the quality of healing. Four clinical indices of periodontal inflammation have been collected since April 2012: approximal plaque index (API), modified gingival index (MGI), bleeding index (BI), and pocket probing depth (PPD). The patient had shown a substantial clinical improvement during Hydrogen peroxide irrigations.

RESULTS

We note that Treatment suggestions of manifest BP-ONJ differ. Some authors agree with surgical approach and refer mucosal healing and wound healing after necrosectomy ranging 84 to 100% (14-16). Healing of the necrosis occurs in only 25% after strictly conservative measures and 28-58% after partial resections or debridement without soft tissue closure (17-18). However, in 2014 update the AAOMS still recommends management with antibacterial mouth rinses and antibiotics in most of the cases to preserve the quality of life (19). Others suggest more invasive surgeries for an implant/prosthesis rehabilitation (20-40) and for restoring sufficient quantities of soft tissues (41-47).

Among all the commercially available antibacterial chemical compounds the peroxide hydrogen appears to be very effective. Its oxidative properties hinder the spread of certain specific bacterial lines in periodontal pockets (especially the red complex of Socransky) which negatively affect an already compromised area (48). Among the first bacterial colonizers of the dental surface and of the periodontal pockets we find the Actinomyces Spp. (mostly obligate anaerobes) (49) that with other periodontal pathogen families (yellow, green and purple Socransky complex) are the conditions for the subsequent growth and multiplication of the main etiological agents of periodontal disease (50) which is the Socransky's red complex (51). The red cluster is composed by Treponema Denticola, Tannarella Fonsythus and Porphyromos Gingivalis, this last one is often associated with periodontal bone loss and is microbiologically considered one of a handful of pathogens that cause chronic periodontitis (52). The most common species find on the surface

of osteonecrosis area are *Staphylococcus Aureus*, *Streptococcus Aureus* (part of yellow Socransky complex) and gram-negative *Fusobacterium* (orange Socransky complex) (49, 53). To oppose the pathogenic action of *P. Gingivalis* and *F. Nucleatus* different medical drugs have been utilized. Few scientific articles reports the use of hydrogen peroxide help to obtain a significant reduction of in vitro growth of *P. Gingivalis* (54), in vivo reducing periodontal inflammation as an antibacterial minimally invasive additional treatment of periodontal pathology (55) or moreover, used as a long term adjunct mouthwash to daily oral hygiene for reducing the early signs of gingival redness (56) and last in dentifrices containing 0.5% SCN- and 0.1% H₂O₂ inhibited plaque and decreased gingivitis (57). Moreover, peroxide hydrogen is extremely useful on obligate anaerobes such as few species of *Actinomyces Spp.* isolated in the bone surface by the histological post-surgery exam in this report. In this context a combined approach (surgical debridement and hydrogen peroxide) resulted to be successful and strictly indicated. Specifically, the long-term rinse.

Through an objective and intersubjective analysis of radiological data in our hands (CT and OPG) we measured at different times (from September 2011 to April 2016) the bone volume between 43-47 in bucco lingual frontal prospective and in apicalcoronal sagittal prospective. These measurements are expressed in millimeters. Comparing specific radiological cuts in the equal points it appears a general increase in bone volume. It can also be noted a peculiar coronal migration of mental nerve's emergency which indicates not only a regression of the initial minus of lesion, but even a further bone centripetal apposition (Fig.1-3).

Histologically it has also been demonstrated that high concentration of hydrogen peroxide affects the wound healing process of tissues through proliferation and differentiation of fibroblast (58), the promotion of myofibroblast differentiation from fibroblast (59) and increases osteoblast survival by decreasing oxidative stress (60). Our case report seems to confirm radiologically these histological healing processes. The centripetal bone healing apposition had been progressed for 4 years as the CBCT screen shots sequence showed alongside the hydrogen peroxide long term rinse.

DISCUSSION

The idea arises from the considerations listed above is a complementary treatment of BP-ONJ with a surgical curettage/removal of osteonecrotic areas and frequent washes with hydrogen peroxide.

Encouraging data on the hypothetical success of this therapy comes from this clinical and 5 years long CBCT radiological follow up that describes a singular bone healing appreciable by a coronollization of mental foramen. The present study shows that non-surgical treatment with long term maintenance therapy (twice a week supragingival irrigations with Hydrogen peroxide for 4 years) improved clinical periodontal status and bone healing process. However, these findings need to be confirmed in larger and more controlled studies for any observation regarding the potential benefits of this therapy. Moreover, we found a correspondence between radiological images of bone healing and the long-term use of supragingival hydrogen peroxide rinse in the same period of follow up.

16 Zygomatic implants supported rehabilitations in atrophic maxilla: sinus complications, radiological, periodontal and prosthodontic evaluations: a one year follow up retrospective longitudinal study

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The rehabilitation of maxillary bone atrophy represents one of the main challenges of modern oral implantology. The use of zygomatic implants in the prosthetic rehabilitation of the patient affected by severe maxillary bone atrophy is another therapeutic alternative, not exempt from complications. The present study included 19 patients with edentulous maxillae who were treated between 2013 to 2015 with at least two zygomatic implants at the Department of Maxillofacial Surgery, Verona, Italy. The purpose of this retrospective longitudinal study was to evaluate sinus complications and radiological, periodontal and prosthetic evaluations of zygomatic implants technique in severe atrophic. Implant-prosthetic rehabilitation of the upper jaw edentulous severely atrophic using zygomatic implants represents one safe and repeatable technique. In terms of implant survival from our study showed an implant CRS (common reporting standard) of 98.5% and a prosthetic CRS 100% with a mean follow-up period of 19.2 months (range). Both recorded data are superimposed on major reported studies in literature.

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severely atrophic using zygomatic implants represents one safe and repeatable technique.

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The great advantage of this type of rehabilitation is not only to minimize postoperative morbidity caused by massive reconstructive surgeries (1-4) such as bone grafting (5-15) or sinus floor elevation, but also to eliminate hospitalization, high cost and risk of complications. The placement of dental implants in the zygomatic bone, introduced by Branemark in 1988, is an alternative technique that can facilitate the rehabilitation procedures in severely atrophic maxilla and maxillectomy defects (16-18), pre prosthetic surgery following ablative tumor surgery (19), congenital clef lip and or palate (20). Zygomatic implants have been used in conjunction with regular implants or alone in the number of four when the premaxilla presents severely resorbed. The main objective of the present article is to draw a retrospective longitudinal study to evaluate the cumulative zygomatic implants survival rate and peri-implant soft tissues condition and complications at the one-year follow-up.

MATERIALS AND METHODS

The study included 19 patients (9 males and 10 females) range 46- to 88- years-old (mean age 66+/-12 years) with edentulous maxillae who were treated between 2013 to 2015 with at least two zygomatic implants at the Department of Maxillofacial Surgery, Verona, Italy. The patients enrolled in this study met the following inclusion criteria:

- affected by V-VI or VII Cadwood Howell (21) Nocini (22-23) class maxillary atrophy evaluated through a pre- and post-surgery TC cone beam at least 12 months prior;
- good general/local health which allowed them to undergo this kind of surgical treatment;
- treated with at least two zygomatic implants;
- able to receive a full arch prosthodontics rehabilitation such as Toronto Bridge or other kind of overdentures for six months loading.

Patients were excluded if they fulfilled any of the following exclusion criteria:

- previously treated with zygomatic implants not for atrophic disease;
- not affected by allergic rhinitis;
- not previously treated with sinus surgery;
- addicted to smoking;
- lack of clinical documentation.

All these patients showed an insufficient bone volume for traditional implant treatment. However, for 6 patients, a generic medical history revealed a positive anamnesis: 2 diabetes type II, 1 HIV+, 1 HBV+, 2 HCV+, 1 Parkinson, 1 mucoviscidosis and chronic pancreatitis. All patients received a detailed description of the procedures and signed an informed consent prior to participation in the study. The study was conducted according to the principles embodied in the Helsinki declaration, as revised in the 2000, for biomedical research involving human subjects. Patients who were included in the study were carefully evaluated by examining the clinical aspects and periapical/panoramic radiographs and computer tomograms (CT); moreover, data were collected for each patient at the implants placement phase (T0), at the prosthodontic loading (T1) and at the follow up date (T2) and reported in Table I.

After the surgical phase, 5 patients received two Zygomatic Implants (ZI) and four dental implants in the premaxilla; other 12 patients had 4 ZI (Quad Technique), one patient had three ZI and two dental implants and one pterygoid implant, one patient had two ZI and three dental implants in the premaxilla. After prosthodontic phase, 13 patients were rehabilitated through a Toronto Bridge fixed full arch, meanwhile other 9 patients received an overdenture.

Panoramic images supplemented with intraoral radiographs were used preoperatively to evaluate the bone volume of the maxilla. Computed tomograms (CT) were used to determine whether the anatomy would allow installation of zygomatic implants (24) and to eliminate the risk of undiagnosed pathologic lesions.

Preoperative Cadwood Howell Nocini Classification was assessed for each patient ranging from V to VI. Postoperatively a new CT was performed at least 12 months after surgery. Pre surgical Protocol: presurgical exams were detected to analyze bone amount in each patient, i.e. panoramic exam, intraoral radiographs, teleradiographs L-L and Cone Beam TC of the maxillo facial process to accurately evaluate anatomic structures. Evaluation was carried out on the size of the malar bone and Higmoro antrum, the topography of the front wall of the temporal fossa, the degree of pneumatization of maxillary sinus, the thickness of the alveolar process in the premolar area, the degree of bone atrophy and the skeletal relationship between jaws (Fig. 1).

In order to carry out the most prosthetically guided surgery, it was crucial to study the angularity and the expected emergency position of zygomatic implants: this emergency at the alveolar ridge depends on the spatial relationship between the zygomatic bone, the maxillary sinus and the Alveolar crest. Acute phase sinus pathology and/or signs/symptoms of tissue infection (25-30) surrounding the site insertion area are also evaluated. Where present an adequate amount of bone in the pre-maxilla area it was decided to place two to four conventional implants (31-33), to avoid any bone grafts and best distribution in prosthetic cargo. The position and angle of the

conventional rear implant was determined based on the maxillary sinus anatomy, anterior wall. Surgery was performed under general anesthesia with nasal endotracheal intubation supplemented with infiltration of local anesthetic agents with a vasoconstrictor for hemostasis. Patients were given benzylpenicillin (3g) and metronidazole (0.5g) preoperatively routinely. A crestal incision was made bilaterally extending from the second upper molar. A vestibular releasing incision was made at the posterior extent of the incision in the maxillary second molar region. A mucoperiosteal flap elevation revealed the nasal apertures and the piriform rim to the inferior aspect of the infraorbital foramina and laterally of the buttress and body of the zygoma bilaterally.

A round bur rather than piezosurgery tools (34-35) was then used to create a lateral window, 5x10 mm, in the lateral wall of the maxillary sinus. The sinus mucosa was then carefully reflected and protected through the preparation of the zygomatic implant site. A retractor was placed over the superior aspect of the zygomatic arch to enable correct orientation of the implant site preparation. The zygomatic implant heads were placed palatally and as close as possible to the alveolar crest, in the region of the second premolar and first molar. After penetrating the maxillary bone into the maxillary sinus, the preparation was penetrating the cortical layer of the anterior superior part of the zygomatic bone.

The implant sites were then enlarged. Implant size was determined, and final placement of the implant was accomplished using the standard protocol. The zygomatic implant was placed using a low speed until the tip of the implant engaged the zygomatic bone and was finalized manually until the implant was optimally seated. All 31 zygomatic implants had a stable and ridged primary stability at the installation and were dressed in a cover screw. Patients obtained immediate placement of additional endosseous implants (36-39) in the anterior region of the maxilla (Branemark System, Nobel Biocare AB, Goteborg, Sweden). The wound was closed with a continuous, absorbable 4-0 suture. Postoperatively, the patients were prescribed antibiotics for 1 week. Abutment connection surgery was performed after a healing time of 5 to 8 months (mean 6.4 months).

Prosthetic Protocol

The conventional dentures were relined after implant surgery and after abutment connection and were worn provisionally in the healing periods. Fabrication of Toronto Bridge or overdentures implant supported fixed prostheses followed the standard procedures for the implant treatment, as described in literature (40-42). The fixed prosthesis was finally handed out 4 months after the abutment connection procedure. All patients were enrolled in a personally tailored supportive periodontal maintenance program; in this study all patients were maintained with oral hygiene instructions, or air polishing (glycin powder) on an individual basis according to their needs.

Follow Up

Input measures examinations and study variables analysis. Data were collected after zygomatic implants placement (baseline or Time 0), at time 1 and time 2; data were retrospectively analyzed according to a research protocol. An examiner not involved in performing the surgical treatment, took all the measurements as outlined below:

- age and gender as demographic variables at T 0,
- surgical technique according to Aparicio's classification (43),
- type and number of implants placed,
- perimplant Pocket Probing Depth (PPD),
- Mombelli Bleeding Index (44) (MBI): was measured with a periodontal probe (Hu-Friedy, PGF- GFS, Hu-Friedy, Chicago, IL, USA) at the buccal (mesial, vestibular and distal) and palatal surfaces,
- Mombelli Plaque Index (MPI): was measured with a periodontal probe (Hu-Friedy, PGF- GFS, Hu-Friedy, Chicago, IL, USA) at the buccal (mesial, vestibular and distal) and palatal surfaces,
- Implant surgery-Prosthesis evaluation: measure of prosthetic screw torque at T1 and T2; moreover, patients had to compile a Visual Analogue Scale (VAS), satisfaction questionnaire about aesthetic, function and phonetic.
- radiological and clinical analysis of the maxillary sinuses: evaluated on Cone Beam CT scan (CBCT, NewTom 3G). The data acquisition was set through a single rotation of the device, with 59µSv radiant dose for each patient. Coronal, axial and sagittal images were obtained for each implant considered in this study. The osteointegrated portion of the zygomatic bone was calculated using a specific medical imaging viewer: Radiant DICOM Viewer (Radiant DICOM Viewer™, Medixant, Poznan, Poland). Nineteen patients received zygomatic implant treatment and were included in the study. All patients were contacted for a further prospective follow-up examination. Subsequently the patients underwent clinical and radiographic examination according to the prospective follow-up protocol.

RESULTS

Implant Stability: nineteen patients were treated with 63 zygomatic implants (Branemark System) with lengths range from 35 to 50

mm. One patient was treated with 2 unilateral zygomatic implant, one patient received 3 zygomatic implants, 12 patients received 4 zygomatic implants (quad technique) and 5 patients had 2 zygomatic implants bilaterally (see Table II). Twenty-six additional dental implants (Bra°nemark System or Astra Tech Dental Implant System) were placed (see Table II). Out of 19 patients, 17 were non-smokers and 2 (one male/ one female) were smokers (20 cigarettes in a day).

Serious maxillary bone defects were caused in 14 cases (7 males and 7 females) from periodontitis disease, in 1 case (1 male) by upper cystic process, in another 1 case by partial maxillectomy due to an atypical lymphoproliferative process with a rich follicular component (1 female), 2 cases of previous implant failure (2 females) and 1 trauma case (1 male) (Table II). Post-surgery complications (45-49): one zygomatic implant, in one patient, was removed after a car crash trauma. After a mean follow-up period of 19.2 months (range), the overall cumulative survival rate (CSR) was 94.3%. After the prosthetic loading of the implants the survival percentage was 100%. The follow-up period ranged from 105 to 2483 days from the day of prosthesis delivery, with a mean of 570.52 days (3 years, 10 months). From the patient records, the following parameters were recorded:

Soft Tissues: the mean PPD was 3.16 mm (dev. St.±1.75 range 1-11). The mean mPI was 0.7 (dev. St.±0.9 range 0-3). The mean mBI was 0.54 (dev. St.±0.7 range 0-2). It was not necessary a soft tissue augmentation around the implant exit point (50-65).

Prosthetic components analysis

Overall, the torque of 63 prosthetic screws was evaluated: at T1 the mean torque was 15.68 Ncm (dev st±8.41 Ncm range 0-30 Ncm). T2 torque of MUA screw was evaluated to investigate possible unscrewings: at T1 it was serried with 15-18 Ncm. 37 screw on MUA were analyzed: the mean torque was 11.81 Ncm (dev st 4.23 Ncm range 0-17 Ncm).

Prosthesis satisfaction

The definitive prosthesis was delivered to the patient 4 months after surgery. It had been performed 13 Toronto Bridge and 6 overdentures. A prosthetic questionnaire for the evaluation of the satisfaction (56) based on Visual Analogue Scale (VAS) was given to the patients. It was formed by three parts: function (mean VAS 9.3/10), aesthetic (mean VAS 9.7/10) and phonetic (mean VAS 9.2/10).

Maxillary sinuses

The presence of sinusitis was radiologically evaluated according to the Lund and Mackay CT scoring rhinological staging system. So, evaluation of the maxillary sinuses was executed before surgery (mean 0.078±0.27) and after 6 months (0.26±0.5) to evaluate the differences between the two values obtained.

Entities of rhinosinusual symptomatology

For each patient, the Questionnaire SNOT-20 (Sino-Nasal Outcome Test) was collected before and after surgery with a minimum 12 months follow up. This tool evaluates a wide range of parameters including health, the Quality of life, physical problems, functional limitations and emotional consequences. (Lachanas et al. 2012). This study has been used to standardize the evaluation of the symptoms pool referred by the patients. Clinical analysis of maxillary sinuses the magnitude of symptomatology of rhinitis-sinus relevance has been evaluated through the administration of the SNOT-20 questionnaire.

In detail, the Preoperative assessment 17 out of 19 patients showed a score Ranging from 0 to 10. The remaining 2 patients reported a score Between 11 and 40 None of these patients considered their disease to be significantly affected Quality of life, limiting the management of any therapy symptoms to the need. The SNOT-20 total score for this sample in the survey Preoperative was 49 points, with an average score of 2.58±6.61, while in the postoperative survey the total score of the sample Was 80 points, with an average of 4.21±6.93. At postoperative evaluation, 16 out of 19 patients reported a score ranging from 0 to 10. Instead, the remaining 3 patients reported a score between 11 and 40.

DISCUSSION

The purpose of this retrospective longitudinal study was to evaluate sinusal complications and a radiological, periodontal, prosthetic evaluations of zygomatic implants technique in severe atrophic at the 1 year follow up.

Surgery

After surgical procedures, we did not register any intraoperative complications; immediately after surgery we only found one implant failure before the prosthetic loading. This study reported implant and prosthetic survival rates so similar to other Authors' clinical experiences.

Prosthetic parameters

In this longitudinal retrospective study, a total of 19 patients were screened for a total of 63 implants and 19 prosthetic rehabilitation. The Med Calc (Med Calc Software bvba, Ostend, Belgium) software was used for statistical analysis. The Mann-Whitney U test for independent variables (level of significance a $P < 0.05$) tested data collected by all 19 patients to determine the possible correlation between the kind of prosthetic rehabilitation and torque measured on the prosthetic screws. It revealed that no statistically significant differences between torque levels on prosthetic screws in non-removable prostheses and Toronto Bridge's ones related to the loading time ($P > 0.05$).

The same Mann-Whitney test was used to evaluate the possible correlation between the kind of prosthetic rehabilitation and torque levels measured on the MUA screws. ($P > 0.05$). For measurements collected at 1.2, it was not possible to carry out the Mann-Whitney U test due to insufficient samples number. Otherwise, it showed no significant differences in torque registered level on screws between overdenture and Toronto in other sites. In all these cases a $P > 0.05$ was provided. Therefore, there is no statistically relevant correlation between the type of prosthetic solution adopted and possible tensile stresses at the prosthetic screw and MUA. All the authors decided to evaluate the possible correlations between type of prosthesis and the measurement of Pocket Depth (PD) at T2 using the same Mann-Whitney U test with a statistical significance value of $P < 0.05$. The text revealed a correlation between prosthesis type and PD at T2 with a $P < 0.05$. We observed that two posterior implants 1.4 and 2.4 showed most significant differences. Particularly posterior zygoma implants in overdentures showed higher values of PD than ones in Toronto.

The same statistical test was carried out to analyze the relationship between the follow-up survey bleeding and the type of prosthetic solution. There was no statistical significance from this test that could justify a correlation between the type of prosthesis and the bleeding indices recorded at follow-up. Implanted rehabilitations require, for long-term survival, a great home hygiene by the patient, in order to evaluate which of the two prosthetic solutions provides greater cleanliness, the Mann-Whitney test for independent variables Twotier, correlating the type of prosthesis with plaque indexes recorded at the follow up visit.

The test showed that there are statistically significant differences in 2 sites (1.4 P and 2.4 P) in which the amount of plaque detected was found significantly greater in unmistakable prostheses than Toronto. The question of prosthetic satisfaction has provided results. In line with what was reported in the literature by a 12-month analysis from the load reported by Peñarrocha (63).

Radiographic indices Based on Wilcoxon's Row Test for dependent variables, there is a statistically significant increase ($p < 0.0002$) of the magnitude of the postoperative radiological evidence of rhinosinus pathology compared to preoperative evidence. Based on the Lund-Mackay score, the presence of rhinosinus or of mucosal alterations was evaluated by tapered CT in the coronal sections. In detail, no patient had preoperative evaluation total radiopacity of the maxillary sinuses (LMS = 2+2). Three patients showed up unilateral mucous membrane (LMS=1). The remaining patients had bilateral radiotransparency (LMS=0) of the maxillary sinuses. Altogether, there were 35 breasts in the preoperative evaluation jaws with LMS equal to 0.3 maxillary sinuses with LMS equal to 1 and 0 breasts jaws with LMS equal to 2. Clinical analysis of maxillary sinuses: the magnitude of symptomatology of rhinitissinus relevance has been evaluated through the administration of the SNOT-20 questionnaire. In detail, the preoperative assessment 17 out of 19 patients showed a score ranging from 0 to 10. The remaining 2 patients reported a score between 11 and 40. None of these patients considered their own symptomatically affected quality of life, limiting the management of any therapy symptoms to the need.

At postoperative evaluation, 16 out of 19 patients showed a score from 0 to 10. The remaining 3 patients reported a score between 11 and 40 (89%-11%). The SNOT-20 total score for this sample in the survey preoperative was 49 points, with an average score of 2.58 ± 6.61 , while in the postoperative survey the total score of the sample was 80 points, with an average of 4.21 ± 6.93 . Hirsch (Hirsch, et al. 2004) also used the VAS scale for 2004 evaluate the chewing function and the aesthetics of 76 patients rehabilitated with zygomatic implants after 1 year of prosthetic cargo. The 80% of patients were completely satisfied with both aesthetics and asthma for the function.

Comparison of the degree of prosthetic satisfaction, reported in the literature and that recorded by our study, showed 110 fully satisfied with the rehabilitation while the other half of the patients found difficulty in chewing and problems related to oral hygiene, aesthetics and phonetics. Farzad et al. (66) analyzing the answers to questionnaires satisfaction delivered to 11 patients before and after implantoprosthetic rehabilitation, finds statistically significant differences with respect to chewing and aesthetics but does not find significant changes in the language.

Radiographic indices

Based on Wilcoxon's Ranks Test for Employee Variables there is a statistically significant increase ($p < 0.0002$) of the entity of postoperative radiological evidence of rhinosinus pathology to preoperative evidence. Inizio modulo

Clinical analysis of maxillary sinuses

Based on Wilcoxon's Row Test for Employee Variables there is no statistically significant increase ($p = 0.1$) of the magnitude of rhinosinus symptomatology compared to preoperative.

The clinical and radiological retrospective study allowed to highlight the following results: implant-prosthetic rehabilitation of the upper jaw edentulous severely atrophic using zygomatic implants represents a safe and repeatable technique. In terms of implant survival from ours. The study showed an implant CRS of 98.5% and a prosthetic CRS 100%. Both recorded data are superimposed on those reported in major studies in literature. As for implant survival it was also not detected no statistically significant difference between the various techniques of zygomatic implant insertion, which are therefore overlapping. The analysis of prosthetic components did not show correlations or statistically significant differences between inamputable prostheses and the Toronto Bridge prostheses, both with respect to the torque values recorded on the prosthetic screws, as well as the torque values recorded at the screws of MUA.

The analysis of periodontal parameters related to the type of prosthesis has produced statistically significant results with regard to depth of the survey, despite the resulting depth values of the poll (PD) greater in, intact, removable prostheses has not found any clinical significance since the modified bleeding index associated with the type of prosthesis has produced statistically significant results. The modified plaque index showed a greater accumulation of palatal plaque at the zygomatic rear implant (1.4 and 2.4) with unmovable prosthesis, this could reflect a greater difficulty in detaching the patient's in-removable implant prosthesis posteriorly due to its conformation.

The radiologic analysis of paranasal sinuses, subjected to zygomatic implantation, showed a statistically significant increase in Lund-Mackay Postoperative Score. The rise of radiologic sinusitis, elsewhere already described as silent sinusitis, does not correspond, and does not correlate with a statistically significant increase in clinical symptoms since SNOT20 postoperative values did not record significant variations. Long-term monitoring and follow-ups is necessary in order to verify the actual incidence of sinusopathies related to the presence of transient zygomatic implants. To conclude, we can say that implant prosthetic rehabilitation through zygomatic implants in cases of extreme atrophy of the edentulous upper jaw is a good alternative to those more invasive procedures such as Le Fort I intervention with interposition grafts or revascularized free flaps characterized by a larger Surgical complexity, a more burdensome post-operative course for the patient, and a greater chance of failure.

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17 Ortodonzia chirurgicamente assistita (Piezosurgery®): studio In-Vivo Pre-Clinico e Clinico

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Introduzione

La terapia ortodontica nei pazienti adulti spesso si traduce in tempi di trattamento prolungati al fine di evitare problematiche parodontali, nello specifico al legamento parodontale e all'osso alveolare.

Per limitare questa problematica, molti autori hanno valutato l'applicazione delle tecniche chirurgiche.

Lo scopo di questo studio in-vivo pre-clinico su modello animale e clinico è stato quello di valutare la risposta infiammatoria a seguito dell'applicazione della metodica "ligament dislocation and distraction technique (MTDLD)", utilizzando la tecnologia Piezosurgery®.

Materiali e Metodi

Studio pre-clinico. È stato eseguito uno studio caso-controllo scegliendo il modello animale di Guinea pig (14 cavie). Dopo la corticotomia, sono state eseguite una biopsia a 24 ore, una a 7 giorni e una a 30 giorni, al fine di valutare le differenze morfologiche tramite microscopia ottica ed elettronica a scansione, mentre a 7 e 14 giorni è stata quantificata la risposta dei mediatori infiammatori IL-1 beta, MMP-9 e TIMP-1 attraverso la metodica RT-PCR.

Studio clinico. Sono stati reclutati 10 pazienti presso la Facoltà di Medicina di Cluj Napoca (Romania). In tutti i casi, le corticotomie sono state eseguite utilizzando il Piezosurgery® (Piezosurgery III - Mectron, Carasco, Italy).

È stato eseguito un follow-up a 1-2-7-14 e 28 giorni, e successivamente ogni due settimane per due mesi. Le biopsie sono state effettuate durante la corticotomia e dopo 14 giorni. L'analisi morfologica è stata eseguita utilizzando la microscopia elettronica a trasmissione e a scansione.

In tutti i pazienti reclutati, inoltre, abbiamo quantificato attraverso la metodica della RT-PCR, la variazione dei mediatori infiammatori IL-1 beta, TNF alpha e IL-2 a 8, 24 e 48 ore e dopo 7, 14 e 28 giorni dalle corticotomie.

Risultati

Studio pre-clinico. Attraverso la microscopia ottica ed elettronica a scansione, nei campioni a 7 giorni, si riscontrava un'elevata cellularità e intensa angiogenesi che scompariva a 30 giorni.

La RT-PCR ha dimostrato che l'espressione di IL-1 beta e di MMP-9 rimaneva alta entro il 14° giorno, e che TIMP-1 seguiva l'andamento di MMP-9.

Studio clinico. Utilizzando la microscopia ottica a scansione a 14 giorni si osservava l'apposizione irregolare di nuovo collagene e il richiamo cellulare nel legamento, mentre con l'utilizzo della microscopia elettronica a scansione, risultava evidente una struttura regolare del legamento e la presenza di osteoni.

Attraverso la RT-PCR è stato valutato che l'espressione di IL-1 beta e TNF-alfa: dopo 24, 48 ore queste raggiungevano il valore massimo, mentre l'espressione di IL-2 risultava aumentata in tempi più lunghi. A 7, 14 e 28 giorni, l'espressione dell'mRNA dei singoli marcatori sembrava diminuire.

Conclusioni

La tecnica MTLDL con Piezosurgery® risulta valida e sicura, prevenendo il danno del legamento, minimizzando il disagio per il paziente e riducendo i rischi chirurgici.

Infatti, in questo studio, i risultati ottenuti hanno dimostrato come l'anatomia del legamento parodontale risulti preservata senza alcun segno di danno tissutale e con miglioramento della velocità di trattamento nei pazienti adulti.

18 An overview of orthodontic retainers

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Orthodontic retention is the maintenance of the teeth in their ideal position from an aesthetic and functional point of view. The aim of this work is to illustrate the different orthodontic retainers. For this study we proceeded with a research of the abstract concerning this topic from the scientific archive "Pubmed" using terms relating to orthodontic retainers: 40 articles were selected from the research. In addition, 4 textbooks related to this topic have also been consulted. 7 fixed and 10 removable retainers have been identified. The most used retainers are the bonded ones for the lower arch and the Hawley and/or vacuum-formed ones for the upper one. Although numerous studies relating to orthodontic retention have been performed, there is no definitive evidence to identify the best type of orthodontic retainer.

Orthodontic retention can be defined as the maintenance of the teeth in their ideal position from an aesthetic and functional point of view: the purpose of the retainers is therefore to counteract the tendency of the teeth to return to their previous position (1). The choice of the type of retention must be individualized and must take into account: the severity of the initial malocclusion, the quality of the result achieved with the treatment, anatomical-functional characteristics, age, needs and collaboration of the patient (2).

Orthodontic retainers can be accompanied by some surgical, gnathological and myofunctional procedures aimed at eliminating or controlling some etiological factors that may be present (3). Since numerous orthodontic retainers have been identified in the literature, the aim of this work is to illustrate them and their main characteristics to help the clinician in their daily practice.

MATERIALS AND METHODS

For this study we proceeded with a research of the abstracts concerning this topic from the scientific archive "Pubmed" using terms relating to orthodontic retainers such as 'orthodontic retainer', 'orthodontic retention' and 'orthodontic relapse'. Forty articles were selected. In addition, 4 textbooks related to this topic have also been consulted.

RESULTS

Seven fixed retainers were identified: multistranded wire retainer; thick wire retainer; fiber reinforced composites retainer (FRC); palatal/lingual arch; retainer with pontic; fixed prosthesis; space maintainer. 10 removable retainers were identified: Hawley retainer; Begg retainer; Schwarz appliance; Van der Linden retainer; vacuum-formed retainer (VFR); wraparound retainer; positioner; acetal ferula; Crozat removable appliance; Osamu retainer.

Discussion

Multi-stranded wire retainer is an appliance made of multiple twisted-stranded stainless steel wires. It is bonded to the lingual surface of each tooth of the mandibular anterior sextant. At the level of the upper arch, however, it is less used for a greater risk of detachment due to masticatory trauma. The twisted wire offers a better mechanical retention of the composite than the other types of wire. Moreover, this retainer allows the physiological tooth mobility thanks to its elastic properties. Then it is essential that the wire is completely passive to avoid the onset of undesired movements of the teeth (4-6). Thick wire retainer is a stainless steel wire of variable diameter (usually .028, .030 or 0.32 inch) with a loop bent at each end that is bonded to the lingual surface of the lower canines. This retainer effectively maintains the intercanine width; furthermore, it prevents the lingual tipping of the lower incisors, but it hardly controls their rotations (7, 8). FRC is a glass fiber reinforced resin or polyethylene strip that is bonded to the lingual or palatal surfaces of the anterior teeth (from canine to canine). Its advantages are: transparency, aesthetics, ease of modeling, reduced plaque accumulation, comfort and reduced mechanical stress. Initially, the main disadvantage of this retainer was the stiffness, which determined a greater risk of failure than the multi-stranded wire retainer (51% vs 12%); however, the current mechanical characteristics have significantly reduced the difference in reliability between the two appliances (9-11). Palatal/lingual arch consists of a stainless steel wire with a diameter of 0.9 mm, welded to the bands. It is mainly used in the lower arch; it is useful to avoid changes in length or width of the arch and to prevent tooth rotations. Retainer with pontic is a metallic appliance, created in the dental laboratory, which is bonded to the palatal or lingual surface of the anterior teeth in patients with periodontitis or who have undergone important tooth movements on the vertical and sagittal plane. It can have pontics in case the patient lacks some teeth (12-17). Fixed prosthesis is used if one or more teeth are missing or to stabilize periodontally compromised teeth (18-25). Space maintainer is an orthodontic band to which a 0.9 mm diameter steel wire or a pontic is welded and it is used to prevent the mesialization of the tooth on which the band is cemented (13). Regarding the removable appliance, Hawley retainer is the most common retainer, especially in the maxillary arch. The upper Hawley retainer consists of: an acrylic palatal cover; Adams' clasps on the upper first molars; a "U" loop labial bow, usually spanning from canine to canine. There are variants of this orthodontic appliance: for example, the labial bow can be welded to Adams' clasps or extended to the premolars to keep the spaces closed in patients who have undergone extractions. In addition, a bite plane lingual to the upper incisors can be added to this appliance, on which there is a slight contact of the lower incisors, which serves to maintain an adequate overbite and to avoid deep bite relapse (26-35). The Begg retainer differs from the Hawley retainer due to the fact that Adams' clasps are absent and the labial bow extends to the last molar in the arch and then it is incorporated into the acrylic that covers the palate.

These characteristics permit a better settling of the occlusion and a lower risk of reopening the space between canine and premolar (36). The Schwarz appliance is a removable appliance consisting of an acrylic palatal cover, two Adams' clasps (or ball clasps) and a metallic or acrylic labial bow. It allows maintaining the sagittal and transversal dimensions of the dental arches (13). The Van der Linden retainer is an acrylic appliance for the upper arch with a labial bow (0.028 inch diameter stainless steel wire), passing between lateral incisor and canine, and "C" clasps that surround for three quarters the last molar in the arch. The acrylic palatal cover contacts the anterior teeth maintaining them in position, while material is removed at the level of the posterior teeth allowing the settling of the occlusion (37). VFR is a removable and clear appliance that is manufactured using a vacuum machine, which adapts heat-softened plastic to a cast by negative pressure. It is thin (0.5-1.5 mm) so as not to interfere too much with the occlusion. It can be used for orthodontic finishing, it is well tolerated by the patient for its transparency and can support the home bleaching gels. However, it needs to be replaced periodically as it can deteriorate. Examples of VFRs include Invisalign® and Essix®. The Damon Splint is an appliance consisting of an upper and a lower Essix® connected to each other: in addition to acting as a retainer, it is also useful to rebalance any nighttime respiratory dysfunctions (38-41). Wraparound retainer consists of an acrylic structure, usually reinforced by a stainless steel wire, along the labial and lingual surfaces of the teeth of the entire arch. However, it shows disadvantages: it holds the teeth too firmly in place, not allowing the periodontal ligament to reorganize and it is less comfortable and less effective in maintaining overbite correction than the Hawley retainer. A variant of the wraparound retainer is the clip retainer or spring retainer: it consists of a stainless steel wire with a diameter of 0.9 mm adherent to the dental cervix of canines and covered with resin at the labial and lingual surfaces of the incisors. It is very effective in preventing relapse of crowding of the inferior anterior teeth.

Moore retainer is a canine-to-canine clip retainer that extends distally on the lingual surface to the central groove of the first molar. It can be indicated in case of: treatment that involves the lower premolars extraction because it allows a good control of the closed space; misalignment of posterior teeth prior to orthodontic therapy (6). Positioner is a flexible horseshoe-shaped appliance that simultaneously incorporates the two arches, exceeding the neck of the teeth by 2-3 mm; it has breathing holes in the labial surface. It is an appliance that can be used both for the finishing and for the retention. The main advantage is to effectively maintain both the occlusal relationship and the tooth position. The major disadvantage is the difficulty in wearing it: in fact, this appliance should be worn for 4-6 weeks throughout the night and as much as possible during the day; subsequently it can be worn only at night for an unlimited period of time. It is indicated in highly compliant patients, with vicious oral habits or when the fixed appliance must be removed before the end of the treatment (42). The acetal ferula is an acetal resin strip that surrounds the teeth involved in the

retention. It can be complete or partial; it is characterized by a good aesthetics. Furthermore, it has a high elastic memory and can be used as a passive or slightly active appliance if designed on set-up (43).

Crozat removable appliance is an appliance made entirely of metal alloy consisting of a transverse bar, two Jackson clasps, two lingual arms that generally extend from the first molar to the first premolar and from additional elements that serve to maintain the space. It has less encumbrance and wear compared to the acrylic retainers and it is extremely precise (44-45). Osamu retainer is a thermoformed appliance made up of two superimposed layers: the inner layer is made of ethylene-vinyl acetate copolymer (thickness: 1.5 mm), it adapts to the interproximal areas and it covers the palatal and lingual surfaces of the teeth; the outer one is made of rigid elastic polycarbonate (thickness: 0.75 mm) and it covers the occlusal surfaces. This retainer is transparent, cheap, simple to build, thin and robust at the same time. It also allows to correct slight dental malpositions (46).

Fixed retention has the following advantages compared to the removable one: maximum efficacy, minimum encumbrance, good aesthetics, unnecessary patient compliance. The disadvantages are: impossibility of grading the use; impossibility to apply additional forces; difficulty in determining the time of removal; greater difficulty in maintaining an accurate oral hygiene; impediment of physiological occlusal settling (2). The most used retention appliances are the bonded retainer, the Hawley retainer and the vacuum-formed retainer (47). Currently, at the level of the mandibular arch, the multi-stranded wire retainer bonded to the anterior sextant is preferred to the other fixed and mobile appliances as it seems to have a greater effectiveness in maintaining the dental alignment (48-51). If a removable appliance is used for retention of the lower teeth, the vacuum-formed retainer appears to be slightly more performing than the Hawley one (52-55). The latter two appliances are the most chosen by orthodontists to avoid undesired movements of maxillary teeth: in general, their effectiveness is comparable (56), but patients prefer the vacuum-formed ones for their transparency and greater comfort (57-59). Regarding the effects on periodontal tissues, fixed retainers, especially the fiber reinforced composites ones, favor more plaque and tartar retention than mobile appliances (60). With regard to the survival of fixed retainers, fiber reinforced resin retainers have failure rates (fracture and detachment) now comparable to the metallic wire ones because their mechanical properties have been improved and their bonding occurs under rubber dam isolation (61-62). The detachment of the fiberreinforced resin retainer occurs mainly due to the failure of adhesion at the level of the composite-enamel interface, while instead the metallic wire retainer detaches because the retention at the composite-retainer interface is lost (63). On the other hand, removable appliances, if compared to each other, do not seem to have large differences in survival time; lower Hawley and vacuum-formed retainers tend to break more easily than the upper ones because of their thinner thicknesses (64). Although numerous studies regarding orthodontic retainers have been performed, there is no evidence to provide definitive recommendations on retention procedures after fixed orthodontic treatment (65). The most used retainers are the bonded retainer for the lower arch and the Hawley and/or vacuum-formed retainer for the upper one, but there is no definitive evidence to identify the best type of orthodontic retainer.

19 An overview of photometric analysis to evaluate aesthetics in orthodontic patients

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Photometric analysis is a facial aesthetics evaluation method which is useful for diagnosis and treatment planning. This system is increasingly applied since there is growing attention to aesthetic improvement and occlusal correction as objectives of orthodontic treatment. Ten articles regarding aesthetic analysis on photos were identified through scientific archives and analysed. The diagnostic rationale, the scientific reliability and the methods used were identified to help clinicians in their practice. Photometric analysis represents an effective, reliable and cheap system for the analysis of craniofacial morphology of the face profile. This analysis can be achieved in subjective or objective ways; the latter modality provides greater reproducibility of the results as well as a good assessment of the harmony between the external craniofacial structures, including soft tissue contribution; it also provides repeatable and reliable measurements, thus enabling a rapid acquisition of the facial image, with long-term durability. Through facial profile photometric analysis it is possible to obtain proportionality, angular and linear measurements. These measures are useful as parameters for an optimal definition of the conditions of normality, harmony and profile balance.

Any orthodontic treatment causes several changes in the soft tissues, with a consequent significant aesthetic impact (1). To successfully meet expectations on facial aesthetics it is important to understand the impact of orthodontic treatment on it. Studies on craniofacial growth and facial aesthetics typically evaluate soft tissues using cephalometrics, with consequent limitations related to the difficulty in correctly reproducing the "Natural Head Position" and in assessing the real labial and incisal prominence and detailed reproduction

of the soft tissues (2). In order to completely evaluate the aesthetics of the face, it is possible to use anthropometry, templates, photographs, videos, 3D reconstructions, lasers and optical surface scanning (3-23).

Photographs are easier to use than anthropometric analyses, allowing also to analyze larger areas and more details than the templates, with lower costs compared to three-dimensional and laser analysis and avoiding patient exposure to radiation, contrary to what happens with telerradiographs from which cephalometries are extrapolated (24-37). Photometric analysis therefore represents an effective, reliable and cheap system for the analysis of the craniofacial morphology in face profile (38).

The aim of this work was to carry out an overview of the literature to analyze the state of the art regarding aesthetic analysis on photos to draw useful conclusions for clinical practice.

MATERIALS AND METHODS

An initial research of the abstracts was carried out through the scientific archives "PubMed" and "Cochrane Library" and the "full text articles" were downloaded in PDF. The following search terms were selected: "photometric analysis", "photographic analysis", "aesthetic analysis" or "soft tissue profile". The research was limited to the international bibliography in English from 2000 to 2018. From the numerous articles found, only those of major scientific rigor were selected for a total of 10 articles. This allowed to deepen the knowledge present in the literature and to draw some conclusions regarding photographic analysis of facial soft tissue profile.

RESULTS

As observed by Li and Qian, orthodontic treatments produce changes in the soft tissues, with a consequent significant aesthetic impact (1). Many studies have used a subjective evaluation system for analyzing profile aesthetics and changes induced by orthodontic treatment; in particular, Sukhia et al. took into consideration the soft tissue changes resulting from orthodontic treatment by comparing the aesthetic preferences of orthodontists, patients and parents at the beginning and the end of the treatment (39). Similarly, but using a group of external evaluators that included students of art and dentistry alongside the parents of the patients, O'Neill et al. sought to determine the profilometric improvements produced by functional treatment in patients with class II division 1 malocclusion; however, no differences were found between the treated patients and the control group (40). Therefore, it is clear that a purely subjective assessment shows significant limits in terms of the possibility of quantification and reproducibility of the observations, as well as their statistical significance. Since these limits affect the diagnosis and the treatment planning, the use of photo-retouching programs has been proposed in order to visualize the potential aesthetic improvement obtainable thanks to different orthodontic treatments (41-44). However, these are still purely subjective evaluations, which do not allow a "quantification" of aesthetic improvements. Although the photographs are much closer to the real appearance of the face than the radiographs, it emerges that it is necessary to use techniques for the quantitative measurement of the facial structures in order to obtain an objective assessment of the characteristics of the patients' profiles. Photometric analysis techniques have been proposed in order to obtain an objective and biologically and economically advantageous evaluation of the facial aesthetics. In fact, photographs provide a good assessment of the harmony between external craniofacial structures, including the contribution of soft tissues. Furthermore, they provide reliable measurements which, thanks to the almost zero invasiveness, can be repeated during the intermediate stages of treatment, in order to monitor its progression (45-48).

Through the facial profile photometric analysis, it is possible to obtain proportionality, angular and linear measurements, useful as parameters for an optimal definition of normality, harmony and balance profile conditions (49.) Various studies have attempted to identify the facial features that account for the pleasantness of a face: some classified facial profiles through subjective analysis of the photographs, others studied some structural features that can influence profile aesthetic (50-53). Fortes et al. conducted a study in order to identify which linear, angular and proportional measures could be considered decisive in influencing the pleasantness of the profile. After a preliminary evaluation by specialists (plastic surgeons and orthodontists) and common people of 150 standardized photographs of the facial profile, classified as "pleasant", "acceptable" or "unpleasant", and the selection of the 15 best and 15 worst profiles of the sample, the photographs were scanned using AutoCAD software. Linear, angular and proportional measurements were performed on this scan: they showed a statistically significant difference between pleasant and unpleasant profiles (54).

Once again, Marchiori et al. tried to correlate the cephalometric measurements of the nasolabial angle, of the Holdaway H line and of the distance between the H line and the tip of the nose, in order to overcome a purely subjective assessment of the face profile and to obtain quantitative and statistically relevant data. These measurements were taken on the profile photographs of a sample of 50 subjects (25 males and 25 females, aged between 17 and 24), with the subjective evaluations of a group of common people and orthodontists. From what emerged, there would be an important relationship between subjective and cephalometric evaluations, demonstrated by the best evaluation attributed to the subjects with a profile presenting little deviations from the normal cephalometric values (55). Similarly, Oh et al. performed a comparative analysis between profile photographs and cephalometries of the same subjects, concluding however that the association between objective data and subjective assessments of facial attractiveness,

even though formulated by specialists in orthodontics, was less than expected and substantially poor (56).

In order to obtain more predictable and statistically significant results, a cephalometric analysis of the soft tissues can also be carried out using specific software on patient profile photographs, rather than on lateral telerradiographies. In fact, this is the most effective and efficient method, allowing a simultaneous analysis of various data, as well as greater accuracy and precision in the information collected and in the obtainable results. In particular, Dimaggio et al. elaborated an aesthetic analysis applied to the left profile photographs of a sample of I, II and III dentoskeletal class patients. The evaluation was conducted on upper anterior facial height (N-Sn), lower anterior facial height (Sn-Gn), total facial height (N-Gn), facial convexity (N-Sn-Gn), cutaneous analogue of the angle ANB (Sn -N-Sl), nasal prominence (Sn-N-Pn), nasolabial angle (Pn-Sn-Ls), interlabial angle ((Sn-Ls) - (Li-Sl)), cutaneous class (Projection of Sn and S1 on the Camper plane). The results showed that, given the highlighted correspondence between the cutaneous and the dentoskeletal class and the significant differences in the parameters considered between I, II and III class patients, this protocol represents a non-invasive, simple and low-cost method: it can provide quantitative and qualitative data, useful as a preliminary diagnostic tool for the evaluation of the facial soft tissues. In addition, this procedure can be repeated during treatment, thus providing useful information on the impact of therapy on the soft tissue appearance (57-59).

DISCUSSION

Although the photometric analysis of the patient's profile has historically been considered purely practical, more functional to a general clinical setting rather than to an effective diagnostic purpose, it is an essential tool for diagnosis and orthodontic planning. Indeed, it represents an effective, reliable and economic tool, which provides some advantages compared to conventional cephalometry, including the possibility of correctly reproducing the "Natural Head Position", of evaluating the real lip and incisal prominence and of reproducing the soft tissues in detail. The use of objective tools also ensures predictable and statistically significant results, thus allowing the advantages of the two types of images, radiographic and photographic, to be combined.

20 Mini-invasive rehabilitation with removable total prosthesis with mixed conometric connection on 1.4-1.5-2.2 (2.9 mm) implant abutments and 1.6-2.3-2.4 dental abutments: a two-year follow-up

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Nowadays, the best possible approach in respect to the patient is that tailored on the "person", intended as the result of the balance between the patient's requirements and expectations, the latter being influenced by contemporary society's over-information without a proper preparation. It is therefore possible to obtain an efficient and effective treatment by recovering the doctor-patient relationship, which is fundamental to guarantee the respect of the therapist's pragmatic and common-sense guidance whilst satisfying the patient's needs. The reported case serves as an example of this choice, combining the psychological support with a valuable minimally invasive surgical implant-prosthetic rehabilitation.

In our contemporary society, the dental professional needs to balance the best possible approach for the specific patient with his/her requirements and expectations, the latter being influenced by different socio-cultural and economic factors. Among these elements, the symptom of pain is particularly relevant, conceptualised in the dual paradigm "pain-avoidance versus reward-seeking" (1): if pain, or the expectation of it, comes between an individual and reaching a goal, the number of people who put their achievement above pain is lower than those who delay or completely abandon that achievement, proportionally to the expected or felt pain intensity and the determination in reaching the goal itself. Nowadays, this model needs to be correlated to how the sociological concept of physical and psychological pain has changed, in accordance with Illich's view in 1976. Traditionally, pain was interpreted as an essential component of existence, being part of both life and death; in the 21st century, with the development of the cosmopolitan culture, the above-mentioned element has progressively disappeared. Indeed, pain is now identified as the failure of the modern socio-economic system, implying its alienation from social existence, as well as from the individual daily life, and thus legitimating the avoidance of pain in all its forms as a social goal (2-5), rather than an individual choice. Consequently, the new millennium has brought a wide offer of ancillary drug therapies in the medical and dental sector, based on the large demand from patients, also paediatric (6); however, these treatments have not been accompanied by an equal offer of adjuvant psychological therapies, thus allowing the patient to

avoid pain, rather than dealing with it. The combination of the above-described aspects with the recent economic and ethno-demographic changes, which have determined a general impoverishment of the population (7), drives the patient to prefer minimally invasive, quick, and less painful procedures, which are more respectful of the patient's approach to the pain (8).

Corroborating the above-mentioned elements, which are all part of the same extremely complex and heterogeneous social framework, the identification of a common goal between the clinician and the patient is fundamental and crucial for the success of the treatment in the dentist's daily practice. This shared objective allows to reach the right balance between the treatment's invasiveness, its suitability in respect to the clinical circumstance, and the emotional-economic impact the patient is willing to handle (9-12).

In this perspective, the reported case reprises the need for an implant-prosthetic rehabilitation that is in line with the patient's scarce propensity to undergo invasive and/or lengthy procedures, nonetheless guaranteeing the appropriate clinical value (13-17) of the cutting-edge treatment (18), which is supported by the scientific community (19-24). The case takes into consideration the treatment of a male adult patient (48 years old) with a negative medical history, but with a limited propensity towards dental treatments due to previous regrettable experiences. The said patient consequently required a minimally invasive approach that avoided any kind of exodontic surgery, thus preserving the existing dental elements and strictly precluding any form of bone regenerative surgery, expansive or appositive, vertical or horizontal. Following the oral cavity physical examination, studying the case by analysing the gypso and radiographic documentation – the latter including maxillary computed tomography – permitted to develop a minimally invasive planning. This procedure was obtained by implementing cutting-edge technologies (11), techniques (13-17) and materials (25) and has been validated by the scientific community (19-22), linked to a pragmatic clinical “common-sense”. The patient's oral cavity rehabilitation therefore consisted in maintaining the dental stumps in positions 1.6-2.3-2.4 and inserting the implants - with the related differed implant stumps - in positions 1.5-1.4-2.2, to support a removable full denture, anchored to the aforementioned elements through conometric attachments (26). Occlusal elevations on dental elements 4.5-4.4-3.4-3.5 were necessarily combined with the outlined therapeutic project to rebalance the curve of Spee (27). Moreover, upon the patient's request, it was agreed to preserve the dental element 4.8 and the implant element 1.2 after conservative treatment; however, the patient was informed concerning the uselessness of element 4.8 in terms of chewing. Regarding this, the final mesial odontoplasty of element 4.8 is expected, as well as the impossibility to use element 1.2 for prosthetic purpose, due to the fracture of a portion of the implant margin that makes any load unbearable.

MATERIALS AND METHODS

The preparation of the patient's case consisted in taking initial pictures, realising study models, conducting a preliminary radiographic analysis of the bone availability, to measure the implant length and diameter in advance, and carrying out preliminary occlusal analysis, to obtain a pre-surgical guide indicating the prosthetic ideal inclination (Figs. 1, 2, 3).

Firstly, a professional oral hygiene session and dental element 2.3 conservative restoration in composite resin – exploiting the existing pivot - were performed. Then, the said element was subjected to the sub-gingival preparation with feather edge margin and covered with a conometric primary prosthetic work made in Chromium-Cobalt alloy. Furthermore, the pre-existing conometric primary prosthetic works on dental elements 1.6-2.4 were polished. Thereafter, the pre-existing mobile prosthesis was set up as a provisional prosthesis, temporarily anchored to the solely “ball attachment” on the previous implant 1.2. This procedure was feasible upon condition of stabilising the mentioned on-site attachment with cyanoacrylate, with the aim of impeding its rotation, which would otherwise cause the disinsertion from the implant due to fracture in the mesial margin of the peri-implant collar initially encountered. Secondly, after a few weeks, the first surgery phase was initiated by preparing the patient through an ancillary psychological pre-surgical treatment in the hour beforehand to help him deal with the procedure, and a supportive drug treatment through the administration of 20 drops of Diazepam just before the surgery. The patient was then seated and prepared in accordance with the traditional health and hygiene norms to guarantee the maximum sterility. Initially, perioral skin disinfection (povidone iodine 10%) was performed combined with Vaseline to moisten the tissues. The gingival surface was then treated with a topical anaesthetic (Lidocaine + cetrimonium bromide 15%) and, afterwards, the peripheral anaesthesia was inoculated at the vestibular fornix micro-circulation and the palatal levels (Articaine 4% + adrenaline 1/200,000). Following these steps, an oblique incision with tissue decollement was made at the vestibular para-crestal level, with a mid-thick incision at vestibular level and a full-thick incision at the palatal level (scalpel # 12C). The total bone exposition allowed to carry out the explorative milling at 5 mm with a lanceolate cutter (1.9 mm diameter) at the sites 2.2, 1.4 and 1.5, following the presurgical guide dictates. After checking the bone density (D3 Misch classification) (28), the first milling at 5 mm was performed (2.2 mm diameter) by using an implant probe, always keeping the pre-surgical guide, which was then removed to complete the milling by following the obtained inclination up to 13 mm. A second milling for 3 mm (2.8mm diameter) was subsequently performed, to avoid an excessive bone pressure during the insertion of the implant element. Three implants were inserted (Titanium 5 HRS surface) with a diameter of 2.9 mm and length of 12 mm up to 2 mm under the bony crest, to favour the prosthetic aesthetics (25). After inserting the screw tap on each implant element, a check-up orthopantomography was

carried out to verify the quality of the procedure (Figs. 4, 5). The site was then accurately sutured by executing a closing flap through single intra-papillary stitches in positions 1.6- 2.3 and a crossed horizontal mattress suture between the vestibular and palatal portions. The suture in vestibular para-crestal position obtained from the initial incision is therefore exploited, such that, due to the lateral position of the incision - thus the suture - in respect to the insertion site (glycolic/lactic acid absorbable suture), a decreased risk of implant stump infection is expected. Finally, the temporary total prosthesis was rebased with a soft silicon, to allow the smallest load possible on the surgical site. The patient was then discharged, after being provided with bactericidal and anti-inflammatory antibiotic pharmacological indications (amoxicillin with clavulanic acid 1 g every 8 hours for 6 days, and paracetamol with codeine 500mg + 30mg when needed), combined with post-surgery indications. A thorough hygiene and a soft diet for the first month were also recommended to the patient. After two weeks, the suture was removed, and the patient had to undergo monthly radiographic checks with hygiene for three months. Three months after surgery, the final radiographic control was performed to assess the full osseointegration of the implant elements. The positive outcome of this checkup authorised to proceed with the second surgical phase of re-opening, with the aim of initiating the prosthetic rehabilitation. The patient was then prepared once more with an ancillary psychological pre-surgical therapy and a drug treatment, identical to that described previously. The patient was seated and prepared in accordance with the traditional health and hygiene norms to guarantee the maximum sterility, as already reported.

Initially, the perioral skin disinfection (povidone iodine 10%) was performed, combined with Vaseline to moisten the tissues. The gingival surface was then treated with a topical anaesthetic (Lidocaine + cetrimonium bromide 15%) and, afterwards, the peripheral anaesthesia was inoculated at the vestibular fornix micro-circulation and the palatal levels (Articaine 4% + adrenaline 1/200,000). Following these steps, an oblique incision with tissue decollement was executed at the vestibular para-crestal level, with a midthick incision at vestibular level and a full-thick incision at palatal level (scalpel # 12C). The total bone exposure allowed the immediate display of the implant elements' peri-implant collar in positions 2.2, 1.4 and 1.5. The implemented approach consisted in immediately utilising the intermediate supports for screwing the conometric stumps, thus avoiding the usage of healing screws. On site 1.5, a support with a 7.5° angle and 5 mm in length was employed, on site 1.4, a 5 mm length support with a 15° angle and on-site 2.2, a 7 mm length straight support. Finally, primary conometrics were tightened in all sites, with a 3.3 mm diameter, a 4.3 mm height and a 5° angle. Following an additional orthopantomography check-up to verify the correct insertion with of the conometric stumps' intermediate supports in the implant elements, the site was accurately sutured (Figs. 6, 7, 8, 9). As in the previous intervention, the suture consisted in executing a closing flap through single intra-papillary stitches in positions 1.6-2.3 and a crossed horizontal mattress suture between the vestibular and palatal portions. The suture in palatal para-crestal position obtained from the initial incision was therefore exploited, expecting an increase in the thickness of the vestibular attached gingiva and a concurrent soft tissue guide towards a recovery suitable for the conometric stumps' intermediate supports (glycolic/lactic acid absorbable suture). Finally, the temporary total prosthesis was rearranged to allow its permanent usage while keeping the already mentioned supports and the related stumps. The patient was discharged, after being provided with bacteriostatic and anti-inflammatory antibiotic pharmacological indications (azithromycin 500 mg every 24 hours for three days, and paracetamol with codeine 500mg + 30mg when needed), combined with post-surgery indications. After two weeks, the suture was removed to proceed with the development of the permanent mobile total prosthesis. A first polysulfide precision impression was performed in relation to pictures of the patient's face and smile, starting from the previously-made individual spoon. By placing wax rims on the temporary flange, it was possible to identify the vertical dimension, assure the correct occlusion "key" through a precise mastication on auxiliary dedicated wax and point out the interdental midline related to the nose tip and the chin (Figs. 10, 11). Finally, the teeth trial - anterior aesthetic first, posterior functional after - was conducted, accompanied with the concurrent development of composite resin occlusal elevations on dental elements 3.4-3.5-4.4-4.5 to balance the mastication and improve the patient's curve of Spee (27). During the same session, the phonetic trial was also carried out, combined with an additional aesthetic evaluation by a relative. The final step consisted in incorporating three secondary conometric crowns of alloy (Chromium-Cobalt) to the prosthesis, which had been calibrated on the three primary conometric crowns on elements 1.6-2.3-2.4 and consolidated to a supporting base of alloy (Chromium-Cobalt). Moreover, three secondary conometric crowns of PEEK were inserted into the prosthesis through resinous rebasing (polymethylmethacrylate), calibrated on the primary conometric stumps of implant elements 1.5-1.4-2.2 (Figs. 12, 13, 14). In addition to this, the mesial-occlusal odontoplasty of dental element 4.8 was executed, to avoid its interference with achieved chewing balance (Fig. 15).

RESULTS

After a month from the procedure, the first clinical monitoring took place, focusing on the stability of implants, intermediate prosthetic components, and gingival and tissue structure. Then, after the first post-delivery quarter, a second clinical and radiographic test to analyse the stability of the above-mentioned elements was performed, together with professional hygiene. In both observations, the implants, prosthetic components, and gingival and tissue structure stability proved to be optimal; furthermore, the second test showed radiographic evidence of a full osseointegration. Following another 3-month period, a new professional hygiene was carried

out, together with the collection of additional photographic documentation (Fig. 16). During the first year, professional hygiene was performed every 3 months, thus guaranteeing a gingival maintenance treatment of extra-implant mucous canals and making the patient aware of the importance of these regimens to maintain an optimal prosthetic rehabilitation. The annual clinical and radiographic control of implant, intermediate prosthetic components, and gingival and tissue stability showed both clinical and radiographic positive results, observing only one mucositis episode affecting the implant at site 1.2, which was unexploited due to fractures. This inflammation was resolved with a laser-assisted supportive peri-implant treatment (laser diode – 810nm wavelength). At the end of the treatment, the patient received instructions to undergo professional hygiene every four months, to favour the durability of the realised implant-prosthetic rehabilitation. After two years, a clinical and radiographic control of stability was performed and showed positive results (Fig. 17).

DISCUSSION

The urge to identify a treatment that encounters the patient's clinical requirements and needs is essential nowadays in the dental profession. In the reported case, the patient requested a procedure to restore the functionality, as well as the morphology, of the stomatognathic system, although refusing a classical implant approach, which would have implied changes to the available bone thicknesses (29-31). The patient had also turned down the possibility to perform the exodontics of the elements in position 1.2 (implant) and 4.8 (dental) inside the oral cavity, hence complicating even more the rehabilitative procedure. In the perspective of achieving a common goal, the patient finally accepted to undergo a removable prosthetic rehabilitation, assisted by the clinician's decision-making flexibility. In particular, the rehabilitation would be supported, through conometric connection, by last-generation dental implants, which have demonstrated to handle the masticatory forces generated in the oral cavity (26) despite the limited diameter. In the last decade, the scientific community already approved removable prosthetic rehabilitations supported by dental implant through conometric connection (12-14). However, the reported case describes a procedure that, exploiting the original bone availability without additional changes, employs minimum-diameter dental implants (2.9 mm). These implants were inserted at sites 2.2, 1.4 and 1.5 and linked to the residual dental stumps on sites 1.6, 2.3 and 2.4 by means of a prosthetic device, developed in total conometric removable coupling on a mixed dental-implant support (26). As a completion to the rehabilitative project, it was also decided to rebalance the masticatory plane, by applying composite occlusal suspensions on the antagonist dental elements in positions 4.5, 4.4, 3.4 and 3.5. This procedure guarantees more stability to the entire stomatognathic system (27) and thus more durability to the applied implant-prosthetic rehabilitation. The medical hazard of exploiting implants with a 2.9 mm minimum diameter was then rebalanced by the concurrent secure additional support on the residual dental stumps, allowing an equal distribution of the masticatory load. Finally, there are two observations to be made. Firstly, the removable prosthesis anchored on dental and implant stumps allows to overcome the potential long-term stability issues, which are caused by the different mobility of the afore-mentioned elements (dental 150 μ m - implant around 0 μ m) (13). In case of a cemented or screwed fixed bridge prosthesis, this kind of problems would have been more probable (13, 29, 32-37). Secondly, the conometric connection permitted to grant a reinforced implantdental mixed anchoring system (38-42) and a proper distribution of the masticatory forces perpendicular to the stumps. Moreover, the tangential forces to the stumps, (43-45) which are generated by the daily removal, were reduced to minimum, due to the strict disconnection mode, almost perpendicular to the stumps, that is almost impossible to obtain with simpler ball connection systems. In this scenario, the chosen therapeutical plan permitted not only to achieve optimal clinical results in a patient who would otherwise reject any kind of treatment, but also to obtain additional benefits (46). Firstly, the application of a removable device enables a better domestic cleansing of the stumps, reducing the rate of the medium-long-term failures in patients with a scarce oral hygiene and easing the device readaptation in case of compromised stability of dental pillars over time. Secondly, the operating invasiveness reduction, together with the patient acknowledging the orthodontist as a person who understands their fears and demonstrates medical flexibility, leads to a reduction of anticipatory anxiety in the subject. Consequently, it was possible to apply an anxiolytic psychological and pharmacological approach, which otherwise would have probably shifted towards a higher level of unconsciousness, reaching the state of sedation.

21 Short-term sagittal changes of the upper and lower jaws in patients treated with acrylic-splint rapid palatal expander before growth peak

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Rapid palatal expansion can determine an improvement of the sagittal relationship between maxilla and mandible. The purpose of this study was to evaluate the skeletal and dentoalveolar effects of the upper and lower jaws on the sagittal plane in subjects treated with acrylic-splint rapid palatal expander before growth peak. 36 patients aged 6-10 years with a cervical vertebral maturation stage of CS1 or CS2 were selected. Skeletal and dentoalveolar variables on the cephalometric traces of the lateral telerradiographs were measured before (T0) and at the end (T1) of the orthodontic treatment. The same variables were measured in a subgroup (20 subjects) of the same sample, characterized by a skeletal Class II malocclusion ($ANB \geq 4^\circ$) at T0. Statistics used was paired samples t-test. The p-value was considered statistically significant for $P < 0.05$. In the whole sample ANB showed a significant decrease ($-0.96 \pm 1.75^\circ$). Pg-OLp and Co-OLp + Pg-OLp increased of 4.25 ± 6.07 mm and 4.89 ± 6.65 mm respectively. FMA angle showed a significant decrease ($-1.26 \pm 2.47^\circ$). In the subgroup with skeletal Class II malocclusion the results were similar, but it was also registered a significant increase of SNB ($1.37 \pm 2.14^\circ$). In addition to the correction of the cross-bite, the treatment with acrylic-splint rapid palatal expander determined an improvement of the dento-basal discrepancy in the maxilla, an improvement of the skeletal maxillo-mandibular relationships, an anterior repositioning and length increase of the mandible and a facial height reduction.

The rapid palatal expansion has acquired a role of primary importance in modern orthodontics as a safe, predictable and effective method to correct the transverse maxillary deficit (1). In addition to an increase of the transverse diameter of the palatal vault and the correction of the cross-bite, there are many data in the literature regarding the favorable effects of this therapy in increasing the amplitude of the nasal cavities and the length of the upper arch perimeter (2-19). Concerning the effects of the rapid palatal expansion on the sagittal plane, the opinions presented in the literature appear conflicting. Some Authors reported a forward and downward repositioning of the maxilla after rapid palatal expansion (20-23). Cleall et al. considered that the maxilla gets back to its original position during retention (24). Other Authors observed that the forward and downward displacement of the maxilla can be minimized by using a type of expander with acrylic occlusal splints (25). Other studies reported a spontaneous anterior repositioning of the mandible after rapid palatal expansion in patients with Class II malocclusion due to mandible retrusion (26-29). The aim of this study was to evaluate the skeletal and dentoalveolar effects at the level of upper and lower jaws on the sagittal plane in subjects treated with acrylic-splint rapid palatal expander before growth peak.

MATERIALS AND METHODS

In this study 36 subjects (18 males and 18 females) aged between 6 and 10 years were selected. At the beginning of the treatment (T0) the patients were in mixed dentition and their mean age was 8.11 ± 2.3 years. The inclusion criteria were: skeletal transverse deficit of the maxilla; monolateral or bilateral skeletal cross-bite; CS1 or CS2 cervical vertebral maturation stage according to Baccetti et al. (30). The exclusion criteria were: genetic or endocrine diseases that could affect the treatment plan; previous orthopaedic and/or orthodontic treatment; skeletal abnormalities or significant facial asymmetry (19,31-36). The transverse discrepancy of the patients was measured on the dental casts using a caliper with 0.01 mm accuracy to quantify the needed expansion. Since all subjects had a mixed dentition, the transverse discrepancy was the result of the difference between the superior intermolar distance (distance between the central fossae of the upper first permanent molars) and the inferior intermolar distance (distance between the top of the distobuccal cusps of the inferior first permanent molars). All subjects had an initial upper arch width inferior to 30 mm. The patients were treated with acrylic-splint rapid palatal expander (i.e. McNamara-type rapid palatal expander): it was composed of Hyrax-type screw embedded into a wireand- acrylic framework; the acrylic splints were bonded to the deciduous molars and the permanent first molars (37- 38). The patients' parents were instructed to activate the expansion screw twice a day until the palatal cusps of the maxillary posterior teeth approximated the buccal cusps of the mandibular posterior teeth: every activation was a 0.25 mm expansion. Once reached the correct expansion, the screw was blocked and the expander was kept in place for six months: this period was necessary to allow the reorganization of the midpalatal suture. At the end of this period (T1), the expander was removed, cleaned and given to the patient to wear it as retainer at night for further 6 months. If the expander was not sufficiently retentive, the patient wore a Hawley retainer (39). At the end of the orthodontic treatment skeletal and dentoalveolar variables on the cephalometric traces of the initial (T0) and final (T1) lateral telerradiographs were measured with Dolphin Imaging 11.7 software (Dolphin, Imaging & Management Solutions, Chatsworth, CA, USA). Parameters derived from Steiner, Tweed, Ricketts, Panchez and Bjork cephalometric analyses were measured in order to gather all the measurement variables often used in the literature (Table I) (40). This study was

approved by the Clinical Investigation Ethics Committee of Verona and Rovigo, Italy (protocol number 70252). The statistical analysis was performed using the software STATA (version 13; StataCorp LP, College Station, Texas, USA). Mean and standard deviation (SD) were calculated for all cephalometric variables at T0 (pre-treatment) and at T1 (after treatment). Paired samples t test was performed for the evaluation of the skeletal and dentoalveolar changes that occurred during treatment with rapid palatal expander. The p-value was considered statistically significant if less than 0.05. The same evaluation was performed for a subgroup (20 subjects) of the same sample, characterized by a skeletal Class II malocclusion ($ANB \geq 4^\circ$) at T0.

RESULTS

The results of the changes of the skeletal variables at T0 and T1 are reported in Table II. SNA and SNB showed no statistically significant differences between T0 and T1. ANB underwent a statistically significant decrease between T0 and T1 ($-0.96 \pm 1.75^\circ$, $P < 0.05$), indicating an improvement of the sagittal relationships between the maxilla and the mandible. Pancherz analysis was adopted to assess the positions of the maxilla, the condylar head and the mandible and the length of the mandible on the sagittal plane. No statistically significant differences were found for A-OLp (1.93 ± 5.23 mm, $P > 0.05$) and Co-OLp (0.61 ± 2.50 , $P > 0.05$). Pg-OLp showed a statistically significant increase (4.25 ± 6.07 mm, $P < 0.05$), suggesting an advancement of the mandibular position. As regards the total mandibular length, measured as Co-OLp + Pg-OLp, a statistically significant increase (4.89 ± 6.65 mm, $P < 0.05$) was found. FMA angle showed a statistically significant decrease between T0 and T1 (-1.26 ± 2.47 mm, $P > 0.05$), indicating a horizontally mandibular advancement rather than a vertical one. The results regarding the changes of the dentoalveolar variables at T0 and T1 are reported in Table III.

Only the variables related to the inclination of the upper incisors showed statistically significant changes: in particular, there was a proclination of the upper incisors given by the decrease of U1-OL angle ($-2.55 \pm 3.39^\circ$, $P < 0.05$) and by the increase of U1-SN angle ($3.12 \pm 4.07^\circ$, $P < 0.05$). The results regarding the changes of the skeletal and dentoalveolar variables at T0 and T1 in the subgroup of Class II malocclusion patients are reported in Table IV. With regard to the sagittal position of the maxilla, SNA and A-OLp did not show statistically significant differences between T0 and T1. The sagittal mandibular position was evaluated by analysing SNB and Pg-OLp. As regards the comparison between the values of Pg-OLp at T0 and T1, a statistically significant increase was found (3.85 ± 6.38 mm, $P < 0.05$), suggesting an advancement of the sagittal mandibular position. SNB increased of $1.37 \pm 2.14^\circ$ ($P < 0.05$). The maxillo-mandibular relationship was evaluated through ANB: the angle decreased of $1.27 \pm 1.63^\circ$ ($P < 0.05$). FMA showed a statistically significant decrease between T0 and T1 ($-2.01 \pm 2.06^\circ$, $P < 0.05$), indicating a mandibular advancement in the horizontal direction rather than in the vertical one. Regarding the dentoalveolar variables, the only significant change regarded the proclination of the upper incisors, as it was observed in the total sample.

