

Nuove tecnologie nella riabilitazione oro-maxillo-facciale

A.B. Gianni



Università degli Studi di Milano

Scuola di Specializzazione in Chirurgia Maxillo-Facciale

IRCCS OSPEDALE MAGGIORE POLICLINICO

U.O. C. Chirurgia Maxillo-Facciale ed Odontostomatologia

(Dir.: Prof. A.B. Gianni)

Padiglione Monteggia Via F. Sforza 35 Milano

Padiglione Clinica Odontoiatrica Via Commenda 10 Milano

aldo.gianni@unimi.it www.face-team.it



UNIVERSITÀ DEGLI STUDI
DELLA CAMPANIA
Luigi Vanvitelli

lunedì 22
maggio 2017



UNIVERSITÀ DEGLI STUDI DELLA CAMPANIA

Luigi Vanvitelli

Dipartimento Multidisciplinare
di Specialità Medico-Chirurgiche e Odontoiatriche
Direttore: Prof. Angelo Itrò

Segreteria organizzativa:

Proff: Luigi Guida, Marco Annunziata, Livia Nastri
Tel.: 081 5665515 - 328 3310017
e-mail: marco.annunziata@unicampania.it

con il supporto di:



80141 Napoli - Italy - Via Colonnello Carlo Lahalle, 51
Tel. +39 081 7807498 - Fax +39 081 7807498
Raffaele Pelliccio
cell.: +39 336 730568 - e-mail: rpelliccio@maipek.it
www.maipek.it - info@maipek.it



attualità
in tema di
impiantologia
orale

relatori:

prof. Aldo Bruno Gianni
dr. Pierpaolo Racco

Dipartimento Multidisciplinare di Specialità
Medico-Chirurgiche e Odontoiatriche

aula Giardino
Via L. De Creschio, 6 - 80138 Napoli

www.maipek.it
tel. +39 081 7807498 - fax +39 081 7807498
Raffaele Pelliccio
cell. +39 336 730568 - e-mail: rpelliccio@maipek.it
www.maipek.it - info@maipek.it



www.maipek.it

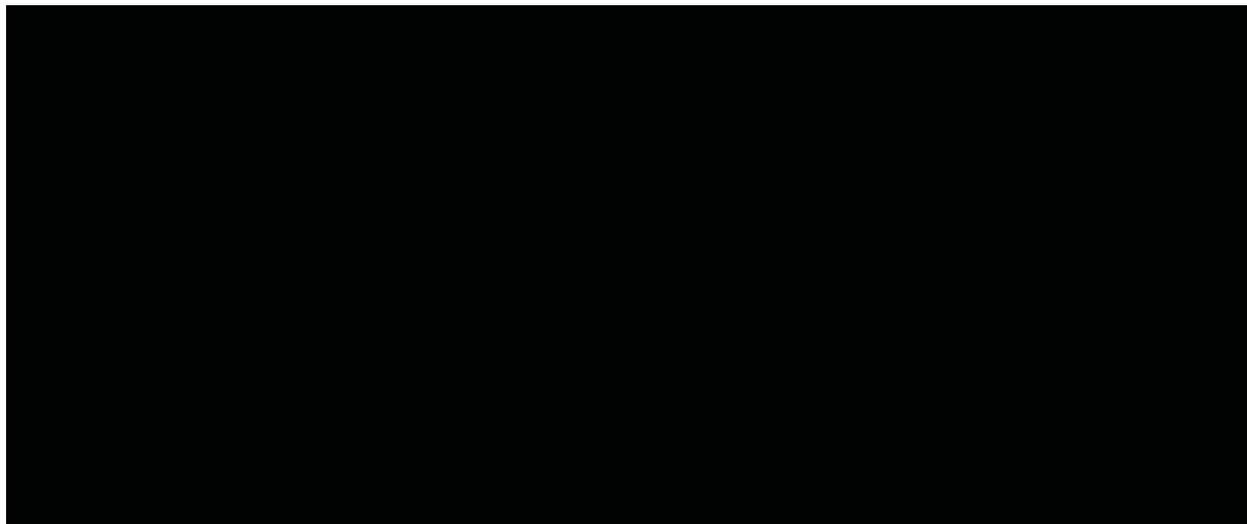
Nuove tecnologie virtuali e digitali in Chirurgia Maxillo-Facciale

- ▶ **Chirurgia oncologica con realtà aumentata**
- ▶ **Ricostruzione customizzata dello scheletro facciale**
- **Chirurgia ortognatica e delle OSAS con programmazione totalmente digitale**
- **Chirurgia mini-invasiva della ATM e ricostruzione alloplastica customizzata temporo-mandibolare**

MYTH
one
CYLINDRICAL



MYTH
two
CONICAL



Nuove tecnologie in Chirurgia Maxillo-Facciale

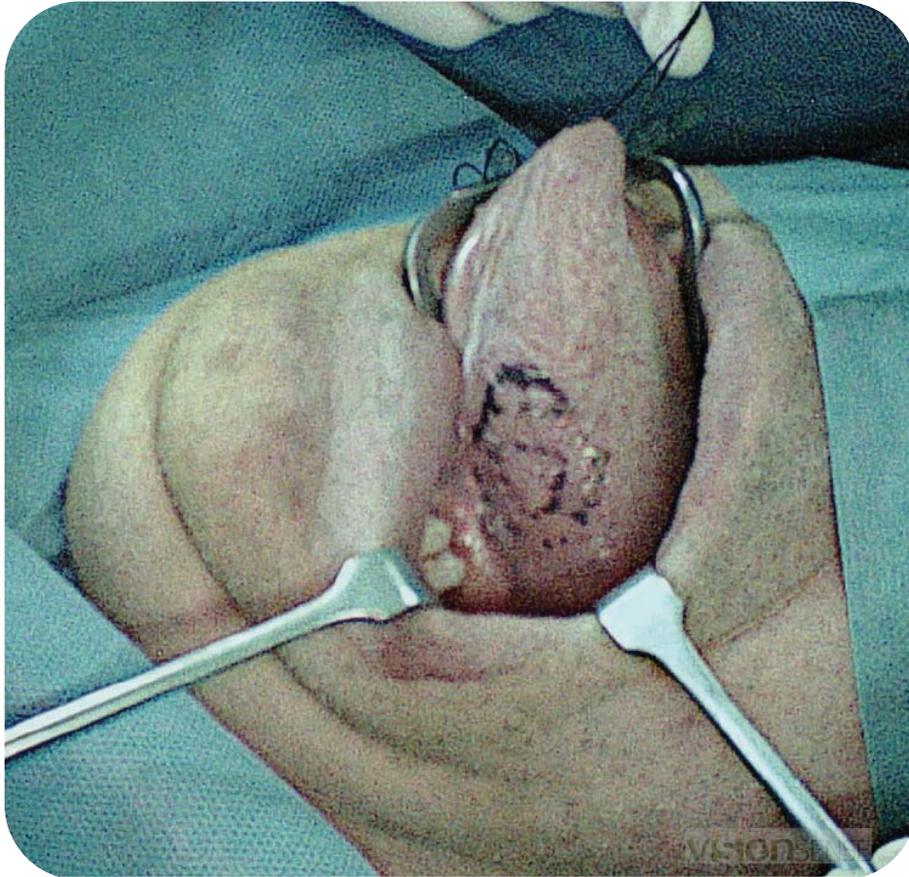
► Chirurgia oncologica con realtà aumentata

♂ 63 aa

**Carcinoma
squamocellulare
della lingua**

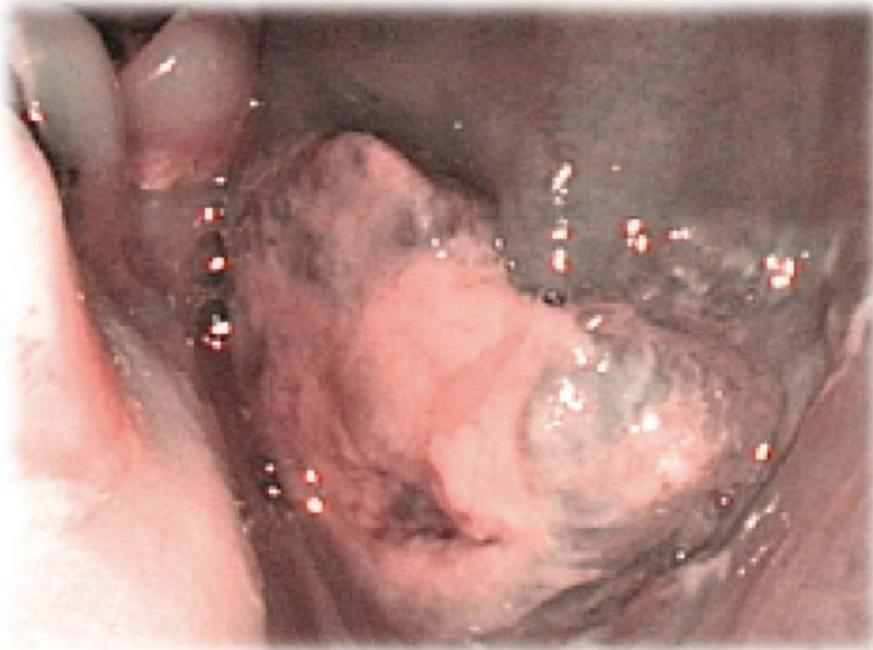


Chirurgia oncologica con realtà aumentata



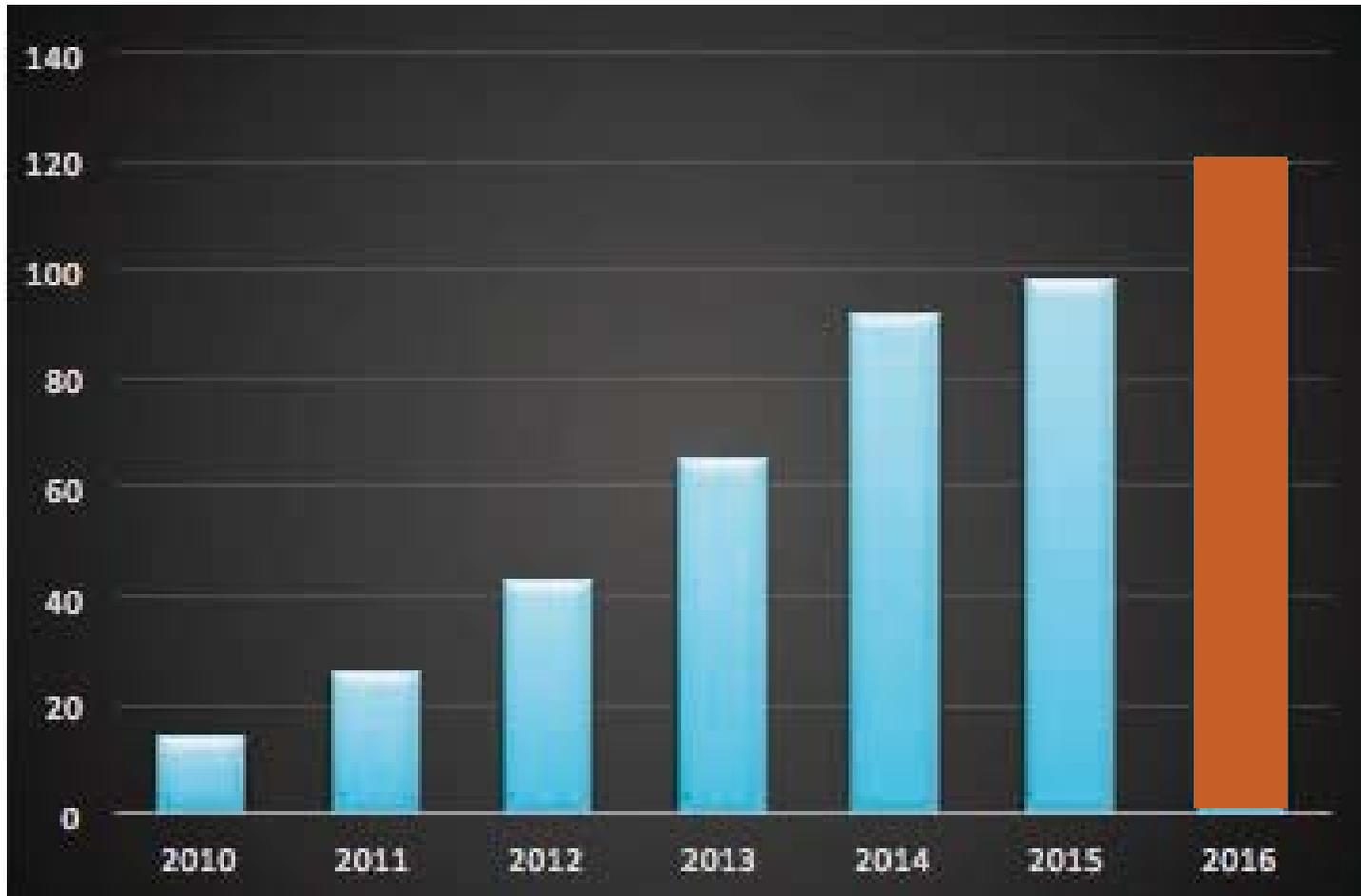
VISIONSENSE SYSTEM

Chirurgia oncologica con realtà aumentata



NBI System

Pazienti oncologici 2010-2016



**UOC Chirurgia Maxillo-Facciale IRCCS Fondazione
Ca' Granda Ospedale Policlinico Milano**

Sedi anatomiche



■ **cavo orale**

■ **cute**

■ **ghiandole salivari**

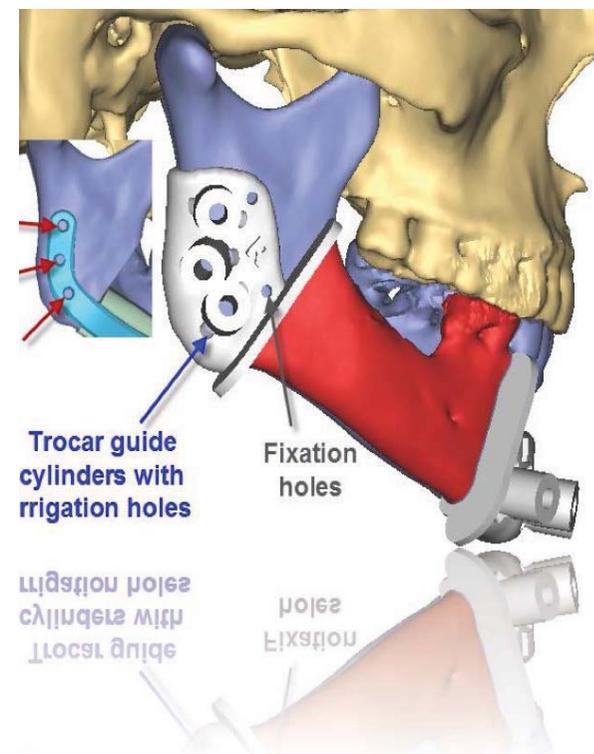
■ **altre sedi**

Nuove tecnologie in Chirurgia Maxillo-Facciale

► Chirurgia ricostruttiva post oncologica customizzata



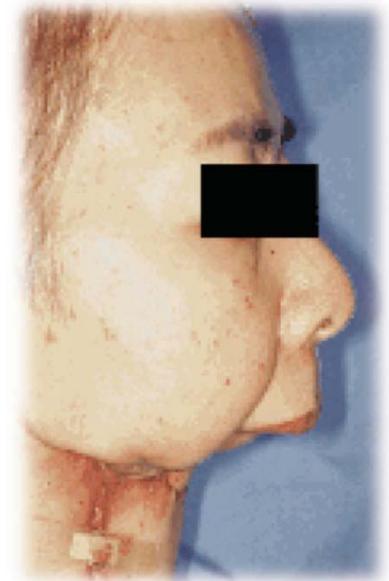
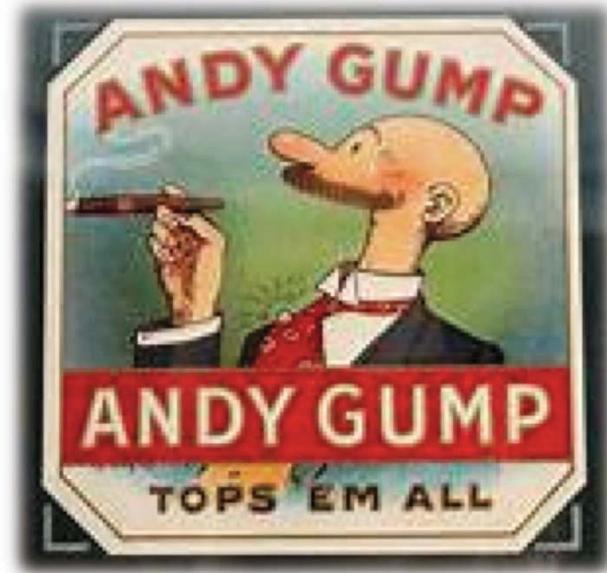
MYTH
DENTAL IMPLANT



La ricostruzione post-oncologica è un obiettivo primario



L'obiettivo primario del trattamento chirurgico oncologico è curare il cancro o il paziente ammalato di cancro



SCELTA RICOSTRUTTIVA

FATTORI GENERALI

- **Eta' biologica del paziente e performance status**
- **Aspettative del paziente**
- **Motivazione**



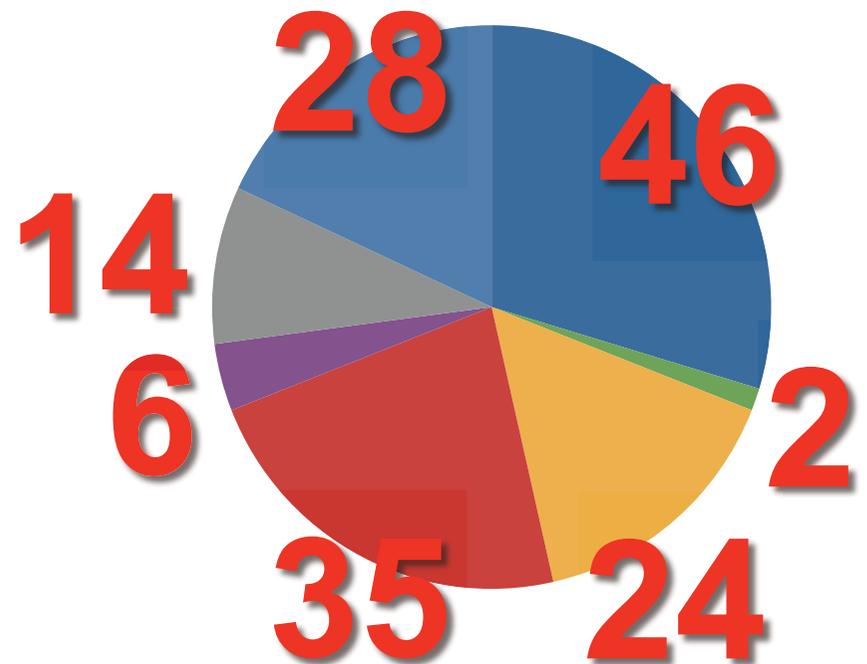
FATTORI LOCALI

- **Entità del difetto**
- **Sede del difetto**
- **Paziente edentulo VS dentato**
- **Neoplasia benigna VS maligna**



LEMBI LIBERI 2010-2016

- FIBULA
- SCAPULA
- ALT
- FOREARM
- ILIAC CREST
- LATISSIMUS DORSI
- PEDICLED

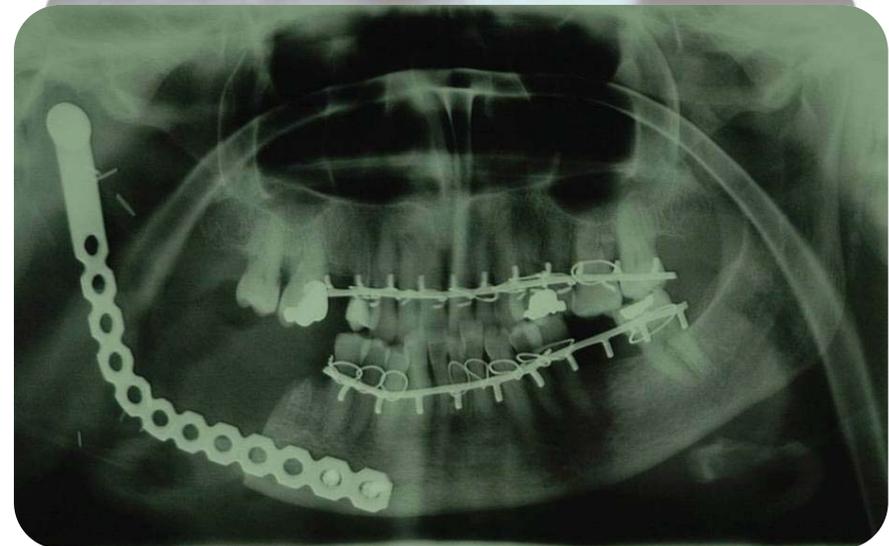
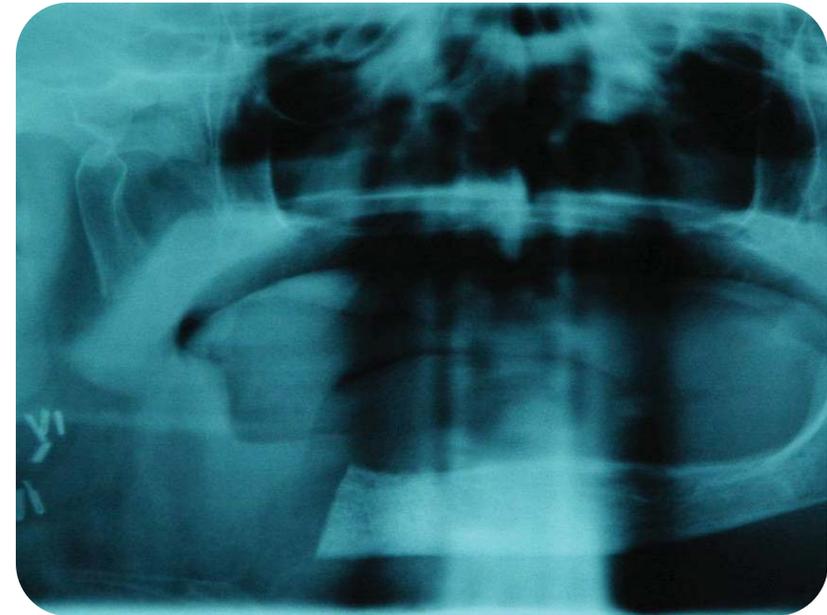


FINALITA' DELLA RICOSTRUZIONE POST-ONCOLOGICA

- **RIPRISTINO ANATOMICO** del viso
- **RECUPERO FUNZIONALE**
 1. Deglutizione
 2. Fonazione

3. Masticazione

**Foster, Plast Reconstr Surg
99: 1555, 1997**



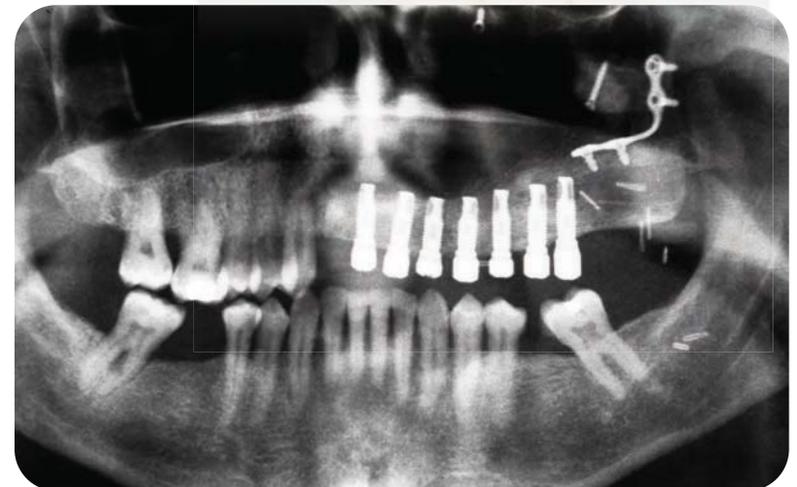
Riabilitazione masticatoria post oncologica

- **Protesi rimovibile totale o parziale**

(necessità denti residui, xerostomia post-radioterapia riduce la ritenzione protesica, maggiore suscettibilità osteoradionecrosi per lesioni mucose microtraumatiche)

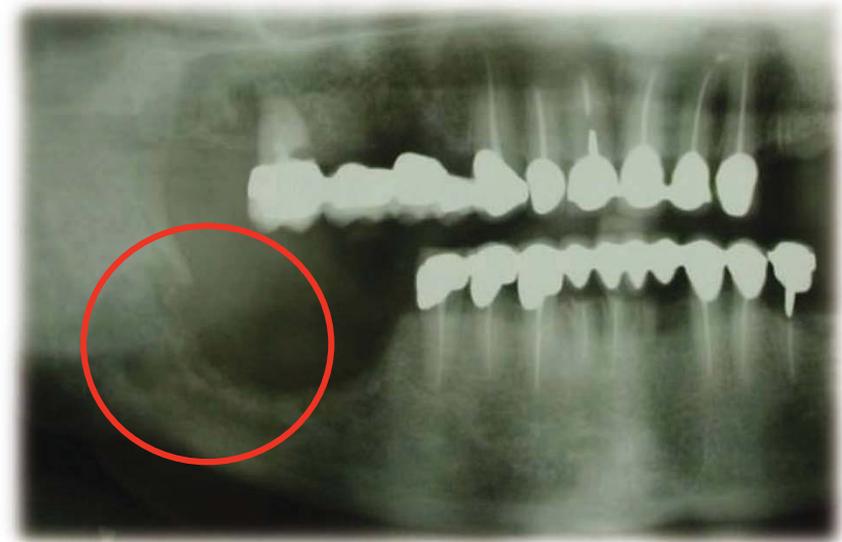


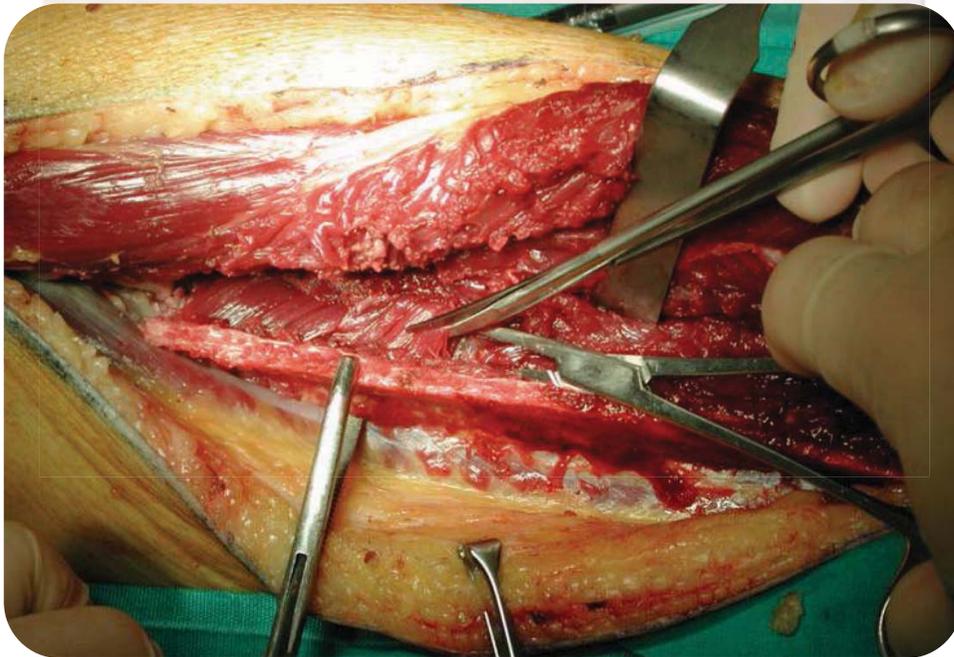
- ***Overdenture su impianti***
- ***Protesi fissa su impianti***



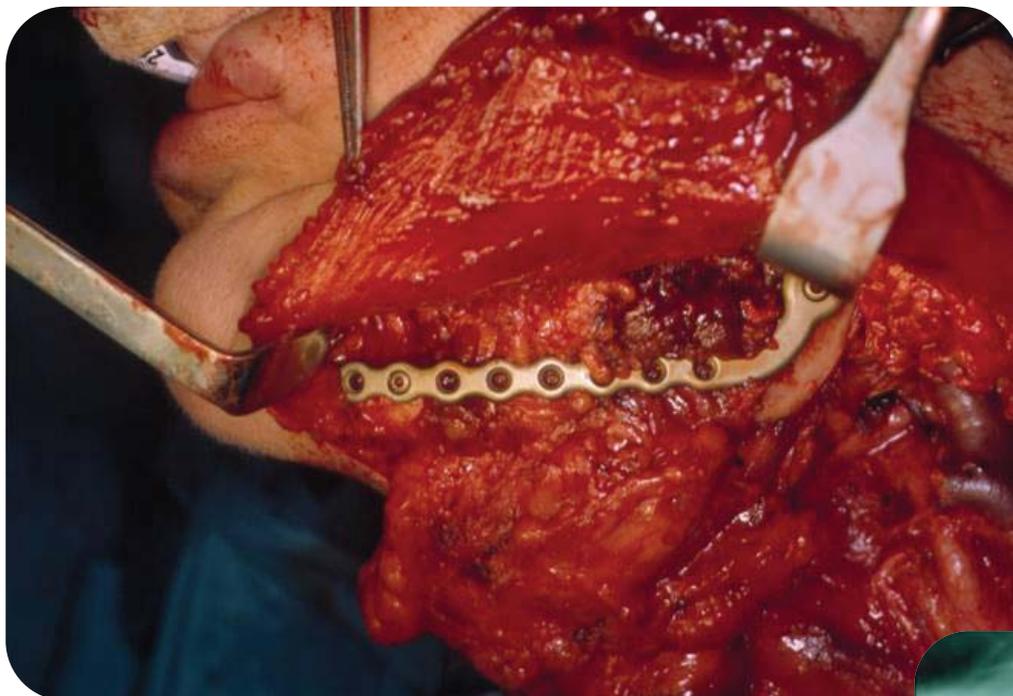
Ricostruzione con osso nel difetto mandibolare laterale (B secondo Urken)

- **Tumori benigni**
- **Pazienti giovani**
- **Presunto lungo
intervallo libero da
malattia**
- **Apparato
masticatorio integro**