DISCUSSION

No statistically significant differences were found in the sagittal position of the maxilla (expressed by SNA, A-OLp and Co-A) between T0 and T1. As these values were not significant, it can be inferred that the therapy with the acrylic-splint rapid palatal expander did not affect the maxillary growth in the anteroposterior direction. These results were in agreement with the studies conducted by Da Silva et al., Asanza et al. and Sarver et al. (25,41,42). In this latter study the Authors observed that the anterior displacement of the maxilla due to treatment with banded rapid palatal expander could be minimized through the use of an acrylic-splint rapid palatal expander: therefore, it can be an effective treatment option for patients with Class II malocclusion. Regarding the sagittal position and the length of the mandible, it was found: an increase of Pg-OLp distance, indicating an anterior displacement of the lower jaw; an increase of Pg-OLp + Co-OLp and Co-Gn, indicating an increased mandibular length. The anterior displacement of the mandible was in part due to the mandibular growth and in part to its anterior repositioning. The values representing the sagittal position of the mandible were even more expressive in the subgroup of Class II malocclusion patients. In particular, there was a statistically significant increase of SNB ($1.37 \pm 2.14^\circ$, $P < 0.05$) and Pg-OLp (3.85 ± 6.37 mm, $P < 0.05$) between T0 and T1. Therefore, the therapy with acrylic-splint rapid palatal expander favoured an advancement of the mandible thanks to its release from the dental occlusal contacts with the upper jaw: in this way, it led to an improvement of the maxillo-mandibular relationships. This was also confirmed by the statistically significant reduction of ANB both in the whole sample ($-0.96 \pm 1.75^\circ$, $P < 0.05$) as well as in the Class II subgroup ($-1.27 \pm 1.63^\circ$, $P < 0.05$). This suggested that the acrylic-splint rapid palatal expander can be an effective choice for the treatment of all those patients who have a transverse maxillary deficit associated with a mandibular retrusion. In the subjects with Class II malocclusion the therapy with rapid palatal expander favoured a spontaneous mandibular repositioning that led to an improvement of the maxillo-mandibular relationship. This is why it is important to perform the Frankel manoeuvre to assess the need of a palatal expansion before the orthodontic treatment in Class II malocclusion subjects with mandibular retrusion (43). This consideration, together with our results, is in agreement with a study by Guest et al, in which the sagittal effects of a group of Class II division I malocclusion subjects treated with acrylic-splint rapid palatal expander are compared with those of an untreated control group with the same malocclusion (26). These observations are also comparable to those reported by McNamara, who observed that the rapid palatal expansion led to a spontaneous growth or to an advancement of the mandible in subjects with Class II malocclusion (44-

45). Regarding the effects of the rapid palatal expansion on the vertical plane, there was a statistically significant decrease of FMA (-1.26 ± 2.47 mm, $P > 0.05$), indicating a facial height reduction. This might be caused by the likely intrusion of the posterior maxillary teeth, due to the action of masticatory forces on acrylic splints. This suggested that therapy with the acrylic splint rapid palatal expander can be very favourable in hyperdivergent subjects, who present a vertical mandibular growth pattern. Our results were similar to those by De Rossi et al. and Cohen and Silverman, who affirmed that the presence of the acrylic splints could inhibit the alveolar growth and the eruption of the posterior teeth, thus becoming the ideal choice for all those patients with an increased facial height and overly inclined mandibular plane (46-47). Regarding the analysed dentoalveolar variables, only the values representing the inclination of the upper incisors and the interincisal angle showed statistically significant variations. In particular, a proclination of the upper incisors was found. This finding could be due to the presence of the resin splints which determined an anterior position of the tongue in contact with the upper incisors, causing an almost continuous force able to procline them.

In addition to the correction of the cross-bite, the orthodontic treatment with acrylic-splint rapid palatal expander in subjects before growth peak determined: improvement of the dento-basal discrepancy in the upper jaw; improvement of the skeletal maxillomandibular relationship; anterior repositioning and length increase of the mandible; facial height reduction.

This therapy appears to be effective and advantageous in all those subjects that present a Class II malocclusion with mandibular retrusion and/or hyperdivergent growth pattern.

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Caso clinico

Ritratamento full-mouth in paziente Asa 1 con dentatura terminale e fallimenti implantari. In questi casi clinici è indispensabile seguire un protocollo validato (EVIDENCE BASED DENTISTRY) nelle sue fasi chirurgiche e protesiche garantendo un supporto biomeccanico adeguato.

IL COLUMBUS BRIDGE PROTOCOL ci garantisce una percentuale di successo sovrapponibile al carico differito in questi casi di elevata complessità chirurgico-protesica.

Le immagini extraorali della paziente indicano una perdita della dimensione verticale di occlusione (Figg. 1-2) e del sostegno del labbro superiore.

L'ortopantomografia e la visione intraorale a tempo 0 confermano la non predicibilità protesica degli elementi residui. La terapia proposta prevede l'estrazione degli elementi dentari residui e l'inserimento implantare post estrattivo con riabilitazione full arch "Columbus Bridge" superiore e inferiore (Figg. 3-4).

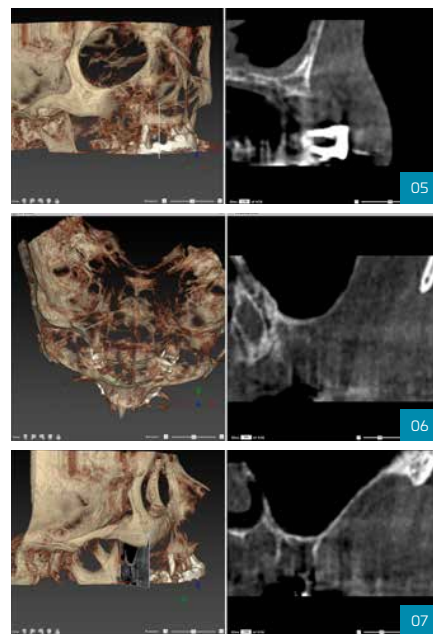
La pneumatizzazione moderata di entrambi i seni mascellari (Figg. 5-6-7) necessita di un appoggio distale per

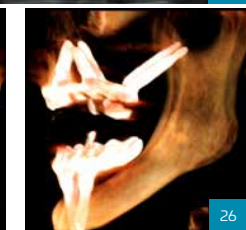
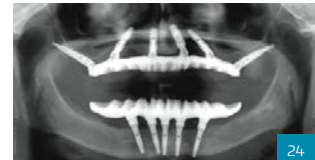
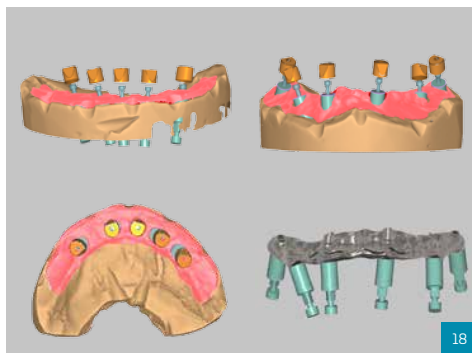
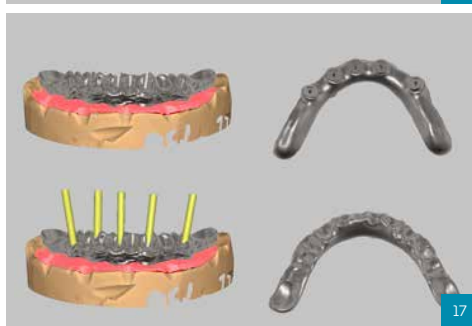
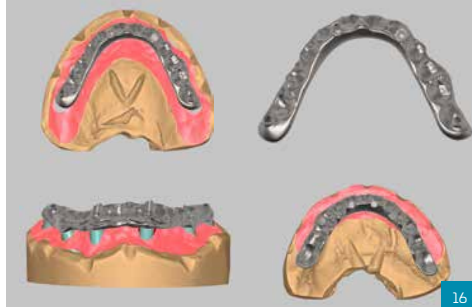
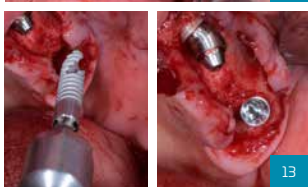
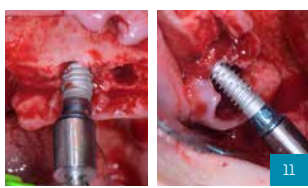
evitare cantilever di almeno 2 elementi per ogni quadrante che rappresenterebbero un potenziale fattore di rischio protesico. Vengono pertanto inseriti 2 impianti distali pterigoidei (Noris Medical) da 20 mm e 4 impianti Uniplant (Biomax) da 13 mm per 4,5 mm di diametro in regione pre-maxillare. Questi impianti, grazie al loro macrodesign, garantiscono elevata stabilità negli alveoli post estrattivi, permettendo di seguire il protocollo di carico immediato senza precludere il raggiungimento dell'osseointegrazione (Figg. 8-9-10-11-12-13-14-15).

Le fasi protesiche di laboratorio (Figg. 16-17-18) per la realizzazione del framework permanente sono progettate in ambiente EXOCAD. Lo spazio intermascellare, la distanza interimplantare, l'altezza dei canali mucosi sono valutati e progettati al CAD, comprese le ritenzioni e i supporti per il composito di rivestimento utilizzato secondo la tecnica della stratificazione incrementale in muffola trasparente. I volumi protesici disponibili ci indicano come scelta di elezione il titanio fresato al CAM per la sua elevata biocompatibilità nel contatto mucosa-bridge, il basso peso specifico, la resistenza e l'adesione metallo-composito (Figg. 19-20-21-22-23).

L'ortopantomografia di controllo finale (Fig. 24) e la CBCT (Figg. 25-26) evidenziano la corretta distribuzione full arch degli impianti intra ed extraorali, la corretta morfologia del framework e il fit sui sei pilastri conici avvitati sugli Impianti Uniplant e Noris Pteryfit. Nelle visioni sagittali destra e sinistra è possibile osservare l'inclinazione reale mesio-distale dei due impianti extramascellari distali da 20 mm ancorati nei processi pterigoidei dello sfenoide.

Nella figura 27 è possibile apprezzare il risultato della riabilitazione definitiva e il nuovo sorriso della paziente.








Systematic Review

A New Matrix for Soft Tissue Management

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Abstract: Gingival recession is a mucogingival defect defined as the apical shifting of the gingival margin in relation to the CEJ. The use of connective tissue autografts allows for the obtention of very satisfactory results but is associated with undoubted disadvantages. The aim of the present work is to carry out a systematic review of the literature using a meta-analysis to investigate the clinical efficacy of xenogeneic collagen matrix (XCM) in the treatment of gingival recessions. This revision was carried out strictly following the guidelines published in the Cochrane Handbook. Thus, a meta-analysis was performed to calculate relative risks and standardized mean differences for each of the variables considered. The results of the meta-analysis show that CAF + CTG was statistically better than CAF + XCM in almost all the variables analyzed: complete root coverage (RR 0.46), mean root coverage (SMD -0.89), recession reduction (SMD -0.98), clinical attachment level (SMD -0.63) and gingival thickness (SMD -1.68). Meanwhile, CAF + XCM was slightly better than CAF alone in regard to: mean root coverage (SMD 0.51), recession reduction (SMD 0.47) and gingival thickness (SMD 0.56). It is possible to conclude that CAF + CTG still remains the gold standard in radicular coverage.

Keywords: gingival recession; collagen matrix; connective tissue graft; free gingival graft



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1. Introduction

Gingival recession (GR) is a mucogingival defect defined as the apical shifting of the gingival margin in relation to its physiological position, located 1–2 mm coronally to the cemento-enamel junction (CEJ) [1,2]. This defect is associated with aesthetic impairment because of the exposure of root surface and/or other conditions such as dentinal hypersensitivity and abrasive or carious lesions at the cervical area of the teeth. The treatment of these defects evolved over the years [3,4] until the introduction of bilaminar techniques [5], which consist of the use of a connective tissue graft (CTG) partially or totally covered by a pedunculated flap [6]. According to recent literature reviews, CTG below a coronally advanced flap (CAF) represents the gold standard for the treatment of gingival recessions, as it yields better results in short- and long-term follow-ups [7]. The use of connective tissue autografts in these periodontal surgery procedures yields very satisfactory results even if it is associated with undoubted disadvantages related to: post-operative morbidity, duration of surgery and limited availability of harvested tissue [8]. To overcome these unfavorable conditions, new biomaterials were developed: barrier membranes, enamel matrix derivatives [9] and acellular dermal matrix [10,11]. The latter, derived from human donors, is associated with ethical problems and the risk of transmitting infectious diseases [12]. For these reasons, a new xenogeneic collagen matrix (XCM) of porcine origin, indicated for root coverage and other periodontal plastic surgery, has recently been marketed. Different XCMs are produced by different manufacturers, but those most used in the clinical scenario are characterized by a bi-layered structure of type I and III collagen without cross-linking [13]. The compact layer is thin and less permeable to cellular infiltration while the spongy layer is thicker than the latter, and the presence of large pores in the thicker layer allows a huge degree of cellular migration and proliferation [14]. As an alternative, another commercial

product exists, consisting of a single layer with interconnected pores and parallel drilling peaks on the side facing the pristine connective tissue in order to promote neo-angiogenesis. Another variant consists of a porcine collagen matrix with resorbable interconnected pores and volumetric stability, thanks to chemical cross-linking [15].

Nowadays, the real effect of XCMs on the treatment of GRs is unclear. The aim of the present work is to carry out a systematic review of literature with meta-analysis to investigate the clinical efficacy of XCM in the treatment of GRs.

2. Materials and Methods

This study followed the PRISMA statement guidelines [15]. This systematic review was conducted according to the population, intervention, control and outcome (PICO) format. We analyzed clinical trials involving patients with at least one gingival recession classified as Miller I or II (P) who were treated with xenogeneic collagen matrix + CAF (I) or with subepithelial connective tissue graft + CAF or coronally advanced flap alone (C) in order to answer a specific question: the effectiveness of these procedures at least 6 months after surgery (O) (Figure 1).



Figure 1. (A) Mucogingival defect of the first mandibular molar; (B) insertion of the xenogeneic collagen matrix; (C) flap suture; (D) healing of the surgical site after 6 months.

2.1. Focused Question

Is xenogeneic collagen matrix superior than subepithelial connective tissue graft + CAF or coronally advanced flap alone with regard to the treatment of GRs?

2.2. Information Sources

Electronic research was performed through the MEDLINE (PubMed) and Cochrane Library databases. In addition, in order to further increase the number of eligible articles

and not omit potentially relevant publications, an analysis of the reference list of the main literature reviews and studies performed on the topic of interest was carried out.

2.3. Search Strategy

The electronic search was conducted by four independent examiners to minimize reviewer biases, applying the following filters: human studies, date of publication starting 01/01/1998 up to the time of the search (May 2022) and articles published exclusively in English. The search strategy made use of the following terms: “collagen matrix” OR “acellular dermal matrix” OR “dermal matrix allograft” OR “alloderm” OR “keratinized gingiva” OR “keratinized tissue” OR “soft tissue graft” OR “subepithelial connective tissue graft” OR “free gingival graft” OR “mucograft” OR “mucoderm” OR “gingival autograft” OR “attached gingiva” OR “attached mucosa” OR “connective tissue graft” AND “gingival recession”.

2.4. Eligibility Criteria

The following inclusion and exclusion criteria were applied in order to carry out study selection.

2.4.1. Inclusion Criteria

- Randomized controlled clinical trials (RCT) and prospective studies with a minimum follow-up of 6 months, which is necessary for the complete healing and maturation of soft tissues subjected to surgery [16];
- Studies with ≥ 5 patients involved;
- Patients with single or multiple GRs classified as class I or II according to Miller 4 or class RT1 according to Cairo et al. [2];
- Studies applying these types of surgery: CAF/tunnel + XCM, CAF/tunnel + CTG, or CAF.

2.4.2. Exclusion Criteria

- In vitro studies, animal studies, retrospective studies, case reports, case series, and systematic reviews;
- Studies with a follow-up < 6 months;
- Studies with < 5 patients involved;
- Patients with single or multiple GRs classified as class III or IV according to Miller [4] or class RT2 or RT3 according to Cairo et al. [2]. We decided to exclude these types of defects as they involve a loss of attachment and bone support at the interproximal level that does not allow for complete and predictable root coverage;
- Surgical interventions other than those previously specified, with biomaterials other than the xenogeneic collagen matrix or with interventions that, although adopting XCM, aimed to compare two different surgical techniques.

2.5. Data Items

The variables sought in each study were defined as follows:

- Complete root coverage (CRC), which is a percentage value describing the number of sites, with respect to the total number of sites treated, that obtained a complete radicular covering at a given time of follow-up. The formula to calculate it is the following: $CRC = (n. \text{ of sites with CRC}) / (\text{total n. of sites treated}) \times 100\%$;
- Mean root coverage (MRC), which is a percentage value that describes the rate of reduction of the recession compared to the initial recession;
- Recession reduction (RecRed), which is a millimeter value that describes the difference between the recession measure at a given follow-up and the measure of the initial recession;
- Differential clinical attachment level (Δ CAL), which reflects the gain or loss of CAL at the end of the time of a given follow-up;

- Differential keratinized tissue width (Δ KTW). KTW is the distance from the free gingival margin to muco-gingival junction;
- Differential gingival thickness (Δ GT). GT is a millimeter measurement that indicates the thickness of the attached gingiva.

2.6. Study Selection

Titles deriving from the research previously highlighted were reviewed (identification) by two examiners. In the case of disagreement, the two reviewers discussed each case jointly to arrive at a final decision concerning inclusion or exclusion. Articles identified as potentially useful through analysis of the title only were then selected for a more in-depth investigation by reading the abstract. In the examination of the abstract (screening), attention was paid to assessing the compliance of the study with the inclusion criteria. The selected studies were saved as a digital or paper version and submitted to a reading of the full-text (eligibility). In this way, only articles that conformed to the aforementioned criteria were included (included).

2.7. Data Extraction

Data extraction was performed by filling in a table with the following data: author, publication year, study design, setting, type of test surgery, type of control surgery, total number of patients, number of test patients, number of control patients, GR type, total number of sites, number of test sites, number of control sites, primary outcomes test, primary outcomes control, secondary outcomes test, secondary outcomes control, patient-reported outcome test (pain, post-operative bleeding or swelling), aesthetics, patient-reported outcome control, follow-up and number of drop-outs.

2.8. Quality Assessment

The RCTs included in the meta-analysis were qualitatively assessed using the Cochrane Collaboration tool [17]. The following parameters were adopted for the evaluation of risk of bias: random sequence generation and allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), selective reporting (reporting bias) and other possible reasons for bias.

2.9. Meta-Analysis

A meta-analysis was performed, splitting the selected studies into two groups based on the performed surgical technique: (1) CAF + XCM vs. CAF + CTG and (2) CAF + XCM vs. CAF. Since the result of root coverage may follow different temporal trends between the various techniques, only the studies with a 12-month follow-up were included in the meta-analysis. The results of the meta-analysis were expressed as standardized mean difference (SMD) for quantitative variables (MRC, RecRed, Δ CAL, Δ KTW, and Δ GT) and as relative risk (RR) for the qualitative variable (CRC). The magnitude of the SMD was interpreted as mild if SMD = 0.2, mean if SMD = 0.5 and high if SMD = 0.8. [18]. The heterogeneity between studies was assessed with the homonymous test and quantified with the heterogeneity index of Higgins (I^2), which describes the proportion of heterogeneity of the single studies that cannot be explained by the sampling error and has the advantage of being intrinsically independent from the number of studies. Since the heterogeneity test was significant and/or I^2 was > 30% [19,20] for all the variables considered, a statistical model with “random” effects was used. Arbitrarily, heterogeneity is considered low if I^2 is less than 50%, substantial if I^2 is between 50% and 75% and considerable/high if this parameter exceeds 75%. The pooled estimates and relative confidence intervals were calculated using the DerSimonian and Laird method [21]. The results were graphically represented using a forest plot. The level of statistical significance was set at 5% and confidence intervals (CI) were calculated at 95%. All data was analyzed with the STATA Software (Version 15), StataCorp 4905 Lakeway Drive College Station, Texas 77845 USA.

3. Results

3.1. Study Selection

The electronic search through the PubMed database identified 902 publications, while the search using the Cochrane Library database identified 565 titles. Following the removal of all duplicates, 1151 articles were identified from 1998 to 2022. Among these, 214 publications were maintained for screening. After the reading of all abstracts, 18 studies positive for eligibility were read entirely (full-text). The reading of full-texts allowed for the exclusion of 4 articles with reason, so the electronic search identified 14 articles, whose data are reported in Table 1 [22–36]. A flow chart summarizing the study selection procedure was constructed in accordance with PRISMA guidelines (2009) (Figure 2).

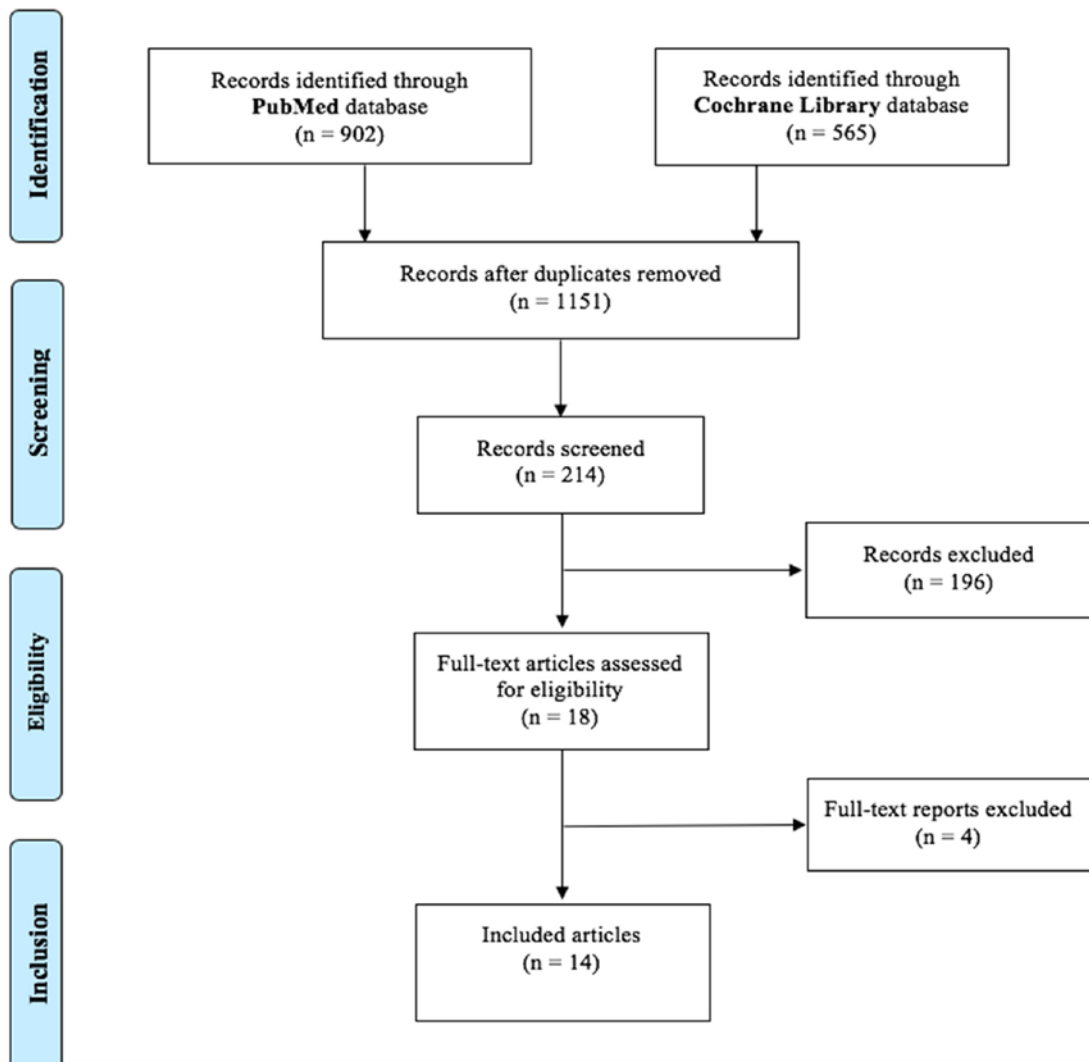


Figure 2. Flow chart of study selection.

Table 1. Articles included from the study selection.

Authors	Year	Design	Setting	N° Patients	N° Sites	Test Surgery	Control Surgery	Type of Defect	Follow-Up (Months)
Matoh et al. [23]	2019	RCT (split mouth)	University	10	20	CAF + XCM	CAF + CTG	single GRs	12
Pietruska et al. [24]	2019	RCT (split mouth)	University	20	91	tunnel + XCM	tunnel + CTG	multiple GRs	12
Tonetti et al. [25]	2018	RCT (parallel groups)	University	187	485	CAF + XCM	CAF + CTG	multiple GRs	6
Jepsen et al. [26]	2017	RCT (split mouth)	University	18	36	CAF + XCM	CAF	single GRs	36
Tatarakis et al. [35]	2017	RCT (parallel groups)	University	8	8	CAF + XCM	CAF + CTG	single GRs	6
Cieslik-Wegwmund et al. [27]	2016	RCT (parallel groups)	University	28	106	tunnel + XCM	tunnel + CTG	multiple GRs	6
McGuire et al. [28]	2016	RCT (split mouth)	Private practice	17	34	CAF + XCM	CAF + CTG	single GRs	60
Moreira et al. [34]	2016	RCT (parallel groups)	University	40	40	CAF + XCM	CAF	single GRs	6
Stefanini et al. [29]	2016	RCT (split mouth)	University and private practice	45	90	CAF + XCM	CAF	single GRs	12
Cardaropoli et al. [30]	2014	RCT (parallel groups)	Not specified	32	113	CAF + XCM	CAF	multiple GRs	12
Aroca et al. [31]	2013	RCT (split mouth)	University	22	156	tunnel + XCM	tunnel + CTG	multiple GRs	12
Jepsen et al. [36]	2013	RCT (split mouth)	University and private practice	45	90	CAF + XCM	CAF	single GRs	6
Cardaropoli et al. [32]	2012	RCT (parallel groups)	Private practice	18	22	CAF + XCM	CAF + CTG	multiple GRs	12
McGuire et al. [33]	2010	RCT (split mouth)	Private practice	25	50	CAF + XCM	CAF + CTG	single GRs	12

3.2. Characteristics of the Included Study

As stated in inclusion criteria, all 14 studies included in this review were randomized controlled clinical trials (RCTs) [22–36]. Eight of these articles were performed with a split mouth design, in which each patient was treated with both test and control surgical intervention; in six studies, a parallel groups design was adopted in order to divide patients into two groups treated with the test or control surgery, respectively. All publications compared two types of periodontal surgery for GRs: CAF/tunnel + XCM (test) vs. CAF/tunnel + CTG or CAF alone (control).

The number of patients included in each study ranged from 8 to 187 and the number of sites treated varied from 8 to 485. The number of patient drop-outs was reported in all articles, most of which were 0. Only four patients from two articles [13,25] dropped out of the study: the number of drop-outs was so low that it did not influence the results.

In eight studies single GRs were treated, while in the remaining six studies multiple GRs were subjected to surgery. Only few articles reported the reason why patients asked for intervention: in most cases the indications for the intervention were represented by the aesthetic need to mask the mucogingival defect and/or the treatment of dentinal hypersensitivity. For further details see Table 1.

3.3. Risk of Bias

The assessment of the risk of bias within the studies included in this review is summarized in Figure 3.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Matoh et al, 2019	+	+	+	+	+	+	?
Pietruska et al, 2019	+	+	+	+	+	+	+
Tonetti et al, 2018	+	+	+	+	+	+	+
Jepsen et al, 2017	+	+	+	+	+	+	?
Tatarakis et al, 2017	+	+	+	?	+	+	?
Cieslik-Wegwmund et al, 2016	+	+	+	+	+	+	+
McGuire et al, 2016	+	+	+	+	+	+	?
Moreira et al, 2016	+	+	+	+	+	+	+
Stefanini et al, 2016	+	+	+	+	+	+	+
Cardaropoli et al, 2014	+	?	+	+	+	+	+
Aroca et al, 2013	+	?	+	+	+	+	?
Jepsen et al, 2013	+	+	+	+	+	+	+
Cardaropoli et al, 2012	+	?	+	+	+	+	?
McGuire et al, 2010	+	+	+	+	+	+	?

Figure 3. Assessment of risk of bias.

Six articles were classified as low risk of bias, while eight publications were classified as unclear risk of bias. In particular, with regard to “random sequence generation”, the risk of bias was adequate in all publications. “Allocation concealment” was generally performed using an opaque envelope containing the type of intervention that the operator had to perform on the patient: this envelope was opened only after the design of the flap on the treatment site. This risk of error was unclear in three articles. The blinding of participants to the type of intervention selected was not possible due to the nature of the intervention itself, which required either the execution of a second surgical site on the palate for collecting the connective graft or the use of the collagen matrix/CAF alone. The blinding of the staff in relation to the type of surgery performed was obviously not possible (the surgeon knows the type of intervention he is carrying out on the patient). Despite this, it is the opinion of the author that performance bias did not compromise the quality of the studies considered, as in oral surgery it is very difficult, if not impossible, to eliminate this bias. For these reasons, it was arbitrarily decided to consider all articles low-risk with regard to performance bias. Only one article [34] was classified as unclear risk of bias relative to “detection bias”. Despite some limited patient drop-outs (4 drop-outs), it is possible to state that there were no incomplete data. Furthermore, no errors were reported in reporting the results. As regards the “other bias” section, it was decided to attribute a risk of unclear bias to the articles in which the collagen matrix was subsidized by the manufacturer.

3.4. Results of Individual Studies

The parameter CRC was reported by 13 articles: it ranged from 14.3% to 100% of treated sites. Thirteen studies reported the parameter MRC, which varied in a range from 53.20% \pm 32.17% to 99.3% \pm 2.54%. The parameter RecRed was present in eight

publications and ranged from $1.00\% \pm 0.69\%$ to $2.95\% \pm 0.69\%$. For the values of the other parameters and for further details see Table 2.

3.5. Synthesis of Results

In order to reduce the heterogeneity between studies and to improve the quality of the statistics, only the studies with a 12-month follow-up were included in the meta-analysis. There were eight publications included in the meta-analysis [22,23,25,28–32] and six parameters considered (CRC, MRC, RecRed, Δ CAL, Δ KTW and Δ GT). For each parameter, we created a forest plot in order to explore the efficacy of CAF + XCM (test) compared to CAF + CTG or CAF alone (control).

- Complete root coverage (Figure 4): the meta-analysis shows a statistically significant difference in favor of CAF + CTG compared to CAF + XCM relative to the parameter of complete root coverage at the 12-month follow-up: RR (relative risk) 0.46; 95% CI (confidence interval) from 0.24 to 0.87; $p = 0.018$. On the contrary, the difference between CAF + XCM and CAF alone is not statistically significant: RR 1.32; 95% CI from 0.96 to 1.82; $p = 0.085$.
- Mean root coverage (Figure 5): the statistical analysis shows a statistically significant difference in favor of CAF + CTG compared to CAF + XCM relative to the parameter mean root coverage at 12-months follow-up: SMD (standardized mean difference) -0.89 ; 95% CI from -1.12 to -0.66 ; $p < 0.001$. The difference between CAF + XCM and CAF alone is statistically significant in favor of the first surgical procedure: SMD 0.51; 95% CI from 0.002 to 1.01; $p = 0.049$. Notice that SMD is the ratio between the means and the estimated common standard deviation.

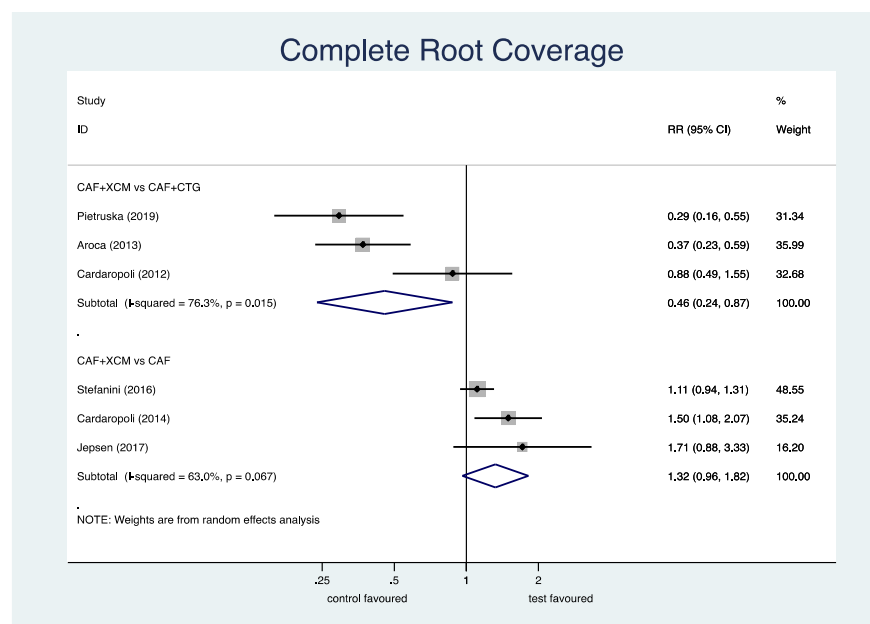


Figure 4. Forest plot relating to complete root coverage.

Table 2. Parameters used in the articles and their values.

Authors	Year	Surgery Test VS Control	CRC (%)	MRC (%)	RecRed (mm)	Δ CAL (mm)	Δ KTW (mm)	Δ GT (mm)	Follow-Up (Months)
Matoh et al. [23]	2019	CAF + XCM	70	85 \pm 24	-	-	-	0.3 \pm 0.2	12
		CAF + CTG	100	100	-	-	-	0.9 \pm 0.2	
Pietruska et al. [24]	2019	Tunnel + XCM	19.6	53.20 \pm 32.17	1.00 \pm 0.69	-	0.52 \pm 0.65	0.27 \pm 0.40	12
		Tunnel + CTG	68.8	83.10 \pm 27.63	1.54 \pm 0.58	-	2.78 \pm 1.53	1.1 \pm 0.54	
Tonetti et al. [25]	2018	CAF + XCM	48	-	1.7 \pm 1.1	-	-0.1 \pm 1.1	-	6
		CAF + CTG	70	-	2.1 \pm 1	-	0.5 \pm 1.2	-	
Jepsen et al. [26]	2017	CAF + XCM	61.1	91.70 \pm 12.05	2.92 \pm 0.71	3.17 \pm 1.11	1.92 \pm 1	0.59 \pm 0.39	36
		CAF + CTG	100	100	-	-	-	0.9 \pm 0.2	
Cieslik-Wegwmund et al. [27]	2016	Tunnel + XCM	14.3	91 \pm 13	-	-	-	-	6
		Tunnel + CTG	71.4	95 \pm 11	-	-	-	-	
McGuire et al. [28]	2016	CAF + XCM	52.9	77.6 \pm 29.2	-	-	-	-	60
		CAF + CTG	88.2	95.5 \pm 12.8	-	-	-	-	
Moreira et al. [34]	2016	CAF + XCM	40	77 \pm 21.2	2.41 \pm 0.73	-	-	0.40 \pm 0.19	6
		CAF	35	72 \pm 14.4	2.25 \pm 0.50	-	-	0.14 \pm 0.29	
Stefanini et al. [29]	2016	CAF + XCM	93.3	76.28 \pm 28.07	2.48 \pm 1.46	-	1.06 \pm 1.07	0.52 \pm 0.46	12
		CAF	84.4	75.05 \pm 25.24	2.26 \pm 1.17	-	0.64 \pm 1.05	0.27 \pm 0.43	
Cardaropoli et al. [30]	2014	CAF + XCM	72.4	93.25 \pm 10.01	2.28 \pm 0.82	-	-	-	12
		CAF	48.1	81.49 \pm 23.45	1.85 \pm 0.99	-	-	-	
Aroca et al. [31]	2013	Tunnel + XCM	23	71 \pm 21	-	-	-	-	12
		Tunnel + CTG	59	90 \pm 18	-	-	-	-	
Cardaropoli et al. [32]	2012	CAF + XCM	72	94.32 \pm 11.68	2.86 \pm 0.39	2.41 \pm 0.83	1.23 \pm 0.61	1 \pm 0.32	12
		CAF + CTG	81	96.97 \pm 6.74	2.95 \pm 0.69	2.95 \pm 0.82	1.27 \pm 0.65	1.23 \pm 0.47	
McGuire et al. [33]	2010	CAF + XCM	-	88.5 \pm 21.08	2.17 \pm 0.67	2.26 \pm 1.21	1.11 \pm 0.82	-	12
		CAF + CTG	-	99.3 \pm 2.54	3.17 \pm 0.38	2.85 \pm 0.63	1.09 \pm 1.6	-	

- Recession reduction (Figure 6): the difference between CAF + XCM and CAF + CTG is statistically significant in favor of the latter procedure relative to the reduction of recession depth 12 months after surgery: SMD -0.98 ; 95% CI from -1.80 to -0.15 ; $p = 0.02$. Furthermore, there is a statistically significant difference between CAF + XCM and CAF alone in favor of the first procedure: SMD 0.47 ; 95% CI from 0.10 to 0.85 ; $p = 0.013$.
- Differential clinical attachment level (Figure 7): the meta-analysis shows a statistically significant difference in favor of CAF + CTG compared to CAF + XCM relative to the

parameter of clinical attachment level at the 12-month follow-up: SMD -0.63 ; 95% CI from -1.10 to -0.15 ; $p = 0.01$.

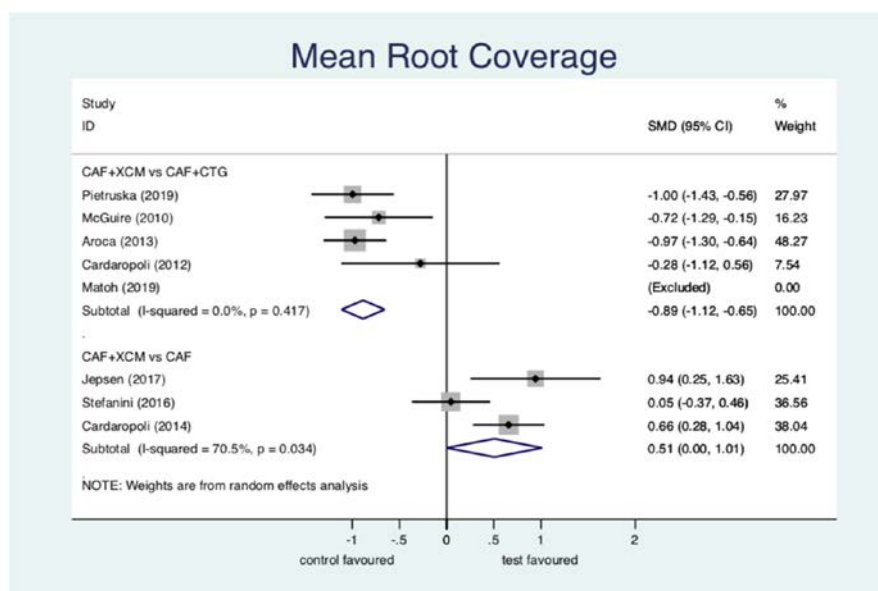


Figure 5. Forest plot relating to mean root coverage.

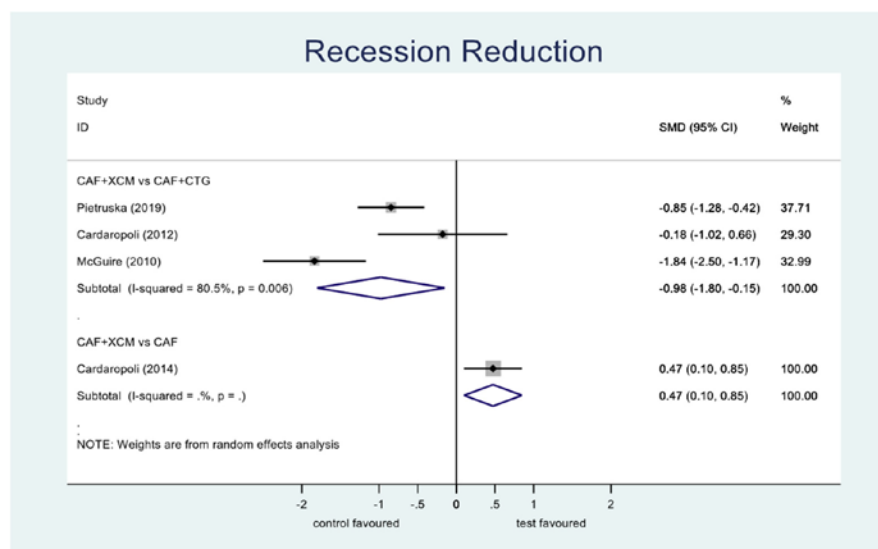


Figure 6. Forest plot relating to recession reduction.

- Differential keratinized tissue width (Figure 8): the difference between CAF + XCM and CAF + CTG is not statistically significant relative to the parameter Δ KTW 12 months after periodontal surgery: SMD -0.68 ; 95% CI from -2.06 to 0.71 ; $p = 0.34$. The difference between CAF + XCM and CAF alone is not statistically significant too: SMD 0.27 ; 95% CI from -0.15 to 0.68 ; $p = 0.209$.

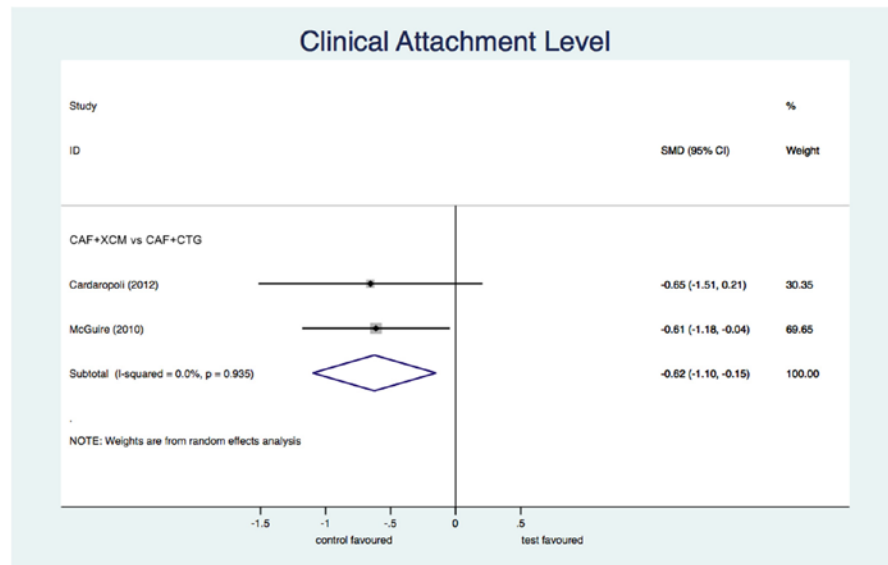


Figure 7. Forest plot relating to the clinical attachment level.

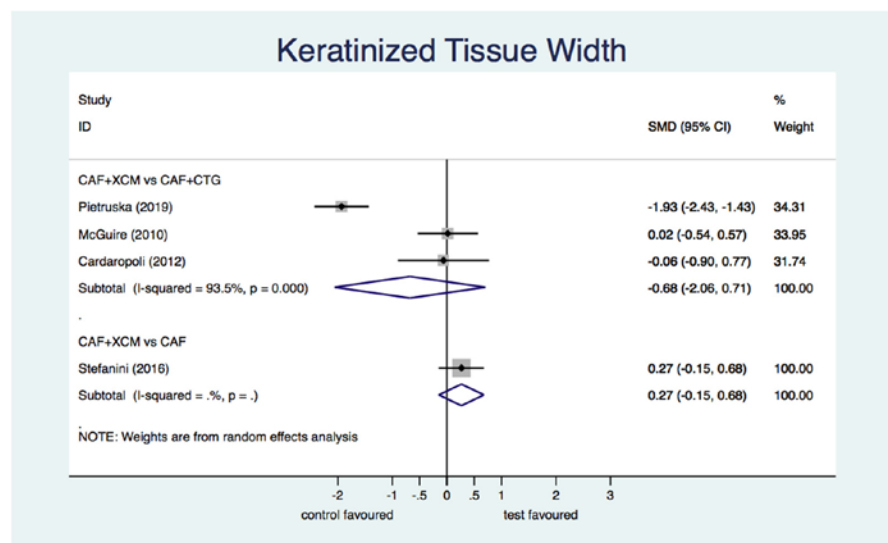


Figure 8. Forest plot relating to keratinized tissue width.

- Differential gingival thickness (Figure 9): the statistical analysis finds a statistically significant difference in favor of CAF + CTG compared to CAF + XCM relative to gingival thickness gain at 12-months follow-up: SMD -1.68 ; 95% CI from -2.78 to -0.58 ; $p = 0.003$. The difference between CAF + XCM and CAF alone is statistically significant in favor of the first procedure: SMD 0.56 ; 95% CI from 0.14 to 0.98 ; $p = 0.009$.

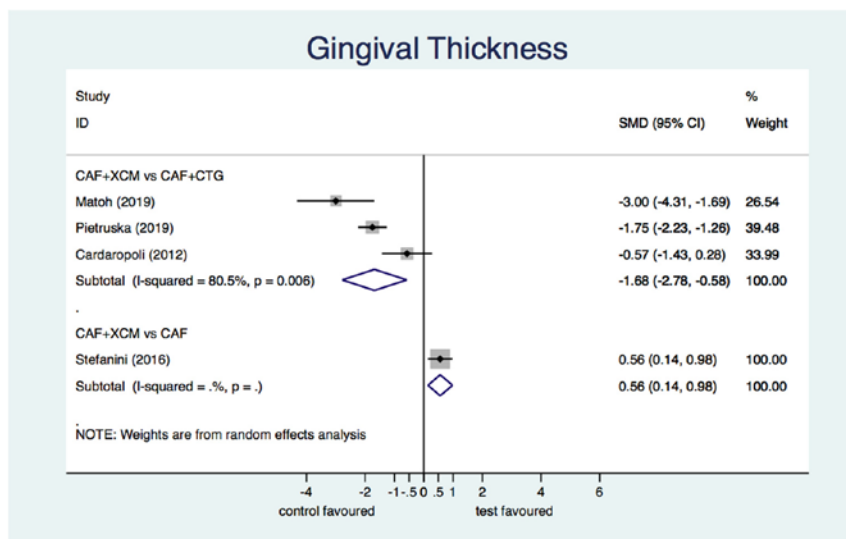


Figure 9. Forest plot relating to gingival thickness.

4. Discussion

4.1. Quantitative Analysis of Evidence

From a quantitative point of view, the meta-analysis performed in this study stated that CAF + XCM was significantly worse than CAF + CTG with regard to most of the parameters considered (CRC, MRC, RecRed, ΔCAL and ΔGT). In fact, the probability to achieve a complete root coverage with the matrix was halved, and gingival thickness, mean root coverage and recession reduction were decreased by about 1–1.5 standard deviations. Relative to the parameter ΔKTW, the difference between CAF + XCM and CAF + CTG, though in favor of the latter, was not statistically significant.

However, CAF + XCM was slightly superior to CAF alone with respect to gingival thickness, mean root coverage and recession reduction. The increase, although significant, was only about half of the common standard deviation.

The results of this meta-analysis could be used to realize a rank of the three investigated procedures: the most effective result of CAF + CTG, followed by CAF + XCM and CAF alone, respectively. It is important to emphasize that the meta-analyses were performed considering the results at 12 months because of the lack of wider follow-up data in randomized controlled clinical trials selected from scientific literature. Hence, researchers should make a greater effort to perform delayed clinical evaluations at 24 and 36 months on patients enrolled in randomized clinical trials.

In the scientific literature, there are 16 systematic reviews with meta-analysis on this topic [37–52]. The two main systematic reviews with meta-analysis are Atieh et al. [37] and Huang et al. [38]. The latter has the disadvantage of not reporting any forest plots or useful graphs with interpretation of the results as well as using data coming from studies with different follow-up periods, while the first publication includes a reduced number of studies. With respect to CAF + XCM vs. CAF + CTG, previous reviews are consistent with the results of this meta-analysis as regards most of parameters considered; the only differences concern MRC (Atieh et al. did not report a statistically significant difference between the two procedures) and ΔKTW (Huang et al. reported a statistically significant difference between the two procedures). With respect to CAF + XCM vs. CAF alone, Huang et al. and Atieh et al. reported results consistent with those of this meta-analysis; the only difference concerns CRC, since Huang et al. indicated that CAF + XCM was statistically better than CAF alone.

4.2. Qualitative Analysis of Evidence

Bilaminar techniques are considered the gold standard in gingival recession surgery because of their proven efficacy, which was confirmed by our meta-analysis too. A recent review of literature [9] stated that the procedure of CAF + CTG, analyzed in 28 randomized controlled clinical trials, achieved a mean root coverage of 84.7% and a complete root coverage of 51.8%. Notwithstanding these good results, connective tissue harvesting from a patient's palate is associated with some disadvantages, such as post-operative pain or discomfort, limited tissue availability and long chair time [8]. Xenogeneic collagen matrix was produced with the aim of overcoming the above-mentioned disadvantages. In fact, in the randomized controlled clinical trial of Tonetti et al. [24], post-operative pain, investigated using a visual analogue scale, was always slightly lower in the group treated with XCM compared to that of the group treated with a connective tissue graft, although these results did not achieve statistical significance; a study published by Aroca et al. [30] investigated post-operative pain through the VAS scale: patients who received collagen matrix complained of a statistically lower pain than patients with connective tissue autografts. Despite the limited scientific evidence, these data suggest that collagen matrix allows for the reduction of post-operative pain in patients treated for root coverage and avoids a second surgical site. Thus, reduction of patient morbidity is one of XCM's major advantages.

The possibility of avoiding the collection of a connective tissue graft from the palate is also associated with reduction of surgical time, which is a substantial advantage, especially for phobic patients [24,30].

Another aspect that could support the use of XCM is the limited availability of autologous CTG, which is a problem in the case of multiple adjacent recessions.

Finally, as regards patients' aesthetic satisfaction, in most of selected studies results were slightly higher or comparable with those obtained using a connective tissue graft, although differences between the two types of procedure never reached statistical significance. Therefore, the aesthetic equivalence of XCM and CTG makes both clinicians and patients particularly satisfied about the aesthetics of soft tissue following root coverage with XCM.

4.3. Quality and Limitations of Included Studies

The assessment of the reported studies has already been extensively described in the [Results Section](#), to which the authors refer the reader.

5. Conclusions

Within the limits of the present work, it is possible to state that the use of xenogeneic collagen matrix under a coronally advanced flap or a tunnel to achieve root covering tends to show a slightly greater efficacy compared to the results of CAF alone. However, the results achieved with CAF + XCM were lower than those with CAF + CTG in relation to all clinical parameters observed. Therefore, it is possible rank these root covering procedures in decreasing order of efficacy:

1. CAF/tunnel + CTG;
2. CAF/tunnel + XCM;
3. CAF.

XCM was worse than CTG in relation to all the clinical parameters analyzed, but it has undoubted advantages that in some situations make it preferable even to autografting. In fact, it avoids the preparation of a donor surgical site for the harvesting of connective tissue (usually from the palate), consequently reducing post-operative morbidity and the duration of surgery. In future investigations we suggest reporting long-term results, even as simply as recalling the patients already treated for the collection of further data. Furthermore, considering the small number of RCTs on the use of XCM in root coverage, further studies are required to evaluate the efficacy of XCM in this type of periodontal surgery with greater significance.

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Article

Custom Bone Regeneration (CBR): An Alternative Method of Bone Augmentation—A Case Series Study

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Abstract: We performed this clinical study in order to evaluate the reliability of the Guided Bone Regeneration (GBR) surgical technique through the use of customized CAD CAM titanium meshes (Yxoss CBR[®] Reoss) in order to show an alternative method of bone augmentation. Materials and methods: Nine patients presenting 10 bone defects were referred to solve oral dysfunction due to edentulous atrophic ridges. Guided bone regeneration was performed with titanium meshes combined with autogenous bone grafting and heterologous bovine bone mineral grafting, and exclusively a “poncho technique” soft tissue approach for all the cases. After a mean 9 months of graft healing (range 6–12 months), titanium meshes were removed, and implant surgery was subsequently performed. The results we obtained were positive in terms of volumetric increases in height, length and thickness of the atrophic ridges without biological complications detectable before implant surgery. Results: Out of nine, one site met titanium mesh exposure: however, in all 10 sites a three-dimensional volumetric bone implementation was obtained. The statistical results were estimated by uploading and superimposing cbct scans before and after CBR surgery for each patient, so it was possible to evaluate the maximum linear vertical and horizontal bone gain through dedicated Cad Cam software (Exocad GmbH[®]). The average horizontal gain was 6.37 ± 2.17 mm (range 2.78–9.12 mm) and vertical gain was 5.95 ± 2.06 mm (range 2.68–9.02 mm). A total of 18 implants were placed into the grafted sites with a 100% survival rate (clearly they are relative percentages to be compared to the short time elapsed). Conclusions: The results we obtained in this study suggest that this CBR procedure (Yxoss[®] by Reoss) is reliable and safe for bone regeneration to allow implant-prosthetic restoration in horizontal, vertical and combined bone defects. The soft tissue management is diriment: all the cases were managed with a “poncho” flap approach to decrease exposure complication.



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Keywords: custom bone regeneration; bone defect; digital flow; superimposition; digital planning in surgery

1. Introduction

Nowadays, it can be assumed that dental implantology represents a reliable treatment both aesthetically and in functional restoration according to the different edentulism stage [1]. However, the loss of dental elements commonly turns over into a lack of bone that prevents the implant rehabilitation of the affected areas.

The main objective of all regenerative techniques in the dental field is to stimulate new bone tissue so the correct inter arches prosthetic relationship could be easier than in the initial clinical situation [2]. Guided bone regeneration (GBR) is a well consolidated surgical procedure that allows new bone formation in atrophies or various types of hard tissue defects.

Titanium-reinforced polytetrafluoroethylene (PTFE) membranes held in place by small screws are considered the best equipment for tissue augmentation during or before implant

insertion surgery (even without total and universal consent on the part of all clinical users) [3].

To date, there is no unique scientifically shared consensus concerning the most suitable membrane choice (non-absorbable or resorbable) [4].

The implant success on regenerated bone in the literature is postulated to be between 68% and 100% [5,6].

The traditional titanium mesh (TM) represents a good alternative tool to restore bone defects.

However, the literature reports some criticism concerning TM, such as a learning curve to acquire the skills to cut, shape and adapt the TM to the irregular defects. This procedure usually is an intraoperative time-consuming phase, and the final result might be unideal: angles and edges, if not properly rounded, could represent, in the healing phase, a traumatic aspect for the surrounding soft tissue. This condition may lead to flap perforation and TM exposure. The clinical consequence may be infection and partial or total loss of the grafted bone [7].

The digital flow has been an ally in integrating this TM technique and supporting it to overcome limitations and disadvantages.

A new generation of titanium meshes has been recently introduced: these digital conceived titanium meshes are Cad Cam designed and created to be customized and precisely adapted to an irregular bone defect. Cad Cam technology allows one to produce laser sintered three dimensional custom scaffolds [8,9].

This clinical case series study focuses on the clinical efficacy of digital custom titanium mesh combined with autologous bone and bovine bone minerals (BBM) covered with collagen membranes to restore atrophic ridges. Specifically, it underlines the horizontal and vertical bone gain (digitally determined) in association with the peculiar poncho technique approach for the soft tissue management, which has been perfected in recent years, especially by the Veronese school. It allows one to avoid tension around the flap. The packaging of the flap according to this methodology is perhaps the most delicate and important point for a good result of the entire intervention, which is why it must be performed in the best way with the utmost care and precision with respect to the adjacent tissues.

2. Materials and Methods

This case series enrolled nine patients referred to the Maxillofacial Surgery and Dentistry Unit of the Hospital G.B. Rossi in Verona to solve chewing and functional problems due to atrophic edentulous ridges. All of them met the following inclusion criteria:

1. Clear clinical and radiographic identification (using some or all the tools at our disposal) of maxillary/mandibular bone defects or atrophic ridge (different in causality but similar for problems presented), specifically less than 8 mm in height and 5 in thickness.
2. No presence of any local or systemic contraindication to surgical treatment, such as infections, smoking habit of >10 cigarettes a day, uncontrolled diabetes (HBA1c \geq 7.5%), previous radiotherapy in the head and neck anatomical areas, chemotherapy, liver, blood and kidney diseases, immunosuppression, state of pregnancy, inflammatory and autoimmune diseases of the oral cavity, poor oral hygiene and poor motivation.
3. No (learned from clinical practice) need to insert dental implants before 8 months of complete healing.
4. Nine patients (3 males and 6 females) aged between 43 and 65 years (mean 53.11 years, SD 6.79) affected by oral dysfunction due to atrophic edentulous ridges were enrolled in this study.

Table 1 reports the details concerning the distribution of the bone defects.

Table 1. Distribution of the bone defects and maximum vertical/horizontal/volume bone gain recovered through measurements on CTCB.

Patient No.	Site	Age	Gender	Max Horizontal Gain (mm)	Max Vertical Gain (mm)	Pre Clinical Volume Gain Plan (mm ³)	Superimposition (T0–T1)
1	36	65	F	4.4	4.7	718	3330.56
2	36	51	F	9.1	9.0	927	3221.47
3	22–23–24	43	F	6.0	5.5	1008	1273.18
4	13–11–23–24	62	F	5.7	4.5	1208	2960.2
5	14–15–16	49	M	8.6	7.3	4250	5342.31
6	46	55	M	5.2	4.9	364	1686.84
7	13	53	M	6.7	6.3	1070	6879.74
8	36	51	F	8.9	8.6	895	2217.1
9	11–12–13–14	49	F	2.8	2.7	1632	1676.75

All of them received a customized titanium mesh (Yxoss CBR[®] Reoss) derived from a Cad Cam technology and necessary to maintain in the grafted area a mixture of autogenous bone particles and deproteinized bovine bone mineral (Bio-Oss[®]—Geistlich Biomaterials AG, Wolhusen, Switzerland) in a 50% ratio, and it was covered with collagen membranes (Bio-Gide[®]—Geistlich Biomaterials AG).

Informed consent was obtained from all patients prior to treatment, including (a) the purpose of the treatment; (b) a detailed description of the procedure; (c) the potential side effects and complications; (d) the patients' authorization to use their data for statistical analysis.

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of the University of Verona, Italy (Project identification code CICG-1935CESC, date: 16 October 2018).

Preoperative planning and patient preparation.

All the enrolled patients received a CBCT scan before CBR (T0): DICOM files obtained were sent to the Master Centre (Yxoss CBR[®] by Reoss) to share the Ti mesh planning and design. A digital model of the Ti-mesh was provided by the manufacturer for the final approval. Any planned change to the mesh, if necessary, was communicated by clinician to the digital technician to achieve an appropriate mesh morphology (Figure 1).

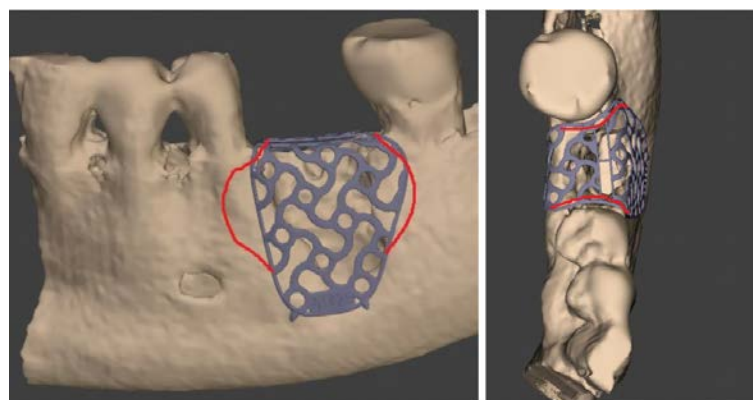


Figure 1. These screenshots show all the customized Ti mesh changes shared between the surgeon and the digital technician in the pre-clinical digital planning.

These CBCTs were compared as the reference point (time 0 = T0) to the following CBCTs (T1) to calculate bone volume gain.

After final clinician approval, the custom Ti mesh (class IV titanium) was produced through laser sintering CAD/CAM technology (Yxoss CBR[®] by Reoss).

The treatment protocol was as follows:

Antibiotic prophylaxis, oral administration of amoxicillin and clavulanate (2 pills, 1 g, 1 h before the surgical date), was prescribed.

- Anesthesia with loco-regional infiltration of anesthetic mepivacaine with adrenaline 1:100,000 (no patient had physio-pathological conditions to require anesthesia without constricting vessel liquid).
- Flap design: Very gentle soft tissue handling had to be carried out. The shape and extension of the flap had to ensure no tension in primary closure, especially with a bulky graft. Our suggestion in these cases is the “poncho” flap [8,10]. This technique includes a first large vestibular incision of the mucosa and the muscle/periosteal structures to increase their mobility, and two further vertical incisions not so close to the graft site. After the incision, the preparation of a muco-periosteal flap and the remotion of scar tissue, a full thickness flap was raised until the bone defect was uncovered [11–13]. Finally, the positioning of the customized titanium mesh was passively tested to evaluate its fit intra-operatively.
- Preparation of the receiving site: It was necessary to carefully clean the underlying bone and drill corticotomy to allow bleeding and to make a connection with the inner medulla bone, which has osteogenetic potential.
- Particulate bone: We used miscellaneous bone, autologous and heterologous, mixed together in equal parts (50:50) (Bio-Oss[®]—Geistlich Biomaterials AG). The autologous bone samples (essential to allow the 50:50 mix) were collected from different sites based on volumetric availability; they included the retromolar mandible area, tuber maxillae and ascending branches of the mandible (by combining all the quantities from the various sites for a total of approximately 3.5–4 cm³). We used a manual bonescraper (Manufactured from AISI 420 German stainless steel. Product Conforms to ISO 9001, CE-Quality Mark, ISO 13485).
- Positioning of the customized titanium mesh (Yxoss CBR[®] Reoss): since the titanium grid was built on previously designed projects, it was not necessary to make any changes because it fit perfectly to the bone residue.
- Fixation and coverage: Fixation was a fundamental point for the success of the intervention. Usually, mini titanium screws are used (5 mm long and 1.35 mm diameter), placed with special dedicated screwdrivers and subsequently covered with a resorbable membrane (Bio-Gide[®]—Geistlich Biomaterials AG).
- Passivation of the flap: Subtle periosteal incisions were performed to allow easier and greater mobility of the entire flap aimed at closure by primary intention without any kind of tension, thereby creating passivation.
- Suture: Precise closure had to be obtained through horizontal mattress sutures 5 mm beneath from the incision line, and subsequently, with single interrupted stitches connecting the edges of the flap. In this way it was possible to obtain an approximation of the edges of the flap with intimate contact between the two parts and the interposition of connective tissue (Figures 2 and 3)

Oral antibiotics were prescribed for all the patients (amoxicillin and clavulanate-3 g/day for 6 days). Sutures were removed 2–3 weeks after surgery.

During the healing phase, only one patient had later exposure of the titanium mesh: it did not affect the whole CBR procedure because partial removal of the exposed titanium mesh was performed: the poncho technique was re-applied, including sectioning with rotary cutter of the portion of the exposed grid and repositioning of the cover flap.

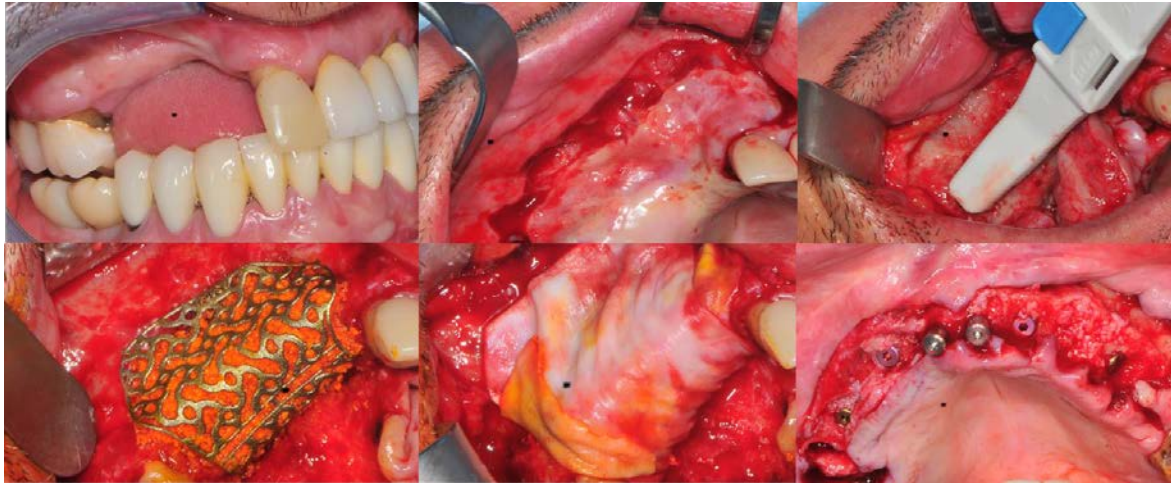


Figure 2. CBR involving upper jaws. Top line, from left to right: initial clinical situation, flap design, bone refreshing. Bottom line from left to right: CBR in place, covering of it with a resorbable membrane, implanting of insertion after grid removal and clinical evaluation of the bone quality obtained.



Figure 3. Occlusal and frontal intra-oral aspects of the immediate loaded full arch prosthesis. (Left): occlusal view. (Right): front view.

Not less than six months after CBR, a CBCT was scanned for all the patients (T1) to control the outcomes of the surgery after the graft healing phase (6–12 months) (Figures 4 and 5).

It was possible to compare the Dicom file derived from T0 e T1 CBCT scan exams to evaluate all these CBR procedures and the bone gain from a bi/tridimensional aspect.

First of all, through dedicated software (Real Guide Universal Open System 3 Diemme), all the Dicom format files were converted to .stl format files (known as a segmentation process).

After that, through other dedicated software (Exocad GmbH-specific tool “cross section view”), it was possible to superimpose T0 e T1 CBCT scans to trace and evaluate the linear maximum vertical and horizontal gains for all the patients (in mm) and bone volume gains for all the grafted sites (in mm³) (Figures 6 and 7).

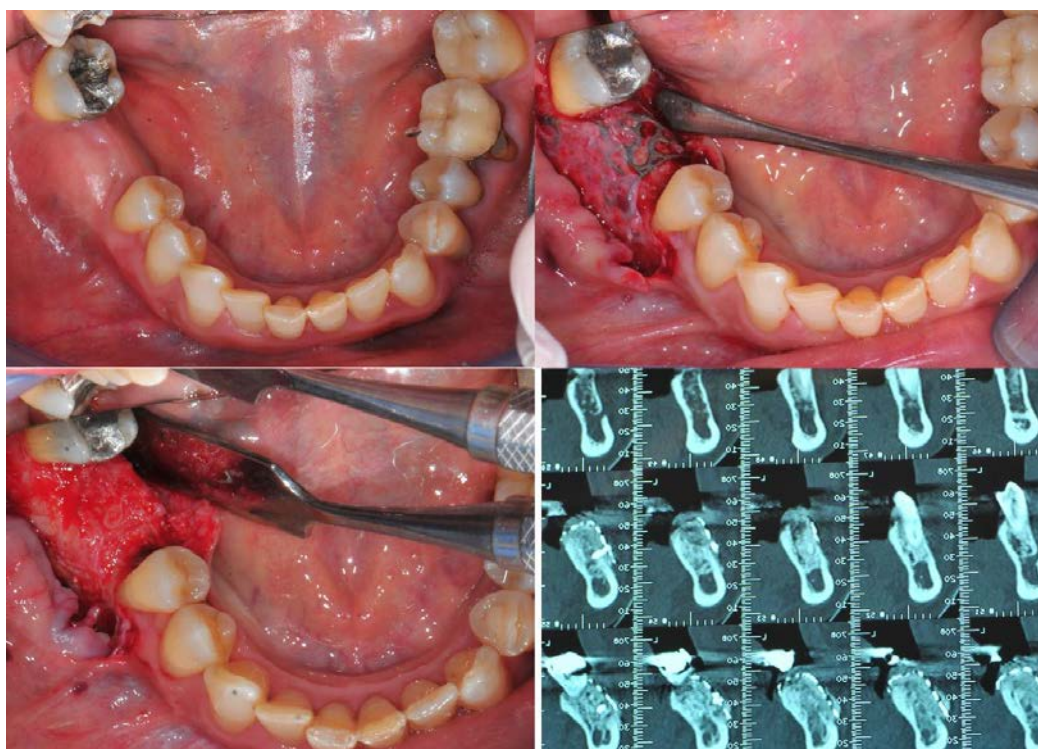


Figure 4. This composite resumes the surgical workflow from the custom Ti Mesh graft healing to the implant placement. In the CBCT (T1) screenshots it is possible to appreciate the bone volume gain. From the top left clockwise: starting situation, grid removal after 6 months; section of CBCT shows the bone volume gain, occlusal view just before implant surgery.

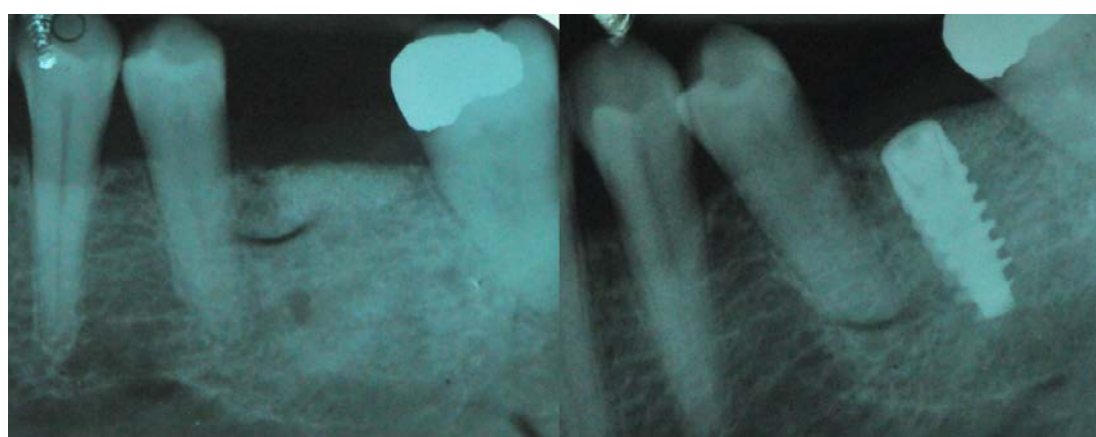


Figure 5. Intra oral radiograph before and after implant placement. Left: intra-oral X-ray after grid removal and healing occurred. Right: fixture installation.

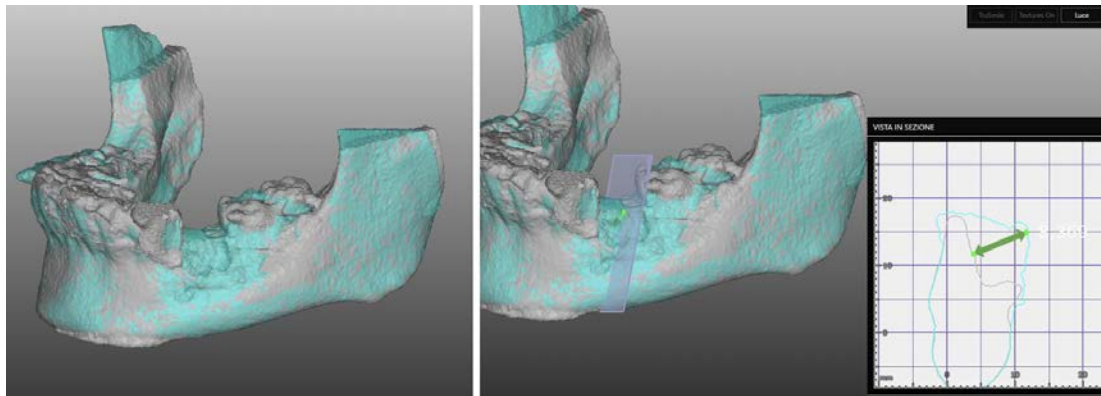


Figure 6. Segmentation of Dicom file and (T0–T1) CBCT superimposition to evaluate horizontal, vertical and bone volume gains.

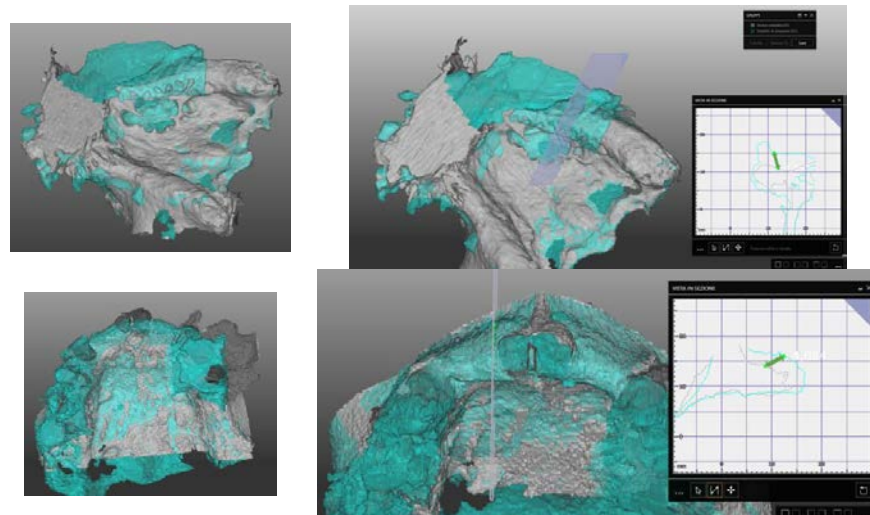


Figure 7. Segmentation of Dicom file and (T0–T1) CBCT superimposition to evaluate horizontal, vertical and bone volume gains for upper jaw case.

All the values collected are reported in Table 1.

3. Results and Statistical Analysis

Statistical Analyses

Qualitative variables are summarized by absolute and percent frequencies, and quantitative variables by mean and standard deviation (Figure 8).

Maximum and vertical gains, obtained in the present series, were compared with historical data, and the significance of differences was evaluated by the *t*-test for unpaired data, after verifying the homoscedasticity and normality assumptions (Figure 8).

Overall, 18 implants were inserted in nine patients. Four of them were put in mandibular sites and five in maxillary sites. The resulting total healing took place in 8–9 months for eight patients, but not in one case due to limited mesh exposure (in a maxillary site). In no case was the bone volume gain effected.

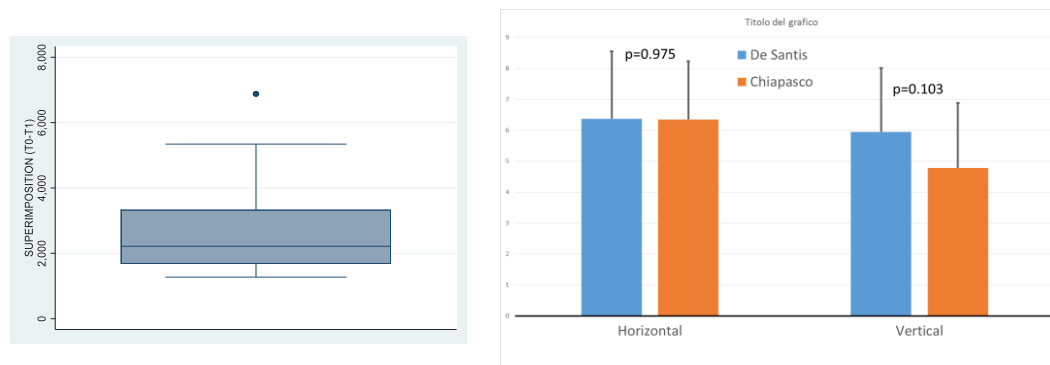


Figure 8. Maximum and vertical gains, obtained in the present series, are compared with historical data, and the significance of differences was evaluated by the *t*-test for unpaired data, after verifying the homoscedasticity and normality assumptions.

In this last case, only the exposed portion of the custom titanium mesh was removed, and this patient used chlorhexidine-based (0.2%) mouthwash.

Despite the limited number of the sample, all 18 implants (placed at T1 after the custom titanium mesh removal) met osteointegration and showed a survival rate of 100%.

4. Discussion

First of all, in this context we should have a little digression about the use of bio-material fillers in this surgical CBR technique.

In the last decades, the literature concerning the deproteinized bovine bone has been extensive and increasing [11–15]. It suggests several and undoubted advantages, such as the potentially infinite quantity of material that can be used and the absence of further and more complex surgical interventions to obtain it. Another aspect to be considered, is the fundamental and intrinsic property of osteoconduction [16–18] (defined as the process by which the regeneration of new bone tissue is facilitated, acting as a temporary scaffold); the autologous bone, which is universally recognized as the gold standard for bone reconstructions, adds osteoinduction [19–22] (the ability to stimulate the cells proposed to form bone by inducing or increasing their function precisely with the so-called growth factors and morphogenetic proteins induce the formation of bone) and osteogenesis [23–26] (the osteoblasts mediated process), which leads to the formation of new bone tissue starting from the graft.

These three characteristics listed above are essential cornerstones for guided bone regeneration. Thus, this 50:50 mix can well be considered the biomaterial par excellence. It is defined by “Definitions in Biomaterials”, Chester consensus conference in 1986 [27], as any substance intended to be connected to living tissues and/or biological fluids to maintain or change the shapes or to replace any tissue, organ or function of the body and further demonstrating, according to Osborne, three essential characteristics of a biomaterial, or rather biotolerance, bioinertness and bioactivity [28].

Using a resorbable membrane of collagenic nature to improve healing is universally recognized to be faster and better [29–33]. The fundamental principle of GBR (guided bone regeneration) is in fact the use of this type of membrane to maintain primary wound closure, angiogenesis, space creation/maintenance and stability for the initial blood clot [34]. In addition, it seems that the interaction between the titanium mesh and the resorbable membrane can help the formation of a soft tissue similar to the periosteum [35] that can be formed on the internal or external surface of the mesh, or both sides of the mesh, and promote mucosal healing [36], protect titanium mesh and bone graft material from gingiva and reduce inflammation during wound healing [37]. Ultimately, we recall that

a negative predictive factor in the success of the use of this technique is the lack of soft tissues enveloping the area. Proximity to muscle insertions and a lack of keratinized mucosa are factors that affect the mobilization of the flap, and therefore, increase the risk of dehiscence [7]. Therefore, the use of this tissue identified histologically by Arx could be useful for compensating the physiological lack of keratinized tissue.

The last but not the least biomaterial to be mentioned is titanium, which is widely used in surgical treatments due to its high stiffness, low density, corrosion resistance and effective biocompatibility. Titanium mechanical properties are fundamental to a safe CBR strategy: high strength and stiffness concur to space maintenance in the osteogenesis; the stability is mandatory for the bone graft volume during wound healing [38]. Thickness and porosity are mechanical features affecting titanium properties. Literature suggests that the thickness of titanium is a factor affecting the final bone formation; moreover, the pore diameter may affect the proportions of soft and hard tissue under the titanium mesh [39]. The thickness of titanium mesh (commonly ranging from 0.1 to 0.6 mm) is proportionally linked to its mechanical properties.

A titanium mesh of 0.2 mm is suitable for most instances. At this thickness, titanium mesh can provide sufficient stiffness to maintain space and protect grafts, while offering appropriate flexibility to reduce the risk of tissue rupture. Concerning the pore diameter, it also affects the performance of titanium mesh during bone augmentation. The pore of the titanium mesh seems to rise an essential role in establishing blood supply and facilitating metabolic processes of the grafts at the defect site [40].

This aspect may be associated with the increased delivery of blood supply, nutrients and oxygen due to the large aperture. On the contrary, a study showed that the use of a titanium mesh with large diameter (>2 mm) may lead to more soft tissue growth upon the surface of new bone than the use of a titanium mesh with a small diameter [41]. However, the relationship between the pore size of titanium mesh and bone formation is still controversial. For the intrinsic nature of pores on titanium mesh, selective cell isolation is not insured, and soft tissue often grows under titanium meshes [40].

4.1. Biological Properties and Osteogenic Property

Titanium mesh offers good biocompatibility. This behavior of materials usually can be distinguished into corrosion resistance and cytotoxicity. Commonly, titanium shows low electrical conductivity; it is basically disposed to perform electrochemical oxidation to form a passive and inert oxide layer [42]. This oxide layer can be retained at the pH of the human body, leading to high and persistent corrosion resistance for titanium [43]. A thin layer of 1–2 mm thick soft tissue (defined as “pseudo-periosteum”) has been observed in several studies upon the regenerated bone surface through a titanium mesh [35].

Probably, the pseudo-periosteum formation could depend on the not sufficient cell exclusion behavior of the titanium mesh due to its pores. A clear set of evidence sustains its role in bone graft protection, and its roles in infection prevention and absorption. Currently, it is often removed with the titanium mesh in a subsequent operation [44].

4.2. Progress in Material Modification

In the last few decades, the research trend has been developing surface modification of titanium mesh to achieve better biological activity. Bioactive coatings for accelerating bone regeneration by improving the differentiation and proliferation of osteoblasts have been widely developed in tissue engineering.

In a previous study conducted on a rat model, Nguyen compared the different behavior of titanium mesh covered by calcium phosphorus coating and untreated titanium mesh [45–47].

There was no soft tissue intervention under the titanium mesh of the experimental group, and the bone density was higher ($p < 0.05$). There was consequently improved structural durability of the grafted site. In another succeeding study, strontium was proposed to promote osteoblasts' proliferation and differentiation, and inhibit osteoclasts' activity.

It was tested in guided bone regeneration in a rat model combined with a calcium–phosphorus coating on the surface of titanium mesh. Compared to no treatment and calcium–phosphorus-coated titanium mesh treatment, the strontium–calcium–phosphorus coating resulted in more uniform and denser bone, enabling higher bone density in the regenerated area, improving the osseointegration between bone and titanium mesh and preventing infiltration of soft tissue in the early stage of healing.

After this study it is reasonable to think that proper coating treatment can lead to more stable bone regeneration without specific adverse reactions.

4.3. Radiological Considerations

Another aspect we should underline is the radiological behavior of customized titanium mesh during the cbct or rx scan: its physico-chemical features allow it to minimize the scattering effect. This implicitly guarantees a clear radiological image of the control exam (T1), and it is thus possible to trace the calculation lines underlying the edge of the customized mesh, thereby minimizing the error. Customized titanium meshes have been recently proposed as an alternative surgical procedure to the conventional TM. [8] A lot of advantages seem to sustain this affirmation:

- (a) The custom titanium meshes features do not need modelling or trimming;
- (b) These custom scaffolds are self-contained, and it is possible to load the graft outside the oral cavity, causing very strong reductions in the risks of graft dispersion and contamination intraorally;
- (c) Safe stabilization with a small number of screws and custom mesh passiveness.

All these aspects seem to be so relevant for safe graft healing below the custom titanium mesh.

To the best of our knowledge [7–9], the main critical issue concerning TM is mesh exposure (at different time) with variable degrees of bone resorption.

This aspect seems to depend on a strong learning curve to acquire the skills to cut, shape and adapt the TM to the irregular defects. This procedure usually is an intraoperatively time-consuming phase, and the final result might not be ideal: angles and edges, if not properly rounded, could represent, in the healing phase, a traumatic aspect for the surrounding soft tissue. This condition may lead to flap perforation and TM exposure. The clinical consequences may be infection and partial or total loss of the grafted bone [7].

In the only case of exposure of the grid, it was not necessary to remove it, as there were no signs of infection, and it did not worsen or diminish the pre-established final result of bone regeneration. This exposure occurred in the maxilla, a result that might be in accordance with other authors using the same location in the mouth [8], but in this case we think it may have been due to the friction of the grid (particularly extended) with the overlying soft tissues.

All the authors believe that soft tissue management represents the most critical issue for this technique, which involves the shape of the surgical flap, for a stress-free first intention closure. The extension of the incision should be broad, involving at least two additional dental elements both medially and distally to allow a more secure and sealed closure.

For all the nine patients, a “poncho technique” soft tissue approach was performed: this soft tissue management seems to play a favorable role in preventing meshes’ exposure, as confirmed by other authors, compared to the crestal incision approach [8].

The presence of a fibrous granulation tissue below the titanium mesh could increase the low probability of infection. This tissue has been analyzed and is similar to the periosteum, constituting a real mechanical shield from bacterial contamination and subsequent surface exposure with bone reduction. The real nature and origin of this tissue are not well known [48–50].

The present clinical case series has shown the potential of the digital flow to integrate a conventional surgical procedure such as TM to achieve a safer and more efficacious bone regeneration technique.

Results from the present study seem to confirm data reported in literature: an average horizontal gain of 6.37 ± 2.17 mm (range 2.78–9.12 mm) and a vertical gain of 5.95 ± 2.06 mm (range 2.68–9.02 mm). In detail, if these mean values are compared to those obtained by other authors, we notice: 0.9747 in horizontal gains, and t: 0.1030 in vertical gains [33,51].

Furthermore, other results derived from the data collection concerning the T0–T1 CBCT scans' superimposition have confirmed a mean bone volume gain value of 3012 ± 1938 mm³ (range 1273–6879). It is, however, worth nothing that these last results gave us an overestimated mean bone volume gain value if compared to the presurgical planned bone volume gain value. Results are also comforting if related to other GBR procedures with resorbable and non-resorbable membranes [33].

5. Conclusions

Given the small number of implants inserted and the even smaller number of patients enrolled for these treatments, we are now far from standardization of procedures and a global consensus. However, this study suggests that CBRs with customized meshes represent predictable and encouraging alternatives for the future.

The planned construction of the grid itself and the attention paid to the design of the flap and its management are essential factors for clinical success. Partial exposure of the mesh does not necessarily lead to the failure of the CBR technique. All authors consider the surgical “poncho” technique the best approach to avoid uncovering of the grid, superinfections and the failure of the intervention itself in general. In addition, careful pre-operative planning and the precision of the grid/bone tissue fit seem to further reduce the margins of operator-dependent error.

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*Review***Investigation on the accuracy of implant surgery in dynamic navigation:
metanalysis and systematic review of literature**

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ABSTRACT

The object of this study was to compare, through meta-analysis, the accuracy in implant placement obtained in Dynamic Navigation (DN) with Static Navigation (SN) and with conventional free-hand surgery (CS) and to provide some useful clinical parameters to consider during the planning phase of the intervention. A meta-analysis was performed, dividing the selected studies into two groups based on the statistical technique adopted: DN vs CS and DN vs SN. The heterogeneity between the various studies was assessed with the homonymous test and quantified with I². The results were graphically represented using a forest plot. Egger's test and funnel plot were used to investigate the "small study effect". The search was performed through the PubMed database, and the Cochrane Library database identified 448 articles. After applying the inclusion criteria, 14 articles were selected and used for quantitative synthesis (meta-analysis). From the results obtained from this meta-analysis, it can be stated that the Dynamic Navigation mode allows for better accuracy than conventional surgery, the most used type of surgery, and is comparable to Static Navigation, the gold standard for accuracy.

INTRODUCTION

The rehabilitation of partial and total edentulism using osteointegrated implants is a method that has proven to be highly effective and predictable, with success rates reported in the literature that are also high in the long-term follow-up (1, 2). In order to obtain these results, the diagnostic phase of pre-surgical planning is fundamental and if carried out correctly, reduces complications connected to implant malposition, such as an occlusal overload of the implant that can lead to a preterm failure, unsatisfactory aesthetics, in particular in the anterior sectors, and prosthetist difficulty in creating a prosthetic product (3). Complications of greater interest always linked to a malposition of the implant can be cortical perforations, lesions of adjacent teeth and damage to particular anatomical structures, such as the inferior alveolar nerve or the maxillary sinus (4).

Once the planning has been carried out, i.e. once the ideal implant position has been identified on the software, the clinician's objective is to transfer it with maximum reproducibility to the real site (transition to the surgical phase); in order to do this, there are 2 methods available:

- Analogical: Conventional surgery, also called Free Hand or Mental Navigation
- Digital: Computer Assisted Surgery (CAS), also known as Computer Guided Surgery or Surgery in Navigation

This last method is divided into two modalities:

- Surgery in Static Navigation
- Surgery in Dynamic Navigation

A distinction can be made between static navigation using templates (dime) and direct dynamic navigation using optical transmission systems (5). The last frontier in the field of implant surgery is represented by Dynamic Navigation, a practical aid to minimise the discrepancies between the virtually planned implant position (using special software) and the real position of the dental implant. This technique is therefore added to the other two already available in implantology: conventional free-hand surgery and static navigation. The following discussion will compare the accuracy of these three surgical modalities through a systematic review and meta-analysis of what is currently reported in the literature.

MATERIALS AND METHODS

The guidelines in the *Cochrane Handbook for Systematic Reviews of Interventions (the Handbook)*, version 5.1.0 of March 2011, were followed for this systematic review of the literature accompanied by meta-analysis. Furthermore, the PRISMA Statement (2015) Guidelines for reporting systematic reviews and meta-analyses were followed to realise the Materials and methods section. (6) To search for scientific publications, the online databases most used in Italy, “PubMed” and “Cochrane Library”, were used. The bibliographic research was carried out from February 2021 until the end of June of the same year by a single author (M.B.).

The following filters were applied to search for publications in the online databases mentioned above: 1) publication date included in the period from 01/01/2000 to 31/06/2021; 2) articles published exclusively in English. In addition, the research was carried out to select studies that compared the accuracy obtained from implant surgery in Dynamic Navigation (DN) with the one obtained from other types of implant placement, such as Static Navigation (SN) and/or free-hand conventional surgery (CS). The search strategy was based on the following terms: “Oral Implant”, OR “Endosseous Implant”, OR “Dental Implant”, OR “Implant Placement”, AND “Navigation surgery”, OR “Image-guided surgery” OR “Dynamic Navigation” OR “Dynamic surgery” AND “Free-hand” OR “Conventional surgery” OR “Computer-Aided Design” OR “Static Navigation” OR “Static surgery” OR “Template” AND “Mesh” OR “custom titanium mesh” OR “custom mesh” OR “titanium mesh”.

Eligibility criteria

Regarding the articles potentially includable in the review, randomised-controlled clinical trials (RCT), controlled clinical trials (CCT), cohort studies, comparative cadaver studies and comparative model studies were considered. Cadaver and model studies were included to compensate for the reduced availability of articles regarding implant placement in Dynamic Navigation due to the recent introduction of this technique, and this was possible as no Patient-centered outcomes or other data requiring a follow-up period were assessed but only those relating to the accuracy of the system, which can also be measured in this type of studies. Studies involving pterygoid implants, zygomatic implants, orthodontic mini-screws, studies with no control and Case reports were not included in the review.

As indicated by the *Cochrane Handbook for Systematic Reviews of Interventions*, the protocol for the formulation of the PICO question was adopted to outline the criteria for the inclusion of the articles, as shown below (7):

- **Population:** Only articles regarding patients, models and cadavers with partial or total edentulism to be rehabilitated with the placement of dental implants preceded by virtual planning were considered. Furthermore, the number of total implants had to be greater than or equal to 10 in the test and control groups.
- **Intervention:** The test group had to be composed of Dynamic Navigation implant placement.
- **Comparison:** The control group had to consist of implant placement with Static Navigation surgery, the gold standard for accuracy, or with conventional surgery, the most used procedure.
- **Outcomes:** The outcomes searched for in the articles were divided into primary and secondary outcomes. The primary outcome searched was the accuracy measured by superimposition between the virtual plan and the real position of the implant and reported as one of the following parameters:
 - *angular deviation,*
 - *total apical deviation*
 - *total coronal deviation.*

In addition, the following accuracy parameters were considered secondary outcomes:

- *apical depth deviation*
- *coronal depth deviation*
- *lateral apical deviation and lateral coronal deviation.*

Data characteristics

Coronal and apical deviations were assessed in individual clinical trials as follows: a first CBCT is executed to allow the digital pianification of the ideal implant position. After the surgery, a second CBCT is performed to evaluate the actual implant position. Then a superimposition of the first and second CBCT is performed to evaluate the accuracy of the surgery technique adopted (Fig. 1).

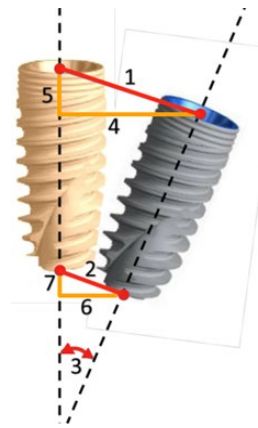


Fig. 1. The primary outcomes are shown in red, and the secondary outcomes are shown in orange. Angular deviation (3): evaluates the amplitude of the angle formed by the axis of the positioned implant and the insertion axis of the virtual implant, expressed in degrees ($^{\circ}$). Total apical deviation (2): it is the overall distance between the center of the positioned implant apex and the center of the virtual implant apex, expressed in mm. This variable, considering also the depth and the angular deviation, is reported, in some articles, as a 3D apical distance. Total coronal deviation (1): this is the total distance between the center of the platform of the positioned implant and the center of the virtual implant platform, expressed in mm. This variable, considering also the depth and the angular deviation is reported, in some articles, as 3D coronal distance. Apical depth deviation (7): it is the distance between the center of the positioned implant apex and the center of the virtual implant apex, measured along the Z axis. It is expressed in mm. Coronal depth deviation (5): it is the distance between the center of the placed implant platform and the center of the virtual implant platform, measured along the Z axis. It is expressed in mm. Lateral apical deviation (6): it is the distance between the center of the positioned implant apex and the insertion axis of the virtual implant, measured perpendicular to the latter. It is expressed in mm. Lateral coronal deviation (4): it is the distance between the center of the platform of the positioned implant and the insertion axis of the virtual implant, measured perpendicular to the latter. It is expressed in mm.

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Study selection

The PRISMA 2009 flow diagram guidelines were followed to select the articles (6). The titles obtained through the generic research previously explained were subsequently reviewed one by one (identification) by a single author (M.B.). At this point, the articles were selected by analysing the title and reading the abstract. In this second phase (screening), the full satisfaction of the inclusion criteria by the article in question was assessed. Therefore, studies that did not meet the inclusion criteria were excluded at this stage. Instead, the publications in which the abstract reading was insufficient to understand if the inclusion criteria were met were included in the next phase (reading the full text (eligibility)). In this way, it was possible to include (*included*) only the studies that met all the criteria set out above.

Data collection process

The data of interest were extrapolated and grouped in data collection tables. The following parameters were analysed: 1) authors, year of publication, type of study; 2) test surgery modality and machinery used, comparison surgery modality; 3) the total number of patients, cadavers, models, number of test patients, cadavers, models, number of control patients, cadavers, models; 4) number of test implants, number of control implants; 5) type of edentulous test, type of edentulous control; 6) primary outcomes, secondary outcomes.

Statistical analysis

A meta-analysis was performed, dividing the selected studies into two groups based on the statistical technique adopted: DN vs CS and DN vs SN.

The meta-analysis results were expressed as standardised mean difference (SMD = Standardized Mean Difference) for the quantitative variables (Total Coronal Deviation, Coronal lateral D., Coronal depth D., Total apical D., Lateral apical D., Apical Depth D., Angular Axes D.). The extent of SMD was interpreted as mild, SMD = 0.2; medium, SMD = 0.5; and high, SMD = 0.8.

The heterogeneity between the various studies was assessed with the homonymous test and quantified with I². The Higgins heterogeneity index (I²) describes the proportion of heterogeneity of the individual studies that cannot be explained by the sampling error and has the advantage of being intrinsically independent of the number of studies. Since the heterogeneity test was significant and/or the I² was > 30% (8) for all the variables considered, a “random” effects statistical model was used. The combined (pooled) estimates and the related confidence intervals were calculated using Der Simonian and Laird (9). Finally, the results were graphically represented using a forest plot.

Egger’s test and funnel plot were used to investigate the “small study effect” (10). As a general rule, funnel plot asymmetry tests should only be used when at least 10 studies are included in the meta-analysis because when there are fewer studies, the tests’ power is insufficient to distinguish randomness from true asymmetry. The level of statistical significance was set at 5%, and the confidence intervals (CI) were calculated at 95%. All data were analysed with the STATA Software (Version 15).

RESULTS

Study selection and description

The search through the PubMed database identified 437 articles; instead, the search through the Cochrane Library database identified 21 articles. After eliminating the duplicates, 448 publications were obtained. A single operator (M.B.) viewed all these 448 titles and selected 347 abstracts to be read to assess whether or not they comply with the topic of interest. After the screening phase, 320 articles were removed. The 27 papers

that tested positive for eligibility were investigated by reading the full text to assess whether they adhered to the inclusion criteria and, consequently, their possible use in the systematic review and meta-analysis. After reading the text, it was possible to exclude 13 jobs (Table I). From the initial research, 14 articles were selected: 14 were used for the qualitative synthesis (systematic review of the literature), and 14 were used for quantitative synthesis (meta-analysis). Following the *PRISMA 2009 guidelines*, a flow chart was constructed summarising the study selection procedure (Fig. 2). It is always important to mention and consider the possibility and the risk of bias in the included studies. The general characteristics of the 14 studies included in the quantitative synthesis were collected and summarised in the following table (Table II). Five clinical studies were identified (11-15), 1 study on the anatomical specimen (16) and 8 in vitro studies (4, 17-23).

Table I. Articles excluded with motivation.

Author	Year	Reason for exclusion
Pellegrino et al.	2019	Absence of control
Stefanelli L. et al.	2019	Absence of control
Widmann et al.	2010	Absence of control
Kim et al.	2015	Absence of control
Golob Deeb J. et al.	2019	Absence of control
Emery et al.	2016	Absence of control
Sun et al.	2019	Absence of control
Ma L. et al.	2019	N. implants test/control < 10, DS not reported
Jokstad A. et al.	2018	Accuracy not reported or not comparable
Herklotz I. et al.	2017	Accuracy not reported or not comparable
Mischkowski R. et al.	2016	Accuracy not reported or not comparable
Kramer F. et al.	2004	Accuracy not reported or not comparable
Sießegger M. et al.	2001	Accuracy not reported or not comparable

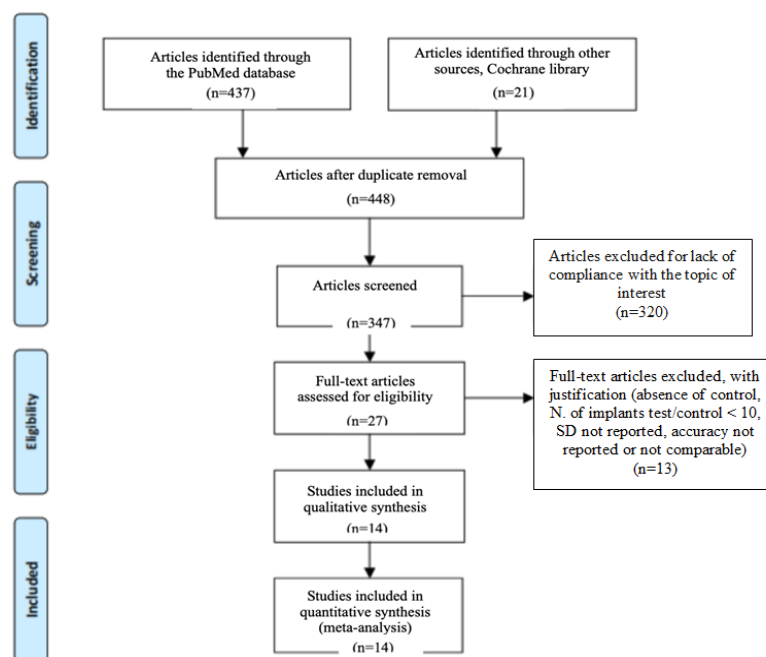


Fig. 2. PRISMA flow chart.

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Table II. General characteristics of the included studies.

Author, Year	Study type	Surgical technique adopted		N(patients)		N(implants)		Edentulous type	
		Test	Control	Test	Control	Test	Control	Test	Control
HUMAN (VIVO)									
Kaewsiri, 2019	Human RCT	DN (IRIS-100)	SN	30	30	30	30	PE	PE
Block, 2017	Human CT	DN(X-Guide, full guide)	CS	tot 478		219	122	PE	PE
		DN(X-Guide, partial guide)				373		PE	PE
Yimarj P 2020	RCT parallel	DN(Iris-100)	SN (Visijet MP200)	Tot 30		30	30	Partial (two neighboring implants)	Partial (two neighboring implants)
Sun 2020	Non-RCT	DN(AqNavi)	- sCAIS - d+sCAIS Freehand	NR		32	32 32 32	NR	NR
Aydemir 2020	Split-mouth RCT	DN(Navident)	Freehand	15	15	43	43	Partial (posterior bilateral edentulism)	Partial (posterior bilateral edentulism)
EX VIVO (CADAVER)									
Ruppini, 2008	Ex Vivo (human cadaver mandibles)	DN (RoboDent) DN (Artma Virtual Patient)	SN	tot20 (20 human cadaver mandibles)		40	40	TE-PE	TE-PE
VITRO (MODEL)									
Mediavilla Guzman 2019	In vitro study (Polyurethane model)	DN(Navident)	SN(NemoStudio® / Projjet 6000)	10 models	10 models	20	20	Total	Total
Zhou 2020	In vitro study (Resin 3D printed model)	DN (Yizhimei)	sCAIS (Visijet M3)	10 models	10 models	40	40	Partial	Partial
Jorba-Garcia 2019	In vitro study (Resin model)	DN (NaviDent)	CS	3 models	3 models	18	18	PE	PE
Chen CK, 2018	In vitro study (Plaster model)	DN (AQ Navi SNS)	SN CS	10 models	10 models 10 models	50	50 50	PE	PE PE
Somogyi-Ganss, 2014	In vitro study	DN (NaviDent)	CS SN (Strauman GS) SN (Simplant SG) SN (Nobel Guide)	50	50 50 50 50	400	400 400 400 400	PE	PE PE PE PE
Kang, 2014	In vitro study	DN (CBYON Suite System), zona canini DN (CBYON Suite System), zona molari	SN	10	10	20	20 20	TE	TE TE
Hoffmann, 2005	In vitro study	DN (Vector Vision Compact)	CS	8	8	112	112	TE	TE
Brief, 2005	In vitro study	DN (RoboDent) DN (DenX IGI System)	CS	5 5	5 5	15 15	15 15	PE PE	PE PE
DN: Dynamic Navigation, SN: Static Navigation, CS: Conventional Surgery PE: partially edentulous TE: totally edentulous NR: not reported, dCAIS dynamic computer – aided implant surgery, sCAIS static computer – aided implant surgery									

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All the studies included analysed the implant positioning in Dynamic Navigation (DN) as a test intervention; in particular, 1 of these studies used and evaluated two DN systems as a test; 1 divided the test group based on the site of insertion in canine and molar position and 1 study divided the test group, based on the method of insertion, between Full and Partial Guide. If control intervention is considered, only 6 studies represented implant placement in Static Navigation (SN), 5 studies by conventional surgery alone (CS), and 3 by SN and CS.

Considering the total number of implants inserted and divided into the 3 groups used in the subsequent meta-analysis, the data concerning 1517 implants in the DN test group, 1482 implants in the SN control group and 792 implants in the CS control group were collected.

In almost all the articles considered, the type of edentulism treated was exclusive of the partial type, with the exception of 3 in vitro studies which performed the insertion of implants in models characterised by total edentulism. In the remaining studies, it was not possible to separate the number of partial edentulous ones from the total edentulous ones.

Results of the individual studies

This paper examined the following primary outcomes resulting from the implant placement: Total coronal deviation, Total apical deviation and Angular deviation. The secondary outcomes considered are Coronal lateral deviation, Coronal depth deviation, Apical lateral deviation and Apical depth deviation.

Primary outcomes

The Total Coronal Deviation parameter was analysed in 8 studies, 4 clinical (11-13, 15) and 4 in vitro (4, 17, 18, 19). The total apical deviation was analysed in 11 studies, 5 clinical (11-15) and 6 in vitro (4, 17, 1-20, 23).

The Angular Deviation parameter was analysed in all included studies (4, 11-23). The primary outcomes were grouped in the table below (Table III).

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Table III. Primary Outcomes.

Author, Year	Study Type	Surgery type		N(implants)		Mean Total Coronal Deviation (SD); mm		Mean Total Apical Deviation (SD); mm		Mean Angular Deviation (SD); °	
		Test	Control	Test	Control	Test	Control	Test	Control	Test	Control
HUMAN (VIVO)											
Kaewsiri, 2019	Human RCT	DN	SN	30	30	1,05 (0,44)	0,97 (0,44)	1,29 (0,5)	1,28 (0,46)	3,06 (1,37)	2,84 (1,71)
Block, 2017	Human CT	DN f	CS	219	122	1,16 (0,59)	1,78 (0,77)	1,29 (0,65)	2,27 (1,02)	2,97 (2,09)	6,5 (4,21)
		DNp		373		1,31 (0,68)		1,52 (0,78)		3,43 (2,33)	
Yimarj P 2020	RCT parallel	DN	SN	30	30	1,24 (0,39)	1,04 (0,67)	1,58 (0,56)	1,54 (0,79)	3,78 (1,84)	4,08 (1,69)
Sun 2020	Non-RCT	DN	- sCAIS	32	32			1,25 (0,09)	1,49 (0,08)	3,24 (0,36)	4,54 (0,29)
			- d+sCAIS		32				0,98 (0,19)		2,20 (0,38)
			Freehand		32				1,89 (0,09)		6,12 (0,12)
Aydemir 2020	Split-mouth RCT	DN	Freehand	43	43	1,01 (0,07)	1,70 (0,13)	1,83 (0,12)	2,51 (0,21)	5,59 (0,39)	10,04 (0,83)
EX VIVO (CADAVER)											
Ruppin, 2008	Ex Vivo (human cadaver mandibles)	DN	SN	40	40					8,1 (4,6)	7,9 (5)
		DN		40						8,1 (4,9)	
VITRO (MODEL)											
Mediavilla Guzman 2019	in vitro study (Polyurethane model)	DN	SN	20	20	0,85 (0,48)	0,78 (0,43)	1,18 (0,60)	1,20 (0,48)	4,00 (1,41)	2,95 (1,48)
Zhou 2020	in vitro study (Resin 3D printed model)	DN	sCAIS	40	40	0,4 (0,41)	1,15 (0,34)	0,34 (0,33)	1,37 (0,38)	0,97 (1,21)	2,6 (1,11)
Jorba-Garcia 2019	in vitro study (Resin model)	DN	CS	18	18	1,29 (0,46)	1,50 (0,58)	1,33 (0,5)	2,26 (1,11)	1,6 (1,3)	9,7 (5,2)
Chen CK, 2018	In vitro study (Plaster model)	DN	SN	50	50	1,07 (0,48)	1,02 (0,46)	1,35 (0,55)	1,5 (0,79)	4,45 (1,97)	6,02 (3,71)
			CS		50			1,44 (0,56)		2,00 (0,79)	9,26 (3,62)
Somogyi-Ganss, 2014	In vitro study	DN	CS	400	400			1,71 (0,61)	2,32 (1,18)	2,99 (1,68)	8,95 (4,65)
			SN 1		400				1,71 (0,86)		3,31 (1,86)
			SN 2		400				1,46 (0,76)		3,09 (1,9)
			SN 3		400				1,91 (0,94)		4,24 (2,66)
Kang, 2014	In vitro study	DNc	SNC	20	20					12,37 (4,18)	6,72 (3,41)
		DNm	SN m	20	20					8,97 (3,83)	3,9 (2,44)
Hoffmann, 2005	In vitro study	DN	CS	112	112					4,2 (1,8)	11,2 (5,6)
Brief, 2005	In vitro study	DN 1 DN 2	CS	15	15			0,6 (0,2)	1,89 (0,8)	2,12 (0,78)	4,59 (2,84)
				15	15			0,94 (0,4)		4,21 (4,76)	

DN: Dynamic Navigation, SN: Static Navigation, CS: Conventional Surgery PE: partially edentulous TE: totally edentulous; NR: not reported, dCAIS dynamic computer – aided implant surgery, sCAIS static computer – aided implant surgery, c: canines, m: molars

Secondary outcomes

The Lateral Coronal Deviation parameter was analysed in a total of 6 studies, 1 clinical (12), 1 on an anatomical piece (16) and 4 in vitro (18, 20, 21, 23). The Coronal Depth Deviation parameter was analysed in 2 studies, 1 clinical (12) and 1 in vitro (21).

The apical lateral deviation parameter was analysed in 4 studies, 1 clinical (12) and 3 in vitro (20, 21, 23). The Apical Depth Deviation parameter was analysed in a total of 7 studies, 2 clinical (12, 14), 1 on an anatomical piece (16) and 4 in vitro (18, 20, 21, 23). The secondary outcomes were grouped in the table below (Table IV).

Table IV. Secondary Outcomes.

Author, Year	Study Type	Surgery type		N(implants)		Mean coronal lateral deviation (SD); mm		Mean coronal depth deviation (SD); mm		Mean apical lateral deviation (SD); mm		Mean apical depth deviation (SD); mm	
		Test	Control	Test	Control	Test	Control	Test	Control	Test	Control	Test	Control
HUMAN (VIVO)													
Kaewsiri, 2019	Human RCT	DN	SN	30	30								
Block, 2017	Human CT	DN f	CS	219	122	0,74 (0,43)	1,19 (0,68)	0,76 (0,6)	1,12 (0,83)	0,9 (0,55)	1,84 (1,05)	0,78 (0,6)	1,1 (0,82)
		DNp		373		0,8 (0,49)		0,89 (0,73)		1,01 (0,65)		0,9 (0,74)	
Yimarj P 2020	RCT parallel	DN	SN	30	30								
Sun 2020	Non-RCT	DN	- sCAIS	32	32							0,73 (0,13)	1,00 (0,15)
			- d+sCAIS		32								0,52 (0,20)
			Freehand		32								1,42 (0,25)
Aydemir 2020	Split-mouth RCT	DN	Freehand	43	43								
EX VIVO (CADAVER)													
Ruppini, 2008	Ex Vivo (human cadaver mandibles)	DN	SN	40	40	1,0 (0,5)	1,5 (0,8)					0,6 (0,3)	0,6 (0,4)
		DN		40		1,2 (0,6)						0,8 (0,7)	
VITRO (MODEL)													
Mediavilla Guzman 2019	in vitro study (Polyurethane model)	DN	SN	20	20								
Zhou 2020	in vitro study (Resin 3D printed model)	DN	sCAIS	40	40								
Jorba-Garcia 2019	in-vitro study (Resin model)	DN	CS	18	18	0,85 (0,41)	1,26(0,66)					0,88 (0,47)	0,57(0,33)
Chen CK, 2018	In vitro study (Plaster model)	DN	SN	50	50								
			CS		50								
Somogyi-Ganss, 2014	In vitro study	DN	CS SN 1	400	400	1,14 (0,55)	1,14 (0,68)			1,18 (0,56)	1,74 (1,07)	1,04 (0,71)	0,73 (0,71)
			SN 2	400	400	0,76 (0,54)	0,9 (0,48)			1,19 (0,62)	1,05 (0,86)	1,1 (0,79)	
			SN 3	400	400	0,81 (0,55)	0,81 (0,55)			0,99 (0,64)	1,24 (0,8)	1,27 (0,86)	
Kang, 2014	In vitro study	DNc	SNc	20	20	2,06 (1,43)	0,73(0,41)	1,14 (1,25)	0,47(0,34)	2,76 (1,03)	2,03(0,97)	1,42 (1,01)	1,52(1,31)
		DNm	SN m	20	20	3,03 (1,81)	0,68 (0,44)	0,76 (0,84)	0,32 (0,25)	3,31 (2,07)	1,08 (0,77)	1,96 (0,93)	0,52 (0,52)
Hoffmann, 2005	In vitro study	DN	CS	112	112								
Brief, 2005	In vitro study	DN 1	CS	15	15	0,35 (0,17)	1,35 (0,56)			0,47 (0,18)	1,62 (0,68)	0,32 (0,21)	0,84 (0,65)
		DN 2		15		0,65 (0,58)				0,68 (0,31)		0,61 (0,36)	

DN: Dynamic Navigation, SN: Static Navigation, CS: Conventional Surgery PE: partially edentulous TE: totally edentulous NR: not reported, dCAIS dynamic computer – aided implant surgery, sCAIS static computer – aided implant surgery, c: canines, m: molars

Clinical outcomes

Before dealing with the section regarding quantitative synthesis to extrapolate clinical data that can be valid as a reference during the planning phase of an intervention in Dynamic Navigation, a further investigation was made where the overall mean and standard deviation of all studies included in the systematic review were

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calculated. The overall mean and standard deviation of Dynamic Navigation is shown in the following table, divided into primary and secondary outcomes. (Table V).

Table V. Accuracy of Dynamic Navigation.

Primary outcomes	Mean (SD)
Total Coronal Deviation	1,04 (0,44)
Total apical deviation	1,25 (0,45)
Axis angular deviation	4,7 (2,27)
Secondary outcomes	Mean (SD)
Lateral coronal deviation	1,18 (0,7)
Coronal depth deviation	0,89 (0,86)
Lateral apical deviation	1,47 (0,76)
Apical depth deviation	0,91 (0,56)

Quantitative synthesis of the results

A quantitative comparison for the accuracy of implant placement was performed through a meta-analysis of each of the 7 primary and secondary outcomes evaluated.

Forest plot graphs were extrapolated from the meta-analysis to allow a simpler graphical interpretation. In addition, where possible, or where the number of studies allowed their realisation, the Egger test was also performed accompanied by the graphical representation through a funnel plot to investigate the “small study effect”.

The results of the statistical tests accompanied by the reference graphs are shown in the section below, divided by parameter. In order to facilitate the interpretation, the results relating to the comparison between Dynamic Navigation and conventional surgery (DN vs CS) were highlighted in blue, and those between Dynamic Navigation vs Static Navigation (DN vs SN) in yellow.

Total coronal deviation

For the total coronal deviation, the statistical analysis shows that there is a high difference (SMD = -1.650), statistically significant ($p < 0.001$), in favor of Dynamic Navigation in comparison with conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a slight difference emerges (SMD = -0.234) in favor of Dynamic Navigation, but this difference does not reach statistical significance ($p = 0.576$) (Table VI).

Table VI. Total Coronal Deviation.

Study	SMD	[95% Conf. Interval]		% Weight
DN vs CS				
Aydemir (2020)	-6.609	-7.694	-5.524	8.00
Chen CK (2018)	-0.709	-1.114	-0.305	10.40
Jorba-Garcia (2019)	-0.401	-1.061	0.259	9.63
Block (2017)	-0.668	-0.877	-0.460	10.78
Block (2017)	-0.940	-1.172	-0.707	10.75
Sub-total				
D+L pooled SMD	-1.650	-2.509	-0.791	49.56
DN vs SN				
Chen CK (2018)	0.106	-0.286	0.499	10.43
Zhou (2020)	-1.991	-2.530	-1.453	10.03
Mediavilla (2019)	0.154	-0.467	0.774	9.76
Yimarj P (2020)	0.365	-0.146	0.875	10.11
Kaewsiri (2019)	0.182	-0.325	0.689	10.12
Sub-total				
D+L pooled SMD	-0.234	-1.055	0.586	50.44
Overall				
D+L pooled SMD	-0.933	-1.527	-0.339	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	113.91	4	0.000	96.5%	0.8741
DN vs SN	52.99	4	0.000	92.5%	0.8074
Overall	192.50	9	0.000	95.3%	0.8400

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated;
only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z= 3.77	p = 0.000
DN vs SN	z= 0.56	p = 0.576
Overall	z= 3.08	p = 0.002

Total coronal deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs SN comparison and the lower portion the DN vs CS comparison, it can be seen that the test, the DN, is favoured in comparison with the CS and comparable to the SN, although presenting a very slight difference, however not significant (Fig. 3).

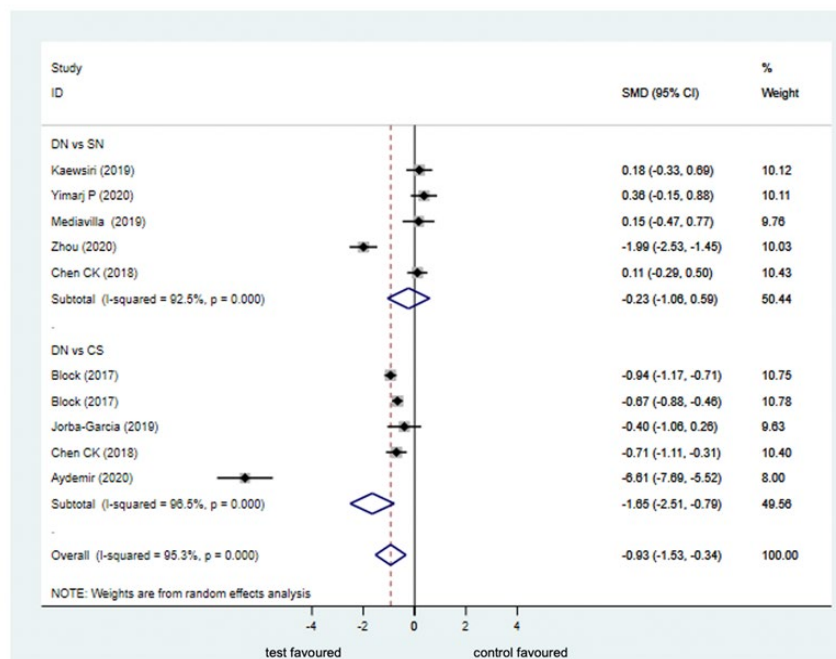


Fig. 3. Total Coronal Deviation, forest plot.

Total apical deviation

For the total apical deviation, the statistical analysis shows that there is a high difference (SMD = -1.919), statistically significant (p < 0.001), in favor of Dynamic Navigation in comparison with conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a moderate difference emerges (SMD = -0.556) in favor of Dynamic Navigation, reaching statistical significance (p = 0.008) (Table VII).

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Table VII. Total Apical Deviation.

Study	SMD [95% Conf. Interval]			% Weight
DN vs CS				
Block (2017)	-1.222	-1.462	-0.982	6.17
Block (2017)	-0.887	-1.099	-0.676	6.20
Sun (2020)	-7.111	-8.455	-5.767	3.53
Aydemir (2020)	-3.976	-4.711	-3.241	5.12
Jorba-Garcia (2019)	-1.080	-1.782	-0.378	5.20
Chen CK (2018)	-0.955	-1.369	-0.541	5.88
Somogyi-Ganss (2014)	-0.649	-0.792	-0.507	6.27
Brief (2005)	-2.212	-3.133	-1.291	4.61
Brief (2005)	-1.502	-2.319	-0.685	4.90
Sub-total				
D+L pooled SMD	-1.919	-2.482	-1.355	47.88
DN vs SN				
Kaewsiri (2019)	0.021	-0.485	0.527	5.69
Yimarj P (2020)	0.058	-0.448	0.565	5.69
Sun (2020)	-2.819	-3.516	-2.121	5.22
Mediavilla-Guzman (2)	-0.037	-0.657	0.583	5.41
Zhou (2020)	-2.894	-3.525	-2.263	5.39
Chen CK (2018)	-0.220	-0.614	0.173	5.92
Somogyi-Ganss (2014)	0.000	-0.139	0.139	6.27
Somogyi-Ganss (2014)	0.363	0.223	0.503	6.27
Somogyi-Ganss (2014)	-0.252	-0.392	-0.113	6.27
Sub-total				
D+L pooled SMD	-0.556	-0.969	-0.143	52.12
Overall				
D+L pooled SMD	-1.220	-1.601	-0.840	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	177.38	8	0.000	95.5%	0.6313
DN vs SN	181.71	8	0.000	95.6%	0.3465
Overall	560.92	17	0.000	97.0%	0.5960

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated;
only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z = 6.67	p = 0.000
DN vs SN	z = 2.64	p = 0.008
Overall	z = 6.29	p = 0.000

Total apical deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs CS comparison and the lower portion the DN vs SN comparison, it can be seen that the test, the DN, is favoured in comparison with the CS and also favoured in comparison with the SN, with statistical significance in both comparisons (Fig. 4).

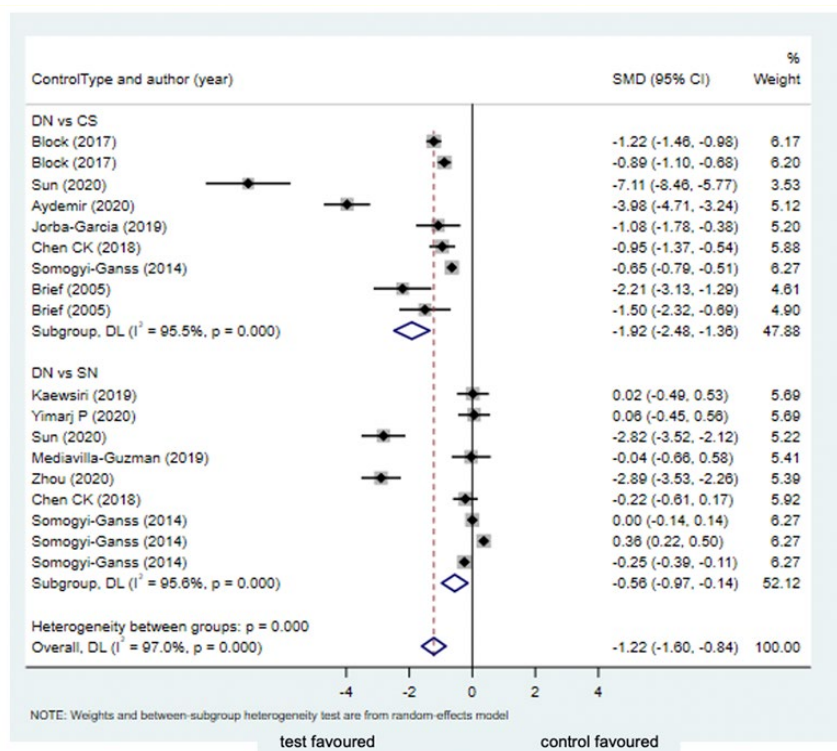


Fig. 4. Total Apical Deviation, forest plot.

Axis angular deviation

For the angular deviation of the axes, the statistical analysis shows that there is a high difference (SMD = -2.269), statistically significant ($p < 0.001$), in favor of Dynamic Navigation in comparison with conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a slight difference emerges (SMD = -0.199) in favor of Dynamic Navigation, but this difference does not reach statistical significance ($p = 0.239$) (Table VIII).

Table VIII. Axis Angular Deviation.

Study	SMD	[95% Conf. Interval]		% Weight
DN vs SN				
Kaewsiri (2019)	0.142	-0.365	0.649	4.50
Yimarj P (2020)	-0.170	-0.677	0.337	4.50
Sun (2020)	-3.977	-4.831	-3.123	3.94
Ruppin (2008)	0.042	-0.397	0.480	4.58
Ruppin (2008)	0.040	-0.398	0.479	4.58
Mediavilla Guzman (2020)	0.726	0.085	1.367	4.30
Zhou (2020)	-1.404	-1.894	-0.913	4.52
Chen CK (2018)	-0.529	-0.927	-0.130	4.63
Somogyi-Ganss (2014)	-0.181	-0.319	-0.042	4.84
Somogyi-Ganss (2014)	-0.056	-0.194	0.083	4.84
Somogyi-Ganss (2014)	-0.562	-0.703	-0.421	4.84
Kang (2014)	1.481	0.778	2.185	4.20
Kang (2014)	1.579	0.865	2.293	4.18
Sub-total				
D+L pooled SMD	-0.199	-0.529	0.132	58.44
DN vs CS				
Block (2017)	-1.168	-1.406	-0.930	4.78
Block (2017)	-1.056	-1.271	-0.842	4.80
Sun (2020)	-10.733	-12.685	-8.781	2.17
Aydemir (2020)	-6.862	-7.983	-5.742	3.46
Jorba-Garcia (2019)	-2.137	-2.965	-1.310	3.98
Chen CK (2018)	-1.651	-2.106	-1.196	4.56
Somogyi-Ganss (2014)	-1.705	-1.867	-1.543	4.83
Hoffmann (2005)	-1.683	-1.988	-1.378	4.73
Brief (2005)	-1.186	-1.966	-0.406	4.07
Brief (2005)	-0.097	-0.813	0.619	4.17
Sub-total				
D+L pooled SMD	-2.269	-2.850	-1.688	41.56
Overall				
D+L pooled SMD	-1.073	-1.460	-0.686	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs SN	186.57	12	0.000	93.6%	0.3069
DN vs CS	223.40	9	0.000	96.0%	0.7433
Overall	800.09	22	0.000	97.3%	0.7992

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated;
only valid with inverse variance method

Significance test(s) of SMD=0

DN vs SN	z= 1.18	p = 0.239
DN vs CS	z= 7.65	p = 0.000
Overall	z= 5.44	p = 0.000

Axis angular deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs SN comparison and the lower portion the DN vs CS comparison, it can be seen that the DN test is favoured in comparison with the CS and comparable to the SN, although presenting a very slight difference, however not significant. Furthermore, it can be observed that the difference between DN and SN remains minimal and negligible both by analysing the data as a whole and in individual studies, except for the data reported by Kang et al. and Sun et al. which differ considerably from the other data reported (Fig. 5).

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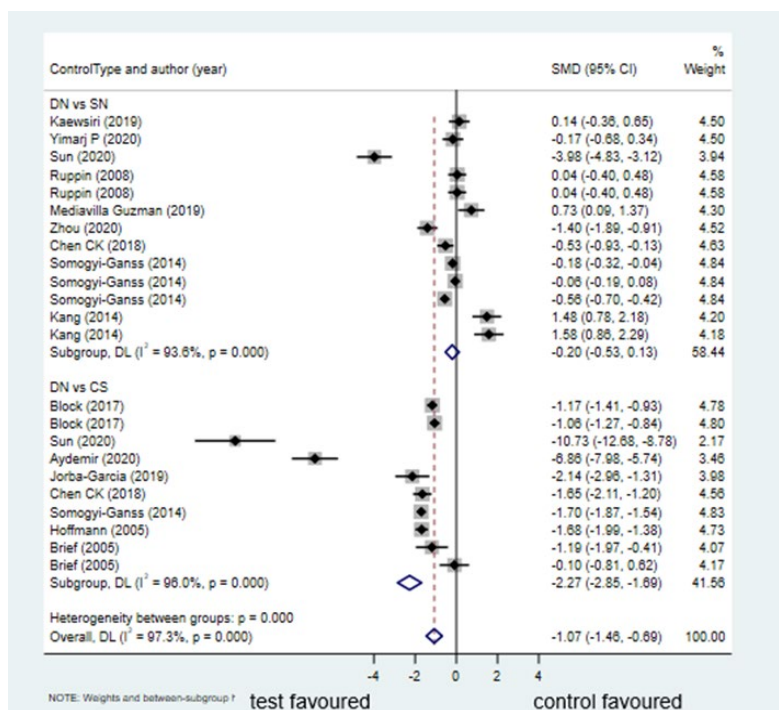


Fig. 5. Axis Angular Deviation, Forest Plot.

The presence of the “small study effect” was investigated using the funnel plot and the Egger test:

- Funnel Plot Axis Angular Deviation, DN vs CS comparison (Fig. 6).
- Funnel Plot Axis Angular Deviation, DN vs SN comparison (Fig. 7).
- Since the $p = 0.148$, the presence of “small-study effects” is excluded from the comparison between DN and CS. (Table IX).
- Since $p = 0.840$, the presence of “small-study effects” is excluded from the comparison between DN and SN. (Table X).

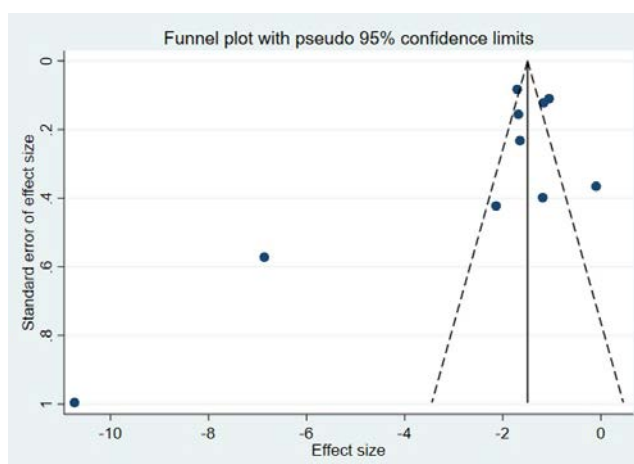


Fig. 6. Funnel Plot Axis Angular Deviation, DN vs CS comparison.

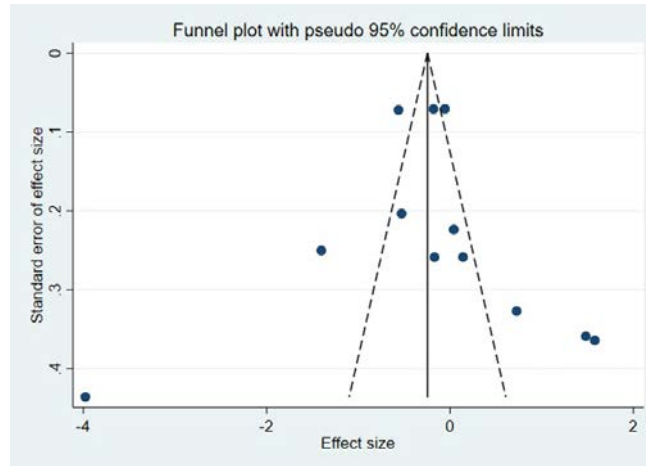


Fig. 7. Funnel Plot Axis Angular Deviation, DN vs SN comparison.

Table IX. Since the $p = 0.148$, the presence of "small-study effects" is excluded in the comparison between DN vs CS.

```

. ***CHECKING PUBLICATION BIAS WITH EGGER'S TEST FOR DN vs CS
. *table (P VALUE)
. metabias _ES _seES if ControlType=="DN vs CS", egger

Note: data input format theta se_theta assumed.

Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of studies = 10                                Root MSE = 4.598

```

Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
slope	-.9547596	.4109467	-2.32	0.049	-1.902405 - .0071148
bias	-4.062364	2.53608	-1.60	0.148	-9.910575 1.785846

```

Test of H0: no small-study effects                    P = 0.148

```

Table X. Since $p = 0.840$, the presence of "small-study effects" is excluded in the comparison between DN vs SN.

```

. ***CHECKING PUBLICATION BIAS WITH EGGER'S TEST FOR DN vs SN
. *table (P VALUE)
. metabias _ES _seES if ControlType=="DN vs SN", egger

Note: data input format theta se_theta assumed.

Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of studies = 13                                Root MSE = 4.11

```

Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
slope	-.2887218	.2567526	-1.12	0.285	-.8538305 .2763869
bias	.3977745	1.925844	0.21	0.840	-3.840979 4.636528

```

Test of H0: no small-study effects                    P = 0.840

```

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Coronal lateral deviation

For the lateral coronal deviation, the statistical analysis shows a high difference (SMD = -0.867), statistically significant (p = 0.001), in favor of Dynamic Navigation compared to conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a moderate difference emerges (SMD = 0.449) in favor of Static Navigation, reaching statistical significance (p = 0.006) (Table XI).

Table XI. *Coronal Lateral Deviation.*

Study	SMD	[95% Conf. Interval]		% Weight
DN vs CS				
Block (2017)	-0.844	-1.075	-0.614	8.57
Block (2017)	-0.718	-0.928	-0.509	8.62
Jorba-Garcia (2019)	-0.746	-1.423	-0.069	6.84
Somogyi-Ganss (2014)	0.000	-0.139	0.139	8.75
Brief (2005)	-2.416	-3.372	-1.461	5.58
Brief (2005)	-1.228	-2.012	-0.443	6.34
Sub-total				
D+L pooled SMD	-0.867	-1.358	-0.376	44.70
DN vs SN				
Ruppin (2008)	-0.750	-1.203	-0.296	7.82
Ruppin (2008)	-0.424	-0.868	0.019	7.86
Somogyi-Ganss (2014)	0.465	0.324	0.605	8.75
Somogyi-Ganss (2014)	0.697	0.554	0.840	8.75
Somogyi-Ganss (2014)	0.600	0.458	0.742	8.75
Kang (2014)	1.264	0.583	1.946	6.82
Kang (2014)	1.784	1.046	2.522	6.55
Sub-total				
D+L pooled SMD	0.449	0.129	0.768	55.30
Overall				
D+L pooled SMD	-0.133	-0.503	0.238	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	77.56	5	0.000	93.6%	0.3037
DN vs SN	70.89	6	0.000	91.5%	0.1437
Overall	352.23	12	0.000	96.6%	0.4030

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated; only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z= 3.46	p = 0.001
DN vs SN	z= 2.75	p = 0.006
Overall	z= 0.70	p = 0.483

Coronal lateral deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs CS comparison and the lower portion the DN vs SN comparison, it can be seen that the test, the DN, is very favored in comparison with the CS but disadvantaged when compared to the SN, with statistical significance in both comparisons (Fig. 8).

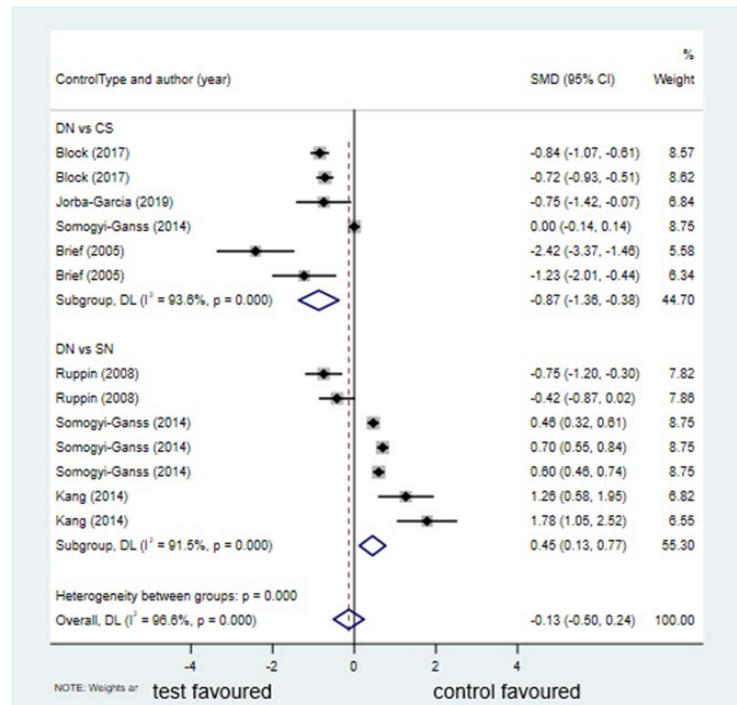


Fig. 8. Coronal Lateral Deviation, Forest Plot.

Coronal depth deviation

For the coronal depth deviation, the statistical analysis shows that there is a moderate difference (SMD = -0.408), statistically significant ($p < 0.001$), in favor of Dynamic Navigation in comparison with conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a moderate difference emerges (SMD = 0.721) in favor of Static Navigation, and this difference reaches statistical significance ($p = 0.002$) (Table XII).

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Table XII. Coronal Depth Deviation.

Study	SMD [95% Conf. Interval]			% Weight
DN vs CS				
Block (2017)	-0.521	-0.746	-0.296	29.68
Block (2017)	-0.304	-0.510	-0.099	30.01
Sub-total				
D+L pooled SMD	-0.408	-0.620	-0.195	59.69
DN vs SN				
Kang (2014)	0.731	0.090	1.373	20.14
Kang (2014)	0.710	0.070	1.350	20.17
Sub-total				
D+L pooled SMD	0.721	0.268	1.174	40.31
Overall				
D+L pooled SMD	0.045	-0.431	0.520	100.00

Test(s) of heterogeneity:					
	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	1.95	1	0.163	48.6%	0.0114
DN vs SN	0.00	1	0.963	0.0%	0.0000
Overall	23.20	3	0.000	87.1%	0.1851

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated; only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z= 3.77	p = 0.000
DN vs SN	z= 3.12	p = 0.002
Overall	z= 0.18	p = 0.854

Coronal depth deviation, forest plot

Observing the forest plot, of which the upper portion concerns the DN vs CS comparison and the lower portion the DN vs SN comparison, it can be seen that the test, the DN, is favoured in comparison with the CS but disadvantaged if compared to SN, with statistical significance in both comparisons (Fig. 9).

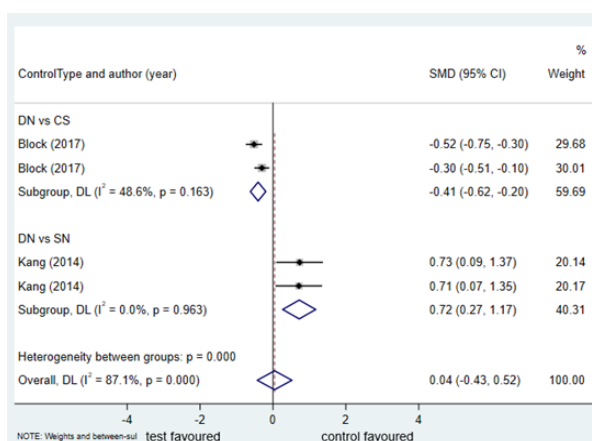


Fig. 9. Coronal Depth Deviation, Forest Plot.

Lateral apical deviation

For the lateral apical deviation, the statistical analysis shows that there is a high difference (SMD = -1.216), statistically significant ($p < 0.001$), in favor of Dynamic Navigation in comparison with conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a slight difference emerges (SMD = 0.289) in favor of Static Navigation, and this difference reaches statistical significance ($p = 0.048$) (Table XIII).

Table XIII. *Lateral Apical Deviation.*

Study	SMD	[95% Conf. Interval]		% Weight
DN vs CS				
Block (2017)	-1.226	-1.466	-0.986	11.10
Block (2017)	-1.081	-1.296	-0.866	11.19
Somogyi-Ganss (2014)	-0.656	-0.798	-0.513	11.40
Brief (2005)	-2.312	-3.250	-1.375	7.07
Brief (2005)	-1.779	-2.633	-0.925	7.57
Sub-total				
D+L pooled SMD	-1.216	-1.603	-0.829	48.32
DN vs SN				
Somogyi-Ganss (2014)	-0.017	-0.156	0.122	11.41
Somogyi-Ganss (2014)	0.316	0.177	0.455	11.40
Somogyi-Ganss (2014)	-0.087	-0.226	0.052	11.41
Kang (2014)	0.730	0.089	1.371	8.91
Kang (2014)	1.428	0.730	2.126	8.55
Sub-total				
D+L pooled SMD	0.289	0.003	0.576	51.68
Overall				
D+L pooled SMD	-0.419	-0.818	-0.019	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	33.90	4	0.000	88.2%	0.1402
DN vs SN	36.53	4	0.000	89.1%	0.0773
Overall	293.37	9	0.000	96.9%	0.3596

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated;
only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z= 6.16	p = 0.000
DN vs SN	z= 1.98	p = 0.048
Overall	z= 2.05	p = 0.040

Lateral apical deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs CS comparison and the lower portion the DN vs SN comparison, it can be seen that the test, the DN, is favoured in comparison with the CS but disadvantaged if compared to SN, with statistical significance in both comparisons (Fig. 10).

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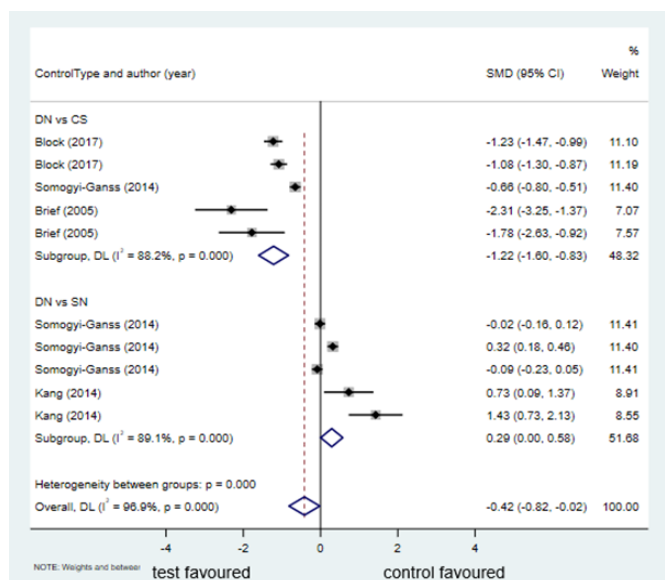


Fig. 10. Lateral Apical Deviation, Forest Plot.

Apical depth deviation

For the apical depth deviation, the statistical analysis shows a moderate difference (SMD = -0.577) with borderline statistical significance ($p = 0.055$) in favor of Dynamic Navigation compared to conventional surgery. From the comparison of Dynamic Navigation vs Static Navigation, a slight difference emerges (SMD = -0.065) in favor of Dynamic Navigation, and this difference does not reach statistical significance ($p = 0.673$) (Table XIV).

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Table XIV. *Apical Depth Deviation.*

Study	SMD	[95% Conf. Interval]		% Weight
DN vs CS				
Block (2017)	-0.466	-0.690	-0.242	7.88
Block (2017)	-0.263	-0.468	-0.058	7.94
Sun (2020)	-3.463	-4.245	-2.681	5.00
Jorba-Garcia (2019)	0.763	0.085	1.441	5.55
Somogyi-Ganss (2014)	0.437	0.296	0.577	8.13
Brief (2005)	-1.077	-1.846	-0.307	5.06
Brief (2005)	-0.438	-1.163	0.287	5.30
Sub-total				
D+L pooled SMD	-0.577	-1.167	0.013	44.85
DN vs SN				
Sun (2020)	-1.924	-2.519	-1.328	6.00
Ruppin (2008)	0.000	-0.438	0.438	6.88
Ruppin (2008)	0.351	-0.091	0.793	6.86
Somogyi-Ganss (2014)	-0.013	-0.151	0.126	8.14
Somogyi-Ganss (2014)	-0.080	-0.219	0.059	8.14
Somogyi-Ganss (2014)	-0.292	-0.431	-0.152	8.13
Kang (2014)	-0.085	-0.706	0.535	5.86
Kang (2014)	1.911	1.157	2.665	5.14
Sub-total				
D+L pooled SMD	-0.065	-0.366	0.236	55.15
Overall				
D+L pooled SMD	-0.260	-0.537	0.017	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
DN vs CS	149.27	6	0.000	96.0%	0.5567
DN vs SN	76.21	7	0.000	90.8%	0.1429
Overall	228.90	14	0.000	93.9%	0.2406

** I-squared: the variation in SMD attributable to heterogeneity)

Note: between group heterogeneity not calculated;
only valid with inverse variance method

Significance test(s) of SMD=0

DN vs CS	z= 1.92	p = 0.055
DN vs SN	z= 0.42	p = 0.673
Overall	z= 1.84	p = 0.066

Apical depth deviation: forest plot

Observing the forest plot, of which the upper portion concerns the DN vs CS comparison and the lower portion the DN vs SN comparison, it can be seen that the test, the DN, is favoured in comparison with the CS and comparable to SN, although presenting a very slight difference, however not significant (Fig. 11).

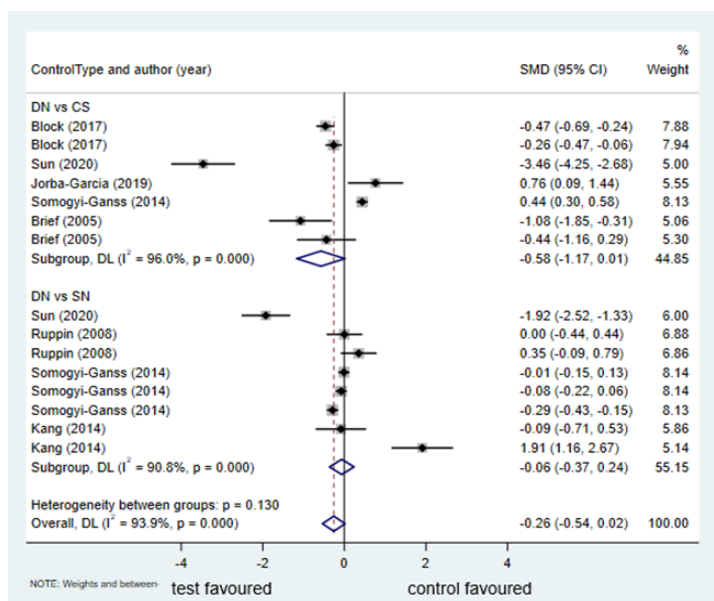


Fig. 11. Apical Depth Deviation, Forest Plot.