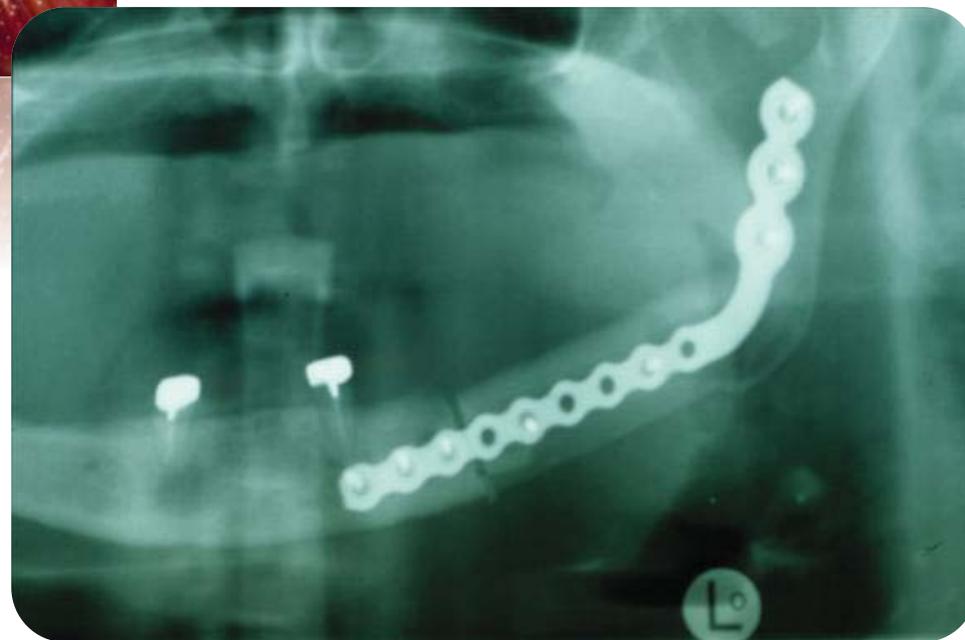


Paziente di 66 aa
Carcinoma spinocellulare
del trigono

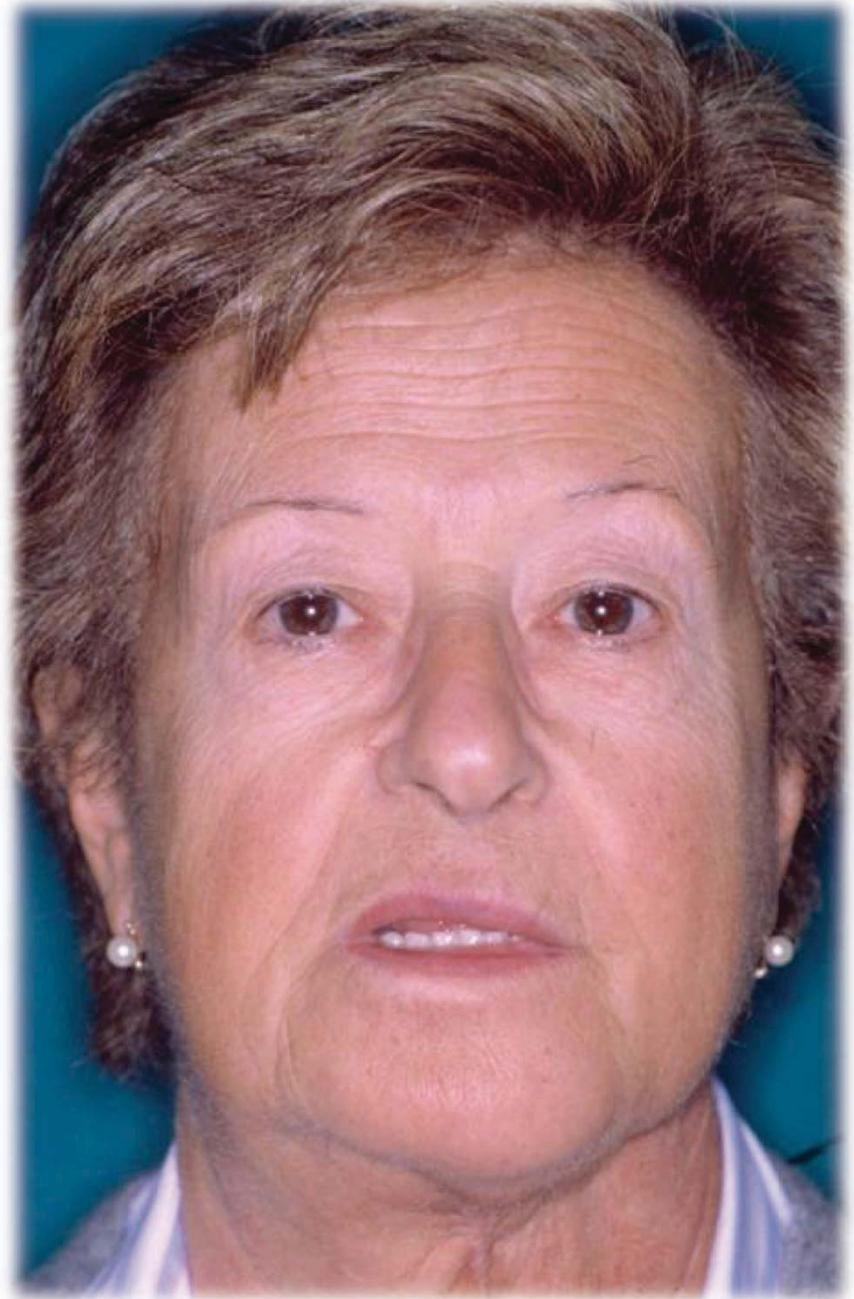


Ricostruzione

**Lembo microvascolare
di perone**

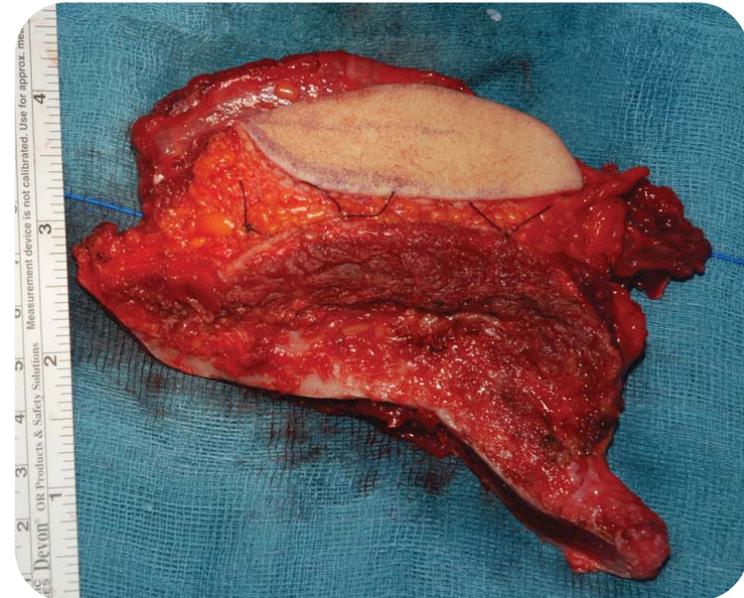


**Ricostruzione ossea
permette di mantenere la
stabilità e la ritenzione
della vecchia protesi
(overdenture)**



RICOSTRUZIONI DEI MASCELLARI

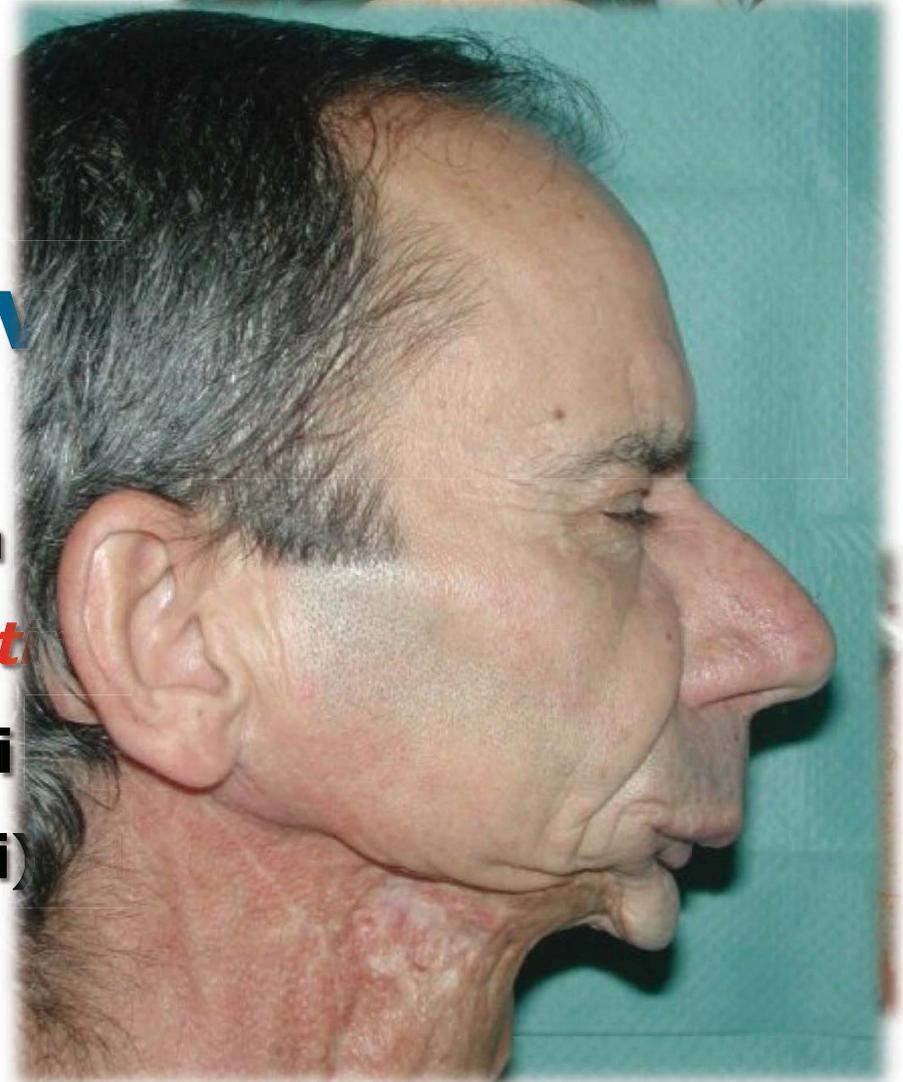
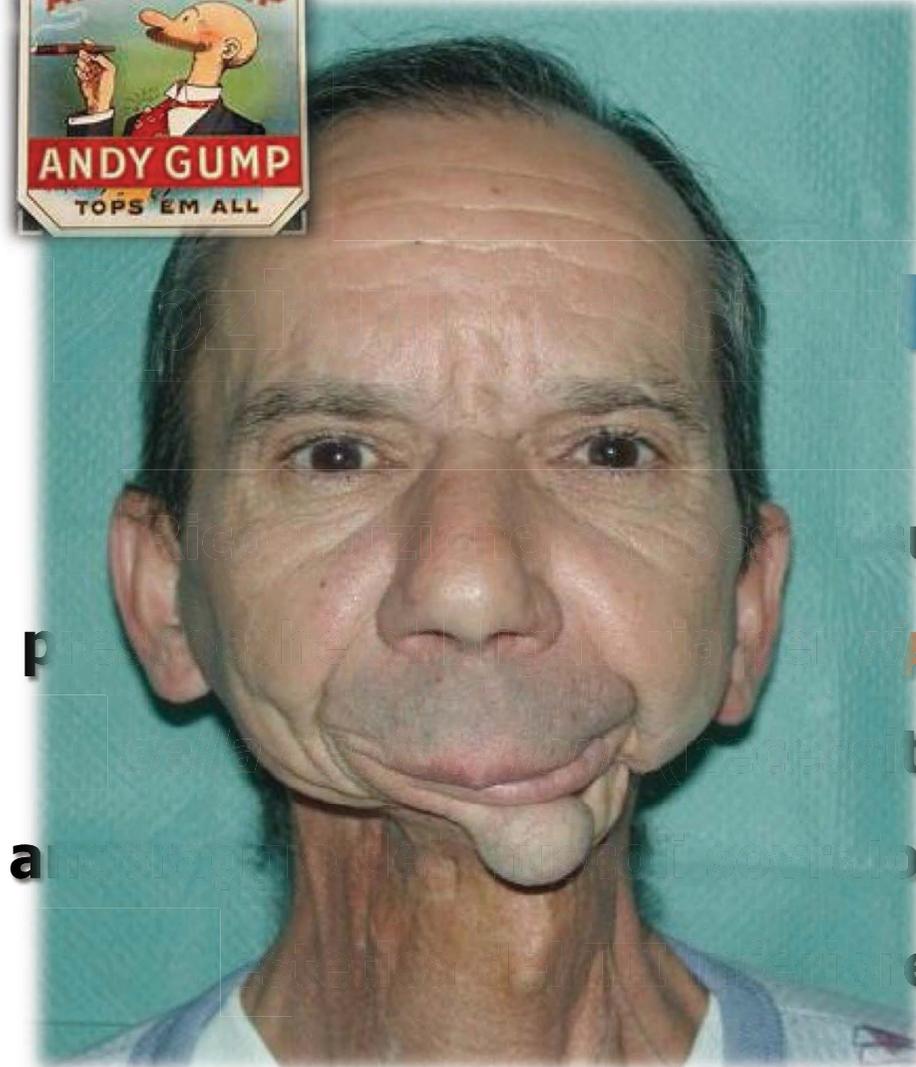
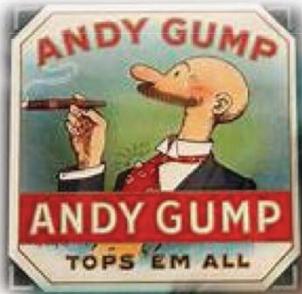
lembo libero di fibula VS lembo libero di ala iliaca



- Baj, S. Ferrari, B. Bianchi, F. Laganà, G. Bellocchio, E. Sesenna: “Ricostruzione oro-mandibolare con lembo libero di ala iliaca. Esperienza su 13 casi”. Acta Otorhinolaryngol Ital 23: 102-110, 2003
- Reconstruction of the mandible with osseous free flaps: a 10-year experience with 150 consecutive patients. Cordeiro PG, Disa JJ, Hidalgo DA, Hu QY. Plast Reconstr Surg. 1999 Oct; 104(5):1314-20.
- Mandible reconstruction with microvascular surgery. Disa JJ, Cordeiro PG. Semin Surg Oncol. 2000 Oct-Nov; 19(3):226-34
- [Iliac crest free flap for maxillary reconstruction.](#) Bianchi B, Ferri A, Ferrari S, Copelli C, Boni P, Sesenna E. J Oral Maxillofac Surg. 2010 Nov;68(11):2706-13

Resezione della sinfisi

(difetto *S* e *Sh* sec. *Urken*)



ttiv

ulta

prist

tà di

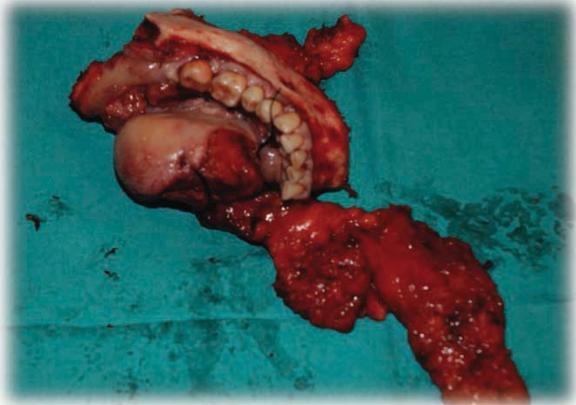
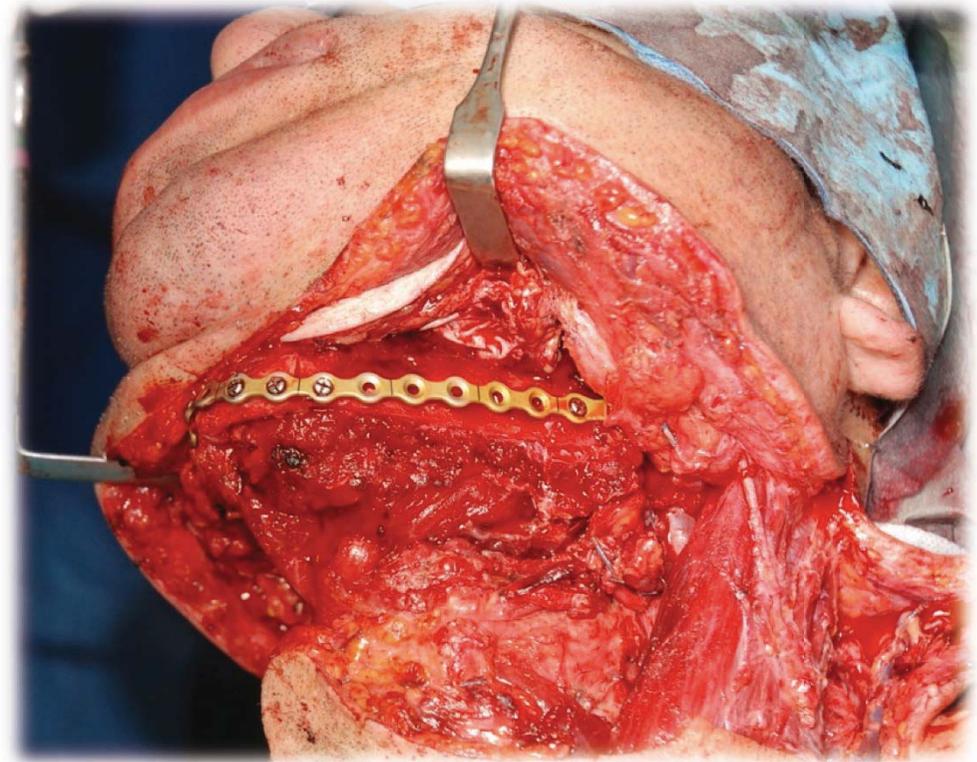
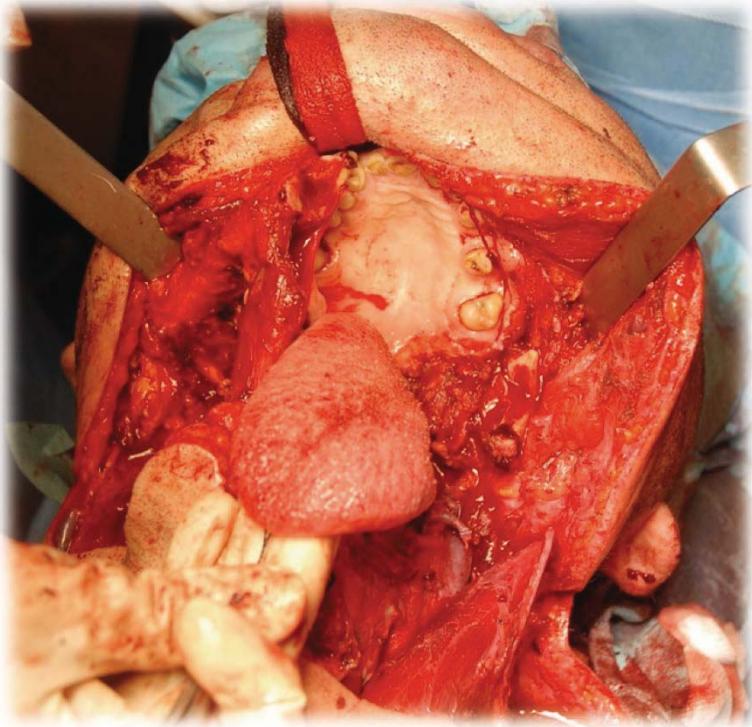
sovraboidi)

e

p

a

Ricostruzioni a mano libera

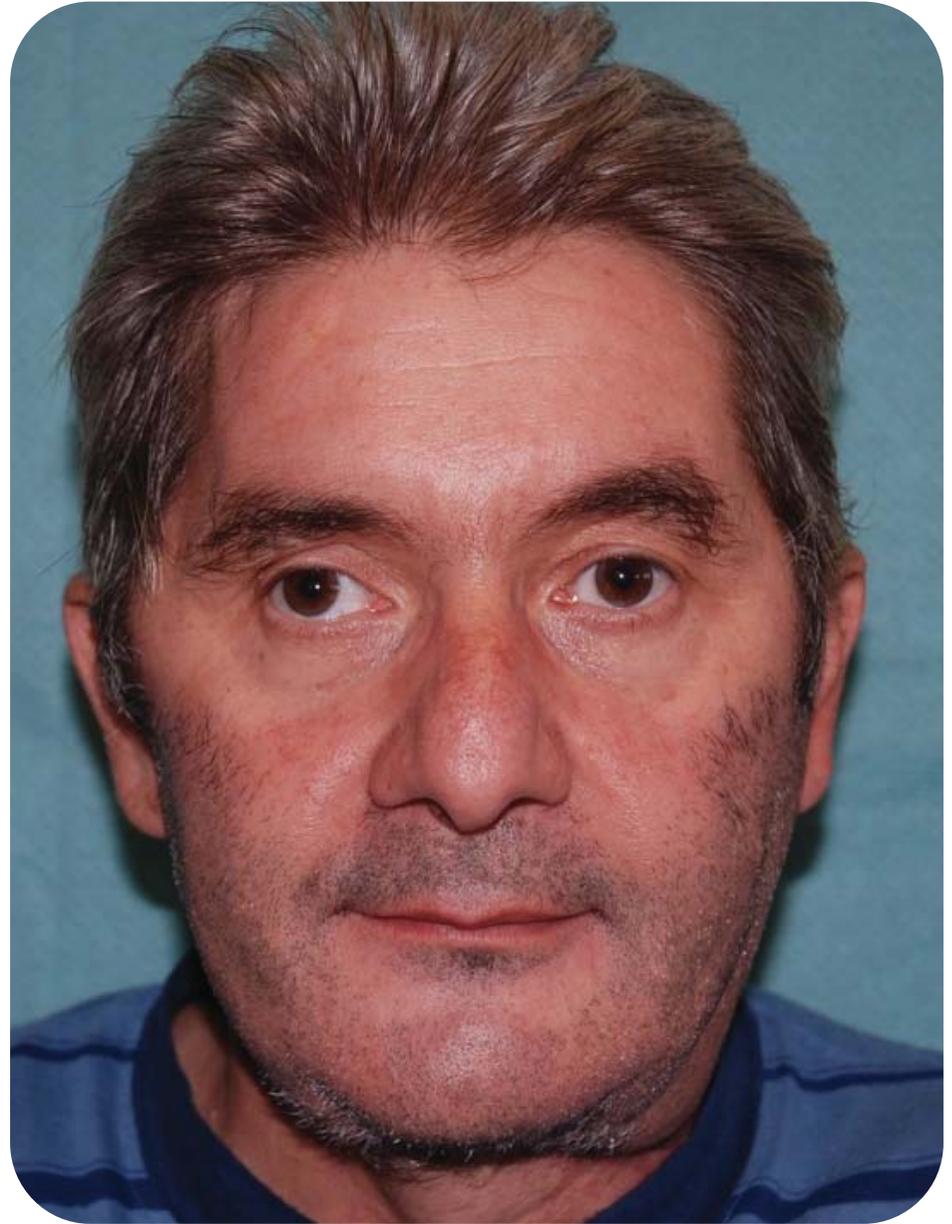




Fond.Osp.Maggiore
FACCIALE SENZA CONTRASTO
3D COR
05/09/2012 18:13:11
0032185044

HFS

Z: 1
C: 128
W: 256



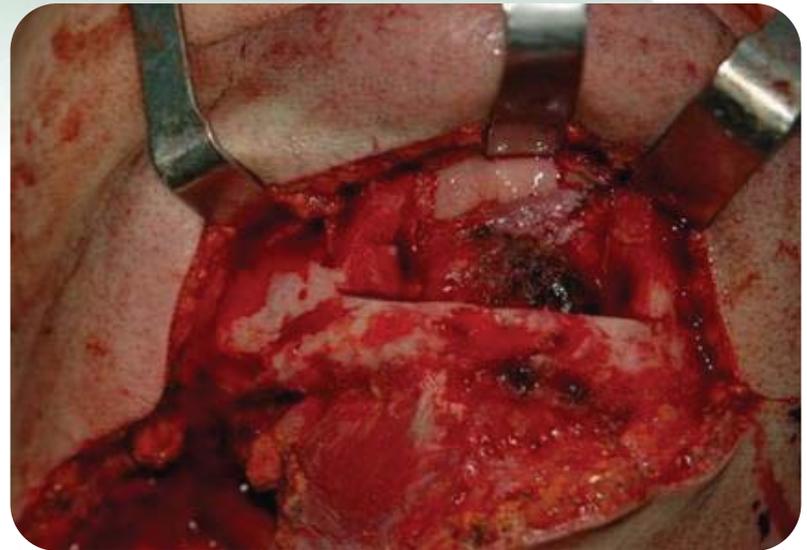
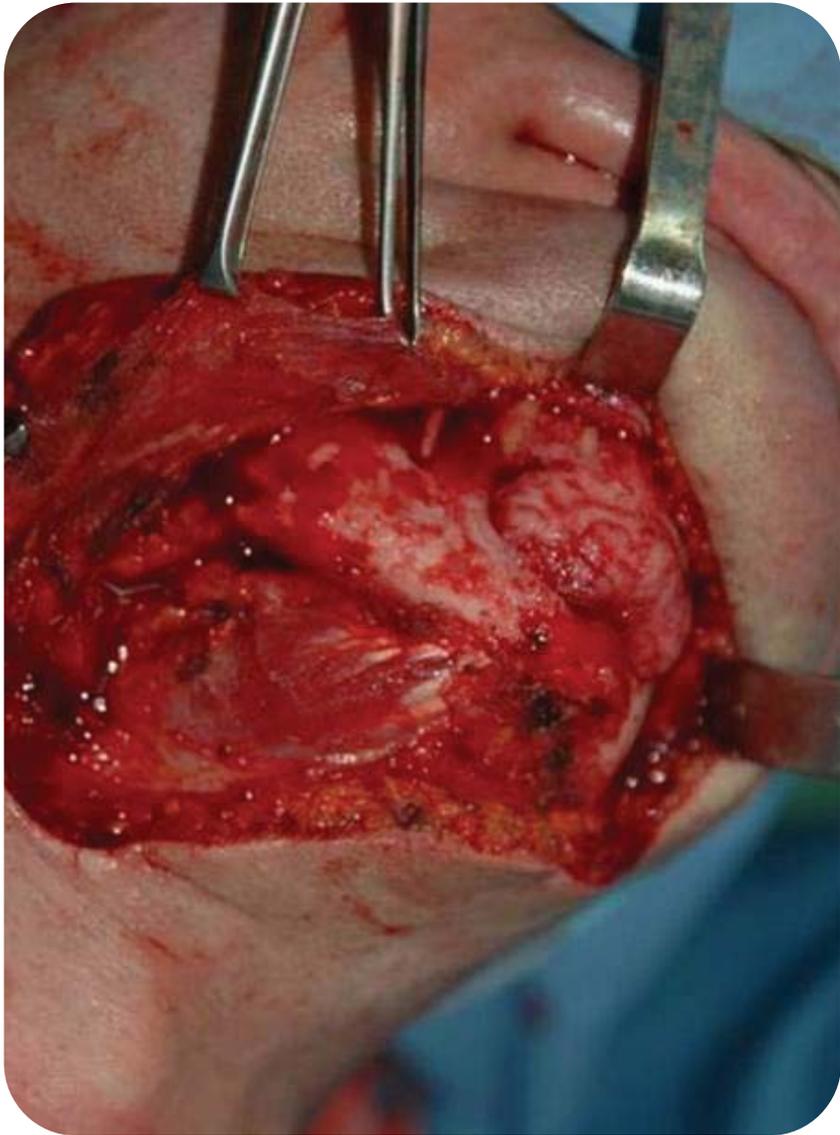
♂ 31aa

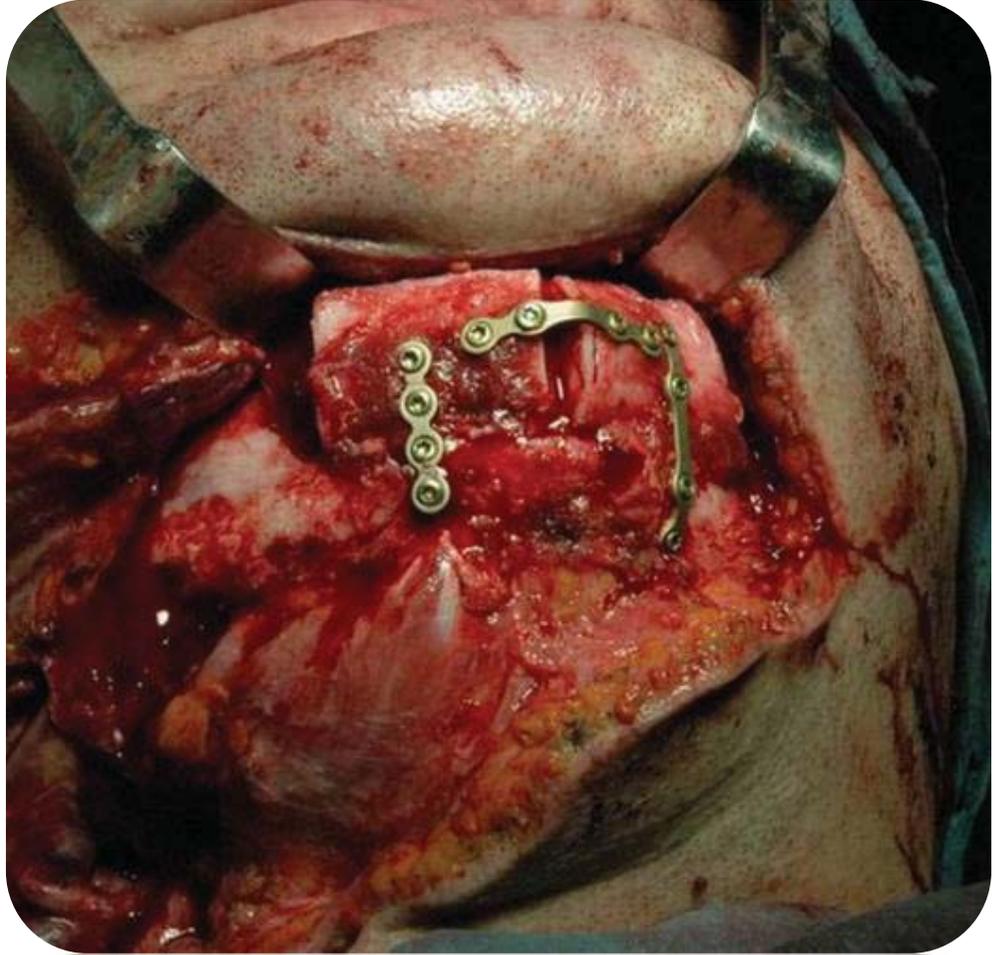
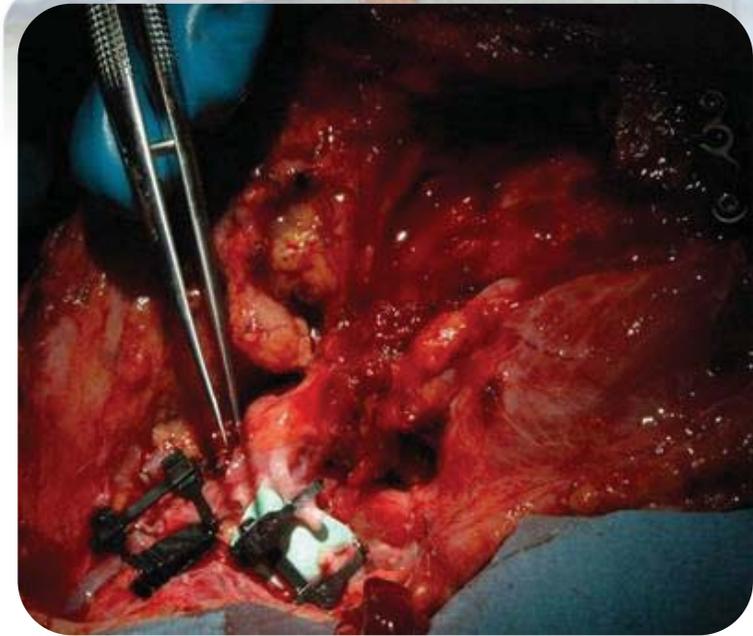
**Tumore a cellule
giganti sinfisi
mandibolare in paz
con
ipoparatiroidismo**

**DEMOLIZIONE:
Mandibulectomia
non interrutrice**

**RICOSTRUZIONE
Lembo
microvascolare
osteo-mio-cutaneo di
perone**





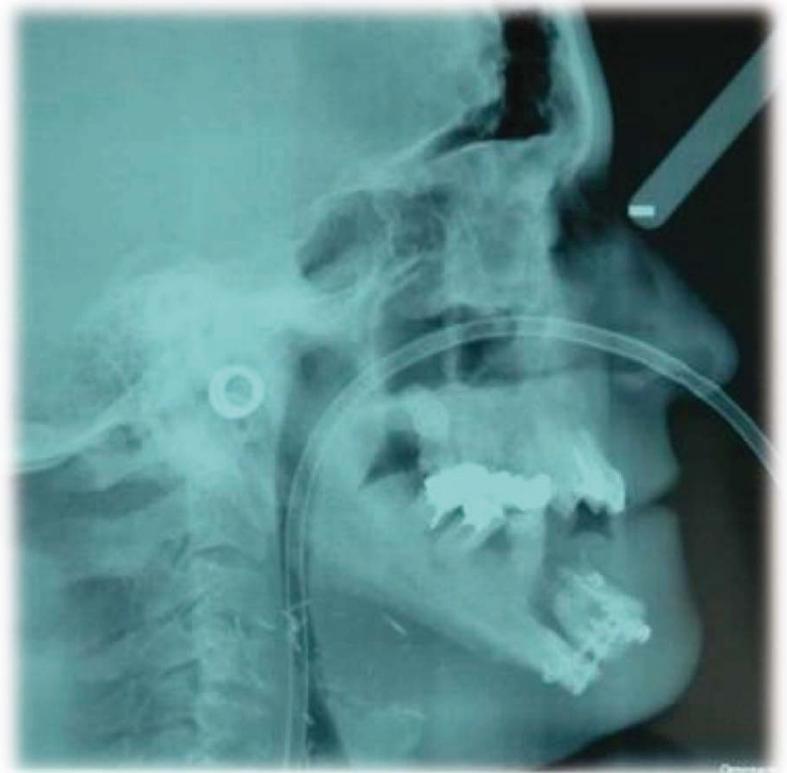


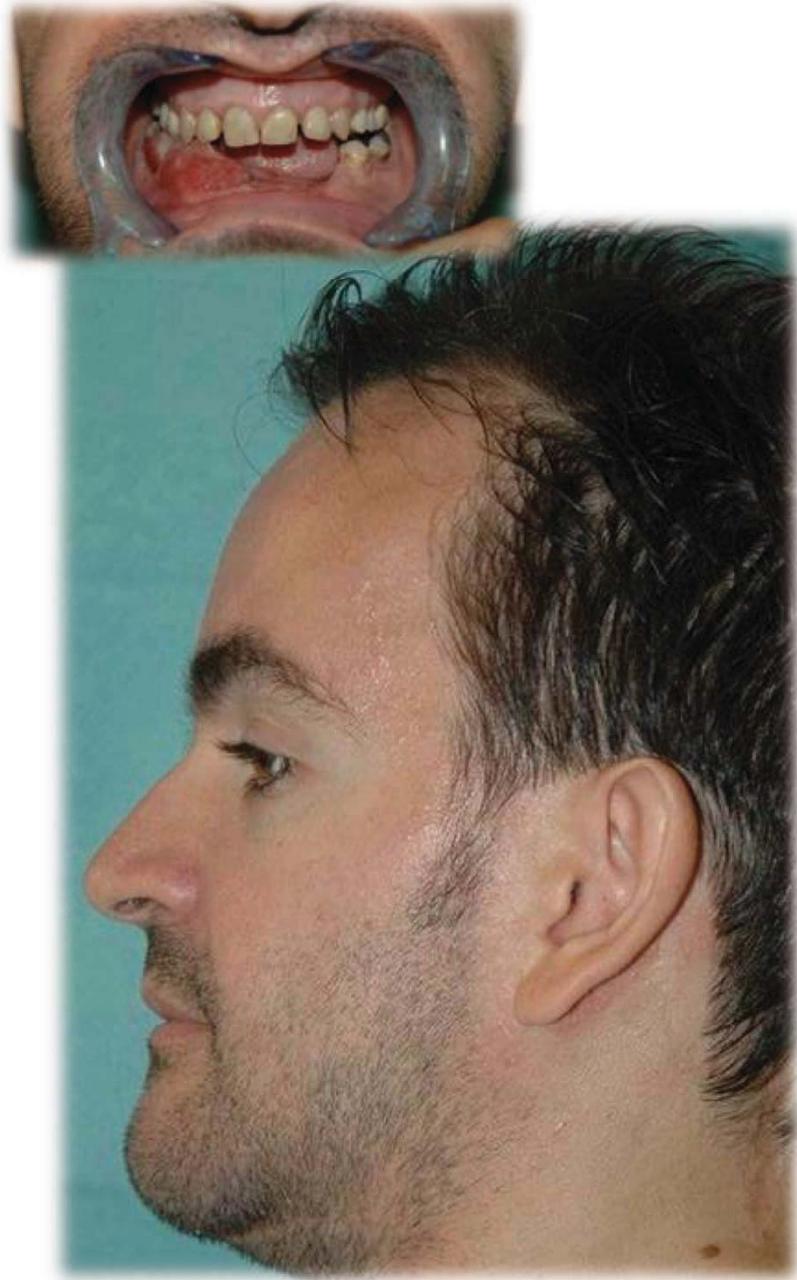
SIST. FERRETTI ALEX

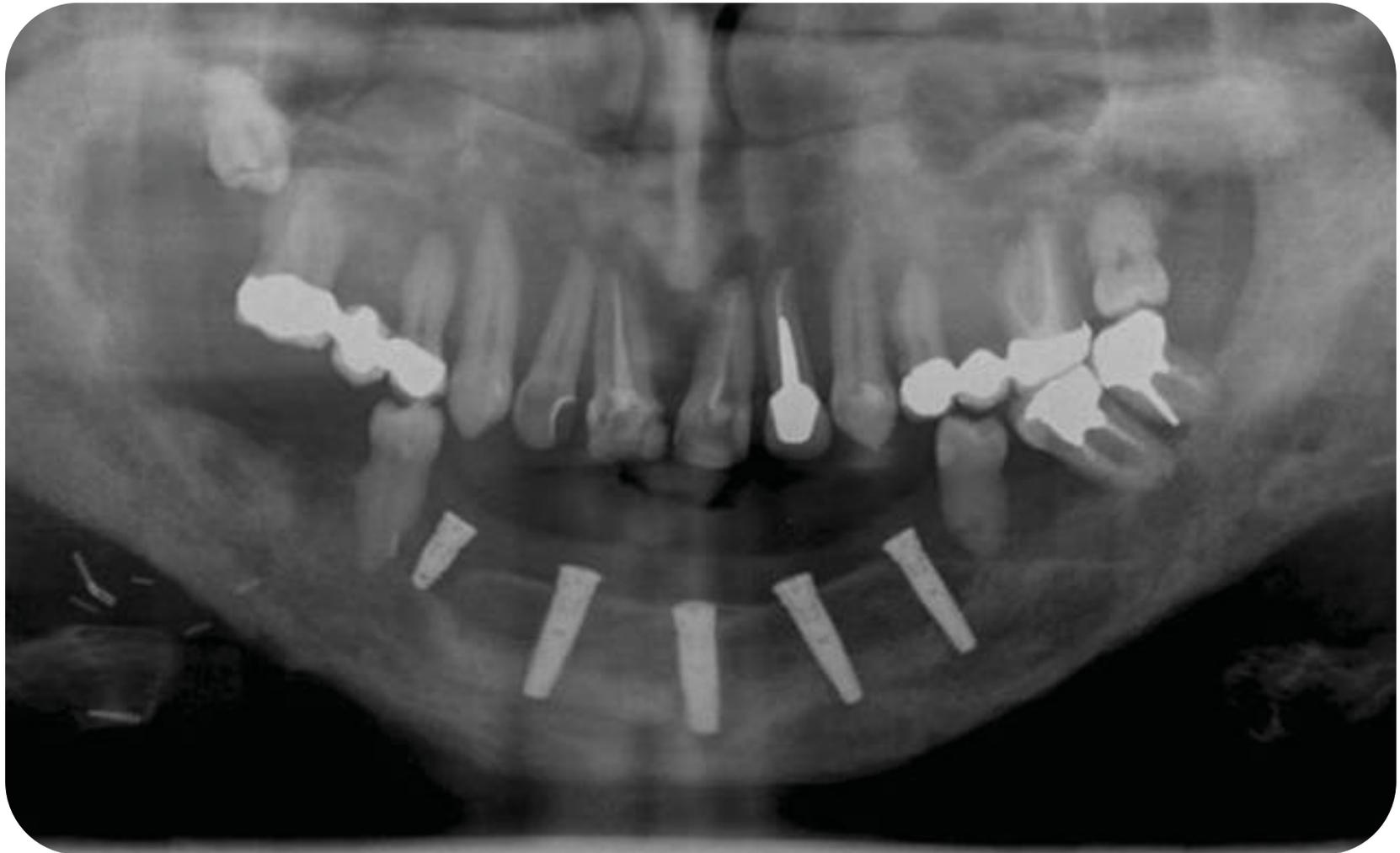
M
FEB-1974
JUN-2007
13:20.17
68.0
37
4

Ist. Ort. Gal
SOMATOM P

H-







FIBULA Caratteristiche anatomiche

- LUNGHEZZA PRELEVABILE

22.2 +/- 2.5 cm

- ALTEZZA

10.6 +/- 2.0 mm
tratto prossimale

11.0 +/- 2.0 mm
tratti distali

- RANGE

7 mm (1/4 prossimale)
16 mm (1/4 distale)