Summary of Meta-analysis results

In almost all the meta-analyses, heterogeneity was found between the studies, partly reflecting the variability of the surgical experiences.

Concerning primary outcomes, using a Dynamic Navigation method allows for significantly better accuracy than conventional surgery; compared to static navigation; however, two slight differences are not statistically significant, and a moderate difference that is statistically significant, all in favor of dynamic navigation.

Regarding secondary outcomes, Dynamic Navigation is significantly more accurate than conventional surgery but less than Static Navigation, except for the Apical Depth Deviation in comparison with static navigation, which has minimal and no significant differences (Table XV).

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Table XV. Summary of Meta-analysis results, statistically significant differences are shown in bold.

	DN vs SN		DN vs CS	
	SMD, 95%CI (p)	I2 (p)	SMD, 95%CI (p)	I2 (p)
PRIMARY OUTCOMES				
Total coronal deviation	-0.234, -1.055; 0.586 (p=0.576)	92.5% (p=0.000)	-1.650, -2.509; -0.791 (p=0.000)	96.5% (p=0.000)
Total apical deviation	-0.556, -0.969; -0.143 (p=0.008)	95.6% (p=0.000)	-1.919, -2.482; -1.355 (p=0.000)	95.5% (p=0.000)
Axis angular deviation	-0.199, -0.529; 0.132 (p=0.239)	93.6% (p=0.000)	-2.269, -2.850; -1.688 (p=0.000)	96.0% (p=0.000)
SECONDARY OUTCOMES				
Linear coronal deviation	0.449, 0.129; 0.768 (p=0.006)	91.5% (p=0.000)	-0.867, -1.358; -0.376 (p=0.001)	93.6% (p=0.000)
Coronal depth deviation	0.721, 0.268; 1.174 (p=0.002)	0.0% (p=0.963)	-0.408, -0.620; -0.195 (p=0.000)	48.6% (p=0.163)
Linear apical deviation	0.289, 0.003; 0.576 (p=0.048)	89.1% (p=0.000)	-1.216, -1.603; -0.829 (p=0.000)	88.2% (p=0.000)
Apical depth deviation	-0.065, -0.366; 0.236 (p=0.673)	90.8% (p=0.000)	-0.577, -1.167; 0.013 (p=0.055)	96.0% (p=0.000)

DISCUSSION

From the results obtained from this meta-analysis, it can be stated that the Dynamic Navigation mode allows for better accuracy than conventional surgery, the most used type of surgery, and is comparable to Static Navigation, the gold standard for accuracy.

Dynamic Navigation vs Conventional Surgery

Compared with conventional surgery, Surgery in Dynamic Navigation presents notable and significant differences in all the parameters taken into consideration.

In more detail, slight differences are found in the results obtained from conventional surgery (control surgery) in the two different clinical and model study settings, which appears to be slightly more accurate in model studies than at a clinical level. This difference can be traced back and explained by the fact that in the experimental setting, mainly due to the absence of saliva, blood, and soft tissue encumbrance, the notch on the drill used as a reference during the osteotomy is more easily identifiable.

Dynamic Navigation vs Static Navigation

When considering the primary outcomes from the comparison with Static Navigation, the data show that Dynamic Navigation has better accuracy. The Total Apical Deviation shows a moderate difference in favor of Dynamic Navigation and reaches statistical significance, while the Total Coronal Deviation and the Axis Angular Deviation show slight differences in favor of Dynamic Navigation, but neither of them reaches statistical significance.

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Regarding the different types of studies (clinical, anatomical preparation, and model studies), in all three primary outcomes, there is some agreement in the results of the different types of studies, with some exceptions (14, 17, 21).

Kang et al., in regards to the Axes Angular Deviation, clearly differs from the other studies with a clear difference in favor of Static Navigation (values comparable to the other studies for Static Navigation, the worst among all studies included for Dynamic Navigation). However, the discrepancy between the study by Kang 21 and the other studies included manifesting itself in the test (DN) and being negligible as regards the control (SN) may be partly justified by the systematics used for Dynamic Navigation, which is not among those available on the market and therefore presumably still in the experimentation phase. In some studies, the discrepancy could be attributed to the systematics used (14, 17).

In secondary outcomes, compared with Static navigation, the data show that Static Navigation has better accuracy. The Coronal Lateral Deviation presents a moderate difference in favor of the Static Navigation and reaches statistical significance, the Coronal Depth deviation presents a high difference in favor of the Static Navigation and reaches statistical significance, the apical lateral deviation presents a slight difference in favor of Static Navigation and reaches statistical significance. In contrast, the apical depth deviation presents a slight difference in favor of Dynamic navigation but does not reach statistical significance.

Since the primary outcomes favour Dynamic navigation while the secondary outcomes favour Static Navigation, it can be concluded that overall Dynamic Navigation and Static Navigation have comparable accuracy.

Furthermore, the fact that secondary outcomes show better accuracy for static navigation must be analysed, taking into consideration that the data derive mainly from anatomical preparation studies and in vitro studies and little from clinical studies since secondary outcomes were considered in only one clinical study, and detail only the apical depth. The almost total absence of the clinical component in the analysis of secondary outcomes may explain the reason for the difference found with the primary ones.

The accuracy of Static Navigation strictly depends on the stability of the surgical guide, which in turn depends on the type of edentulousness from the supporting tissue, the movements of the muscle compartment, and the thickness and resilience of the supporting tissues (24, 25). All conditions in model studies, no matter how much you try to recreate and reproduce them, do not negatively affect the performance of this navigation mode, thus resulting in better accuracy than in anatomical preparation studies and clinical studies (26). However, exactly the opposite happens for Dynamic Navigation; considering Dynamic Navigation, this trend not only does not manifest itself but also presents an opposite trend; by comparing the weighted averages obtained on the model and in the clinical setting, a better accuracy emerges in favor of clinical studies in all the parameters considered except for the Total Coronal Deviation (Table XVI).

Table XVI. Comparison of Dynamic Navigation results divided by study type.

	Total coronal deviation, mm	Total apical deviation, mm	Axis angular deviation, °	Lateral coronal deviation, mm	Coronal depth deviation, mm	Lateral apical deviation, mm	Apical depth deviation, mm
CLINICAL	1.23 (0.59)	1.45 (0.65)	3.41 (2)	0.78 (0.47)	0.84 (0.68)	0.97 (0.61)	0.85 (0.66)
ANATOMICAL PREPARATION	-	-	8.1 (4.75)	1.1 (0.55)	-	-	0.7 (0.5)
VITRO	0.86 (0.46)	1.50 (0.56)	3.6 (1.85)	1.21 (0.62)	0.95 (1.05)	1.30 (0.62)	1.05 (0.7)
OVERALL	1.17 (0.57)	1.47 (0.61)	3.75 (2.1)	0.98 (0.54)	0.85 (0.70)	1.12 (0.61)	0.92 (0.67)

Comparison of Dynamic Navigation results divided by study type

The fact that in Dynamic Navigation, the clinical data are better than the model studies can be partly explained by the fact that the clinical studies are recent and therefore report the data of systematic DNs updated and tested over time than those used in experimental settings on a model, which may still be in the process of being perfected or even prototypes. It should also be considered that using these DN systematics in the clinical setting is reserved for operators who have usually completed extra-clinical training before using them on the patient. This condition is not necessary for experimental settings based on the model and in which it can therefore be assumed that the inexperience in the use of these systematic DNs adversely affects the performance detected, in fact, the existence of a learning curve in the use of Dynamic Navigation has been demonstrated, with statistically significant differences between the measurements obtained in the first and subsequent surgical interventions (12, 27) (Table XVI).

CONCLUSIONS

Although this meta-analysis has limitations due to the small number of articles in the literature regarding this recent surgical technique and also due to the high heterogeneity obtained by including anatomical preparation studies and model studies, we can conclude that further clinical studies, possibly RCTs, are needed in order to make a comparison characterised by greater statistical power and better homogeneity (28-30).

Despite these limitations, based on the foregoing sections, it can be stated that the introduction and use of a Dynamic Navigation system in implantology represents a predictable and reliable surgical technique. (31-33) (Table XVI).

Compared to conventional surgery, which is still the most widespread implant placement modality, Dynamic Navigation allows for greater accuracy, which potentially translates into a lower number of intra-operative complications and more optimal prosthetic management, simplifying its steps and reducing the need to use complex and unexpected solutions that would lead to an increase in costs and times. (34-37).

When using Dynamic Navigation, a safety distance of at least 2 mm from the surrounding anatomical structures must be established and considered in the design phase, as for Static Navigation (38, 39); this is because Dynamic Navigation while allowing a high reduction of the discrepancy detected between virtual planning and real positioning, has a residual margin of error (40-42).

Compared with Static Navigation, currently the gold standard in terms of accuracy, Dynamic Navigation allows you to obtain overlapping results whose possible differences, found mainly in the secondary outcomes, remain slight and insignificant. (43, 44)

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This minimal difference in favor of Static Navigation is, however, entirely compensated by the many advantages introduced by Dynamic Navigation; first of all, the enormous flexibility of use which, not being constrained by a rigid template (typical instead of Static Navigation), allows the surgeon the possibility to modify the rehabilitation project in the intra-operative phase and to manage the peri-implant tissues in the most suitable way for the patient's clinical situation. (45, 46)

In conclusion, although further studies are necessary to validate the cost-benefit ratio, the possible extension of operating times must also be carried out for the reasons just expressed, Dynamic Navigation is proposed, when available, as the system of the first choice in implantology, combining in a single instrument the indispensable versatility offered by conventional surgery with the accuracy typical of Static Navigation. (47, 48)

Conflicts of Interest

All the Authors confirm no conflict of interest or financial support.

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*Review***Could digital workflow replace the conventional?
A narrative review**

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ABSTRACT

In the last ten years, digital technologies have conditioned our lives in many ways. Also, in dentistry, new inventions changed our working routine, accompanying the clinician from the analogic epoch to the digital. A fully digital workflow seems to be very promising in terms of less discomfort for the patients and less time needed to make an impression than the traditional method. However, many aspects still need to be investigated, such as the procedure's complexity, the optical impression's reliability, the precision of the CAD-CAM-made crown, the costs, and the time needed to deliver a final crown. This review aims to understand, analyzing some RCT studies, whether a digital workflow is reliable compared to the analogic.

INTRODUCTION

In the last years, digital Technologies have become part of our lives to the point of conditioning the timing and how we communicate with each other. Nowadays, it would be unthinkable to work without any electronic device, whether a computer, a smartphone, or a tablet, since such devices allow us to store and share a significant amount of fundamental data for our activities.

In dentistry, digital progress has been principally developed in CAD/CAM systems and imaging systems. Computer-aided design (CAD) systems and computer-aided manufacturing systems were initially developed in 1950 by the American Air Force to design automotive and aeroplane components. After three decades, this technology was also applied to dentistry when Francois Duret developed the first CAD/CAM dentistry device, which was substantially made by an optical device for the impression and a numerically controlled milling machine (1).

Werner Mormann developed the CEREC System, the first commercially available chairside CAD/CAM system for dentistry, and it allowed delivery of a fixed final crown in a few hours (2). The first chairside treatment made with CEREC was executed in 1985 at the Zurich Dental School and the fact that this system allowed the clinician to deliver a fixed final ceramic crown the same day as the impression was revolutionary (3-7).

Nowadays, the CEREC system is largely used worldwide, and with the progress of technology, it has become a predictable and accessible workflow system. The evolution of dentistry digital imaging started with the invention of CBCT (8) and culminated 10 years ago with the invention of optical scanners.

The intraoral optical scanners allow the clinician to take a direct impression by projecting a light source onto the teeth and soft tissues of the mouth (9, 10). The image is captured by high-resolution cameras and processed by powerful software that produces a 3D digital model (11, 12). It allows the clinician to avoid the traditional plaster models and to have, in a few minutes, a digital model that replicates dentogingival tissues (13, 14).

There are many different types of optical impressions systems; the most common ones on the market are Trios 3, 4, 5(3Shape), iTERO Element 2, iTERO 5d Element (Align Technology), CS3800 (Carestream), Panda P2 (Pengtum technologies), Medit i700 (Medit Corporation), Planmeca Emerald S (Planmeca), Cerec Omnicam (Dentsply Sirona).

Each scanner has specific characteristics; comparative studies comparing different scanners have been performed, such as the one performed by Pokpong Amornvit, Dinesh Rokaya and Sasiwimol Sanohkan: "Comparison of Accuracy of Current Ten Intraoral Scanners" (15). In this study, a maxilla model was scanned with different scanners and measurements were taken on the respective STL files in the X, Y, Z and XY axes.

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According to the study, the greater the distance the scanner travels, the lower the accuracy and the greater the error. The precision in this study appears similar for all the scanners analyzed, while the trueness value varies, showing that Trios 3 and 4 from 3Shape reported better results than the others in both categories.

Other studies comparing the various optical impression systems include, for example, Miran Kwon and Coll's "Full-arch accuracy of five intraoral scanners: In vivo analysis of trueness and precision" (16) from which, comparing trueness and precision values, concludes that in the two categories the one that seems to perform better still turns out to be Trios 3.

The analysis conducted by Walter Renne, "Evaluation of the accuracy of 7 digital scanners: An *in vitro* analysis based on 3-dimensional comparisons" (17), shows that regarding trueness values for the full-arch, the best performance was recorded by D800 (3Shape), followed by iTero (Align Technology), TRIOS 3 (3Shape), followed by the others.

Regarding Precision values in full-arch scanning, the best scanner was CS3500 (Carestream), then iTero (Align Technology), then TRIOS3 (3Shape) and then all others. On the other hand, the most accurate and truthful scanner for posterior sextant scanning was the CS3500 (Carestream), while for full-arch scan, TRIOS3 (3Shape) offers the best compromise between scanning speed and accuracy.

The traditional impression technique could sometimes be very uncomfortable for patients, especially those with strong gag reflexes (18-20). On the contrary, the optical impression is well tolerated by the patients, and sometimes it could also be easier for the clinician (18, 21, 22). Once the 3D model is obtained, it can be used by the technician to project and model a prosthesis, a provisional and final crown or bridge, a Toronto bridge, a bite, a surgical or radiological guide and so on.

One of the most widely used software is Exocad's Dental Cad software, which allows for most designs, from custom abutments, screw-retained bridges, simple and complex bars, monolithic zirconia crowns, metal copings, esthetic veneers and more (23). When the technician completes the projecting phases, the STL file can be sent to a CAM milling machine or a 3D printer to obtain the final physical product.

A fully digital workflow seems advantageous for patients and clinicians, but it is a relatively new way of working, and we are still trying to understand the limits of this technique. Therefore, this review aims to investigate those aspects that could be critics in making a prosthetic rehabilitation using a fully digital workflow compared to the traditional, analyzing data from four specific articles in which these protocols had been examined.

The secondary aim is to provide unbiased information about a new digital way of working, analyzing features such as operative times, prosthetic success rate, costs, patient satisfaction and more.

An overview of the advantages and disadvantages of both traditional and digital workflow will be provided, helping the reader understand the clinical situations in which a digital workflow can be used successfully. This article wants to analyze the available data about these technologies impartially, obtaining some clear indications about their use in clinical practice.

Design of the review

The digital workflow is a current argument in research, one of the first articles about digital workflow making CAD-CAM references was written by Dennis J Fasbinder in 2010 (24). In the last twelve years, reviews have been written to clarify this new workflow's positive and negative aspects, sometimes showing discordant outcomes.

This paper aims to indagate the argument by analyzing data of RCT studies and trying to track a common line to shed light on the present and future of restorative and prosthodontic dentistry.

For this review, PubMed research has been conducted using the keywords “digital” AND “crown” and selecting RCT as an option. The research produced 100 articles which were reduced to 20 after selecting “full-text”. Articles published before 2015 were excluded from this review to obtain updated data about the topic.

Only articles with a good level of evidence were selected. Four articles were chosen from the twenty after reading the abstract, following homogeneity criteria. The selected articles strictly dealt with the topic and provided valuable data in accordance with the aims of this study.

We opted to do a narrative review, analyzing aspects that could be more critical for clinicians and patients. The most important findings of the articles selected for the present study were analyzed and reported in the review. The focus of this review is to answer simple questions that clinicians could ask before approaching these new techniques:

- Is the digital workflow equally efficient compared to the analogic one?
- Does the digital workflow have fewer working and crafting prosthesis times than the analogic workflow?
- How do the patients perceive the optical impression compared to the traditional one?
- What kind of technique do the clinicians and technicians prefer?
- Is the quality of the prosthesis comparable?
- Does the cost of the prosthesis decrease for the clinician using a digital workflow?
- Are there more complications using a digital workflow compared to the analogic workflow?

RESULTS

First article

To answer these questions, we analyzed four articles: the first one was written in 2018 by Francesco Mangano: “Digital versus Analog Procedures for the Prosthetic Restoration of Single Implants: A Randomized Controlled Trial with 1 Year of Follow-Up” (25).

This RCT study compares a digital workflow to an analogic workflow in single implant restoration. The population was made of 50 patients, 22 male and 28 female, with an average age of 52, divided with randomization into two groups of 25, the test and control groups. Both groups were treated with single-implant prosthetic crowns. The test group was treated with a monolithic zirconia crown following a digital workflow; the control group was treated with a single ceramic-steel crown following the analogic workflow instead.

After a one-year follow-up, no patient dropped out of the study, and the success rate was 92% for both groups. The test group recorded a percentage of biological and prosthetic complications of 4%, while the control group had 8% of biological complications but no prosthetic complications. Both groups showed a prosthetic success rate of 92% without any statistically significant difference between them. Also, in the case of marginal bone loss, no differences between the groups were recorded, with a total value of 0.47 ± 0.31 mm.

Patient satisfaction was evaluated with a VAS scale, and during the impression procedure, patients considered the optical impression more comfortable than the traditional one, with fewer gagging and nausea episodes. However, no differences were observed in comfort during the restoration phase.

The digital workflow received a higher rating in treatment times (average difference in VAS: +16, $p < 0.0001$) and costs (+9.2, $p = 0.01$). For the esthetic results, there were no differences between the two groups. However, the VAS total score showed a statistically significant difference in favour of digital workflow (+ 9.9, $p < 0.0001$).

To take an optical impression requires less time than the analogic one made with the double impression technique, which requires more than double the time (20 ± 5 min versus 50 ± 7 min; $p < 0.0001$). When

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calculating the active working time for the dental technician, the workflow in the test group was more efficient than that of the control group for both the provisional (70 ± 15 min versus 340 ± 37 min; $p < 0.0001$) and the final crown (29 ± 9 min versus 260 ± 26 min; $p < 0.0001$). There were no differences in the delivery times.

The realization cost of a final zirconia crown with a digital workflow was Euro 277.3, whereas a ceramic-steel final crown made with a traditional analogic workflow was Euro 392.2.

In analyzing this article, a digital workflow seems to be more advantageous in terms of comfort for the patient, working times and costs. Regarding impression times, such a big difference between the two groups could be due to the double impression technique used for the control group. This data contrasts with other works, and using a different technique, such as a polyether mono-impression, could significantly reduce the traditional impression times.

Second article

The title of the second article analyzed was “Randomized controlled clinical trial of digital and conventional workflows for the fabrication of zirconia-ceramic fixed partial dentures.

Part I: Time efficiency of complete-arch digital scans versus conventional impressions”: it included a small population of 10 patients needing a posterior tooth-supported 3-unit FPD (26). The clinical treatments were performed by 3 calibrated clinicians (I.S., G.B., S.M.) experienced with digital scanners and ceramic CAD-CAM prostheses. For each patient, the clinicians used three digital scanners (iTero, Cerec and Lava) and one conventional impression.

The results showed that the full-arch conventional impression took less time than the intraoral scanner. The difference was statistically significant for two of the three scanners, iTero and Cerec; moreover, using Cerec took more time than the other two systems. The scanning had to be repeated three times with the Lava scanner and seven times with iTero, while the conventional impression was only made once.

When the VAS value was assessed, the patients and the clinician evaluated the digital scanner less comfortably than the conventional impression; in particular, they found scanners that required powder during the procedure more complex than the others. However, the patients generally did not express any preference between the different impression methods.

The clinician preferred traditional impressions to digital ones and impressions without using powder to the ones with powder. In this study, data regarding the timing of the procedures are opposite to the results of the first study.

Third article

The third article examined is an RCT (27) which analyzes the prosthetic implant restoration of single implant tissue level Straumann RN, comparing the optical impression to the analogical one, using polyether. Again, 32 patients underwent rehabilitation, and a total of 32 implants were used: 23 for the test group and 22 for the control group.

Twenty-one patients received a single crown, 9 patients two crowns and 2 patients 3 crowns. In 9 of the 23 patients in the test group (39.1%) and 2 of the 22 patients in the control group (18.2%), fitting was adequate and did not require modifications. Fourteen crowns in the test group and 18 in the control group required modifications before being placed in the mouth. The time used by the clinician to modify the crown went from 3 to 11 minutes (mean = 3.35 min) in the test group and from 2 to 18 minutes (mean = 6,09 min) in the control group.

During the first year of loading, two complications occurred to the same implant in the control group. In the test group, one biological complication developed after three months of loading, leading to implant mobility with no signs of inflammation.

The results of this study show that a try-in of a CAD-CAM solitary screw-retained monolithic zirconia implant restoration needs shorter adjustment times than the conventional for the same restoration type and exhibit low complication rates and higher survival rate on the short-term (one-year follow-up).

Fourth article

The fourth study reviewed is an RCT titled “Digital vs conventional workflow for one-abutment one-time immediate restoration in the esthetic zone: a randomized controlled trial” (28). The article analyzes the short-term outcomes of single implants in esthetic areas in 18 patients, using the technique “one abutment, one time” and comparing a conventional workflow (analogical) to a fully digital workflow.

In the study, the impressions were made using alginate and 3Shape (TRIOS®, Denmark) for each patient; then the patients got CBCT scan, and the STL files from the digital impression were imported and merged in DicoDiagnostiX® software. The implant positioning was planned using this software.

The test group used the CARES software to do a digital tooth setup. The setup was combined with the initial planning, modifying the position of the implant to have a prosthetic-favourable final position. A fully guided drill guide was ordered at the end of the planning phase. The technician, guided by the previous planning, created a custom-made zirconia abutment and a provisional prosthesis in PMMA CAD-CAM, which were then used on the day of the surgery. Moreover, the technician built a silicon verification key on the surgical guide’s buccal side so it was possible to verify the implant position during its placement.

In the control group, orthocryl free-hand surgical guides based on a conventional wax-up were performed, and the technicians created an individual impression tray. During surgery, the consecutive drills of the implantation procedure were carried through the free-hand guide to position the implant according to the prosthodontic planning. A precision impression was then taken using the individual impression tray immediately after the implant insertion. Using the impression taken after the surgery, the technician planned a final zirconia abutment using the diagnostic wax-up. Following this phase, a PMMA-stratified provisional crown was produced.

Surgical results

In the control group, the insertion of the conventional guide was possible for every patient with no modifications; in the test group, the surgical guide needed modifications in order to be fitted. The higher deviation in the entrance site was 1.13 mm in the test group’s surgical guide, which was modified later. In one case, the clinician had to change the height of the implant due to a standard deviation of 2mm in the vertical dimension.

The global apical deviation (GAD) was significantly higher in the control group compared to the test group ($p = 0.014$). In addition, significant differences were observed for the Angular deviation ($p = 0.014$) and the Apical vestibular deviation ($p = 0.038$) in favor of the fully guided surgery.

No significant differences were registered regarding the Coronal global deviation, Coronal distal deviation, Coronal vestibular deviation, Coronal apical deviation, Apical distal deviation, and Apical deviation.

All the implants obtained primary stability, a 15Nm torque was used for all the custom-made zirconia abutments, and all the provisional prostheses were inserted right after the surgery in the test group and after 10 days in the control group. There were no statistically significant differences between the two groups concerning occlusion and interproximal contacts; the two groups both required occlusal modifications in almost half of the patients.

The White Esthetic Score (WES) showed no significant difference between the two groups, even though the scoring was not higher in the group with the conventional stratified provisional crown. However, the PES

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score tended to be higher in the test group. In terms of soft tissue colour and texture, the values of “2” were recorded for all patients in the test group, while the proportion of score “2” was 44.4% in the control group ($p = 0.029$, respectively).

The satisfaction scores were similar between the groups, except for the comfort during the polyether impression (control group) vs digital impression (test group); the digital impression was found to be significantly more comfortable compared to the conventional one ($p = 0.014$). No statistical differences were registered in the esthetic VAS in the two groups. Both methods showed the authors registered satisfactory results and no statistically significant differences in the outcome regarding esthetics. The patients preferred the optical impression to the conventional polyether one, as the previous one caused less discomfort.

DISCUSSION

In the past two decades, dentistry has made great strides in evolution in both techniques and materials (29-48), nowadays increasing number of clinicians use the optical impression in their office, choosing the digital workflow for many reasons. From these studies, we deduce that in terms of aesthetics and reliability of the final crown, there are no differences between digital and analogic workflow, which also concerns the need for occlusal and interproximal modification in the delivery appointment.

There were no differences between the two groups in the post-delivery prosthetic complications. For what concerns the times needed for the impression, there is a certain discrepancy of data and, in our opinion, it depends a lot on the conventional impression technique used for the comparison; however, it seems to be easier to take the impression using a scanner without the necessity of the powder.

A fully digital workflow seems to be more efficient for the realization of the final crown, showing shorter times in the crafting process. The costs of a final crown made using a fully digital workflow seem less expensive for the clinician compared to the analogic.

The patient, except for the second article, appears to prefer the optical impression compared to the traditional one, mainly because of a less gagging and nausea episodes, whereas there are still contrasting opinions among the clinicians, and it might depend on the dexterity in using the new technique.

These data agreed with recently published systematic reviews such as “3D Digital Impression Systems Compared with Traditional Techniques in Dentistry: A Recent Data Systematic Review” by Marco Cicciù et al. (49), in which, in addition to what has already been said, there is evidence of greater ease of use of the optical impression for students than for established professionals, this may be due to the unwillingness of those professionals, who have been used to working in a certain way for so long, to change.

Limitations

Since digital workflow was introduced in dentistry not years ago, only a few data about these new technologies are available in the literature. Moreover, the high cost of the equipment makes it even more challenging to design clinical studies that provide data with a high level of evidence.

Extended research that includes a larger number of reliable studies should be conducted in the future when more knowledge about these technologies will be acquired, and the use of the equipment will be extended in clinical practice.

This paper has not considered all the techniques that could be used for digital workflow; however, interesting recent reviews, such as that of Lavorgna et al. (50), does compare the values obtained with different optical impression systems and the photo-detection system on which Digital Smile Design is based.

CONCLUSIONS

The use of the optical impression undoubtedly required a learning curve to optimize times and avoid making the same impression many times. However, even with some critical points, such as powder use, the optical impression seems reliable and precise, especially for single or small implant-supported bridges.

From the analysis of these papers, we can conclude that, for what concerns fixed implant-supported prosthesis, a digital workflow showed promising results. However, the limits of these methods are the powder's use and the time needed to take an impression.

A digital workflow is a viable alternative to the traditional workflow; it seems to work better for some treatments than others. However, there is still a conflicting opinion in the literature and among clinicians about its applicability and benefits in daily clinical practice.

It will undoubtedly be interesting to carry out new research in the future, also trying to create large databases to enter all the various digital data collection systems and compare them with each other in order to highlight the strengths and weaknesses of each.

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Review

Minimally invasive rehabilitation with total removable implants supported prosthesis with conometric connection

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ABSTRACT

Since its inception, modern dentistry has been a discipline in continuous evolution. Thanks to this progress, the prosthetic rehabilitation of the edentulous patient can now be effectively addressed by multiple therapeutic approaches rooted in the decision-making marriage between patient and clinician in both partial and total edentulous patients. From a historical perspective, the aesthetic-functional restoration of the completely edentulous maxillary arch has been subverted in the possibilities of intervention by the introduction of implantology, which has made it possible to overcome the otherwise mandatory use of removable devices with complete mucous support (1). The current study is intended to be an example of this evolution by describing one out of five clinical cases performed. Furthermore, it is intended to demonstrate how the newly proposed implant-prosthetic techniques, where a fixed implant rehabilitation is not possible due to age constraints, lack of bone support or unfavourable mechanical-aesthetics parameters, allow the rehabilitation of the upper total edentulous jaw with a removable device without a solidarizing intermediate bar to rely upon for the implants. The implants and the whole rehabilitation are, however, consolidated thanks to the stability provided by the presence of a telescopic connection, combining viable long-term survival (2) with optimal results for the patient in terms of cost (3), comfort, chewing capability (4), aesthetics and home hygiene.

INTRODUCTION

The therapeutic possibilities for the implant-prosthetic rehabilitation of the oral cavity afflicted by total edentulism can be primarily distinguished in relation to the possibility of removal, both by the patient and by the doctor, of the strictly prosthetic component constituting the rehabilitation.

According to reports by Misch (5) in 1990, there are five categories of implant-prosthetic rehabilitation for fully edentulous arches, three fixed and two removable; the distinction between the two removable options is mainly related to the fact that the support can either be based entirely on dental implants (RP-4) or be the combination of an implant-mucous one (RP-5).

According to the literature (6), the choice to carry out a removable implant-prosthetic rehabilitation may be justified by multiple reasons. Among these, the reduced cost offered by these treatment plans compared to the fixed counterparty, often resulting from a reduced implant demand, is very important for decision-making. Indeed, the implants are frequently placed in the anterior maxillary region, and the posterior region is supported by the combination of a cantilever element with mucous support, thus making it less pressing to perform higher bone additive procedures since the anterior bone resorption is, in general, less marked.

Other advantages attributable to a removable prosthesis on implants lie in the possibility of making up for soft tissue deficiency (7, 8), the best home hygiene that the patient can put in place, the possibility of removing the prosthesis at night to mitigate the effects of a possible parafunctional habit and the ease of repair, given the possibility of delivering the artefact to the dental laboratory.

While conducting a cost-benefit analysis of prosthetic rehabilitation, the clinician must assess the degree of atrophy and the patient's age (9). Regarding the degree of atrophy, one of the most appreciated classifications in the literature, that of Misch & Judy (10), published in 1987, notes the existence of a biomechanical relationship between the residual crestal bone amplitude and the maximum inclination of the dental implant with respect to the bone base, such that when the values of crestal amplitude are less than 5mm the inclination

as mentioned above should not exceed 20 degrees. In these scenarios, the therapeutic will to guarantee, through a full-mouth fixed bridge, adequate home hygiene and satisfying aesthetic contrasts with the implant biomechanics and, therefore, the needle of the balance “cost-effectiveness” tends towards a removable implant-prosthetic rehabilitation.

When it comes to the removable implant-supported rehabilitation of the completely edentulous upper arch, it is common to find in the literature (6, 10-13) that a device with a “bar” retention system with solidarized implants is superior on both the mechanical and hygienic-prognostic planes compared to other types of connections on non-solidarized dental implants (14, 15). From a combined clinical and biomechanical perspective, the magnitude of the stabilization mentioned above derives, at least partly, from the type of connection chosen. The literature (16, 17) reports a greater ability to withstand functional loads for “locator” attachments and bar-supported solutions when compared to “ball” attachments.

The literature is not so rich regarding “telescopic” or “conometric” connections; however, it is sufficient for some considerations. It is reported that the connections guarantee greater stability and rigidity than others (18) and allow the distribution of masticatory forces comparable to that obtainable with a bar, albeit with some differences (19); furthermore, one must consider that the literature has not come to a clear conclusion when considering the marginal bone loss as the effect of the overload applied on fully osseointegrated implants (20). The mechanical advantage of these connections is attributed (21) to the intimate circumferential contact between the components, resulting in the reduction of rotational torque generated by applying any masticatory load.

Considering the statements mentioned above, this study aims to report the possibility of performing an implant-prosthetic rehabilitation of the maxillary district through a telescopic connection without a “bar” superstructure, granting hygienic and economic benefits without mechanical or prognostic sacrifice.

In order to give scientific support to the therapeutic option proposed in the current paper, a search has been conducted on the bibliographic search engines PubMed and Scopus to identify similar publications, which allowed a broader spectrum of considerations than the ones directly inherited by the individual sample reported by the authors and which could therefore support the scientific rationale of the therapeutic plan.

Case study

The case involves an adult male patient (74 years) with a medical history positive for hypertension, which is reported to be pharmacologically compensated at the time of treatment. The patient, who has a total edentulous upper arch, has requested a prosthetic rehabilitation of this sector through an implant-prosthetic treatment, not bearing the possibility of a completely mucous-supported prosthesis.

Following the case study, carried out through gipsographic models, radiographic examinations and objective evaluation of the oral cavity, the therapeutic possibilities individualized for the specific case were illustrated. Given the massive bone atrophy and unfavourable aesthetic-prosthetic parameters when a fixed implant-supported device was considered, a removable prosthesis with telescopic connection on implants placed in the 1.3, 1.2, 2.2 and 2.3 sites was theorized.

From the subsequent comparison with the patient, it was decided to proceed with the therapy, given the criteria set out in the previous section and the lowest cost of the whole treatment plan. Therefore, the treatment plan was carried out with the placement of the dental implants, of size and diameter commensurate with bone availability and biomechanical aspects (14, 22), in the planned sites and, after waiting an adequate time for osseointegration to happen, with the positioning of the relative implant connection abutments. Then, the removable prosthetic device, coupled through a telescopic connection, was manufactured on those supports.

MATERIALS AND METHODS

The preparation of the patient involved obtaining the preliminary analogue-digital documentation, consisting of initial photos (analysis of chewing - exposure of the smile - general aesthetics of the patient), study models and computed tomography to define bone availability. A radiological-surgical-prosthetic template was then commissioned to the dental laboratory, through which the position chosen for the dental implant was radiologically and prosthetically verified before the surgery (Fig. 1, 2).



Fig. 1. *Implant-prosthetic project by cone beam computerized tomography.*

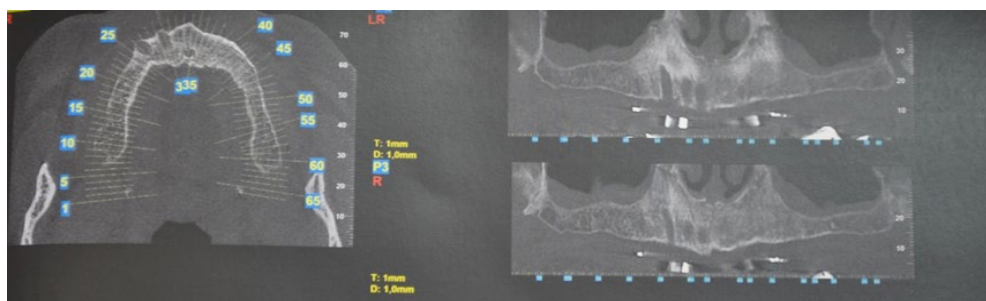


Fig. 2. *Pre-implant surgery orthopantomography.*

Then, we proceeded with the surgical phase. Firstly, perioral skin disinfection (Povidone Iodine 10%) was associated with Vaseline to moisten the tissues, and local anaesthesia followed. The gingival surface was then treated with a topical anaesthetic (Lidocaine + cetrimonium bromide 15 %), and plexal anaesthesia was inoculated both at the level of the upper vestibular fornix microcirculation and in the palate (Articaine 4% + adrenaline 1/200,000).

Secondly, an oblique incision of the tissues at the vestibular paracrestal level was made with full-thickness tissue cleavage palatally and narrowly at the vestibular level (scalpel 12C). The total bone exposure made it possible to trace the reference points determined by the positioning of the radiological-surgical-prosthetic template and the consequent execution of exploratory milling using “lanceolate” milling (1.9 mm) at 5mm in the predetermined sites 1.3-1.2-2.2-2.3.

After a clinical examination of bone density (D3 classification of Misch (5)) with an implant probe, the first milling (2.2mm) was performed at 5mm and then completed, radiologically verified the inclination, up to 13 mm in sites 1.2-2.2 and up to 11 mm in sites 1.3-2.3. A second milling for 5mm (diameter 2.8 mm) and a third

milling (diameter 3.3 mm) was subsequently carried out for 3mm to prevent excessive bone pressure by the implant element during insertion, favoring the primary osteogenesis but also ensuring implant stability. Four implants (titanium 5 HRS surface) were inserted, with a diameter of 3,75 mm and a length of 12 mm in the 1.2 and 2.2 locations, and a diameter of 3,75 mm and a length of 10 mm in the 1.3 and 2.3 locations, up to 1 mm below the bone ridge, favoring prosthetic aesthetics (23).

Following the insertion of the cap screw on each implant, a check orthopantomography was performed to verify the operation's success. Next, the flap was carefully sutured using a closing flap through single intrapapillary stitches in positions 1.4-2.4 and a horizontal mattress crossed between the vestibular and palatal front portions.

This method, the wrapping of the suture in the vestibular paracrestal position obtained from the initial incision mode, has decreased the risk of infection of the implant stumps since the incision and the consequential suture are both laterally placed to the insertion site (glycolic acid absorbable suture).

The patient was discharged following pharmacological indications, antibiotic bactericidal and anti-inflammatory (amoxicillin with clavulanic acid 1gr every 8 hours for six days and paracetamol with codeine 500mg + 30mg when needed), associated with post-surgical indications, indications to hygiene and, for the first month, to a soft diet. The patient was finally given the temporary, pre-packaged, mobile prosthesis with light silicone relining, adapting the occlusion to the lower arch. Three weeks later, the sutures were removed, and a monthly radiographic check was carried out for a quarter. We proceed with the radiographic control three months after the surgery to assess osseointegration (Fig. 3).

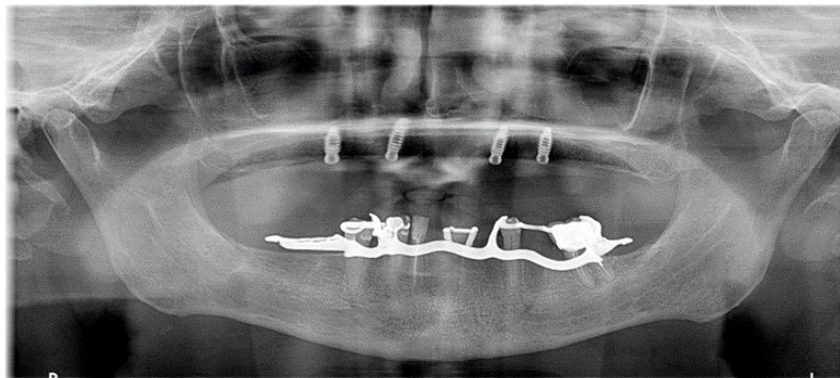


Fig. 3. Post-implant surgery orthopantomography.

The optimal results in the radiogram made it possible to proceed with the second surgical phase of implant uncovering to start the prosthetic rehabilitation. In this phase, about a quarter from the previous one, we proceeded with the same procedure of disinfection and anesthesiology, as reported above. We then drew a flap characterized by an oblique paracrestal palatal incision with partial thickness cleavage vestibular and full thickness palatally (scalpel 12C). This incision increased the volume of vestibular tissues, the simultaneous exposure of the smooth peri-implant collar and the subsequent placement of healing screws (Fig. 4).

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Fig. 4. *Mucosa during implant activation.*

Once the necessary healing screws were placed, the suture (glycolic acid absorbable suture) and the readaptation of the temporary mobile prosthesis were performed. Finally, the photographic documentation was updated, and an alginate impression was taken to create an individual impression holder before the surgical phase mentioned above.

Once the time of the healing of the perimplant tissues had elapsed, the treatment plan was continued with the taking of a first analogic precision mucostatic impression (polysulfide) necessary for the realization of the removable prosthesis. In the same session, a second precision analogic impression was performed (polysilicon) using transfers to determine the correct position of the implant pillars. With this information, the intermediate supports necessary for the subsequent screwing of the primary telescopic abutment (standard length 4.3mm and standard angle 5° of the patient) were chosen, relying on the gum volume at the intraoral level and the parallelism between primary stumps at the extraoral level on dedicated models (Fig. 5).



Fig. 5. *Implant position evaluation.*

Specifically, an intermediate support of length 1.5mm with an inclination of 25° was placed in position 1.3; in seat 1.2, the length was 5mm with an inclination of 15°; in site 2.2 length was 5mm with an inclination of 35° and in seat 2.3 length was 3mm with an inclination of 25° (Fig. 6, 7).



Fig. 6. Intermediate supports for screwing the telescopic primary stumps.



Fig. 7. The telescopic primary stumps.

In the following sessions, we realized the prosthesis through the test of the wax rims, placed on the provisional prosthetic flange, and thus detecting the vertical dimension, the correct model of occlusion, through precise mastication on dedicated auxiliary wax, and the interdental midline related to the tip of the nose and chin.

The tooth test was then performed, first in the front and then in the rear (Fig. 8, 9); the prosthesis was also subjected to a chewing control, in which we assured that while performing lateral excursions and protrusions, there were not too many tangential stresses (Fig. 10).

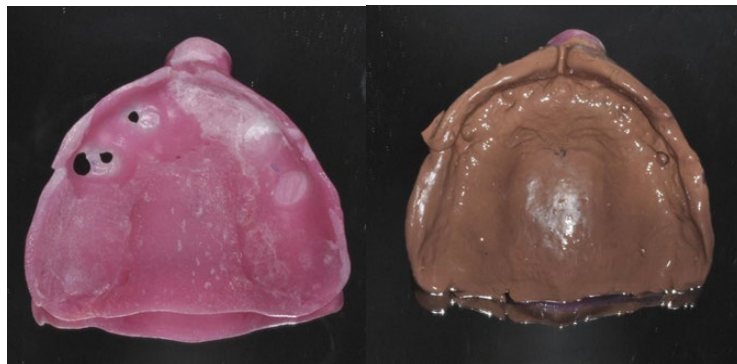


Fig. 8. Accurate impression in order to produce a removable prosthesis.

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Fig. 9. Structure test - vertical dimension evaluation - chewing test.



Fig. 10. Chewing test.

In the same session, a phonetic test was also carried out, associated with a further aesthetic evaluation by a family member. As a final step, the palatal coverage was removed from the prosthesis, and an alloy reinforcement grid (chromium-cobalt) was incorporated at the dental laboratory.

Finally, at the time of delivery, four secondary telescopic crowns in peek (Standard length 4.3mm and standard angle 5,6 mm) have been inserted into the final removable prosthesis using a direct relining (polymethyl methacrylate). Those were calibrated for the primary telescopic abutments of the implant elements 1.3-1.2-2.2-2.3 and were necessary to determine the telescopic anchorage on the implant elements of the said prosthesis (Fig. 11-13).

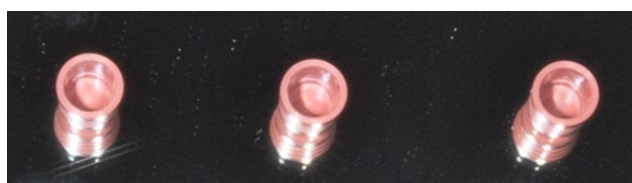


Fig. 11. Peek® secondary telescopic crowns.

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Fig. 12. *Peek® secondary telescopic crowns insertion.*



Fig. 13. *Removable prosthesis.*

After approximately one month, the patient was reviewed for the execution of an indirect relining through the support of the dental laboratory updating, in the same session, the photographic documentation and verifying the positive course of rehabilitation (Fig. 14).

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Fig. 14. *Smile.*

In order to perform a comparison of the proposed rehabilitation protocol with other similar publications, a search has been carried out on the search engines PubMed and Scopus, using as a query the following string: '("Telescopic" or "Conometric" or "Milled bar") AND ("Overdentures" or "implant-supported prosthesis" or "Dental Bridge" or "Removable prosthesis") AND "Dental Implants"'. The titles and abstracts of the 93 individual results were then analyzed to make a further selection of the comparative studies, and the three independent revisors involved selected a preliminary total of 4 publications.

Only one article (15) was found to be suitable for comparison since it included removable telescopic-coupled overdentures, among other types of connections, supported by more than 4 implants in treating patients with edentulous upper jaws.

RESULTS

At the end of the first trimester, the first clinical inspection checked the stability of the implants, the intermediate prosthetic components and the gum tissue structure and professional oral hygiene were performed. After delivery, the second clinical and radiographic check was carried out to analyze the stability of the implants, the intermediate prosthetic components and the gum-tissue structure.

In both measurements, the stability of the implants, prosthetic components, and gingival-tissue structure was optimal, accompanied, in the second examination, by the radiographic evidence of complete osseointegration. Therefore, professional oral hygiene was carried out every four months for the first year, ensuring gum health of the mucous channels and making the patient aware of the importance of such attention to achieve an optimal duration of the prosthetic rehabilitation.

DISCUSSION

Dentistry is a medical discipline that requires a certain amount of therapeutic flexibility on the part of the practitioner: no protocol allows all clinical cases to be successfully concluded, but all clinical cases can be fully satisfied by the correct choice of a treatment plan (24).

A further aspect of peculiarity, which constitutes the foundation of modern medicine, is the continuous evolution of therapeutic methods, where what was generally considered not optimal in the past can be, to date, thanks to technical progress, considered the best desirable treatment for a specific patient (25).

A clear example of the importance of adapting the prosthetic treatment plan to the patient's needs using new therapeutic algorithms has already been reported by Zanotti and colleagues in the minimally invasive telescopic prosthetic restorations (26). The concept is further evidenced by the reported clinical cases, in which the need to converge objectives on the appropriate levels of stability, aesthetics and durability of rehabilitation sought by the clinician with the patient's expectations, existing both clinically and economically, has imposed an innovative approach to the total removable prosthetic rehabilitation of the upper jaw, denying the poor predictability that is attributed in the literature to IODs (27, 28) (maxillary implant-supported overdentures).

The rehabilitation method adopted, assuming as a requirement the adequate availability of bone in the premaxilla, has allowed the placement of the implants in the optimal locations for the realization of a removable prosthesis with mixed implant-mucous support and thus allowed to reduce costs and discomfort for the patient compared to fixed alternatives, which would have required surgical bone augmentation procedures.

The contextual design of a telescopic device based on mixed support, as opposed (29, 30) to the ones solidarized by bars or other types of connections, has further contained costs without sacrificing stability and prognosis, in line with the assertions in the previous sections. Furthermore, an advantage obtained, thanks to the prosthetic-implant design proposed, further than those mentioned above, consists in the possibility to reduce the prosthetic flange on the vestibular side and eliminate the palatal component, thanks to the convergence of the coronal prosthetic component to the implant support resulting from the absence of a rigid superstructure.

Eliminating the palatine component improves patient comfort since many phonemes are produced by addressing the tip of the tongue to the premaxilla, and the presence of clutter is often referred to as an obstruction to the phonation (31). At the same time, the reduction of the vestibular flange made the rehabilitation more appealing aesthetically, in compliance with the perioral musculature.

There is no clear evidence that implant solidarization employing a bar is favourable for the survival of the rehabilitation, where the possible advantage of its use as a better compensation of the tangential forces in a phase of disengagement of the device in the case of non-aligned implants in patients with marked modification of the original arch shape, would not have been significant in the specific patient analyzed.

What emerges clearly from the literature (31, 32) is the strong influence that the "hygienic potential" conferred by the prosthetic design has on peri-implant disease. For example, Serino (31) reports that in 48% of the samples analyzed, peri-implantitis was associated with poor prosthesis hygiene and that this parameter had predictive power for the onset of the pathology for 82%. The authors, therefore, consider, in the light of the above literary data and based on their clinical experience, that they can summarize the advantages of the treatment solution adopted as follows.

The first aspect is the possibility of rehabilitating an elderly edentulous patient if the initial bone volume does not allow the realization of a fixed implant-supported prosthesis without performing regenerative surgery, with low costs compared to bars and comparable costs to alternative couplings. The second advantage is that compared to the aforementioned alternative couplings, namely 'Interlock' and "ball" attachments, the wear of the structural components seems to be lower, while the hygienic potential of the device is kept extremely high. The clinician should also note that telescopic is an approach that makes extreme precision its pivotal point and therefore requires meticulous accuracy in all its steps, which from a certain point of view, can be a disadvantage;

Secondly, telescopic systems tend to show a more significant number of mechanical complications during maintenance. However, it should be noted that in the literature, this data is discordant (33, 34), and, in the scenario of those happening, they are fully manageable on a regular ambulatorial recall.

CONCLUSIONS

In the reported scenarios, the chosen therapeutic plan made it possible to achieve optimal and stable clinical results, giving a hopeful demonstration of the importance of critically interpreting the consolidated prosthetic dictates resulting from empirical experience. The authors also consider it necessary to stress that, in addition to the obvious advantages in economic terms and invasiveness compared to fixed or bar-supported counterparts, the approach adopted, that is, the use of a removable device without a fixed superstructure has allowed for improved hygiene at home, which is by no means secondary to the incidence of peri-implant disease (32, 33, 34).

In order to document the difficulty of comparing the therapeutic approach described therein with statistical data available in the literature, a recent systematic review is considered, published by Kern et. Al (35). The work has shown that the factors influencing the clinical success of implant-prosthetic rehabilitation are many. In general, fixed rehabilitations have a greater survival rate than the removable alternatives; that is why the latter would be preferable under idealistic conditions. However, the same publication also reports the impossibility of making a direct comparison between the implant's survival rate obtainable with "ball" attachments and telescopic connections rather than between "bar" structures and telescopic connections since the number of studies available is very limited.

It is therefore considered, in agreement with the literature, plausible to conclude that, although within the limitations of the experiential sample considered, the total removable prosthesis with telescopic connections may constitute a therapeutically and prognostically comparable alternative (36), if not even superior in terms of peri-implant soft tissues health (37), to bar retained IODs in cases where, due to medical, clinical or economic reasons, fixed rehabilitation loses absolute value; while adopting this approach the clinician should, however, consider the possibility of encountering a slightly higher number of mechanical complications during maintenance visits: this statement is based on literary data (15), given the already mentioned timespan and sample limitations of this study.

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03 CLINICAL CASE REPORT



Marco BEVILACQUA Tiziano TEALDO



Christian ALBERTI Maria MENINI

Chi si occupa di implantoprotesi sa come la scelta dell'impianto sia di fondamentale importanza per l'ottenimento del successo clinico immediato e a lungo termine.

Le caratteristiche principali da valutare nella scelta fra le diverse tipologie di impianti oggi presenti sul mercato sono quattro¹⁻³:

1. Macro-struttura o macro-architettura, determinata dalla forma dell'impianto, che, nonostante l'ormai consolidata preferenza per la forma radicolare (tronco-conica o root-form), può essere anche cilindrica, a lama, a disco, ad ago e in altre morfologie.
2. Micro-struttura o profilo dell'impianto, determinata dalla geometria delle spire (quantità, altezza, spessore, angolazione): a parità di morfologia macroscopica, il profilo può presentarsi lineare con spire o con gradini e tali elementi possono avere una geometria e una dimensione diversa. Queste caratteristiche influenzano la direzione dei vettori della forza di carico esercitata sull'osso circostante.
3. Micro-topografia, determinata dal trattamento della superficie: l'impianto può mostrare vari gradi di rugosità, di tipo diverso e di entità variabile a seconda del trattamento utilizzato nella produzione del manufatto o presentare esclusivamente le striature dovute al processo di tornitura ed è quindi definito "impianto con superficie liscia" (machined).
4. Struttura chimica, determinata dalla composizione chimica della superficie a seguito del trattamento di produzione: regola gli scambi ionici con l'organismo ed è alla base di fenomeni di citotossicità e infiammazione. Inoltre, la deposizione e l'adsorbimento di proteine dal sangue, processi influenzati dalla struttura chimica, sono di basilare importanza nello stabilire l'interfaccia tessuto-impianto.

La macro-struttura e la micro-struttura dell'impianto condizionano il comportamento biomeccanico dell'impianto e quindi influiscono sulla stabilità primaria e sulla distribuzione di forze all'interfaccia osso-impianto in seguito al carico oclusale. La micro-topografia e la struttura chimica agiscono invece sul comportamento biologico tra il dispositivo alloplastico e l'ospite^{4,5} (Fig. 1).

Sulla base di questa premessa, Biomax ha

Razionale e utilizzo clinico di un nuovo impianto con macro e micro-struttura modificata

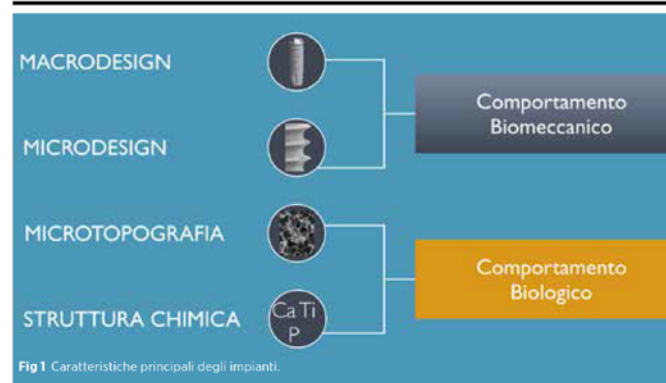


Fig 1 Caratteristiche principali degli impianti.

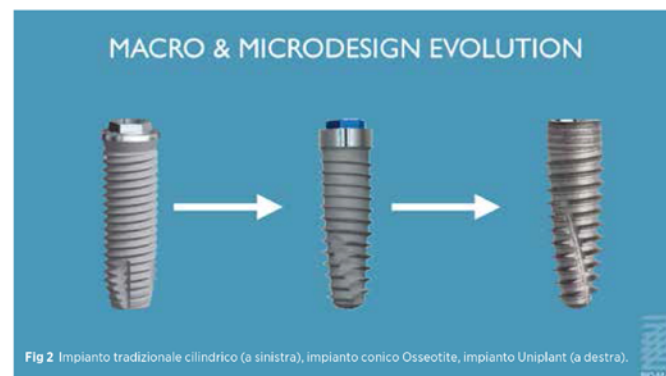


Fig 2 Impianto tradizionale cilindrico (a sinistra), impianto conico Osseotite, impianto Uniplant (a destra).

sviluppato un nuovo impianto (UNIPLANT) con macro e micro-struttura di ultima generazione che racchiude i più moderni concetti biomeccanici (Fig. 2).

Tutti i particolari del disegno dell'UNIPLANT concorrono a creare un impianto il cui obiettivo principale è di offrire un'adeguata stabilità primaria anche nelle situazioni più critiche: dall'osso di scarsa qualità ai siti post estrattivi, dalle procedure di carico immediato più estreme ai ritrattamenti implantari (Fig. 3-7)

Il trattamento implantare con UNIPLANT è particolarmente indicato in presenza di tessuto osseo di scarsa qualità (tipo III e IV secondo Leckholm e Zarb) ma seguendo gli appositi protocolli di preparazione può essere inserito anche in osso più compatto utilizzando maschiatori dedicati.

Il torque massimo raccomandato con chiavi dinamometrie è di 70/80 NCm a seconda del diametro implantare.

La conicità del corpo implantare⁶ (dovuta al minor diametro a livello apicale) crea un impianto dalle spiccate caratteristiche autofillettanti e osteocompattanti che abbinate ad una sottopreparazione del sito implantare aumentano significativamente la stabilità primaria⁷. L'apice implantare è in grado di ingaggiare la zona utile dell'alveolo post

estrattivo anche per poche spire, riuscendo comunque a dare un'elevata stabilità anche nei casi di carico immediato (Fig. 8-11). Gli impianti sono attualmente disponibili fino ad una lunghezza di 20 mm (nei diametri da 4 e 4,5 mm).

La spira profonda ed autofillettante dell'impianto è studiata in modo da ottenere stabilità primaria anche dove l'osso è meno denso e per ottimizzare la trasmissione dei carichi masticatori all'osso perimplantare. Le scanalature presenti sul corpo dell'impianto creano dei profili autofillettanti che si alternano a profili autobloccanti per mantenere la stabilità dell'impianto nelle fasi immediatamente successive all'inserimento. Le scanalature, che si prolungano fino al colletto terminando in microsolchi orizzontali crestali, facilitano l'inserimento dell'impianto nel sito osteotomico e aiutano a ridurre le forze tensivo che si creano durante l'avvitamento.

Il disegno delle spire, la loro ampiezza, numero, profilo e spaziatura sono elementi determinanti dal punto di vista biomeccanico, con ripercussioni sul mantenimento dell'osseo-integrazione dell'impianto. Infatti, l'osso è caratterizzato da un estremo dinamismo metabolico, che determina un continuo ricambio delle sue componenti organiche e

inorganiche e il cui equilibrio viene influenzato da fattori sia endocrini sia metabolici. Inoltre, come espresso dalla legge di Wolff, il tessuto osseo si rimodella in base ai carichi funzionali cui è sottoposto⁸.

Per quanto riguarda la micro-topografia, la superficie implantare, ottenuta tramite trattamenti fisico-meccanici (sabbatura con materiali a granulometria controllata) e successivi trattamenti chimici (doppia mordenzatura acida), è da considerarsi moderatamente ruvida, più pronunciata verso l'apice e ridotta al colletto. Questo tipo di superficie è utilizzato da diversi anni e vanta un'ampia e rigorosa letteratura di supporto con follow-up a lungo termine.

Da un punto di vista protesico, UNIPLANT combina le caratteristiche di una connessione conica con una connessione antirrotazionale, posta alla base del cono, per dare ulteriore stabilità alla componentistica protesica. Il sigillo conico consente di ottenere un'adeguata precisione tra la parete dell'impianto e quella dei monconi. La precisione così ottenuta si traduce in stabilità della connessione e trasmissione assiale ottimale delle forze che si disperdono in maniera controllata lungo l'asse dell'impianto. I componenti protesici presentano due sole piattaforme per tutti i diametri implantari (small: Ø 3,5 mm, 4mm e regular: Ø 4,5 mm, 5mm).

Per le procedure di carico immediato sono disponibili monconi conici (UNICONE) da 0°, 17° e 30°. Le connessioni sono dotate di platform switching integrato con rispetto dell'ampiezza biologica.

L'esperienza clinica iniziata dal nostro gruppo con il nuovo impianto da più di due anni, soprattutto nei mascellari superiori, in osso D3 e D4 in un numero consistente di pazienti, sta dando risultati molto incoraggianti con percentuali di successo elevate, grazie alla stabilità primaria iniziale ottenibile con maggiore facilità.

Come per tutti i dispositivi ad elevate performance, l'utilizzo di questo sofisticato impianto richiede una curva di apprendimento (Fig.12-15). Si consiglia pertanto un'attenta selezione soprattutto dei primi casi clinici da trattare: la qualità ossea dovrà essere realmente D3 e D4 per meglio apprezzare i vantaggi e il comportamento del nuovo impianto.

Uniplant consente al clinico una maggior applicabilità dei protocolli implantari e una maggior predicibilità grazie al raggiungimento di un'elevata stabilità primaria anche in condizioni avverse con un tessuto osseo di qualità decisamente scarsa.

Ringraziamenti

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Fig 3 Caso clinico di riabilitazione mascellare in una paziente donna che presenta fallimento di una protesi fissa tradizionale su monconi naturali per severa parodontopatia. Il volume osseo residuo appare adeguato, ma di scarsa qualità soprattutto nei settori distali.



Fig 4 Ponte fissa provvisorio ad modum "Columbus Bridge Protocol" a 48 ore dall'intervento.

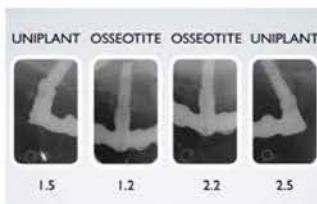


Fig 5 Radiografie endorali di controllo. Posteriormente, dove la qualità ossea era di tipo IV, sono stati inseriti 2 impianti inclinati Uniplant da 18 mm. Anteriormente 2 impianti conici tradizionali Osseotite da 15 mm. Il provvisorio di tipo avvitato con framework in metallo è stato passivato con la tecnica dell'incollaggio differenziato senza cantilever distali.



Fig 6 L'estetica della paziente prima della riabilitazione.



Fig 7 Visione finale del Columbus Bridge definitivo di tipo "natural".



Fig 8 Trattamento implantare post estrattivo con carico immediato.



Fig 9 particolari del caso iniziale.

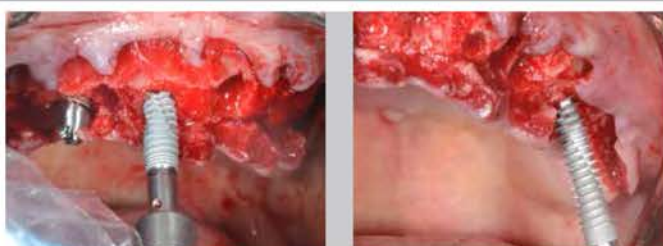


Fig 10 Visione ravvicinata della macro e micro-struttura del nuovo impianto Uniplant. Si possono chiaramente apprezzare il disegno delle spire, la forma conica del corpo implantare, le scanalature, i microsolchi orizzontale del colletto e il driver dedicato. Sono stati utilizzati impianti da 18 e 20 mm.



Fig 11 Particolare connessione conica e pilastro angolato.



Fig 12 Particolare del carico immediato protesico.

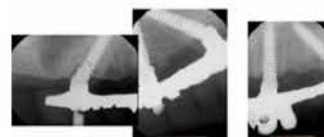


Fig 13 Controllo radiografico a 24 mesi. Si osservi il mantenimento dei livelli ossei.



Fig 14 Caso di ritrattamento implantare



Fig 15 Tessuti molli alla consegna della protesi provvisoria.



Fig 16 Protesi provvisoria.



Fig 17 Protesi provvisoria in situ, visione occlusale.



Fig 18 Guarigione dei tessuti molli.



Fig 19 RX endorale in cui si evidenziano il platform switching e la connessione conica per il mantenimento ottimale dei livelli tissutali.

BIBLIOGRAFIA 1) Schierano G, Pera P, Macaluso MM, Galli C, Conserva E. Impianti dentari. In: Preti G. Riabilitazione protesica. Torino: UTET, 2005;341-67. 2) Morra M, Cassinelli C, Di Carlo F. Le superfici implantari. In: Malchiodi M. Chirurgia implantare. Bologna: Edizioni Martina, 2003. 3) Pera P, Conserva E, Pin D, Acquaviva A, Tealdo T, Xotta M, Valente S. Analisi "in vitro" della citotossicità di differenti sistemi implantari in relazione al tipo di microtopografia di superficie. *Implantologia* 2004;3:207-17. 4) Arcelli D, Palmieri A, Pezzetti F, Brunelli G, Zollino I, Carini F. Genetic effects of a titanium surface on osteoblasts: a meta-analysis. *J Oral Science* 2007;4:299-309. 5) Li LH, Kong YM, Kim HW, Kim YW, Kim HE, Heo SJ, Koak JY. Improved biological performance of Ti implants due to surface modification by micro-arc oxidation. *Biomaterials* 2004;25:2867-75. 6) O'Sullivan D, Sennerby L, Meredith N. Influence of implant taper on the primary and secondary stability of osseointegrated titanium implants. *Clin Oral Implants Res* 2004;15(4):474-80. 7) Lioubavina-Hack N, Lang NP, Karring T. Significance of primary stability for osseointegration of dental implants. *Clin Oral Implants Res* 2006;17(3):244-50. 8) Wolff J. *Das Gesetz der Transformation der Knochen*. Berlin: Hirschwald, 1982.

Razionale e utilizzo clinico di un nuovo impianto con macro e micro-struttura modificata

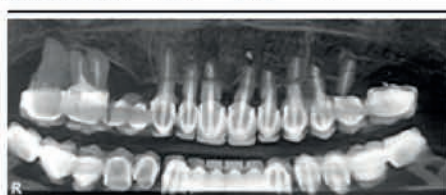


Fig 3 Caso clinico di riabilitazione maxillare in una paziente donna che presenta fallimento di una protesi fissa tradizionale su molari naturali per sovrera-ortodonzia. Il volume osseo residuo appare adeguato, ma di scarsa qualità soprattutto nei settori distali.

Che si occupa di implantoprotesi sa come la scelta dell'impianto sia di fondamentale importanza per l'ottenimento del successo clinico immediato e a lungo termine.

Le caratteristiche principali da valutare nella scelta fra le diverse tipologie di impianti oggi presenti sul mercato sono quattro^{1,2}:



Fig 4 Ponte fissa provvisorio ad interim "Columbus Bridge Protocol" a 48 ore dall'intervento.

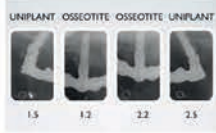


Fig 5 Radiografie endorali di controllo. Posteriormente, dove la qualità ossea era di tipo IV, sono stati inseriti 2 impianti inclinati UNIPLANT da 10 mm. Anteriormente 2 impianti conici tradizionali Osseotite da 15 mm. Il provvisorio di tipo avvitato con framework in metallo è stato passivato con la tecnica dell'incolaggio differenziato senza cantilever distali.



Fig 6 L'estetica della paziente prima della riabilitazione.



Fig 7 Visione finale del Columbus Bridge definitivo di tipo "retentor".



Fig 8 Trattamento implantare post-estrattivo con carico immediato.



Fig 9 Particolari del caso iniziale.



Fig 10 Visione ravvicinata della macro e micro-struttura del nuovo impianto Uniplant. Si possono chiaramente apprezzare il disegno delle spire, la forma conica del corpo impiantare, le scanalature, i microscopi orizzontali del colletto e il driver dedicato. Sono stati utilizzati impianti da 10 e 20 mm.

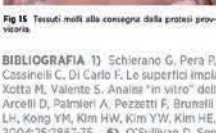


Fig 11 Particolare connessione conica e piastra argentea.

1. Macro-struttura o macro-architettura, determinata dalla forma dell'impianto, che, nonostante l'ormai consolidata preferenza per la forma radicolare (tronco-conica o root-form), può essere anche cilindrica, a lama, a disco, ad ago e in altre morfologie.
2. Micro-struttura o profilo dell'impianto, determinata dalla geometria delle spire (quantità, altezza, spessore, angolazione): a parità di morfologia macroscopica, il profilo può presentarsi lineare con spire o con gradini e tali elementi possono avere una geometria e una dimensione diversa. Queste caratteristiche influenzano la direzione dei vettori della forza di carico esercitata sull'osso circostante.
3. Micro-topografia, determinata dal trattamento della superficie: l'impianto può mostrare vari gradi di rugosità, di tipo diverso e di entità variabile a seconda del trattamento utilizzato nella produzione del manufatto o presentare esclusivamente le strutture dovute al processo di tornitura ed è quindi definito "impianto con superficie liscia" (machined).
4. Struttura chimica, determinata dalla composizione chimica delle superficie e dalla natura del trattamento di produzione: regola gli scambi ionici con l'organismo ed è alla base di fenomeni di citotossicità e infiammazione. Inoltre, la deposizione e l'adsorbimento di proteine dal sangue, processi influenzati dalla struttura chimica, sono di basilare importanza nello stabilire l'interfaccia tessuto-impianto.

La macro-struttura e la micro-struttura dell'impianto condizionano il comportamento biomeccanico dell'impianto e quindi influiscono sulla stabilità primaria e sulla distribuzione di forze all'interfaccia osso-impianto in seguito al carico occlusale. La micro-topografia e la struttura chimica agiscono invece sul comportamento biologico tra il dispositivo alloplastico e l'ospite^{3,4,5} (Fig. 1).

Sulla base di questa premessa, Biomax ha sviluppato un nuovo impianto (UNIPLANT) con macro e micro-struttura di ultima generazione che racchiude i più moderni concetti biomeccanici (Fig. 2).

Tutti i portatori del disegno dell'UNIPLANT concorrono a creare un impianto il cui obiettivo principale è di offrire un'adequata stabilità primaria anche nelle situazioni più critiche: dall'osso di scarsa qualità ai siti post-estrattivi, dalle procedure di carico immediato più estreme ai ritrattamenti implantari (Fig. 3-7).

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Il torque massimo raccomandato con chiavi dinamometriche è di 70/80 Ncm a seconda del diametro impiantare. La conicità del corpo impiantare⁶ (dovuta al minor diametro a livello apicale) crea un impianto dalle spiccate caratteristiche autoflettanti e osteocompatibili che abbinate ad una sottopreparazione del sito impiantare aumentano significativamente la stabilità primaria⁷. L'apice impiantare è in grado di ingaggiare la zona utile dell'avevolo post

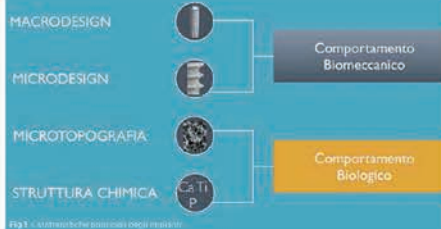


Fig 1 - Le caratteristiche strutturali degli impianti.



Fig 2 Impianto Uniplant: l'habitus di UNIPLANT, insieme al suo Osseotite, impianto "Machined" da Bevilacqua.

estrettivo anche per poche spire, riuscendo comunque a dare un'elevata stabilità anche nei casi di carico immediato (Fig. 8-11). Gli impianti sono attualmente disponibili fino ad una lunghezza di 20 mm (nei diametri da 4 e 6,5 mm).

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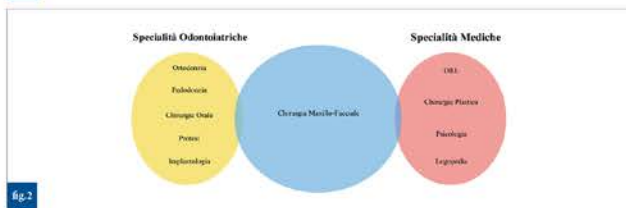
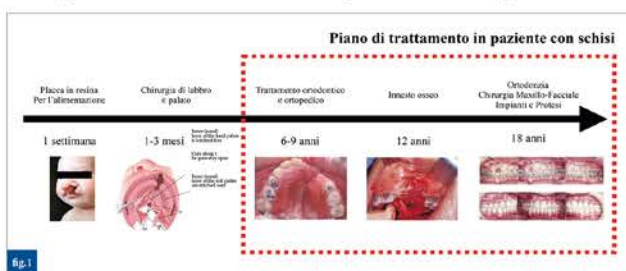
Association For Pediatric Oral Surgery - 5th Congress Firenze, 27-28 Marzo 2020

GESTIONE MULTIDISCIPLINARE DI UN PAZIENTE CON LABIOPALATOSCHISI



CASE REPORT

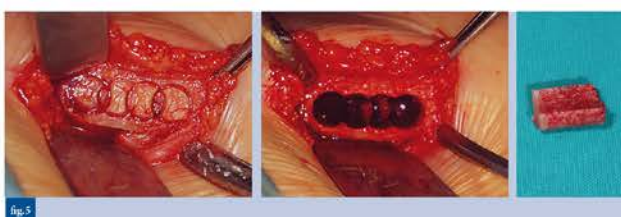
La gestione del paziente pediatrico con labiopalatoschisi (fig.1) è necessariamente multidisciplinare e coinvolge figure sia nell'ambito delle specialità odontoiatriche che di quelle mediche (fig.2).

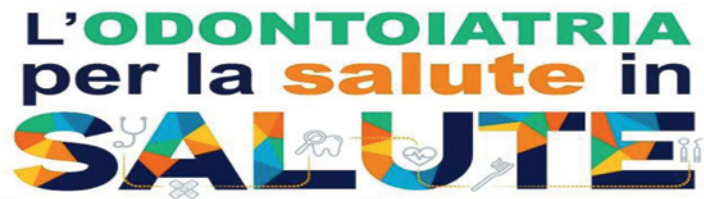


Un paziente di 11 anni, originario della Cina, presenta labiopalatoschisi precedentemente operata ma con persistente comunicazione oro-nasale. Il paziente non ha anamnesi familiare disponibile, mentre all'esame odontoiatrico viene rilevata la posizione ectopica di 2.1 e 2.2 che si presenta anche di forma conoide (fig.3). Il piano di trattamento ha previsto un intervento di innesto nella zona della schisi (fig.4) Osteoplastica della schisi alveolare mediante innesto di osso autologo prelevato dalla cresta iliaca (fig.5), il recupero in arcata dell'elemento 2.1, l'estrazione del 2.2 con la risoluzione della malocclusione (fig.6) e riabilitazione protesica con dente provvisorio a lungo termine ancorato su miniviti palatali (fig.7).

Alla fine del trattamento tutti gli obiettivi di trattamento sono stati raggiunti: il paziente presenta una prima classe molare e canina, un adeguato overjet e overbite, un corretto allineamento dentale in arcata superiore e inferiore, una buona estetica, una centratura delle linee mediane e un appiattimento della curva di Spee.

Il trattamento nei pazienti con labiopalatoschisi richiede un approccio multidisciplinare che coinvolge molte figure mediche ed odontoiatriche per tutto l'arco della vita del paziente. L'approccio proposto richiede fin da subito una pianificazione degli obiettivi che si vorranno ottenere a livello funzionale ed estetico prevedendo la riabilitazione dell'arcata dentaria con un provvisorio a lungo termine supportato da miniviti palatali. Il piano di trattamento ha richiesto oltre alla figura centrale del chirurgo maxillofacciale l'intervento dall'ortodontista, del chirurgo orale, dell'implantologo e del protesista.





PAT27

Teledentistry for the early detection of oral lesions: a lesson from the COVID-19 pandemic

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INTRODUZIONE

La telemedicina può essere definita come la condivisione di dati medici attraverso l'utilizzo delle nuove tecnologie al fine di fornire, a distanza, l'assistenza medica al paziente o il consulto a colleghi. Attraverso la descrizione di questo caso clinico, vorremmo richiamare l'attenzione sulla fattibilità della tecnologia nella diagnosi precoce delle lesioni orali, in particolare durante la pandemia COVID-19; infatti, la necessità di evitare contatti interpersonali per prevenire la diffusione del virus, ha reso le consultazioni a distanza ancora più significative.

CASE REPORT

Un uomo caucasico di 49 anni ha contattato telefonicamente un chirurgo orale (AC) per spiegare i suoi sintomi e segni: ha riferito la presenza di gonfiore gengivale associato a parestesia del labbro inferiore. Considerando quanto riportato, gli abbiamo chiesto di inviare le foto della lesione orale tramite la chat room di WhatsApp: la foto inviata dal paziente ha evidenziato la presenza di una tumefazione gengivale di colore rosso in sede V sestante (**Figure 1**).

Grazie ad un'immediata valutazione telefonica, siamo stati in grado di organizzare per il giorno seguente una biopsia incisoria urgente.

L'esame istologico ha mostrato la diagnosi di linfoma diffuso a grandi cellule B (Bcl 6, MUM 1 E CD20 positivo) (**Figure 2, 3, 4**)

Il paziente è stato indirizzato dall'oncologo e ha iniziato il trattamento con la chemio-radioterapia.



Figura 1: foto inviata dal paziente attraverso lo Smartphone

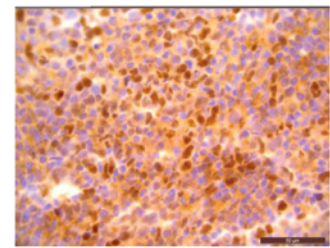


Figura 2: Bcl6. Positività nucleare dei linfociti neoplastici (63X)

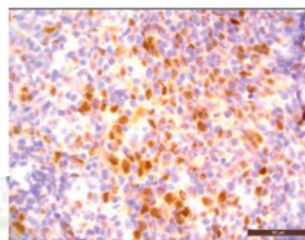


Figura 3: MUM 1. Positività nucleare dei linfociti neoplastici (63X)

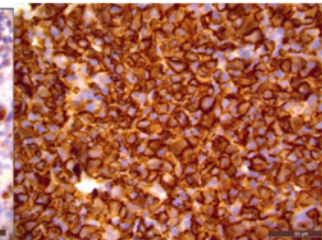


Figura 4: CD20. Forte positività di membrana per il marcatore linfoide (63X)

CONCLUSIONE

In medicina orale è importante supportare nuove strategie di diagnosi precoce: Smartphone e Apps sono di facile accesso e utilizzo per la maggior parte della popolazione.

Considerando la situazione sanitaria generata dalla pandemia da COVID-19, la telemedicina potrebbe svolgere un ruolo chiave nel futuro della medicina orale, in modo particolare nei casi in cui qualsiasi ritardo nella diagnosi può avere importanti implicazioni sulla morbilità e mortalità della condizione.

TOOTH-DERIVED BONE OBTAINED FROM TOOTH TRANSFORMER AS GRAFT MATERIAL: A LITERATURE REVIEW

G. Causarano*, D. De Santis*, M. Albanese*, C. Alberti*, U. Luciano*, M. Magi*, N. Modena*, A. Poscolere*, M. Zarantonello*, P. F. Nocini*

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INTRODUZIONE

Scopo dello studio è stato di eseguire una revisione della letteratura sull'uso di matrice dentale demineralizzata ottenuta mediante l'utilizzo del Tooth Transformer (BIOMAX S.p.A. Italia) nel trattamento dei difetti ossei alveolari. Tramite l'impiego del TT è possibile ottenere dagli elementi dentali materiale da innesto autologo. La matrice dentinale demineralizzata ottenuta aumenta la biodisponibilità di BMP inducendo osteoinduzione e osteodifferenziazione cellulare. La capacità di reclutamento, dal tessuto circostante, di cellule mesenchimali che si differenziano in cellule osteogeniche è data dalla presenza di molecole che vengono preservate anche a distanza di tempo nel dente e non sono influenzate dal grado di conservazione, le BMP.

Il tessuto dentale, come l'osso, è composto di collagene tipo 1 e minerali di idrossiapatite (HA), quest'ultimo essendo ad elevata cristallinità, non è riassorbibile. Il TT riduce la cristallinità dell' HA e il particolato ottenuto è in grado di determinare un meccanismo di osteoinduzione, in grado di stimolare l'adesione, la proliferazione e la differenziazione cellulare durante la rigenerazione ossea.

MATERIALI E METODI

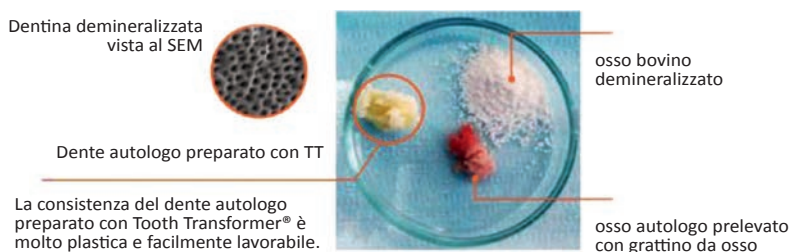
Lo studio è stato condotto mediante una ricerca bibliografica per identificare la letteratura scientifica rilevante indicizzata dal 2012 al 2020 utilizzando database internazionali (MEDLINE, PUBMED). Abbiamo utilizzato studi clinici, istologici e analisi istomorfometriche per effettuare una revisione della letteratura sull'impiego di matrice autologa demineralizzata ottenuta tramite TT. Molti studi sull'impiego del particolato di origine dentale in tecniche di GBR, socket preservation, rigenerazione orizzontale e rialzo di seno mascellare, miravano a dimostrare la formazione di nuovo tessuto duro nella terapia dei difetti ossei.

RISULTATI

Diversi autori hanno dimostrato che la dentina demineralizzata può mantenere intatta la struttura dell'innesto autogeno ed indurre la formazione ossea. In linea teorica anche lo smalto è dotato di buone capacità di osteoconduttività ma, avendo una componente minerale inorganica superiore (98 % rispetto al 60-70 % della dentina) risulta meno facilmente riassorbibile anche dopo la demineralizzazione. Tramite l'impiego del TT è stata stimata una quantità di circa 1,4 - 2,8 gr, ottenuti da un dente molare a seconda dello stato di idratazione dello stesso, da cui è possibile ottenere molecole che promuovono la guarigione e il rimodellamento osseo. La BMP2 è una delle molecole osteoinduttive più efficaci in grado di stimolare la formazione e la riparazione ossea. Già in uno studio degli anni novanta, condotto su animali, veniva studiato il ruolo osteoinduttivo di molecole presenti a livello dentale, la BMP presente nella matrice extracellulare della dentina umana è stata estratta, purificata e trasferita sperimentalmente nei ratti. Indagini effettuate successivamente all'impianto nell'animale hanno dimostrato che le BMP, ricavate dalla matrice dentinale, hanno indotto a distanza di tre settimane nuova formazione ossea. La BMP derivata da matrice dentinale è simile alla BMP derivata dalla matrice ossea, entrambi i tipi di molecole hanno dimostrato di avere la stessa azione in vivo. È stato inoltre visto che alcuni fattori di crescita come BMP2, IGF, TGF-β si conservano a lungo nel tempo permettendone l'impiego anche dopo diversi anni.

Analisi istologiche hanno riportato percentuali di neoformazione ossea comprese tra il 45% e l'87%, un intervallo considerevole rispetto ad altri sostituti ossei, in tutti i casi revisionati è stato riportato un riempimento completo con tessuto duro confermato dall'osservazione clinica e radiografica. La guarigione dei tessuti dopo le procedure di innesto era priva di complicazioni o processi infettivi cronici e l'aspetto dell'osso rigenerato è apparso omogeneo rendendo indistinguibili le particelle dell'innesto dall'osso nativo, è stata inoltre rilevata assenza di segni di infiammazione indice di assoluta biocompatibilità.

Ulteriori studi hanno valutato, dal punto di vista istologico e istomorfometrico, il tessuto osseo ottenuto dopo la guarigione dell'innesto, sono state osservate trabecole ossee di nuova formazione, indice di rimodellamento tessutale, differenti dal surrogato osseo riscontrato con l'impiego di biomateriali deantigenizzati di origine animale.



CONCLUSIONI

Tale revisione ci porta a concludere che l'uso della matrice ossea demineralizzata di origine dentale, ottenuta tramite l'uso di TT, porta ad una buona guarigione e neoformazione ossea. Il TT prevede un procedimento in più fasi: pulizia, decontaminazione, triturazione e demineralizzazione offrendo la possibilità di utilizzare anche elementi decidui sebbene dotati di una minore componente dentinale. Il TT aumenta la biodisponibilità delle BMP dentali altrimenti vincolate dall'alto grado di cristallinità dell'idrossiapatite che viene quindi ridotta. Questa tecnica potrebbe essere una ragionevole alternativa ai materiali attualmente impiegati nel trattamento dei difetti ossei dei mascellari, offre il vantaggio di avere un basso costo clinico, non richiede un secondo sito di prelievo, possono essere utilizzati anche elementi decidui e l'innesto viene completamente sostituito da nuovo osso.

FLUSSO DI LAVORO DIGITALE NELLA RIABILITAZIONE DEL QUADRANTE EDENTULO E ATROFICO

A. Poscolere *, C. Alberti *, D. De Santis *, M. Albanese *, G. Causarano*, U. Luciano *, M. Magi *, N. Modena *, M. Zarantonello *, P.F. Nocini *

* Reparto di chirurgia orale e maxillo facciale, Dipartimento di Scienze Chirurgiche Odontostomatologiche e Materno-Infantili, Università degli Studi di Verona, Italia.

**INTRODUZIONE**

Paziente di sesso femminile di 49 anni, anamnesi negativa, nega allergie ad antibiotici ed anestetici locali.

Si rivolge al reparto di Chirurgia Orale dell'Azienda Ospedaliera Universitaria Integrata di Verona per riabilitare il primo quadrante. All'esame obiettivo e radiografico si rilevano esiti di parodontite cronica in terapia di mantenimento, buon controllo dell'igiene orale, edentulia elementi 3.5, 3.6, 4.7 ed edentulia completa dei settori premolare e molare del primo quadrante, caratterizzato da un avanzato riassorbimento osseo dovuto ad un precedente intervento di rimozione di una lesione cistica.

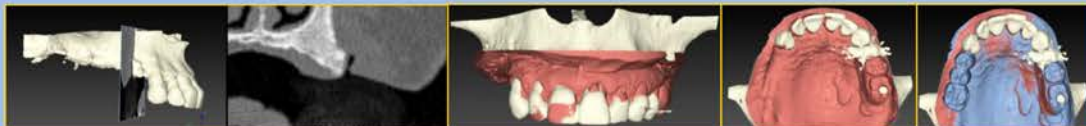
MATERIALI E METODI

Dalla CBCT viene ricavato un modello tridimensionale del tessuto osseo della paziente e tramite un apposito software viene realizzata una mesh in titanio customizzata per eseguire un intervento di rigenerativa ossea guidata (GBR). A distanza di 9 mesi si rimuove la mesh utilizzata e si avvia l'iter diagnostico per il successivo intervento di posizionamento implantare.



Durante il primo appuntamento vengono rilevate le impronte dell'arcata superiore ed inferiore e il loro rapporto oclusale per consentire all'odontotecnico di eseguire una ceratura diagnostica, la quale verrà successivamente scansionata per ricavarne un file .nxa. Durante la stessa seduta si va ad improntare la clip con la quale la paziente effettuerà l'indagine radiografica, il lato oclusale della clip è composto da un materiale termoplastico che viene portato ad una temperatura di circa 70° e consente, una volta avvenuto il rammollimento testimoniato dal cambiamento cromatico, di prendere un'impronta precisa degli elementi dentari adiacenti al sito chirurgico. All'interno della clip sono presenti delle sfere metalliche, i fiducial marker, che consentiranno la sovrapposizione tra la scansione TC e l'arcata reale della paziente.

Eseguita la scansione TC, viene importato, sul software DTX-Studio®, il file DICOM contenente le informazioni riguardanti il tessuto osseo della paziente ed il file .nxa, ottenuto dalla scansione di modello e ceratura diagnostica, contenente le informazioni riguardanti i tessuti molli e la futura riabilitazione protesica (protesi fissa su impianti, avvitata).



Grazie alla funzione "Smart Fusion" i due file vengono sovrapposti utilizzando gli elementi dentari come repere comune. Terminata questa fase, denominata Superimposition, si procede con la pianificazione della posizione implantare e la selezione delle dimensioni delle fixture. La progettazione viene poi esportata in un sistema di Chirurgia Computer Assistita in modalità Dinamica (d-CAIS) con il quale verrà effettuato l'intervento (X-Guide®)



Subito prima di procedere con la fase chirurgica viene eseguita la calibrazione del sistema X-Guide® che prevede l'esposizione dei vari tracker (paziente, manopola e fresa) alla sorgente luminosa proveniente dalle telecamere optoelettroniche le quali hanno la capacità di ricevere e trasdurre il segnale luminoso riflesso dai tracker stessi e di poterne quindi tracciare le relative posizioni in tempo reale. Terminata la calibrazione, si eseguono le osteotomie per inserire un impianto Nobel Active® 3.5 x 13 mm in posizione 1.4 e un 4.3 x 10 in posizione 1.6 potendo costantemente osservare sul monitor l'avanzamento delle frese e delle fixture in tempo reale fino al raggiungimento della posizione pianificata.

**RISULTATI**

L'utilizzo di una mesh in titanio customizzata, preformata sui volumi ossei della CBCT, ha permesso di ridurre i tempi intraoperatori e di ottenere un adeguato volume osseo.

L'utilizzo di un sistema d-CAIS ha permesso l'inserimento degli impianti in una corretta posizione protesica, precedentemente determinata, e la gestione dei tessuti molli senza ripercussioni sull'accuratezza della sistemazione.

**CONCLUSIONI**

L'utilizzo delle tecnologie digitali nelle fasi pre-chirurgiche e intraoperatorie consente di ottimizzare i risultati riabilitativi in siti atrofici.

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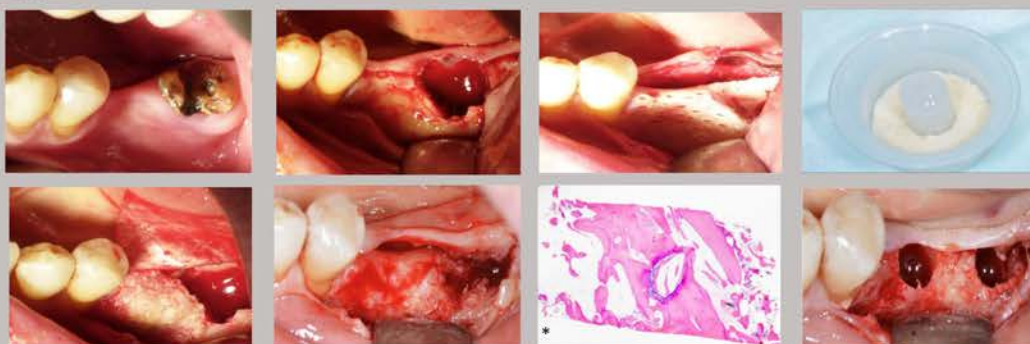


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* TESSUTO CALCIFICATO TOTALE 47,33%
 NUOVO OSSO 41,67 %
 DENTINA/TOOTH TRANSFORMER 5,65 %

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INCONTRO DELLE SCUOLE DI SPECIALIZZAZIONE IN CHIRURGIA ORALE (Sapienza Università di Roma, 24-26 giugno 2021)

TRATTAMENTO NON CHIRURGICO DELLA MUCOSITE PERI-IMPLANTARE TRAMITE STRUMENTAZIONE MANUALE ASSOCIATA ALL'UTILIZZO DI UN AGENTE ANTISETTICO CON PROPRIETA' IGROSCOPICHE

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INTRODUZIONE E SCOPO DELLO STUDIO

Le evidenze riguardanti l'applicazione di protocolli predicibili per il trattamento delle malattie peri-implantari, definite e classificate soltanto recentemente¹, rimangono ad oggi limitate². E' stato dimostrato come il trattamento non chirurgico, coadiuvato da mezzi sperimentali di disinfezione, possa rivelarsi appropriato per il trattamento di quadri infiammatori reversibili come la mucosite peri-implantare³⁻⁶. Scopo del presente studio è stato quello di comparare dal punto di vista clinico l'efficacia di due diversi antisettici locali (Hybex agente liquido decontaminante⁷, gruppo test HBX; Clorexidina Digluconato gel 1%, gruppo controllo CHX), associati alla strumentazione manuale con curettes in teflon, in siti peri-implantari caratterizzati da infiammazione (sanguinamento e sondaggio maggiore di 4 mm) e da assenza di perdita ossea radiografica^{9,10}.



MATERIALI E METODI

Sono stati inclusi nello studio 12 pazienti, per un totale di 30 impianti, assegnati casualmente al gruppo test (6 pazienti e 15 impianti) o al gruppo controllo (6 pazienti e 15 impianti) per il trattamento iniziale (T0). La procedura è stata ripetuta a distanza di 7 (T1) e 14 (T2) giorni, con rivalutazione clinica a distanza di 3 mesi (T3) dei tessuti molli peri-implantari [profondità di sondaggio (PPD), sanguinamento al sondaggio (BOP), indice di placca (VPI)].



Caso clinico:

Pz maschio, 55 anni, mucosite su impianto 22 trattata con HBX.

Fig.1 (da sx verso dx): valutazione radiografica e clinica a T0, con rilevazione di PPD, BOP, VPI.



Fig.2 (da sx verso dx): applicazione di HBX (a T0, T1 e T2).



Fig.3 (da sx verso dx): valutazione clinica a T3, con rilevazione di PPD, BOP, VPI.



RISULTATI

Nonostante entrambi gli agenti si siano dimostrati validi, l'agente decontaminante (HBX) ha evidenziato una maggiore efficacia del punto di vista clinico, con una riduzione complessiva, a distanza di 3 mesi, di PPD, BOP e VPI rispettivamente di 0.55 mm, 27% e 35%, rispetto al gruppo CHX (0.16 mm, 11% e 20%). La riduzione BOP si è rivelata statisticamente significativa, per quanto riguarda i siti più profondi, nel gruppo HBX (57%) rispetto al gruppo CHX (44%).



CONCLUSIONI

In base ai dati ottenuti da questo studio clinico a 3 mesi, sull'associazione di due differenti agenti antimicrobici con la strumentazione meccanica manuale, per il trattamento di impianti affetti da mucosite possiamo concludere che entrambe le terapie danno risultati efficaci in termini di riduzione dell'infiammazione peri-implantare. Per quanto riguarda il gruppo di pazienti trattato con HBX sembra esserci una maggiore tendenza alla riduzione dei parametri di infiammazione rispetto al gruppo trattato con CHX. Ulteriori studi con campioni più numerosi e con follow-up più lunghi sono auspicabili a sostegno dei nostri risultati.

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Poster per il Congresso Internazionale della Società Italiana di Chirurgia Orale, Roma - luglio 2021

NEW TECHNOLOGIES FOR COMMON PATHOLOGIES AND TREATMENTS

Unità di Specializzazione in Chirurgia Orale alla Sapienza Università di Roma
 Dipartimento di Scienze di Specializzazione in Chirurgia Orale

SAPIENZA
ROMA
 8-10 LUGLIO 2021

IMPLANTOLOGIA ZIGOMATICA IUXTA SINUSALE: LA TECNICA CHIRURGICA

Alberti Christian* - Tealdo Tiziano - Bevilacqua Marco

● Aleksandrowicz P. et al. Extra-Sinus Zygomatic Implants to Avoid Chronic Sinusitis and Prosthetic Arch Malposition: 12 Years of Experience. J Craniofac Surg. 2017;28(8):797-799.

● Maló P. et al. Five-year outcome of a retrospective cohort study on the rehabilitation of completely edentulous atrophic maxillae with immediately loaded zygomatic implants placed extra-maxillary. Eur J Oral Implantol. 2014;7(3):267-281.

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— CLINICAL CASE REPORT

RIABILITAZIONE IMPLANTOPROTESICA MEDIANTE IMPIANTI UNIPLANT® E IMPIANTI PTERIGOIDEI NEL RITRATTAMENTO DEL MASCELLARE MODERATAMENTE ATROFICO

di Tiziano TEALDO
 Marco BEVILACQUA
 Christian ALBERTI
 Luca SCAGLIONE
 Piercarlo SEGHESSIO

Caso clinico

R Trattamento full-arch in paziente Asa I con dentatura permanente fallimentare. In questi casi è indispensabile seguire un protocollo validato (VIDENCIA, SASCI OGNISERT) nelle fasi chirurgiche e protesiche per ottenere un risultato biomeccanico adeguato.

IL COLLAGIS BRIDGE PROTOCOL ci garantisce una percentuale di successo sovrapponibile al corallo differita in questi casi di elevata complessità chirurgico-protesica.

Le immagini esordiali della paziente indicano una perdita della dimensione verticale di occlusione (Fig. 1-12) del sovrappiù dentario superiore.

L'ortopantomografia e la visione in Nuvola a lungo 3° confermano la non zidomaxillare prognica degli elementi residui. La tecnica proposta prevede l'ablazione degli elementi dentali residui e l'impilamento impiantare post-estratto con riabilitazione full arch Colлагis Bridge® superiore e inferiore (Fig. 1-4).

La pneumatizzazione inserita di estrazione in seno maxillofaciale (Fig. 5-10) necessita di un appoggio distale per

evitare castivieri di almeno 2 elementi per ogni quarante che rappresenterebbero un'aspirante fattore di rischio protidico. vengono pertanto inseriti 2 impianti distali stereotipati (Pivot Medical) da 20 mm e 4 impianti Uniplant (Biomax) da 15 mm per 4,5 mm di diametro in regione pre-massillare. Questi impianti, grazie all'angolo neutro, consentono una elevata stabilità negli archi post-estratto, permettendo di seguire il protocollo di carico immediato senza precludere il raggiungimento dell'osteointegrazione (Fig. 6-9-10-11-12-13).

La fase protetica di laboratorio (Fig. 14-15) per la realizzazione del framework permanente sono progettate in ambiente CAD/CAM. Lo spazio intermaxillare, la distanza interimplantare, l'altezza dei cusci mucosali sono valutati e progettati al CAD, comprese le rimborsioni e i supporti per il compianto di trattamento filtrato secondo la tecnica della stratificazione incrementale in multiple trasparenze. I volumi protetici disponibili indicano come scelta di elezione il fatto di inserire al CAD per la sua elevata biocompatibilità nel contatto mucosa-bridge, il basso peso specifico, la resistenza e la funzione metallo-ceramica (Fig. 16-17-18-19-20-21).

L'ortopantomografia di controllo finale (Fig. 20) e la CBCT (Fig. 21-22) evidenziano corretta distribuzione sul sito degli impianti intra ed extra-oral, la corretta morfologia del framework e il fit sui sei cusci dentali avvilati sugli impianti Uniplant e Pivot Medical. Nella visione sagittale destra e sinistra è possibile osservare l'inclinazione reale medio-stivale dei due impianti extra-maxillari distali da 20 mm ancorati nel processo proiettivo dello sfenoidale.

Nella figura 27 è possibile apprezzare il risultato della riabilitazione definitiva e il nuovo contesto della paziente.

02 CLINICAL CASE REPORT



Tiziano
TEALDO



Marco
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MENINI



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PERA



Christian
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Paolo
PESCE



Paolo
PERA

in collaborazione con il Laboratorio Odontotecnico Scaglione Luca & Seghesio Piercarlo

Riabilitazione fissa del mascellare atrofico con tecnica *hybrid zygoma extrasinusale*

Quali i vantaggi per il paziente e per il clinico?

CASO CLINICO

Paziente maschio di 59 anni, ASA 1, edentulo totale da 3 anni con grave atrofia del mascellare superiore (che rende impossibile il posizionamento di impianti nelle zone distali del mascellare senza importanti cantilever o utilizzo di chirurgia rigenerativa) richiede un trattamento fisso completo (foto 1).

Dopo una valutazione intra ed extraorale si procede all'esame CBCT e allo studio 3D per la pianificazione chirurgica e protesica con software Exocad (foto 2-4). L'impiego di tecnologie digitali consente di eseguire un'attenta analisi prechirurgica valutando il tessuto osseo residuo a disposizione per l'inserimento degli impianti. Questa scelta sarà guidata non solo da considerazioni di tipo anatomico, disponibilità o meno di quote ossee, ma anche dal progetto protesico condiviso con il laboratorio odontotecnico. Tutte le informazioni contenute nel montaggio virtuale verranno utilizzate per la realizzazione della ponte provvisorio e per la progettazione del ponte definitivo.

I due impianti zigmatici vengono inseriti secondo il protocollo extrasinusale. Questo approccio è molto meno invasivo di quello intrasinusale originariamente proposto dalla scuola svedese perché rispetta l'integrità del seno, non essendo necessario aprire una botola sulla parete laterale per controllare il posizionamento dell'impianto. Il protocollo extrasinusale della Noris Medical prevede l'utilizzo di una fresa a pallina per definire il punto di ingresso dell'impianto nel processo zigmatico e il punto di emergenza sulla cresta alveolare residua.

Lo slot sulla parete laterale del seno che collega i due reperi precedenti tracciati viene preparato con una fresa diamantata unica nel suo genere: consentirà di bypassare il seno mascellare evitando danni alla membrana di Schneider e creerà un alloggiamento anatomico

dell'impianto (foto 5).

Nel caso illustrato sono stati inseriti due impianti zigmatici da 45 mm di lunghezza con un insertion torque di 70 Ncm.

L'asse implantare viene corretto protesicamente avvitando a 20 Ncm due pilastri tipo MUA con un'inclinazione di 52 gradi (foto 6).

Clinicamente la procedura chirurgica è facilitata dal razionale con cui è concepito il kit implantare e dalla vasta gamma di fixture zigmatiche a disposizione.

La procedura protesica è altresì semplificata dalla possibilità di scegliere pilastri preangolati con diverse angolazioni e altezze per poter compensare le spiccate angolazioni implantari.

La sistemica Noris Medical dispone di impianti zigmatici con una lunghezza compresa tra i 30 e i 60 mm (con incrementi di 2,5 mm) e monconi angolati da 17 a 60 gradi.

Questo ampio catalogo di prodotti consente di avere grande versatilità chirurgica e protesica.

Data la scarsa qualità ossea, nella premaxilla vengono inseriti 4 impianti UNIPLANT che con il loro macrodesign aggressivo consentono il raggiungimento di una stabilità primaria importante anche in casi di qualità D3 e D4.

Nel mascellare inferiore, dove la mineralizzazione è ottima, vengono inseriti quattro impianti conici Biomet 3i di lunghezza adeguata secondo il protocollo chirurgico Columbus Bridge.

Anche la procedura protesica relativa all'impronta in gesso e alla rilevazione della DVO in relazione centrica segue scrupolosamente i principi del Columbus Bridge Protocol (foto 7).

Il paziente viene dimesso lo stesso giorno dell'intervento con i provvisori fissi avvitati (foto 8,9).



Fig 1 Visione extraorale del paziente edentulo.

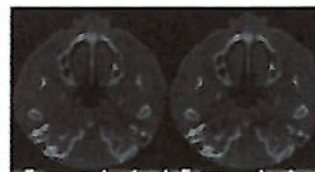


Fig 2 Sezioni assiali CBCT.

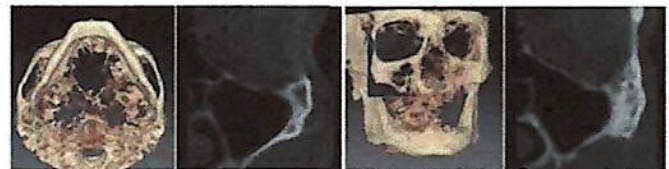
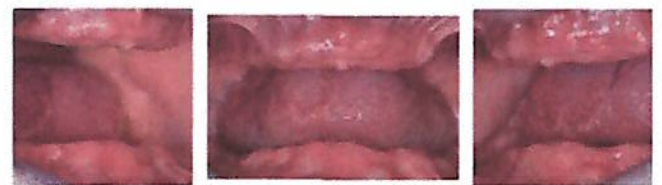


Fig 3 Valutazione ossea 3D in rapporto alla regione zygomatica.

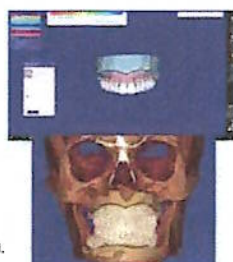


Fig 4 Pianificazione protesica con Exocad.



Fig 5 Preparazione dello slot per l'alloggiamento dello zygomatico.

L'utilizzo di impianti zigmatici nella riabilitazione del mascellare reso atrofico dalla iperpneumatizzazione dei seni mascellari rappresenta una procedura altamente predicibile, con elevato tasso di successo soprattutto se applicata con carico immediato.

Il caso clinico qui di seguito illustrato, con l'inserimento di un impianto zigmatico per emiarcata con tecnica extrasinusale e impianti standard posizionati nella premaxilla, può rappresentare un'opzione terapeutica interessante per il trattamento delle gravi atrofie posteriori del mascellare superiore.

Il posizionamento di due impianti zigmatici a sostegno di un ponte fisso full-arch contribuisce a ridurre i cantilever distali e ad ottimizzare il comportamento biomeccanico della riabilitazione.

Gli step chirurgici e protesici sono oggi ben protocollati tali da rendere la riabilitazione veloce, sicura e più predicibile rispetto a procedure alternative con implementazione ossea.

Si procede dopo circa 14 settimane alla realizzazione del definitivo utilizzando nuovamente un protocollo che miscela attentamente il know-how analogico e digitale. In primis viene realizzata una nuova impronta tradizionale in gesso (foto 10,11). Il modello viene digitalizzato in laboratorio con uno scanner da banco e su questa acquisizione, con un software CAD dedicato (Exocad), si recuperano tutte le informazioni utilizzate precedentemente per meglio progettare l'estetica definitiva e il relativo framework (foto 12-15). Prima dell'invio dei file al centro di fresaggio è indispensabile realizzare la stampa 3D in resina del progetto definitivo per poter effettuare le prove cliniche su paziente e gli eventuali aggiustamenti necessari (foto 16). Questa fase è molto importante perché il paziente può apprezzare la forma e i volumi dei denti definitivi ed esprimere la propria valutazione: si procederà alla realizzazione del manufatto definitivo solo quando sarà stato raggiunto un risultato condiviso tra paziente, protesista e odontotecnico (foto 17).



Fig 6 Connessione del MUA all'impianto zigomatico.



Fig 7 Impronta pick-up in gesso secondo il Columbus Bridge Protocol.



Fig 8 Provvisorio rinforzato con fibra di vetro.

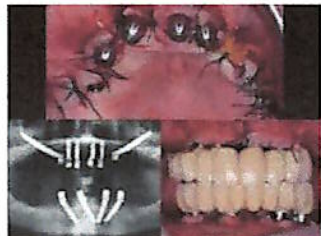


Fig 9 Consegna provvisori avvitati.



Fig 10 Guarigione dei tessuti molli a 3 mesi.

La riabilitazione protesica definitiva prevede come materiale estetico di rivestimento il composito stratificato in muffola trasparente. Questa tecnica permette di ottenere un triplice vantaggio: mantenimento delle forme e dei volumi precedentemente valutati sul paziente, stratificazione ottimale delle masse per un risultato estetico di eccellenza ed infine un ottimo connubio tra robustezza strutturale e capacità di shock absorption (foto 18-21).

La Tecnica HYBRID ZYGOMA EXTRASINUSALE permette di riabilitare pazienti con gravi atrofie mascellari in una sola seduta chirurgica gestibile ambulatorialmente. Tecniche alternative richiedono più interventi chirurgici e un intervallo di tempo maggiore prima della finalizzazione del caso generando un importante aggravio dei costi e una diminuzione del grado di accettazione del piano terapeutico da parte del paziente.

La difficoltà del presente protocollo è in parte chirurgica, dal momento che l'inserimento degli impianti zigomatici richiede una profonda conoscenza dell'anatomia di pertinenza, e in parte protesica per le necessarie competenze nel trattamento del paziente edentulo che l'operatore deve conoscere.



Fig 11 Impronta in gesso per la realizzazione del definitivo.



Fig 11 Recupero della simulazione estetica del ponte provvisorio (azzurro).



Fig 12 Nuova simulazione estetica con il progetto del ponte definitivo (avorio).

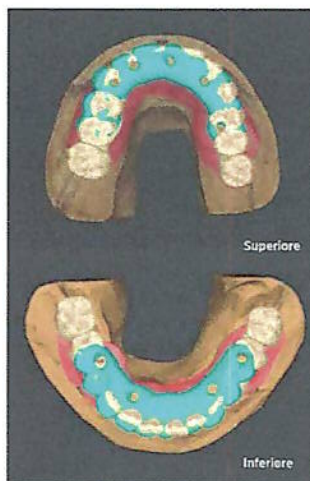


Fig 14/15 Visione oclusale delle arcate con i due progetti sovrapposti.

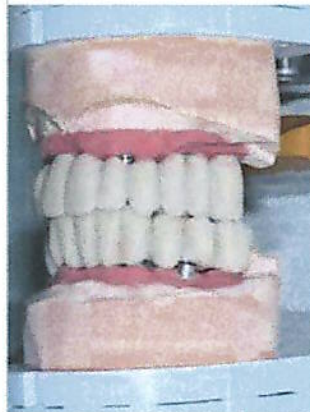


Fig 16 Stampante 3D per la realizzazione del duplicato in resina del progetto definitivo.



Fig 17 Prova clinica.

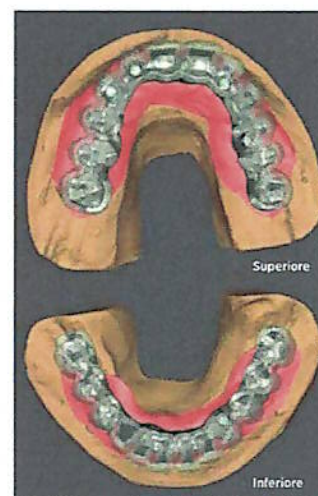


Fig 18/19 Visione del progetto del framework in accordo con il set-up estetico approvato dal paziente.



Fig 20 Stampaggio in muffola trasparente del composito su framework in titanio realizzato al CAD CAM.



Fig 21 Protesi fissa bimassellare su impianti ultimata.



Columbus Bridge Protocol®

RIABILITAZIONE PROTESICA DEL MASCELLARE GRAVEMENTE ATROFICO: APPROCCIO COMBINATO BIOMECCANICO/ESTETICO

L'utilizzo degli impianti zigomatici nella riabilitazione del mascellare atrofico rappresenta una procedura altamente predicibile con elevato tasso di successo soprattutto se applicata nel carico immediato.

CASO CLINICO

Paziente di anni 59, ASA 1, parzialmente edentula da 23 anni. Dopo valutazione intra ed extraorale si procede come da protocollo all'esame CBCT e allo studio 3D per la pianificazione chirurgica e protesica.

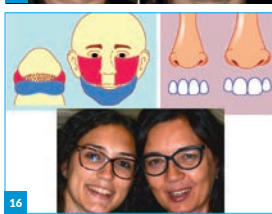
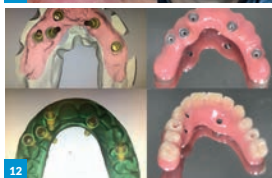
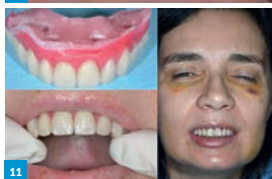
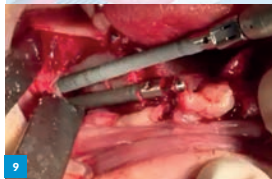
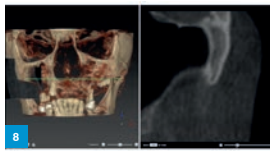
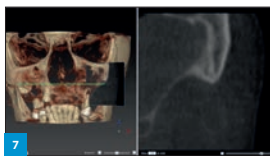
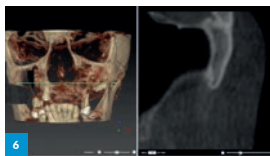
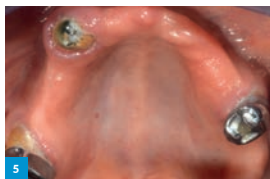
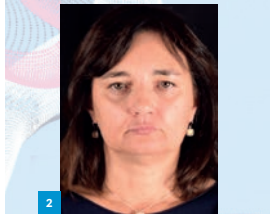
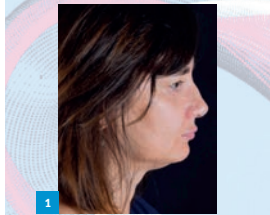
La procedura protesica in 48 ore consente di realizzare un ponte fisso provvisorio mediante impronta di precisione in gesso e rilevazione della DVO in relazione centrica. Il provvisorio a carico immediato (4) segue scrupolosamente i principi del COLUMBUS BRIDGE PROTOCOL®.

La fase finale della riabilitazione protesica viene eseguita mediante Exocad a 12 settimane. Si realizza il Framework in accordo con il progetto estetico definitivo e si procede ai relativi aggiustamenti prima di inviare il file al centro di fresaggio.

L'utilizzo di un impianto tradizionale in posizione pre-maxillare in aggiunta alla tecnica classica del Quad-Zigoma consente di ridurre il cantilever antero-posteriore che si crea con un ancoraggio esclusivamente zigomatico per via dell'conseguenza non solo all'atrofia sinistra del mascellare e della classe scheletrica relativa.

Il progetto estetico finale si basa sui canoni classici dell'estetica in protesi totale per cui la scelta della forma e posizione del gruppo frontale superiore è pianificata secondo i principi della teoria Embriogenetica di Gerber come si evidenzia dal sorriso finale della paziente in armonia con il sorriso della figlia.

In collaborazione con il Laboratorio Odontotecnico Scaglione Luca & Seghesio Piercarlo Santo Stefano Belbo



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Ritrattamento implantare chirurgico e protesico full-arch secondo il Columbus Bridge Protocol® mediante la tecnica QUAD zygoma



DR TIZIANO TEALDO

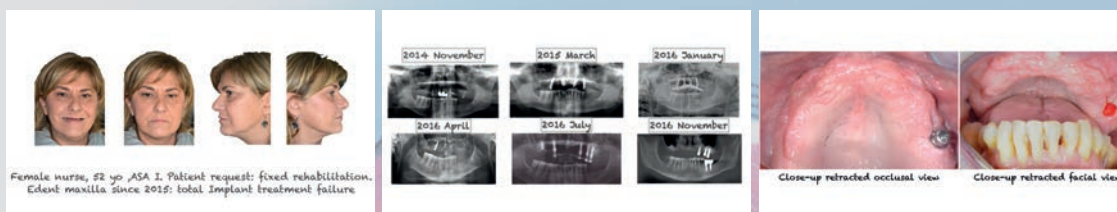


DR MARCO BEVILACQUA

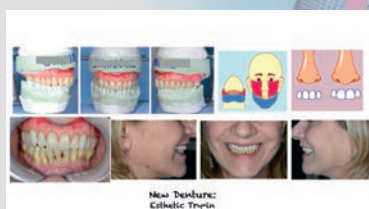


DR CHRISTIAN ALBERTI

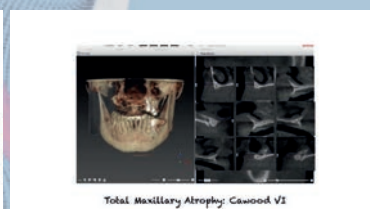
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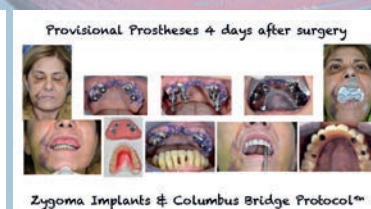
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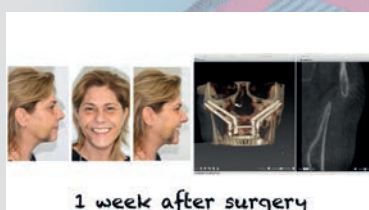
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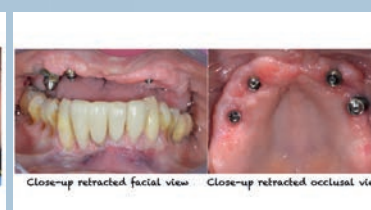
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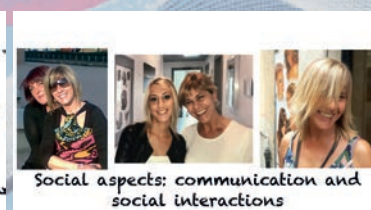
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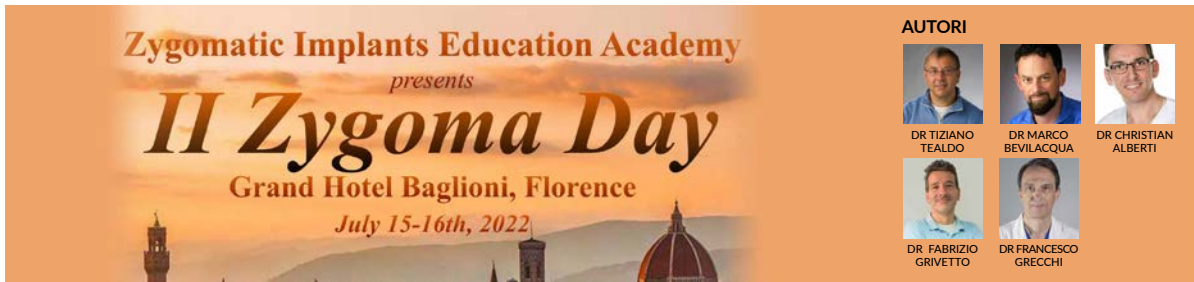


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RITRATTAMENTO IMPLANTARE IMMEDIATO CHIRURGICO E PROTESICO FULL-ARCH SECONDO IL PROTOCOLLO COLUMBUS BRIDGE® MEDIANTE LA TECNICA HYBRID ZYGOMA

<p>1</p>	<p>Clinical and testimonial case Female Retired 64 yo Medical History: none ASA I Patient request: fixed rehabilitation "Implant treatment failure"</p>	<p>Close-up retracted occlusal view</p>	<p>2</p> <p>DR TIZIANO TEALDO</p>
<p>3</p>		<p>Close-up retracted facial view</p>	<p>4</p> <p>DR MARCO BEVILACQUA</p>
<p>5</p>			<p>6</p> <p>DR CHRISTIAN ALBERTI</p> <p>In collaborazione con il Laboratorio Odontotecnico Scaglione Luca & Seghesio Piercarlo Santo Stefano Belbo</p>
<p>7</p>			<p>8</p>
<p>9</p>			<p>10</p> <p>Pektkon®</p>
<p>11</p>			<p>12</p>



Riabilitazione dei mascellari atrofici mediante impianti zigomatici, nasali, pterigoidei e tecnica piezochirurgica: studio clinico osservazionale

Background: gli impianti zigomatici sono dispositivi biomedici ideati da P. I. Brånemark negli anni '90 per riabilitare pazienti oncologici che avevano subito maxillectomie; dal 2010 la loro applicazione si è estesa al trattamento delle atrofie mascellari gravi. Gli impianti Nasali e Pterigoidei nelle riabilitazioni full arch mascellari sono spesso utilizzati come ulteriore supporto alla riabilitazione protesica al fine di ottimizzare la distribuzione dei carichi soprattutto in presenza di arcate antagoniste fisse su elementi naturali o su impianti.

Scopo della ricerca: lo scopo di questo studio osservazionale è valutare la sopravvivenza implantare e l'incidenza di complicanze delle riabilitazioni mediante impianti zigomatici, pterigoidei, nasali e la soddisfazione dei pazienti con riabilitazioni full-arch a carico immediato.

Materiali e Metodi: lo studio è stato sviluppato retrospettivamente raccogliendo i dati clinici di 32 pazienti trattati da settembre 2021 a giugno 2022 con il protocollo PIEZOCHIRURGICO per la preparazione del sito osseo; in totale sono stati inseriti 28 impianti ZIGOMATICI, 42 PTERIGOIDEI e 18 NASALI (fase 1), 7 pazienti sono stati riabilitati mediante 4 impianti zigomatici con protocollo QUAD ZYGOMA, mentre 25 pazienti con un protocollo ibrido che prevedeva da 1 a 3 impianti zigomatici, da 1 a 2 impianti NASALI / PTERIGOIDEI e da 2 a 4 impianti standard. Ciascun caso clinico è stato riabilitato con un minimo di 4 impianti e un massimo di 6. Per ogni paziente sono state analizzate le ortopantomografie pre e post operatorie. Sono stati registrati i fallimenti implantari e le complicanze protesiche riportate nelle cartelle cliniche. Di questi 32 pazienti, 18 sono stati rivalutati a 6 MESI rimuovendo la protesi fissa avvitata per valutare la stabilità implantare, la condizione dei tessuti perimplantari ed è stato valutato il design protesico (fase 2). A questi 18 pazienti è stato sottoposto un questionario di gradimento della riabilitazione.

Risultati: lo studio in esame ha avuto un follow up di 10 mesi. I tassi di fallimento implantare sono simili a quelli riportati in letteratura per il campione nella fase 1 e nella fase 2. Sono falliti 2 impianti su 88 presi in esame. I valori di stabilità implantare, incidenza di sinusiti (2,8%), condizioni dei tessuti perimplantari e valutazione protesica sono paragonabili a quelli riportati in letteratura per questo tipo di riabilitazione (Tabella 1). È stato inoltre paragonato il gradimento della nuova riabilitazione rispetto alla precedente da parte dei pazienti. Tutti i soggetti hanno confermato un miglioramento della propria qualità di vita.

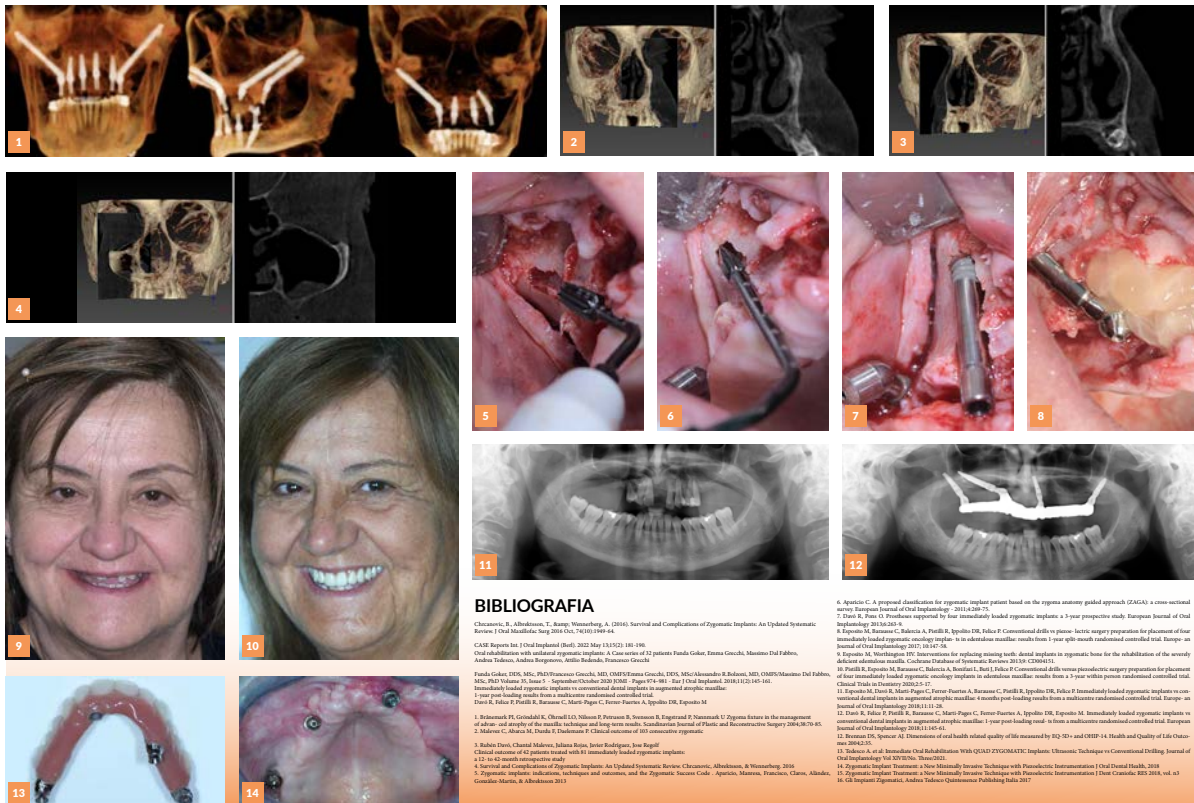
Conclusioni: gli impianti Zigomatici associati agli Pterigoidei e Nasali nelle riabilitazioni full arch a carico immediato dei mascellari atrofici, utilizzando la preparazione del sito mediante PIEZOCHIRURGIA, sono dispositivi affidabili con una sopravvivenza implantare paragonabile a quella degli impianti dentali convenzionali. Questa tecnica necessita di un'accurata pianificazione delle fasi chirurgiche e protesiche per garantire un'adeguata predicibilità del risultato clinico relativo alla riabilitazione protesica definitiva.

	Numero	Numero	Complicanze protesiche	Complicanze implantari	Complicanze protesiche e implantari	Successo	Complicanze protesiche e implantari	
Chirconvivi 2016	4556	2361	1,30%	2,40%	2%	1%	0,40%	4,8%
Campione nella fase 1	168	32	1,2%	1%	0%	2%	0%	0%
Campione nella fase 2	89	18	0%	1%	0%	1%	0%	2%

Tabella 1: Tabella riassuntiva che mette a confronto i risultati della revisione sistematica della letteratura con quelli dello studio osservazionale.

LEGENDA immagini cliniche:

- Fig. 1: possibili combinazioni di utilizzo di impianti zigomatici, pterigoidei e nasali.
- Fig. 2,3,4: pianificazione con DTXSTUDIO® per l'inserimento anatomicamente corretto nelle aree nasali, zigomatiche e pterigoidee.
- Fig. 5,6,7: foto intraoperatorie per l'inserimento dell'impianto zigomatico e pterigoideo mediante gli inserti dedicati Esacorn® con procedura PIEZOCHIRURGICA.
- Fig. 8: impianto zigomatico Aon® inserito e moncone a connessione conometrica Aon® correttamente orientato e utilizzo di PRGF.
- Fig. 9,10: immagini viso e sorriso pre e post trattamento.
- Fig. 11,12: ortopantomografia pre e post operatoria.
- Fig. 13,14: smontaggio full bridge a 6 mesi relativamente alla FASE 2 dello studio osservazionale.



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Zygomatich Implants Education Academy
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DR MARCO BEVILACQUA
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DR FABRIZIO GRIVETTO
DR FRANCESCO GRECCHI

Impianti zigomatici e pterigoidei a connessione conometrica e a connessione esagonale interna: osservazioni al microscopio elettronico a scansione dell'interfaccia Fixture - Abutment

Sono state eseguite osservazioni al microscopio elettronico a scansione su impianti pterigoidei e zigomatici da accoppiare ad un moncone conico (caso A) e ad uno esagonale (caso B) con lo scopo di verificarne le caratteristiche morfologiche. In particolare è stata valutata la finitura meccanica delle parti da accoppiare degli impianti e dei monconi e, per quanto osservabile, la qualità dell'accoppiamento risultante tra le parti.

Materiali e Metodi

La valutazione al microscopio elettronico a scansione (SEM) con modalità detector normale è stata eseguita mediante uno strumento EVO MA 10 (ZEISS).

I parametri salienti dell'analisi (potenziale di accelerazione degli elettroni=EHT, working distance=WD, ingrandimento=Mag, tipologia di detector=Signal A, data di realizzazione delle immagini) sono riportati direttamente sulle fotografie.

I materiali forniti sono stati sottoposti all'analisi microscopica riducendo al minimo le manipolazioni ed evitando ogni contatto con la superficie.

Risultati

I principali risultati ottenuti nell'osservazione al SEM sono riportati nelle immagini fornite come singoli files tif.

IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE CONOMETRICA

L'accoppiamento conico (A) presenta una buona finitura meccanica, la quale dovrebbe garantire clinicamente stabilità e resistenza allo svitamento se sottoposto a cicli masticatori ripetuti.

La qualità delle aree interne, quindi, delle aree di accoppiamento dell'impianto zigomatico e pterigoideo appare buona e adatta all'uso clinico previsto.

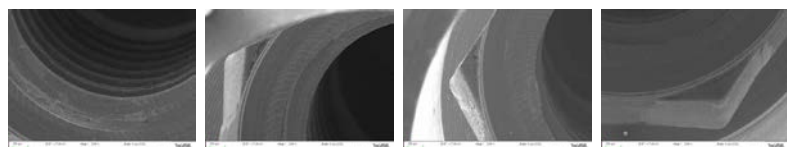
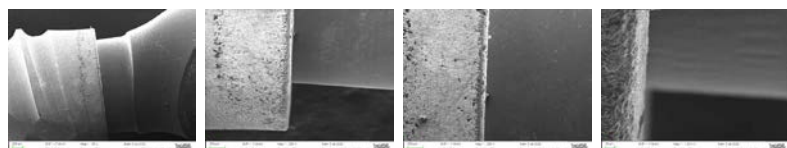
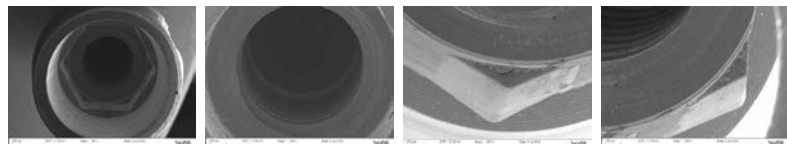
Per quanto possibile osservare dopo avvistamento, l'accoppiamento tra moncone conico e impianto pterigoideo presenta una buona precisione, senza distanze apprezzabili tra le 2 parti.

IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE ESAGONALE INTERNA

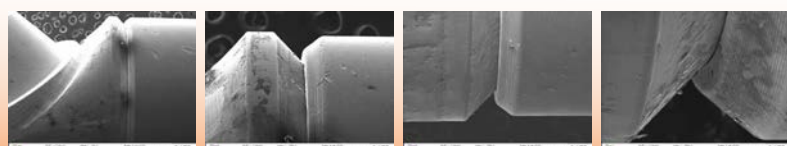
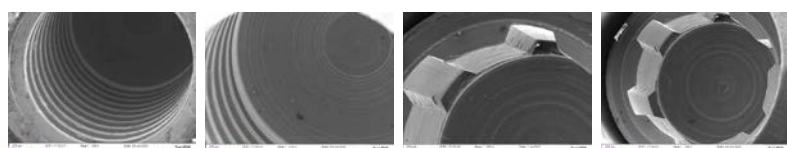
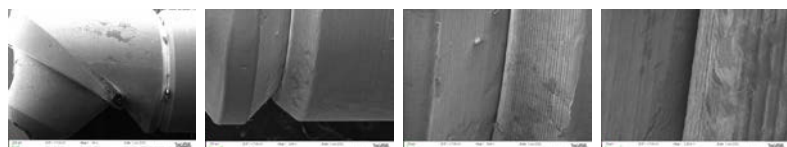
Sia il moncone che gli impianti zigomatici e pterigoidei non presentano particolari difetti di finitura meccanica, del tipo bave ed accumuli di materiale.

Per quanto possibile osservare dopo avvistamento, l'accoppiamento tra moncone e impianti pterigoidei a connessione esagonale interna (B) sembra buono, senza distanze apprezzabili tra le 2 parti o da altre anomalie. La qualità delle aree interne, quindi, delle aree di accoppiamento, analogamente alla connessione conometrica dell'impianto zigomatico e pterigoideo, appare buona e adatta all'uso clinico previsto.

CARATTERISTICHE MORFOLOGICHE DI SUPERFICIE E DELL'ACCOPIAMENTO DEI MONCONI PROTESICI: IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE CONOMETRICA (A)



CARATTERISTICHE MORFOLOGICHE DI SUPERFICIE E DELL'ACCOPIAMENTO DEI MONCONI PROTESICI: IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE ESAGONALE INTERNA (B)



Valutazioni eseguite da:
Dr.ssa Clara CASSINELLI
Dr. Marco MORRA

NOBIL
BIO RICERCHE

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Zygoma breakdown in a bruxer female patient: surgical & prosthetic management

1. Planing	2. Zygoma FAILURE	3. New PLANING	4. Temporary RESTORATION	5. Final RESTORATION

This case report shows a zygomatic rehabilitation massive breakdown. Bruxism was considered the main factor affecting implant osseointegration. A new maxillary treatment was carried out after one year. The number and the length of supporting implants were enhanced adopting a quad zygoma technique plus a central short implant. Overload was managed by a provisional mandibular overdenture replacing a preexisting fixed bridge. Immediate loading of zygomatic implants can be a safe approach if load is under control.

Riabilitazione dei mascellari atrofici mediante impianti zigomatici, nasali, pterigoidei e tecnica piezochirurgica: studio clinico osservazionale.

Le attuali aspettative, estetiche e riabilitative, del paziente adulto

24^o Congresso Terapia Implantare e Ortodonta Biomax

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Scopo della ricerca: lo scopo di questo studio osservazionale è valutare la sopravvivenza implantare e l'incidenza di complicanze delle riabilitazioni mediante impianti zigomatici, pterigoidei, nasali e la soddisfazione dei pazienti con riabilitazioni full-arch a carico immediato.

Materiali e Metodi: lo studio è stato sviluppato retrospettivamente raccogliendo i dati clinici di **32 pazienti** trattati da settembre 2021 a giugno 2022 con il protocollo PIEZOCHIRURGICO per la preparazione del sito osseo: in totale sono stati inseriti 28 impianti ZIGOMATICI, 42 PTERIGOIDEI e 18 NASALI (**fase 1**). 7 pazienti sono stati riabilitati mediante 4 impianti zigomatici con protocollo QUAD ZYGOMA, mentre 25 pazienti con un protocollo ibrido che prevedeva da 1 a 3 impianti zigomatici, da 1 a 2 impianti NASALI / PTERIGOIDEI e da 2 a 4 impianti standard. Ciascun caso clinico è stato riabilitato con un minimo di 4 impianti e un massimo di 6. Per ogni paziente sono state analizzate le ortopantomografie pre e post operatorie. Sono stati registrati i fallimenti implantari e le complicanze protesiche riportate nelle cartelle cliniche. Di questi 32 pazienti, **18** sono stati **rivalutati a 6 MESI rimuovendo la protesi fissa avvitata** per valutare la stabilità implantare, la condizione dei tessuti perimplantari ed è stato valutato il design protesico (**fase 2**). A questi 18 pazienti è stato sottoposto un questionario di gradimento della riabilitazione.

Risultati: lo studio in esame ha avuto un **follow up di 10 mesi**. I tassi di fallimento implantare sono simili a quelli riportati in letteratura per il campione nella fase 1 e nella fase 2. Sono falliti 2 impianti su 88 presi in esame. I valori di stabilità implantare, incidenza di sinusiti (2,8%), condizioni dei tessuti perimplantari e valutazione protesica sono paragonabili a quelli riportati in letteratura per questo tipo di riabilitazione (Tabella 1). È stato inoltre paragonato il gradimento della nuova riabilitazione rispetto alla precedente da parte dei pazienti. Tutti i soggetti hanno confermato un miglioramento della propria qualità di vita.

Conclusioni: gli **impianti Zigomatici associati agli Pterigoidei e Nasali** nelle riabilitazioni full arch a carico immediato dei mascellari atrofici, utilizzando la preparazione del sito mediante **Piezochirurgia**, sono dispositivi affidabili con una sopravvivenza implantare paragonabile a quella degli impianti dentali convenzionali. Questa tecnica necessita di un'accurata pianificazione delle fasi chirurgiche e protesiche per garantire un'adeguata predicibilità del risultato clinico relativo alla riabilitazione protesica definitiva.

	Implanti	Patienti	Complicanze implantari	Complicanze protesiche	Stabilità del perimplantare	Stabilità del tessuto perimplantare	Stabilità protesica	Complicanze protesiche
Campione 2016	4556	2361	1,30%	2,40%	2%	1%	0,40%	4,8%
Campione nella fase 1	168	32	1,2%	1%	0%	2%	0%	0%
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- Fig. 8:** impianto zigomatico Aon® inserito e moncone a connessione conometrica Aon® correttamente orientato e utilizzo di PRGF.
- Fig. 9,10:** immagini viso e sorriso pre e post trattamento.
- Fig. 11,12:** ortopantomografia pre e post operatoria.
- Fig. 13,14:** smontaggio full bridge a 6 mesi relativamente alla FASE 2 dello studio osservazionale.

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AUTORI

Introduzione

Sono state eseguite osservazioni al microscopio elettronico a scansione su impianti pterigoidei e zigomatici da accoppiare ad un moncone conico e ad uno esagonale con lo scopo di verificarne le caratteristiche morfologiche. In particolare è stata valutata la finitura meccanica delle parti da accoppiare degli impianti e dei monconi e, per quanto osservabile, la qualità dell'accoppiamento risultante tra le parti.

Materiali e Metodi

La valutazione al microscopio elettronico a scansione (SEM) con modalità detector normale è stata eseguita mediante uno strumento EVO MA 10 (ZEISS). I parametri salienti dell'analisi (potenziale di accelerazione degli elettroni=EHT, working distance=WD, ingrandimento=Mag, tipologia di detector=Signal A, data di realizzazione delle immagini) sono riportati direttamente sulle fotografie. I materiali forniti sono stati sottoposti all'analisi microscopica riducendo al minimo le manipolazioni ed evitando ogni contatto con la superficie.

Risultati

I principali risultati ottenuti nell'osservazione al SEM sono riportati nelle immagini fornite come singoli files tif.

IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE CONOMETRICA

La qualità delle aree interne dell'impianto, quindi delle aree di accoppiamento, appare buona e adatta all'uso previsto. Il moncone conico presenta molti difetti di finitura meccanica - bave e accumuli di materiale metallico - soprattutto a livello delle porzioni interne di avvitaamento. Le immagini mostrano in modo molto chiaro frammenti di bave fluttuanti, destinati a staccarsi facilmente a seguito di sollecitazione anche di debole intensità. Sono presenti accumuli di materiale non asportato dall'utensile. Per quanto possibile osservare dopo avvitaamento, l'accoppiamento tra moncone conico e impianto sembra buono, senza distanze apprezzabili tra le due parti.

IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE ESAGONALE INTERNA

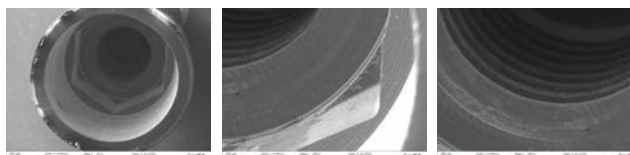
Sia il moncone che gli impianti zigomatici e pterigoidei non presentano particolari difetti di finitura meccanica, del tipo bave ed accumuli di materiale. Per quanto possibile osservare dopo avvitaamento, l'accoppiamento tra moncone e impianti a connessione esagonale interna sembra buono, senza distanze apprezzabili tra le due parti o altre anomalie e pertanto adatta all'uso clinico previsto.

Conclusioni

Dall'analisi microscopica si evince che, a prescindere dal tipo di connessione fixture-abutment utilizzata (conometrica o esagonale interna), la bontà di fabbricazione degli impianti e soprattutto degli abutment è fondamentale per l'ottenimento di un perfetto accoppiamento tra le componenti intraossee e protesiche, tra quest'ultime e il bridge e la stabilità delle varie interfacce nel tempo. Appare nondimeno difficile, per il clinico, saggiare la precisione dei dispositivi industriali presenti sul mercato in assenza di strumenti idonei di analisi.

CARATTERISTICHE MORFOLOGICHE DI SUPERFICIE E DELL'ACCOPIAMENTO DEI MONCONI PROTESICI: IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE CONOMETRICA

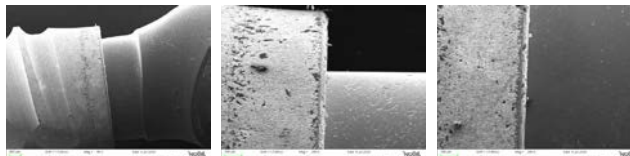
IMPIANTO



MONCONO

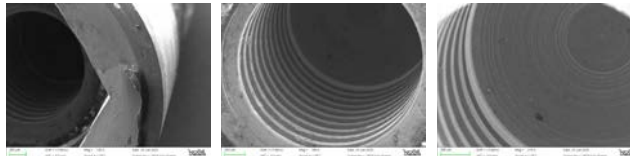


CONNESSIONE

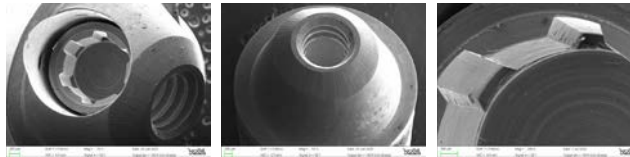


CARATTERISTICHE MORFOLOGICHE DI SUPERFICIE E DELL'ACCOPIAMENTO DEI MONCONI PROTESICI: IMPIANTI ZIGOMATICI E PTERIGOIDEI A CONNESSIONE ESAGONALE INTERNA

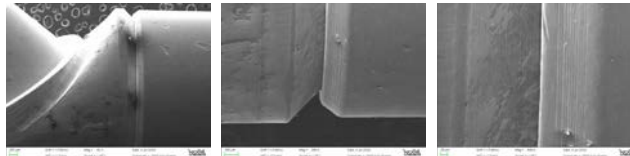
IMPIANTO




MONCONO



CONNESSIONE



Valutazioni eseguite da:
Dr.ssa Clara CASSINELLI
Dr. Marco MORRA



I 5 step per l'intercettazione e la gestione delle complicanze in implantologia Zigomatica, Nasale e Pterigoidea (ZNP) durante il mantenimento professionale

Le attuali aspettative, estetiche e riabilitative, del paziente adulto

24° Congresso Terapia Implantare e Ortodonta Biomax

22 | 23 | 24 Settembre 2022

VERONA Palazzo della Gran Guardia Piazza Bra 1

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Introduzione

Gli impianti Zigomatici, insieme ai Nasali e Pterigoidei, sono dispositivi alloplastici che si stanno consolidando nel trattamento di pazienti con gravi atrofie mascellari. Queste tecniche non sono prive di complicanze e richiedono una certa esperienza chirurgica, ma al contempo stanno dimostrando un tasso di successo paragonabile alle tecniche convenzionali e per questo sono sempre maggiormente applicate in campo implanto-protetico.

Una recente revisione della letteratura evidenzia che le deiscenze dei tessuti molli, le rinosinusiti e le rotture protesiche sono le complicanze più frequenti (1) e, come viene suggerito da Aparico (2), il controllo della salute sinusale dovrebbe fare parte del programma di mantenimento.

Durante il follow-up si rilevano ipertrofe/iperplasie gengivali, ulcere da decubito, fistole e fessurazioni gengivali orizzontali.

Le alterazioni dei tessuti molli aumentano il rischio di avere una mucosite batterica. La prevenzione e il controllo della mucosite batterica sono di rilevante importanza per scongiurare la perimplantite (3). Studi microbiologici su impianti zigomatici dimostrano una correlazione tra sanguinamento al sondaggio e batteri patogeni parodontali (4). Gli impianti zigomatici presentano una differente anatomia perimplantare in quanto la porzione vestibolare è in relazione solo con tessuti molli e talvolta manca anche l'osso mediale. Questo impedisce l'utilizzo dei parametri parodontali tradizionali ed impone l'uso di una tecnica di sondaggio delicata per non alterare l'adesione desmosomica. Il sondaggio servirà solo a verificare il buon attacco dei tessuti e prevenire le complicanze come suggerito nello studio prospettico di Agliardi (5).

La mancanza di gengiva aderente vestibolare e il posizionamento palatale con tecnica intra-sinusale rendono difficoltoso l'esame obiettivo e le manovre igieniche perimplantari quando la protesi è in situ. Malgrado il sondaggio risulti difficile intorno agli ZNP, esso rimane l'unico atto clinico utile ad intercettare l'infiammazione dei tessuti perimplantari.

Considerando invece il complesso implanto-protetico nella sua interezza, un'attenta osservazione del manufatto protesico sarà necessaria per intercettare linee di frattura o usure anomale da segnalare allo specialista. L'esame dell'ATM dovrebbe entrare di routine per intercettare eventuali modifiche occlusali o dolore riferito dal paziente. Chi si occupa del mantenimento potrà fornire utili suggerimenti per la progettazione di accessi idonei al controllo della placca batterica.

Gli autori di questo lavoro, dopo una disamina della letteratura (6) e grazie alla loro esperienza maturata durante una pluriennale collaborazione con chirurghi specialisti in queste complesse riabilitazioni, si propongono di offrire una guida per intercettare le possibili complicanze e mantenere al meglio la salute dei pazienti con ZNP. Questo è il primo step di un lavoro che si propone di stilare protocolli mirati anche al mantenimento professionale e domiciliare dei pazienti con ZNP.

Obiettivo

Mettere in evidenza gli step e i materiali necessari per effettuare un esame intra ed extra orale completo e utile all'intercettazione delle alterazioni biologiche, protesiche e meccaniche al fine di prevenire le possibili complicanze nei pazienti con grave atrofia ossea sottoposti a tecniche implantoprotesiche avanzate con impianti ZNP.

Conclusioni

Le riabilitazioni implantoprotesiche con ZNP sono sempre più diffuse e necessitano di nuove conoscenze per gli operatori che si occupano del mantenimento. Le maggiori complicanze sono date dalle alterazioni dei tessuti molli, le rino-sinusiti ed i fallimenti protesici. Al fine di prevenire le complicazioni si richiede un attento esame intra ed extra orale che comprenda il controllo del seno mascellare e dell'ATM, un set di foto iniziali, la palpazione e il sondaggio perimplantare, l'attenta osservazione dei tessuti molli e dei manufatti protesici con l'uso di sistemi ingranditori. Si attendono studi clinici e nuove linee guida dalla comunità scientifica per operare al meglio.

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I 5 STEP DELLA FASE INTERCETTIVA

L'operatore che si occupa del mantenimento in pazienti trattati con ZNP e protesi provvisorie o definitive deve, come prima cosa, avere a disposizione e visualizzare gli esami radiografici eseguiti dallo specialista dopo la consegna dei manufatti. Questo gli permetterà di conoscere il numero degli impianti utilizzati, la posizione, le connessioni e il tragitto transmucoso.