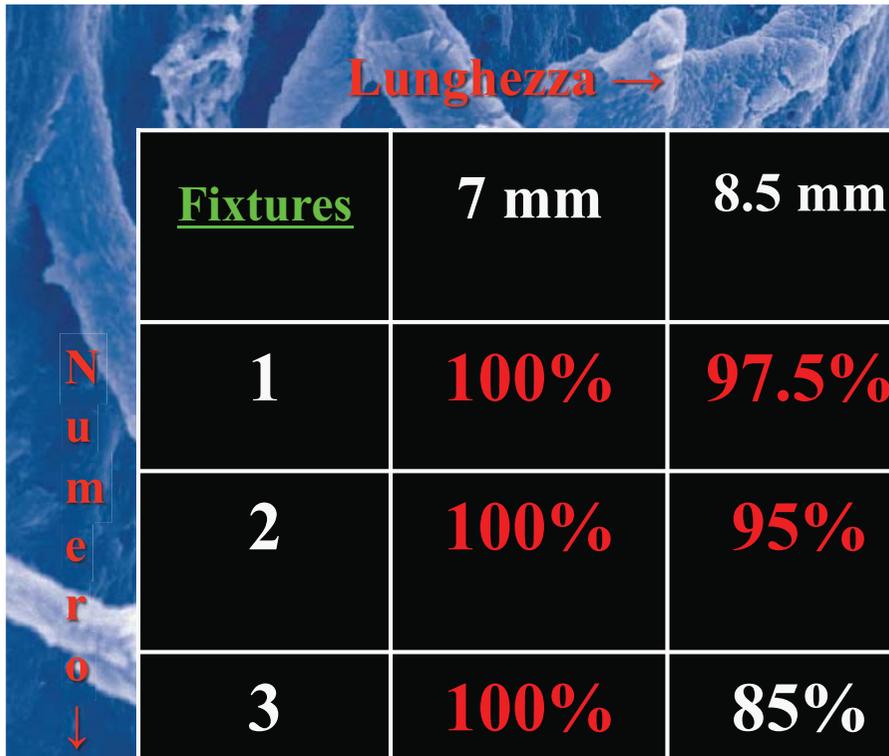
Proximal					Distal
A	1.5 ± 0.5	1.8 ± 0.7	1.8 ± 0.6	1.5 ± 0.5	
B	1.5 ± 0.3	1.9 ± 0.4	1.9 ± 0.4	1.7 ± 0.5	
C	10.6 ± 2.0	11.0 ± 2.0	11.0 ± 1.7	11.1 ± 1.5	

A: altezza della componente ossea del lembo in cm

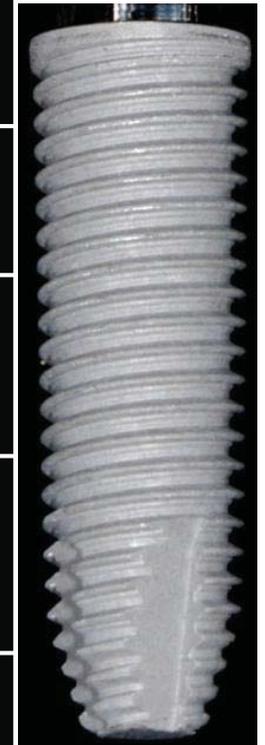
B: spessore della corticale ossea in mm

C: densità della corticale ossea

IMPLANTABILITA' DELLA FIBULA



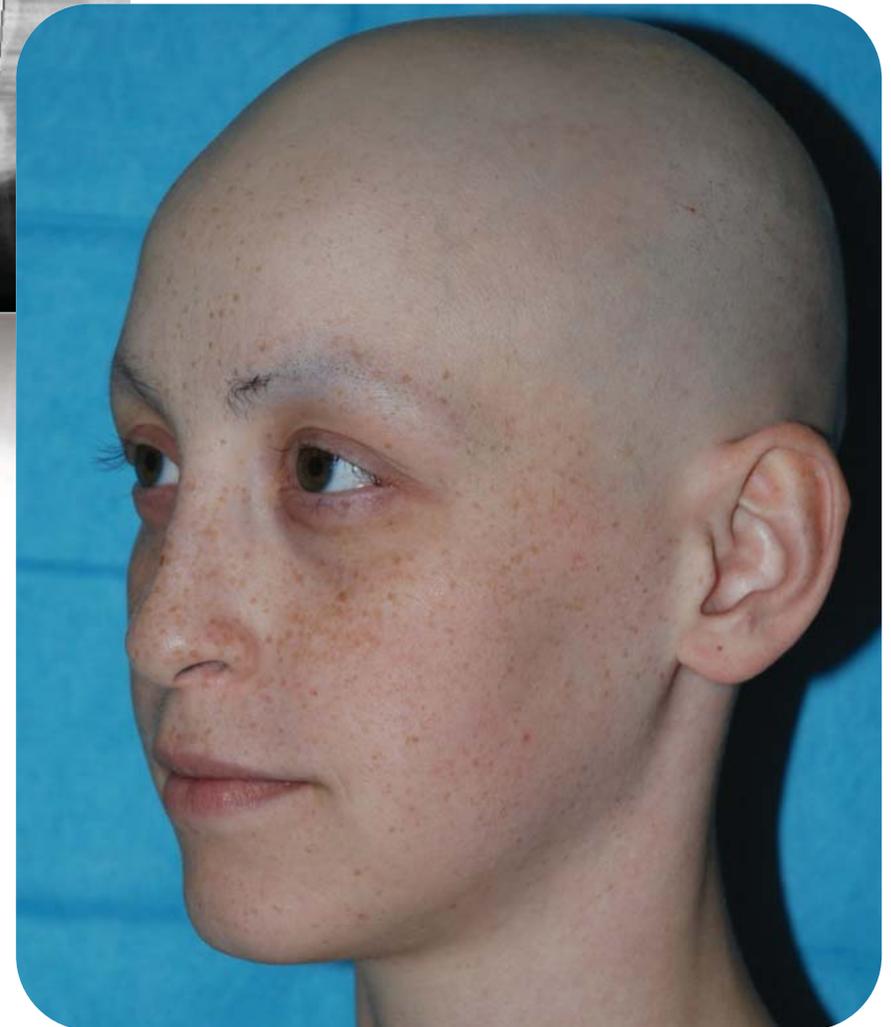
<u>Fixtures</u>	7 mm	8.5 mm	10 mm	13 mm	15 mm
1	100%	97.5%	87.5%	37.5%	15%
2	100%	95%	70% (100%)	20% (100%)	5% (97.8%)
3	100%	85%	60% (100%)	17% (80%)	- (67.5%)
4	100%	10% (75%)	- (52.5%)		

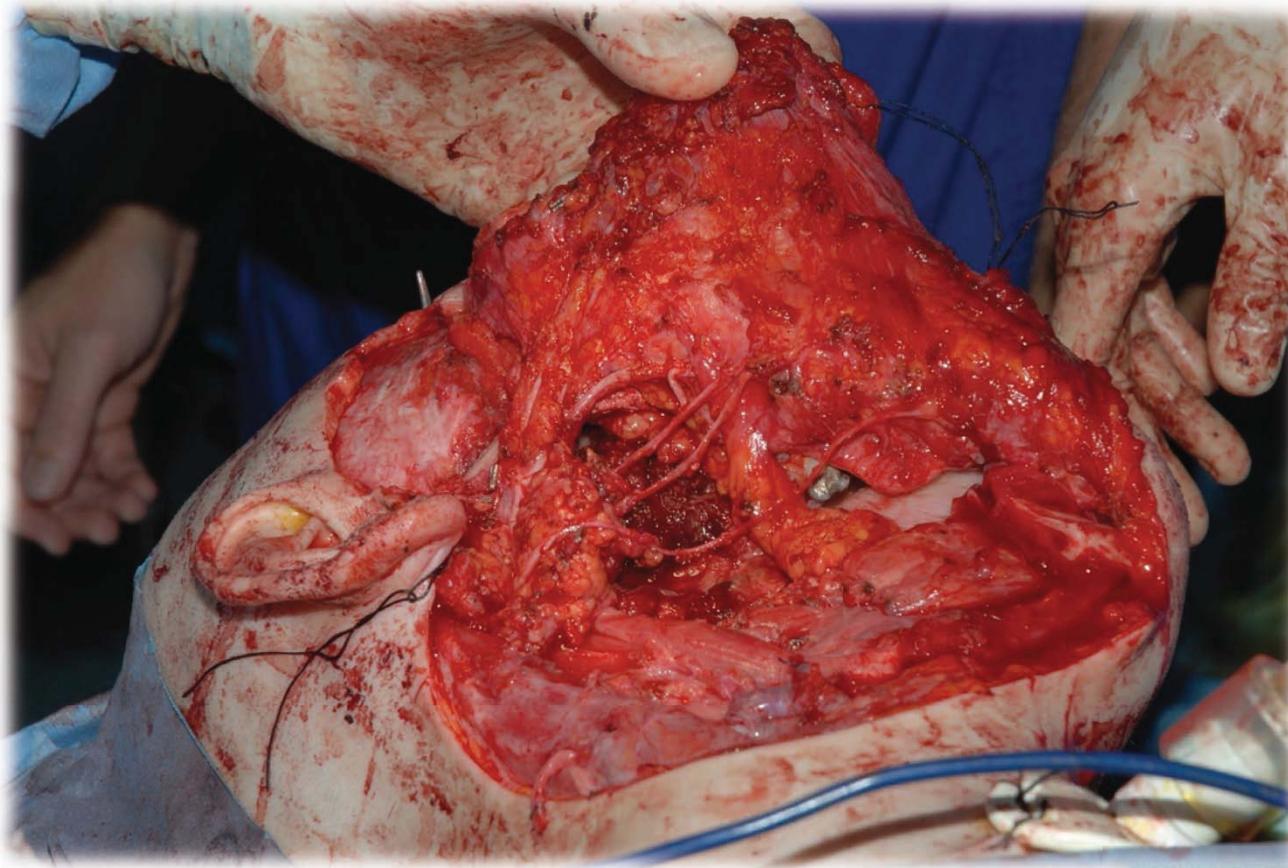


Klesper B et al, *Journal of Cranio-Maxillofacial Surgery* 2000; 28:110-115
Moscoso J et al, *Arch Otolaryngol Head and Neck Surg* 1994; 120:36-43

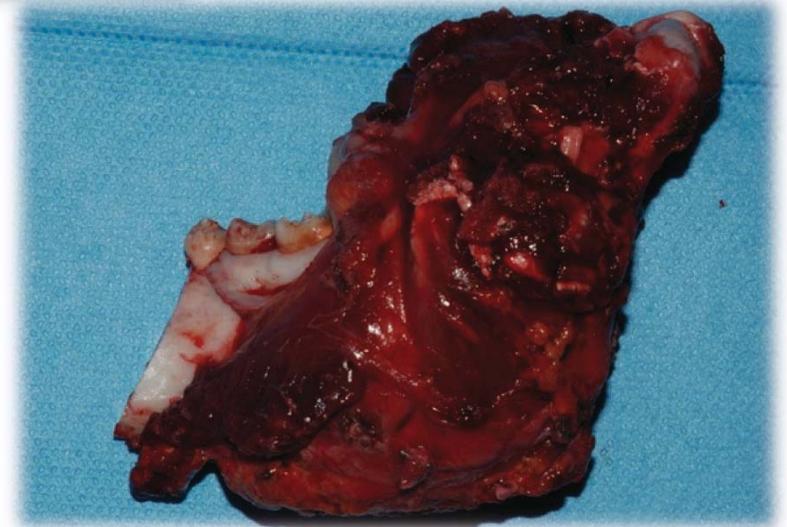


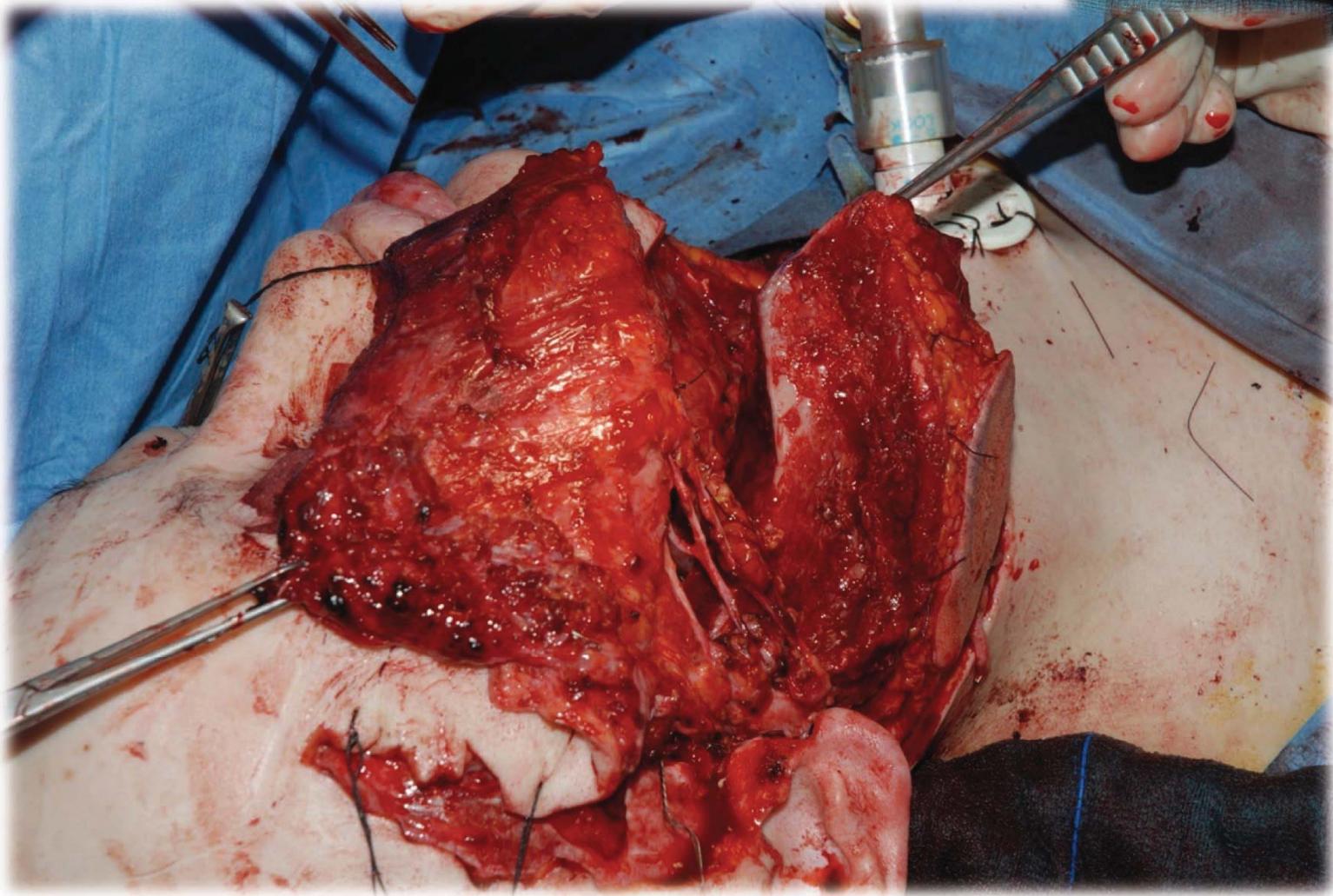
Osteosarcoma mandibolare



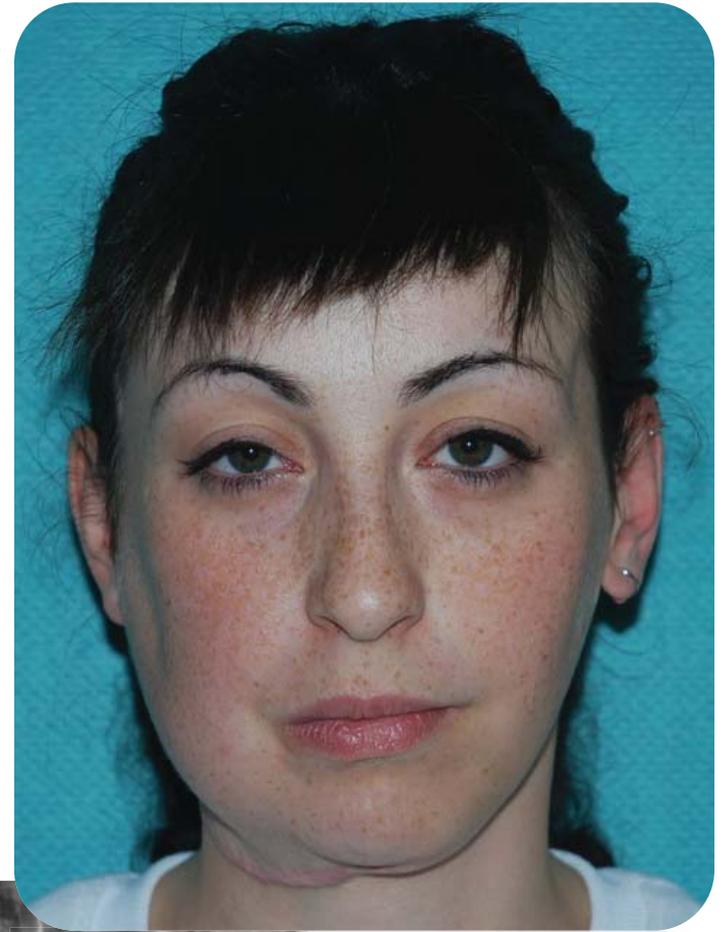
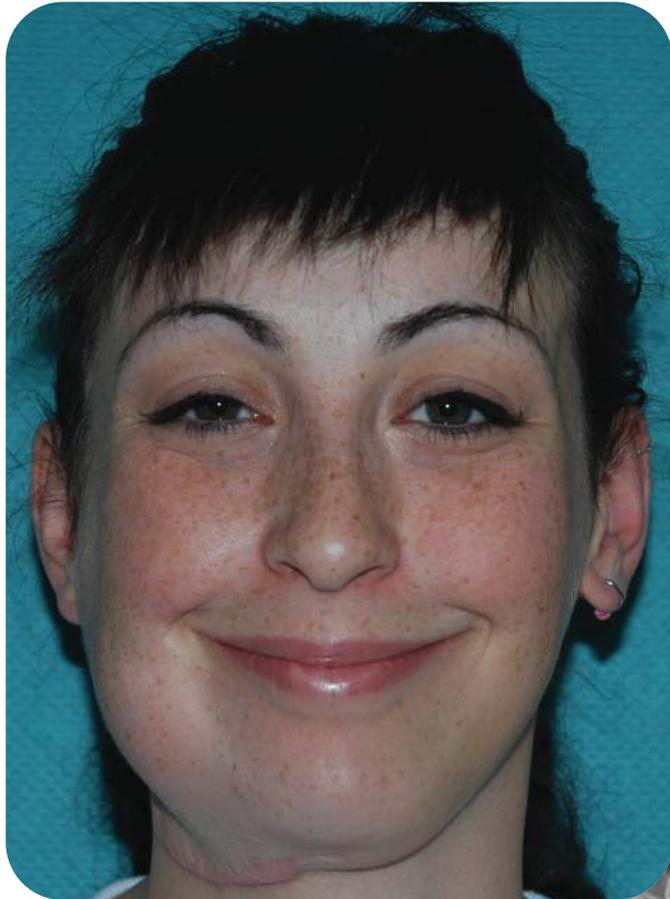


**Emimandibulectomia
compartimentale con
conservazione del VII n.c.**





**Esito a 7
anni**



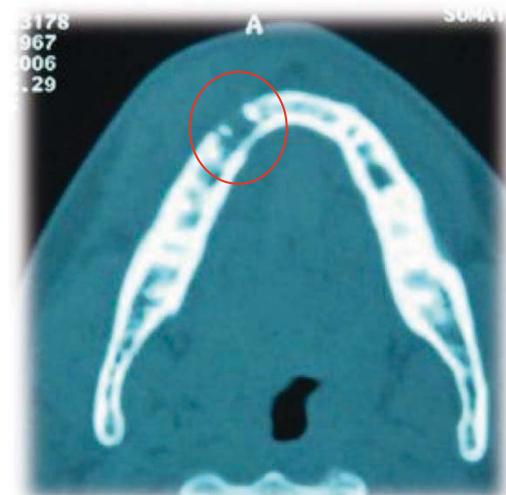
♂ 38aa

Ca Squamocellulare

T4 N2b M0 G2

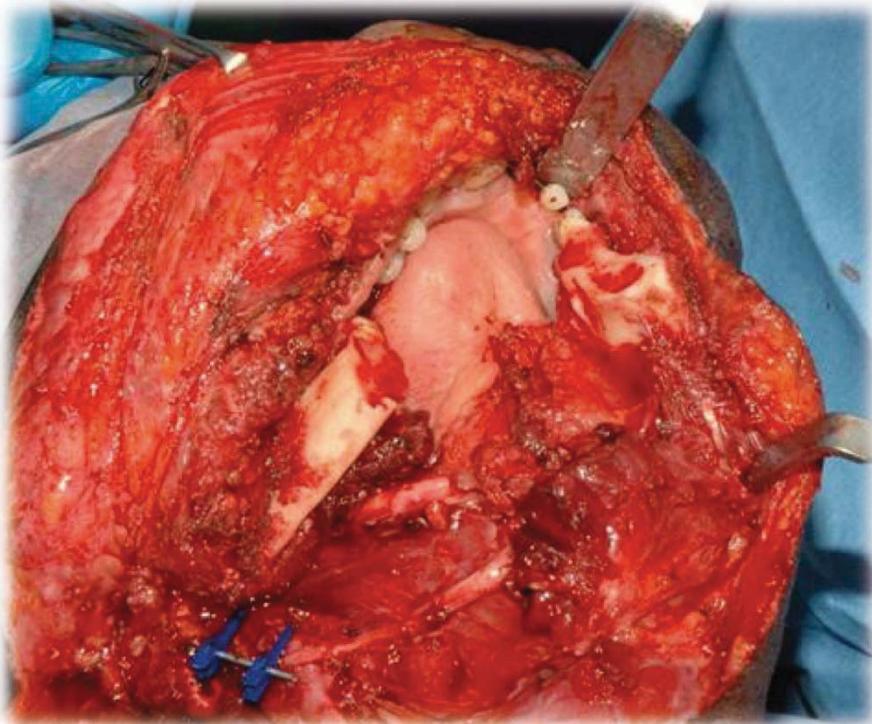
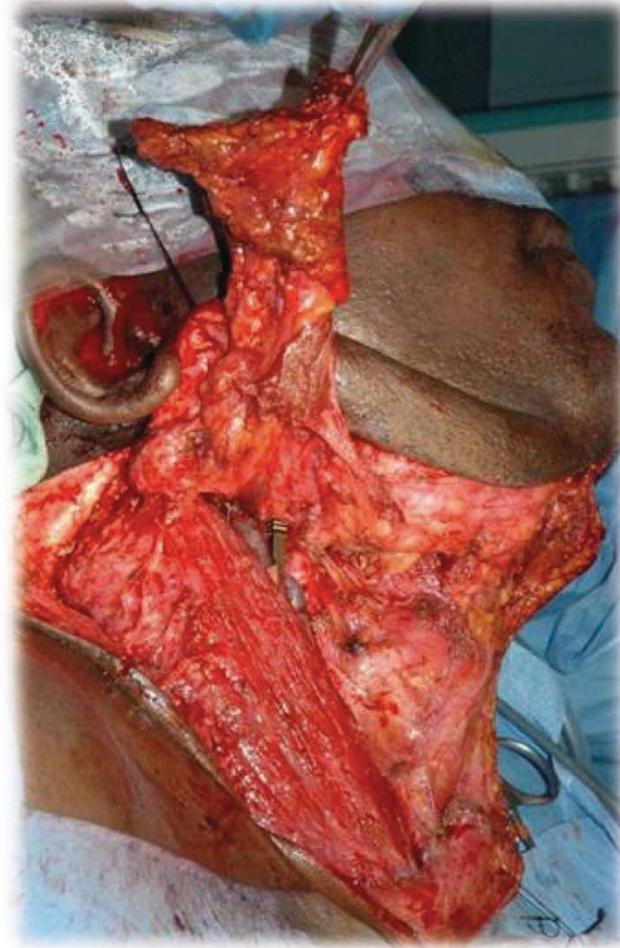
DEMOLIZIONE:
Mandibulectomia B_S,
MRND III

RICOSTRUZIONE :
Lembo microvascolare
osteo-mio-cutaneo di
cresta iliaca



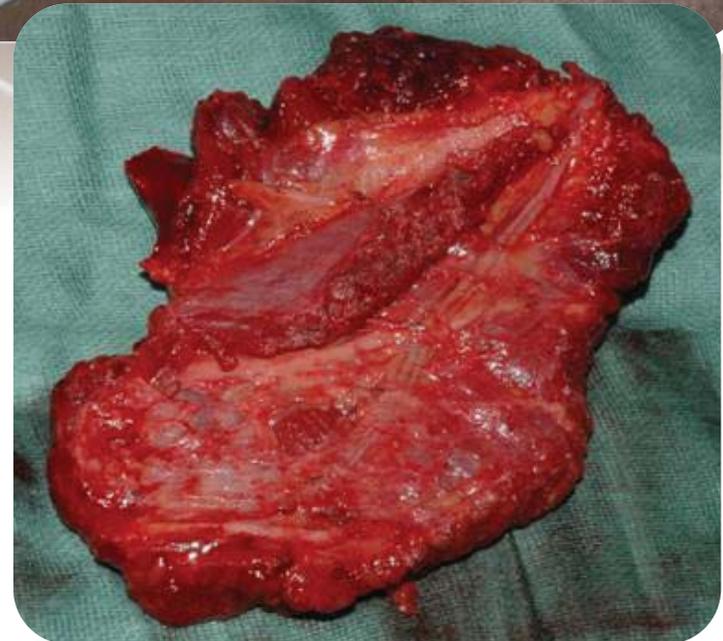
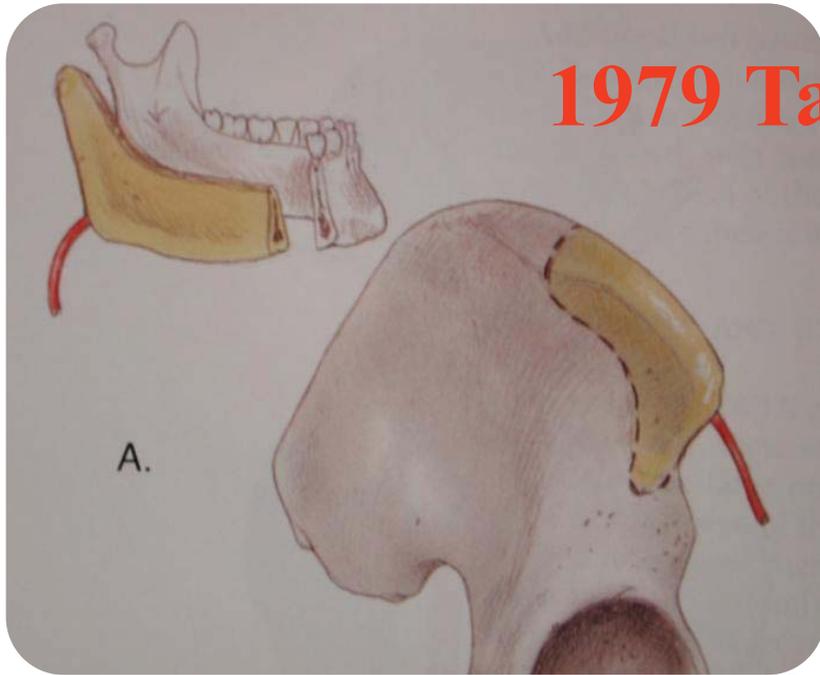
Urken Head & Neck 1999

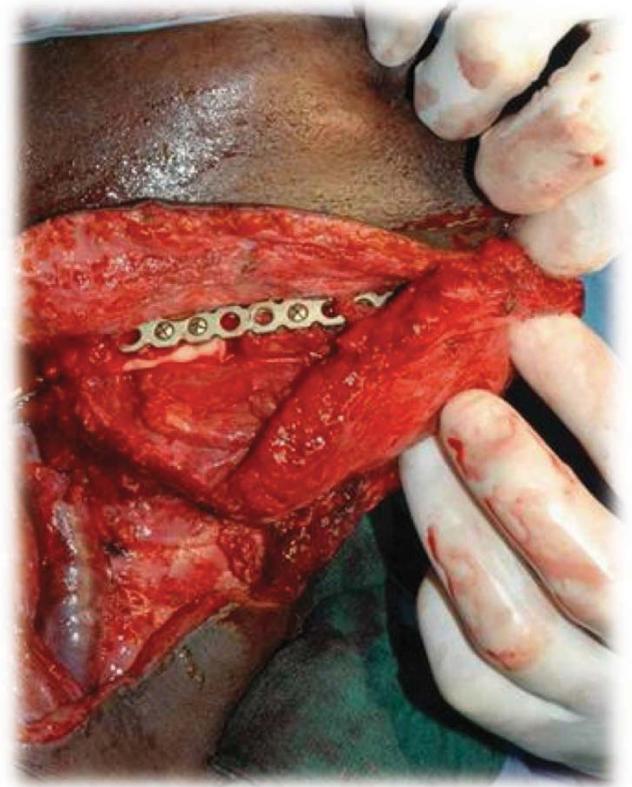
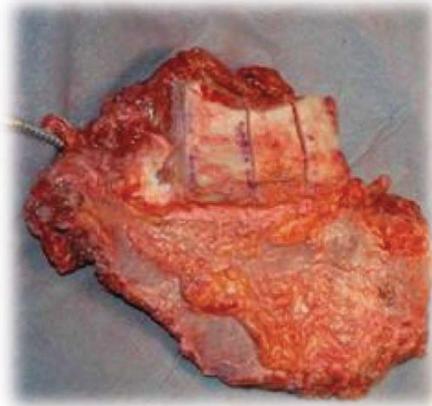
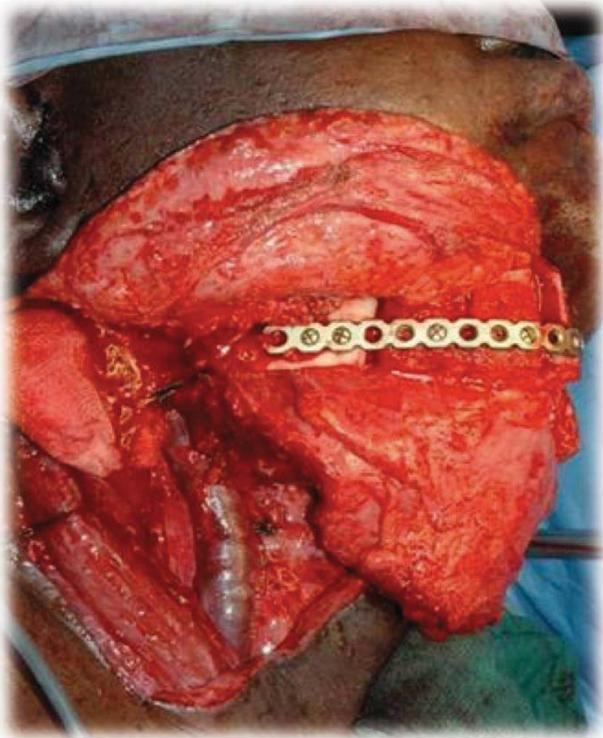
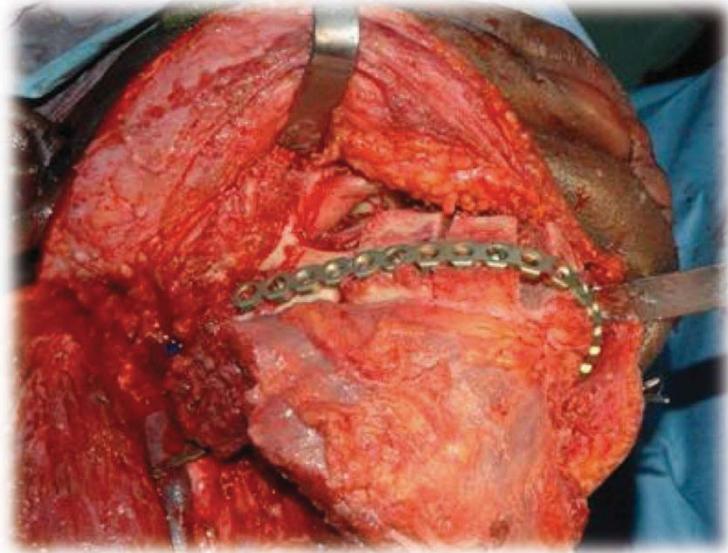
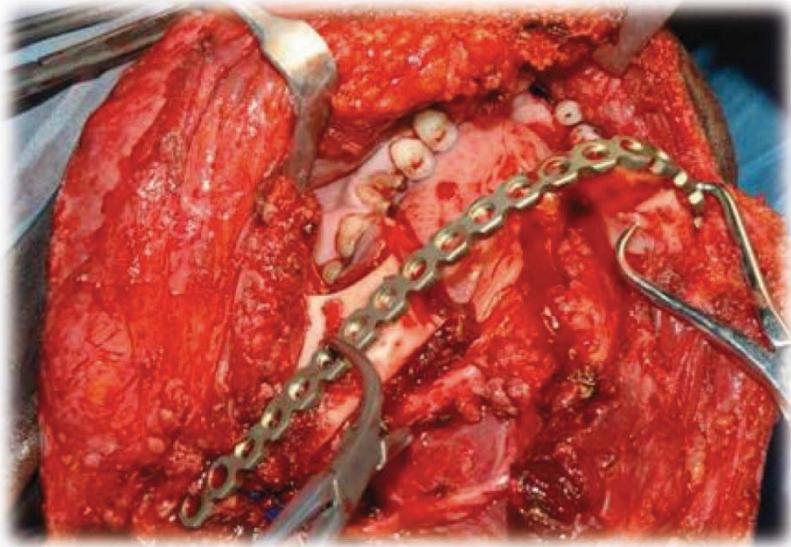


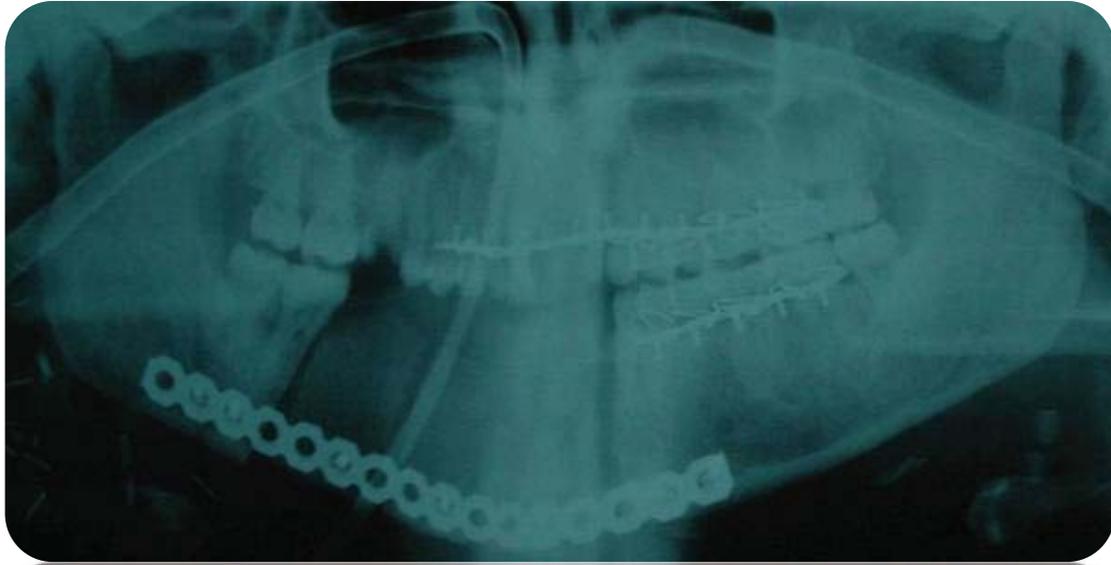


Lembo di cresta iliaca

1979 Taylor et al









ALA ILIACA Caratteristiche Anatomiche

- **FORMA SEZIONE** Trapezoidale

-

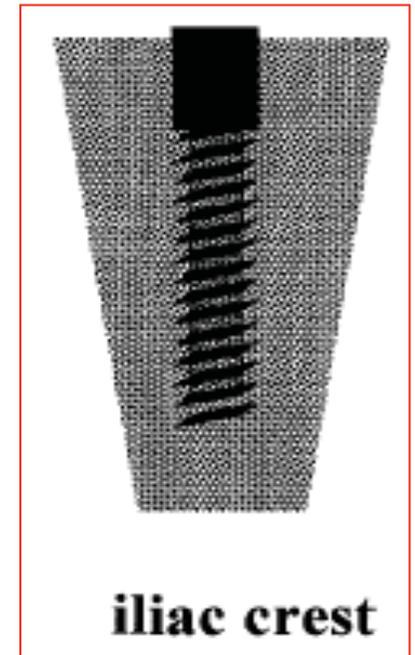
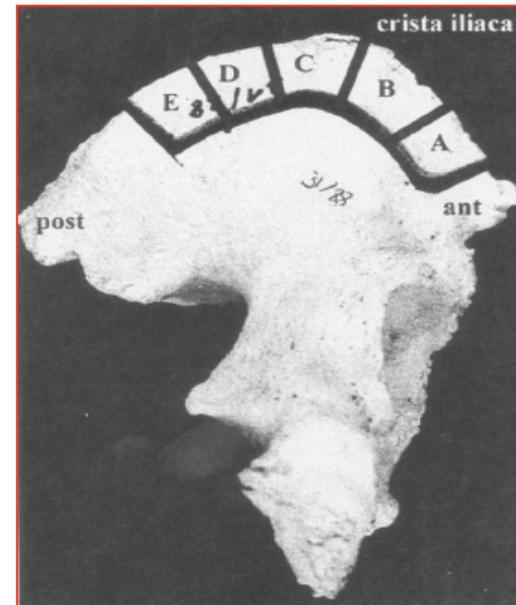
- **ALTEZZA** 26.7 +/- 5.5 mm.