Esame radiologico post-operatorio a finalizzazione protesica ultimata.

1 ESAME INTRA/ EXTRAORALE E ATM
Esame dell'ATM per click o dolore riferito Fig.1.1
Palpazione dei linfonodi sotto e collo Fig.1.2
Pericuzione digitale extraorale dei seni nasali Fig.1.3
Esame della lingua per eventuali lesioni da trauma
Esame della zona gengiva per eventuali traumi masticatori
Osservazione e palpazione del palato e della musca masticatoria
Osservazione e palpazione del forame dotore riferito alla palpazione, presenza di fistole o squallori nasali Fig.1.4 e 1.5
Alitosi persistente riferita o percepita dall'operatore

2 OSSERVAZIONE DEI TESSUTI MOLLI E DEL TRAGITTO TRANSMUCOSO CON INGRANDITORI
Segni di decubito Fig.2.1
Fessurazione Fig.2.2
Fistola Fig.2.5
Deiscenza Fig.2.6
Materiali: set attore ortognat, garza, ingranditori cili Fig.2.7

3 STIMOLAZIONE DEI TESSUTI MUCOSI CON SONDE C/O DIGITALE SOTTO INGRANDITORI
Sondaggio delicato con sonda flessibile per il controllo del sigillo mucosale e Bp Fig.3.1
Presenza di biofilm e tartaro Fig.3.2-3.5
Digitopressione apico/coronale dei tessuti perimplantari per rilevare la presenza di essudato e/o suppurazione Fig.3.6

4 ESAME DELLE STRUTTURE PROTESICHE CON INGRANDITORI
Usura occlusale Fig.4.1
Chipping Fig.4.2-4.4
Linee di frattura Fig.4.5
Mobilità orizzontale e verticale Fig.4.6
Verifica accesso igienico Fig.4.7

5 FOTOGRAFIE INIZIALI
Si consiglia un set fotografico completo con protesi definitiva a TO per il monitoraggio nel tempo dei tessuti e del manufatto protesico Fig.5.1-5.3

Riabilitazione implantoprotetica mediante impianti Uniplant® e impianti pterigoidei nel ritrattamento del mascellare moderatamente atrofico

Le attuali
aspettative,
estetiche e
riabilitative,
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LUCA
SCAGLIONE

PIERCARLO
SEGHESSIO

AUTORI

CASO CLINICO

Ritrattamento full-mouth in paziente Asa 1 con dentatura terminale e fallimenti implantari. In questi casi clinici è indispensabile seguire un protocollo validato (EVIDENCE BASED DENTISTRY) nelle sue fasi chirurgiche e protesiche garantendo un supporto biomeccanico adeguato.

Il COLUMBUS BRIDGE PROTOCOL ci garantisce una percentuale di successo sovrapponibile al carico differito in questi casi di elevata complessità chirurgico-protesica.

Le immagini extraorali della paziente indicano una perdita della dimensione verticale di occlusione (Fig. 1-2) e del sostegno del labbro superiore. L'ortopantomografia e la visione intraorale a tempo 0 confermano la non predicibilità protesica degli elementi residui. La terapia proposta prevede l'estrazione degli elementi dentari residui e l'inserimento implantare post estrattivo con riabilitazione full arch "Columbus Bridge" superiore e inferiore (Fig. 3-4).

La pneumatizzazione moderata di entrambi i seni mascellari (Fig. 5-6-7) necessita di un appoggio distale per evitare cantilever di almeno 2 elementi per ogni quadrante che rappresenterebbero un potenziale fattore di rischio protesico. Vengono pertanto inseriti 2 impianti distali pterigoidei (Noris Medical) da 20 mm e 4 impianti Uniplant (Biomax) da 13 mm per 4.5 mm di diametro in regione pre-maxillare. Questi impianti, grazie al loro macrodesign, garantiscono elevata stabilità negli alveoli post estrattivi, permettendo di seguire il protocollo di carico immediato senza precludere il raggiungimento dell'osseo-integrazione (Fig. 8-9-10-11-12-13-14-15).

Le fasi protesiche di laboratorio (Fig. 16-17-18), per la realizzazione del framework permanente, sono progettate in ambiente EXOCAD. Lo spazio intermascellare, la distanza interimplantare, l'altezza dei canali mucosi sono valutati e progettati al CAD, comprese le ritenzioni e i supporti per il composito di rivestimento utilizzato secondo la tecnica della stratificazione incrementale in muffola trasparente. I volumi protesici disponibili ci indicano come scelta di elezione il titanio fresato al CAM per la sua elevata biocompatibilità nel contatto mucosa-bridge, il basso peso specifico, la resistenza e l'adesione metallo-composito (Fig. 19-20-21-22-23).

L'ortopantomografia di controllo finale (Fig. 24) e la CBCT (Fig. 25-26) evidenziano la corretta distribuzione full arch degli impianti intra ed extraorali, la corretta morfologia del framework e il fit sui sei pilastri conici avvitati sugli impianti Uniplant e Noris Pteryfit. Nelle visioni sagittali destra e sinistra è possibile osservare l'inclinazione reale mesio-distale dei due impianti extramascellari distali da 20 mm ancorati nei processi pterigoidei dello sfenoide.

Nella Fig. 27 è possibile apprezzare il risultato della riabilitazione definitiva e il nuovo sorriso della paziente.



Attività corsistica e congressuale

1997				
1	16 Maggio	Verona	Fusione e precisione	Dott. Andrea Maleci
1998				
2	28 Gennaio	Milano	Attacchi dentali e metallurgia	Cendres & Metalux Italia
3	29 - 30 Maggio	Bassano del Grappa, Vicenza	La ricostruzione morfologica e funzionale delle creste mascellari atrofiche	Dott. Paolo Toscano
1999				
4	01 Marzo	Bassano del Grappa, Vicenza	Diploma di Soccorritore	Associazione Italiana Soccorritori
2000				
5	18 Marzo	Padova	Terapia parodontale ricostruttiva	Dott. Andrea Chierico D.ssa Zeina Majzoub Dott. Paolo Vigolo
6	21 Ottobre	Asolo, Torino	Il contributo del Logopedista nella gestione della salute del cavo orale della persona anziana istituzionalizzata	Dott. Gino Redigolo Ing. Silvio Zanus
7	26 - 27 - 28 Ottobre	Bologna	Distraction Osteogenesis of the Facial Skeleton	Dott. Roberto Cocchi
8	25 Novembre	Caerano di S. Marco, Treviso	Nuove prospettive in terapia odontoiatrica: materiali e tecniche.	Prof. Giuseppe Ferronato
9	29 Novembre	Bassano del Grappa, Vicenza	Corso BLS esecutore categoria B	Dott. Maurizio Rizzon L.P. Girolamo Simeoni
10	07 Dicembre	Torino	PHTLS Advanced Provider Course	Dott. Alberto Adducci A.F.D. Stefania Moio
2001				
11	21 - 24 Febbraio	Venezia	3rd World Congrss of Osseointegration	Prof. G.A. Favero Prof. N.P. Lang - Prof. J. Lindhe
12	22 Aprile	Bassano del Grappa, Vicenza	Corso di primo soccorso ed educazione sanitaria	Croce Rossa Italiana
13	04 - 05 - 06 Ottobre	Udine	Orthognathic Surgery	Prof. Massimo Politi
14	23 - 24 Novembre	Monselice, Padova	Tecniche di ricostruzione nei tumori della testa e del collo	Dott. Francesco Lunghi

2002				
15	15 - 16 Novembre	Castelfranco Veneto, Treviso	Corso teorico-pratico di chirurgia implantologica con rialzo del seno mascellare	Prof. Ferronato Giuseppe Prof. Giampiero Cordioli Dott. Sergio Dovigo
16	30 Novembre	Como	L'impiego del Medpor nelle ricostruzioni cranio facciali	Dott. Paolo Ronchi Dott. Ernesto Padula
2003				
17	15 Gennaio	Bassano del Grappa, Vicenza	Corso di rianimazione cardiopulmonare e defibrillazione precoce per operatori sanitari	Istruttore BLS Bordignon Emanuela
18	28 - 31 Maggio	Vicenza	XIII Congresso Nazionale SICMF	Dott. Ernesto Padula
19	31 Agosto	Mestre, Venezia	Corso Advances in Heand and Neck Cancer	Dott. Francesco Lunghi
20	06 Settembre	Bassano del Grappa, Vicenza	Ruolo di logopedista nello squilibrio muscolare orofacciale in età evolutiva	Dott. Aurelio Levrini Dott.ssa Laura De Toffol Log. Pasqualina Andretta
21	11-13 Dicembre	Verona	Predicibilità nelle ricostruzioni maxillo-facciali con o senza biomateriali e stato dell'arte nelle grandi ricostruzioni	Prof. Daniel Buser
2004				
22	24 Gennaio	Padova	L'evoluzione delle tecniche chirurgiche a supporto dell'ortodonzia	Dott. Matteo Chiapasco
23	17 Aprile	Monastier di Treviso, Treviso	Giornata di chirurgia orale	Prof. Gian Antonio Favero Dott. Giovanni Mazzolen Dott. Claudio Boato Dott. Amedeo Zirilli
24	15 Maggio	Mestre, Venezia	Pianificazione e realizzazione sinergica nella riabilitazione Implantoprotesica	Dott. Fabio Caine
25	17 - 18 Settembre	Como	Terapia delle II Classi: ortopedia, ortodonzia, chirurgia	Dott.ssa Patrizia Luzzi
26	02 Ottobre	Padova	Simposio Internazionale di chirurgia dell'orbita e della cavità anoftalmica	Dott. Dario Surace
27	14 - 16 Ottobre	Venezia	4th World Congress of Osseointegration	Prof. Gian Antonio Favero Prof. Massimo Simion

28	20 Novembre	Limena, Padova	Approcci non convenzionali alle disfunzioni temporo mandibolari	Prof. Ferronato Giuseppe Prof. Giampiero Cordioli Dott. Sergio Dovigo Dott. Guarda Nardini Luca
29	21 Novembre	Padova	Il paziente disfunzionale e ortodontico-chirurgico	Dott. Luca Guarda Nardini Dott. Redento Peretta Dott. Dario Urzi
30	25 - 26 Novembre	Verona	Trattamento dei linfonodi regionali nei tumori della testa e del collo: problemi e controversie.	Dott. Franco Barbieri
2005				
31	05 Febbraio	Due Carrare, Padova	Programma Nazionale per la formazione continua degli operatori della sanità. seminario di chirurgia maxillo-facciale.	Dott. Luigi Clauser
32	10 Febbraio	Bassano del Grappa, Vicenza	Analisi biomeccanica del movimento	Dott.ssa Cristina Smiderle
33	05 Marzo	Legnago, Verona	Traumatologia dentaria e maxillo-facciale	Dott.ssa Antonella Vecchi
34	08 Aprile	Treviso	La chirurgia pre-protetica ambulatoriale dei mascellari superiori	Prof. Pier Francesco Nocini Dott. Daniele De Santis
35	02 Maggio	Padova	Svuotamenti latero-cervicali	Prof. Giuseppe Ferronato
36	04 Maggio	Ferrara	Fissazione rigida 2005 con intervento live	Prof. J.F. Hoenig
37	06 Maggio	Bassano del Grappa, Vicenza	La contenzione in geriatria: limite o risorsa?	Dott. L. Marinangeli
38	07 Maggio	Vicenza	Tecniche e tecnologie per la personalizzazione del trattamento implantoprotesico	Dott. Castellucci
39	13 Maggio	Cittadella, Padova	Il seno mascellare: in odontoiatria più nostro di prima.	Dott. Roberto Ferro
40	14 Maggio	Limena, Padova	2° One Implant Day	
41	23 Maggio	Vicenza	Corso di aggiornamento in microchirurgia ricostruttiva	Dott. Ernesto Padula
42	06 Giugno	Padova	Chirurgia plastica ricostruttiva ed estetica della regione orbito-palpebrale	Dott. Luigi Chiarelli

43	9 - 10 - 11 Giugno	Parma	XIV Congresso Nazionale della società italiana di chirurgia maxillo-facciale	Relatori vari
44	20 Giugno	Padova	La chirurgia ricostruttiva pre-protetica: multiple metodologiche a confronto.	Dott. Philip J. Pandolfi
45	04 Giugno	Padova	La chirurgia ricostruttiva in traumatologia cranio-maxillo-facciale	Dott. Umberto Zanetti
46	04 Giugno	Padova	Osteogenesi distrazionale in chirurgia cranio-maxillo facciale	Dott. Umberto Zanetti
47	15 - 17 Settembre	Bassano del Grappa, Vicenza	Convegno la chirurgia endoscopica rino sinusale IV corso di chirurgia in diretta	Dott. Paolo Agostini
48	21 Ottobre	Bassano del Grappa, Vicenza	La riabilitazione implantoprotesica: tecniche predicibili di chirurgia e protesi avanzata.	Dott. Roberto Cocchetto Dott. Paolo Toscano Dott. Federico Hernandez Alfaro Dott. Andrea Chierico
49	19 Dicembre	Bassano del Grappa, Vicenza	Corso di informazione/formazione sui rischi specifici, sorveglianza sanitaria, sorveglianza fisica a personale in frequenza equiparato al dipendente ed ai lavoratori autonomi, occupati presso Ospedale S. Bassiano in applicazione Art.7 del D.Lgs 626/94 e S.M.I. ed Art.10 del D.m. 363/98	Per. Ind. Emiliano Bazzan
2006				
50	25 Marzo	Modena	Corso di perfezionamento in posturologia clinica	Prof. Ugo Consolo
51	26 - 27 Maggio	Trieste	Aesthetic Rhinoplasty and Functional Rhinoplasty in Secondary Treatment of Cleft Patients	Dott. Francesco Manna
52	29 Maggio	Bassano del Grappa, Vicenza	Le infezioni ospedaliere in chirurgia: epidemiologia e linee guida.	Dott. Guglielmo Breda
53	29 Maggio	Bassano del Grappa, Vicenza	Le infezioni ospedaliere in chirurgia: l'implementazione delle linee guida nella pratica clinico assistenziale.	Dott. Guglielmo Breda
54	31 Maggio	Udine	Gestione del rischio clinico in ortognatodonzia e chirurgia ortognatica	Dott. Moreno Lirutti
55	16 Giugno	Padova	Traumatologia maxillo-facciale aspetti clinico-diagnostici e medico-legali della traumatologia dento-maxillo-facciale	Dott. Umberto Zanetti

56	19 Giugno	Padova	La ricostruzione del padiglione auricolare	Prof. Giuseppe Ferronato
57	23 Giugno	Padova	Sviluppo e crescita cranio-facciale: diagnosi e programmazione del trattamento in ortognatodonzia.	Prof. Lorenzo Favero
58	26 Giugno	Padova	Sarcomi della testa e del collo in età pediatrica	Prof. Giuseppe Ferronato
59	07 - 08 - 09 Settembre	Treviso	6th SVO International Conference on Head and Neck Cancer	Prof. Ashok R. Shaha Prof. Gregorio Babighian Dott. Francesco Lunghi Dott. Roberto Spinato
60	27 - 30 Settembre	Abano Terme, Padova	La condivisione di metodi consolidati per l'ottenimento del successo estetico implantare	Dott. Ernesto Valdesolo
61	07 Ottobre	Bassano del Grappa, Vicenza	Il percorso diagnostico, terapeutico e assistenziale della persona con ulcere degli arti inferiori nell'Azienda ULSS n°3	Relatori vari
62	18 Novembre	Modena	Success by design: integrating biology new implant designs and esthetics in simplified and complex therapy.	Dott. Henry Salama Dmd
63	18 Novembre	Modena	Il successo in estetica nei casi semplici e complessi	Dott. Henry Salama Prof. Ugo Consolo
64	14 Dicembre	Bassano del Grappa, Vicenza	La gestione della persona con dolore: aspetti clinici e relazionali.	Dott. Pietrobon Francesco
2007				
65	20 Gennaio		Indicazioni e programmazione del trattamento ortodontico-chirurgico	Prof. Giuseppe Ferronato Prof. Redento Peretta
66	24 Gennaio	Limena, Padova	Occlusione, equilibrio e postura: realtà, miti e inganni.	Meeting and Service Club
67	14 Febbraio	Ferrara	L'approccio coronale nella patologia dell'ATM	Prof. Paolo Toscano
68	15 - 17 Febbraio	Venezia Lido	5th World Congress of Osseointegration	Prof. G.A. Favero Prof. M. Simion
69	24 Febbraio	Vicenza	Guidare il futuro con protocolli creativi ed altamente estetici	Dott. H. Salama
70	31 Marzo	Cavenago Brianza, Monza Brianza	Tecniche semplificative nella chirurgia preimplantare dei mascellari atrofici	Dott. Alejandro Padros Fradera Dott. Francesco Epifani

71	13 Aprile	Bassano del Grappa, Vicenza	Incontri oftalmologici bassanesi	Dott. Salvatore Carlantini Dott. Giovanni Rappo
72	05 Maggio	Milano	Consensus conference sul carico immediato	Dott. Tiziano Testori
73	14 Maggio	Bassano del Grappa, Vicenza	Scienza e tecnologia a servizio dello sport	Dott. Guglielmo Stecchini
74	20 - 23 Giugno	Bologna	XV Congresso Nazionale della società italiana di chirurgia maxillo-facciale	Relatori vari
75	20 - 22 Settembre	Verona	Convergenze operative cliniche e tecnologiche per un moderno piano di trattamento implantare	Dott. Ernesto Valdesolo
76	27 Settembre	Bassano del Grappa, Vicenza	Il dolore toracico e l'infarto	Dott. Ivan Gallio
77	29 Settembre	Ferrara	Reconstructive Surgery after Oncologic Resection of the Cranio Maxillofacial Skeleton	Prof. Julio Acero Prof. Luigi Clauser
78	19 - 20 Ottobre	Verona	Progettare e realizzare il successo in terapia implantare utilizzando metodiche attuali e innovative	Prof. Pier Francesco Nocini
79	03 Dicembre	Mestre, Venezia	La chirurgia delle palpebre	Dott. Leonardo Priore
2008				
80	17 Gennaio	Bassano del Grappa, Vicenza	Come funziona la comunicazione che porta a capirsi	Dott.ssa Antonella Mosele
81	29 Marzo	Monastier di Treviso, Treviso	Terapia parodontale e rigenerazione ossea nella chirurgia implantare	Dott. Gianfranco Dotto
82	19 Aprile	Vicenza	Sviluppo del sito e posizionamento Implantare nei casi complessi: principi e tecniche.	Dott. Tiziano Testori Dott. Giovanni La Scala Dott. Paolo Toscano Dott. Vittorio Ferri Dott. Domenico Beldi
83	17 Maggio	Agrate Brianza, Monza Brianza	Chirurgia implantare guidata: una sfida per il team.	Relatori vari
84	21 Giugno	Padova	Dalla chirurgia alla protesi per un risultato di successo: una visione interdisciplinare.	Relatori vari
85	18 Ottobre	Padova	12° Workshop di implantologia computer assistita	Prof. G. Ferronato Dott. G. Schirolì Dott. S. Fabbro

2009				
86	07 Maggio	Bassano del Grappa, Vicenza	Chirurgia tiroidea e chirurgia oncologica: cavo orale-orofaringe.	Dott. Luigi Barzan
87	26 Settembre	Treviso	L'aspetto protesico come guida all'Implantologia	Relatori vari
88	21 Ottobre	Bassano del Grappa, Vicenza	Basic Life Support Defibrillation Tipo B Esecutore BLS-D secondo linee guida internazionali (IRC)	Dott. Marconi Fabio Inf. Moro Gabriele
89	23 - 24 Ottobre	Verona	Implantologia osteointegrata: evidenze cliniche e prospettive future.	Relatori vari
90	14 Novembre	Padova	Simposio avanzato: aggiornamenti in chirurgia maxillo-facciale.	Prof. Giuseppe Ferronato Dott. Stefano Fusetti
91	28 Novembre	Padova	L'ausilio del computer in Implantoprotesi: dal software diagnostico al Cad-Cam.	Dott. Giuseppe Luongo
2010				
92	05 Marzo	Bologna	XVI Congresso Nazionale parodontologia 2010	Prof. Luca Francetti
93	12 - 13 Marzo	Abano Terme, Padova	Recenti innovazioni di successo in terapia implantare: dalla chirurgia guidata al carico immediato.	Dott. Ernesto Valdesolo
94	17 Aprile	Bassano del Grappa, Vicenza	Chirurgia mininvasiva: è sempre il Gold Standard?	Dott. Simonetta Morselli Dott. Romeo Altafin Dott. Giovanni Rappo Dott. Claudio Spadaro Dott. Antonio Toso Dott. Danise Zanotto
95	22 Maggio	Vicenza	La chirurgia implantare post-estrattiva	Dott. Briccoli Dott. Menini Dott. Padovan
96	11 - 13 Giugno	Verona	International Association of Dental Traumatology 16th World Congress	Dott. Mitshiro Tsukiboski Prof. Giacomo Cavalleri
97	22 Giugno	Padova	Concetti avanzati di fisiopatologia e di riabilitazione funzionale dei disordini temporo-mandibolari non chirurgici	Dott. Redento Peretta Dott. Dario Urzi

98	23 Giugno	Bolzano Vicentino, Vicenza	Impianti post-estrattivi a carico immediato senza l'ausilio di tecnologie computer guidate nei pazienti parzialmente edentuli	Dott. Paolo Filippini
99	30 Giugno	Padova	Metodiche per il mantenimento e per l'accrescimento dei volumi ossei	Dott. Antonio Lapi Dott. Ian Paul Cardarelli
100	11 Settembre	Ancona	Diagnosi morfologica del paziente disgnatico: 2D Versus 3D.	Dott.ssa Maria Cristina Bellardinelli
101	18 Settembre	Treviso	Il paziente: professioni in dialogo.	Relatori vari
102	25 Settembre	Verona	Congresso Internazionale di terapia implantare corsi post-congressuali con accreditamento ECM	Dott. Ernesto Valdesolo
103	01 Ottobre	Rimini	Nobel Biocare Symposium	Dott.ssa Alizia Trambaiolo
104	02 Ottobre	Verona	Corso sul materiale d'impronta	Fabrizio Sambugar
105	29 - 30 Ottobre	Torino	Approccio integrato ai disordini temporo-mandibolari: occlusodonzia, psicologia e riabilitazione funzionale.	Dott. Dario Urzi
106	19 - 20 Novembre	Padova	Incontro di chirurgia ortognatica	Prof. Giuseppe Ferronato Dott. Redento Peretta
107	01 Novembre	Bassano del Grappa, Vicenza	Corso base primo soccorso	Mascotto Giorgio
108	11 Novembre	Bassano del Grappa, Vicenza	Nuove acquisizioni in tema di terapia antalgica: controllo del dolore acuto post-operatorio, cronico oncologico e non oncologico.	Dott. Vittorio Bernardi
2011				
109	12 Febbraio	Verona	Corso sul materiale d'impronta	Fabrizio Sambugar
110	26 Febbraio	Verona	Corso di Traumatologia Dento-maxillo-facciale	Giacomo Cavalleri
111	17 - 19 Marzo	Abano Terme, Padova	La tecnologia come fattore determinante di ogni fase della vita dell'impianto: l'orologio implantare.	Dott. Ernesto Valdesolo
112	26 Marzo	Verona	Corso di Traumatologia Dento-maxillo-facciale	Giacomo Cavalleri
113	02 Aprile	Garda, Verona	Elevazione del seno mascellare a scopo Implantologico	Dott. Marco Sanguigni

114	30 Aprile	Verona	Corso di Traumatologia Dento-maxillo-facciale	Prof. Giacomo Cavalleri
115	14 Maggio	Verona	Corso di Traumatologia Dento-maxillo-facciale	Prof. Giacomo Cavalleri
116	08 Giugno	Alte Montecchio Maggiore, Vicenza	Seminario Nobel clinician TM	Relatori vari
117	11 Giugno	Verona	Corso di traumatologia dentale	Dott. Piero Alessandro Marcoli
118	16 Giugno	Verona	Corso di Traumatologia Dento-maxillo-facciale	Prof. Giacomo Cavalleri
119	02 Luglio	Verona	Corso di Traumatologia Dento-maxillo-facciale	Prof. Giacomo Cavalleri
120	15 - 17 Settembre	Verona	14° Congresso Internazionale di terapia implantare corsi monotematici post-congressuali l'estetica implantare nell'era digitale	Dott. Ernesto Valdesolo
121	23 - 24 Settembre	Sirmione del Garda, Brescia	Il privilegio della funzione	Dott. Giuseppe Stefanelli Dott. Mario Mosconi
122	28 Settembre	Pavia	Predicibilità e mini-invasività nell'approccio chirurgico implantare	Dott. Gioacchino Cannizzaro
123	05 Novembre	Vicenza	Simposio accademia italiana CAMLOG	Prof. Carlo Maiorana
2012				
124	13 Febbraio	Vicenza	Semplifica il trattamento e proteggilo nel tempo	Dott. Fabio Mazzocco
125	01 Marzo	Bassano del Grappa, Vicenza	Informazione sui rischi presenti nell'ambiente di lavoro connessi all'attività a personale in frequenza, equiparato al lavoratore, in applicazione del D.lgs. 81/08 e S.M.I.	Ing. Emiliano Bazzan
126	02 Aprile	Vicenza	Semplifica il trattamento e proteggilo nel tempo	Dott. Stefano Mega
127	24 Maggio	Padova	Chirurgia pre-implantologica nella riabilitazione stetica delle gravi atrofie dei mascellari	Prof. Giuseppe Ferronato
128	30 Maggio	Vicenza	Alternative chirurgiche mini-invasive in chirurgia implantare	Dott. Stefano Sivilella Dott. Paolo Toscano
129	20 Giugno	Pavia	Predicibilità e mini-invasività nell'approccio chirurgico implantare	Dott. Gioacchino Cannizzaro

130	21 Giugno	Padova	Chirurgia pre-implantologica nella riabilitazione estetica delle gravi atrofie dei mascellari	Prof. Giuseppe Ferronato
131	20 Settembre	Padova	Chirurgia pre-implantologica nella riabilitazione statica delle gravi atrofie dei mascellari	Prof. Giuseppe Ferronato Dott. Stefano Fusetti
132	27 - 29 Settembre	Verona	Complicanze, problematiche e loro risoluzioni in terapia implantare	Dott. Ernesto Valdesolo
133	23 - 24 Novembre	Santo Stefano Belbo, Cuneo	Funzionalità immediata dell'impianto osteointegrato	Dott. Tiziano Tealdo
2013				
134	19 Febbraio	Vicenza Sede Biomax Spa	Casi complessi di terapia implantare risolti con chirurgia piezoelettrica, chirurgia muco-gengivale ed ortodonzia cercando di risolvere al minimo l'invasività ed il disagio del paziente	Dott. Italo Menini Dott. Alberto Padovan
135	01 - 02 Marzo	Buttrio, Udine	Easymyo Friends Meeting: principi di elettromiografia standardizzata dei muscoli masticatori ed interpretazione degli indici P.O.C.	Dott. Riccardo Rosati Dott. Redento Peretta Dott. Carmelo Condorelli
136	22 - 23 Marzo	Montecatini Terme, Pistoia	Outcome estetico e funzionale mediante il trattamento del tessuto duro e molle	Dott. Ernesto Valdesolo Relatori Vari
137	19 Aprile	Santo Stefano Belbo, Cuneo	Procedure di laboratorio per la protesizzazione immediata a carico implantare	Luca Scaglione Piercarlo Seghesio
138	20 Aprile	Padova	Strategie in impianto-protesi	Dott. Stefano Longoni Prof. Giuseppe Ferronato Dott. Redento Peretta Dott. Giorgia Saia
139	16 - 17 Maggio	Padova	XVIII Congresso Nazionale della società italiana di chirurgia maxillo-facciale	Dott. Olindo Procopio Dott. Maurizio Franco Prof. Giuseppe Ferronato Dott. Redento Peretta
140	18 Maggio	Padova	Convegno odontoiatri nuove tecnologie in implantologia avanzata	Dott. Giorgia Saia Dott. Olindo Procopio Dott. Maurizio Franco
141	01 Giugno	Vicenza	L'impegno della ricerca. Diamo una risposta alle persone con sclerosi multipla.	Dott. Carlo Adelchi Castrignano

142	06 Giugno	Padova	Treatment Strategies for the Mutilated Dentition. Rapporto tra contorno protesico e tessuti gengiva.	Prof. Niklaus P. Lang Dott. Ignazio Loi
143	07 - 08 Giugno	Padova	International Congress on Implant Prosthodontics	Prof. Niklaus P. Lang Dott. Ignazio Loi
144	17 Giugno	Bassano del Grappa, Vicenza	Basic Life Support Defibrillation	I. P. Fabio Cecchin
145	19 - 20 - 21 Settembre	Verona	16° Congresso Internazionale di Terapia Implantare	Dott. Ernesto Valdesolo
146	05 Ottobre	Genova	Estetica e funzione nell'Implantologia moderna	Prof. Paolo Pera Prof.ssa Maria Menini
147	08 - 09 Novembre	Genova	Columbus Bridge Protocol 5° Forum Columbus Bridge	Dott. Tiziano Tealdo Dott. Marco Bevilacqua Prof. Paolo Pera
148	10 Novembre	Bassano del Grappa, Vicenza	Corso di formazione su cenni di primo soccorso e rianimazione cardiopolmonare	Dott. Leka Enkelej
2014				
149	25 Gennaio	Padova	Il carico immediato con l'impronta digitale	Dott. M. De Francesco
150	27 Marzo	Torino	Attestato di partecipazione criticità della zona tra impianto e pilastro per assicurare successo estetico, preservazione del tessuto molle e prevenzione della perimplantite	Dott. Ernesto Valdesolo
151	14 Maggio	Vicenza	Carico immediato funzionale: quali sono i fattori che influenzano il risultato?	Dott. Marco Bevilacqua Presidente Dott. Federico Zanetti
152	02 - 04 Ottobre	Verona	Attestato di partecipazione 17° Congresso Internazionale di terapia implantare	Dott. Ernesto Valdesolo
153	07 Novembre	Santo Stefano Belbo, Cuneo	Corso Columbus Bridge Protocol	Dott. Tiziano Tealdo Dott. Marco Bevilacqua Prof. Paolo Pera
154	15 Novembre	Genova	Attestato di partecipazione al Congresso Advances in Clinical Prosthodontics	Prof. Paolo Pera

2015				
155	26 Marzo	Venezia	Affidabilità nel tempo del trattamento Implantare mediante strategie efficaci e predicibili	Relatori vari
156	27 Giugno	Milano	Corso di economia e management per dentisti 2015	Dott. Gabriele Vassura
157	24 - 26 Settembre	Verona	Attestato di partecipazione 18° Congresso Internazionale di terapia implantare	Dott. Ernesto Valdesolo
158	06 Novembre	Santo Stefano Belbo, Cuneo	VII Forum sul Columbus Bridge Protocol	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
159	14 Novembre	Bassano del Grappa, Vicenza	Prevenzione delle patologie del cavo orale e monitoraggio della salute bucco dentale in età pediatrica	Prof.ssa Laura Strohmerger Prof.ssa Stefania Zampogna
160	28 Novembre	Genova	Attestato di partecipazione Convegno Advances in Clinical Prosthodontics	Prof. Paolo Pera
2016				
161	30 Gennaio	Rosà, Vicenza	BLDS - Basic Life Support - Defibrillation	I.P. Fabio Cecchin
162	11 - 12 Marzo	Udine	Attestato di frequenza Easymyo	Odt. Francesco Rosati
163	07 - 08 Aprile	Lazise, Verona	XVI Closed Meeting Boston University Italian Alumni	Dott. Ernesto Valdesolo
164	15 Aprile	Roma	Dalla salute orale alle strategie operative per il paziente Implantare: la persona attorno alla bocca.	Dott. Ernesto Valdesolo
165	25 Maggio	Treviso	Le roncopatie e le apnee notturne ostruttive nel sonno (OSAS) Approccio clinico - terapeutico multidisciplinare	Dott. Luigino Guarini
166	13 - 14 Maggio 25 Giugno	Milano	Corso di economia e management per dentisti	Dott. Gabriele Vassura
167	09 - 10 Settembre	Santo Stefano Belbo, Cuneo	VIII Forum sul Columbus Bridge Protocol	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
168	07 Ottobre	Padova	Preparazioni a finire con tecnica SPP	Dott. Fabio Scutellà
169	29 - 30 Settembre 01 Ottobre	Verona	19° Congresso Internazionale di terapia implantare	Dott. Ernesto Valdesolo
170	13 - 14 Maggio 25 Giugno	Milano	Corso di economia e management per dentisti	Dott. Gabriele Vassura
171	25 - 26 Novembre	Genova	Advances in Clinical Prosthodontics	Prof. Paolo Pera Prof.ssa Maria Menini

2017				
172	27-28 Gennaio	Udine	Incontro scientifico TFR technology srl	Odt. Francesco Rosati
173	20 Febbraio	Vicenza	Attestato di partecipazione AON implants - cavo orale e patologie sistematiche - considerazione e diagnosi	Prof. Luca Viganò
174	23 Febbraio	Genova	Attestato ECM Advances in Clinical Prosthodontics	Prof. Paolo Pera
175	20 Marzo	Vicenza	Attestato di partecipazione AON implants - implantologia complessa -	Dott. Bruno De Santis
176	27 Marzo	Verona	Attestato di partecipazione - corso per utilizzatori Cone-Beam SL3D	Dott. Gianluca Battipaglia
177	01 Aprile	Trieste	Attestato di riconoscimento per il contributo offerto in qualità di moderatore	Dott. Ernesto Valdesolo
178	03 Aprile	Vicenza	Attestato di partecipazione AON implants - come migliorare l'estetica di denti ed impianti: la chirurgia mucogengivale cosmetica -	Dott. Alberto Fonzar
179	04 Maggio	Bassano del Grappa	Corso di formazione dei lavoratori	Ing. Emiliano Bettin
180	12 - 13 Maggio	Trieste	Attestato di partecipazione Congresso di patologia e chirurgia oro-maxillo-facciale	Prof. R. Di Lenarda
181	23 Maggio	Bassano del Grappa	Corso per addetti alla prevenzione incendi – lotta antincendio Gestione emergenze	Ing. Emiliano Bettin
182	25 Settembre	Vicenza	Diagnosi delle terapie Peri-implantite con accenni sul ruolo delle superfici macchinate e irruvidite	Dott. Marco Esposito
183	12 - 13 - 14 Ottobre	Verona	XX Congresso Internazionale Terapia Implantare	Relatori vari
184	16 Ottobre	Vicenza	Attestato di partecipazione AON Implants - il carico immediato in implantologia -	Dott. F. Tura Odt. P. Smaniotto
185	23 Ottobre	Vicenza	Soluzioni implantoprotesiche: Tradizione VS Innovazione. Risoluzione di impianti disparalleli	Dott. Flavio Tura Odt. Paolo Smaniotto
186	27 - 28 Ottobre	Santo Stefano Belbo, Cuneo	IX Forum Internazionale sulla metodica Columbus Bridge Protocol	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
187	23 Novembre	Vicenza	“Uso del Putty Sintetico Bioattivo in chirurgia rigenerativa: dall'alveolo al seno mascellare e oltre”	Dott. Sebastiano Andreana
188	01 - 02 Dicembre	Genova	Advances in Clinical Prosthodontics	Prof. Paolo Pera Prof.ssa Maria Menini

2018				
189	10 Gennaio	Rosà, Vicenza	Corso di abilitazione Operatore BLS-D Retraining	Inf. Prof. Fabio Cecchin
190	18 Gennaio	Bassano del Grappa	Basic life support defibrillation per sanitari -retraining-	Fabio Cecchin
191	20 Gennaio	Bassano del Grappa	Basic life support defibrillation per sanitari	Fabio Cecchin
192	26 Gennaio	S. Martino di Castrozza, Trento	Corso di aggiornamento di Implantologia orale	Dott. Antonio Maria Miotti
193	27 Gennaio	S. Martino di Castrozza, Trento	Corso di aggiornamento in Chirurgia ortognatica	Dott. Antonio Maria Miotti
194	28 Gennaio	Bassano del Grappa	Attestato di partecipazione formazione lavoratori – aggiornamento – valutazione rischi aziendali	Ing. Emiliano Bettin
195	19 Febbraio	Vicenza	La rigenerazione dei tessuti duri e molli in area ad alta valenza estetica	Dott. Marzio Todisco
196	23 - 24 Febbraio	Santo Stefano Belbo, Cuneo	Corso Columbus Bridge Protocol	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
197	06 - 07 Aprile	Santo Stefano Belbo, Cuneo	Chirurgia Implantare avanzata per il paziente gravemente atrofico	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
198	08 Maggio	Vicenza	Estetica in Implatoprotesi	Dott. Giuseppe Castorina
199	24 Maggio	Padova	Le Agenesie dentali sindromiche e non sindromiche: implicazioni multidisciplinari.	Prof. Antonio Gracco
200	07 Giugno	Oviglio, Alessandria	I Ritrattamenti implantari: casistica e soluzioni terapeutiche.	Dott. Tiziano Tealdo
201	16 - 17 Giugno	Vienna	Corso Hands on Cadaver Course: oral Surgery and Implantology.	Prof. Amerigo Giudice Prof. Hermann Traxler Dott. Giovanni Giorgetti
202	04 - 06 Ottobre	Verona	XXI Congresso Internazionale Terapia Implantare	Relatori vari
203	27-28-29 Settembre	Torino	Congresso Internazionale Osteology 2018	Relatori vari
204	29 Settembre	Santo Stefano Belbo, Cuneo	Corso teorico pratico su paziente per igienisti dentali sul mantenimento del Columbus Bridge Protocol	Dott. Edoardo Vallerga Prof. Tiziano Tealdo
205	03 Ottobre	Vicenza	Corso di Chirurgia Ortognatica 2018 Live Surgery	Prof. Antonio Gracco Prof. Laura Siviero Dott. Ugo Baciliero

206	04-05-06 Ottobre	Verona	Congresso Internazionale di Terapia Implantare	Relatori vari
207	24-25-26-27 Ottobre	Santo Stefano Belbo, Cuneo	X Forum Internazionale sulla Metodica Columbus Bridge Protocol	Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Tiziano Tealdo
208	30 Novembre 01 Dicembre	Genova	Advances in Clinical Prosthodontics	Prof. Paolo Pera Prof. Tiziano Tealdo Dott. Marco Bevilacqua Prof. Maria Menini Dott. Francesco Pera
209	30 Novembre 01 Dicembre	Genova	Advances in Clinical Prosthodontics	Prof. Paolo Pera Prof. Tiziano Tealdo Dott. Marco Bevilacqua Prof. Maria Menini Dott. Francesco Pera
2019				
210	26 Gennaio	San Martino di Castrozza	Incontro di chirurgia ortognatica	Relatori vari
211	01 - 02 Febbraio	Catania, Avola, Siracusa	Corso di implantologia secondo la tecnica NTA	Relatori vari
212	18 Marzo	Vicenza	Il tooth transformer: sistema di trasformazione del tessuto dentale in osso autologo	Prof. Elio Minetti
213	21 Marzo	Verona	Le reazioni avverse da farmaci ed il sistema di segnalazione	Prof. Ugo Moretti
214	29 - 30 Marzo	Roma	Congresso Nazionale di primavera 3i: Il nuovo rinascimento odontoiatrico italiano	Relatori vari
215	10 Aprile	Verona	EMA e farmaci orfani	Dott. Mario Ricciardi
216	17 Aprile	Verona	Appropriatezza prescrittiva: come coniugare ricerca, qualità dell'assistenza e sostenibilità	Dott. Enrico Costa
217	03 Maggio	Verona	Congresso di Odontoiatria e Chirurgia Maxillo-Facciale Giornate veronesi	Prof. Pier Francesco Nocini Dott. Mauro Marincola Dott. Mauro Labanca Dott. Haral Huskens Dott. Vincent J. Morgan
218	11 Maggio	Santo Stefano Belbo, Cuneo	Corso sul mantenimento implantare del Columbus Bridge Protocol	Prof. Tiziano Tealdo Dott. Marco Bevilacqua Dott. Edoardo Vallerga Dott. Emanuela Butera
219	14 Maggio	Vicenza	Il paziente digitale	Dott. Marco Annucci Dott. Alessio Franchina
220	30 Maggio	Vicenza	La tossina botulinica nella pratica clinica odontoiatrica	Prof. Seong-Taek Kim (Yonsei University Seoul, Corea del Sud)

221	07 - 08 Giugno	Modena	Primo Congresso Nazionale delle scuole di specializzazione in chirurgia orale	Relatori vari
222	14 - 15 Giugno	Vicenza	Closed meeting IAO	Relatori vari
223	19 Giugno	Limena, Padova	Conferenza: Prime Time Tour, estetica e funzione con materiali del 3° millennio	Dott. Francesco Mintrone Odt. Stefan Strigl
224	16 - 19 Settembre	Parigi	w18° Congress of International Society of Craniofacial Surgery	Relatori vari
225	20 Settembre	Como	Updates in chirurgia oro-maxillo-facciale Memorial Giuseppe Ferronato	Relatori vari
226	21 Settembre	Verona	21° Congresso Internazionale di Implantologia 3i	Relatori vari
227	28 Settembre	Verona	Il trattamento implantare con impianti Rex Piezoimplant	Prof. Tiziano Testori
228	01 Ottobre	Limena, Padova	Guida step by step alla cementazione corretta	Patrizio Giovannetti
229	03-05 Ottobre	Catania	Congresso Nazionale della Società Italiana di chirurgia orale: frontiere in chirurgia orale	Relatori vari
230	12 Ottobre	Vicenza	La tecnologia digitale al servizio dell'estetica: CAD-CAM, impronta ottica, chirurgia computer assistita, stampa 3D	Dott. Alessandro Motta Odt. Aldo Zilio
231	25 - 26 Ottobre	Santo Stefano Belbo e Calosso, Asti, Cuneo	11° Forum Internazionale sulla metodica Columbus Bridge Protocol	Relatori vari Relatore Dott. Christian Alberti
232	22 Novembre	Torino	Corso di dissezione cranio-facciale Università degli studi di Torino Cattedra di chirurgia maxillo-facciale	Prof. Guglielmo Ramieri Prof. Giovanni Gerbino
233	23 Novembre	Santo Stefano Belbo, Cuneo	Chirurgia implantare avanzata per il paziente gravemente atrofico	Prof. Tiziano Tealdo Prof. Paolo Pera Dott. Marco Bevilacqua Dott. Francesco Pera Odt. Feliciano Maggi
234	25 Novembre	Padova	Il Tooth Transformer nella pratica clinica quotidiana. Serata informativa	Prof. Elio Minetti
235	13 Dicembre	Padova	Lezione al master di ortodonzia Face Xp: Ortodonzia Pre-Chirurgica e Chirurgia Ortognatica	Dott. Renato Cocconi

2020				
236	18 Gennaio	Rosà, Vicenza	Corso BLSD-D Retraining	I.P. Giovanni Cerantola I.P. Fabio Cecchin
237	08 Febbraio	Verona	Terapie Antitrombotiche nel paziente odontoiatrico: attuali trend in chirurgia orale	Prof. Antonio D'Agostino
238	08 Febbraio	Verona	La gestione delle complicanze in chirurgia orale	Prof. Lorenzo Trevisiol
239	10 Febbraio	Vicenza	Carico immediato in digitale con tecnica della sovrapposizione dei files	Dott. Francesco Zingari Odt. Marco Genovese
240	10 Febbraio	Verona	Il paziente in medicina estetica	Prof. Dario Bertossi
241	16 Marzo	Padova	Tecnica Invisalign in ortodonzia	Dott. Alessandro Greco
242	17 Marzo	Padova	La sindrome delle apnee ostruttive nel sonno	Dott. Francesca Milano
243	18 Marzo	Padova	Traumatologia dentale	Dott. Patrizia Lucchi
244	18 Marzo	Treviso	L'articolazione temporo-mandibolare vista dal chirurgo orale e maxillo-facciale	Dott. Luca Guarda Nardini
245	19 Marzo	Padova	La correzione delle II classi in dentatura permanente: tecnica linguale	Dott. Mariano Gallone
246	19 Marzo	Vicenza	Il flusso digitale protesico	Sig. Claudio Schellino
247	19 Marzo	Padova e Massa Carrara	L'artrocentesi dell'articolazione temporo-mandibolare	Dott. Luca Guarda Nardini Dott. Daniele Manfredini
248	20 Marzo	Padova	Oltre l'allineamento. Tecnica FACE	Dott. Valerio Maccagnola
249	21 Marzo	Padova	Pianificazione ortodontica in base a parametri estetici – FACE	Dott. Nicola Preda
250	22 Marzo	Padova	La gestione delle discrepanze verticali mediante digital orthodontics con aligners - INVISALIGN	Dott. Alessandro Greco

251	23 Marzo	Padova	Sbiancamento dentale. Metodi per il successo	Dott. Pietro Sibilla
252	24 Marzo	Padova	Riabilitazioni estetiche nel settore anteriore	Dott. Nikolaos Perakis
253	25 Marzo	Padova	Esthetic guided restoration: il restauro conservativo guidato nei settori anteriori	Dott. Patrizia Lucchi
254	26 Marzo	Padova	Tecnica WIN: ortodonzia linguale	Dott. Dirk Wiechmann
255	27 Marzo	Padova	Ortodonzia Digitale: un'occasione imperdibile	Dott. Renato Cocconi
256	28 Marzo	Padova	Agenesia dei laterali. Chiusura spazi, profilo ed estetica del sorriso	Dott. Marco Rosa
257	30 Marzo	Padova	Ortodonzia linguale: bellezza ed estetica di trattamento	Dott. Federico Saverio
258	31 Marzo	Verona	Updates in parodontologia: the free gengiva graft	Prof. Giorgio Lombardo
259	31 Marzo	Padova	Pianificazione ortodontica in base a parametri estetici: applicazioni cliniche	Dott. Nicola Preda
260	31 Marzo	Padova	Diagnosi e opzioni terapeutiche nella riabilitazione di arcata	Dott. Alessandro Perini
261	01 Aprile	Padova	L'ancoraggio scheletrico	Dott. Patrizia Lucchi
262	01 Aprile	Verona	L'estetica nei settori anteriori	Dott. Andrea Chierico
263	01 Aprile	Padova	Sistematiche di Ancoraggio Scheletrico Palatino Palatal anchorage	Dott. Riccardo Riatti
264	02 Aprile	Milano	GBR: la rivoluzione digitale mediante griglie in titanio customizzate Yxoss CBR	Prof. Matteo Chiapasco
265	02 Aprile	Padova	Il laser in odontoiatria	Dott. Giuseppe Chiodera
266	02 Aprile	Padova	Integrated Straight Wire Approach: razionale ed applicazione clinica	Dott. Gualtiero Mandelli
267	03 Aprile	Padova	Patologia orale pediatrica	Dott. Christian Bacci
268	03 Marzo	Padova	Estrazioni: Modulare l'ancoraggio per la migliore occlusione estetica.	Dott. Silvia Rapa

269	03 Aprile	Roma	Il metabolismo del tessuto osseo	Prof. Francesco Riva
270	03 Aprile	Bologna	Il fallimento implantare in zona estetica	Dott. Paolo Casentini Prof. Massimo Simion Prof. Giovanni Zucchelli
271	04 Aprile	Padova	Early Orthodontic Treatment	Dott. Marco Rosa
272	04 Aprile	Ferrara	Lingual straight wire	Dott. Giuseppe Scuzzo
273	05 Aprile	Massa Carrara	Linee guida IADR sui disordini temporo-mandibolari	Dott. Daniele Manfredini Dott. Arturo Fortini Dott. Alvis Caburlotto
274	06 Aprile	Padova	Patologia orale pediatrica	Dott. Christian Bacci
275	06 Aprile	Padova	Approccio interdisciplinare con aligners: the digital vision	Dott. Alessandro Greco Dott. Federico Migliori
276	06 Aprile	Verona	Intervallo di confidenza di una media o di una proporzione. Criteri per la scelta del test statistico. Test t per dati non appaiati e per dati appaiati, verifica dell'assunto di omoschedasticità.	Prof. Giuseppe Verlatto
277	06 Aprile	Milano	Socket shield: preserving nature	Dott. Fabio Manuel Filannino
278	07 Aprile	Padova	Anatomia del seno mascellare posteriore e prevenzione delle complicanze nella terapia implantare della mascella posteriore	Dott. Alessandro Perini
279	07 Aprile	Padova	Trattamento delle III classi e degli open bite con tecnica linguale customizzata	Dott. Dirk Wiechmann Dott. Mariano Gallone
280	07 Aprile	Roma	Linee guida ministeriali per la diagnosi ed il trattamento delle osas in età pediatrica	Dott. Valeria Luzzi
281	07 Aprile	Verona	Demineralizzazione e remineralizzazione dello smalto dentale	Paola Brghi
282	07 Aprile	Vicenza	Implantologia a carico immediato	Dott. Luca Lepidi
283	07 Aprile	Roma	Terapia intercettiva elastodontica	Dott. Gaetano Ierardo
284	08 Aprile	Padova	Il trattamento ortodontico orientato alla funzione occlusale	Dott. Nicola Preda Dott. Valerio Maccagnola
285	09 Aprile	Ferrara	Perforazione della membrana schneideriana: come prevenirla?	Prof. Leonardo Trombelli

286	09 Aprile	Padova	Valutazione genetica nel paziente sindromico con alterazioni di numero e forma dei denti. Parte I.	Dott. Daniela Zuccarello
287	09 Aprile	Venezia	I vantaggi della surgical guide e della prosthetic guide nella riabilitazione full arch	Dott. Rocco Borrello
288	09 Aprile	Treviso	Miniscrew revolution: bases and show case	Dott. Nicola Derton
289	09 Aprile	Verona	Analisi della varianza. Regressione e correlazione	Prof. Giuseppe Verlatto
290	09 Aprile	Ferrara	Complex cases. New possibilities in the correction of skeletal discrepancies	Dott. Giuliano Bortolo Maino
291	09 Aprile	Ferrara	Interdisciplinary synergies and targeted approach with TAD's	Dott. Paolo Manzo
292	10 Aprile	Verona	Le enucleazioni e le estrazioni seriate	Dott. Andrea Compri
293	10 Aprile	Padova	I disturbi respiratori del sonno nei bambini e nell'adulto. Approccio clinico odontoiatrico al paziente OSAS	Prof. Antonio Gracco Dott. Francesca Milano
294	14 Aprile	Padova	La gestione dello smalto e tecniche infiltrative	Dott. Stefano Ferraro Dott. Giuseppe Allocca
295	14 Aprile	Vicenza	Il significato dell'insertion torque e la preparazione implantare	Dott. Michele Stocchero
296	14 Aprile	Brescia	Diagnosi ortodontica	Dott. Raffello Cortesi
297	14 Aprile	Roma	Osteogenesi imperfetta	Prof. Gaetano Ierardo
298	15 Aprile	Padova	Endodonzia in odontoiatria pediatrica. Parte II	Dott. Enrico Semenzato
299	15 Aprile	Roma	Endodonzia del dente permanente	Prof. Maurizio Bossù
300	15 Aprile	Ferrara	Casi complessi: soluzioni razionali per trattamento ortodontici efficienti	Dott. Paolo Manzo
301	16 Aprile	Roma	Le germectomie	Prof. Gianluca Sfasciotti
302	16 Aprile	Verona	Test del chi-quadrato, misura kappa di concordanza di Cohen. Calcolo della numerosità campionaria	Prof. Giuseppe Verlatto

303	16 Aprile	Lodi	Tutela degli interessi personali e dello studio dentistico in corso di emergenza COVID-19	Dott. Gabriele Vassura
304	16 Aprile	Roma	Le germectomie selettive	Dott. Antonio Barone Dott. Fortunato Alfonsi Dott. Guido Galletti
305	17 Aprile	Padova	La lettura di un articolo scientifico	Dott. Sabrina Mutinelli
306	17 Aprile	Parma	Digital Orthodontics and interdisciplinary dentistry	Dott. Renato Cocconi Dott. Nikolaos Perakis
307	17 Aprile	Verona	Soluzione di fallimenti in area estetica	Dott. Marzio Todisco
308	17 Aprile	Padova	Razionale scientifico per l'uso degli impianti di diametro ridotto in zone estetiche	Dott. Giuseppe Bavetta
309	17 Aprile	Ferrara	Intrusione o estrusione degli incisivi nei pazienti con severa perdita di tessuto parodontale	Dott. Marco Rosa
310	17 Aprile	Verona	Soluzioni di fallimenti in area estetica su denti naturali e impianti	Dott. Marzio Todisco
311	18 Aprile	Roma	Le asimmetrie dento-facciali in chirurgia ortognatica	Prof. Piero Cascone
312	20 Aprile	Bologna	Quali attenzioni per la ripresa dell'attività professionale? Stato dell'arte delle prescrizioni e delle norme	Avv. Silvia Stefanelli Sig. Roberta Pegoraro
313	20 Aprile	Milano	Epidemiologia della carie: nuovi approcci	Prof. Guglielmo Campus
314	20 Aprile	Verona	Analisi della sopravvivenza: curve di Kaplan-Meier	Prof. Giuseppe Verlato
315	20 Aprile	Milano	La ricerca dell'occlusione stabile in ortodonzia	Dott. Valerio Maccagnola
316	21 Aprile	Milano	La terapia non invasiva della carie	Prof. Maria Grazia Cagetti
317	21 Aprile	Milano	La radioprotezione in odontoiatria pediatrica: dalle linee guida alla pratica clinica	Prof. Maria Cristina Firetto
318	21 Aprile	Padova	Diagnosi ed opzioni terapeutiche nella riabilitazione implantare della mascella posteriore atrofica	Dott. Alessandro Perini
319	21 Aprile	Padova	I dolori oro-facciali e loro implicazioni in medicina del sonno	Dott. Massimiliano Di Gioiosa

320	21 Aprile	Ferrara	Aligners: the key to success	Prof. Giuseppe Siciliani Prof. Luca Lombardo
321	21 Aprile	Genova	Il razionale delle suture in GBR: tecniche, timing, materiali	Dott. Marco Ronda
322	22 Aprile	Milano	Approccio psicologico al paziente pediatrico	Dott. Vincenza Birardi
323	22 Aprile	Milano	Le malattie ulcerative della mucosa orale in età pediatrica	Prof. Andrea Sardella
324	22 Aprile	Padova	La gestione dei tessuti molli facciali in funzione della crescita cranio-facciale	Dott. Nicola Preda
325	22 Aprile	Ferrara	Canini inclusi: clinical case discussion	Dott. Daniele Cantarella Dott. Luca Sabato Dott. Ivano Maltoni
326	22 Aprile	Padova	B.O.P.T. e gestione dei tessuti molli	Dott. Ignazio Loi
327	23 Aprile	U.S.A. Boston	Modern Strategies for Tooth Replacement in the Esthetic Zone - Implants or Bridges?	Prof. German Gallucci Dott. Ronald Jung Dott. Nikolaos Perakis Dott. Daniel Edelhoff
328	23 Aprile	Milano	Valutazione del rischio di carie attraverso modelli standardizzati	Dott. Giuliana Bontà
329	23 Aprile	Milano	Sedazione cosciente ed uso degli anestetici locali nel paziente pediatrico	Prof. Concezione Tommasino
330	24 Aprile	Milano	L'espansione rapida tridimensionale del palato	Prof. Cinzia Maspero
331	24 Aprile	Milano	Traumi dentari	Prof. Roberto Biagi
332	24 Aprile	Padova	Procedure di simulazione in chirurgia ortognatica	Prof. Valerio Maccagnola
333	24 Aprile	Milano	I frenuli labiali e linguali	Dott. Luca Creminelli
334	24 Aprile	Milano	Surgery first: un approccio chirurgico da conoscere	Prof. Giuseppe Salvato Prof. Giorgio Gastaldi Dott. Gualtiero Mandelli Dott. Gianluigi Fiorillo
335	24 Aprile	Torino	Protesi fissa su denti naturali ed impianti: workflow operativo digitale ed analogico	Dott. Roberto Abundo Dott. Stefano Lombardo

336	24 Aprile	Catania	Ricostruzioni osseo-gengivali in zona estetica: dalla socket preservation alle grandi ricostruzioni tridimensionali mascellari	Dott. Sandro Marcoli Dott. Marco Csonka
337	25 Aprile	Roma	Ortodonzia pre-chirurgica e chirurgia ortognatica	Dott. Valerio Ramieri
338	27 Aprile	Brescia	Radiologia pediatrica 3.0	Dott. Maria Pia Bondioni
339	27 Aprile	Padova	Valutazione genetica nel paziente sindromico con alterazioni di numero e forma dei denti. Parte II	Dott. Daniela Zuccarello
340	27 Aprile	Roma	Aspetti di laboratorio determinanti nel raggiungimento del risultato bio-estetico	Odt. Antonello di Felice
341	27 Aprile	Padova	Osas in odontoiatria: dai dispositivi mandibolari di avanzamento, MAD, alla chirurgia ortognatica	Prof. Antonio Gracco Dott. Francesca Milano
342	28 Aprile	Brescia	Approccio clinico al bambino con patologia delle mucose orali	Prof. Alessandra Majorana
343	28 Aprile	Brescia	La lesioni delle mucose non ulcerative	Dott. Elena Bardellini
344	28 Aprile	Brescia	Gestione delle problematiche orali nel bambino in terapia oncologica	Prof. Alessandra Majorana Dott. Elena Bardellini
345	28 Aprile	Brescia	Prevenzione primaria della carie e delle gengiviti con polveri di eritritolo	Dott. Magda Mensi
346	28 Aprile	Brescia	Avulsione traumatica e reimpianto del dente avulso	Dott. Stefania Pasini
347	28 Aprile	Padova	Master FACE	Dott. Nicola Preda
349	29 Aprile	Brescia	Protocollo di pronto soccorso nel trauma oro-facciale	Dott. Anna Ferri
350	29 Aprile	Brescia	Prevenzione ed igiene orale nella gravida e nel bambino	Dott. Ignazia Casula
351	29 Aprile	Padova	Il torque di inserzione implantare nel carico immediato e nel full arch	Dott. Rocco Borrello
352	29 Aprile	Brescia	Web e salute orale	Prof. Umberto Gelatti

353	29 Aprile	Padova	Correlazione tra crescita e morfologia cranio-facciale ed osas	Dott. Redento Peretta
354	29 Aprile	Verona	La medicina estetica cervico-facciale	Prof. Dario Bertossi
355	30 Aprile	Brescia	Gestione clinica dei pazienti con bisogni speciali	Prof. Alessandra Majorana
356	30 Aprile	Brescia	Prevenzione e salute orale negli sportivi, nei bambini ed adolescenti	Dott. Ignazia Casula
357	30 Aprile	Trieste	Impiego della tecnologia laser in odontoiatria pediatrica	Prof. Milena Cadenaro
358	30 Aprile	Brescia	Salute orale e qualità di vita nel bambino	Prof. Alessandra Majorana
359	30 Aprile	Ferrara	Restauri indiretti posteriori: punti essenziali	Dott. Nikolaos Perakis
360	30 Aprile	Verona	Cambio di paradigmi nelle riabilitazioni implantoprotesiche nelle aree estetiche di pazienti con storia di paradontiti	Prof. Giorgio Lombardo
361	30 Aprile	Padova	Master OSAS	Prof. Antonio Gracco Dott. Francesca Milano
362	30 Aprile	Gais, Tn	Importazione ed utilizzo dei files intraorali nei software zirkonzahn	Odt. Antonio Corradini
363	01 Maggio	Milano	Labiopalatoschisi: il ruolo dell'odontoiatra	Prof. Maria Costanza Meazzini
364	02 Maggio	Milano	Attuali strategie nella riabilitazione dei settori posteriori del mascellare superiore	Dott. Claudio Stacchi Prof. Raffaele Vinci Prof. Giacomo Oteri Prof. Carlo Maiorana
365	02 Maggio	Padova	Ortodonzia linguale. Approccio sistematico	Prof. Antonio Graccio Dott. Mariano Gallone
366	02 Maggio	Parma	Ancoraggio scheletrico palatale	Dott. Renzo De Gabriele Odt. Gianluca Dalla Tana
367	09 Maggio	Trieste	L'impiego della tecnologia laser in odontoiatria pediatrica	Prof. Milena Cadenaro
368	09 Maggio	Cagliari	Traumatologia dentale: fini, confini clinici e medico-legali in cui agire	Prof. Enrico Spinis Prof. Claudio Buccelli Prof. Raoul D'Alessio
369	13 Maggio	Parma	Traumatologia dentale	Prof. Silvia Pizzi

370	15 Maggio	Genova	One on one discussion: Jovanovic and Ronda	Dott. Sasha Jovanovic Dott. Marco Ronda
371	15 Maggio	Mexico City	Modification of the occlusal plane in orthognathic surgery	Dott. Rodrigo Liega-Reyes
372	15 Maggio	Gais, Trento	Prettau z e Prettau z dispersive: tecniche e metodi per grandi riabilitazioni implantari	Odt. Federico Presicci
373	18 Maggio	New Delhi	Management of tooth avulsion: clinician's perspectives	Prof. Nitesh Tewari
374	20 Maggio	Roma	Aumenti di cresta mediante tessuti molli in chirurgia plastica parodontale e perimplantare	Dott. Francesco Cirillo
375	20 Maggio	Verona	La misura delle malattie nella popolazione umana: incidenza, incidenza cumulativa, prevalenza	Prof. Elisabetta Zanoli
376	21 Maggio	Padova	Prevention by regeration: una nuova prospettiva per il clinico	Dott. Paolo Ghensi
377	21 Maggio	Bologna	Le linee guida ERC per la rianimazione cardiopolmonare durante la pandemia COVID-19	Relatori vari
378	22 Maggio	Lodi	S.O.S. dentista manger: la gestione dello studio dentistico post pandemia COVID-19	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu Dott. Gianluca Zanetti
379	22 Maggio	Verona	Profiloplasty: lines and countours to achieve facial rejuvenation and beautification	Prof. Dario Bertossi Prof. Thierry Besins
380	23 Maggio	Catanzaro	Dalle lesioni potenzialmente maligne al cancro orale	Prof. Amerigo Giudice
381	23 Maggio	Trieste	Le seconde classi subdivisione: diagnosi accurate per terapie efficaci	Dott. Fabio Giuntoli
382	26 Maggio	Roma	L'Italia a 50 anni dallo statuto dei lavoratori: CNEL e CIU	Prof. Francesco Riva
383	28 Maggio	Berna	L'acido ialuronico nella chirurgia muco gengivale e parodontale	Prof. Anton Sculean
384	28 Maggio	Verona	Misura della relazione tra esposizione e malattia: modelli di rischio assoluto e modelli di rischio relativo. Stima del rischio e disegno dell'indagine	Prof. Elisabetta Zanolin

385	30 Maggio	Trieste	Maxillary expansion: different approach according to patient's individual skeletal maturation	Prof. Luca Contardo
386	30 Maggio	New York, MSKCC	Consideration in pediatric mandible reconstruction	Dott. Farooq Shahzad
387	30 Maggio	New Delhi	Cleft deformities – a masterclass	Dott. Robert Mann Dott. Maria Meazzini Dott. Nassir Nasser
388	30 Maggio	Stoccolma	Vertical bone augmentation in esthetic zone using non-resorbable membranes	Prof. Massimo Simion Prof. Christer Dahlin Dott. David Gonzales
389	30 Maggio	Trieste	Odontoiatria consercatica diretta e semi-diretta in odontoiatria pediatrica	Dott. Monaldo Saracinelli
390	04 Giugno	Verona	Stima del rischio e disegno dell'indagine: concetto di base dell'epidemiologia moderna. Determinante. Modificatore d'effetto. Confondente	Prof. Elisabetta Zanolin
391	04 Giugno	Vicenza	Implantologia iuxta-ossea nella risoluzione delle gravi atrofie	Dott. Carmine Cuomo
392	06 Giugno	Torino	Gli impianti parzialmente e totalmente ceramici: dalla biologia alla clinica	Dott. Michele Nannelli Dott. Riccardo Scaringi Dott. Roberto Crespi
393	06 Giugno	Roma	Asimmetrie facciali	Prof. Piero Cascone
394	06 Giugno	Roma	Alternative al rialzo sinusale nel trattamento del mascellare atrofico	Dott. Marco Finotti Dott. Antonio Ligabue Prof. Massimo Albanese Dott. Luigi Laino
395	06 Giugno	Trieste	Maturazione scheletrica ed espansione del palato	Dott. Bruno di Leonardo
396	07 Giugno	Messina	Nuovi orizzonti in chirurgia ortognatica	Prof. Francesco Saverio de Ponte
397	07 Giugno	Padova	Implantologia zigomatica	Dott. Matteo Giorgi
398	07 Giugno	Bologna	Toronto bridge dentistry evolution	Odt. Carlo Borromeo

399	08 Giugno	Milano	Principali aspetti legati alla ripresa dell'attività odontoiatrica ai tempi del covid-19	Prof. Massimo Clementi
400	08 Giugno	Verona	Non-Suegical Rhinoplasty	Prof. Dario Bertossi
401	11 Giugno	Napoli	Nonsurgical option to adress periodontal and peri-implant diseases	Dott. Vincenzo Iorio-Siciliano
402	11 Giugno	Vicenza	Implant design: what, where, when, why	Dott. Alessandro Cucchi
403	11 Giugno	Bologna	La gestione dei tessuti molli peri-implantari per ottimizzare il risultato estetico	Prof. Giovanni Zucchelli
404	11 Giugno	Verona	Tecniche per il controllo dei confondenti nel disegno e nell'analisi	Prof. Elisabetta Zanoli
405	11 Giugno	Ginevra	Horizontal bone augmentation using GBRconfondenti nel disegno e nell'analisi	Prof. Daniel Buser
406	12 Giugno	Verona	Non-surgical profileplasty	Prof. Dario Bertossi
407	12 Giugno	Milano	Compositi flowable tips and tricks in restaurativa	Dott. Riccardo Becciani
408	12 Giugno	Roma	Bopt in studio ed in laboratorio. Il valore del team in protesi fissa	Dott. Stefano Lombardo Odt. Antonello di Felice
409	12 Giugno	Bologna	Quello che c'è da sapere sulla cementazione adesiva	Prof. Roberto Scotti
410	12 Giugno	Milano	Parodontite e peri-implantite: strategie terapeutiche mini invasive nella fase non chirurgica	Dott. Fabio Currarino
411	12 Giugno	Padova	Endocrinologia: osteoporosi, bifosfanati, cortisonici, diabete, acromegalia Parte 1	Dott. Pietro Maffei
412	20 Giugno	Pisa	Ancoraggi ossei alternativi nelle atrofie dei mascellari	Dott. Michele Nannelli
413	20 Giugno	Bologna	Corso master di protesi fissa	Dott. Marco Montanari

414	20 Giugno	Bologna	OT bridge: nuove opportunità in protesi fissa	Odt. Fabio Damiano
415	20 Giugno	Milano	Implantologia avanzata. Progettazione digitale guidata e protesica per impianti tradizionali e zigomatici	Dott. Francesco Gallo Dott. Francesco Zingari Dott. Alessandro Bolzoni
416	20 Giugno	Milano	I laser in odontoiatria pediatrica	Prof. Claudia Caprioglio
417	20 Giugno	Foggia	Il controllo dell'occlusione in protesi su impianti	Dott. Rosario V.E. Prisco
418	20 Giugno	Vicenza	La chirurgia computer guidata come strumento per la pianificazione ed il trattamento dell'edentulia totale	Dott. Alessio Franchina
419	20 Giugno	Modena	Digitalesperienze	Dott. Maurizio De Francesco Odt. Carlo Baroncini Odt. Gilberto Galletti Odt. Enrico Ferrarelli
420	20 Giugno	Vicenza	Lattualità nella chirurgia guidata: sicurezza ed efficienza per il paziente, l'operatore e tutto lo studio odontoiatrico	Dott. Alberto de Chiesa Dott. Roberto Gallone Dott. Cesare Robello Dott. Luca Salvaggio
421	20 Giugno	Taormina	Congresso Isomed	Relatori Vari
422	20 Giugno	Trento	Programmazione estetico-parodontale dei canini e degli incisivi inferiori	Dott. Marco Rosa
423	20 Giugno	New Mexico	Ricostruzione del terzo medio facciale e del mascellare superiore	Dott. Carlos Navarro Vila
424	20 Giugno	Verona	Il paziente virtuale	Dott. Antonio Zani
425	19 Giugno 20 Giugno	Sydney	Osteology Symposium	Relatori Vari
426	20 Giugno	Padova	Endocrinologia, osteoporosi, bifosfonati, cortisonici, diabete, acromegalia. Parte II	Dott. Pietro Maffei
427	20 Giugno	Padova	Farmacologia. Parte I	Dott. Morena Zusso
428	24 Giugno	U.S.A.	Emerging technologies for orthognathic surgery	Dott. Brian B.Farrell

429	24 Giugno	Bologna	Il digitale come strumento di marketing impianto-protetico nell'era post-covid	Dott. Andrea Agnini De. Alessandro Agnini
430	26 Giugno	Fiuggi	L'innovazione: motore di sviluppo e benessere	Prof. Francesco Riva
431	26 Giugno	Genova	Nuova tecnica di espansione crestale	Prof. Tomaso Vercellotti
432	26 Giugno	Milano	Il ruolo del chirurgo oro-maxillo-facciale in ortodonzia nell'era digitale	Dott. Giuseppe Salvato
433	27 Giugno	Santo Stefano Belbo, Cuneo	Immediate function in the atrophic maxilla using digital workflow in zygomatic implant therapy	Prof. Tiziano Tealdo
434	27 Giugno	Chieti	Dalla ricerca clinica impianti dentali: passato, presente e futuro	Prof. Adriano Piattelli
435	27 Giugno	Udine	Precisione in protesi fissa	Dott. Mario Cattaruzza Odt. Stefano Martina
436	27 Giugno	Salt lake City	Zygomatic implants and alveolar reconstruction	Prof. Ole T. Jensen
437	28 Giugno	S.I.O.I	Il dente da latte: age of webinar. Part I	Dott. Matteo Beretta Dott. Fabio Federici Canova
438	28 Giugno	S.I.O.I	Il dente da latte: age of webinar. Part II	Dott. Matteo Beretta Dott. Fabio Federici Canova
439	28 Giugno	U.S.A.	Normal and abnormal growth of the mandible	Prof. Per Rank
440	29 Giugno	Adria	Conico on Prama: nuovo approccio alla riabilitazione dell'edentulia (attuale e potenziale) alternativo alla toronto	Dott. Lionello Biscaro Odt. Massimo Soattin
441	29 Giugno	Adria	Conico on Prama: nuovo approccio alla riabilitazione dell'edentulia (attuale e potenziale) alternativo alla toronto	Dott. Lionello Biscaro Odt. Massimo Soattin
442	29 Giugno	Padova	Farmacologia. Parte II	Dott. Morena Zusso
443	29 Giugno	Milano	La gestione farmacologica del dolore odontoiatrico in età pediatrica	Prof. Maria Grazia Cagetti

444	30 Giugno	Bassano del Grappa	Disturbi respiratori ostruttivi nel sonno	Dott. Luigi Romano Log. Pasqualina Andretta
445	30 Giugno	Vicenza	Digital dentistry era	Dott. Alessandro Cucchi
446	30 Giugno	Boston	Facial augmentation: osteotomy vs implants	Dott. Faisal A. Queresyl
447	30 Giugno	Vicenza	Trattamento di grave atrofia del mascellare superiore con chirurgia iuxtaossea digitale customizzata	Dott. Stefano Negrini
448	01 Luglio	Milano	La salute orale dei pazienti dopo covid-19	Prof. Silvio Abati
449	01 Luglio	Milano	Carboidrati e salute orale	Prof. Maria Grazia Cagetti
450	02 Luglio	Padova	La radiologia in odontoiatria	Dott. Cicchiello Andrea
451	03 Luglio	Trento	Sviluppo armonico delle arcate: come, quando e perché intervenire precocemente. I reali vantaggi dell'intervento precoce. Perché utilizzare gli elementi decidui. Ancoraggio agli elementi decidui: come utilizzare in maniera efficace. Recupero conservativo degli elementi decidui compromessi o anchilosati	Dott. Patrizia Lucchi
452	03 Luglio	Padova	Disturbi respiratori in età evolutiva	Prof. Antonio Gracco Dott. Francesca Milano
453	04 Luglio	Milano	Semeiotica ortodontica: la capacità di osservare per capire	Dott. Sandro Spigarelli
454	04 Luglio	Padova	Approccio psicologico in odontoiatria pediatrica	Dott. Anna Manente
455	06 Luglio	Vicenza	L'espansione del mascellare: tips e suggerimenti clinici	Dott. Giuliano Maino
456	06 Luglio	Torino	La chirurgia ultrasonica	Dott. Marco Mozzati
457	09 Luglio	Berlino	Basic aspects in trauma surgery and midface	Dott. Harald Essig
458	11 Luglio	Padova	Implantologia zigomatica: nuovi orizzonti della tecnica extrasinusale	Dott. Pietro Salvatori Dott. Gianni Pecorilli

459	13 Luglio	Roma	B.O.P.T. in lab	Odt. Antonello di Felice
460	13 Luglio	Buffalo	Jaw in a day: complex implant dentistry combined with facial reconstructive surgery	Dott. Ashish Patel Dott. Allen Cheng Dott. Babek Khatib Dott. Brian Bray
461	14 Luglio	NapoliE quando un dente smette di erompere?	Dott. Raffele Spena
462	15 Luglio	Roma	La sedazione cosciente nell'odontoiatria moderna	Dott. Manuele Basili Dott. Andrea Rizzacasa
463	16 Luglio	Lima	Controversias terapeuticas y reconstruccion en cancer de via aerodigestiva superior	Dott. Dante De Paz
464	17 Luglio	Milano	Soft tissue 4.0 Implantologia e tessuti molli: come, quando, perché?	Dott. Matteo Invernizzi
465	22 Luglio	Genova	Management of full arch immediate loading rehabilitation using a reduced number of implants	Prof. Maria Menini
466	23 Luglio	Bassano del Grappa	Attestato di partecipazione addetto antincendio	Ing. Emiliano Bettin
467	24 Luglio	Chicago	Uneasy lies the head that wears the crown	Dott. Sreenivas Koka
468	24 Luglio	U.S.A.	Oral cancer early detection: strategies and technologies	Relatori vari
469	25 Luglio	U.S.A.	Advanced oral cancer management: controversies to consensus	Relatori vari
470	25 Luglio	Roma	Infezioni odontogene e vie di diffusione: il punto di vista dell'odontoiatra	Dott. Massimo Galli
471	25 Luglio	Roma	Infezioni odontogene e vie di diffusione: il punto di vista dell'otorinolaringoiatra	Dott. Marco de Vincentiis
472	26 Luglio	Roma	Complicanze endodontiche correlate al seno mascellare	Dott. Luca Testarelli Dott. Gianluca Gambarini
473	26 Luglio	Roma	Gestione dei corpi estranei sinusali	Dott. Vittorio Rinaldi

474	27 Luglio	Chieti	Complicanze implantari della chirurgia del seno mascellare	Prof. Antonio Scarano
475	27 Luglio	Chieti	Complicanze del rialzo del seno crestale e laterale della chirurgia del seno mascellare	Prof. Antonio Scarano
476	27 Luglio	Padova	Come semplificare le problematiche chirurgiche e protesiche nella terapia implantare	Dott. Michele Perelli Prof. Mario Semenza
477	28 Luglio	Brescia	Prevenzione e terapia delle malattie parodontali e peri-implantari	Prof. Magda Mensi
478	28 Luglio	Padova	Traumi dentali	Dott. Marta Nocent
479	28 Luglio	Padova	La lettura dell'opt	Dott. Anna Manente
480	28 Luglio	Brescia	L'isolamento del campo operatorio	Dott. Marco Cardinali
481	29 Luglio	Bologna	Immediate implantation and loading in the esthetic zone: risk or benefit?	Dott. Marco Degidi
482	29 Luglio	Parma	Tip and tricks nel trattamento delle terze classi borderline	Dott. Renato Cocconi
483	30 Luglio	Catania Cagliari	Slow implantology vs fast implantology: diverse filosofie di approccio ai casi complessi. Quando, come e perchè	Dott. Marco Csonka Dott. Ignazio Lio
484	30 Luglio	Padova	Basi immunologiche delle malattie allergiche	Dott.ssa Maria Angiola Crivellaro
485	31 Luglio	Bologna	Riabilitazioni protesiche nel settore anteriore nei pazienti in crescita	Dott. Nikolaos Perakis
486	31 Luglio	Guatemala city	Management of panfacial fractures. Central american perspective	Dott. Jaime Matta
487	03 Agosto	New York	Arthroscopic surgery: how to diagnose and treat TMJ dysfunction with minimal invasive procedures	Dott. Rafael Martin Granizo
488	04 Agosto	Penn university dental medicine	Bonding procedures for minimally invasive esthetic and functional rehabilitations	Dott. Neimar Sartori
489	08 Agosto	Roma	Chirurgia orale pediatrica	Prof. Gianluca Sfasciotti
490	08 Agosto	Roma	Endodonzia del dente deciduo	Prof. Maurizio Bossù

491	11 Agosto	Univerdidad de Chile	Manejo de las deformidades dentofaciales en pacientes fisurados	Dott. Adaia Valls Dott. Roberto Pantoja
492	11 Agosto	Penn University School of Dental Medicine	Adhesive oral rehabilitation: minimally invasive indirect restorations	Dott. Oswaldo Scopin de Andreade
493	13 Agosto	University of Witwatersrand	Maxillofacial prosthetic needs: a growing south african concern	Dott. Meriting Thokoane
494	17 Agosto	Hospital nacional " Dos de Mayo " servicio de cirugía de cabeza, cuello y maxillofacial	Controversias en el diagnostico y manejo de la hiperplasia condilea	Dott. Rodrigo Farina
495	18 Agosto	European federation of periodontology	Diabetes and periodontitis: the bidirectional relationship	Dott. Lior Shapira Dott. Reena Waida
496	18 Agosto	Utah University, oral and maxillofacial surgery	Patient specific microvascular head and neck recontruction	Dott. James Melville Dott. Jonathan Shum
497	20 Agosto	Universidad de Chile	Trauma facial de alta energia	Dott. Marcelo Maradones
498	20 Agosto	Universidad de Chile	Implantes customizados de orbita	Dott. Christian Pedemonte
499	21 Agosto	Roma Lodi	La gestione economica dello studio odontoiatrico	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
500	24 Agosto	Israel University	Arthrocentesis of disorders: when and why?	Dott. Dorrit W. Nitzan
501	25 Agosto	Università di Firenze	Soft-tissue reconstruction at implant site	Dott. Francesco Cairo
502	25 Agosto	Universidad de Chile	Distraction osteogenica en el tratamiento de las dismorfosis faciales en pacientes pediatricos	Dott. Loreto Castillon Zirpel
503	27 Agosto	Universidad de Chile	Is the position of tmj disc really the problem and/or the solution to the management of temporomandibular joint disorders?	Dott. Louis G. Mercuri
504	29 Agosto	Universidad de Chile	Aplicaciones de la fibrina rica en plaquetas en cirugía bucal y maxillofacial	Dott. Osvaldo Gahona Gutierrez
505	29 Agosto	Universidad de Chile	Oxidative stress: the mechanism that destroys the bone around implats. Growth factors can be used as prevention or treatment?	Dott. Joseph Choukroun
506	29 Agosto	Mediterranean academy of esthetic dentistry	Maxillary sinus grafting: what i did and i do now?	Dott. Pascal Valentini

507	29 Agosto	National Taiwan university	Strategies for mandibular reconstruction in head and neck cancer	Dott. Tong Mei Wang
508	30 Agosto	National university of medical sciences, Pakistan	Managing orthodontic surgical cases	Dott. Haris Khan
509	30 Agosto	Penn dental medicine, Univeristy of Pennsylvania	Esthetics with multiple implants, periodontal reconstruction and ceramic restoration	Dott. Victor Clavijo
510	30 Agosto	AO Foundation, Davos	Virtual planning in ankylosis surgery	Dott. Dong Mei He
511	31 Agosto	University of Albama at Birmingham, school of dentistry	Are bone allografts the material of choice in ridge preservations and augmentations?	Dott. Ramzi Abou-Arraj
512	31 Agosto	America academy of maxillofacial prosthetics	Contemporary maxillofacial prosthetics	Dott. Thomas Salinas
513	31 Agosto	El Paso children hospital, Oral and facial surgery	Evaluation and treatment of the unilateral and bilateral cleft nasal deformity	Dott. David M.Yates
514	01 Settembre	Roma	Implantopotesi biomimetica nei settori ad alta valenza estetica. Concetti e strategie operative per il trattamento dei deficit tissutali	Dott. Gaetano Calesini Dott. Stefano Coppè
515	01 Settembre	Roma	Short implant e chirurgia maxillo-facciale	Prof. Andrea Cicconetti
516	01 Settembre	Roma	Asimmetrie facciali	Prof. Piero Cascone
517	02 Settembre	Torino	Hyaluronic acid threads and skin quality improvement	Dott. Alberto Diaspro
518	02 Settembre	Como	Tattamento dei siti compromessi e carico immediato. Influenza della macro e micro geometria implantare nel trattamento dei siti compromessi e nel carico immediato	Prof. Tiziano Testori
519	02 Settembre	Chile	Urgencias y emergencias en cirugía bucco-maxillofacial	Prof. Adrian Carlos Bencini
520	02 Settembre	Penn University, school of dental medicine	The excellence in restorative dentistry	Prof. Lorenzo Breschi
521	03 Settembre	Penn Univesity, school of dental medicine	Bonding time. Tips and tricks for bonding	Prof. Markus b. Blatz

522	03 Settembre	The University of Alabama at Birmingham	Endotracheal tube fixation via a modified Ivy Loop in a pediatric patient with facial burns	Dott. Brian Kinard
523	03 Settembre	U.C.L.A. Craniofacial group, U.S.A.	Radiology aspects of cleft palate	Dott. Mohammed A. Husain
524	03 Settembre	University of Witwatersand, Suoth Africa	The rationale for appropriatech in prosthodontics: additional roles for the prothodontist?	Dott. Peter Owen
525	03 Settembre	Loma Linda University, School of dental medicine, Oral and Maxillofacial surgery	What patients teach us abuoet heda and neck cancer?	Dott. Chi Viet
526	04 Settembre	Universidad de Chile	Curso de cirurgia ortognatica minimamente invasiva	Dott. Jonathan Daniel Claus Dott. Matheus Spinella
527	04 Settembre	Universidad Nacional de La Plaza	Cirurgia ortognatica: anomalies de desarrollo facial	Prof. Dott. Adrian Carlos Bencini
528	04 Settembre	Santo Stefano Belbo	Zygomatic implants	Prof. Tiziano Tealdo
529	05 Settembre	Universidad de Chile	Malformaciones craniofaciales	A.A.
530	10 Settembre	Royal college of surgeon	Surgiacal site infections and outcomes in surgiacal oncology	A.A.
531	10 Settembre	Roma	Le riabilitazioni complesse in pazienti di interesse maxillo-facciale	Dott. Martina Cerroni
532	11 Settembre	Padova	Gli impianti tiltati nelle riabilitazioni parziali dei mascellari: l'importanza dell'osso basale	Dott. Marco Finotti
533	11 Settembre	Milano	Le espansioni crestali	Prof. Raffele Vinci
534	16 Settembre	Roma	Impianti post-estrattivi a carico immediato in area estetica: tessuti duri e molli	Dott. Marco Talocco
535	17 Settembre	Verona	Peri-implantiti e gli impianti Bicon	Prof. Giorgio Lombardo
536	18 Settembre	Padova	Approccio comportamentale al bambino in odontoiatria	Dott. Vincenza Birardi
537	18 Settembre	Padova	Procedure di sedazione nel paziente pediatrico odontoiatrico	Prof. Gastone Zanette
538	19 Settembre	Verona	Non-surgical rhinoplasty	Prof. Dario Bertossi

539	19 Settembre	Padova	Aspetti medico legali in ambito pedodontico	Prof. Dario Betti
540	22 Settembre	Penn University, School of Dental Medicine	Guided surgery, dynamic navigation and full arch guided prostheses: myth and realities over 15 years	Dott. Alessandro Polizzi
541	22 Settembre	Universidad de Chile	Ingeneria tisutal aplicada a la cirugía maxillofacial	Dott. Mauricio Barreda Hale
542	24 Settembre	Palermo	Criteri di valutazione della qualità degli impianti	Dott. Roberto Romano
543	29 Settembre	Basel	Anterior tooth loss in adolescence. What to do?	Dott. Nicola Zitzmann
544	29 Settembre	University of Alcala	Midfacial reconstruction after oncologic excision	Prof. Julio Acero
545	29 Settembre	Vicenza	Tooth transformer e magnetic mallet: la combinazione vincente	Dott. Elio Minetti Dott. Mauro Libertucci
546	29 Settembre	Loma Linda Univesity, School of Dental Medicine	Infection exposure and prevention before, during and after covid-19	
547	30 Settembre	Roma	I tumori della testa e del collo: tecniche demolitive e ricostruttive	Prof. Valentino Valentini
548	30 Settembre	AOCMF	Importance of multidisciplinary treatment of head and neck cancer	Prof. Gregorio Sanchez Aniceto
549	30 Settembre	Firenze	Strategia clinica per il trattamento rigenerativo delle peri-implantiti	Dott. Pierpaolo Cortellini
550	30 Settembre	American academy of implant dentistry	5-Thread guidelines for implant stability	Dott. Robert Stanley
551	02 Ottobre	Riccione	Congresso nazionale delle Società Italiana di Chirurgia Odontostomatologica	Relatori vari
552	02 Ottobre	Riccione	Aspetti endodontico-conservativi in traumatologia dentale	Dott. Pietro Marcoli
553	02 Ottobre	Roma	Ruolo della chirurgia pre-implantare nella implantologia moderna	Prof. Andrea Cicconetti
554	02 Ottobre	Santiago, Chile	Complicaciones en cirugía ortognatica	Dott. Julio Cifuntes
555	02 Ottobre	Ragusa	Approccio sistematico alla chirurgia orale complessa: strumentario, protocolli operativi, anatomia	Prof. Corrado Toro

556	02 Ottobre	Buffalo, New York	Contemporary customized maxillofacial reconstruction	Dott. James C. Melville
557	02 Ottobre	Santo Stefano Belbo	1° Forum Nazionale "Tealdo Total Face Academy". Columbus bridge protocol e digital dentistry: procedure diagnostiche, operative e sviluppi futuri per l'odontoatria e per l'odontotecnico	Relatori vari
558	09 Ottobre	Milano	Come fare una meta-analisi	Prof. Guglielmo Campus
559	09 Ottobre	Bari	Albero decisionale nelle serie atrofe dei mascellari: uso degli innesti di osso omologo	Prof. Felice Roberto Grassi
560	09 Ottobre	Padova	Approccio diagnostico e terapeutico alle riniti allergiche	Dott. Maria Angiola Crivellaro
561	09 Ottobre	Bern	Integration of implants in the treatment of elderly patients	Prof. Regina Mericske Stern
562	09 Ottobre	Penn University, School of Dental Medicine	Immediate tooth replacement	Prof. Joseph Kan
563	09 Ottobre	Facultad de Odontologia, Universidad Finis Terrae	Ameloblastoma: actualizacion en el tratamiento quirurgico	Dott. Javier Perez
564	09 Ottobre	Como	La collaborazione tra ortodontista e chirurgo maxillo-facciale: discrepanze sagittali e trasversali	Dott. Marco Bernardi
565	09 Ottobre	Milano	Atraumatic impacted teeth extraction using piezosurgery approach	Prof. Angelo Cardarelli
566	09 Ottobre	Firenze	Interdisciplinary treatment: modern approach to esthetic and functional rehabilitation	Dott. Giano Ricci Dott. Paolo Manzo
567	15 Ottobre	Padova	Concetti di endocrinologia in odontoatria pediatrica	Dott. Pietro Maffei
568	15 Ottobre	Padova	Cisti radicolari in età pediatrica: diagnosi e terapia. Discussione di casi clinici	Prof. Silvia Pizzi
569	21 Ottobre	Padova	La chirurgia orale pediatrica funzionale all'ortodonzia intercettiva	Dott. Matteo Spigaroli
570	23 Ottobre	Padova	Concetti di endocrinologia	Dott. Pietro Maffei
571	23 Ottobre	Vicenza	Incisor display: un fattore chiave nell'estetica del sorriso. Leading alliance selected lecture	Dott. Giovanna Maino

572	06 Novembre	Padova	Ortodonzia intercettiva: prima parte	Dott. Giovanni Scorpa
573	07 Novembre	Berna	Updates periodontal reconstructive surgery using collagen based products	Prof. Anton Sculean
574	07 Novembre	Udine	Meaningful innovation in personalized care: endoscopic, computer-guided repair of the orbital floor	Prof. Massimo Robiony
575	07 Novembre	Berna	Integration of implants in the treatment of elderly patients	Prof. Regina Mericske Stern
576	11 Novembre	Parma	Evoluzione e precisione in chirurgia ortognatica	Prof. Mirco Raffaini
577	18 Novembre	Padova	Trattamenti in zona estetica e platform switching	Dott. Diego Longhin
578	19 Novembre	Padova	La riabilitazione protesica ed implanto-protesica nell'era digitale	Dott. Gianluca Paniz
579	19 Novembre	Santo Stefano Belbo	L'utilizzo razionale degli short implant nelle procedure di carico immediato nel mascellare atrofico	Prof. Tiziano Tealdo
580	20 Novembre	Milano	Il ruolo dei biomateriali nella gestione dell'alveolo post-estrattivo	Dott. Paolo Casentini
581	21 Novembre	S.O.R.G.	Ricostruzione dei tessuti molli. Algoritmi, indicazioni e risultati	A.A.
582	22 Novembre	S.O.R.G.	Lembi di tessuto molle (radiale, ALT, lat. Dorsi). Indicazioni, tecnica chirurgica e risultati	A.A.
583	23 Novembre	S.O.R.G.	Ricostruzioni Bony. Indicazioni, algoritmi e risultati	A.A.
584	24 Novembre	S.O.R.G.	Lembi DCIA. Indicazioni, tecnica chirurgica e risultati	A.A.
585	25 Novembre	Bologna	Focus on regeneration: dalla preservazione alveolare alle griglie 3D customizzate	Dott. Alessandro Cucchi
586	26 Novembre	Barcellona	Surgical stability in orthognathic surgery	Dott. Orion Haas Junior
587	26 Novembre	Milano	Il trattamento delle terze classi in fase di crescita	Prof. Costanza Meazzini
588	30 Novembre	Bari	Cases reports: riabilitazioni di mascellari superiori ed inferiori con tecnica iuxta-digitale	Dott. Giuseppe Di Biasi

589	30 Novembre	New Delhi	Altering vertical dimension in worm dentition: a prosthodontic physiological perspective	Prof. Veena Jain
590	30 Novembre	S.I.C.P.R.E. Società italiana di chirurgia plastica ricostruttiva ed estetica	Il lifting del volto	Prof. Marco Klinger Prof. Stefano Bruschi
591	01 Dicembre	Padova	I disturbi respiratori del sonno in età evolutiva	Prof. Antonio Gracco
592	01 Dicembre	Padova	Trattamento dei denti con apici immaturi, vital pulp therapy e rigenerativa	Dott. Filippo Cardinali
593	02 Dicembre	Padova	Ortodonzia segmentaria	Dott. Andrea Scarpa
594	02 Dicembre	Ann Arbor	Patient evaluation, data analysis and orthodontic. Virtual surgical planning for orthognathic surgery: overview and live treatment planning session	Dott. Myron Tucker Dott. Sean Edwards
595	03 Dicembre	Società italiana di biomeccanica ed ortodonzia segmentaria	Localization and treatment of asymmetries in class II patients	Dott. Birte Melsen Dott. Morten Godtfredsen Laursen
596	03 Dicembre	Verona	La salute orale nel tabagista: cessazione ed alternative disponibili	Prof. Francesco Riva
597	03 Dicembre	Padova	Odontoiatria pediatrica e dell'età evolutiva	Prof. Patrizia Lucchi Prof. Sergio Mazzoleni
598	03 Dicembre	Genova	Il piano di trattamento integrato nella moderna odontoiatria	Prof. Enrico Conserva
599	03 Dicembre	Orbassano	Come gestire le problematiche delle viti protesiche nella terapia implantare	Prof. Ezio Bruna
600	04 Dicembre	Padova	Cariologia in odontoiatria pediatrica	Prof. Patrizia Lucchi Prof. Sergio Mazzoleni
601	04 Dicembre	Milano	Approccio multidimensionale al paziente edentulo	Prof. Raffaele Vinci Dott. Francesca Cattoni Dott. Michele Manacorda
602	04 Dicembre	Torino	Un percorso coerente dalla diagnosi alla terapia funzionalizzante	Prof. Maria Grazia Piancino
603	04 Dicembre	Società Italiana di Medicina e Patologia Orale - S.I.P.M.O.	Complicanze orali degli inibitori del checkpoint immunitario	Prof. Alessandro Villa
604	04 Dicembre	Palermo	Ortodonzia intercettiva	Dott. Giorgio Garofalo

605	09 Dicembre	Verona	Cefalometria 3D: workflow digitale ed applicazioni cliniche	Dott. Giovanna Perrotti
606	10 Dicembre	Goteborg	Welcome to the muointegration era	Prof. Tomas Albrektsson Dott. Angelines Gasser Dott. Sebastian Bauer
607	10 Dicembre	Trieste	Gestione precoce dell'anchiloglossia	Prof. Milena Cadenaro
608	12 Dicembre	Catanzaro	La chirurgia dei terzi molari inclusi	Prof. Amerigo Giudice
609	12 Dicembre	Milano	Il digitale nell'ottimizzazione della componentistica protesica standard e customizzata	Prof. Raffaele Vinci Dott. Francesca Cattoni Dott. Michele Manacorda
610	14 Dicembre	Pisa	La guarigione dell'alveolo dopo l'estrazione: evoluzione delle conoscenze ed implicazioni cliniche per la ridge preservation	Prof. Ugo Covani
611	15 Dicembre	Roma	Updates in diagnosis and therapy in unilateral condylar hyperplasia	Prof. Piero Cascone
612	18 Dicembre	Palermo	Ortodonzia intercettiva	Dott. Giorgio Garofalo
613	19 Dicembre	Firenze	Accorgimenti per affrontare la chirurgia orale pediatrica in sicurezza	Dott. Roberto Barone
614	19 Dicembre	Roma	La salute orale nel tabagista: cessazione ed alternative disponibili	Prof. Francesco Riva
615	19 Dicembre	Società Italiana di Chirurgia Maxillo-Facciale	Ruolo dell'endodonzia nella risoluzione delle patologie cistiche dei mascellari	Dott. Fabio Gorni
616	20 Dicembre	Rimini	Autotrapianti e re-impianti dentali	Dott. Luca Boschini Dott. Michele Melillo
617	20 Dicembre	Milano	Chirurgia ossea ricostruttiva	Dott. Paolo Casentini
618	21 Dicembre	Accademia Italiana di Ortodonzia	Trattamento dei canini inclusi con TADs diretti	Dott. Nicola Derton
619	22 Dicembre	ITI Italia	La peri-implantite: come diagnosticarla, come guarirla	Dott. Marco Clementini

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620	05 Gennaio	S.I.B.O.S.	Le basi della tecnica bidimensionale: passato, presente e futuro	Dott. Matteo Spigaroli
621	06 Gennaio	Universidad de Chile	3D virtual planning in orthognathic surgery	Prof. Gwen Swennen Dott. Rolando Carrasco
622	06 Gennaio	IAOMS	Artificial intelligence in surgery: will a computer program replace the surgeon?	Dott. Deepak Krishnan
623	06 Gennaio	International College of Prosthodontics	Philosophies and concepts in occlusion: past, present and future with clinical introspections	Dott. Sunjay Sun
624	11 Gennaio	Padova	Align tecnologia	A.A.
625	12 Gennaio	Padova	Approccio innovativo in odontoiatria estetica multidisciplinare: il razionale	Dott. Camilla Molinari
626	19 Gennaio	Milano Brianza	Lavorazioni ed innovazioni nelle tecniche CAD-CAM	Odt. Vito Minutolo
627	19 Gennaio	Salerno	Live streaming full surgery of impacted wisdom tooth close to the ian	Dott. Ruggero Naimoli
628	21 Gennaio	Bologna	Approccio innovativo in odontoiatria estetica multidisciplinare: l'aging e l'analisi dento-facciale	Dott. Camilla Molinari
629	21 Gennaio	Padova	Align tecnologia	A.A.
630	22 Gennaio	Padova	Diagnocam: anatomia ed estetica	Dott. Giuseppe Chiodera
631	22 Gennaio	Lodi	Convenienza ed opportunità offerte dell'esercizio in forma imprenditoriale dell'attività odontoiatrica per il libero professionista odontoiatra. Aspetti normativi, fiscali ed operativi	Dott. Pietro Paolo Mastinu Dott. Gabriele Vassura
632	23 Gennaio	Padova	Le ipoplasie dello smalto: M.I.H.	Dott. Lisa Lardani
633	28 Gennaio	Padova	I disturbi del sonno in età evolutiva	Prof. Antonio Gracco
634	28 Gennaio	Chicago	Artificial intelligence in surgery: will a computer program replace the surgeon?	Dott. Deepak Krishnan
635	02 Febbraio	Bologna	Approccio innovativo in odontoiatria estetica multidisciplinare: l'estetica periorale in odontoiatria	Dott. Camilla Molinari

636	03 Febbraio	SICMF	Il neonato con iperplasia mandibolare: principi di diagnosi e trattamento	Dott. Fabio Mazzoleni Dott. Tiziana Fedeli Dott. Anna Mandelli
637	04 Febbraio	Toronto	Development of occlusion: a pediatric perspective	Dott. Gajanan Kulkarni
638	10 Febbraio	Bologna	Il protocollo Columbus Bridge	Dott. Matteo Furlati
639	11 Febbraio	SICMF	Evolution in head and neck reconstruction	Dott. Nicholas Kalavrezos
640	12 Febbraio	Montreal	Sleep bruxism and its crossing points with sleep apnea, tmd/orofacial pain and insomnia	Dott. Gilles Lavigne
641	12 Febbraio	Trieste	Il trattamento delle lesioni cariose pediatriche	Prof. Milena Cadenaro
642	13 Febbraio	Milano	Implantologia zigomatica con tecnica extrasinuzale	Dott. Francesco Grecchi
643	13 Febbraio	Pordenone	Ortodonzia intercettiva: protocolli clinici efficienti	Dott. Andrea Scarpa
644	15 Febbraio	Lodi Vicenza	Formazione 4.0	Dott. Gabriele Vassura Dott. Gianluca Zanetti Ing. Gabriele Zanon
645	17 Febbraio	Bologna	La chirurgia computer-assistita in oncologia maxillo-facciale	Prof. Claudio Marchetti Dott. Giovanni Badiali Dott. Francesco Ceccariglia Dott. Elisabetta Lucchi Dott. Angelo Pizzigallo Dott. Francesco Ricotta Dott. Achille Tarsitano
646	17 Febbraio	Como	Implantologia osteointegrata	Prof. Tiziano Testori
647	18 Febbraio	Padova	Restauri del settore anteriore: le variazioni di forma	Dott. Giampaolo Drago
648	19 Febbraio	Padova	Odontoiatria conservativa diretta	Dott. Monaldo Saracinelli
649	20 Febbraio	Treviso	Oligodontia, ipodontia ed anodontia: trattamento combinato ortodontico-chirurgico: parte 1	Dott. Patrizia Lucchi
650	20 Febbraio	Treviso	Oligodontia, ipodontia ed anodontia: trattamento combinato ortodontico-chirurgico: parte 2	Prof. Antonio Gracco Dott. Patrizia Lucchi
651	20 Febbraio	Penn Dental Medicine, Oral and Maxillofacial Surgery	The pathophysiology and management of central giant cell lesion of the mandible	Prof. Anthony Pogrel
652	24 Febbraio	University of Toronto	Physical, biomechanical and biochemical consideration when selecting materials for prosthetic rehabilitation	Prof. Yoav Finer

653	25 Febbraio	Padova	Ortodonzia intercettiva: protocolli clinici efficienti. Parte 2	Dott. Gianluca Garofalo
654	26 Febbraio	Nobel Biocare	Peri-implantitis: pravection und therapie	Dott. Holger Zipprich Dott. Urs Brodbeck
655	26 Febbraio	S.I.O.I	Odontoiatria pediatrica moderna	A.A.
656	26 Febbraio	S.I.C.M.F.	Le gestione del collo nelle neoplasie delle ghiandole salivari	Dott. Luigi Solazzo
657	27 Febbraio	Dentalica S.p.a.	La scelta della componentistica implantare	A.A.
658	28 Febbraio	Milano	Nuovi protocolli di gestione delle lesioni del cavo orale	Prof. Federico Biglioli
659	01 Marzo	Berlino	Customized cranial implants: approach to the skull base	A.A.
660	01 Marzo	Madrid	Free flap skull base reconstruction	Prof. Gregorio Sanchez Aniceto
661	01 Marzo	A.P.O.S.	Timing in chirurgia orale pediatrica. Chirurgia estrattiva: decidui infraocclusi, sovranumerari e germi degli ottavi	Dott. Roberto Barone
662	01 Marzo	I.R.C.	Le nuove linee guida della rianimazione cardio-polmonare	A.A.
663	02 Marzo	Vicenza	Chirurgia orale pediatrica: approccio al paziente, problematiche diagnostiche e chirurgiche	
664	03 Marzo	Vicenza	Estetica nelle riabilitazioni implantari: obiettivo perseguibile anche con il flusso digitale?	Dott. Alessio Franchina
665	03 Marzo	Udine	Le ricostruzioni customizzate 3D dello scheletro cranio-facciale	Prof. Massimo Robiony
666	04 Marzo	Torino	Gestione dei difetti per sede: mascellare superiore	Prof. Chiara Copelli
667	04 Marzo	Torino	Gestione dei difetti per sede: lingua e pavimento orale	Dott. Emanuele Zavattero
668	04 Marzo	Torino	Gestione perioperatoria: preparazione ed aspetti anestesilogici	Dott. Enzo Marchello
669	05 Marzo	Padova	Elementi di cariologia: diagnostica e trattamento dei settori posteriori	Dott. Marco Calabrese
670	06 Marzo	England	Erosive tooth wear, occlusion in treatment planning, occlusion and cognition and neuroplasticity	Dott. David Barlett
671	10 Marzo	Rimini	Il ruolo chiave dei tessuti molli e duri nel risultato estetico	Prof. Mauro Merli

672	10 Marzo	Roma	L'approccio combinato perio-implantare	Dott. Marco Talocco
673	11 Marzo	Torino	Aspetti radiologici in chirurgia ricostruttiva	Dott. Paolo Balercia
674	11 Marzo	Torino	Gestione dei difetti per sede: mandibola	Dott. Paolo Balercia
675	11 Marzo	Torino	Gestione dei difetti per sede: cute	Dott. Paolo Balercia
676	11 Marzo	Cagliari	Aggiornamenti in traumatologia dentaria: diagnosi e trattamento delle lussazioni dentarie nei denti decidui e permanenti. Parte 1	Prof. Enrico Spinis
677	12 Marzo	Padova	Restauro indiretto dei denti permanenti coronalmente compromessi	Dott. Marco Calabrese
678	13 Marzo	Madrid	State of the art in mandibular reconstruction	Prof. Julio Acero Sanz
679	14 Marzo	Catanzaro	Le patologie autoimmuni dei bambini: come riconoscerle e trattarle	
680	14 Marzo	Cagliari	La progettazione funzionale, la risoluzione dei casi complessi e l'ortodonzia intercettiva con il sistema Nuvola OP system	Dott. Simonetta Bussu
681	16 Marzo	Vicenza	Trattamento delle grandi atrofie mascellari con impianti zigomatici	Dott. Andrea Tedesco
682	18 Marzo	Monza	Forearm: anatomia ed indicazioni	Dott. Davide Sozzi
683	18 Marzo	Napoli	Forearm: allestimento	Dott. Paolo Iacoviello
684	18 Marzo	Milano	Il lembo laterale di braccio	Dott. Davide Sozzi
685	18 Marzo	Budapest	Chirurgia ricostruttiva e rigenerativa maxillo-mandibolare	Prof. Istvan Urban
686	19 Marzo	Parma	Agenesia unilaterale degli incisivi superiori. Soluzioni interdisciplinari	Dott. Renato Cocconi
687	19 Marzo	Milano	Il trattamento multidisciplinare delle labiopalatoschisi	Prof. Maria Costanza Meazzini Dott. Luca Auteliano Dott. Angela Rezzonico
688	24 Marzo	Padova	Odontoiatria di comunità ed epidemiologia	Dott. Barbara Isaia
689	25 Marzo	Ferrara	Ricostruzioni estetiche del settore frontale: procedure operative	Dott. Pietro Sibilla
690	25 Marzo	Udine	Il lembo libero di fibula: anatomia ed indicazioni	Prof. Massimo Robiony

691	25 Marzo	Perugia	Il lembo libero di fibula: allestimento	Dott. Antonio Tullio
692	25 Marzo	Bologna	Applicazioni tecnologiche in chirurgia ricostruttiva	Dott. Antonio Tarsitano
693	26 Marzo	Trento	Traumatologia dentale: parte 1	Dott. Patrizia Lucchi
694	26 Marzo	Trento	Traumatologia dentale: parte 2	Dott. Patrizia Lucchi
695	27 Marzo	Treviso	Odontoiatria pediatrica ed epidemiologia	Dott. Chiara Terrazzani
696	27 Marzo	Vicenza	Proroga della cassa integrazione, blocco dei licenziamenti e contratti a termine. Le novità del "Decreto Sostegni"	Dott. Ernesto Boschiero
697	27 Marzo	Bologna	Le nuove linee guida della rianimazione cardio-polmonare 2020-2025: congresso nazionale IRC	Italian Resuscitation Council
698	29 Marzo	ITI STUDY CLUB Friuli Venezia Giulia	Razionale clinico ed ergonomico delle procedure di carico immediato nelle edentulie totali o parziali. Analisi clinica e tecnica di due casi clinici	Dott. Leonello Biscaro Sig. Massimo Soattin Sig. Daniele Zampieri
699	30 Marzo	Lodi	Formazione 4.0: agevolazioni importanti anche per il settore odontoiatrico privato	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
700	01 Aprile	Roma	Cresta iliaca: anatomia ed indicazioni	Prof. Valentino Valentini
701	01 Aprile	Roma	Cresta iliaca: sistemi di allestimento	Prof. Valentino Valentini
702	01 Aprile	Milano	Riabilitazione implantoprotesica post-oncologica	Prof. Albo Bruno Gianni
703	07 Aprile	Aquila	La sedazione cosciente e l'ansiolisi in odontoiatria pediatrica	Prof. Marco Moscati
704	08 Aprile	Torino	Il lembo ALT: anatomia ed indicazioni	Prof. Chiara Copelli
705	08 Aprile	Torino	Il lembo ALT: video di allestimento	Prof. Chiara Copelli
706	08 Aprile	Torino	Il percorso foniatrico-riabilitativo nel lembo ALT	Prof. Maria Rita del Zompo
707	09 Aprile	Catania	Ortodonzia indiretta e digitale: SWM ed F22	Dott. Davide Mirabella
708	12 Aprile	Milano	Il ruolo della dissezione extra- capsulare delle lesioni benigne della parotide	Dott. Marco Cucurullo
709	13 Aprile	Napoli	Mascellare atrofico: soluzioni per riabilitazioni immediate fisse	Dott. Antonio Mallardo
710	13 Aprile	Pisa	Total approach concept: zygoma implants	Dott. Andrea Tedesco

711	14 Aprile	Ferrara	Surgical decompression in thyroid eye disease: guidelines and current evidence	Dott. Manlio Galiè
712	14 Aprile	Milano	Teledentistry for the early detection in oral lesions: a lesson from the covid-19 pandemic	Dott. Giorgia Capocasale
713	14 Aprile	Vicenza	La dentina: un materiale da innesto osteoconduttivo	Dott. Elio Minetti
714	15 Aprile	Parma	La scapola: anatomia ed indicazioni chirurgiche	Prof. Silvano Ferrari
715	15 Aprile	Parma	Il lembo libero di scapola: video di allestimento	Prof. Silvano Ferrari
716	15 Aprile	Brescia	Gestione delle complicanze del lembo libero di scapola	Dott. Karim Tewfik
717	15 Aprile	Padova	Endopedodonzia: dai decidui ai permanenti	Dott. Enrico Semenzato
718	16 Aprile	Cagliari	Traumatologia dentale	Dott. Enrico Spinas
719	16 Aprile	Genova	Implantologia zigomatica: il trattamento del mascellare atrofico	Prof. Tiziano Tealdo
720	16 Aprile	Genova	Principi di guarigione ossea e stabilità primaria	Dott. Marco Bevilacqua
721	17 Aprile	Genova	Il punto di vista dell'anestesista: il paziente complesso in chirurgia orale	Dott. Lorenzo Ball
722	19 Aprile	Verona	Tecniche chirurgiche e risultati delle plastiche di chiusura delle perforazioni settali	Dott. Riccardo Nocini
723	20 Aprile	Brescia	La chirurgia maxillo-facciale pediatrica	Dott. Karim Tewfik
724	21 Aprile	S.I.C.M.F.	Approccio multidisciplinare alla Sindrome di Eagle: attualità diagnostiche e terapeutiche	Prof. Francesco Saverio de Ponte Prof. Valentino Valentini Prof. Antonio D'Agostino
725	22 Aprile	Padova	Elementi di traumatologia dentaria	Dott. Patrizia Lucchi
726	22 Aprile	Roma	Hpv: un futuro senza il papilloma virus	Prof. Tiziano Treu Prof. Francesco Riva
727	22 Aprile	Padova	Diagnostica ortognatodontica	Dott. Raffaello Cortesi
728	23 Aprile	Padova	Diagnostica ortognatodontica: 2	Dott. Raffaello Cortesi
729	23 Aprile	Padova	Endodonzia in età evolutiva	Dott. Pio Bertani

730	24 Aprile	Padova	Endodonzia in età evolutiva: 2	Dott. Pio Bertani
731	24 Aprile	Società Italiana di Chirurgia Orale Pediatrica A.P.O.S.	Le lesioni cistiche delle ossa mascellari in età pediatrica	Dott. Roberto Barone
732	24 Aprile	Verona	Seminario di implantologia: short implants nel trattamento delle atrofie mascellari	Prof. Giorgio Lombardo
733	24 Aprile	Verona	Mandibular osteotomies	Prof. Lorenzo Trevisiol
734	26 Aprile	Torino	Il lembo di gracile: anatomia ed indicazioni	Prof. Federico Biglioli
735	26 Aprile	Torino	Il lembo di gracile: video di allestimento	Prof. Federico Biglioli
736	26 Aprile	Torino	Refinements di chirurgia ricostruttiva	Prof. Chiara Copelli
737	28 Aprile	Padova	Malattie genetiche con manifestazioni orali	Prof. Daniela Zuccarello
738	28 Aprile	Milano	Ricostruzioni orbitarie: uso razionale della tecnologia	Prof. Alberto Bozzetti
739	28 Aprile	Milano	Le lesioni cariose in odontoiatria pediatrica	Prof. Maria Grazia Cagetti
740	29 Aprile	Padova	GBR nella pratica quotidiana: risoluzione di casi più o meno complessi	Dott. Fabio Mazzocco
741	29 Aprile	Roma	Lesioni ossee mascellari: diagnosi e terapia	Prof. Francesco Riva
742	29 Aprile	Ankara S.O.R.G.	Genioplasty in orthognathic surgery	Prof. Hakan Tuz
743	04 Maggio	Padova	Patologia orale pediatrica	Prof. Christian Bacci
744	05 Maggio	Firenze	Ortodonzia v/s chirurgia nella III classe	Dott. Massimo Lupoli
745	05 Maggio	Napoli	Considerazioni sulla chirurgia estetica e funzionale dell'unità nasale	Prof. Andrea Castellani
746	05 Maggio	Goteborg	Global osseointegration day	Prof. Tomas Albrektsson
747	06 Maggio	Padova	La traumatologia dentaria: aspetti endodontici su elementi decidui e permanenti	Dott. Enrico Semenzato
748	07 Maggio	Milano	National osteology italian meeting: la rigenerazione nella soluzione dei problemi quotidiani in odontoiatria. Come affrontarli in modo semplice e predicibile	Dott. Giulio Rasperini Dott. Giorgio Pagni Dott. Filippo Fontana Dott. Luca Gobbato

750	08 Maggio	Dallas	Simultaneous tmj and orthognathic surgical procedures	Prof. Larry M. Wolford
751	11 Maggio	Amsterdam	Complications in orthognathic surgery	Prof. Alfred Becking
752	12 Maggio	Napoli	Hot topics nei tumori maligni della parotide	Prof. Luigi Califano
753	13 Maggio	Verona	Le enucleazioni dentarie	Dott. Andrea Compri
754	13 Maggio	Milano	Edentulie dei mascellari: strategie terapeutiche alternative – Decision making	Prof. Raffaele Vinci
755	13 Maggio	Lodi	Organizzazione dello studio odontoiatrico per processi: parte 1	Prof. Gabriele Vassura Dott. Pietro Paolo Mastinu
756	14 Maggio	Lodi	Organizzazione dello studio odontoiatrico per processi: parte 2	Prof. Gabriele Vassura Dott. Pietro Paolo Mastinu
757	15 Maggio	Lodi	Organizzazione dello studio odontoiatrico per processi: parte 3	Prof. Gabriele Vassura Dott. Pietro Paolo Mastinu
758	15 Maggio	Roma	La gestione multidisciplinare dei traumi dentari	Dott. Simone Grandini
759	16 Maggio	Bassano del Grappa	Mininvasività in patologia epato-pancreatico-biliare	Dott. Michele Antoniutti
760	17 Maggio	Milano	Orientamenti diagnostici e terapeutici in ortognatodonzia	Dott. Cinzia Maspero
761	17 Maggio	Padova	Le malattie della tiroide	Dott. Pietro Maffei
762	17 Maggio	Roma	Fondamenti di chirurgia endoscopica dei seni paranasali e della base cranica in chirurgia maxillo-facciale	Dott. Danilo Di Giorgio
763	18 Maggio	Santo Stefano Belbo	Il flusso digitale nelle riabilitazioni full-arch a carico immediato	Prof. Tiziano Tealdo Odt. Luca Scaglione
764	19 Maggio	Milano	Estrazione chirurgica del terzo molare incluso	Dott. Alberto Pispero
765	19 Maggio	Vicenza	I nuovi anticoagulanti orali	Prof. Damiano Rizzoni
766	19 Maggio	Verona	Impianti ultracorti: indicazioni cliniche ed analisi biomeccanica	Prof. Luciano Malchiodi
767	20 Maggio	Cleveland	Outcomes – surgical relapse: orthognathic surgery	Prof. Faisal A. Quereshy
768	21 Maggio	Milano	Terapia ortodontica in dentatura mista: 1 parte	Dott. Gualtiero Mandelli

769	21 Maggio	Milano	Terapia ortodontica in dentatura mista: 2 parte	Dott. Gualtiero Mandelli
770	21 Maggio	Milano	Il bandaggio ortodontico in chirurgia ortognatica	Dott. Niccolò Cenzato
771	22 Maggio	Parma	Semeiotica ortodontica	Dott. Matteo Spigaroli
772	26 Maggio	Vicenza	Rigenerazione ossea guidata ed implantologia protesicamente guidata	Dott. Alessandro Cucchi
773	5 Giugno	Como	Trattamento chirurgico delle MRONJ: mininvasivo vs invasivo	Dott. Luigi Colombo
774	5 Giugno	Treviso	Gravidanza, allattamento e salute orale in età perinatale: la prevenzione inizia dal pancione	Dott. Anna Franco
775	5 Giugno	Milano	Principi contributivi, giuridici e fiscali delle società e dei professionisti: normative legislative prevenzione inizia dal pancione	Dott. Pietro Paolo Mastinu
776	8 Giugno	Parma	Chirurgia guidata e pianificazione digitale in area estetica	Dott. Federico Rivara
777	9 Giugno	Milano	I lembi locali e loco regionali in chirurgia maxillo-facciale	Prof. Alberto Bozzetti
778	10 Giugno	Padova	Le agenesie dentarie: inquadramento diagnostico e scelta terapeutica	Prof. Antonio Luigi Gracco
779	15 Giugno	Roma	Principi di crescita cranio-facciale in chirurgia ortognatica: fisiologia e fisiopatologia della crescita delle strutture facciali	Prof. Piero Cascone
780	17 Giugno	Verona	Il dentista digitale: le tecnologie cone-beam	Dott. Guido Bellabona
781	17 Giugno	Milano	Medicina legale in chirurgia orale e maxillo-facciale	Prof. Gian Aristide Novelli
782	21 Giugno	Napoli	Le osteonecrosi delle ossa mascellari farmaco-ralata (ONJ)	Dott. Cristiana Germano
783	22 Giugno	Santo Stefano Belbo	La riabilitazione con carico immediato del mascellare gravemente atrofico: strategie chirurgiche e protesiche	Prof. Tiziano Tealdo
784	23 Giugno	Padova	Ozonoterapia e protocollo in odontoiatria pediatrica	Dott. Dejda Kokici
785	30 Giugno	Padova	Approccio psicologico in odontoiatria infantile	Dott. Maria Manente
786	30 Giugno	Toronto	Prosthetic reconstruction following head and neck surgeries	Prof. Caroline Tram Nguyen
787	30 Giugno	Santo Stefano Belbo	Il trattamento chirurgico-protesico delle atrofie estreme dei mascellari	Prof. Tiziano Tealdo
788	30 Giugno	Alicante, Spagna	Dissezione ragionata delle logge anatomiche del collo e del cavo orale	Dott. Alessandro Nisii Dott. Roberto Pistilli
789	01 Luglio	Alicante, Spagna	Dissezione ragionata delle logge anatomiche del collo e del cavo orale	Dott. Alessandro Nisii Dott. Roberto Pistilli

790	02 Luglio	Padova	Innovazione tecnologica: nuove prospettive ortodontiche nelle terze classi	Prof. Antonio Gracco Dott. Renato Cocconi Dott. Valerio Maccagnola Dott. Nicola Preda
791	08 Luglio	Padova	Le dermatiti da contatto in odontoiatria pediatrica	
792	08 Luglio	Padova	Riabilitazione restaurativa post-ortodontica dei settori anteriori con tecniche adesive	Dott. Niko Perakis
793	09 Luglio	Roma	New technologies for common pathologies and treatments	Relatori Vari
794	13 Luglio	Roma	Fibrin sealant academy: l'utilizzo della colla di fibrina nella rigenerazione tissutale a scopo implantare	Dott. Roberto Abundo Prof. Francesco Riva Dott. Vincenzo Foti Dott. Michele Perelli
795	14 Luglio	Modena	Il rischio neurologico dell'anestesia generale nei bambini	Prof. Luigi Chiarini
796	15 Luglio	Padova	Isolamento del campo operatorio ed infection control in endodonzia	Dott. Filippo Cardinali
797	15 Luglio	Verona	Traumatologia dento-facciale	Dott. Andrea Compri
798	21 Luglio	Brescia	Il columbus bridge protocol che non ti aspetti	Dott. Diego Cattina Odt. Danilo Braghini
799	29 Luglio	Padova	Laser a diodi: utilizzo clinico in odontoiatria pediatrica	Dott. Giuseppe Chiodera
800	08 Agosto	Groningen	Secondary reconstruction after facial trauma	Dott. Baucke Van Minnen
801	04 Settembre	Verona	Corso di dissezione anatomica su cadavere	Prof. Tiziano Tealdo Dott. Marco Bevilacqua
802	10 Settembre	Padova	Endocrinologia pediatrica	Prof. Pietro Maffei
803	15 Settembre	Ravenna	Allineatori e crescita cranio-facciale	Dott. Alessandro Carraffello
804	23 Settembre	Gubbio	Trattamenti combinati ortodontico-chirurgici	Dott. Marco Pironi
805	23 Settembre	Gubbio	Corticotomie alveolari: basi biologiche, indicazioni, procedure chirurgiche, management ortodontico	Dott. Raffaele Spena
806	24 Settembre	Gubbio	Interdisciplinarietà in chirurgia orale: congresso nazionale SIDCO	Relatori vari
807	25 Settembre	Gubbio	Interdisciplinarietà in chirurgia orale: congresso nazionale SIDCO	Relatori vari
808	25 Settembre	SORG	Osteodistraktion for smile rehabilitation	Relatori vari
809	28 Settembre	Roma	La riforma delle professioni sanitarie	Dott. Francesco Saverio Proia
810	29 Settembre	Padova	Patologie delle mucose orali in odontoiatria infantile: dalla diagnosi alla terapia	Dott. Rolando Crippa
811	29 Settembre	Milano	Implantologia zigomatica	Dott. Francesco Grecchi

812	01 Ottobre	SORG	CO₂-laser in ENT: Transoral laser-assisted microsurgery for treatment of laryngeal cancer	Relatori vari
813	01 Ottobre	Padova	Il trattamento dei denti con apice immaturo: vital pulp therapy e terapia rigenerativa	Dott. Corrado Cardinali
814	04 Ottobre	Bologna	L'arresto cardiaco nel paziente cardiocirurgico	Italian Resuscitation Council
815	08 Ottobre	Padova	Disturbi respiratori ostruttivi nei bambini	Dott. Francesca Milano
816	08 Ottobre	Padova	La pedodonzia in ortodonzia	Dott. Francesco Perri
817	08 Ottobre	Genova	Advances in clinical prosthodontics: estetica e funzione nella riabilitazione full-arch a carico immediato	Prof. Tiziano Tealdo Dott. Marco Bevilacqua Dott. Ivan Calimodio Prof. Francesco Pera
818	09 Ottobre	Genova	Advances in clinical prosthodontics	Relatori Vari
819	14 Ottobre	Padova	Inquadramento diagnostico e terapia dei disordini temporo-mandibolari	Dott. Luca Guarda Nardini
820	15 Ottobre	Padova	Disturbi respiratori ostruttivi nel bambino: terapia	Dott. Francesca Milano
821	21 Ottobre	Verona	23° congresso internazionale di terapia implantare 3i	Relatori Vari
822	21 Ottobre	Verona	23° congresso internazionale di terapia implantare Biomax 3i	Relatori Vari
823	22 Ottobre	Verona	23° congresso internazionale di terapia implantare 3i	Relatori Vari
824	22 Ottobre	Verona	23° congresso internazionale di terapia implantare Biomax 3i	Relatori Vari
825	23 Ottobre	Verona	23° congresso internazionale di terapia implantare Biomax 3i	Relatori Vari
826	27 Ottobre	Fidenza	La chirurgia orale pediatrica funzionale all'ortodonzia	Dott. Spigaroli Matteo
827	13 Novembre	Verona	La gestione dei tessuti molli intorno a denti ed impianti	Relatori Vari
828	13 Novembre	SORG	Advances in orthognathic surgery	Relatori Vari
829	18 Novembre	Palermo	Ortodonzia intercettiva: protocolli clinici efficienti. Parte III	Dott. Giorgio Garofalo
830	18 Novembre	Lodi	Igienista dentale: quali alternative?	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
831	19 Novembre	Teramo	La semeiotica ortodontica nel paziente pediatrico: cosa, dove e perché è importante osservare	Dott. Mara Manente Dott. Azzurra di Ventura
832	10 Dicembre	Padova	Ortodonzia intercettiva: protocolli operativi clinici efficienti. Parte IV	Dott. Giovanni Scarpa
833	10 Dicembre	Vicenza	Corso BLS-D Retraining	I.P. Gianni Cerantola

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834	07 Gennaio	Lodi Vicenza Milano	I crediti d'imposta 2022: agevolazioni fiscali e debiti. Il punto della situazione	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu Dott. Gianluca Zanetti Dott. Paolo Bernorio
835	11 Gennaio	Modena	Approccio innovativo in odontoiatria estetica multidisciplinare	Dott. Camilla Molinari
836	15 Gennaio	Roma	Le gravi atrofie dei mascellari	Prof. Sandro Pelo
837	15 Gennaio	Roma	Linee guida in implantoprotesi	Dott. Antonio D'Addona
838	15 Gennaio	Roma	Chirurgia implantare computer guidata: aspetti clinici e medico-legali	Dott. Antonio Guida
839	15 Gennaio	Roma	Introduzione alla chirurgia guidata: flusso di lavoro, applicazioni cliniche e vantaggi, nuovi materiali e nuove tecnologie	Dott. Roberto Mosca
840	15 Gennaio	Roma	Computer assisted surgery a carico immediato	Dott. Stefano Loghi
841	19 Gennaio	Padova	La fisiologia degli stati di coscienza: parte 1	Prof. Carla Mucignat
842	19 Gennaio	Zurigo	Empowering surgeons with virtual in-hiuse planning in CMF: how to create predictable surgiac outcomes	Prof. Joachim Obwegeser Prof. Massimo Robiony Dott. Alessandro Tel
843	20 Gennaio	Verona	Pianificazione virtuale in chirurgia ortognatica	Prof. Lorenzo Trevisiol
844	20 Gennaio	Padova	Approccio innovativo in odontoiatria estetica multidisciplinare	Dott. Camilla Molinari
845	22 Gennaio	Santa Barbara	Arnett orthognathic surgery forum	Prof. William Arnett Dott. Alejandro Martinez Dott. Mike Gunson Dott. Jeff McClendon
846	23 Gennaio	Santa Barbara	Arnett orthognathic surgery forum	Prof. William Arnett Dott. Alejandro Martinez Dott. Mike Gunson Dott. Jeff McClendon
847	26 Gennaio	Padova	La fisiologia degli stati di coscienza: parte 2	Prof. Carla Mucignat
848	27 Gennaio	Padova	Principi e gestione di una srl odontoiatrica	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
849	28 Gennaio	Padova	Principi e gestione di una srl odontoiatrica	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
850	29 Gennaio	Padova	Principi e gestione di una srl odontoiatrica	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
851	02 Febbraio	Padova	Invisalign first	Dott. Camilla Molinari
852	15 Febbraio	Napoli	8° webinar S.I.P.M.O.	Prof. Gaetano de Rosa
853	25 Febbraio	Lodi	Come trasformare le recensioni in una risorsa di business	Dott. Gabriele Vassura Sig. Valerio Salvi Sig. Francesco Orlandini

854	16 Marzo	Padova	Odontoiatria di comunità ed epidemiologia	Dott. Barbara Isaia
855	17 Marzo	Verona	Istvan urban regeneration italt tour	Prof. Istvan Urban
856	18 Marzo	Alba	Columbus bridge protocol	Prof. Tiziano Tealdo Dott. Marco Bevilacqua
857	19 Marzo	Alba	Columbus bridge protocol	Prof. Tiziano Tealdo Dott. Marco Bevilacqua
858	29 Marzo	Padova	Endocrinologia in odontoiatria pediatrica	Dott. Pietro Maffei
859	31 Marzo	Ferrara	Restauri anteriori, criteri di scelta e modalità operative	Dott. Pietro Sibilla
860	14 Aprile	Padova	Isolamento del campo operatorio e infection control in endodonzia	Dott. Roberto Cardinali
861	21 Aprile	Padova	Il campione dello studio: lettura e interpretazione dei dati	Dott. Franco Mutinnelli
862	26 Aprile	Padova	Genetica clinica e molecolare	Dott. Daniela Zuccarello
863	26 Aprile	Treviso	Imprenditoria ed odontoiatria	Dott. Francesco D'Amelio
864	30 Aprile	Ravenna	Trattamento del mascellare gravemente atrofico mediante l'uso di impianti zigomatici	Prof. Claudio Marchetti Dott. Fausto Pasqualini Galliani
865	02 Maggio	Padova	Patologia orale in odontoiatria pediatrica	Dott. Christian Bacci
866	11 Maggio	Santo Stefano Belbo	Il trattamento del mascellare gravemente atrofico con metodica di successo	Prof. Tiziano Tealdo
867	12 Maggio	Verona	Le enucleazioni dentarie	Dott. Andrea Compri
868	12 Maggio	Brescia	Radiologia digitale	Dott. Andrea Borghesi
869	13 Maggio	Brescia	Digital technology changing historic dental workflows and materials	Dott. Carlo Marinello
870	13 Maggio	Padova	La gestione contrattuale nello studio odontoiatrico	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
871	17 Maggio	Brescia	Anatomia e CBCT	Prof. Ramon Boninsegna
872	19 Maggio	Madrid	Osteotomy design	Dott. Veronica Martinez
873	19 Maggio	Brescia	Clinical photographic documentation protocols for a proper treatment plan evaluation	Dott. Alessandro Devigus
874	24 Maggio	Brescia	Gli scanner intraorali nella pratica clinica quotidiana	Dott. Nicola Barambati
875	24 Maggio	Padova	Endocrinologia pediatrica	Dott. Pietro Maffei

876	01 Giugno	Venezia	I parametri da rispettare per raggiungere un'elevata valenza estetica nella riabilitazione implantare	Dott. Diego Longhin
877	03 Giugno	Roma	Contratto collettivo nazionale e gestione sindacale di aso e dipendenti	Dott. Pietro Paolo Mastinu
878	09 Giugno	Brescia	Face hunter ed integrazione con lo scanner facciale	Dott. Antonello Appiani
879	14 Giugno	Brescia	Comunicazione con il laboratorio: flusso digitale in protesi nei casi complessi	Dott. Giovanni Pisoni
880	14 Giugno	Milano	La rigenerazione ossea guidata. Protocolli operativi 2.0	Prof. Raffaele Vinci
881	16 Giugno	Brescia	Endodonzia digitale	Dott. Riccardo Tonini
882	17 Giugno	Verona	Acquisizione delle immagini radiografiche in 2d e 3d	Dott. Antonio Cerutti
883	17 Giugno	Verona	Soluzioni per l'impronta digitale	Dott. Antonio Cerutti
884	18 Giugno	Verona	Razionale clinico e protocolli per la corretta scansione	Dott. Nicola Barabanti
885	21 Giugno	Brescia	Il corretto uso della CBCT in endodonzia	Dott. Roberto Fornara
886	24 Giugno	Padova	I materiali dentali in odontoiatria pediatrica	Dott. Dejed Kokici
887	28 Giugno	Brescia	I valori del digitale per la qualità odontoiatrica	Dott. Michele Rossini
888	05 Luglio	Brescia	Odontoiatria 4-0	Dott. Marco Belardi
889	07 Luglio	Padova	New perspectives in anterior aesthetics: the bonded way	Dott. Niko Perakis
890	08 Luglio	Brescia	Acquisizione, montaggio e condivisione dei video intra ed extra orali	Dott. Luigi Rubino
891	13 Luglio	Brescia	Diagnostica e decisione clinica: metodi digitali a supporto del team medico. La day medicine applicata all'odontostomatologia. Strategie di design protesico e restaurativo orientate all'applicazione dei materiali dentali di ultima generazione	Dott. Alessandro Preti
892	13 Luglio	Padova	Genetica in odontoiatria pediatrica	Dott. Daniela Zuccarello
893	15 Luglio	Padova	Sedazione cosciente in odontoiatria pediatrica	Dott. Anna Franco
894	19 Luglio	Brescia	Diagnostica e decisione clinica: metodi digitali a supporto del team medico. La day medicine applicata all'odontostomatologia. Strategie di design protesico e restaurativo orientate all'applicazione dei materiali dentali di ultima generazione	Dott. Alessandro Preti

895	19 Luglio	Milano	Marketing digitale in odontoiatria	Dott. Gabriele Vassura
896	21 Luglio	Brescia	Arts of smiles: digital process	Dott. Roberto Molinari
897	22 Luglio	Padova	Genetica in odontoiatria pediatrica	Dott. Daniela Zuccarello
898	26 Luglio	Brescia	Scansione e progettazione delle riabilitazioni implantari	Dott. Pierfrancesco Mondina
899	27 Luglio	Padova	Utilizzo del laser in odontoiatria pediatrica	Dott. Giuseppe Chiodera
900	29 Luglio	Teramo	L'approccio psicologico in odontoiatria pediatrica	Dott. Mara Manente
901	02 Agosto	Brescia	Diagnocat	Dott. Marcus Cedric
902	06 Settembre	Brescia	Evoluzione del CAD-CAM in odontoiatria	Dott. Franco Brenna
903	06 Settembre	Verona	Mrna technology-from cancer therapy to infectious disease prevention	Prof. Ozlem Tureci
904	13 Settembre	Brescia	I materiali per le tecniche CAD-CAM e le loro strategie adesive	Dott. Andrea Fabianelli
905	13 Settembre	Bassano del Grappa	Il ruolo dell'otorinolaringoiatra e dell'odontoiatra nella diagnosi e terapia delle osas pediatriche	Dott. Luigi Romano
906	14 Settembre	Lodi	Brand per lo studio dentistico	Dott. Gabriele Vassura
907	15 Settembre	Brescia	La cementazione dei restauri adesivi	Dott. Dino Re
908	20 Settembre	Brescia	Clinical photography documentation protocols for color lab/dentist	Dott. Luca Conoscenti
909	22/24 Settembre	Verona	Congresso internazionale di implantologia Biomax 3i	Relatori vari
910	27 Settembre	Brescia	Il piano di trattamento estetico-funzionale in protesi fissa: integrazione di tradizione ed innovazione alla luce delle nuove tecnologie	Dott. Giacomo Fabbri
911	28 Settembre	Padova	Patologia orale in odontoiatria pediatrica: approccio terapeutico laser assistito	Dott. Rolando Crippa
912	29 Settembre	Brescia	Il flusso di lavoro digitale in protesi: dal piano di trattamento alla comunicazione con il gruppo di lavoro e con il paziente, dalla pre-visualizzazione alla finalizzazione del caso	Dott. Fernando Zanone
913	29 Settembre	Brescia	Caratteristiche, indicazioni cliniche e selezione razionale delle ceramiche dentali e dei cementi ad uso protesico	Dott. Fernando Zanone Dott. Roberto Sorrentino
914	04 Ottobre	Padova	Il trattamento dei denti con apice immaturo: vital pulp therapy e terapia rigenerativa	Dott. Corrado Cardinali

915	04 Ottobre	Brescia	Management tissutale morfogenetico	Dott. Gaetano Calesini
916	05 Ottobre	Padova	La pedodonzia in ortodonzia	Dott. Alessandro Perri
917	06 Ottobre	Brescia	La riabilitazione estetica del paziente totalmente edentulo: protocolli digitali	Dott. Piero Venezia
918	11 Ottobre	Brescia	Full digital workflow laboratorio	Dott. Giuseppe Daniele Rondoni
919	13 Ottobre	Brescia	Il columbus bridge protocol nel trattamento delle atrofie mascellari	Dott. Diego Cattina
920	19 Ottobre	Padova	Terapia intercettiva, crescita, espansione e maschera di Delaire	Dott. Alessandro Perri
921	20 Ottobre	Brescia	Full digital workflow in laboratorio	Giuseppe Romeo
922	20 Ottobre	Bardolino Verona	Interdisciplinarietà in chirurgia orale: congresso nazionale SIDCO	Relatori vari
923	25 Ottobre	Brescia	Le preparazioni dentali nell'era digitale	Dott. Mario Semenza
924	25 Ottobre	Roma	La gestione assicurativa dello studio dentistico	Simone Turrini
925	24 Novembre	Reggio Emilia	La gestione delle holding odontoiatriche	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
926	25 Novembre	Reggio Emilia	La gestione delle holding odontoiatriche	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
927	26 Novembre	Reggio Emilia	La gestione delle holding odontoiatriche	Dott. Gabriele Vassura Dott. Pietro Paolo Mastinu
928	26 Novembre	Brescia	Il workflow digitale nel trattamento dell'eruzione passiva alterata. Parte 1	Dott. Eugenio Longo
929	29 Novembre	Brescia	Il workflow digitale nel trattamento dell'eruzione passiva alterata. Parte 2	Dott. Eugenio Longo
930	01 Dicembre	Brescia	La logica della funzione: uno sguardo al futuro	Dott. Domenico Massironi Odt. Giuseppe Rampulla
931	06 Dicembre	Brescia	Il flow chart digitale: dalla valutazione clinica alla diagnosi, dalla scelta del metodo e della tecnica al management delle fasi operative. Le procedure digitali per la finalizzazione del caso in chirurgia implantare e protesi su impianti	Dott. Salvatore D'Amato
932	06 Dicembre	Brescia	Il supporto del laboratorio digitale nella pianificazione, nella diagnosi e nelle scelte operative	Dott. Giancarlo Cozzolino
933	12 Dicembre	Lodi	Il welfare per i dipendenti	Dott. Pietro Paolo Mastinu
934	13 Dicembre	Brescia	Il flusso di lavoro digitale completo dalla diagnosi 3D alla progettazione digitale chirurgica e delle parti protesiche con approccio multi-disciplinare	Dott. Luigi Rubino
935	14 Dicembre	Padova	La progettazione e realizzazione dell'ambulatorio odontoiatrico	Arch. Mario Radaelli

936	16 Dicembre	Brescia	La stampa 3d nella pratica clinica	Dr. Francesca Capelli
937	16 Dicembre	Brescia	Pianificazione chirurgica per chirurgia chairside	Dr. Nicola Barabanti
938	17 Dicembre	Brescia	Dall'esame diagnostico alla pianificazione chirurgica	Daniele Montaneri
939	17 Dicembre	Brescia	Chirurgia implantare computer guidata. Basi di pianificazione digitale su siti guariti e siti post estrattivi. Approccio flapless, a tutto spessore ed a mezzo spessore. Flusso di lavoro full digital e flusso di lavoro misto	Giovanni Greco
940	20 Dicembre	Brescia	Diagnosi, pianificazione e progettazione digitale del caso implantare	Prof. Tiziano Testori

2023

941	09 Gennaio	Brescia	Pianificazione chirurgica e protesica computer assistita	Dr. Sergio Piano
942	17 Gennaio	Brescia	Il flow chart digitale: dalla valutazione clinica alla diagnosi, dalla scelta del metodo e della tecnica al management delle fasi operative. Le procedure digitali per la finalizzazione del caso in chirurgia implantare e protesi su impianti	Dr. Salvatore D'Amato
943	17 Gennaio	Brescia	Il supporto del laboratorio digitale nella pianificazione, nella diagnosi e nelle scelte operative	Odt. Giancarlo Cozzolino
944	18 Gennaio	Lodi	La legge di riforma della crisi d'impresa	Dr. Pietro Paolo Mastinu Dr. Gianluca Zanetti
945	24 Gennaio	Brescia	La chirurgia plastica parodontale su denti naturali ed impianti	Dr. Roberto Abundo
946	31 Gennaio	Brescia	Autotrapianti dentali: evoluzione del protocollo alla luce delle tecnologie digitali	Dr. Luca Boschini
947	02 Febbraio	Brescia	Digital era in endodontics: how useful is CBCT in clinical practice	Dr. Andreas Krokidis
948	07 Febbraio	Brescia	Faccette flusso digitale. Introduzione alla diagnosi ortodontica ed alla pianificazione del piano di trattamento. La rivoluzione digitale. Biomeccaniche razionali convenzionali e sequenze virtuali. Comparazione e scelte terapeutiche	Dr. Mario Imburgia Dr. Aldo Giancotti
949	09 Febbraio	Milano	Video strategy per lo studio dentistico	Dr. Gabriele Vassura Sig Valerio Salvi
950	22 Febbraio	Bologna	Columbus bridge: un protocollo sempre più efficace e documentato per il carico immediato	Dr. Matteo Furlati
951	23 Febbraio	Brescia	La moderna odontoiatria multidisciplinare	Dr. Ignacio Faus Dr. Vicente Faus

952	02 Marzo	Roma	La gestione del consenso informato e prevenzione del contenzioso	Dr. Silvio Accardo
953	04 Marzo	Vicenza	Gli amici del Pino: memorial Prof. Giuseppe Ferronato	Relatori vari
954	07 Marzo	Brescia	Restaurative dirette ed indirette dei settori anteriori	Dr. Massimo Veneziani
955	09 Marzo	Brescia	Trattamenti interdisciplinari con particolare attenzione all'estetica	Dr. Camilla Molinari Dr. Tommaso Mascetti
956	09 Marzo	Milano	Fisco, diritto d'autore e marchio industriale	Dr. Giovanni d'Ammassa
957	16 Marzo	Brescia	Allineatori in ortodonzia e protesi dentale	Prof. Luca Levrini
958	23 Marzo	Brescia	Dalla ortodonzia invisibile alla sistematica degli allineatori	Dr. Massimo Ronchin
959	28 Marzo	Brescia	The new boundaries of dentistry	Prof. Miguel Stanley
960	30 Marzo	Brescia	Il razionale utilizzo della CBCT in ortodonzia: la cefalometria 3d come opzione diagnostica insostituibile anche in riabilitazione implantoprotesica	Prof. Giovanna Perrotti
961	04 Aprile	Brescia	Approcci digitali in implantologia moderna Digital treatment of full mouth rehabilitation cases	Dr. Alfonso Coscarella Dr. Mahamood Ezzat Ghazi
962	11 Aprile	Brescia	Full digital workflow nella gestione dei casi interdisciplinari	Dr. Carlo Poggio
963	13 Aprile	Brescia	Digital tools for implants dentistry	Dr. Tali Chackartchi
964	20 Aprile	Brescia	L'applicazione clinica del digitale in odontoiatria	Dr. Mattia Fontana
964	26 Aprile	Rosà	Corso di primo soccorso e rianimazione cardio-polmonare	I.P. Fabio Cecchin
966	2ww8 Aprile	Brescia	The new boundaries of dentistry	Dr. Miguel Stanley
967	10 Maggio	Zelo Buon Persico	La prima visita: la sua importanza	Dr. Gabriele Vassura
968	14 Giugno	Alba	Il trattamento del mascellare gravemente atrofico con i nuovi metodi tecnologici	Dr. Tiziano Tealdo
969	24 Giugno	Padova	Sedazione o anestesista nello studio odontoiatrico? Problematiche amministrative e medico-legali della sedazione cosciente odontoiatrica	Prof. Christian Bacci Dr. Paola Mariuzza
970	08 Luglio	Vicenza	Itaka: la logica della funzione	Odt. Giuseppe Rampulla Sig. Luca Pighin
971	14 Luglio	Firenze	III° Zygoma day	Dr. Andrea Tedesco
972	15 Luglio	Firenze	III° Zygoma day	Dr. Andrea Tedesco

Certificazioni Universitarie



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Matricola 439850

N. Certif.
2010337185/CTIT_S_NEW

Si certifica che ALBERTI CHRISTIAN , nato a Bassano del Grappa (VI) il 15/09/1979 , ha conseguito la Laurea in ODONTOIATRIA E PROTESI DENTARIA presso questa Università degli Studi in data 28/07/2005 con voto 102/110.

Ai sensi del D.M. 270/2004 compete la qualifica accademica di Dottore Magistrale.

La durata legale del suddetto corso di studio è di cinque anni .

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Padova, 03/09/2011

Copia del presente documento, [rilasciato via web](#) , viene conservata negli archivi elettronici dell'Università.



UNIVERSITÀ DEGLI STUDI DI PADOVA

CES36

SERVIZIO FORMAZIONE POST-LAUREAM

Prot. 00001398

Il Dott. ALBERTI CHRISTIAN , nato a BASSANO DEL GRAPPA (VICENZA) il giorno 15/09/1979 , laureato in ODONTOIATRIA E PROTESI DENTARIA presso l'UNIVERSITA' DI PADOVA il giorno 28/07/2005 con punti 102/110 , ha presentato in data odierna domanda per sostenere, presso questa sede, l'Esame di Stato per l'abilitazione all'esercizio della professione di ODONTOIATRA nella seconda sessione dell'anno 2005 che avra' inizio a partire dal giorno 29/11/2005 .