- **SPESSORE**

14.6 +/- 3.8 mm spessore medio assoluto

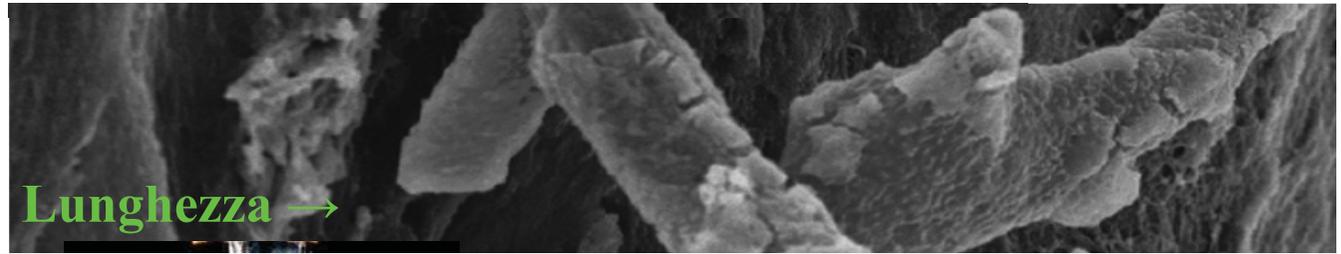
11.1 +/- 3.6 mm spessore medio a 1.5 mm di profondità

2.55 +/- 1.1 mm spessore medio corticale



Beckers A et al, J Cranio-Maxillofac Surg 1998; 26:75-83
Moscoso J et al, Arch Otolaryngol Head and Neck Surg 1994; 120:36-43

IMPLANTABILITA' DELL'ALA ILIACA



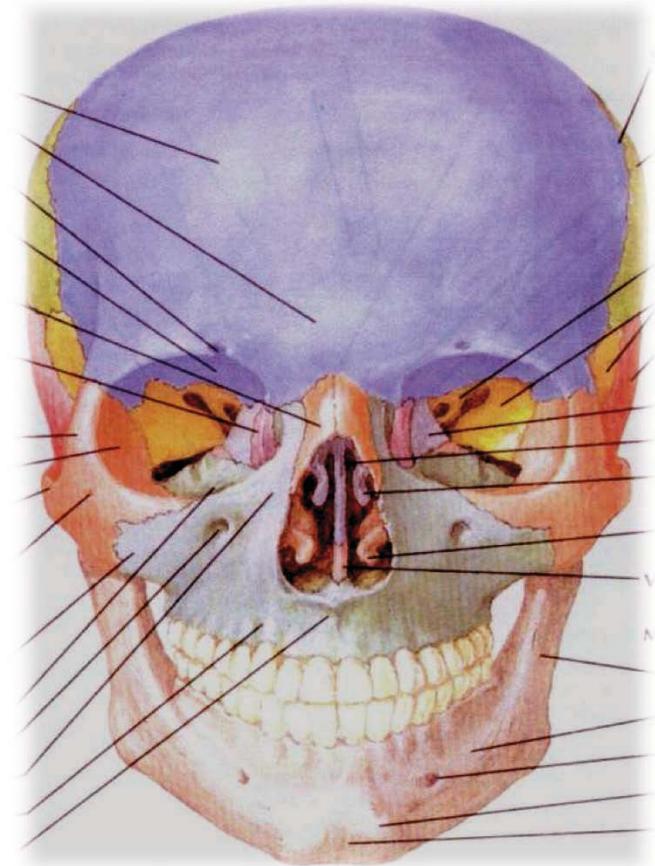
N
u
m
e
r
o
↓

<u>Fixtures</u>	7 mm	8.5 mm	10 mm	15 mm	18 mm
1	100%	100%	100%	100%	100%
2	100%	100%	100%	97%	90%
3	100%	100%	96%	85%	80%
4	95%	90%	87%	78%	48%

Beckers A et al, J Cranio-Maxillofac Surg 1998; 26:75-83
Moscoso J et al, Arch Otolaryngol Head and Neck Surg 1994; 120:36-43

OBIETTIVI DELLA RICOSTRUZIONE MASCELLARE DOPO MAXILLECTOMIA

- **Separazione vie aeree vs digestive**
- **Riabilitazione tridimensionale palato e cresta alveolare**
- **Ricostruzione tridimensionale pilastri e contrafforti mascellari**
- **Rivestimenti esterni ed interni**
- **Sostegno contenuto orbitario**
- **Riabilitazione dentaria**



Foster, Plast Reconstr Surg 99: 1555, 1997

CLASSIFICAZIONE DIFETTI MASCELLARI

Maxillectomia tipo II



**Premaxilla
preservation**



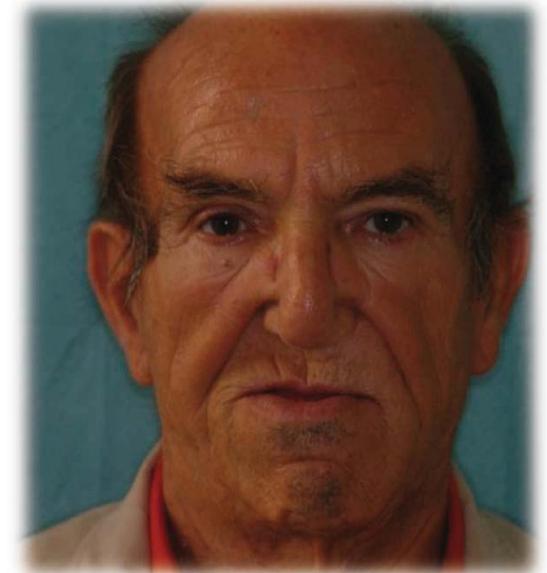
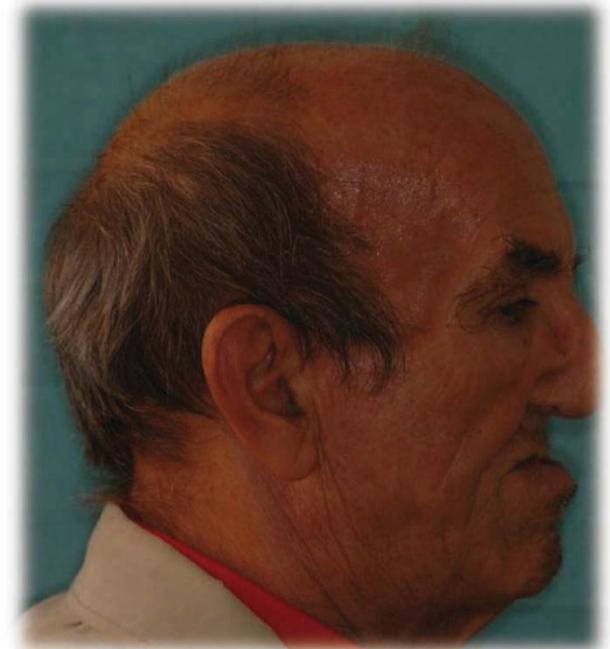
**Locoregional flaps
+/- osseous grafts**



**Premaxilla
involvement**

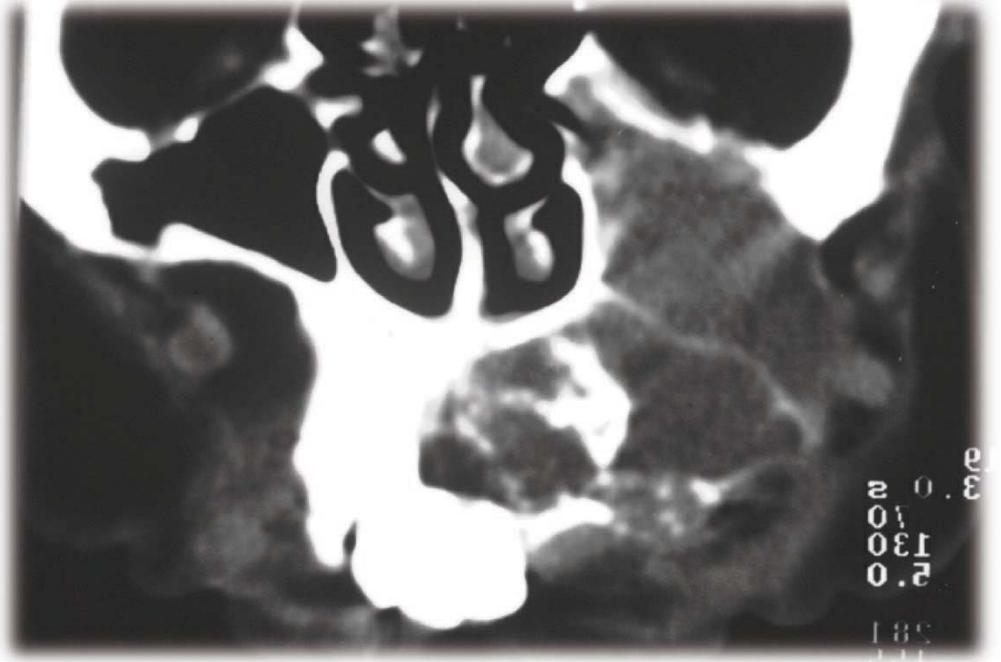


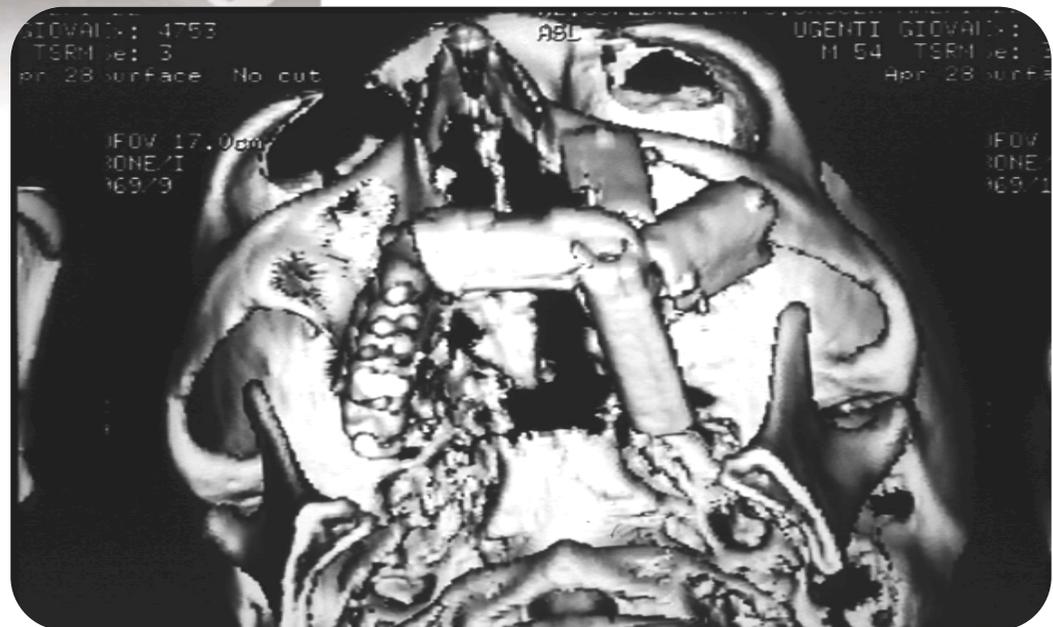
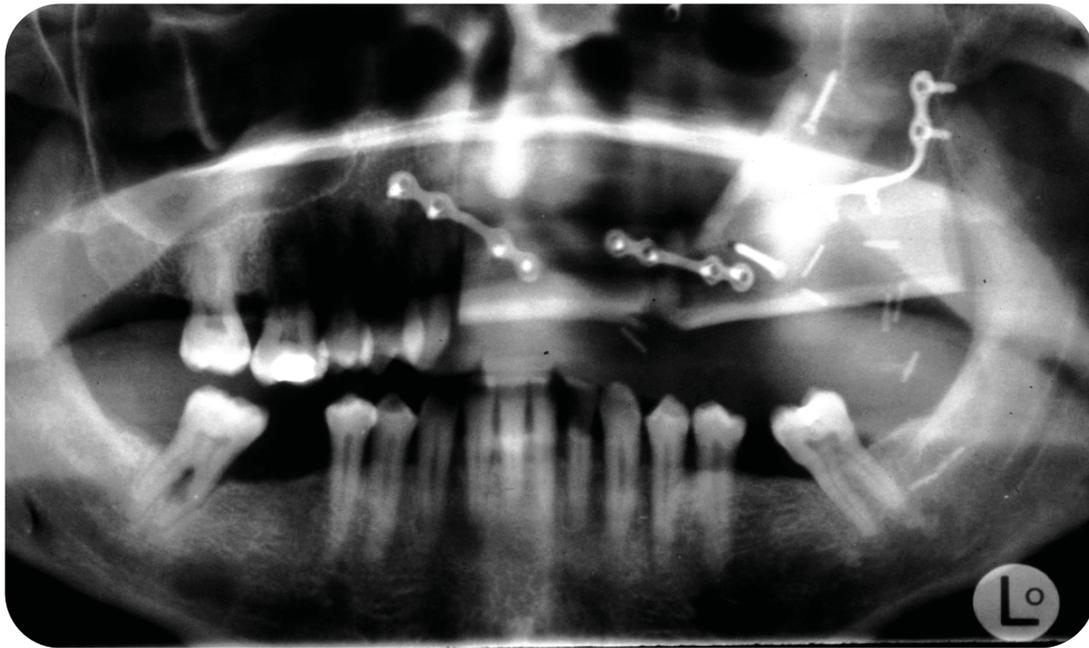
**Bone -containing
free flaps**

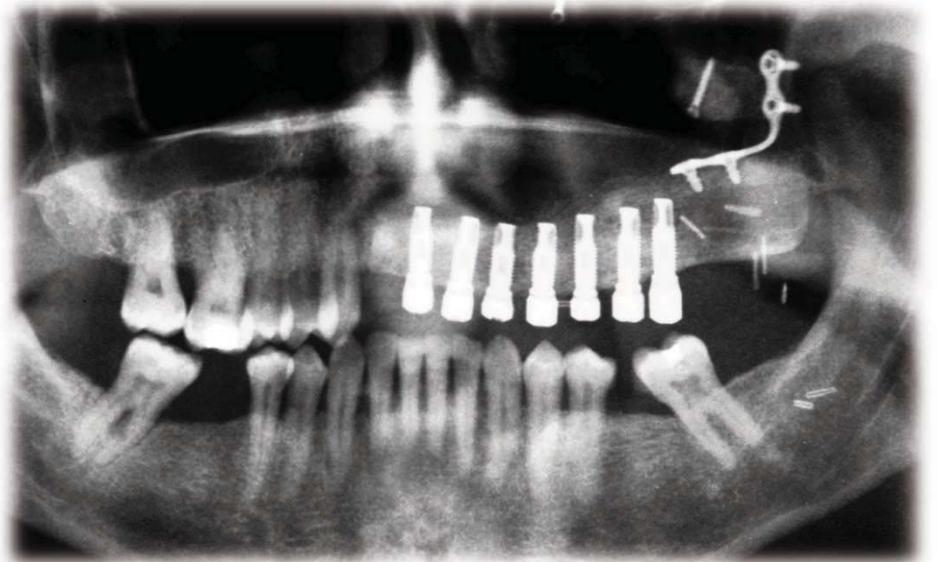
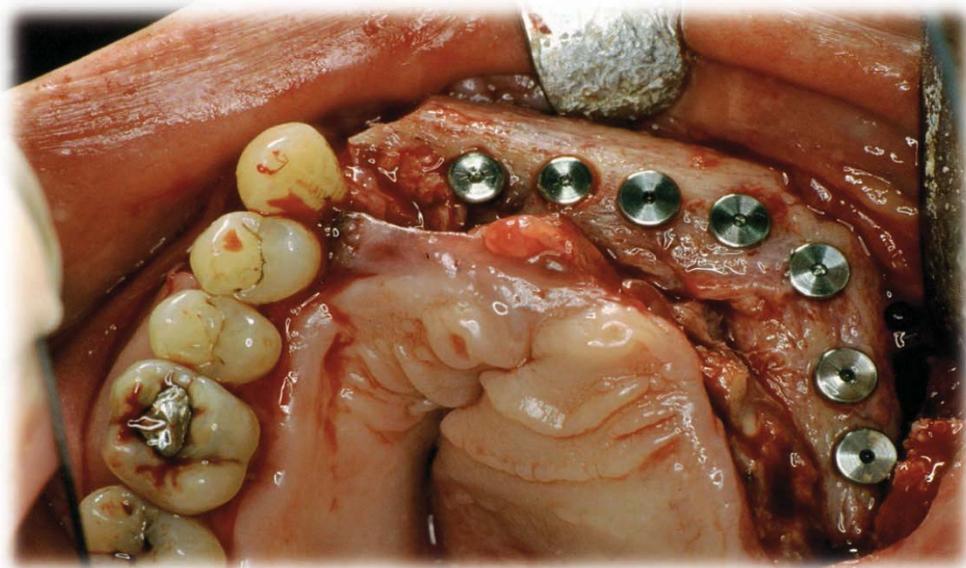
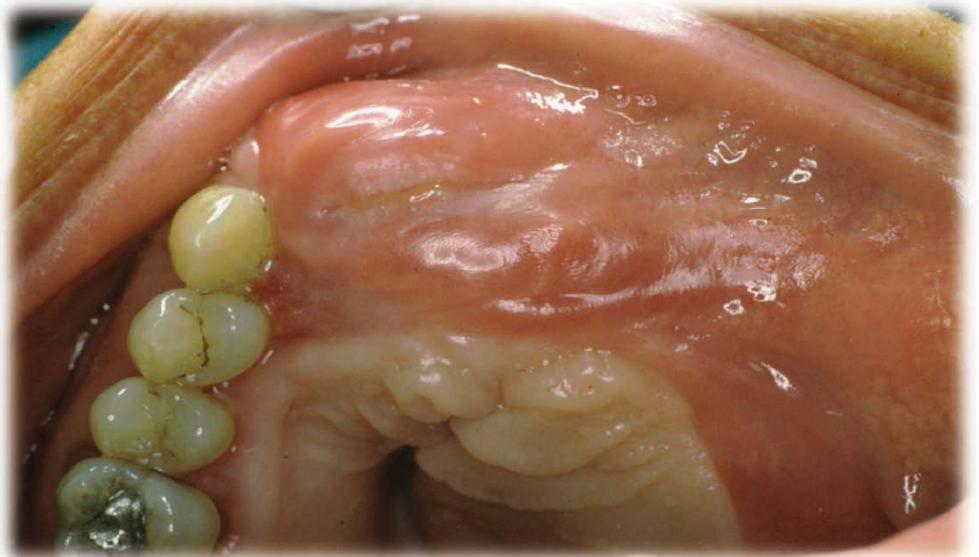


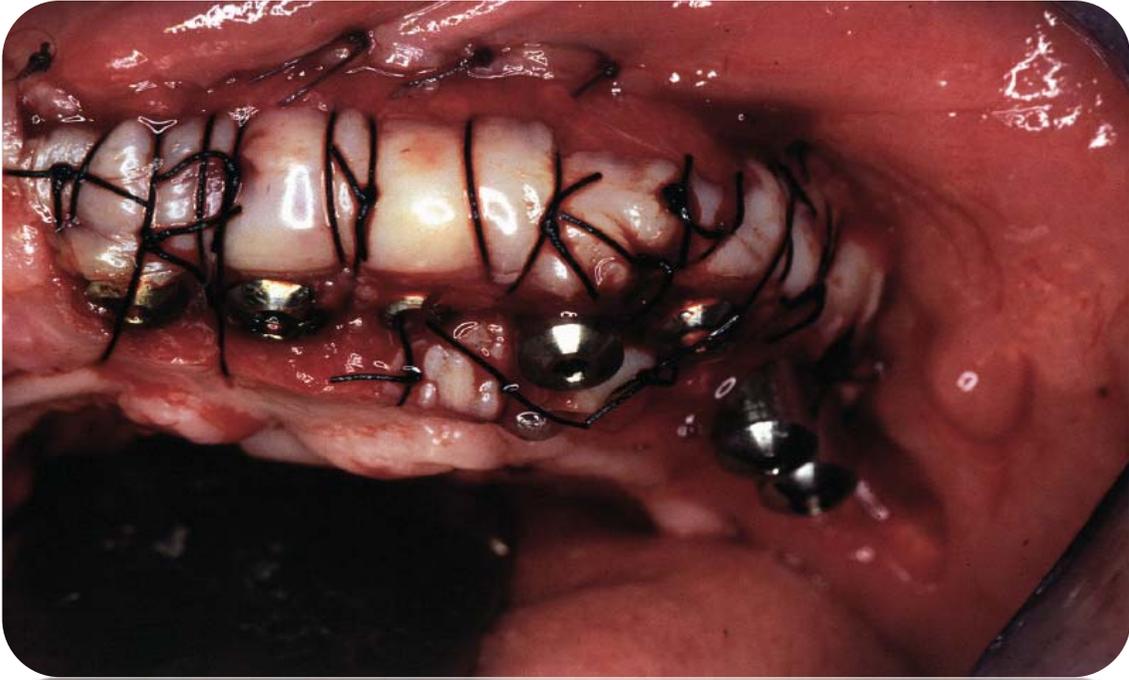
Cordeiro-Santamaria 2000

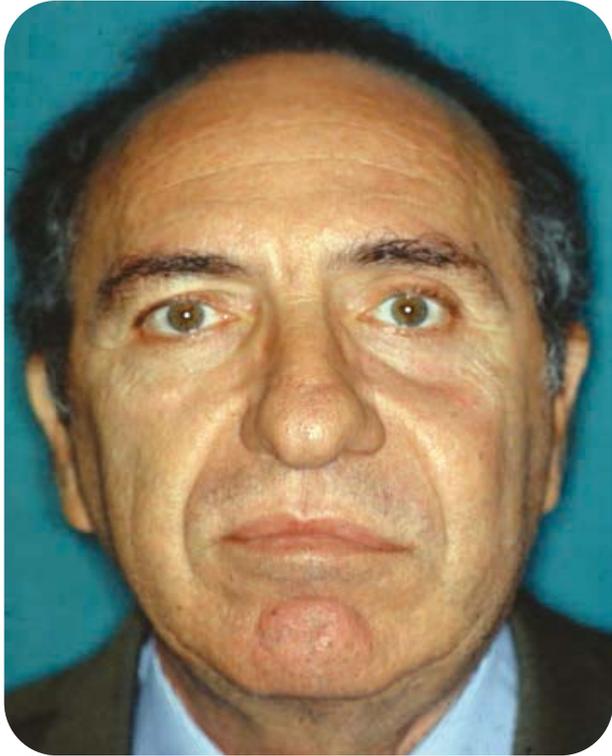
Plast. Reconstr. Surg 105:2331, 2000



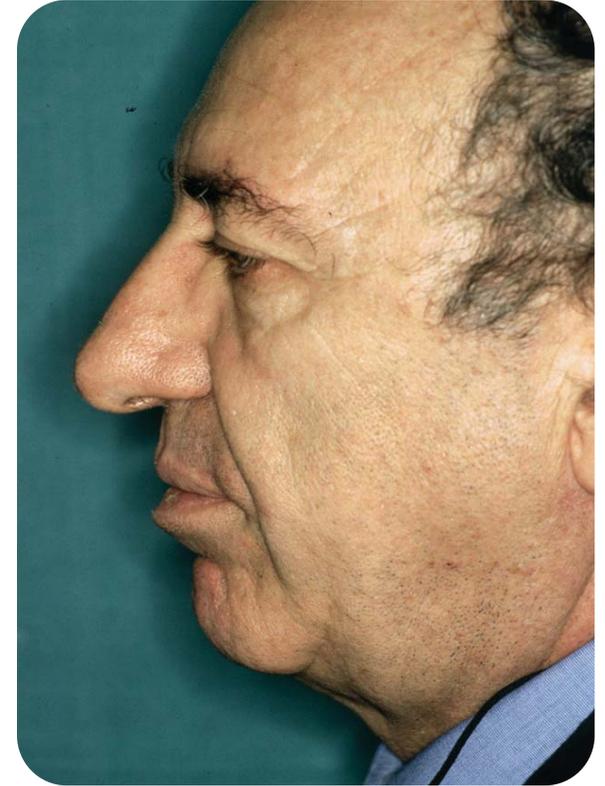


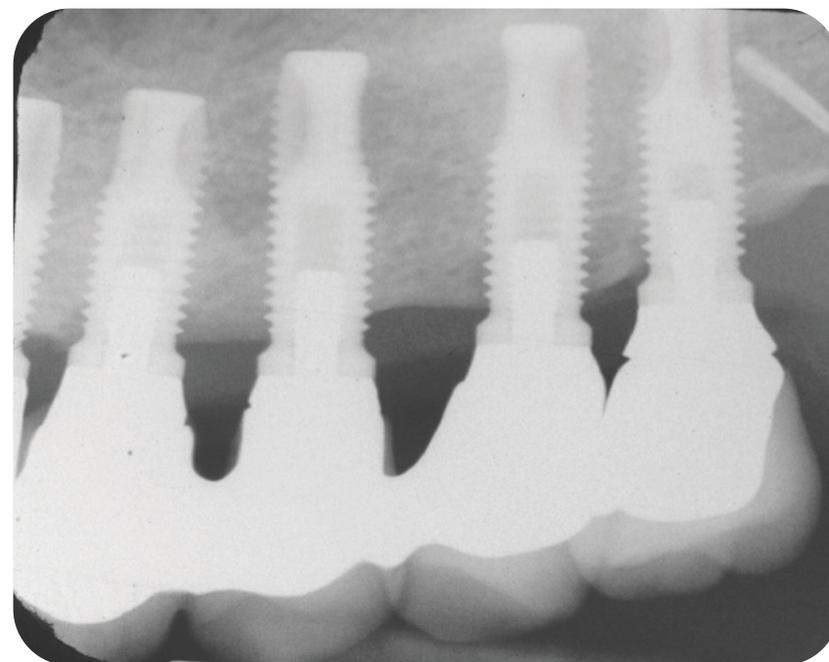




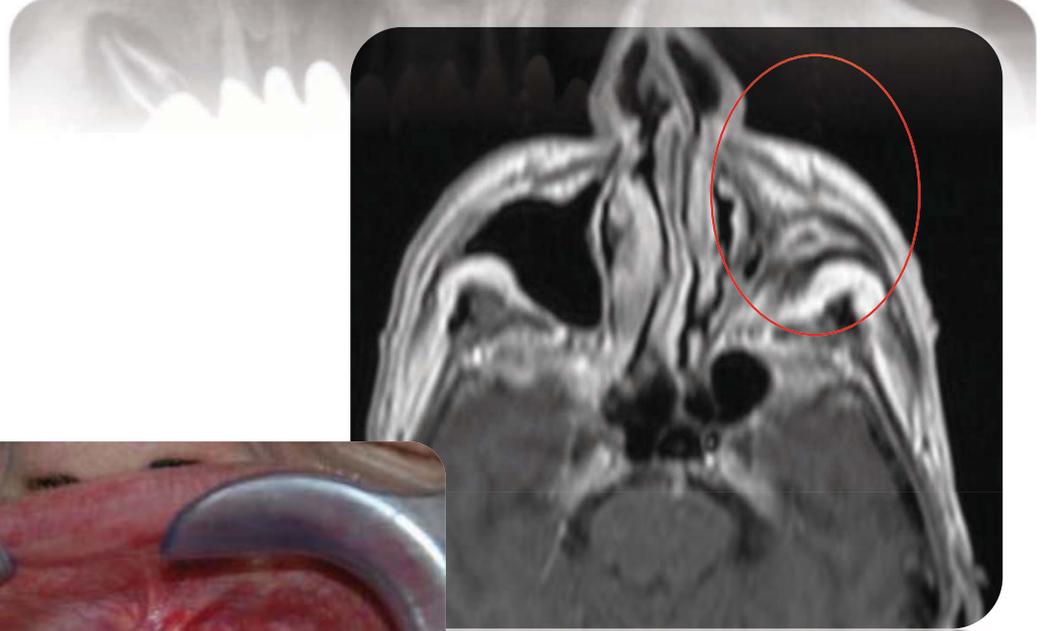
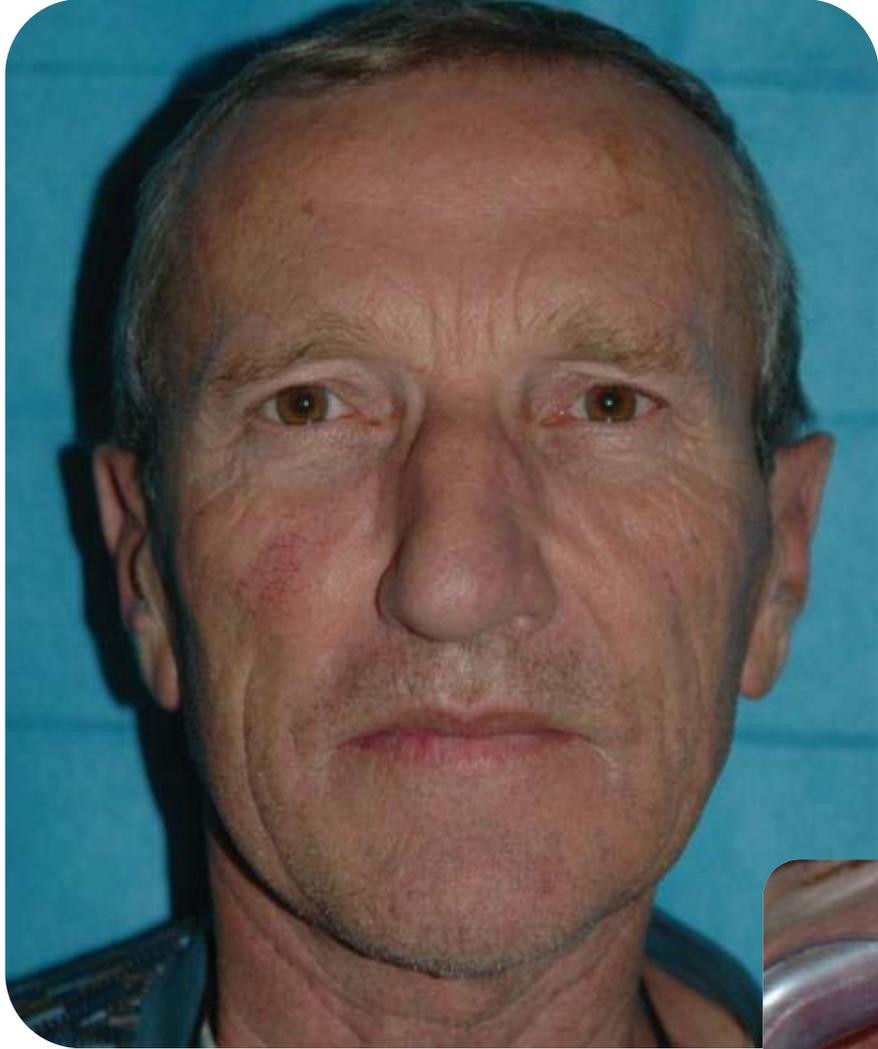


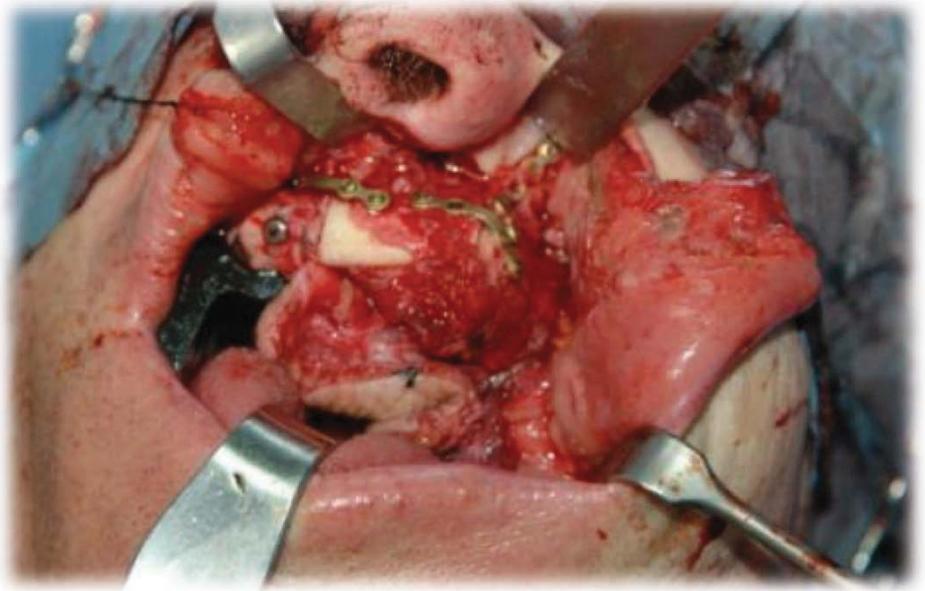
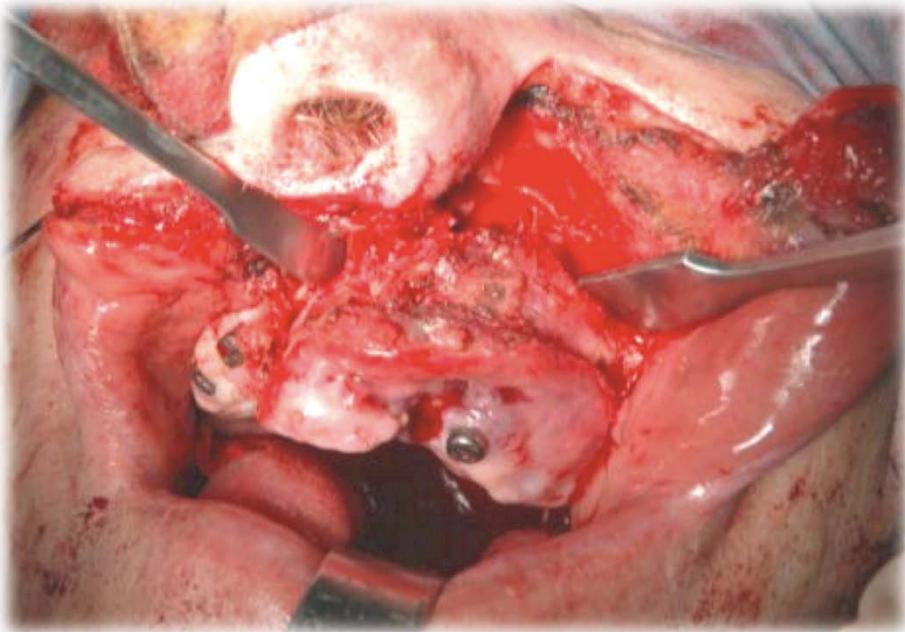
**Controlli clinici ed
occlusali a distanza
di **38 mesi****