Padova, li 08/11/2005

L'ADDETTO AL RILASCIO

A handwritten signature in black ink, appearing to be 'AS'.



UNIVERSITÀ DEGLI STUDI DI PADOVA

CE032

Servizio Segreterie Studenti

Cert. n. 2005665192

Matr. 439850-OP

Si certifica che ALBERTI CHRISTIAN, nato a Bassano Del Grappa (Vicenza) il giorno 15/09/1979, ha superato la prova finale di laurea in Odontoiatria e Protesi Dentaria il giorno 28/07/2005 riportando punti CENTODUE sopra CENTODIECI (102/110) ed e' stato proclamato Dottore in Odontoiatria e Protesi Dentaria, con il seguente piano di studio:

	Voto	Val
! 10/02/2000 CHIMICA	22/30	1.00
! 25/02/2000 FISICA MEDICA	20/30	1.00
! 19/06/2000 ISTOLOGIA ED EMBRIOLOGIA (COMPRESA CITO	24/30	1.00
! 06/09/2000 BIOLOGIA GENERALE APPL. AGLI STUDI MEDI	22/30	1.00
! 18/04/2001 ISTIT.DI ANATOMIA UM.NORM.E DELL'APP.ST	23/30	1.00
! 24/09/2001 CHIMICA BIOLOGICA	20/30	1.00
! 23/10/2001 FISILOGIA UMANA E DELL'APP.STOMATOGNAT	25/30	1.00
! 31/01/2002 MICROBIOLOGIA	18/30	0.50
! 05/02/2002 PATOLOGIA GENERALE	25/30	1.00
! 03/04/2002 MATERIALI DENTARI	30/30	1.00
! 11/04/2002 IGIENE E ODONTOIATRIA PREV.E SOC.CON EP	27/30	0.50
! 10/07/2002 FARMACOLOGIA	23/30	0.50
! 29/07/2002 TOSSICOLOGIA	25/30	0.50
! 24/09/2002 ANESTESIA GEN. E SPECIALE ODONTOSTOMATO	28/30	1.00
! 28/01/2003 ISTIT. DI ANATOMIA ED ISTOLOGIA PATOLOG	24/30	1.00
! 18/02/2003 MEDICINA INTERNA	18/30	1.00
! 23/06/2003 PATOLOGIA SPEC.LE CHIRURGICA E PROP. CL	26/30	1.00
! 04/07/2003 RADIOLOGIA GEN.E SPEC.ODONTOSTOMATOLOGI	30/30	0.50
! 21/07/2003 DIAGNOSTICA ISTO E CITO-PATOLOGICA	28/30	0.50
! 24/07/2003 PATOLOGIA SPECIALE ODONTOSTOMATOLOGICA	28/30	1.00
! 17/02/2004 ONCOLOGIA	20/30	1.00
! 26/02/2004 FARMACOLOGIA CLINICA	26/30	0.50
! 02/02/2004 CHIRURGIA SPECIALE ODONTOSTOMATOLOGICA	30/30	2.00
! 03/02/2004 CLINICA OTORINOLARINGOIATRICA	30/30 E LODE	1.00
! 22/06/2004 OPTALMOLOGIA	30/30 E LODE	0.50
! 22/06/2004 NEUROLOGIA	27/30	1.00
! 01/07/2004 DERMATOLOGIA E VENEREOLOGIA	30/30	0.50
! 09/09/2004 ODONTOIATRIA CONSERVATRICE	30/30	3.00
! 31/01/2005 MED.LEGALE E D.ASSIC.E DEONTOL.IN ODONT	18/30	0.50
! 02/02/2005 CHIRURGIA MAXILLO-FACCIALE	30/30 E LODE	1.00
! 14/02/2005 ORTOGNATODONZIA E GNATOLOGIA (FUNZ.MAST	27/30	2.00
! 15/02/2005 PROTESI DENTARIA	26/30	3.00
! 03/03/2005 PSICHIATRIA	28/30	0.50
! 21/05/2005 PEDODONZIA	30/30 E LODE	0.50
! 20/06/2005 PEDIATRIA	30/30	0.50
! 21/06/2005 CLINICA ODONTOSTOMATOLOGICA	29/30	2.00
! 21/06/2005 PARODONTOLOGIA	25/30	2.00

Il valore si intende espresso in annualita'.

La durata legale del suddetto corso e' di cinque anni.

SEGUE A PAG. 2



UNIVERSITÀ DEGLI STUDI DI PADOVA

PAG. 2 DEL CERTIFICATO N. 2005665192

Si rilascia in esenzione dall'imposta di bollo ai sensi del D.P.R. 26.10.72 n. 642 e 30.12.82 n. 955 (tabella B).

Il presente certificato viene rilasciato a norma dell'art.3 comma 2 del D.L.vo 12.02.1993 n.39.

Padova, li 19/01/2006

IL CAPO SERVIZIO
VITTORIO MOLENA



UNIVERSITÀ DEGLI STUDI DI PADOVA

CES37

SERVIZIO FORMAZIONE POST-LAUREAM

Cert. 2005024417

Matr. 439850-OP

Si certifica che il Dott. ALBERTI CHRISTIAN , nato a BASSANO DEL GRAPPA (VICENZA) il giorno 15/09/1979 , laureato in ODONTOIATRIA E PROTESI DENTARIA presso l'UNIVERSITA' DI PADOVA ha sostenuto in questa sede l'Esame di Stato per l'abilitazione all'esercizio della professione di ODONTOIATRA nella seconda sessione dell'anno 2005 con esito POSITIVO .

Si rilascia in esenzione dall'imposta di bollo ai sensi del D.P.R. 26.10.72 n.642 e 30.12.82 n.955 (tabella B).

Il presente certificato viene rilasciato a norma dell'art.3 comma 2 del D.L.vo 12.02.1993 n.39.

Padova, li 19/12/2005

IL CAPO SERVIZIO
DOTT.SSA MARIA ZANATO



UNIVERSITÀ DEGLI STUDI DI PADOVA

CES38

SERVIZIO FORMAZIONE POST-LAUREAM

Cert. 2005024563

Matr. 439850-OP

Si certifica che il Dott. ALBERTI CHRISTIAN , nato a BASSANO DEL GRAPPA (VICENZA) il giorno 15/09/1979 , laureato in ODONTOIATRIA E PROTESI DENTARIA presso l'UNIVERSITA' DI PADOVA ha sostenuto in questa sede l'Esame di Stato per l'abilitazione all'esercizio della professione di ODONTOIATRA nella seconda sessione dell'anno 2005 con esito POSITIVO (54/60) .

Si rilascia in esenzione dall'imposta di bollo ai sensi del D.P.R. 26.10.72 n.642 e 30.12.82 n.955 (tabella B).

Il presente certificato viene rilasciato a norma dell'art.3 comma 2 del D.L.vo 12.02.1993 n.39.

Padova, li 19/12/2005

IL CAPO SERVIZIO
DOTT.SSA MARIA ZANATO

**AZIENDA
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● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

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Sede:
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(Vicenza)Tel. (0424) 888 111
Fax (0424) 885 223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
050 - 103

Vs. rif. del

Oggetto: Frequenza presso il presidio ospedaliero di Bassano del Grappa.

Egr. Sig.
ALBERTI CHRISTIAN
Via Concordia, 13
36027 ROSA' (VI)

e, p. c.:

AL DIRETTORE SANITARIO
AL DIRETTORE MEDICO DEI PRESIDI OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL DIRETTORE DELLA STRUTTURA COMPLESSA DI ODONTOIATRIA E
CHIRURGIA MAXILLO FACCIALE

LORO SEDI

Si comunica che con atto deliberativo esecutivo n. 754 del 30.5.2001 la S.V. è stata autorizzata a frequentare la struttura complessa di odontoiatria e chirurgia maxillo facciale del presidio ospedaliero di Bassano del Grappa per un periodo di sei mesi a decorrere dal 4.6.2001.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica dell'Ospedale.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.

IL DIRETTORE GENERALE
(ing. Ermanno Angonese)LO/al
frequenza

**AZIENDA
SANITARIA**

● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

**ULSS 3**Sede:
Via Carducci, 2
36061 BASSANO DEL GRAPPA
(Vicenza)SERVIZIO PER
IL PERSONALE

L. 23 GEN. 2002 prot. n. 4425 / 8.5.6.

Tel. (0424) 888 111
Fax (0424) 885 223

Vs. rif. del

Cod. Fisc. e Part. I.V.A.
00913430245

Oggetto: Frequenza.

Conto Corrente Postale
12966362Codice S.I.S.
050 - 103Egr. Sig.
ALBERTI CHRISTIAN
Via Concordia, 13
36027 ROSA' (VI)

e, p.c.:

AL DIRETTORE SANITARIO
AL DIRETTORE MEDICO DEI PRESIDI OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL DIRETTORE DELLA S.C. DI ODONTOIATRIA E CH. MAXILLO FACCIALE

LORO SEDI

Si comunica che con atto deliberativo esecutivo n. 1548 del 14.11.2001 la S.V. è stata autorizzata a frequentare la struttura complessa di odontoiatria e chirurgia maxillo facciale del presidio ospedaliero di Bassano del Grappa per un periodo di 12 mesi a partire dal 15.11.2001.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica dell'Ospedale.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.

IL DIRETTORE GENERALE
(ing. Ermanno Angonese)LO/al
frequenz

**AZIENDA
SANITARIA**

UNITÀ LOCALE SOCIO-SANITARIA N° 3

REGIONE DEL VENETO

**ULSS 3**

SERVIZIO PER IL PERSONALE

☎ 0424/885312 – fax 0424/885298

Sede:
Via Carducci, 2
36061 BASSANO DEL GRAPPA
(Vicenza)Tel. (0424) 888 111
Fax (0424) 885 223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
050 - 103

13 MAR. 2003

13357

prot.

Vs. rif. del

Oggetto: Frequenza.

Egr. Sig.
ALBERTI CHRISTIAN
Via Concordia, 13
36027 ROSA

e, p.c.:

AL DIRETTORE SANITARIO
AL DIRETTORE MEDICO DEI PRESIDII OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL DIRETTORE DELLA S.C DI ODONTOIATRIA E CHIRURGIA MAXILLO
FACCIALE
AL SERVIZIO PER IL PERSONALELORO SEDI

Si comunica che con atto deliberativo esecutivo n. 1256 del 23/10/2002 la S.V. è stata autorizzata a frequentare la Struttura Complessa di Chirurgia Maxillo-Facciale del Presidio Ospedaliero di Bassano del Grappa, per un periodo di 12 mesi a partire dal 14.11.2002.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Sanitaria.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.

L.O/mz
frequenza*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Lorenzo Onorati)*

**AZIENDA
SANITARIA**

UNITÀ LOCALE SOCIO-SANITARIA N° 3

REGIONE DEL VENETO

**ULSS-3**

Sede: SERVIZIO PER IL PERSONALE
Via Carducci, 2 ☎ 0424 - 885312 Fax 0424 - 885298
36061 BASSANO DEL GRAPPA
(Vicenza)

7 DIC. 2003 prot. 60012 /

Tel. (0424) 888 111
Fax (0424) 885 223

Vs. rif. del

Cod. Fisc. e Part. I.V.A.
00913430245

Oggetto: **Frequenza.**

Conto Corrente Postale
12966362

Codice S.I.S.
050 - 103

Egr. Sig.
ALBERTI CHRISTIAN
Via Concordia, 13
36027 ROSA'



e, p. c.:

AL DIRETTORE MEDICO DEI PRESIDI OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA
AL DIRETTORE DELLA S.C. DI ODONTOIATRIA E CHIRURGIA MAXILLO
FACCIALE DEL P.O. DI BASSANO DEL GRAPPA

LORO SEDI

Si comunica che con atto deliberativo esecutivo n. 1161 del 12.11.2003 la S.V. è stata autorizzata a frequentare la Struttura Complessa di Odontoiatria e Chirurgia Maxillo Facciale del presidio ospedaliero di Bassano del Grappa, per un periodo di mesi dodici a partire dal 15.11.2003.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.



*Il Dirigente Responsabile
del Servizio per il Personale
(p.a. Piergiovanni Rigoni)*

PGR/es

Resp. procedimento p.a. Piergiovanni Rigoni
FAX 0424 - 885298 - TEL. 0424 - 885312
C:\Documenti\Lettere\frequenze\P.O.doc

**AZIENDA
SANITARIA**

● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

**ULSS 3**Sede:
Via Carducci, 2
36061 BASSANO DEL GRAPPA
(Vicenza)SERVIZIO PER IL PERSONALE
☎ 0424 - 885312 Fax 0424 - 885298Tel. 0424 888 111
Fax 0424 885 223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
05 - 103

Vs. rif. del

Oggetto: **Frequenza.**

prot.

**Azienda ULSS 3
Prot. N°.. 0053245/04
Data.....26/11/2004**Egr. Sig.
Cristian ALBERTI
Via Concordia, 13
36027 ROSA'

e, p. c.:

AL DIRETTORE MEDICO DEI PRESIDII OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA
AL DIRETTORE DELLA S.C. DI ODONTOIATRIA E CHIRURGIA MAXILLO
FACCIALE DEL P.O. DI BASSANO DEL GRAPPA
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo 10/11/2004, n.1305, la S.V. è stata autorizzata a rinnovare la frequenza presso la Struttura Complessa di Odontoiatria e Chirurgia Maxillo facciale del presidio ospedaliero di Bassano del Grappa, per un periodo di dodici mesi a partire dal 14/11/2004.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Luigi Antoniol)*

L.A/es

Resp. procedimento: dott. Luigi Antoniol
FAX 0424 - 885298 - TEL. 0424 - 885312
P.O.maxillo.docASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
ENEGO
FOZA
GALLIO
LUSIANA
MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
NOVE
PIANEZZE
POVE DEL GRAPPA
ROANA
ROMANO D'EZELINO
ROSÀ
ROSSANO VENETO
ROTZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALTAGHNA

**AZIENDA
SANITARIA**

UNITÀ LOCALE SOCIO-SANITARIA N° 3

REGIONE DEL VENETO

**ULSS3**Sede:
Via Carducci, 2
36061 BASSANO DEL GRAPPA
(Vicenza)SERVIZIO PER IL PERSONALE
☎ 0424 - 885312 Fax 0424 - 885298
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Azienda ULSS 3
PROTOCOLLO GENERALE

n. 0057651/05 del 09/12/2005

USCITA

Tel. 0424 888111
Fax 0424 885223

Vs. rif. del

Cod. Fisc. e Part. I.V.A.
00913430245Oggetto: **Frequenza.**Conto Corrente Postale
12966362Codice S.I.S.
05 - 103Egr. Sig.
Cristian ALBERTI
Via Concordia, 13
36027 ROSA' (VI)

e, p. c.:

AL DIRETTORE MEDICO DEI PRESIDII OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA
AL DIRETTORE DELLA S.C. DI CHIRURGIA MAXILLO-FACCIALE
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo 23 novembre 2005, n. 1339, la S.V. è stata autorizzata a frequentare la Struttura Complessa di Chirurgia Maxillo-Facciale del presidio ospedaliero di Bassano del Grappa, per un periodo di dodici mesi a partire dal 01/12/2005.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Luigi Antoniol)*

Resp. procedimento: dott. Luigi Antoniol

Resp. Pratica: dott.ssa Cinzia Oliviero

FAX 0424 - 885298 - TEL. 0424 - 885324

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CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
ENEGO
FOZA
GALLIO
LUSIANA
MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
NOVE
PIANEZZE
POVE DEL GRAPPA
ROANA
ROMANO D'EZELINO
ROSA
ROSSANO VENETO
ROTZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALSTAGNA

**AZIENDA
SANITARIA**

● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

**ULSS 3**Sede:
Via Carducci, 2
36061 BASSANO DEL GRAPPA
(Vicenza)SERVIZIO PER IL PERSONALE
☒ 0424 - 885312 Fax 0424 - 885298Azienda ULSS 3
PROTOCOLLO GENERALE
prot. n. 0059423/06 del 22/12/2006
USCITATel. 0424 888111
Fax 0424 885223

Vs. rif. del

Cod. Fisc. e Part. I.V.A.
00913430245Oggetto: **Frequenza.**Conto Corrente Postale
12966362Codice S.I.S.
05 - 103Egr. Sig.
Cristian ALBERTI
Via Concordia, 13
36027 ROSA' (VI)

e, p. c.:

AL DIRETTORE MEDICO DEI PRESIDII OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL DIRETTORE DELLA S.C. DI CHIRURGIA MAXILLO-FACCIALE
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE
LORO SEDI

Si comunica che con atto deliberativo 06 dicembre 2006, n. 1221, la S.V. è stata autorizzata a frequentare la Struttura Complessa di Chirurgia Maxillo-Facciale del presidio ospedaliero di Bassano del Grappa, per un periodo di dodici mesi a partire dal 07 dicembre 2006.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si informa, infine, che nel rispetto delle disposizioni di legge il Servizio di Prevenzione e Protezione organizza "Corsi di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale "in frequenza"" la cui partecipazione è obbligatoria. Si invita, pertanto, la S.V. a prendere contatto con il competente Servizio per la definizione delle date dei corsi (Segr. Servizio di Prevenzione e Protezione tel. 0424-889464/5).

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Luigi Antonioli)*Resp. procedimento: dott. Luigi Antonioli
Resp. Pratica: dott.ssa Cinzia Oliviero
FAX 0424 - 885298 - TEL. 0424 - 885324
C:\Documents and Settings\cinzia.oliviero\Documents\UFFICIO DEL PERSONALE\LETTERE FREQUENZA
VOLONTARIE\P.O.dip.chirurgia ALBERTI 2.docASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
ENEGO
FOZA
GALLIO
LUSIANA
MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
NOVE
PIANEZZE
POVE DEL GRAPPA
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ROMANO D'EZZELINO
ROSA
ROSSANO VENETO
ROTZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALTAGNA

**AZIENDA
SANITARIA**

● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

**ULSS 3**

SERVIZIO PER IL PERSONALE

☒ 0424 - 885312 Fax 0424 - 885298

Sede:
Via dei Lotti, 40
36061 BASSANO DEL GRAPPA
(Vicenza)Tel. 0424 888111
Fax 0424 885223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
05 - 103

Vs. rif. _____ del _____

Oggetto: Frequenza.

Azienda ULSS 3
PROTOCOLLO GENERALE

n. 0000679/08 del 04/01/2008

prot.

USCITA

Egr. Sig.
Christian ALBERTI
Via Concordia, 13
36027 ROSA'

e, p. c.:

AL DIRETTORE MEDICO DEI PRESIDI OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL RESPONSABILE DELLA S.S. CHIRURGIA MAXILLO FACCIALE
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE
LORO SEDI

Si comunica che con atto deliberativo 27 dicembre 2007, n.1165, la S.V. è stata autorizzata a frequentare la Struttura Semplice di Chirurgia Maxillo Facciale del Presidio Ospedaliero di Bassano del Grappa, per un periodo di dodici mesi a partire dal 27 dicembre 2007.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni e le malattie che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa alla competente Direzione Medica.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si informa, infine, che nel rispetto delle disposizioni di legge il Servizio di Prevenzione e Protezione organizza "Corsi di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale in frequenza" la cui partecipazione è obbligatoria. Si invita, pertanto, la S.V. a prendere contatto con il competente Servizio per la definizione delle date dei corsi (Segr. Servizio di Prevenzione e Protezione tel. 0424-889464/5).

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Urbano Brazzale)*Resp. procedimento: dott. Urbano Brazzale
FAX 0424 - 885298 - TEL. 0424 - 885324
P O dip chirurgia specASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
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MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
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POVE DEL GRAPPA
ROANA
ROMANO D'EZZELINO
ROSA
ROSSANO VENETO
ROZZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALSTAGNA

**AZIENDA
SANITARIA**

• UNITÀ LOCALE SOCIO-SANITARIA N° 3 •

• REGIONE DEL VENETO •

**ULSS3**

Sede:
Via Concordia, 13
36061 BASSANO DEL GRAPPA
(Vicenza)
Via dei Lotti, 40
Tel. 0424 888111
Fax 0424 885223

Cod. Fisc. e Part. I.V.A.
00913430245

Conto Corrente Postale
12966362

Codice S.I.S.
05 - 103

SERVIZIO PER IL PERSONALE
☎ 0424 - 885312 Fax 0424 - 885298

Vs. rif. _____ del _____

Oggetto: **Frequenza.**

Azienda ULSS 3
PROTOCOLLO GENERALE

n. 0001622/09 del 13/01/2009

USCITA



Egr. dr.
Christian Alberti
Via Concordia, 13
36027 ROSA' (VI)



e, p. c.:

AL DIRETTORE MEDICO DELL'OSPEDALE AZIENDALE
AL DIRETTORE MEDICO DEI PRESIDII OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL DIRETTORE DELLA S.S. CHIRURGIA MAXILLO FACCIALE
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo 17 dicembre 2008, n. 1013, la S.V. è stata autorizzata a frequentare la S.S. Chirurgia Maxillo Facciale del P.O. di Bassano per un ulteriore periodo di 12 mesi a partire dal 27 dicembre 2008.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni e le malattie che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa al Servizio per il Personale.

Si invita la S.V., al fine di documentare la frequenza stessa, a firmare giornalmente l'apposito modulo con l'orario di entrata e di uscita, a disposizione presso la segreteria del servizio da Lei frequentato.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si informa, infine, che nel rispetto delle disposizioni di legge il Servizio di Prevenzione e Protezione organizza "Corsi di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale in frequenza" la cui partecipazione è obbligatoria. Si invita, pertanto, la S.V. a prendere contatto con il competente Servizio per la definizione delle date dei corsi (Segr. Servizio di Prevenzione e Protezione tel. 0424-889464/5).

Distinti saluti.



*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Giovanni Bisinella)*

Resp. procedimento: dott. Giovanni Bisinella
Resp. pratica: dott. sss Cristina Oliviero
FAX 0424 - 885298 - TEL. 0424 - 885324

ASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
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MAROSTICA
MASON VICENTINO
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ROMANO D'EZZELINO
ROSA
ROSSANO VENETO
ROTZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALSTAGNA

**AZIENDA
SANITARIA**

● UNITÀ LOCALE SOCIO-SANITARIA N° 3 ●

● REGIONE DEL VENETO ●

**ULSS 3**

SERVIZIO PER IL PERSONALE

☒ 0424 - 885312 Fax 0424 - 885298

Azienda ULSS 3
PROTOCOLLO GENERALE

n. 0003715/09 del 26/01/2009

prot. USCITA

Sede:
36061 BASSANO DEL GRAPPA
(Vicenza)
Via dei Lotti, 40
Tel. 0424 888111
Fax 0424 885223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
05 - 103

Vs. rif. del

Oggetto: Frequenza.

Egr. dr.
Christian Alberti
Via Concordia, 13
36027 ROSA' (VI)

e, p. c.:

AL DIRETTORE MEDICO DELL'OSPEDALE AZIENDALE
AL DIRETTORE MEDICO DEI PRESIDI OSPEDALIERI
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL RESPONSABILE DELLA S.S. CHIRURGIA MAXILLO FACCIALE
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo 17 dicembre 2008, n. 1013, la S.V. è stata autorizzata a frequentare la S.S. Chirurgia Maxillo Facciale del P.O. di Bassano per un ulteriore periodo di 12 mesi a partire dal 27 dicembre 2008.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Tuttavia la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni e le malattie che la S.V. dovrà provvedere a proprie spese ed esibire all'inizio della frequenza stessa al Servizio per il Personale.

Si invita la S.V., al fine di documentare la frequenza stessa, a firmare giornalmente l'apposito modulo con l'orario di entrata e di uscita, a disposizione presso la segreteria del servizio da Lei frequentato.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si informa, infine, che nel rispetto delle disposizioni di legge il Servizio di Prevenzione e Protezione organizza "Corsi di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale in frequenza" la cui partecipazione è obbligatoria. Si invita, pertanto, la S.V. a prendere contatto con il competente Servizio per la definizione delle date dei corsi (Segr. Servizio di Prevenzione e Protezione tel. 0424-889464/5).

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott. Giovanni Bisinella)*Resp. procedimento: dott. Giovanni Bisinella
Resp. pratica: dott. ssa Cinzia Oliviero
FAX 0424 - 885298 - TEL. 0424 - 885324ASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
CONCO
ENEGO
FOZA
GALLIO
LUSIANA
MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
NOVE
PIANEZZE
POVE DEL GRAPPA
ROANA
ROMANO D'EZZELINO
ROSA
ROSSANO VENETO
ROZZO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENTA
VALSTAGNA

**AZIENDA
SANITARIA**

• UNITÀ LOCALE SOCIO-SANITARIA N° 3 •

• REGIONE DEL VENETO •

**ULSS 3****Azienda ULSS 3**
PROTOCOLLO GENERALE

n. 0030334/11 del 25/05/2011

USCITA

Sede:
Via dei Lotti, 40
36061 BASSANO DEL GRAPPA
(Vicenza)Tel. (0424) 888 111
Fax (0424) 885 223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
050 - 103SERVIZIO PER IL PERSONALE
■ 0424 - 895312 Fax 0424 - 895298
IX.5.1.

Vs. rif. _____ del _____

Oggetto:

Frequenza.**Dr. Christian Alberti**
Via Concordia
36027 Rosà VI

e, p. c.
AL DIRETTORE MEDICO DELL'OSPEDALE AZIENDALE
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL RESPONSABILE S.S.D. CHIRURGIA MAXILLO-FACCIALE
AL DIRIGENTE RESPONSABILE DEL SERVIZIO PER GLI APPROVVIGIONAMENTI
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo 27.04.2011, n. 358, la S.V. è stata autorizzata a frequentare la S.S.D. di Chirurgia Maxillo-Facciale per un periodo di dodici mesi a partire dal 1° maggio 2011.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Ricordiamo che la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni e le malattie che la S.V. ha esibito al Servizio per il Personale.

Si invita la S.V., al fine di documentare la frequenza, a firmare giornalmente l'apposito modulo con l'orario di entrata e di uscita, a disposizione presso le segreterie dei servizi da Lei frequentati.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si prende atto, infine, che la S.V. ha frequentato, come da autocertificazione ricevuta con prot. 22592 del 15.04.2011, il corso di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale in frequenza che, nel rispetto delle disposizioni di legge, è organizzato dal Servizio di Prevenzione e Protezione.

Distinti saluti.



Servizio per il Personale
Il Dirigente Amm.vo
(dott.ssa Chiara Prevedello)

Resp. procedimento: dott.ssa Chiara Prevedello
Ref. Ogg.: dott.ssa Eva Farromito
FAX 0424 - 895298 - TEL. 0424 - 895334

ASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENDA
CARTIGLIANO
CASSOLA
CISON DI GRAPPA
CONCO
ENEGO
FOZA
GALLIO
LUSIANA
MAROSTICA
MASON VICENTINO
MOLVENA
MUSSOLENTE
NOVE
PIANEZZE
POVE DEL GRAPPA
ROANA
ROMANO D'EZZELINO
ROSA
ROSSANO VENETO
ROTO
SAN NAZARIO
SCHIAVON
SOLAGNA
TEZZE SUL BRENDA
VALSTAGNA

**AZIENDA
SANITARIA**

• UNITÀ LOCALE SOCIO-SANITARIA N° 3 •

• REGIONE DEL VENETO •

**ULSS 3**Sede:
36061 BASSANO DEL GRAPPA
(Vicenza)
Via dei Lotti, 40Tel. 0424 888 111
Fax 0424 885 223Cod. Fisc. e Part. I.V.A.
00913430245Conto Corrente Postale
12966362Codice S.I.S.
050 - 103SERVIZIO PER IL PERSONALE
■ 0424 - 885312 Fax 0424 - 885298
IX.S.1.**Azienda ULSS 3**
PROTOCOLLO GENERALE - uscitali n.0007932/12 del 16/02/2012 /
(DA CITARE NELLA RISPOSTA)

Vs. rif. del

Oggetto: **Frequenza.**Egr. dr.
Christian Alberti
Via Concordia, 13
36027 Rosà (VI)

e, p. c.

AL DIRETTORE MEDICO DELL'OSPEDALE AZIENDALE
AL DIRETTORE DEL DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
AL RESPONSABILE S.S.D. CHIRURGIA MAXILLO-FACCIALE
AL DIRIGENTE RESPONSABILE DEL SERVIZIO PER GLI APPROVVIGIONAMENTI
AL RESPONSABILE DEL SERVIZIO DI PREVENZIONE E PROTEZIONE

LORO SEDI

Si comunica che con atto deliberativo n. 22 del 25 gennaio 2012 la S.V. è stata autorizzata a frequentare la S.S.D. di Chirurgia Maxillo-Facciale per un periodo di sei mesi a partire dal 26 gennaio 2012.

Come da Sua dichiarazione nessuna responsabilità potrà ricadere su questa Azienda Sanitaria a seguito della frequenza in argomento.

Ricordiamo che la frequenza medesima è subordinata alla stipulazione di idonea polizza assicurativa contro gli infortuni e le malattie che la S.V. ha esibito al Servizio per il Personale.

Si invita la S.V., al fine di documentare la frequenza, a firmare giornalmente l'apposito modulo con l'orario di entrata e di uscita, a disposizione presso le segreterie dei servizi da Lei frequentati.

Si precisa inoltre che non viene instaurato alcun rapporto di impiego, né Lei avrà diritto ad alcun rimborso.

Si prende atto, infine, che la S.V. ha frequentato, come da autocertificazione ricevuta con prot. 1316 del 10 gennaio 2012, il corso di Informazione sui rischi specifici, sorveglianza sanitaria, fisica a personale in frequenza che, nel rispetto delle disposizioni di legge, è organizzato dal Servizio di Prevenzione e Protezione.

Distinti saluti.

*Il Dirigente Responsabile
del Servizio per il Personale
(dott.ssa Chiara Prevedello)*

Resp. procedimento: dott.ssa Chiara Prevedello
Ref. Ogg.: dott.ssa Eva Farronato
FAX 0424 - 885298 - TEL. 0424 - 885334ASIAGO
BASSANO DEL GRAPPA
CAMPOLONGO SUL BRENTA
CARTIGLIANO
CASSOLA
CISON DEL GRAPPA
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ROTZO
SAN NAZARIO
SCHIAVON
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TEZZE SUL BRENTA
VALSTAGNA

**AZIENDA
SANITARIA**

• UNITÀ LOCALE SOCIO-SANITARIA N° 3 •

• REGIONE DEL VENETO •



ULSS

OSPEDALE SAN BASSIANO
Via dei Lotti, 40 - tel. 0424 888111
36061 Bassano del Grappa (VI)

**Struttura Semplice Dipartimentale di
CHIRURGIA MAXILLO-FACCIALE E ODONTOIATRIA**
Responsabile: **Dr. Breda Guglielmo**

Reparto degenza: tel. 0424 888494 - fax 888759
Segreteria Ambulatorio: tel. 0424 888758

Bassano del Grappa, 08.02.2011

Si certifica che il **Dr. Christian Alberti** ha frequentato la Struttura Complessa di Odontostomatologia e Chirurgia Maxillo-Facciale dal 04-06-2001 al 31-07-2009 in qualità di VOLONTARIO per un totale di 14257 ore.

Il Direttore del
Dipartimento di Chirurgia Specialistica
Dr. Guglielmo Breda



Azienda Ospedaliera ULSS n° 7 Pedemontana
Dipartimento di Chirurgia Specialistica
Unità Operativa Semplice Dipartimentale
di Odontoiatria e Chirurgia Maxillo-Facciale
Responsabile: Dr. Michele Garofolin
 Segreteria ambulatoriale: tel. 0424/888758 fax.0424/ 888759
 Degenze: tel. 0424/888496
 Segreteria Day Surgery: tel. 0424/888496
 Degenza Day Surgery: tel. 0424/888566
 E-mail: maxillo@aulss7.veneto.it

Bassano del Grappa, Febbraio 2022

Si certifica che il **Dr. CHRISTIAN ALBERTI** ha frequentato la U.O.S.D. di Odontoiatria e Chirurgia Maxillo-Facciale della ULSS 7 Pedemontana dal mese di Settembre 2020 a Febbraio 2022 per un totale di **612,5** ore.

Il Direttore della U.O.S.D. di
 Odontoiatria e Chirurgia Maxillo-Facciale
 Dr. Michele Garofolin



Regione del Veneto - Azienda ULSS n.7
 Presidio Ospedaliero Spoke Bassano
 U.O.S.D. Chirurgia Maxillo-Facciale
 Responsabile dr. Michele Garofolin
 cod. PD 003650 CH



Azienda Ospedaliera ULSS n° 7 Pedemontana
Dipartimento di Chirurgia Specialistica
Unità Operativa Semplice Dipartimentale
di Odontoiatria e Chirurgia Maxillo-Facciale
Responsabile: Dr. Michele Garofolin
 Segreteria ambulatoriale: tel. 0424/888758 fax.0424/ 888759
 Degenze: tel. 0424/888496
 Segreteria Day Surgery: tel. 0424/888496
 Degenza Day Surgery: tel. 0424/888566
 E-mail: maxillo@aulss7.veneto.it

Bassano del Grappa, Febbraio 2022

Si certifica che il **Dr. CHRISTIAN ALBERTI** ha eseguito presso la U.O.S.D. di Odontoiatria e Chirurgia Maxillo-Facciale della ULSS 7 Pedemontana dal mese di Settembre 2020 a Febbraio 2022 un totale di **415** interventi.

Il Direttore della U.O.S.D. di
 Odontoiatria e Chirurgia Maxillo-Facciale
 Dr. Michele Garofolin



Regione del Veneto Azienda ULSS n.7
 Presidio Ospedaliero Spoke Bassano
 U.O.S.D. Chirurgia Maxillo Facciale
 Responsabile dr. Michele Garofolin
 cod. RD 005550 CH

Università degli Studi di TORINO**SCIENZE CHIRURGICHE
CHIRURGIA ORTOGNATICA E DELLE MALFORMAZIONI
CRANIO-FACCIALI****Piano degli studi dello studente:
MATRICOLA: 879170 - ALBERTI CHRISTIAN****ORDINAMENTO: 2016/2017
PERCORSO: GENERICO
SCHEMA DI PIANO: GEN - GENERICO
STATO DEL PIANO: APPROVATO
DATA VARIAZIONE: 08/03/2018
ANNO REGOLE: 2017/2018
ANNO OFFERTA: 2017/2018****ATTIVITÀ DIDATTICHE DEL 1° ANNO**

COD	DESCRIZIONE	CFU	STATO	DATA SUP	VOTO
MAS3352	PROVA FINALE	3	SUP.	28/02/2019	IDO
MAS3530	MALFORMAZIONI CRANIO-FACCIALI IN ETA' PEDIATRICA	1	SUP.	25/01/2019	30
MAS3531	CHIRURGIA CORRETTIVA	1	SUP.	28/01/2019	30
MAS3526	TECNICHE CHIRURGICHE	7	SUP.	16/01/2019	30
MAS3522	ANATOMIA TOPOGRAFICA E RADIOLOGIA	2	SUP.	07/01/2019	30
MAS3523	DIAGNOSI DELLE DEFORMITA' CRANIO-MAXILLO-FACCIALI	5	SUP.	09/01/2019	30
MAS3524	ORTODONZIA	7	SUP.	11/01/2019	30
MAS3525	ANESTESIA E GESTIONE PERIOPERATORIA	1	SUP.	14/01/2019	30
MAS3629	TIROCINIO	30	SUP.	28/01/2019	30
MAS3527	CHIRURGIA ESTETICA MAXILLO-FACCIALE E PROCEDURE ANCILLARI	1	SUP.	18/01/2019	30

MAS3528	GESTIONE E TRATTAMENTO DELLE COMPLICANZE	1	SUP.	21/01/2019	30
MAS3529	ANALISI FUNZIONALE DEL PAZIENTE DISMORFICO	1	SUP.	23/01/2019	30
Totale CFU		60			
Totale CFU del piano di studi		60			

MATRICOLA 879170

Codice PA: 31-0001121683-0001892494

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONI

(DPR 28 DICEMBRE 2000, N. 445, ARTT.46 E SEG.)

IL SOTTOSCRITTO ALBERTI CHRISTIAN NATO IL 15/09/1979 A BASSANO DEL GRAPPA, VICENZA

CONSAPEVOLE CHE CHIUNQUE RILASCIA DICHIARAZIONI MENDACI È PUNITO AI SENSI DEL CODICE PENALE E DELLE LEGGI SPECIALI IN MATERIA, AI SENSI E PER GLI EFFETTI DELL'ART. 75 E 76 DPR 445/2000

DICHIARA

DI AVER CONSEGUITO IL MASTER DI SECONDO LIVELLO IN CHIRURGIA ORTOGNATICA E DELLE MALFORMAZIONI CRANIO-FACCIALIDM509, DELL'UNIVERSITÀ DEGLI STUDI DI TORINO IN DATA 28/02/2019 CON VOTO CENTODIECI SU CENTODIECI (110/110) E LODE

DICHIARA INOLTRE

CHE SI E' IMMATRICOLATO IN DATA 21/02/2018 NELL'ANNO ACCADEMICO 2017/2018

CHE LA DURATA NORMALE DEL SUDETTO CORSO DI STUDI E' DI 1 ANNO

DICHIARA ALTRESI'

DI AVER SUPERATO I SEGUENTI ESAMI :

Descrizione e Settore Scientifico Disciplinare (SSD)	TAF	CFU	Data	Voto	Anno	Conv
ANATOMIA TOPOGRAFICA E RADIOLOGIA SSD: BIO/16 SSD: MED/36		2 1 1	07/01/2019	30/30	1	
DIAGNOSI DELLE DEFORMITA' CRANIO-MAXILLO-FACCIALI SSD: MED/29 SSD: MED/29 SSD: MED/28 SSD: MED/28		5 1 2 1 1	09/01/2019	30/30	1	
ORTODONZIA SSD: MED/28		7 7	11/01/2019	30/30	1	
ANESTESIA E GESTIONE PERIOPERATORIA SSD: MED/16		1 1	14/01/2019	30/30	1	
TECNICHE CHIRURGICHE SSD: MED/29		7 7	16/01/2019	30/30	1	
CHIRURGIA ESTETICA MAXILLO-FACCIALE E		1	18/01/2019	30/30	1	

Descrizione e Settore Scientifico Disciplinare (SSD)	TAF	CFU	Data	Voto	Anno	Conv
PROCEDURE ANCILLARI SSD: MED/19		1				
GESTIONE E TRATTAMENTO DELLE COMPLICANZE SSD: MED/28		1 1	21/01/2019	30/30	1	
ANALISI FUNZIONALE DEL PAZIENTE DISMORFICO SSD: MED/28		1 1	23/01/2019	30/30	1	
MALFORMAZIONI CRANIO-FACCIALI IN ETA' PEDIATRICA SSD: MED/19		1 1	25/01/2019	30/30	1	
CHIRURGIA CORRETTIVA SSD: MED/29		1 1	28/01/2019	30/30	1	
TIROCINIO		30	28/01/2019	30/30	1	
PROVA FINALE SSD: PROFIN_S		3 3	28/02/2019	Idoneo	1	
Totale CFU:		60.00				

Legenda: RF Riconosciuta Frequenza
RA Riconosciuta Attività
CF Convalidata Frequenza
CA Convalidata Attività

TORINO, li 21/03/2019

CONSAPEVOLE CHE CHIUNQUE RILASCI A DICHIARAZIONI MENDACI È PUNITO AI SENSI DEL CODICE PENALE E DELLE LEGGI SPECIALI IN MATERIA, AI SENSI E PER GLI EFFETTI DELL'ART. 75 E 76 DPR 445/2000

Luogo e data _____

DICHIARO, ALTRESI', DI ESSERE INFORMATO, AI SENSI E PER GLI EFFETTI DI CUI ALL'ART. 13 DEL D.LGS. 196/2003 CHE I DATI PERSONALI RACCOLTI SARANNO TRATTATI, ANCHE CON STRUMENTI INFORMATICI, ESCLUSIVAMENTE NELL'AMBITO DEL PROCEDIMENTO PER IL QUALE LA PRESENTE DICHIARAZIONE VIENE RESA.

Firma del dichiarante (per esteso e leggibile)

Esente da imposta di bollo ai sensi dell'art. 37 DPR 445/2000



UNIVERSITÀ
di VERONA

MATRICOLA VR441552

N. CERTIF. DOC1218932 /ISCR_ES_SP

Si attesta che **ALBERTI CHRISTIAN**,
nato a Bassano del Grappa (VI) il 15 Settembre 1979,
immatricolato al primo anno di corso nell'anno accademico 2017/2018,
è iscritto al **secondo anno, regolare**,
della **SCUOLA DI SPECIALIZZAZIONE DI AREA SANITARIA IN CHIRURGIA ORALE**
CLASSE SAS-5513 - Classe delle specializzazioni in odontoiatria del Decreto Interministeriale 4
febbraio 2015 n. 68
per l'anno accademico 2018/2019.

Si certifica inoltre che la corsista ha sostenuto i seguenti esami ai fini del conseguimento della specializzazione

TIPO	DATA	ESAME	S.S.D.	CFU	VOTO
	14/02/2020	ESAME DI PROFITTO TEORICO-PRATICO 1			50/50
		ORGANIZZAZIONE AZIENDALE	SECS-P/10	1	
		FARMACOLOGIA	BIO/14	1	
		ANATOMIA UMANA	BIO/16	1	
		DIAGNOSTICA PER IMMAGINI E RADIOTERAPIA 1 (TRONCO COMUNE)	MED/36	1	
		ANESTESIOLOGIA 1	MED/41	1	
		CHIRURGIA MAXILLO-FACCIALE 1 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	5	
		MALATTIE ODONTOSTOMATOLOGICHE 1	MED/28	40	
		MALATTIE ODONTOSTOMATOLGICHE 1 (TRONCO COMUNE)	MED/28	8	
		CHIRURGIA MAXILLO-FACCIALE 1 (TRONCO COMUNE)	MED/29	1	
		SEMINARI E CONVEGNI 1	-	1	
TOTALE CFU ACQUISITI				60.00	

LEGENDA:

C: CONVALIDATO

S.S.D.: SETTORE SCIENTIFICO DISCIPLINARE

CFU: Crediti formativi universitari

La durata normale del suddetto corso è di tre anni.

Si rilascia in carta libera per gli usi consentiti dalla tab. all. B) del D.P.R. 642/72 del 26.10.1972 e successive modificazioni. Ai sensi dell'art. 15, comma 1 della legge 12 novembre 2011, n. 183 il presente certificato non può essere prodotto agli organi della Pubblica amministrazione o ai privati gestori di pubblici servizi. Valido per l'estero. Il certificato è emesso a norma dell'art. 3, comma 2 del Decreto L.vo 12.02.1993, n.39

I dati del presente certificato sono ricavati dal sistema di gestione delle carriere degli studenti.

VERONA, 4 Giugno 2020

LA DIRIGENTE
dott.ssa Maja Laetitia Feldt



UNIVERSITÀ
di VERONA

MATRICOLA VR441552

N. CERTIF. DOC1362060 /ISCR_ES_SP

Si attesta che **ALBERTI CHRISTIAN**,
nato a Bassano del Grappa (VI) il 15 Settembre 1979,
immatricolato al primo anno di corso nell'anno accademico 2017/2018,
è iscritto al **terzo anno, regolare**,
della **SCUOLA DI SPECIALIZZAZIONE DI AREA SANITARIA IN CHIRURGIA ORALE**
CLASSE SAS-5513 - Classe delle specializzazioni in odontoiatria del Decreto Interministeriale 4
febbraio 2015 n. 68
per l'anno accademico 2019/2020.

Si certifica che, a tutt'oggi, l'interessato ha superato i seguenti esami

TIPO	DATA	ESAME	S.S.D.	CFU	VOTO
	14/02/2020	ESAME DI PROFITTO TEORICO-PRATICO 1			50/50
		ORGANIZZAZIONE AZIENDALE	SECS-P/10	1	
		FARMACOLOGIA	BIO/14	1	
		ANATOMIA UMANA	BIO/16	1	
		DIAGNOSTICA PER IMMAGINI E RADIOTERAPIA 1 (TRONCO COMUNE)	MED/36	1	
		ANESTESIOLOGIA 1	MED/41	1	
		CHIRURGIA MAXILLO-FACCIALE 1 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	5	
		MALATTIE ODONTOSTOMATOLOGICHE 1	MED/28	40	
		MALATTIE ODONTOSTOMATOLGICHE 1 (TRONCO COMUNE)	MED/28	8	
		CHIRURGIA MAXILLO-FACCIALE 1 (TRONCO COMUNE)	MED/29	1	
		SEMINARI E CONVEGNI 1	-	1	
	05/03/2021	ESAME DI PROFITTO TEORICO-PRATICO 2			50/50 L
		STATISTICA MEDICA	MED/01	1	
		MICROBIOLOGIA E MICROBIOLOGIA CLINICA	MED/07	1	
		OTORINOLARINGOIATRIA 2	MED/31	1	

TIPO	DATA	ESAME	S.S.D.	CFU	VOTO
		MALATTIE ODONTOSTOMATOLOGICHE 2	MED/28	40	
		DIAGNOSTICA PER IMMAGINI E RADIOTERAPIA 2 (TRONCO COMUNE)	MED/36	1	
		MALATTIE DELL'APPARATO VISIVO	MED/30	1	
		ANESTESIOLOGIA 2	MED/41	1	
		CHIRURGIA MAXILLO-FACCIALE 2 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	4	
		MALATTIE ODONTOSTOMATOLGICHE 2 (TRONCO COMUNE)	MED/28	7	
		CHIRURGIA MAXILLO-FACCIALE 2 (TRONCO COMUNE)	MED/29	1	
		SEMINARI E CONVEGNI 2	-	2	

TOTALE CFU ACQUISITI**120.00****LEGENDA:**

C: CONVALIDATO

S.S.D.: SETTORE SCIENTIFICO DISCIPLINARE

CFU: Crediti formativi universitari

La durata normale del suddetto corso è di tre anni.

Si rilascia in carta libera per gli usi consentiti dalla tab. all. B) del D.P.R. 642/72 del 26.10.1972 e successive modificazioni. Ai sensi dell'art. 15, comma 1 della legge 12 novembre 2011, n. 183 il presente certificato non può essere prodotto agli organi della Pubblica amministrazione o ai privati gestori di pubblici servizi. Valido per l'estero. Il certificato è emesso a norma dell'art. 3, comma 2 del Decreto L.vo 12.02.1993, n.39

I dati del presente certificato sono ricavati dal sistema di gestione delle carriere degli studenti.

VERONA, 7 Maggio 2021

LA DIRIGENTE

dott.ssa Maja Laetitia Feldt



UNIVERSITÀ
di VERONA

MATRICOLA VR441552

N. CERTIF. DOC1510719 /LAU_SSD SP

Si attesta che il dott. **ALBERTI CHRISTIAN**,
nato a Bassano del Grappa (VI) il 15 Settembre 1979,
il giorno 23/02/2022 ha superato presso questa Università l'esame finale di diploma di specialista in
CHIRURGIA ORALE
appartenente alla CLASSE SAS-5513 - Classe delle specializzazioni in odontoiatria del Decreto
Interministeriale 4 febbraio 2015 n. 68, riportando punti 70/70 e lode (settanta/settanta e lode).

Avendo superato i seguenti esami:

TIPO	DATA	ESAME	S.S.D.	CFU	VOTO
	14/02/2020	ESAME DI PROFITTO TEORICO-PRATICO 1		60	50/50
		ORGANIZZAZIONE AZIENDALE	SECS-P/10	1	
		FARMACOLOGIA	BIO/14	1	
		ANATOMIA UMANA	BIO/16	1	
		DIAGNOSTICA PER IMMAGINI E RADIOTERAPIA 1 (TRONCO COMUNE)	MED/36	1	
		ANESTESIOLOGIA 1	MED/41	1	
		CHIRURGIA MAXILLO-FACCIALE 1 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	5	
		MALATTIE ODONTOSTOMATOLOGICHE 1	MED/28	40	
		MALATTIE ODONTOSTOMATOLGICHE 1 (TRONCO COMUNE)	MED/28	8	
		CHIRURGIA MAXILLO-FACCIALE 1 (TRONCO COMUNE)	MED/29	1	
		SEMINARI E CONVEGNI 1	-	1	
	05/03/2021	ESAME DI PROFITTO TEORICO-PRATICO 2		60	50/50 L
		STATISTICA MEDICA	MED/01	1	
		MICROBIOLOGIA E MICROBIOLOGIA CLINICA	MED/07	1	
		OTORINOLARINGOIATRIA 2	MED/31	1	



TIPO	DATA	ESAME	S.S.D.	CFU	VOTO
		MALATTIE ODONTOSTOMATOLOGICHE 2	MED/28	40	
		DIAGNOSTICA PER IMMAGINI E RADIOTERAPIA 2 (TRONCO COMUNE)	MED/36	1	
		MALATTIE DELL'APPARATO VISIVO	MED/30	1	
		ANESTESIOLOGIA 2	MED/41	1	
		CHIRURGIA MAXILLO-FACCIALE 2 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	4	
		MALATTIE ODONTOSTOMATOLGICHE 2 (TRONCO COMUNE)	MED/28	7	
		CHIRURGIA MAXILLO-FACCIALE 2 (TRONCO COMUNE)	MED/29	1	
		SEMINARI E CONVEGNI 2	-	2	
	03/02/2022	ESAME DI PROFITTO TEORICO-PRATICO 3		60	50/50 L
		PROVA FINALE	MED/28	10	
		MEDICINA LEGALE	MED/43	1	
		ANATOMIA PATOLOGICA	MED/08	1	
		OTORINOLARINGOIATRIA 3	MED/31	1	
		MALATTIE ODONTOSTOMATOLOGICHE 3	MED/28	30	
		CHIRURGIA MAXILLO-FACCIALE 3 (DISCIPLINE SPECIFICHE DELLA TIPOLOGIA)	MED/29	6	
		MALATTIE ODONTOSTOMATOLGICHE 3 (TRONCO COMUNE)	MED/28	7	
		CHIRURGIA MAXILLO-FACCIALE 3 (TRONCO COMUNE)	MED/29	2	
		SEMINARI E CONVEGNI 3	-	2	
TOTALE CFU ACQUISITI				180.00	

LEGENDA:

C: CONVALIDATO



UNIVERSITÀ
di **VERONA**

La durata normale del suddetto corso è di tre anni.

Si rilascia in carta libera per gli usi consentiti dalla tab. all. B) del D.P.R. 642/72 del 26.10.1972 e successive modificazioni. Ai sensi dell'art. 15, comma 1 della legge 12 novembre 2011, n. 183 il presente certificato non può essere prodotto agli organi della Pubblica amministrazione o ai privati gestori di pubblici servizi. Valido per l'estero. Il certificato è emesso a norma dell'art. 3, comma 2 del Decreto L.vo 12.02.1993, n.39

I dati del presente certificato sono ricavati dal sistema di gestione delle carriere degli studenti.

VERONA, 10 Marzo 2022

LA DIRIGENTE

dott.ssa Maja Laetitia Feldt



UNIVERSITÀ
di **VERONA**

MATRICOLA VR441552

N. CERTIF. DOC1510363 /LAU_SP

Si attesta che il dott. **ALBERTI CHRISTIAN**,
nato a Bassano del Grappa (VI) il 15 Settembre 1979,
il giorno 23/02/2022 ha superato presso questa Università l'esame finale di diploma di specialista in
CHIRURGIA ORALE
appartenente alla CLASSE SAS-5513 - Classe delle specializzazioni in odontoiatria del Decreto
Interministeriale 4 febbraio 2015 n. 68, riportando punti 70/70 e lode (settanta/settanta e lode).

Al titolo conseguito compete la qualifica accademica di "Specialista" (di cui al decreto M.I.U.R. n.
270/2004, art. 13, comma 7).

La durata normale del suddetto corso è di tre anni.

Si rilascia in carta libera per gli usi consentiti dalla tab. all. B) del D.P.R. 642/72 del 26.10.1972 e successive modificazioni. Ai
sensi dell'art. 15, comma 1 della legge 12 novembre 2011, n. 183 il presente certificato non può essere prodotto agli organi della
Pubblica amministrazione o ai privati gestori di pubblici servizi. Valido per l'estero. Il certificato è emesso a norma dell'art. 3,
comma 2 del Decreto L.vo 12.02.1993, n.39

I dati del presente certificato sono ricavati dal sistema di gestione delle carriere degli studenti.

VERONA, 9 Marzo 2022

LA DIRIGENTE

dott.ssa Maja Laetitia Feldt

Codice PA: 46-0000162679-0000000000

Matricola 740305

Pagina 1 di 2

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE

(DPR 28 DICEMBRE 2000, N.445, ARTT.46 E SGG. E LEGGE NOVEMBRE 2011, N.183, ART. 15)

Il sottoscritto ALBERTI CHRISTIAN, nato a Bassano del Grappa (VI) il 15/09/1979,

DICHIARA

di aver superato l'esame di MASTER DI II LIVELLO IN "ODONTOIATRIA DIGITALE" - sede BRESCIA (D.M. 270/2004) presso Università degli studi di BRESCIA in data 07/07/2023 con voto 110/110 e lode.

La durata normale del corso di studi è di un anno.

DICHIARA INOLTRE

che il sottoscritto ha discusso la tesi dal seguente titolo: Valutazione analitica, morfologica e morfometrica dell'anatomia facciale di superficie tramite tecnologia computerizzata. Utilizzo dei sistemi di scansione tridimensionale computer-assistiti per la riproduzione 3D dei tessuti molli del viso.

DICHIARA INOLTRE

di essersi immatricolato in data 27/04/2022 al primo anno del MASTER DI II LIVELLO IN "ODONTOIATRIA DIGITALE" (D.M. 270/2004) presso Università degli Studi di BRESCIA nell'A.A. 2021/2022

DICHIARA ALTRESI'

di aver superato I seguenti esami:

DESCRIZIONE	DATA	VOTO	SSD	CFU	CONV	TIPO RIC/CONV
TIROCINIO	01/04/2023	ldoneo		20		
ODONTOIATRIA DIGITALE	05/06/2023	30/30	MED/28	35		
PROVA FINALE	07/07/2023	ldoneo		5		
TOTALE CFU ACQUISITI				60.00		

Codice PA: 46-0000162679-0000000000

Matricola 740305

Pagina 2 di 2

La presente carriera risulta chiusa in data 07/07/2023, per conseguimento titolo.

Consapevole che chiunque rilascia dichiarazioni mendaci è punito ai sensi del Codice Penale e delle leggi speciali in materia, ai sensi e per gli effetti degli ART. 75 e 76 DPR 445/2000. Consapevole di quanto previsto dall'ART. 13 del D.LGS 196/03 codice in materia di protezione dei dati personali.

BRESCIA, 13/07/2023

FIRMA DEL DICHIARANTE

Esente da imposta di bollo a sensi dell'art.37 DPR 445/2000



UNIVERSITÀ DI PADOVA
SCUOLA DI SPECIALIZZAZIONE IN
CHIRURGIA MAXILLOFACCIALE
DIR: PROF. G. FERRONATO

Chirurgia
Maxillofacciale



Padova

UOC di CHIRURGIA
MAXILLOFACCIALE
DIR: PROF. G. FERRONATO



AZIENDA OSPEDALIERA DI
PADOVA

Padova, 10 maggio 2013

Conosco il Dr. Christian Alberti dai tempi in cui frequentava il “ Corso di Laurea in Odontoiatria e Protesi Dentaria ” dell’Università degli Studi di Padova, lui come studente, io come suo docente nella disciplina “Chirurgia Maxillo-Facciale”; sono stato il relatore della sua tesi di laurea particolarmente innovativa ma complicata, che divenne una prima pubblicazione sugli studi che stavamo portando avanti sulla diagnosi morfologica e morfometrica in 3D su pazienti disgnatici.

Posso testimoniare che ha sempre lavorato con passione, tenacia ed intelligenza, contribuendo in prima persona a concretizzare tecnicamente e materialmente alcuni ausili per le acquisizioni dei visi mediante scansione laser.

Il Dr. Christian ha sempre manifestato passione per la chirurgia, non solo orale ma anche e soprattutto maxillo-facciale, tanto da desiderare di iscriversi alla Facoltà di Medicina e Chirurgia per poter poi accedere alla specifica Scuola di specializzazione che in Italia è riservata ai laureati in Medicina e Chirurgia; sogno che per le molteplici vicissitudini della vita so essere rimasto nel cassetto.

So però anche che molto viva è rimasta la sua voglia e la passione per la chirurgia odontostomatologica, e che il Dr. Christian intende ulteriormente svilupparla e migliorarla; pertanto, conoscendone il valore, dò il mio incondizionato supporto a tutte le iniziative culturali a cui aderisce per implementare le sue conoscenze professionali.

Prof. Giuseppe Ferronato

Dr Redento Peretta

M.C., Specialista in Odontostomatologia e Ortognatodonzia. Diplomato I.B.O.

Dottore di Ricerca in Scienze Morfologiche, Ph.D.

Vicenza , 13-06-2011

Ho conosciuto il dr Christian Alberti quando era ancora studente di odontoiatria nella veste di correlatore della sua tesi di laurea.

L'argomento non era dei più semplici: si trattava di definire le metodologie migliori per la riproduzione virtuale mediante scansione laser dei tessuti molli del viso e lo studio morfometrico delle caratteristiche facciali. Si trattava infatti di risolvere una quantità veramente notevole di problemi, nessuno semplice: dal valutare gli strumenti migliori tra quelli disponibili alla progettazione e realizzazione di nuovi strumenti adatti allo scopo (ad esempio la realizzazione di una pedana rotante portante una seggiola con craniostato per la scansione semiautomatica con il laser di varie viste facciali).

Ebbene in tutte queste situazione Christian si è dimostrato persona concreta, disponibile e sorridente sdrammatizzando situazioni difficili e portando un contributo fattivo alla loro soluzione. Questa la premessa. Dopo della laurea pur occupandosi prevalentemente di chirurgia ha frequentato il mio studio privato di ortodonzia per ampliare i suoi orizzonti culturali e professionali. Ho seguito con ammirazione il suo impegno nell'apprendere sempre il massimo nel minor tempo possibile.

Potrei aggiungere altre considerazioni sulla sua persona e la sua umanità ma penso che ciò traspaia abbastanza rapidamente nelle relazioni che sa intessere.

È persona degna e di valore.

Cordialmente

Dr Redento Peretta





Università degli Studi di Genova
 SCUOLA DI SCIENZE MEDICHE E FARMACEUTICHE
 Corso di Laurea Magistrale in Odontoiatria e Protesi Dentaria
 CATTEDRA DI PROTESI DENTARIA
 Titolare: **Prof. Paolo Pera**

Genova, 24 Settembre 2014

OGGETTO: Relazione attività formative Dottor Christian Alberti

Christian Alberti ha frequentato il Master Universitario di II livello in Implantoprotesi presso l'Università di Genova (Presidente: Prof. Paolo Pera; Coordinatore scientifico: Prof. Maria Menini) dimostrando un vivo interesse e partecipando sempre attivamente e costruttivamente alle attività didattiche teoriche e cliniche.

Le solide competenze dimostrate nell'ambito scientifico e clinico hanno portato il Dottor Alberti al raggiungimento di ottimi risultati nelle discipline affrontate.

Il 19 Settembre 2014 il Dottor Alberti ha presentato brillantemente la Tesi del Master dal titolo: "La ricostruzione tridimensionale del volto con tecnica laser: metodologia operativa e analisi preliminare dei risultati" ricevendo la votazione di 110/110.

Il Dottor Alberti risulta degno di segnalazione per ulteriori progressioni nell'ambito dell'aggiornamento e carriera professionale.

In fede,

Paolo Pera

Maria Menini

DI.S.C. Sezione di Odontostomatologia
 Servizio di Protesi Dentaria e Implantoprotesi
 Osp. San Martino – PAD. IV 16132 Genova (ITALIA)
 Telefono: 010/3537421 Fax: 010/3537402
 E-mail: paolopera@unige.it maria.menini@unige.it



**OSPEDALE SAN BASSIANO-BASSANO DEL GRAPPA
DIPARTIMENTO DI CHIRURGIA SPECIALISTICA
STRUTTURA COMPLESSA di OCULISTICA
Direttore : Dr.ssa SIMONETTA MORSELLI**

Bassano del Grappa: 29 Novembre 2013

Conosco il Dr. Christian Alberti da molto tempo, per dieci anni ha collaborato con il Dipartimento di Chirurgia Specialistica da me diretto.

Il Dr. Alberti ha collaborato con il Dr. Paolo Toscano, fondatore della struttura di Odontostomatologia e Chirurgia Maxillo Facciale nel 1989, suo direttore fino al 2010, e successivamente con il Dr. Moschino Terenzio fino all'anno 2012.

Il Dr. Alberti ha collaborato con il Maxillo Facciale di Bassano fin dai tempi in cui frequentava il "Corso di Laurea in Odontoiatria e Protesi Dentaria" dell'Università degli Studi di Padova, ed ha continuato assiduamente con costanza, dedizione, puntualità e professionalità anche dopo la Laurea meritando ampiamente il riconoscimento di borse di studio finalizzate al supporto dell'attività clinica prestata e rinnovate annualmente.

Posso confermare che Christian, oltre ad essere una persona concreta, disponibile e sorridente, ha sempre lavorato con passione, tenacia, capacità professionale, è stato un valido aiuto, sempre disponibile anche in caso di emergenze, nei giorni festivi e in orario notturno, un collaboratore che oltre a lavorare con passione per la chirurgia orale e soprattutto maxillo-facciale, è riuscito ad avviare uno studio dentistico privato con grande successo.

Ha sempre desiderato di iscriversi alla Facoltà di Medicina e Chirurgia per poter poi accedere alla specifica scuola di specializzazione, il Dr. Christian intende ulteriormente sviluppare la chirurgia Odontostomatologica pertanto, conoscendone la tenacia, la passione e la competenza professionale, esprimo il mio supporto e i miei migliori auguri.

Cordialmente

**Il Direttore
Dipartimento di Chirurgia Specialistica
Struttura Complessa di Oculistica
Dr .ssa Simonetta Morselli**



Lettere di Presentazione e Ringraziamento



Università degli Studi di Firenze

Scuola di Scienza della Salute Umana

Ho conosciuto il Dr. Christian Alberti durante la frequenza al “ Corso Master in *Chirurgia Ricostruttiva ed implantologica dei mascellari* ” dell’Università degli Studi di Firenze, e sono stato il relatore della sua tesi di Master particolarmente innovativa.

Posso testimoniare che ha sempre lavorato con passione, costanza ed impegno intellettuale, dedicandoti sia alle attività chirurgiche ambulatoriali che in sala operatorio

Il Dr. Christian ha sempre manifestato passione per la chirurgia, oro- maxillo-facciale, tanto da desiderare di iscriversi alla Facoltà di Medicina e Chirurgia per poter poi accedere alla specifica Scuola di specializzazione che in Italia è riservata ai laureati in Medicina e Chirurgia.

Sono a conoscenza che molto viva è in lui la voglia e la passione per la chirurgia odontostomatologica, e che il Dr. Christian intende ulteriormente svilupparla e migliorarla.

In questa ottica, conoscendone il valore, dò il mio incondizionato supporto a tutte le iniziative culturali a cui aderisce per implementare le sue conoscenze professionali.

In Fede

Prof Roberto Bertolai

A handwritten signature in black ink, reading 'Roberto Bertolai'.



SEDE LEGALE: Corso Bramante, 88/90 - 10126 Torino **Centralino:** tel. +39.011.6331633 **P.I./Cod. Fisc.** 10771180014
www.cittadellasalute.to.it

Presidi Ospedali: - Molinette, Dermatologico S. Lazzaro, S. Giovanni Antica Sede - centr. tel. +39.0116331633
- Centro Traumatologico Ortopedico, Istituto Chirurgico Ortopedico Regina Maria Adelaide - centr. tel. +39.0116933111
- Infantile Regina Margherita, Ostetrico Ginecologico S. Anna - centr. tel. +39.0113134444

Presidio – Molinette
S.C. CHIRURGIA MAXILLO – FACCIALE U
Direttore temp Prof. G.Ramieri
C.so A.M. Dogliotti, 14 – 10126 Torino
Segreteria TEL - FAX 0116335125
Reparto TEL 0116335471
Ambulatorio segreteria TEL - 0116336600
TEL 4044 / 4062 fax

Torino, 15 dicembre 2019

Ho conosciuto il dr . Christian Alberti in occasione della sua frequenza al master universitario di II livello “ CHIRURGIA ORTOGNATICA E DELLE DEFORMITA’ CRANIOFACCIALI ” nell’ anno accademico 2017-18.

Nel corso degli incontri periodici e delle attività teoriche pratiche il Dr. Alberti ha dimostrato grande desiderio di apprendimento e ha partecipato attivamente alle discussioni cliniche e alle attività formative, dando prova di una solida preparazione, capacità di interazione e di ascolto con una buona possibilità di crescita professionale.

Sono personalmente molto soddisfatto del contributo, nel rispetto dei ruoli e delle competenze, fornito dal dr Alberti per il buon successo del nostro master.

Giovanni Gerbino


S.C. Chirurgia Maxillo Facciale U.
Prof. Associato Matr. 76258Q
Prof. Giovanni Gerbino



UNIVERSITA' DEGLI STUDI DI TORINO

DIPARTIMENTO DI SCIENZE CHIRURGICHE

Direttore: Prof. Stefano Carossa

Scuola di Specializzazione in Chirurgia Maxillo-
Facciale
School of Maxillofacial Surgery
Direttore: Prof. Guglielmo RAMIERI

via Genova 3
10126 TORINO (Italy)
Tel. Direzione +39 011 6334057 - 5704
Fax (011) + 39 0116633658
e-mail: guglielmo.ramieri@unito.it

LETTERA DI PRESENTAZIONE

Il Dott. Christian Alberti ha frequentato il reparto da me diretto nell'ambito del Master di II livello in "CHIRURGIA ORTOGNATICA E DELLE MALFORMAZIONI CRANIO-FACCIALI", A.A. 2017/18, dal marzo 2018 al febbraio 2019.

Il Dott. Alberti ha partecipato a seminari, attività cliniche su pazienti, frequenza in sala operatoria.

Durante tale periodo, il Dott. Alberti ha dimostrato uno spiccato interesse per la disciplina, una adeguata preparazione di base, e notevoli capacità di apprendimento.

E' stato inoltre apprezzata la sua maturità e la capacità di relazionarsi positivamente, sia con i Colleghi sia con i Pazienti.

Sono certo che queste doti gli permetteranno ottimi risultati professionali.

Torino, 1 marzo 2019

Prof. Guglielmo Ramieri

Professore Ordinario di Chirurgia Maxillo-facciale
Università degli Studi di Torino
A.O.U. "Città della Salute e della Scienza di Torino"

Marostica, 21 gennaio 2004

Egregio

Dr. GIUSEPPE SIMINI
DIRETTORE GENERALE ULSS. N. 3
Via Carducci
36061 BASSANO DEL GRAPPA

e p.c. Dr. Paolo Toscano
Reparto Maxillo-Facciale Ulss 3
Via dei Lotti
36061 BASSANO DEL GRAPPA

e p.c. Associazione a Tutela dell'Ammalato
Via dei Lotti
36061 BASSANO DEL GRAPPA

OGGETTO: Ringraziamento ai medici e agli operatori del reparto MAXILLO-FACCIALE ULSS 3.

Egregio Direttore,

desidero segnalare il caso di mia madre Vialetto Zelia curata presso il reparto Maxillo-Facciale ULSS 3 per carcinoma alla mascella sinistra, successivamente degenerata in metastasi linfonodale del collo.

Gli interventi e le terapie avvenuti negli anni 2002-2003 non hanno arrestato la malattia: mia madre è deceduta il 4 gennaio 2004 u.s.

In queste righe desidero sottolineare la professionalità e la grande umanità di tutti gli operatori del reparto.

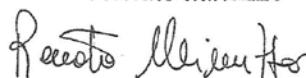
In modo particolare voglio ringraziare il Primario Dr. Paolo Toscano, che ha operato e seguito mia madre fin dall'inizio della malattia, e tutti i suoi collaboratori : Dr. Moschino, Dr. Garofolin , Dr. Alberti e le infermiere Renata, Rosanna, Antonia, Cristina e Franca.

Nella grande sofferenza hanno saputo dare in ogni momento, oltre alle cure necessarie, un importante aiuto con parole , sorrisi, piccoli gesti che rendevano meno dura la "quotidianità" della malattia.

Il mio ringraziamento va anche al Dr. Zarpellon e a tutte le infermiere del reparto oncologico e non posso dimenticare il Dr. Costenaro, nostro medico di base, per la premura e l'attenzione dedicata a mia madre.

Voglia gradire i miei più distinti saluti.

Renato Minuzzo



Minuzzo Renato e Paola - Via Cà Brusà - 36063 Marostica (Vicenza)

Al Consiglio Direttivo SIDCO Società Italiana di Chirurgia Odontostomatologica

In qualità di socio attivo della SIDCO con la presente sono a presentare come aspirante a socio attivo della Società il dottor Christian Alberti.

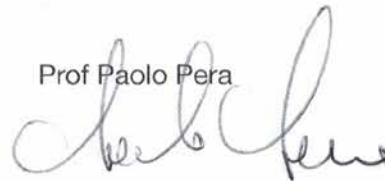
Il dottor Christian Alberti medico odontoiatra si dedica da anni alla chirurgia orale con particolare interesse alla riabilitazione orale implantologica.

Per la competenza e la passione che ha sempre dimostrato negli eventi culturali e clinici che abbiamo condiviso, e per il contributo positivo che potrà portare, reputo che il dottor Christian Alberti possa a pieno titolo essere accettato come socio attivo della SIDCO .

In fede

Genova 03/05/2022

Prof Paolo Pera



Dr.Prof. Roberto Pistilli
Via Amiterno, 54 00183Roma
Office: 0639732568
Mobile: +39335317394

Alla cortese attenzione della commissione accettazione soci attivi SIDCO

OGGETTO: Presentazione del candidato ALBERTI CHRISTIAN alla carica di socio attivo della società SIDCO

Il sottoscritto Roberto Pistilli, supporta la candidatura per la nomina di socio attivo della Società SIDCO del collega ALBERTI CHRISTIAN nato a Bassano del Grappa (VC) il 15-09-1979

Infatti il socio si è sempre dimostrato un cultore appassionato della materia nonché una personalità di alto livello in campo scientifico con un Curriculum formativo di notevolissimo.

Cordiali saluti

Roberto Pistilli



DOTT. PISTILLI ROBERTO
SPECIALISTA IN
CHIRURGIA MAXILLO FACCIALE
A.C.O. S. CAMILLO FORLANINI

MODMaster II livello
Odontoiatria
Digitale0697605619 3480758796 📞
segreteria@masterodontoiatriadigitale.it @
www.masterodontoiatriadigitale.it 🌐Master di II° livello in "Odontoiatria Digitale"
II Edizione - Anni Accademici 2021/2022

Brescia, 4 maggio 2022

Ai Colleghi ammessi al Master di II livello in Odontoiatria Digitale

Carissimo/a,

è con enorme soddisfazione che Ti scrivo per confermare l'avvio della Seconda edizione del Master di II livello in Odontoiatria Digitale che ha registrato ieri la conclusione delle iscrizioni.

Il successo di partecipazione al Master è merito della straordinaria offerta didattica che offre questo panel di docenti di particolare preparazione e fama e che lo rendono unico nel panorama formativo universitario nazionale

Stiamo definendo il programma teorico-pratico definitivo e il calendario didattico inizierà il 10 maggio con la presentazione del Coordinatore del Master e la Lectio Magistralis del Prof. Carlo Marinello.

Sarai quindi contattato nei prossimi giorni dalla Sig.ra Lara Capriotti di Fasi, la nostra segreteria scientifica, che Ti indicherà le date definitive del programma didattico dei mesi prossimi.

Grazie ancora per la Tua partecipazione a cui auguriamo un percorso formativo di assoluta eccellenza e successo.

Con riconoscenza,

Antonio Cerutti