**Controlli radiografici a distanza
di 3 anni - maggio 2014**





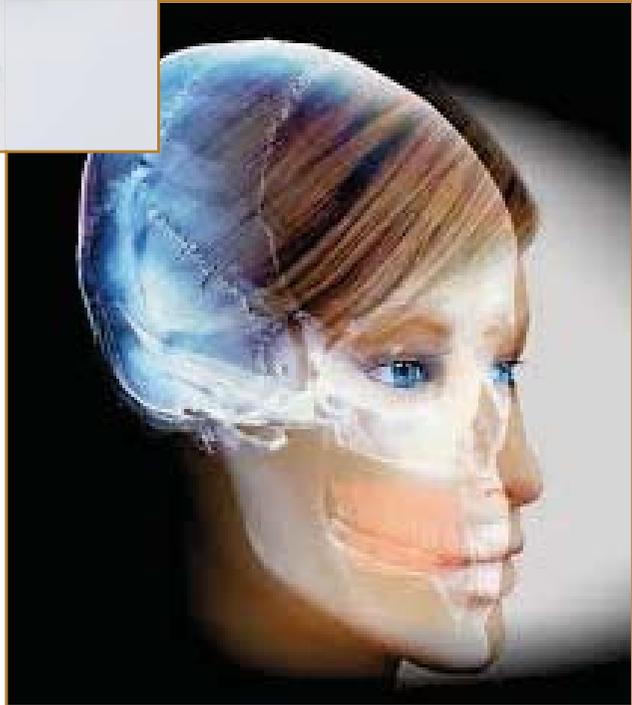
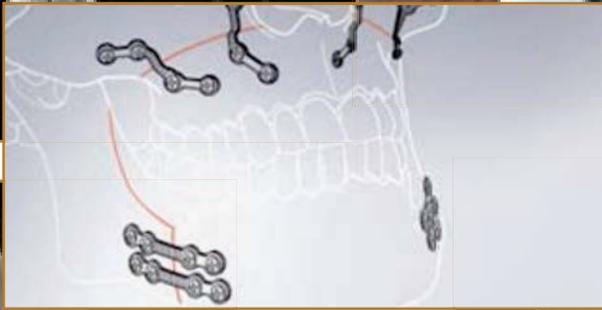
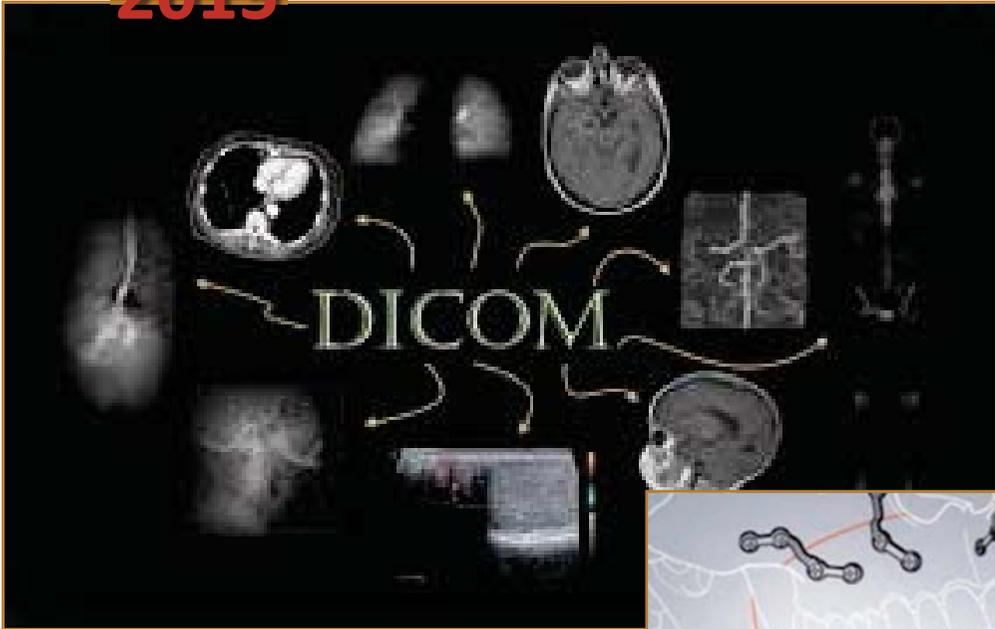




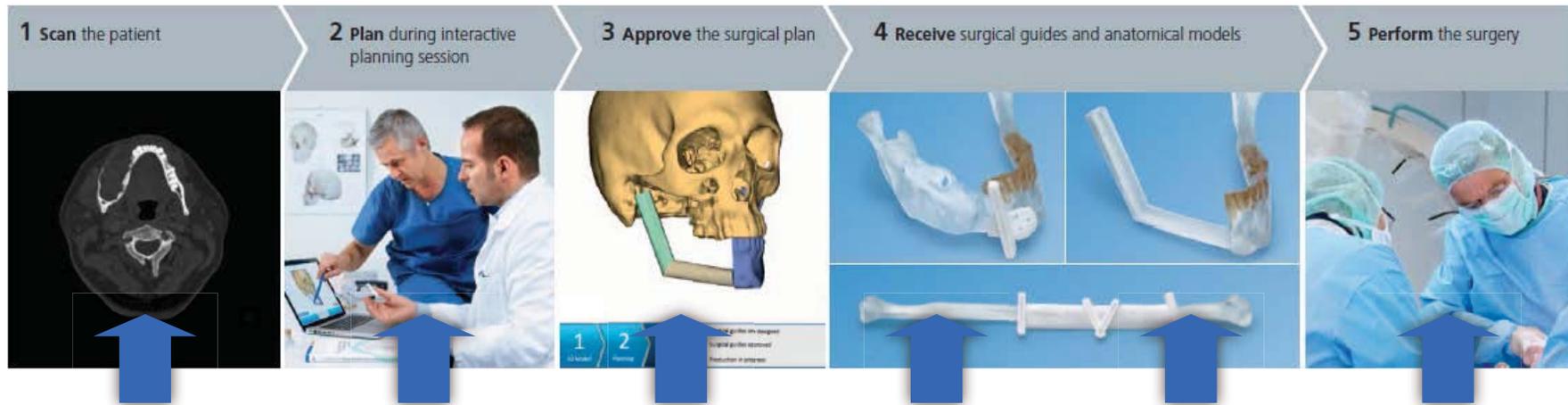
Ricostruzione tridimensionale personalizzata



2015



Customized Surgical Solutions



Tac del paziente

Il centro ospedaliero carica la TAC nel sistema ProPlan CMF Connect o la manda in Synthes.

Planning chirurgico

Il chirurgo pianifica l'intervento con il team altamente specializzato dedicato al planning pre- operatorio di Materialize.

Approvazione del Planning

Il chirurgo fornisce gli input finali ed approva il piano chirurgico, il cosiddetto Case Report.

Disegno & Produzione

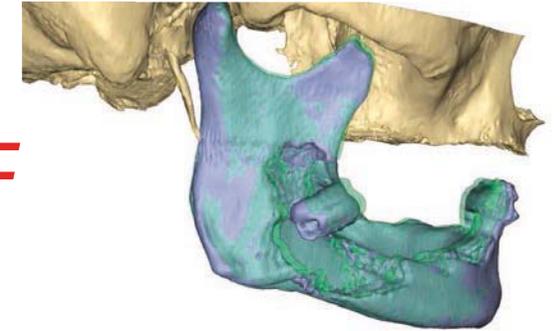
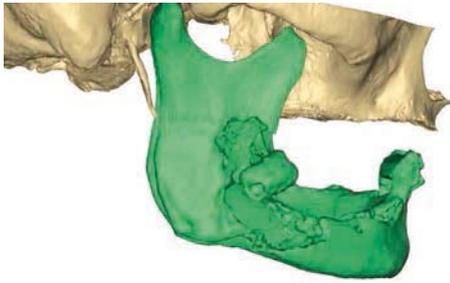
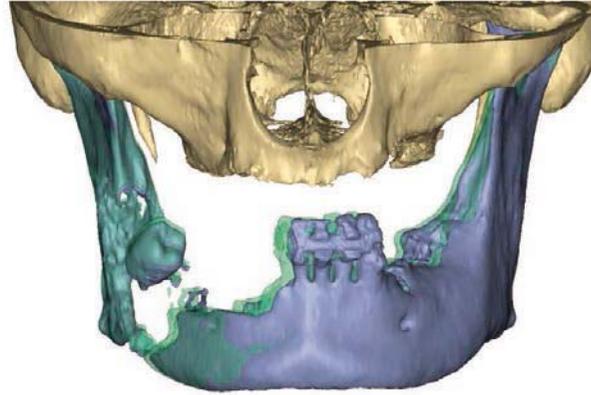
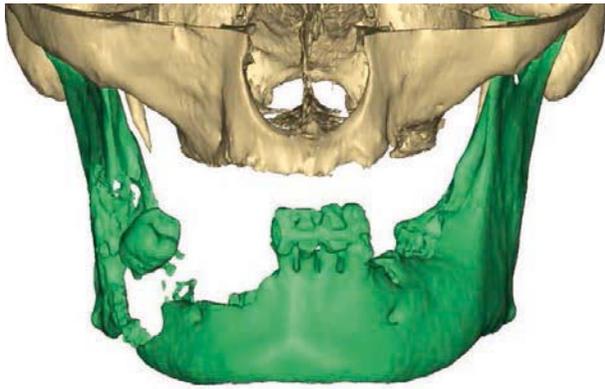
Materialise produce i bone model 3D e le guide di taglio

Disegno & produzione impianto

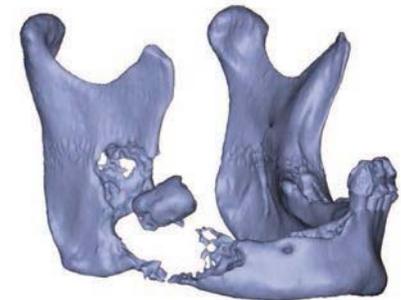
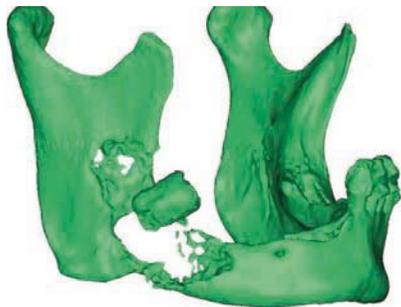
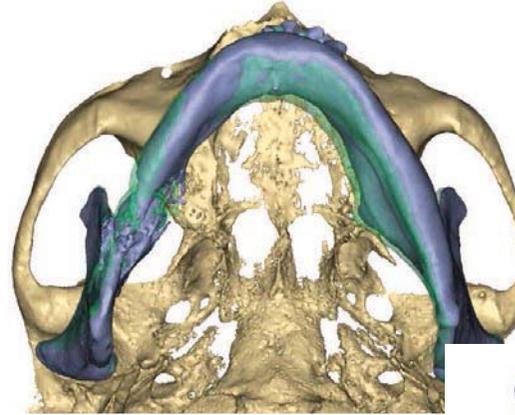
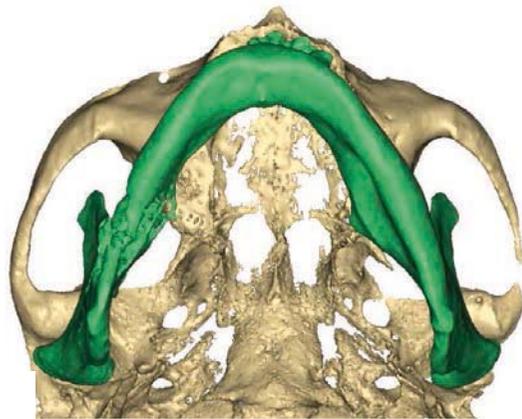
Su richiesta : la DePuy Synthes disegna e produce un impianto ad hoc .

L'intervento

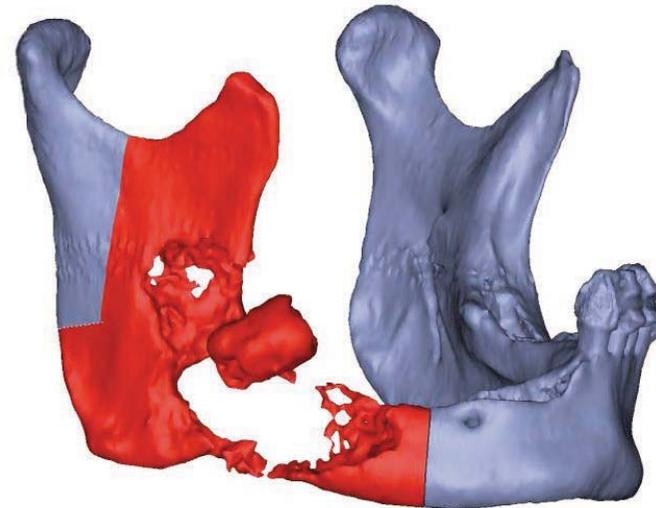
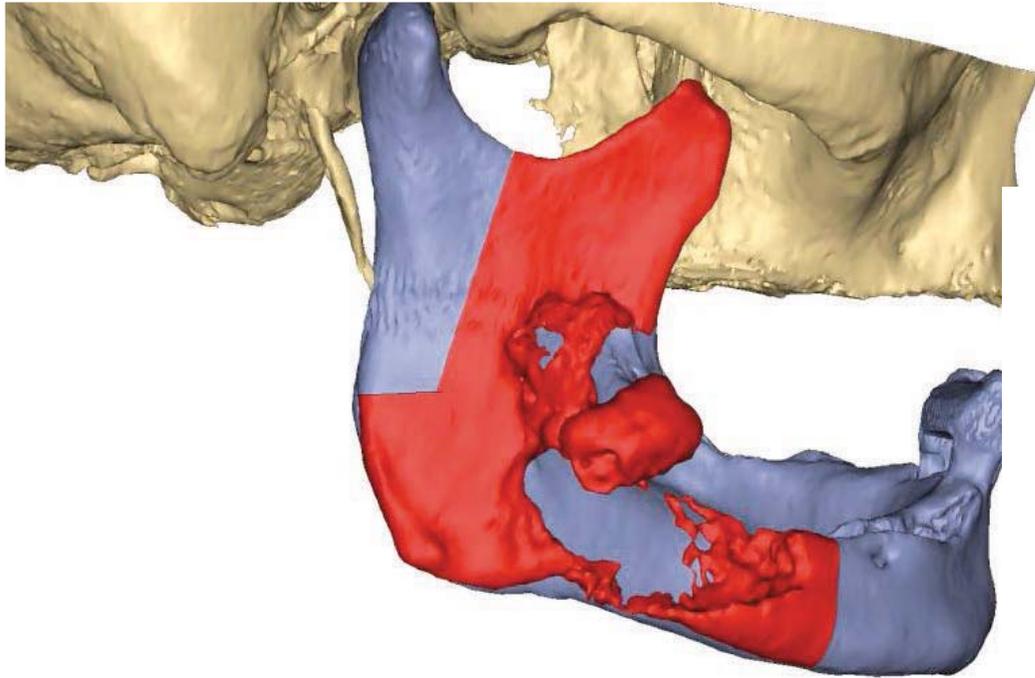
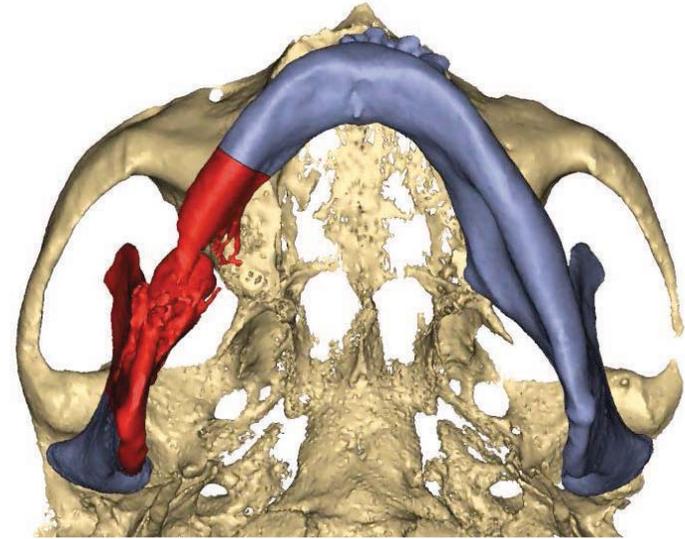
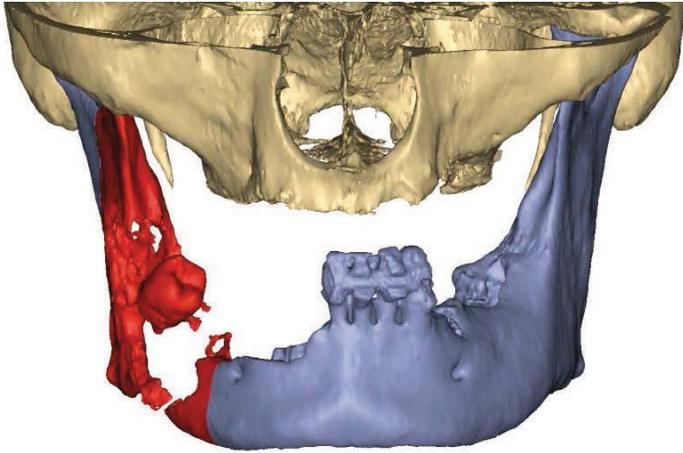
La De Puy Synthes invia all'operatore bone models, guide osteotomiche e impianti

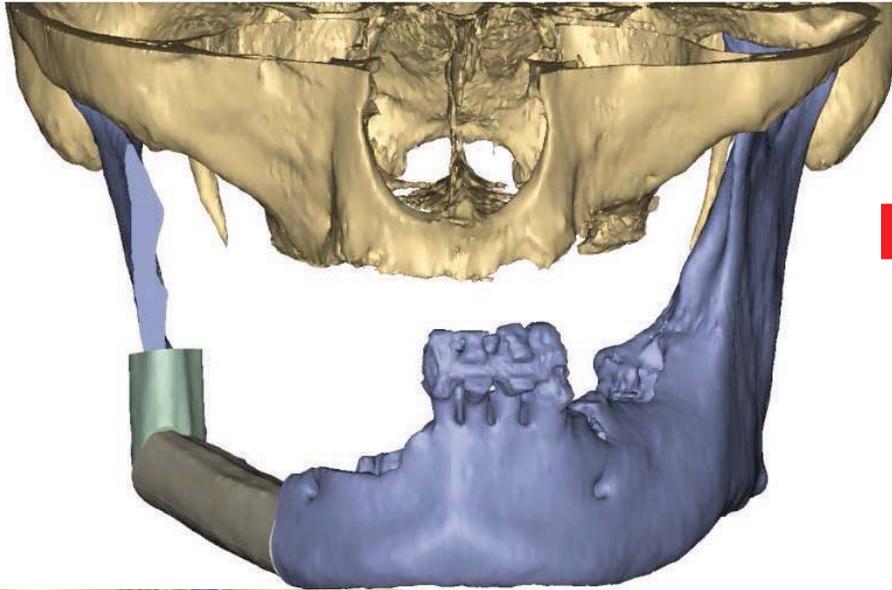
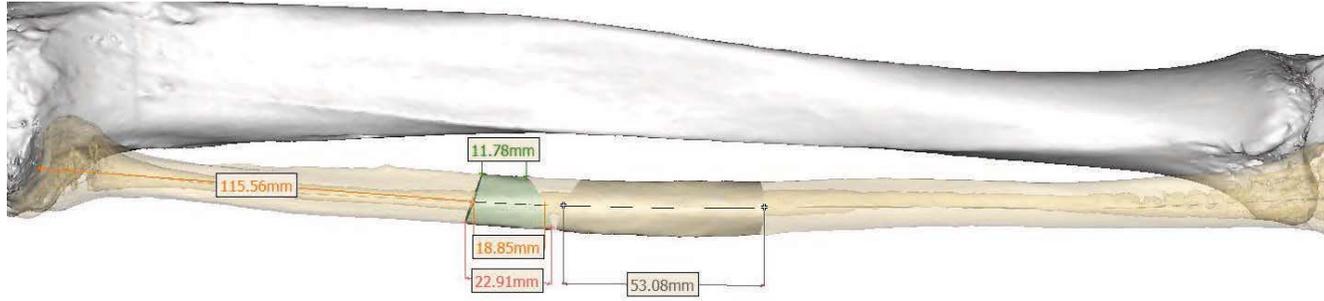


Synthes ProPlan CMF

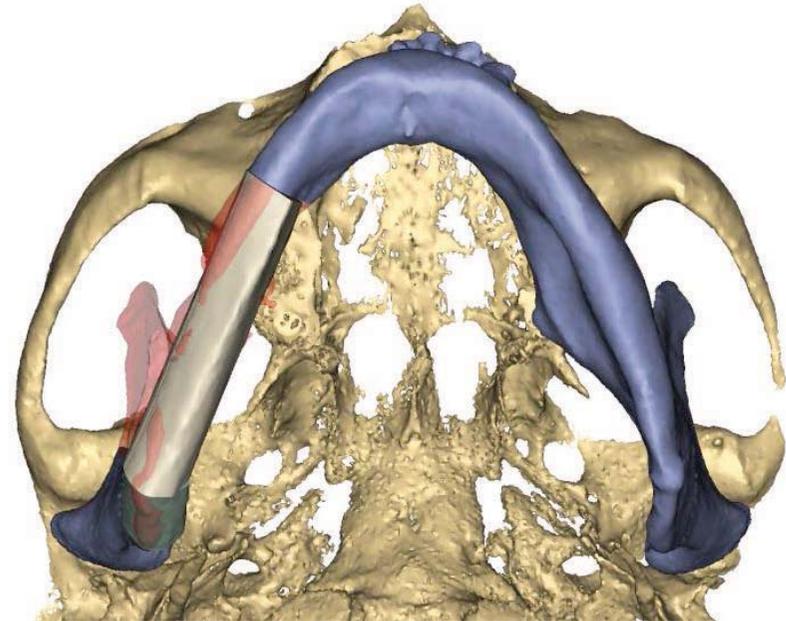
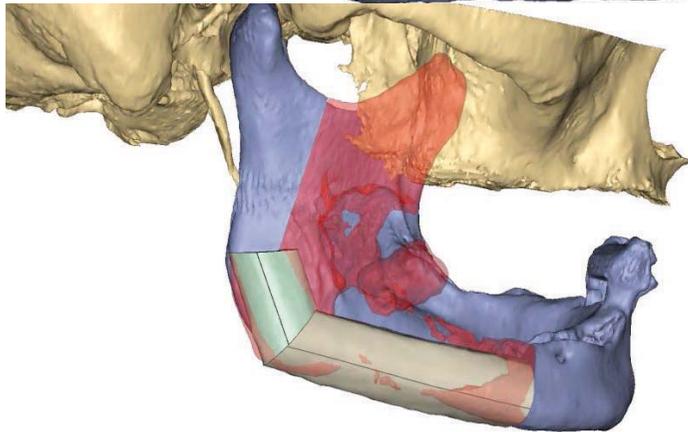


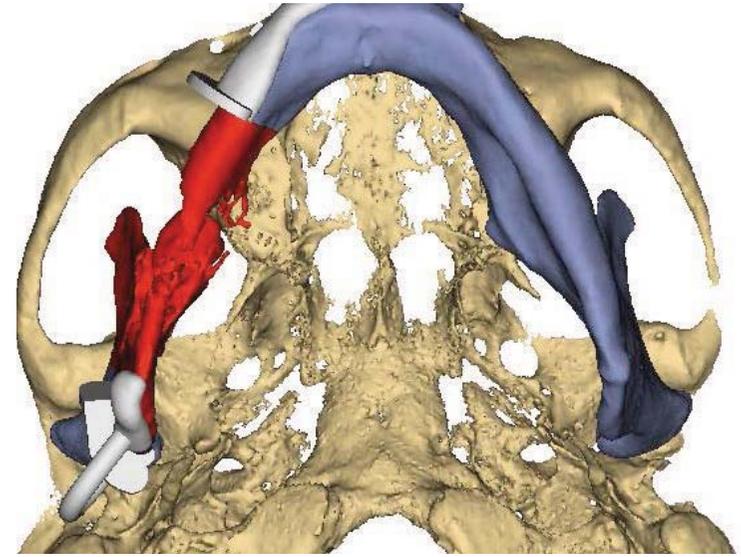
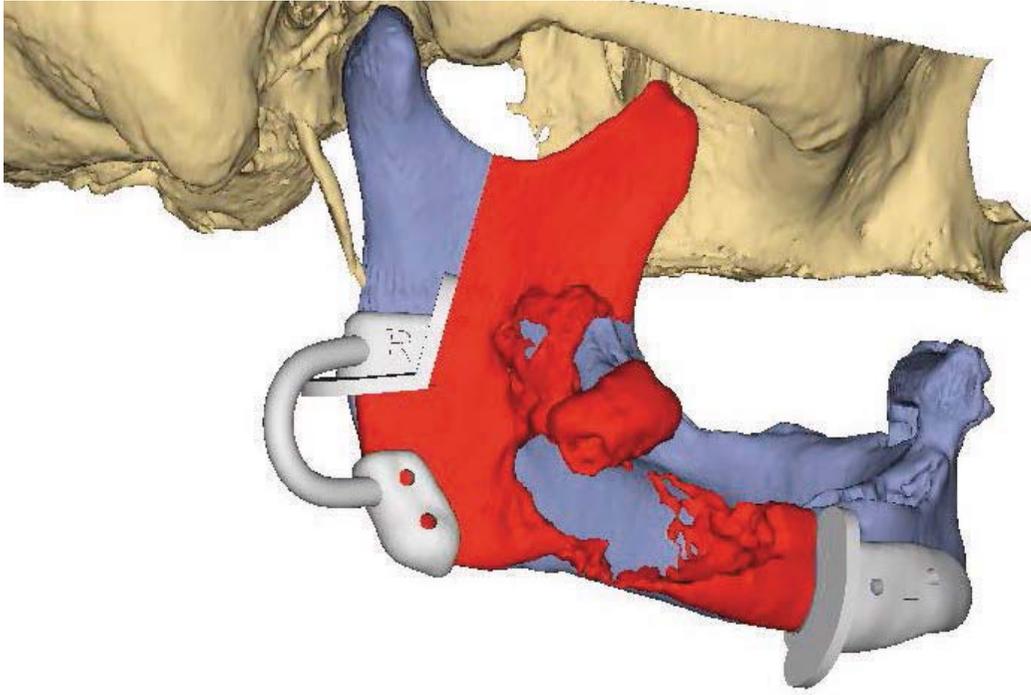
Programma ablativo



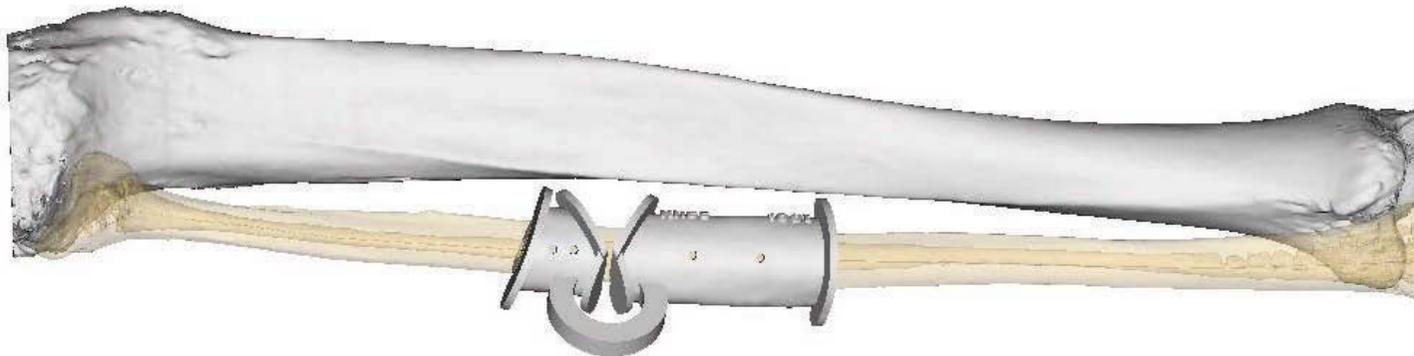


Programma ricostruttivo

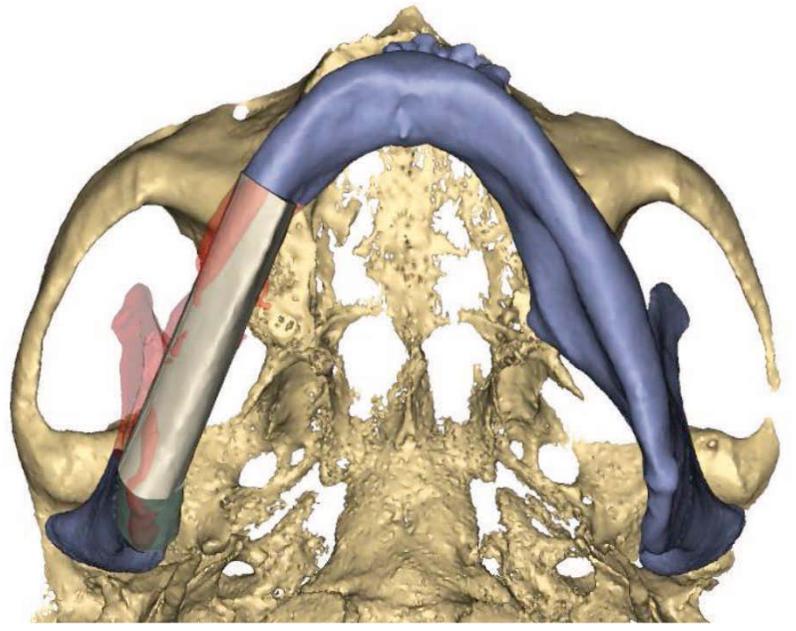
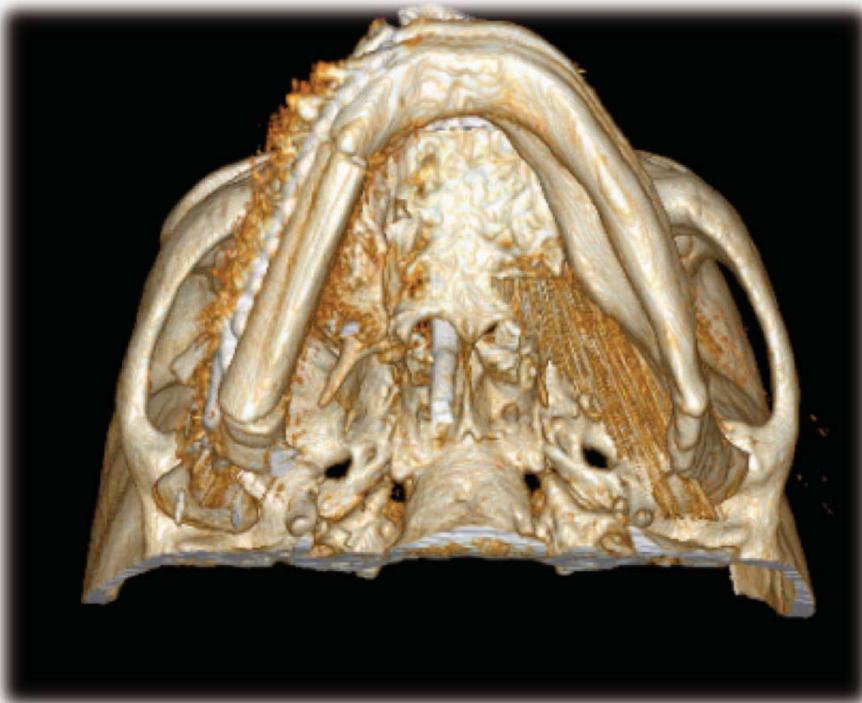
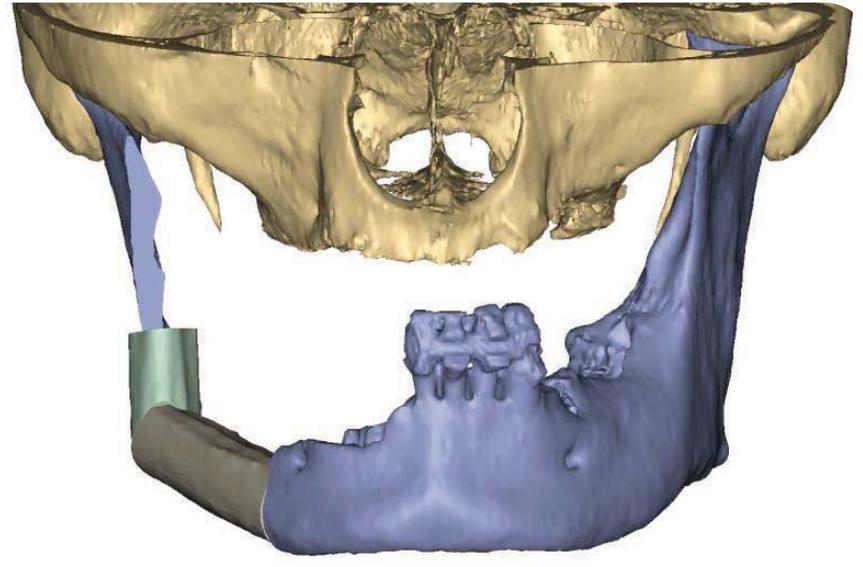
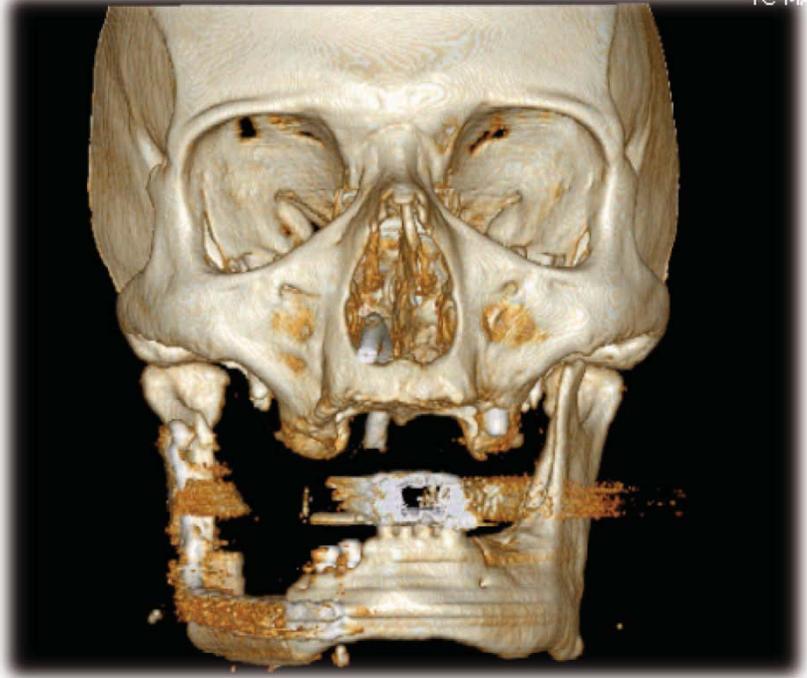




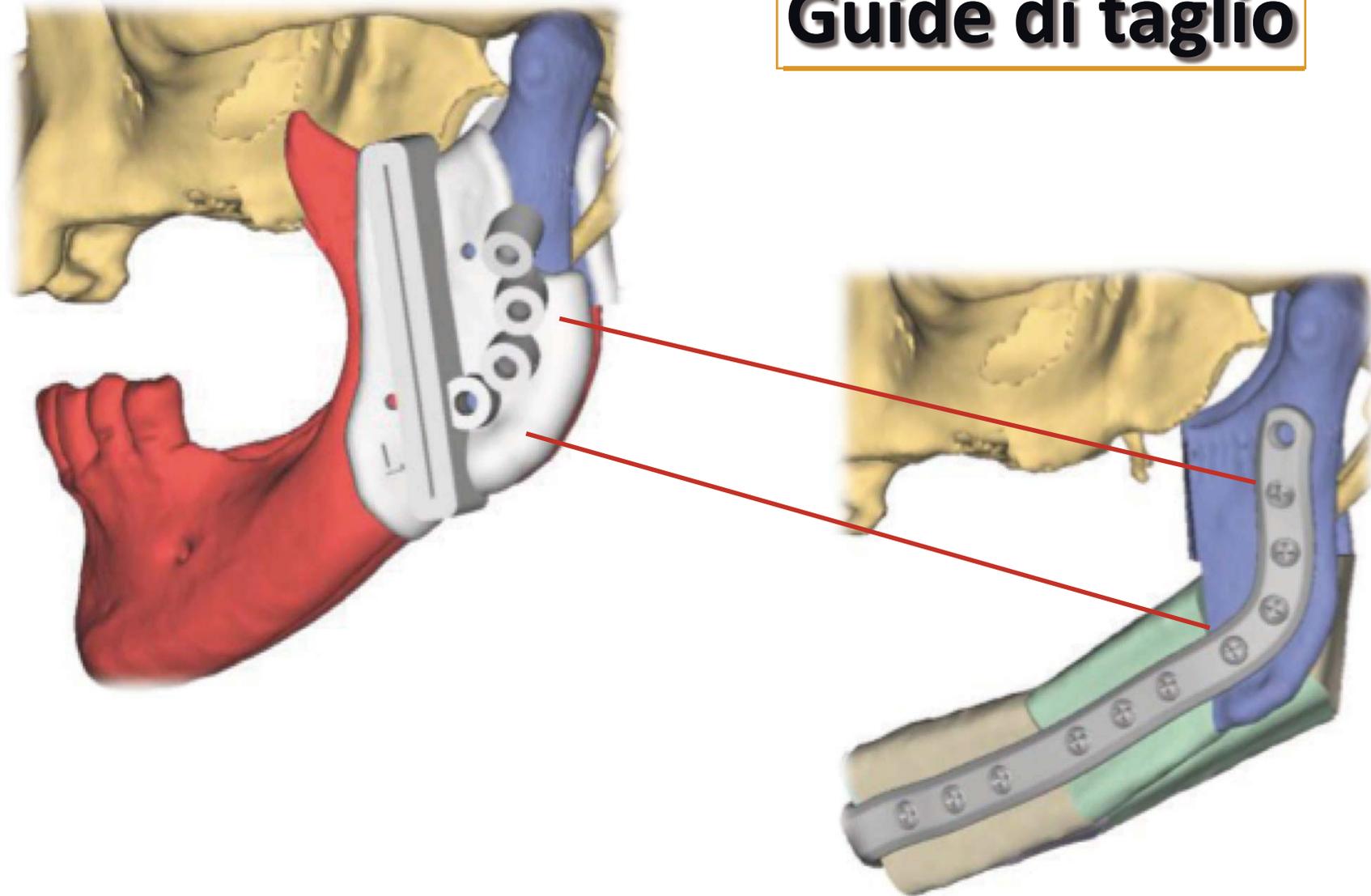
Guide di taglio



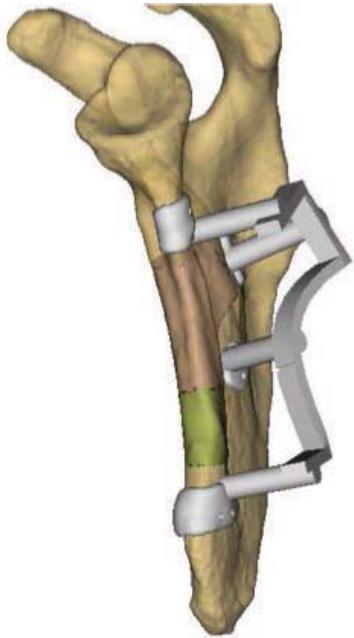
TC M



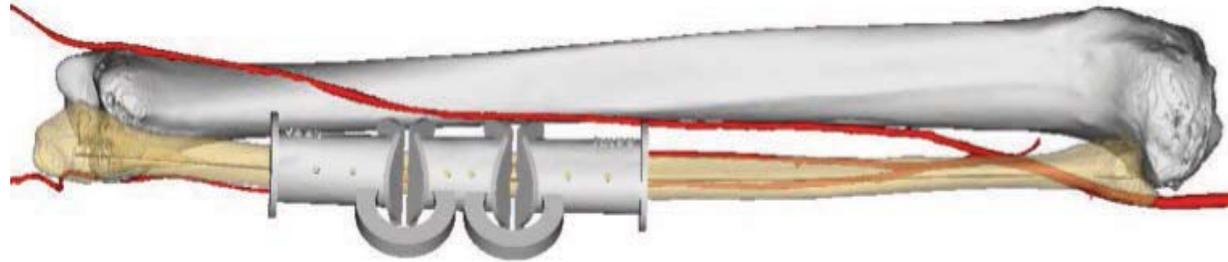
Guide di taglio



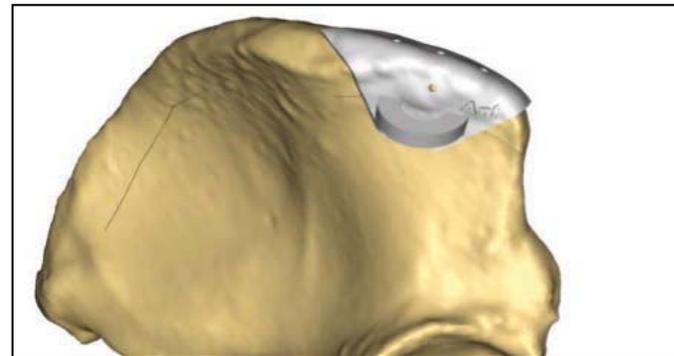
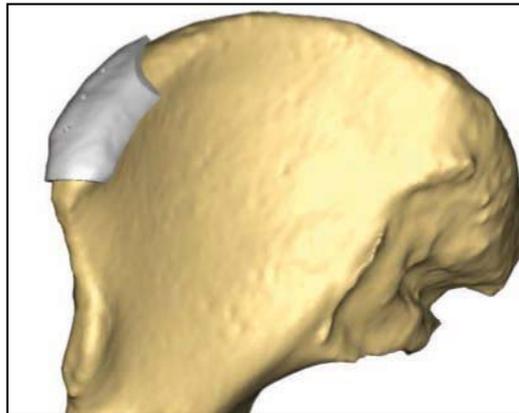
Guida di taglio per il prelievo osseo dalla scapola



Guida per il prelievo osseo da perone

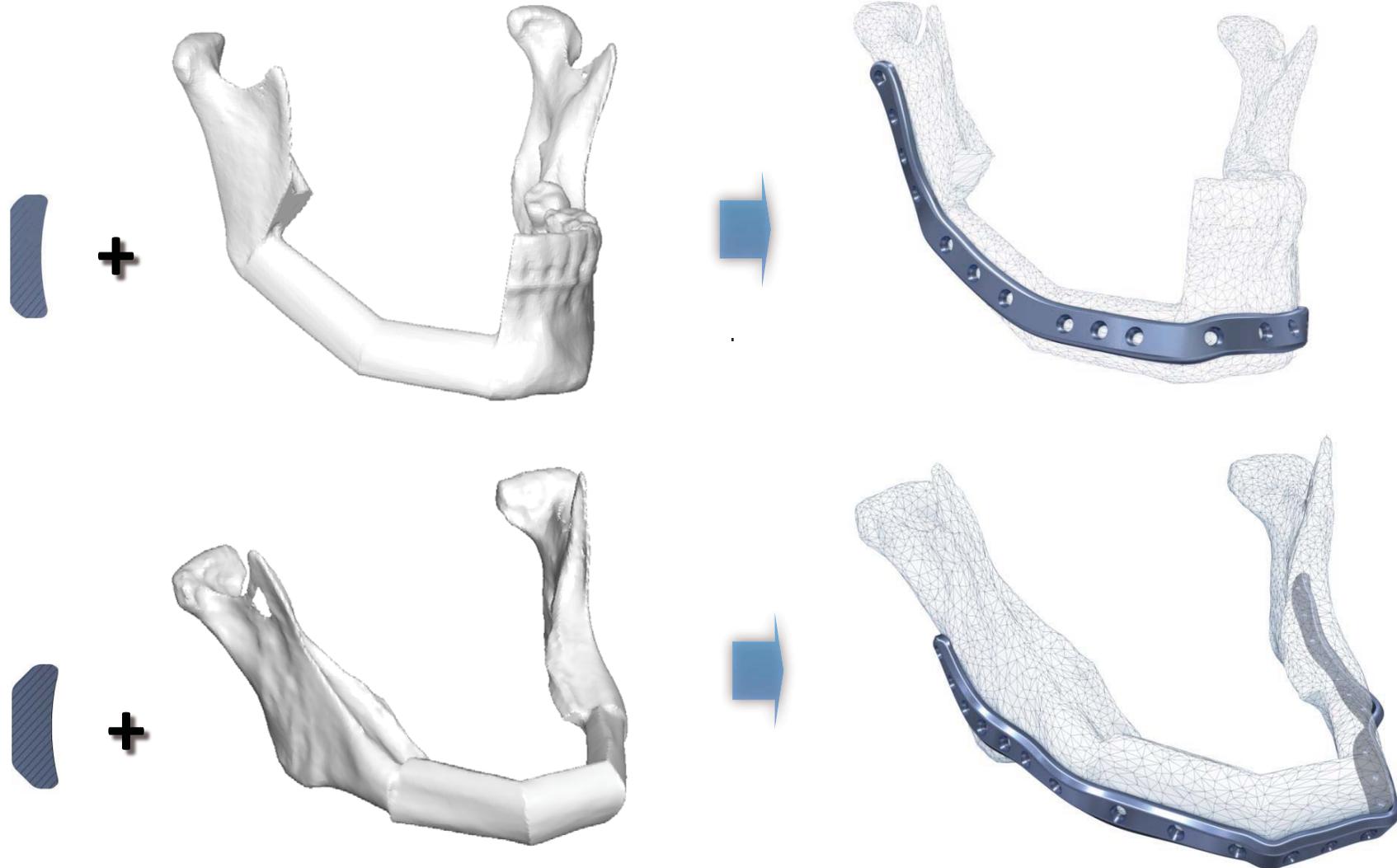


Guida per il prelievo osseo da cresta iliaca



Fissazione

Design (profilo) dell'impianto Patient specific



Fissazione

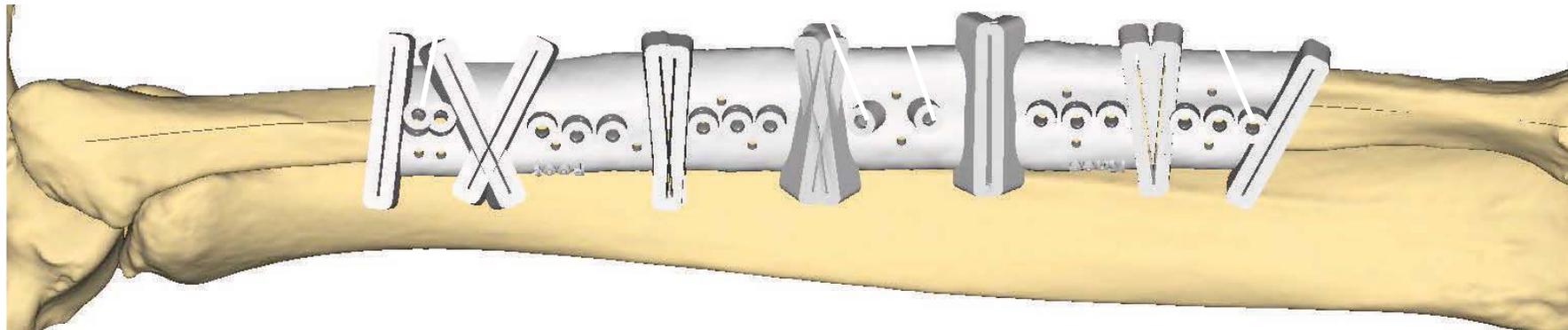
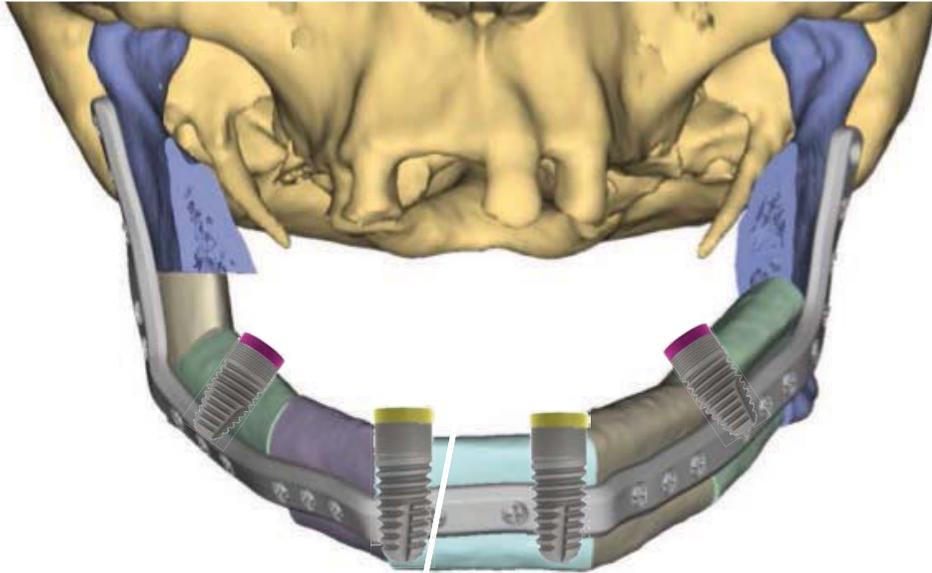
Integrazione del ProPlan CMF e delle guide di taglio

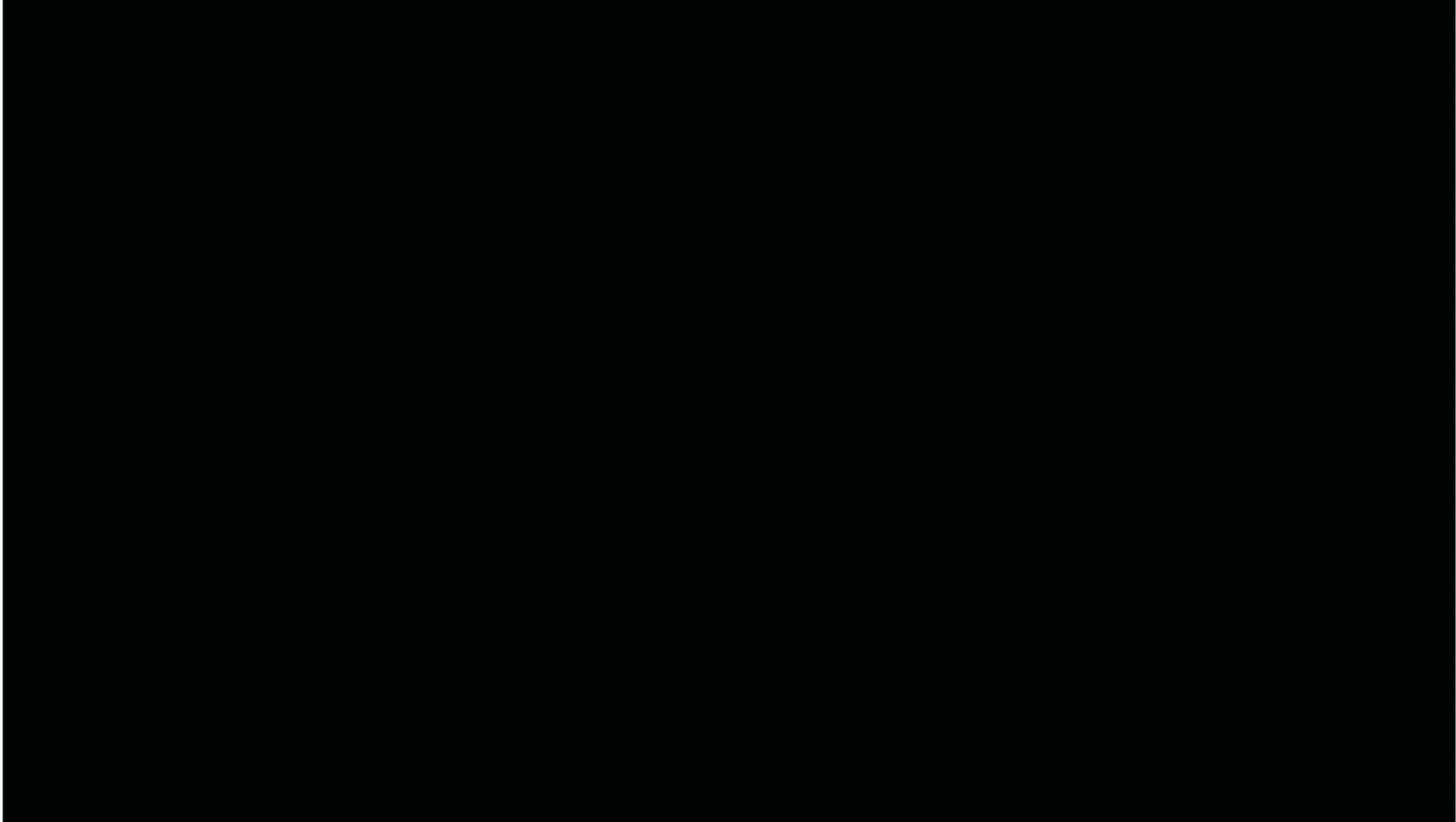
MYTH
DENTAL IMPLANT



MYTH one
CYLINDRICAL

MYTH two
CONICAL





CHIRURGIA oncologica cavo orale

♂ 65aa MANDIBULAR
SQUAMOUS CELL CARCINOMA

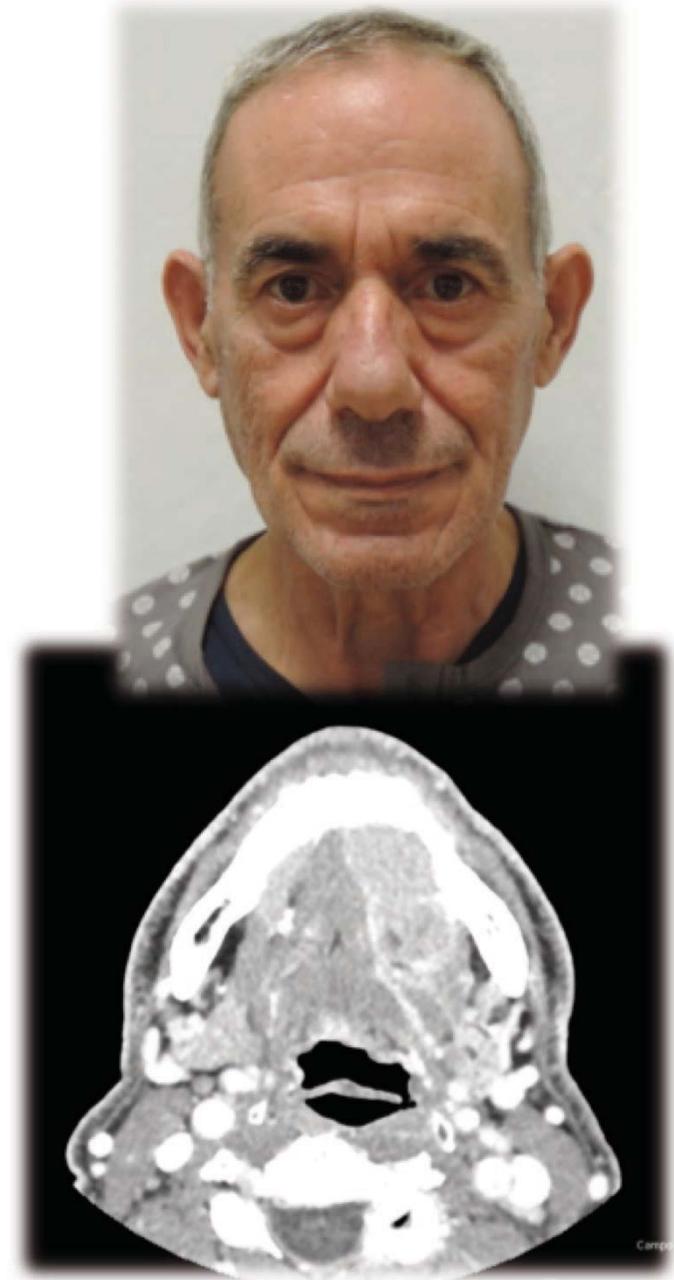
Surgery

**BILATERAL NECK LymphONODAL
DISSECTION**

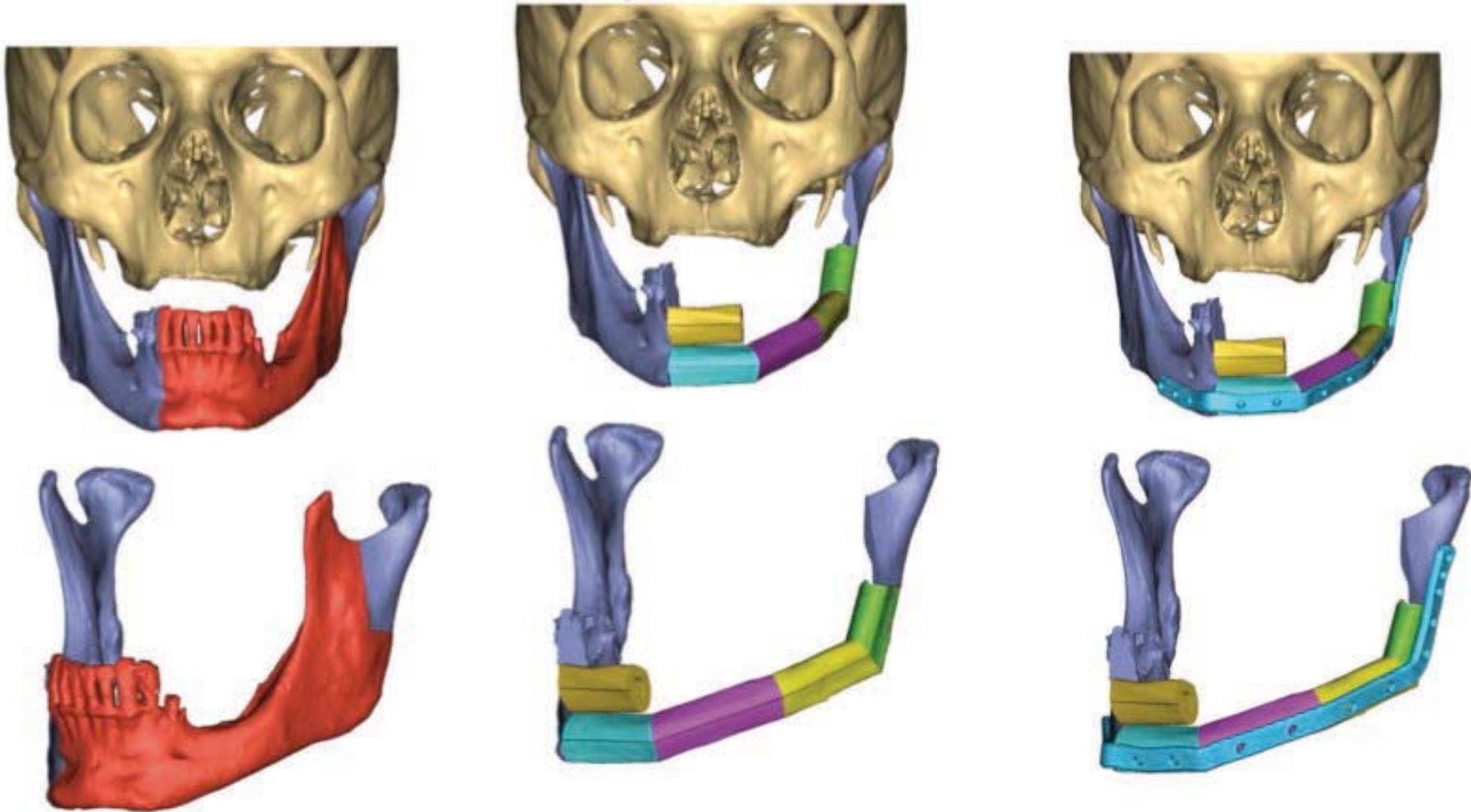
GLOSSOPELVIMANDIBULECTOMY

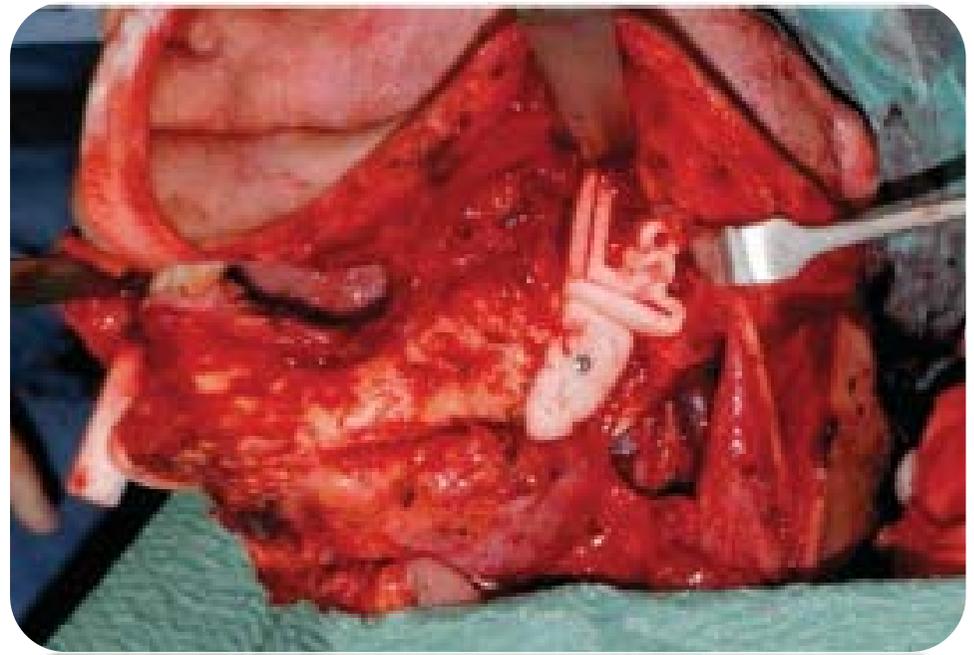
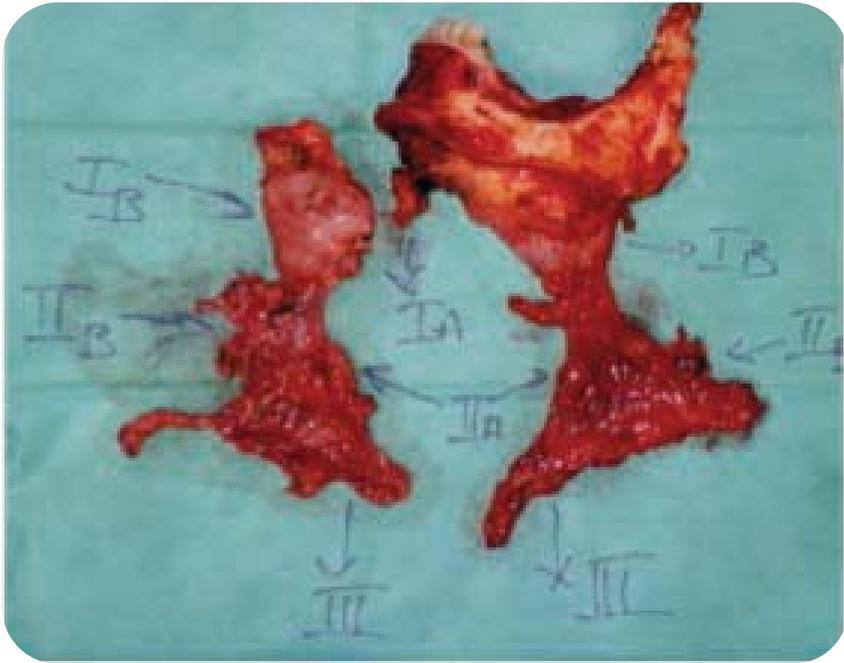
RECONSTRUCTION

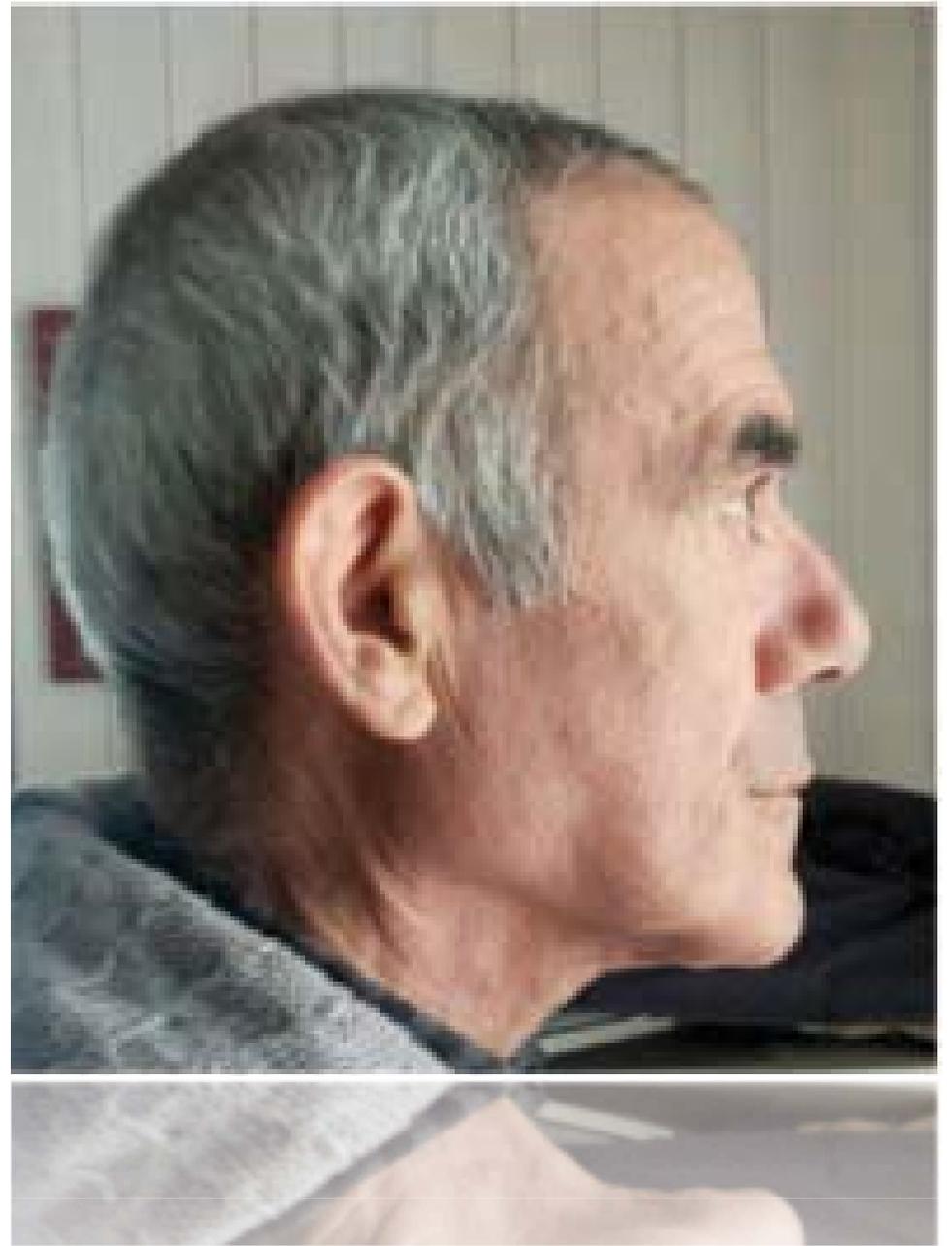
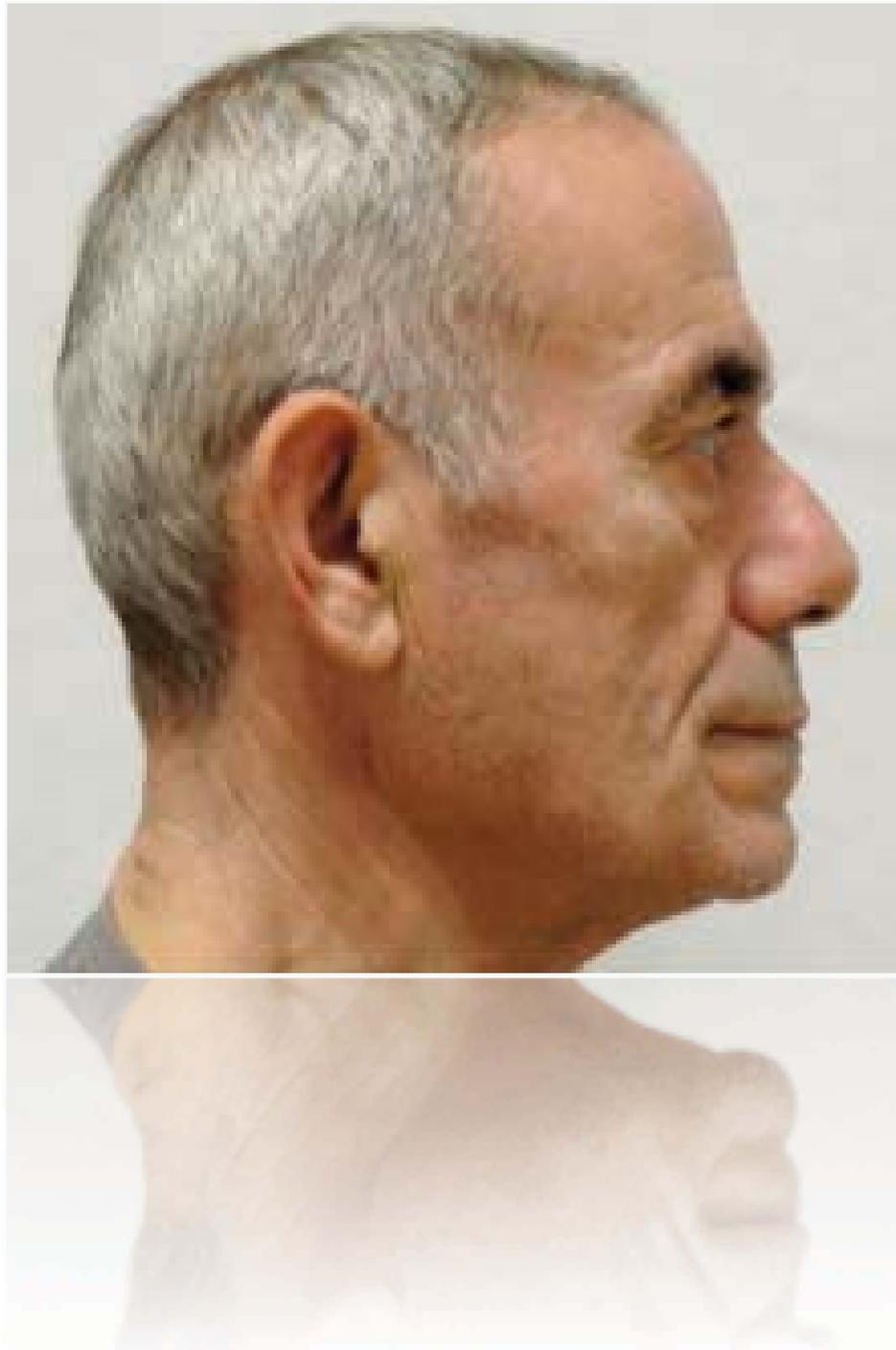
FREE FIBULA FLAP CUSTOM MADE

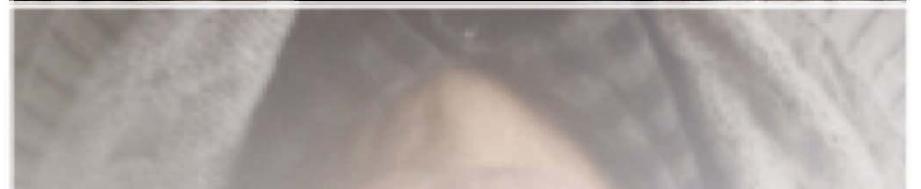


CHIRURGIA oncologica cavo orale



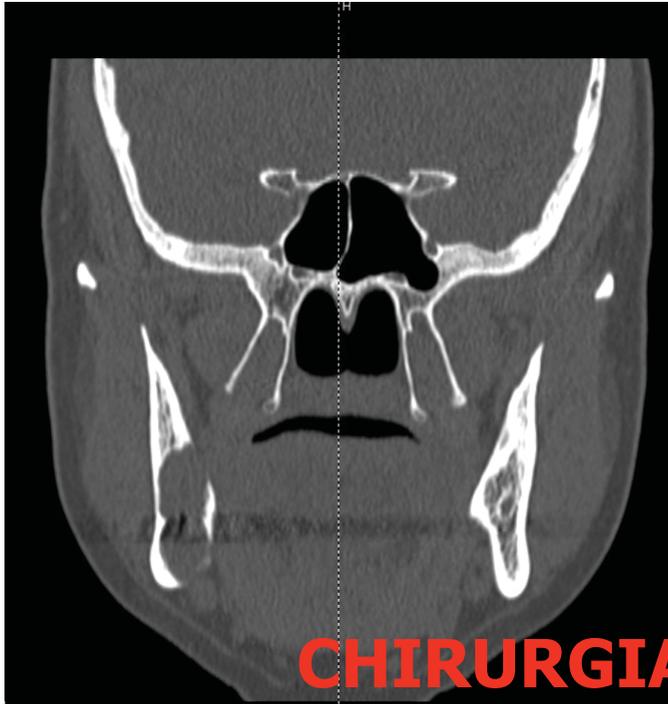






♀ 52 AA

**CARCINOMA MUCOEPIDERMIOIDE
A BASSO GRADO CORPO
MANDIBOLARE DX**



CHIRURGIA

**RESEZIONE EMIMANDIBOLARE
CORPO DESTRO**



RICOSTRUZIONE

**LEMBO LIBERO DI FIBULA
CUSTOMIZZATO**



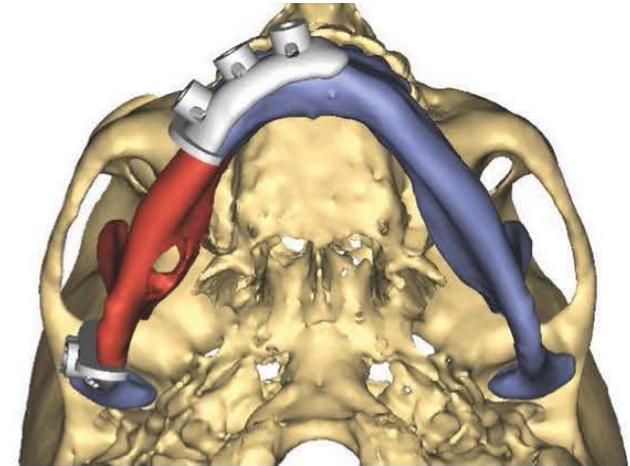
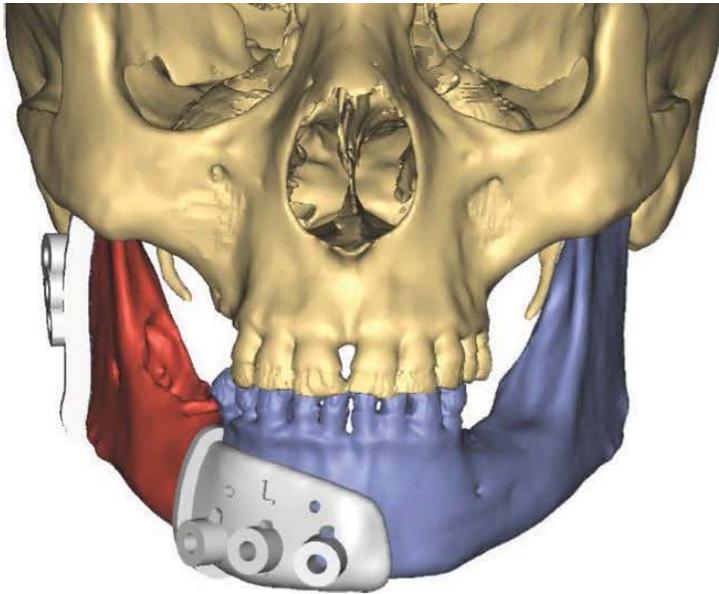
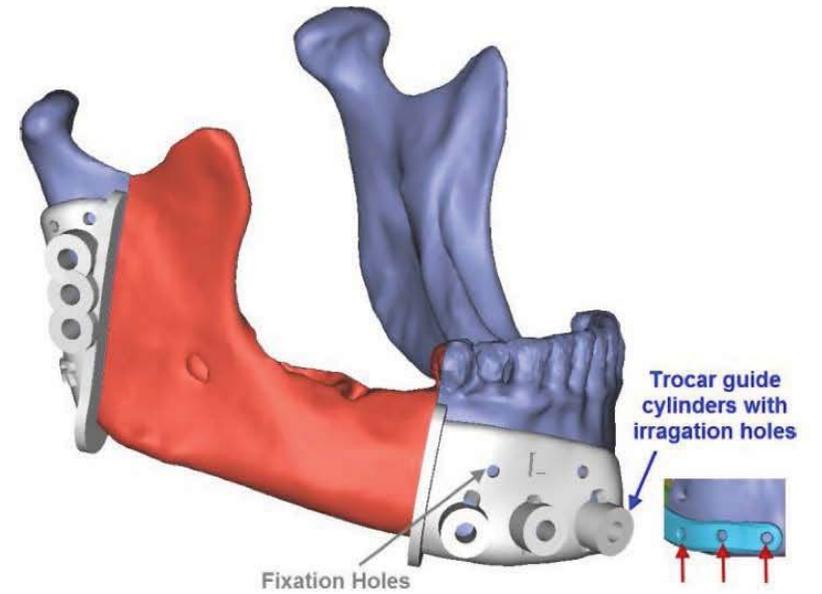
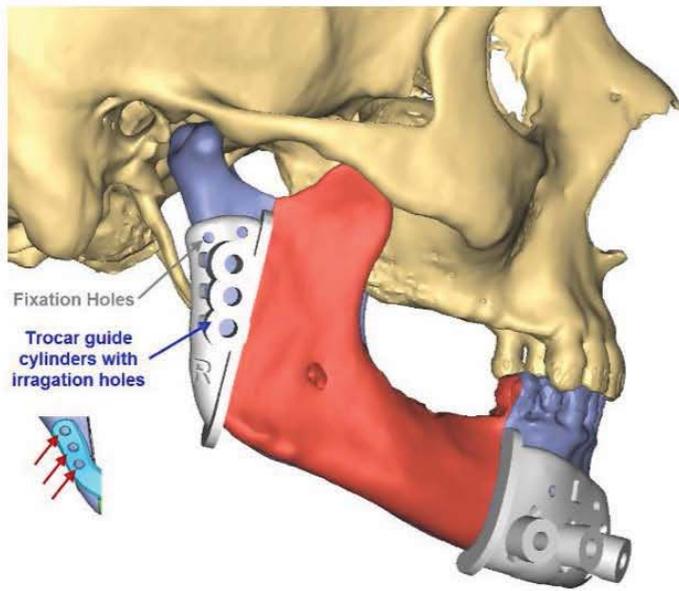
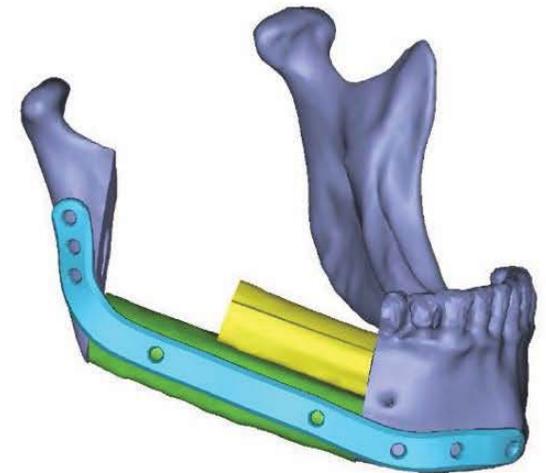
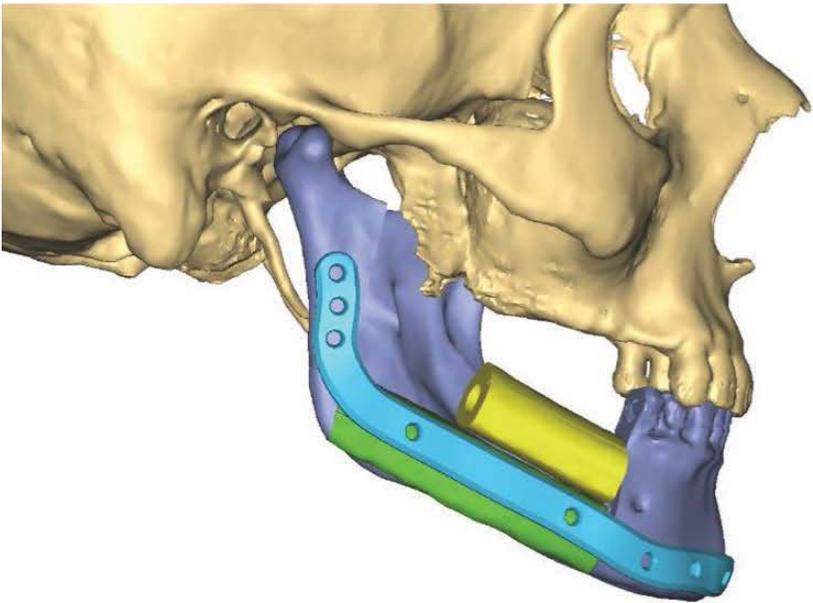
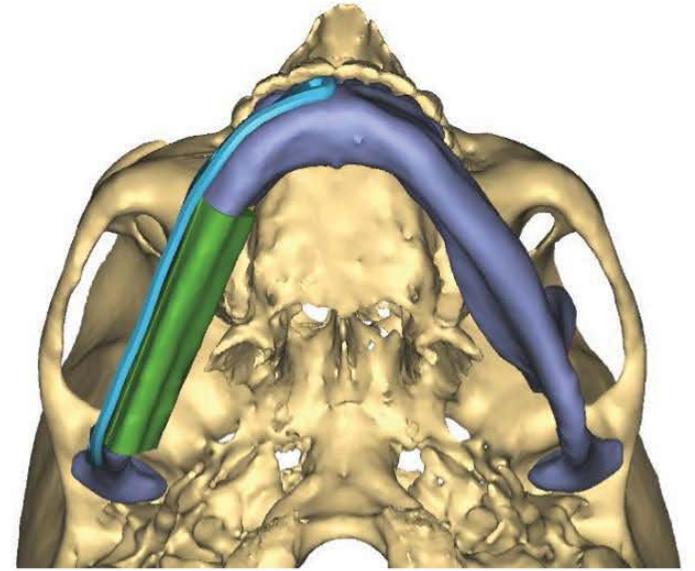
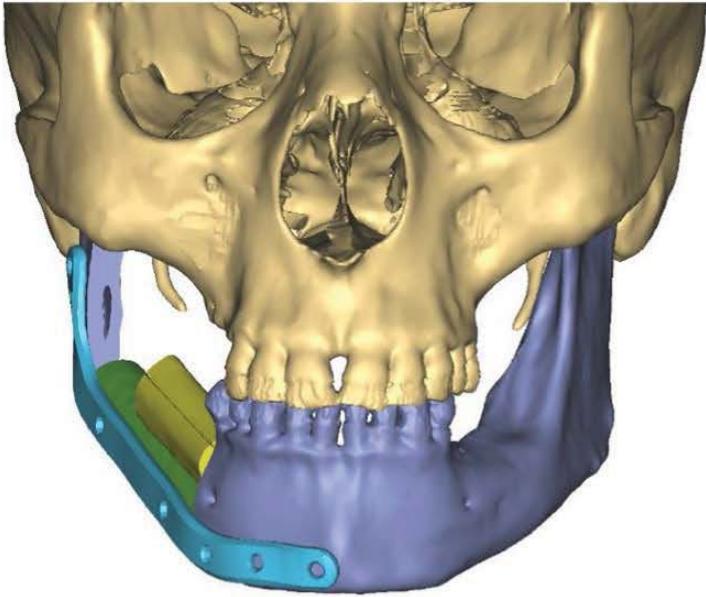
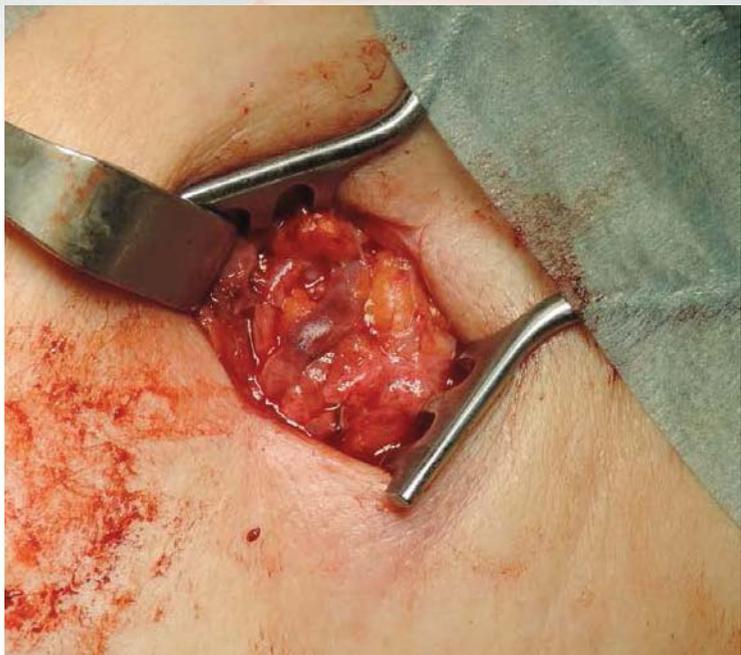
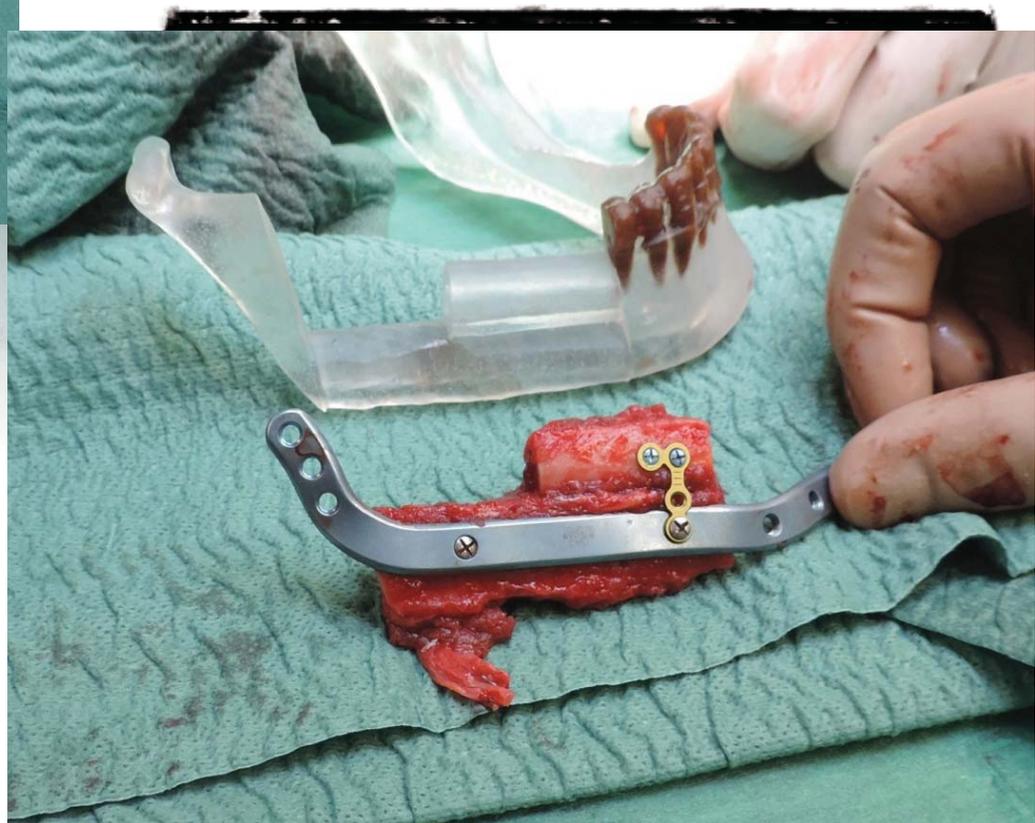
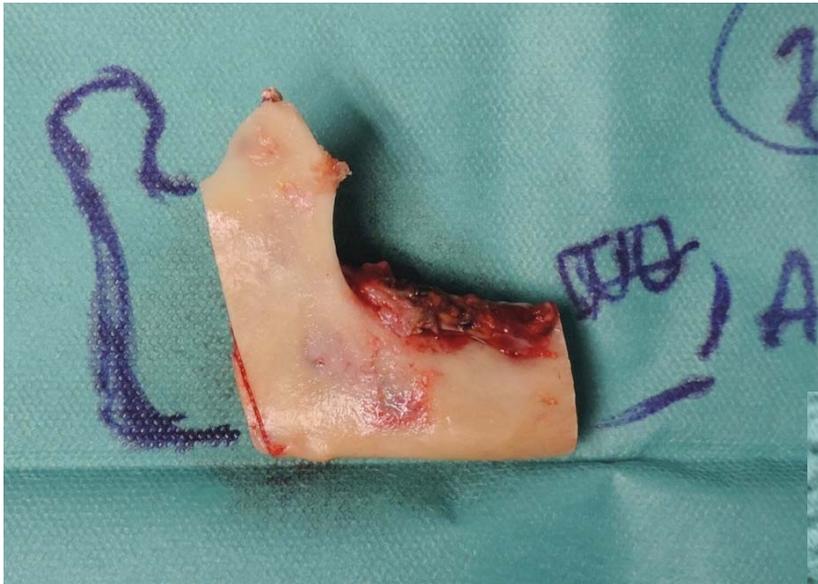


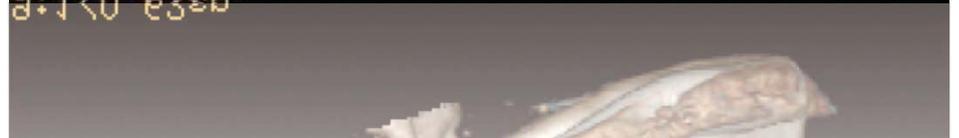
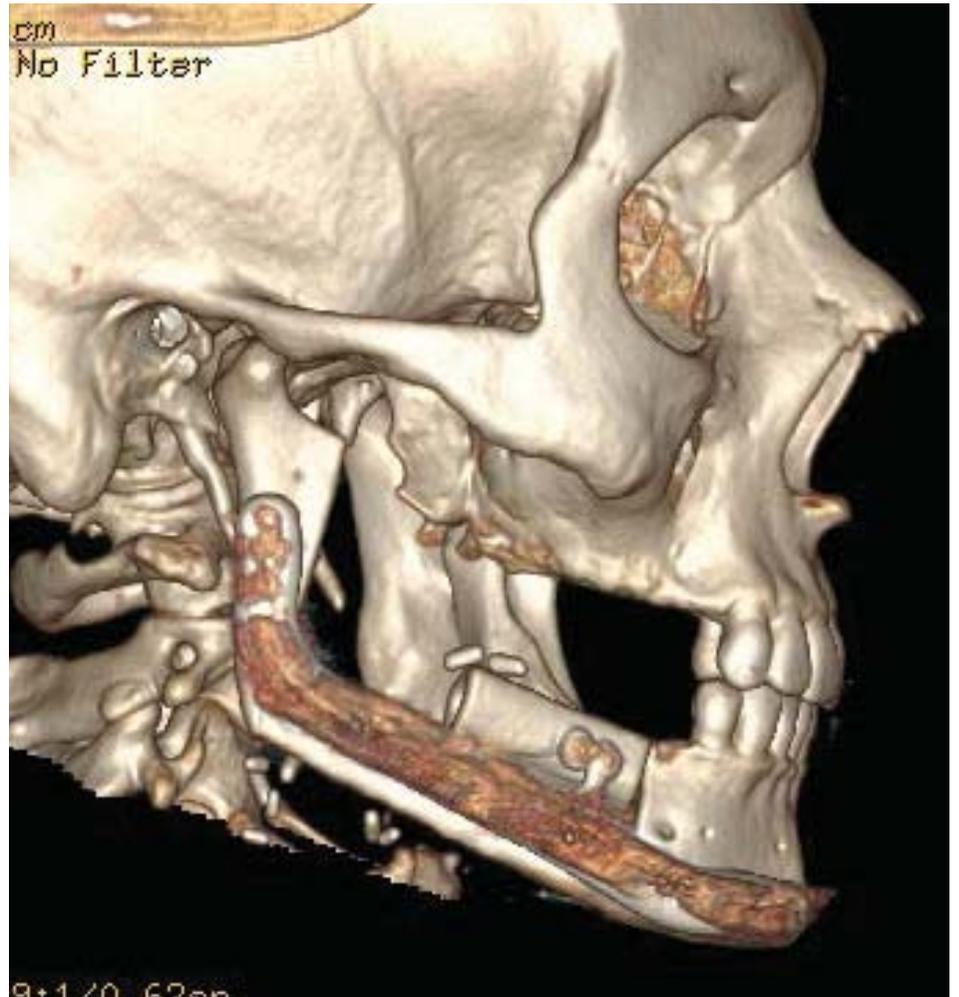
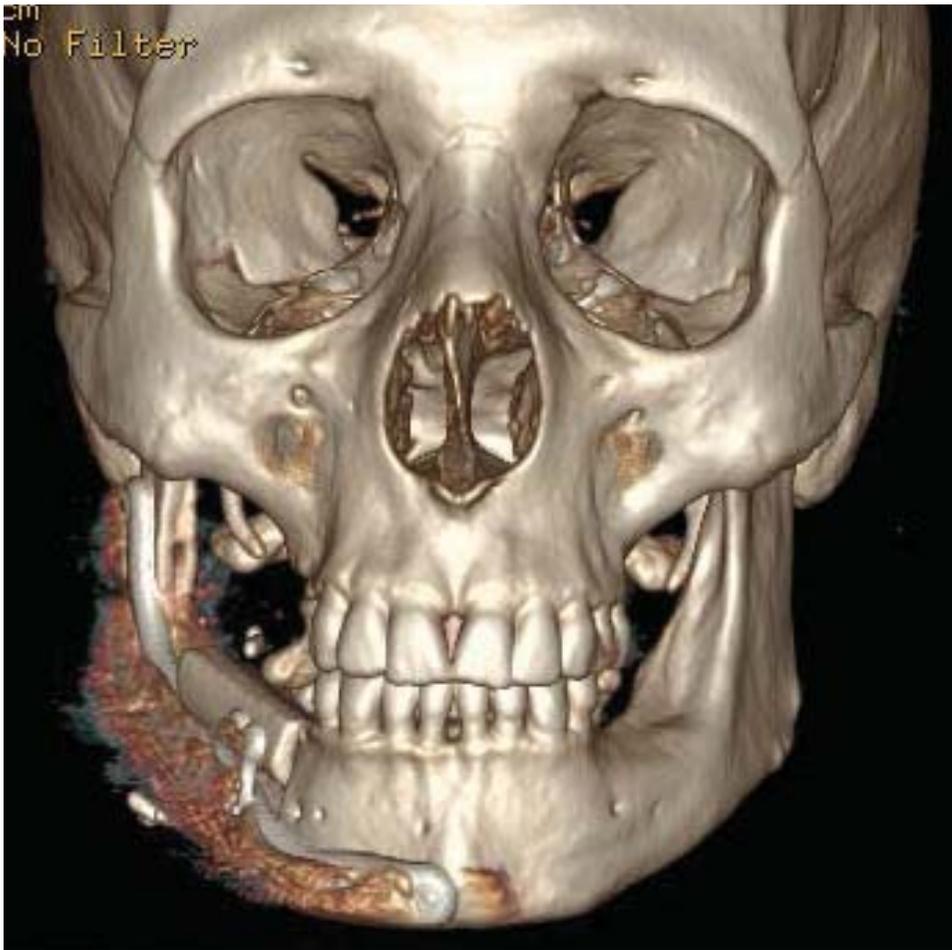
Plate screw holes that are indicated by:

- left mandible guide: hole 3
- right mandible guide: hole 3





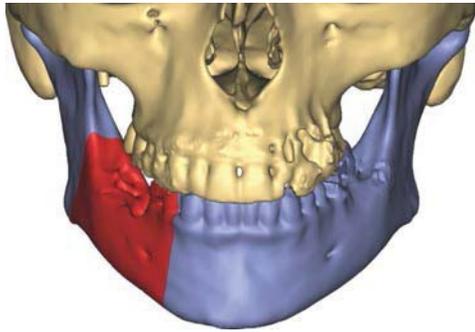




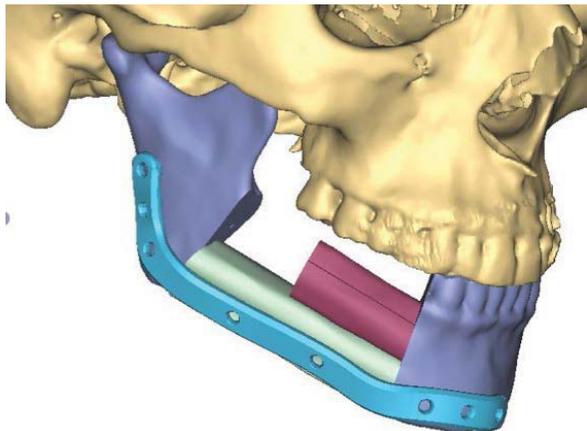


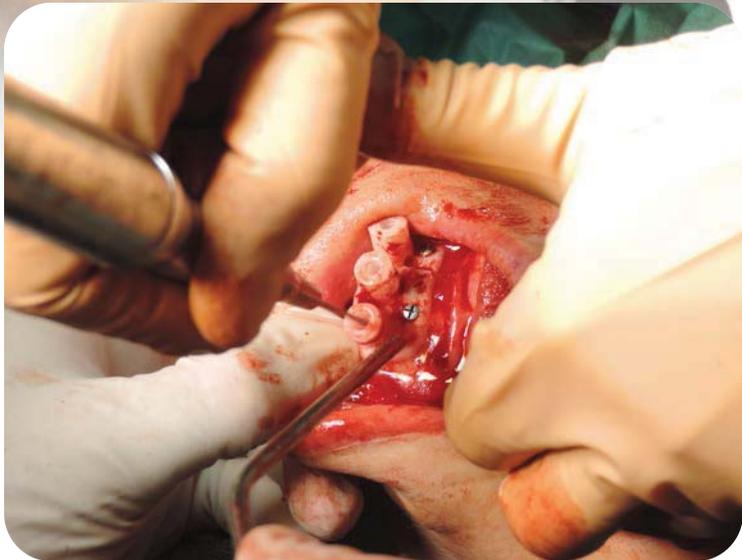
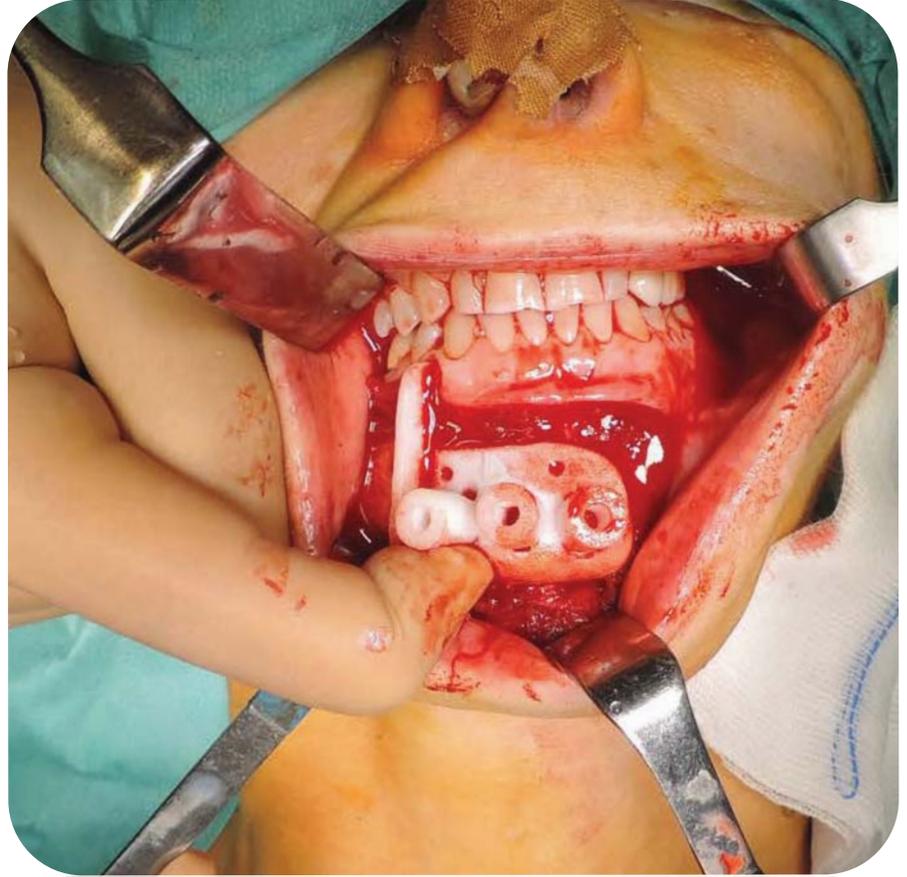
Paz F 56 aa angiosarcoma mandibolare

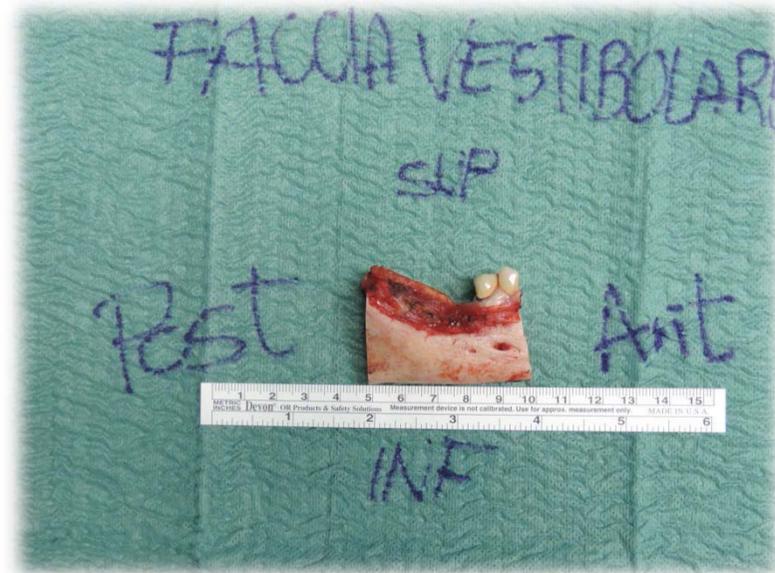
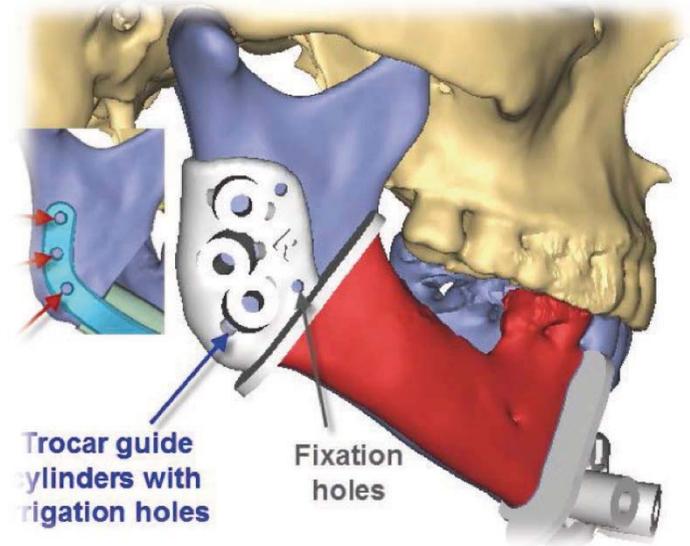
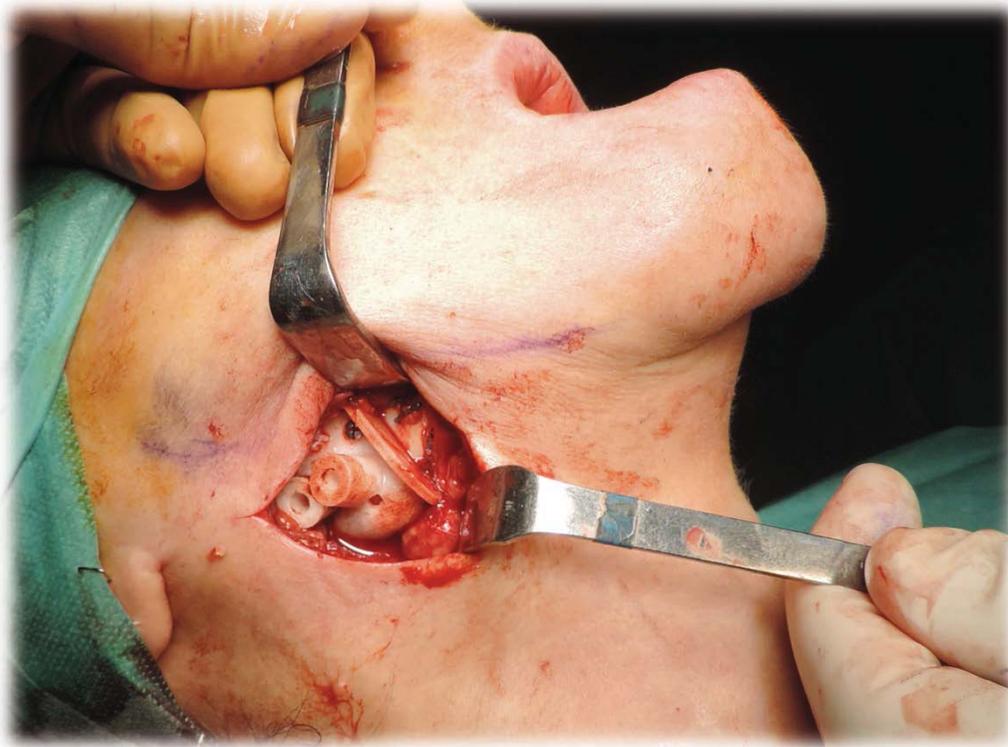
Resezione

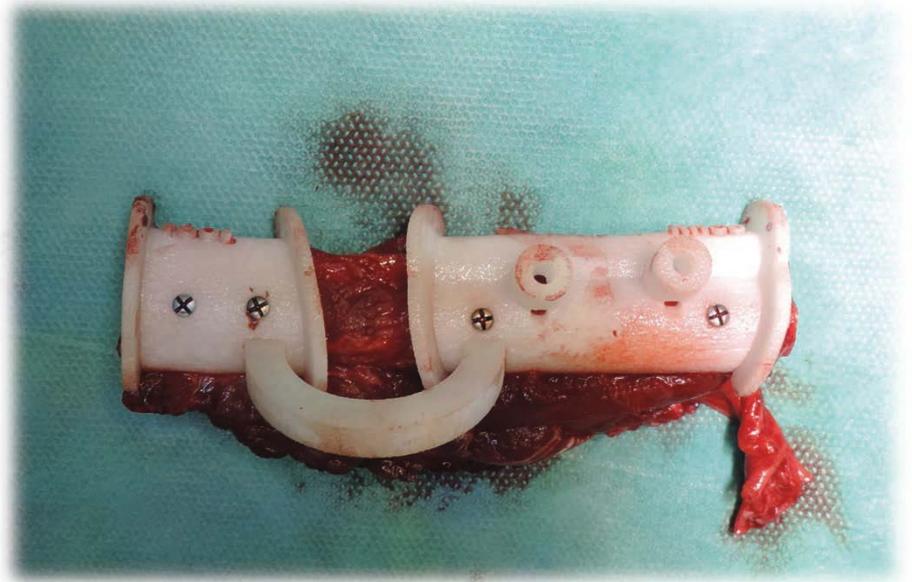


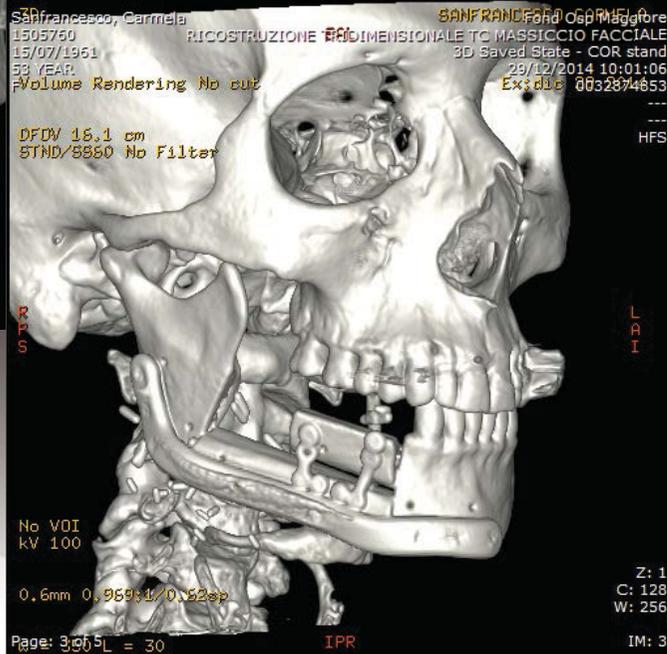
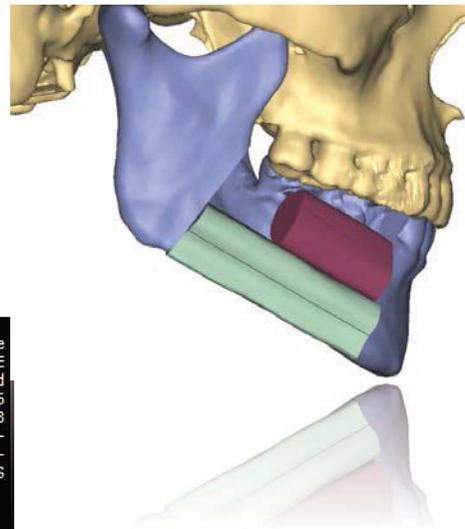
Ricostruzione





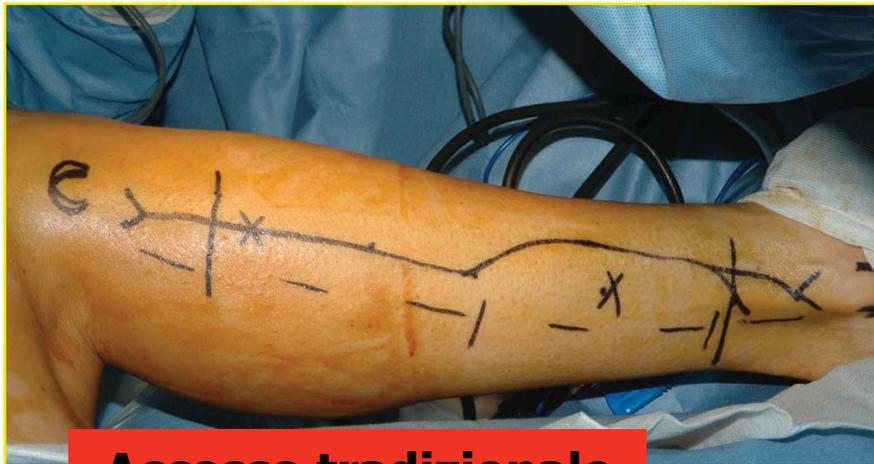




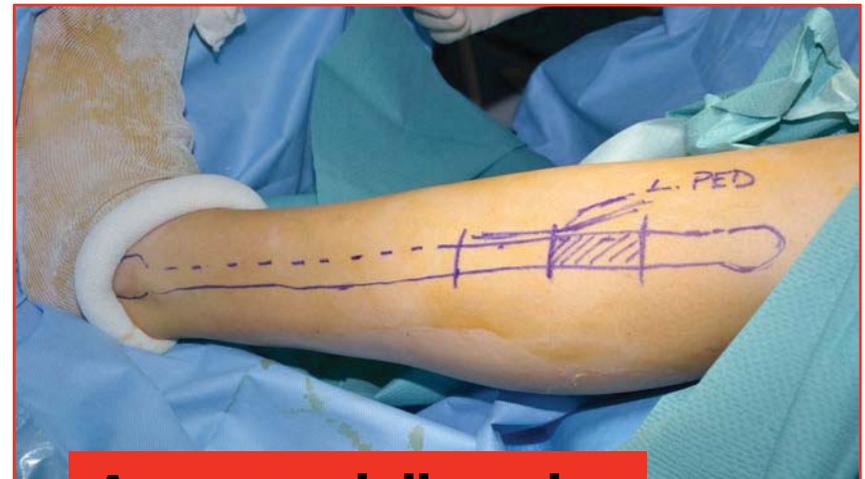




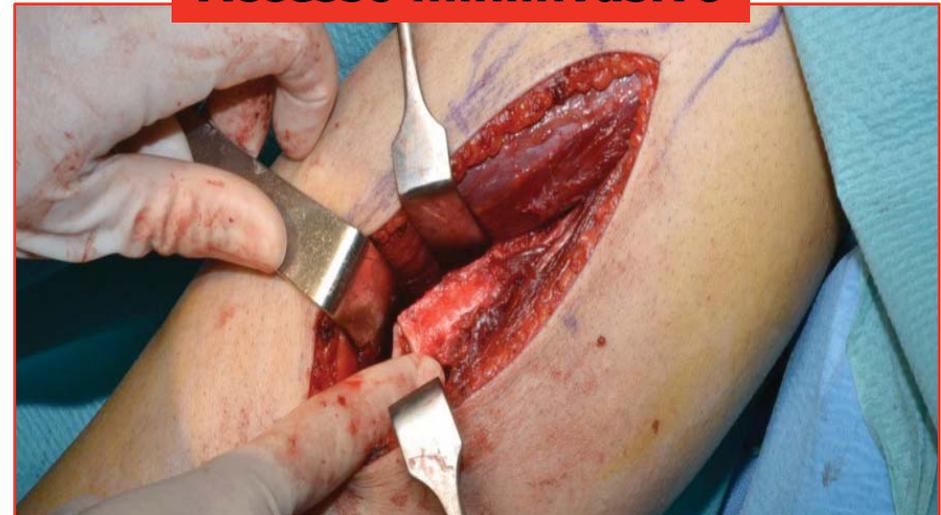
Chirurgia ricostruttiva post-oncologica mini-invasiva ?



Accesso tradizionale



Accesso miniinvasivo

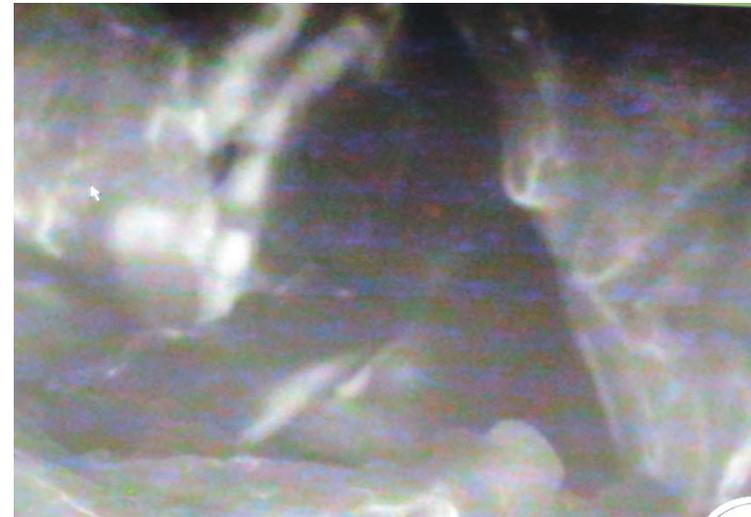
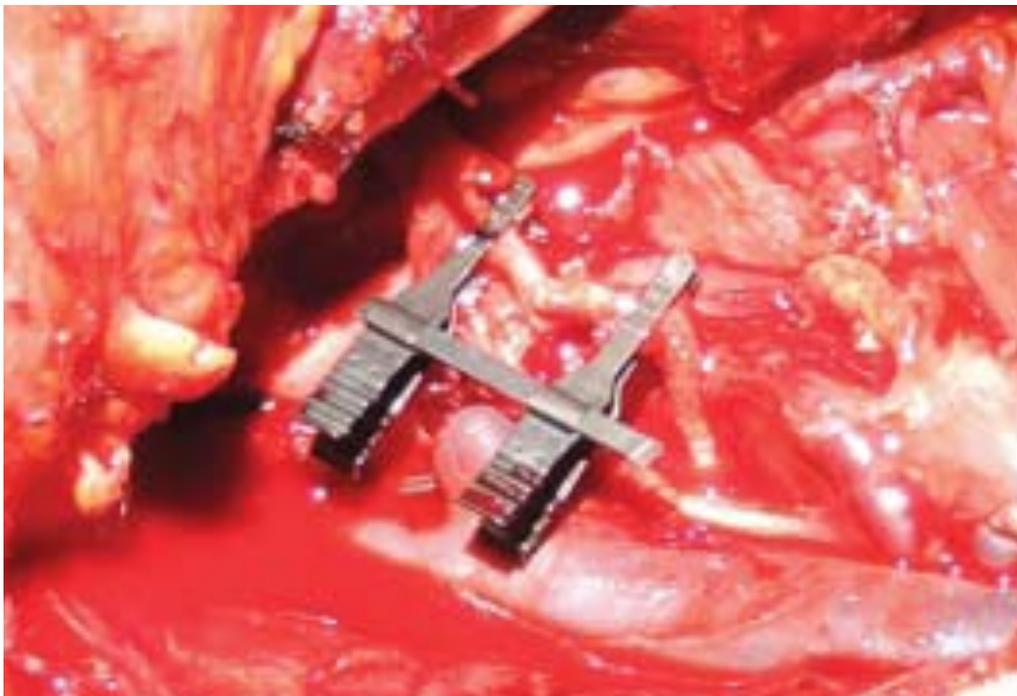


Bai A, Beltramini GA, Massarelli O, Youssef DA, Gianni AB

Minimally invasive harvest of free fibula flap

Plast Reconstr Surg. 2013 Mar;131(3):474e-7e

Chirurgia ricostruttiva post-oncologica con realtà aumentata



Angiografia intraoperatoria



U.O.C. di Chirurgia Maxillo Facciale partecipanti allo studio

1) MILANO Unità Operativa Complessa di Chirurgia Maxillo-facciale ed Odontostomatologia - Policlinico di Milano

Responsabile: Prof. Aldo Bruno Gianni

2) MONZA U.O.C. Chirurgia Maxillo Facciale - Ospedale S. Gerardo di Monza

Responsabile: Prof. Alberto Bozzetti

3) PARMA U.O.C. Chirurgia Maxillo Facciale - Azienda Ospedaliero - Universitaria di Parma

Responsabile: Prof. Enrico Sesenna

4) CESENA U.O. Chirurgia Maxillo Facciale - Ospedale M. Bufalini

Responsabile: Dott. Angelo Campobassi

5) ROMA U.O.C. Chirurgia Maxillo Facciale - Policlinico Umberto I

Responsabile: Prof. Valentino Valentini

6) NAPOLI U.O. Chirurgia Maxillo Facciale - Università degli Studi di Napoli Federico II

Responsabile: Prof. Luigi Califano

7) SASSARI U.O. Chirurgia Maxillo Facciale - AOU Sassari

Responsabile: Prof. Antonio Tullio

8) TORINO Divisione di Chirurgia Maxillo Facciale - Università degli Studi di Torino

Responsabile: Prof. Guglielmo Ramieri

9) GENOVA U.O. Chirurgia Maxillo Facciale - IRCCS Azienda Ospedaliera San Martino

Referente: Prof. Mario Ziola

10) BARI U.O.C. di Chirurgia Maxillo Facciale ed Odontostomatologia - Ospedale Regionale F. Miulli

Responsabile: Prof. Roberto Cortelazzi

11) SAN GIOVANNI ROTONDO Struttura complessa di Chirurgia Maxillo Facciale - IRCCS Casa Sollievo della Sofferenza

Responsabile: Dott. Roberto Cocchi

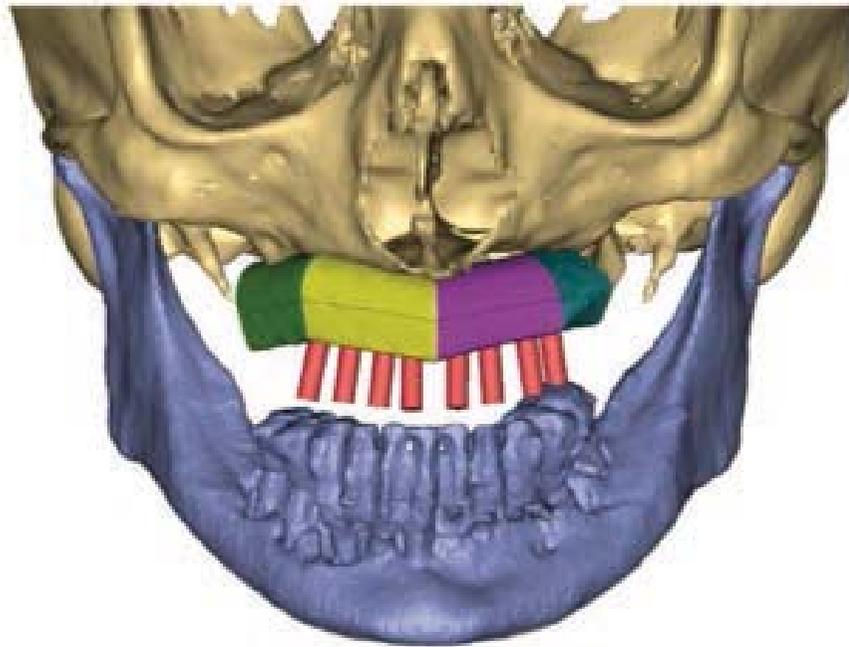


Grave atrofia mascellare



ATROFIA SEVERA DEL MASCELLARE SUPERIORE

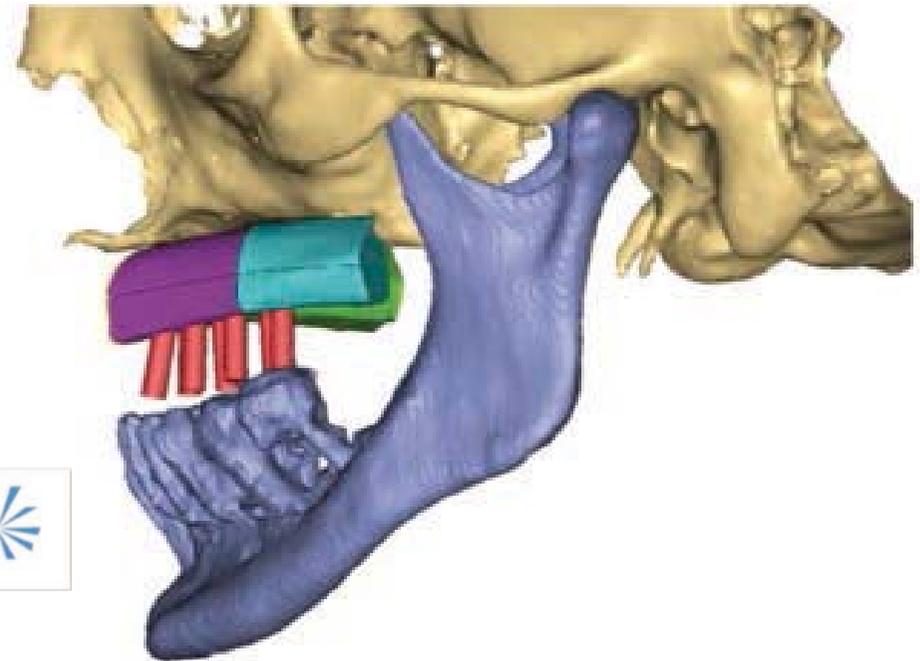
MYTH
DENTAL IMPLANT



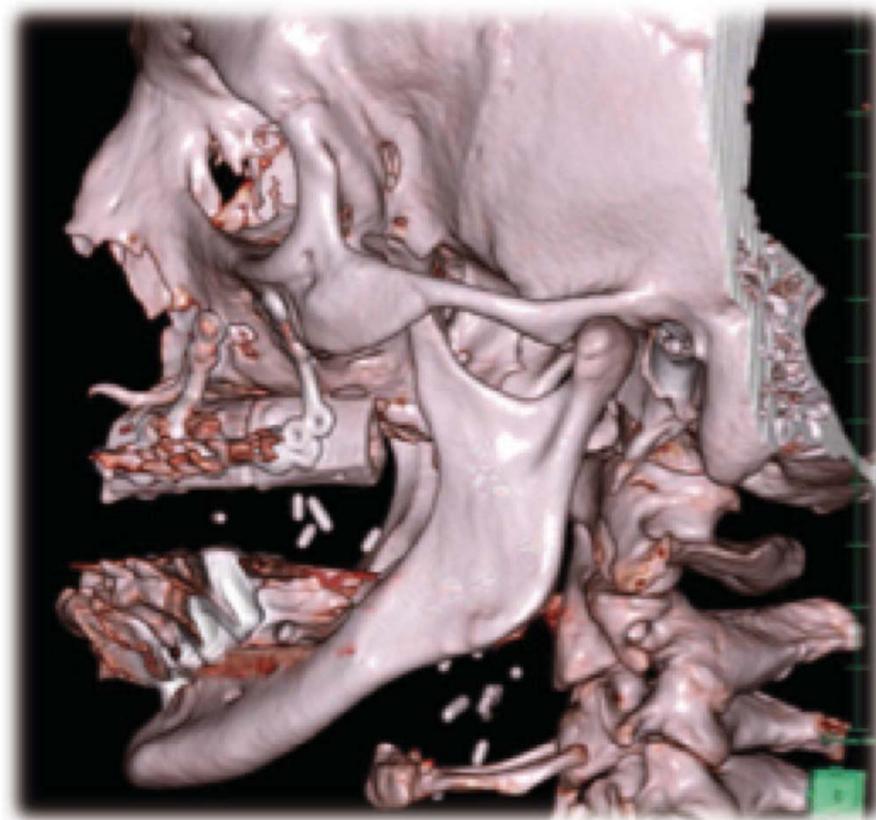
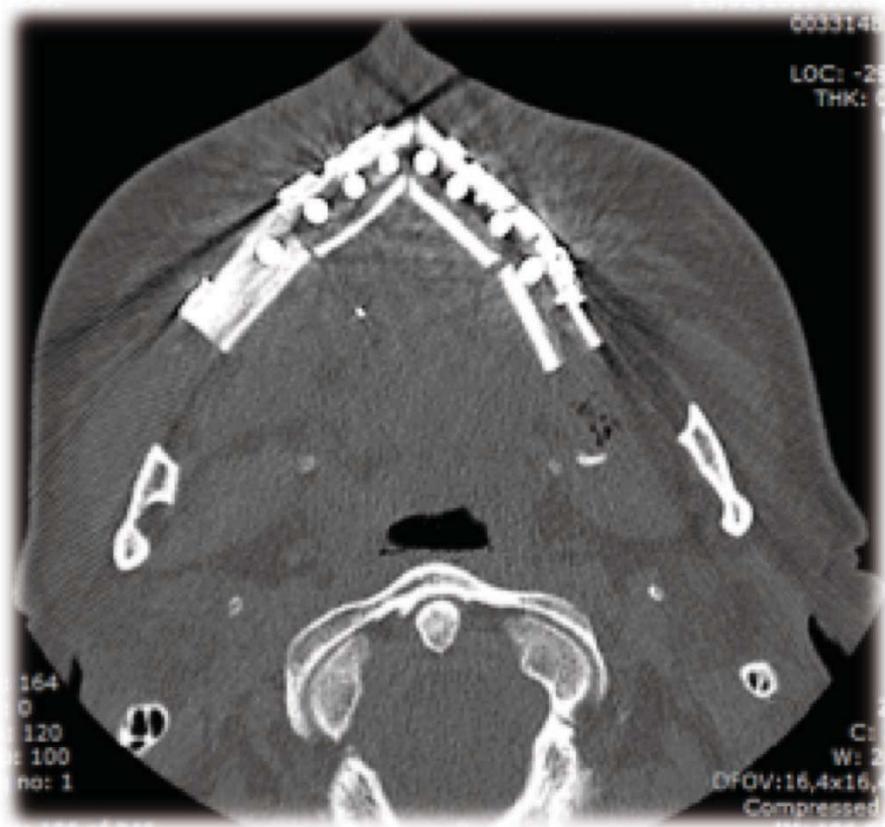
MYTH one
CYLINDRICAL

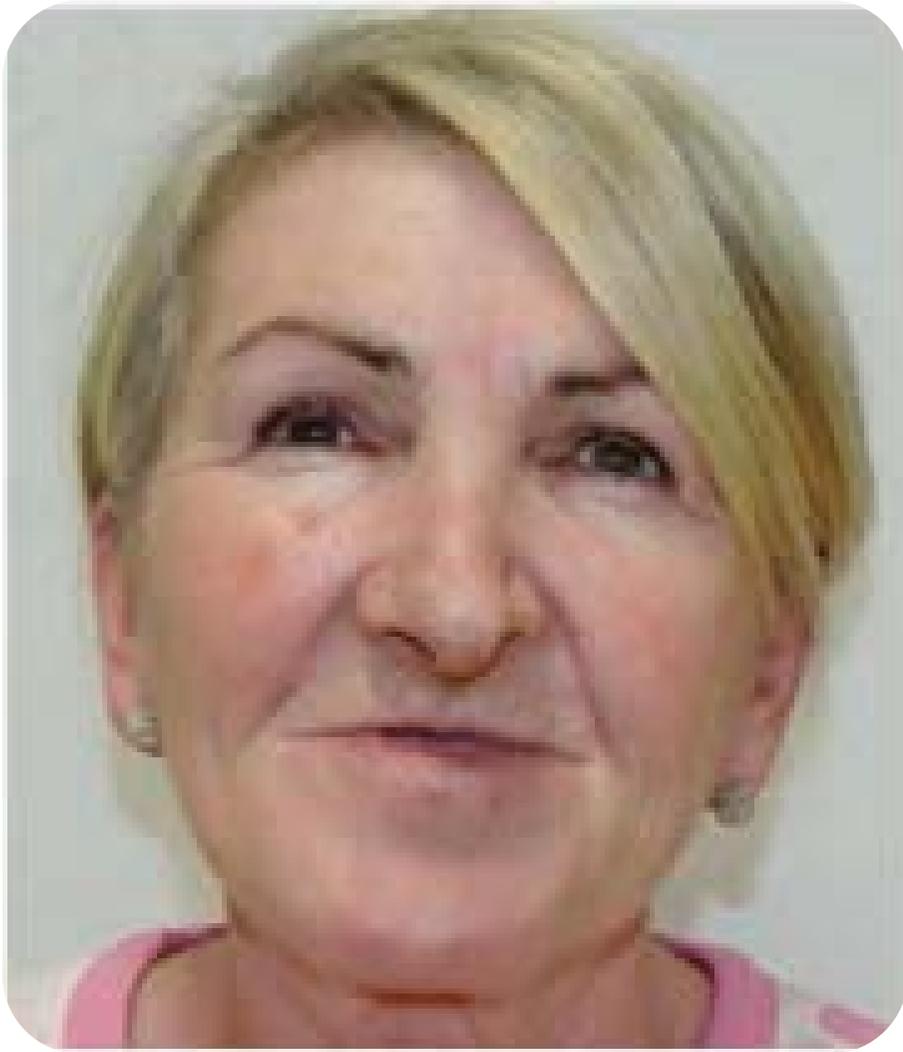


MYTH two
CONICAL









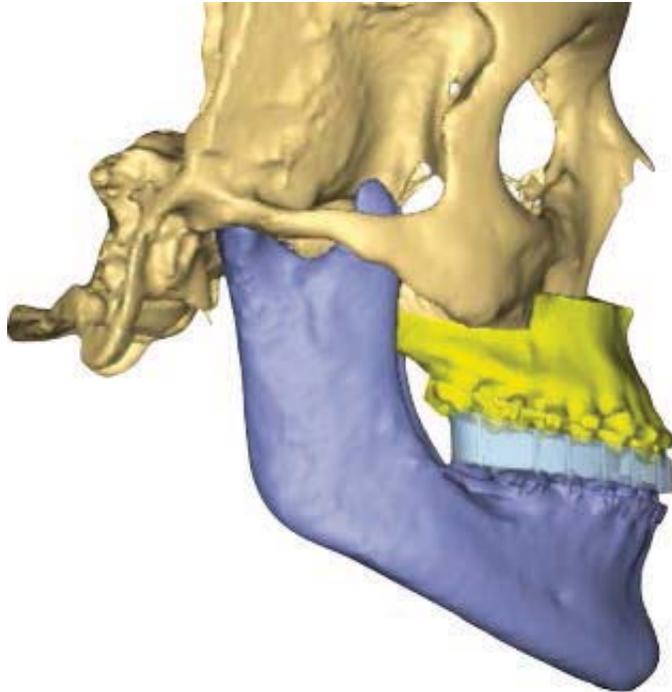
) C





Nuove tecnologie in Chirurgia Maxillo-Facciale

- ▶ *Programmazione totalmente virtuale in chirurgia ortognatica e nei pazienti OSAS*



How Many Oral and Maxillofacial Surgeons Does It Take to Perform Virtual Orthognathic Surgical Planning?



Alexandre Meireles Borba, DDS, PhD, *Dustin Haupt, DDS, †
Leiliane Teresinha de Almeida Romualdo, DDS Stud, ‡
André Luis Fernandes da Silva, DDS, MSc, §

Maria da Graça Nacério-Homem, DDS, PhD, || and Michael Miloro, DMD, MD ¶

Purpose: Virtual surgical planning (VSP) has become routine practice in orthognathic treatment planning; however, most surgeons do not perform the planning without technical assistance, nor do they routinely evaluate the accuracy of the postoperative outcomes. The purpose of the present study was to propose a reproducible method that would allow surgeons to have an improved understanding of VSP orthognathic planning and to compare the planned surgical movements with the results obtained.

Materials and Methods: A retrospective cohort of bimaxillary orthognathic surgery cases was used to evaluate the variability between the predicted and obtained movements using craniofacial landmarks and McNamara 3-dimensional cephalometric analysis from computed tomography scans. The demographic data (age, gender, and skeletal deformity type) were gathered from the medical records. The data analysis included the level of variability from the predicted to obtained surgical movements as assessed by the mean and standard deviation. For the overall sample, statistical analysis was performed using the 1-sample *t* test. The statistical analysis between the Class II and III patient groups used an unpaired *t* test.

Results: The study sample consisted of 50 patients who had undergone bimaxillary orthognathic surgery. The overall evaluation of the mean values revealed a discrepancy between the predicted and obtained values of less than 2.0 ± 2.0 mm for all maxillary landmarks, although some mandibular landmarks were greater than this value. An evaluation of the influence of gender and deformity type on the accuracy of surgical movements did not demonstrate statistical significance for most landmarks ($P > .05$).

*Researcher, Master of Science Program on Integrated Dental Sciences, Faculty of Dentistry of the University of Cuiabá, Cuiabá, Brazil; Postdoctorate Researcher, Department of Oral and Maxillofacial Surgery, Traumatology and Prosthesis, Faculty of Dentistry of the University of São Paulo, São Paulo, Brazil; and Visiting Researcher, Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, Chicago, IL.

†Chief Resident, Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, Chicago, IL.

‡Dental Undergraduate Student, Faculty of Dentistry of the Federal University of Minas Gerais, Belo Horizonte, Brazil; Summer Course Student, Science Without Borders Program, Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, Chicago, IL.

§Former Master of Science Student, Master of Science Program on Integrated Dental Sciences, Faculty of Dentistry of the University of Cuiabá, Cuiabá, Brazil.

||Associate Professor, Department of Oral and Maxillofacial Surgery, Traumatology and Prosthesis, Faculty of Dentistry of the University of São Paulo, São Paulo, Brazil.

¶Professor, Department Head, and Program Director, Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, Chicago, IL.

Conflict of Interest Disclosures: Dr Miloro is a consultant for AxiGen, Inc, Alachua, FL. All other authors do not have any relevant financial relationship(s) with a commercial interest.

Address correspondence and reprint requests to Dr Miloro: Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, 801 South Paulina Street, MC 835, Chicago, IL 60612-7211; e-mail: mmiloro@uic.edu

Received December 28 2015

Accepted March 13 2016

© 2016 American Association of Oral and Maxillofacial Surgeons

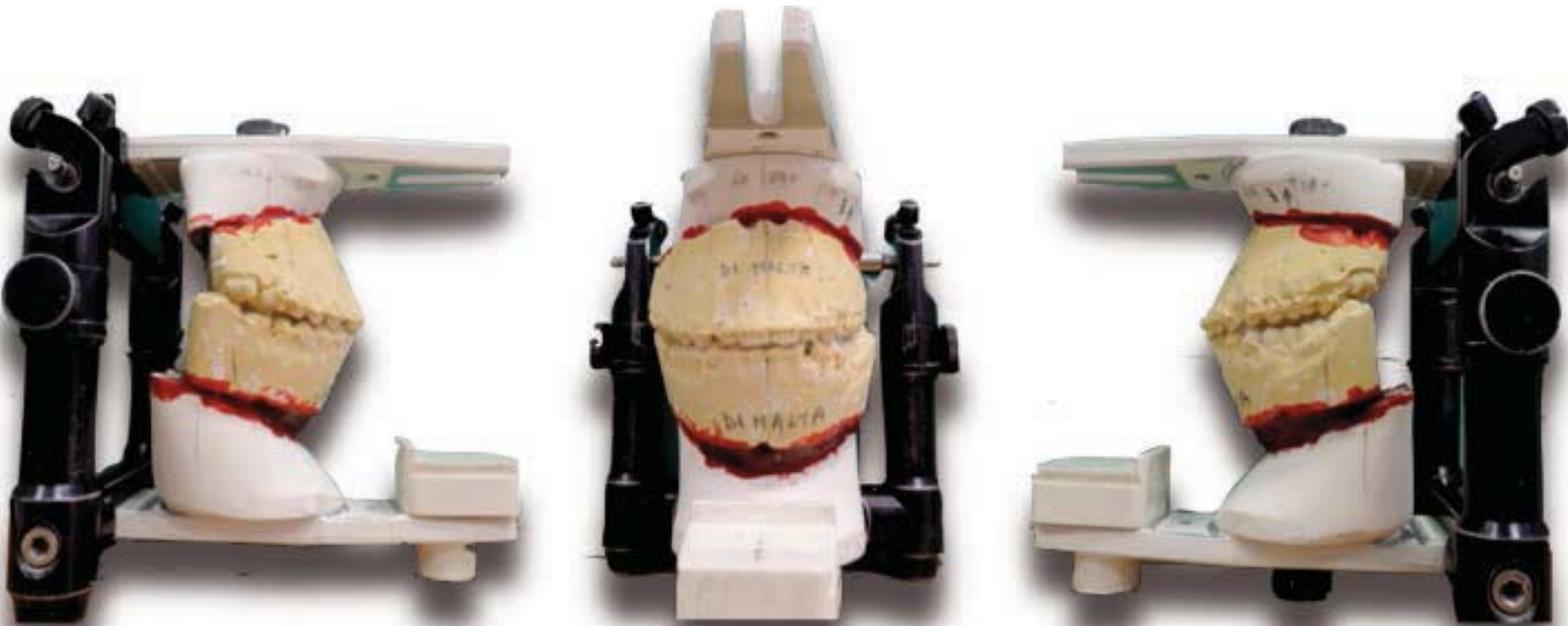
0278-2391/16/00347-5

<http://dx.doi.org/10.1016/j.joms.2016.03.013>



La programmazione chirurgica virtuale è diventata ormai una pratica routinaria in chirurgia ortognatica





Accuratezza



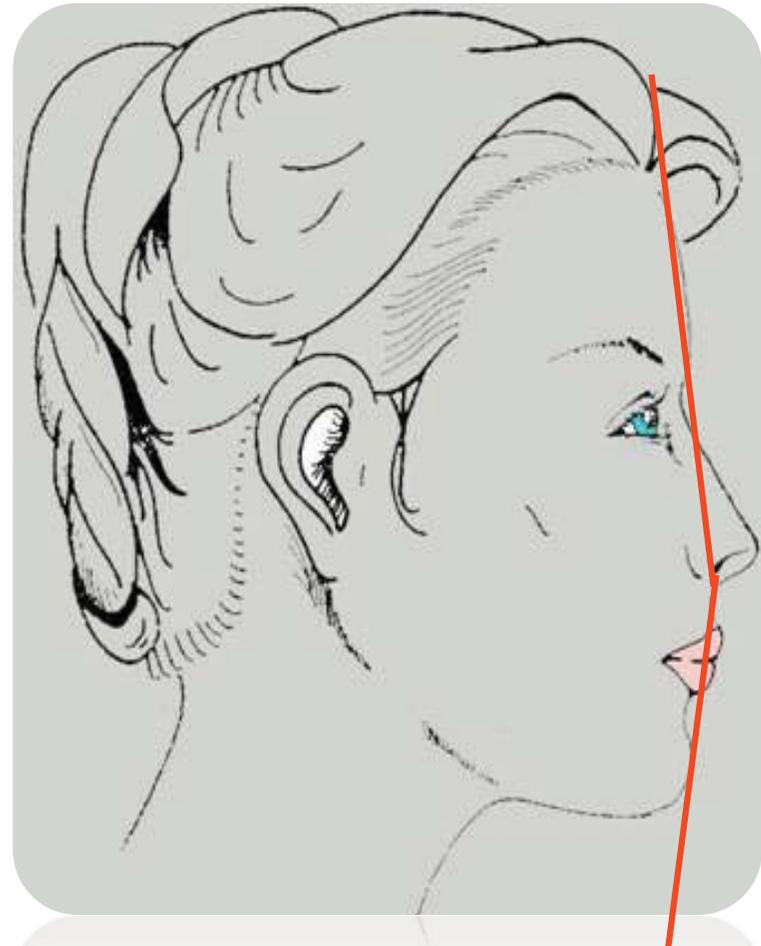
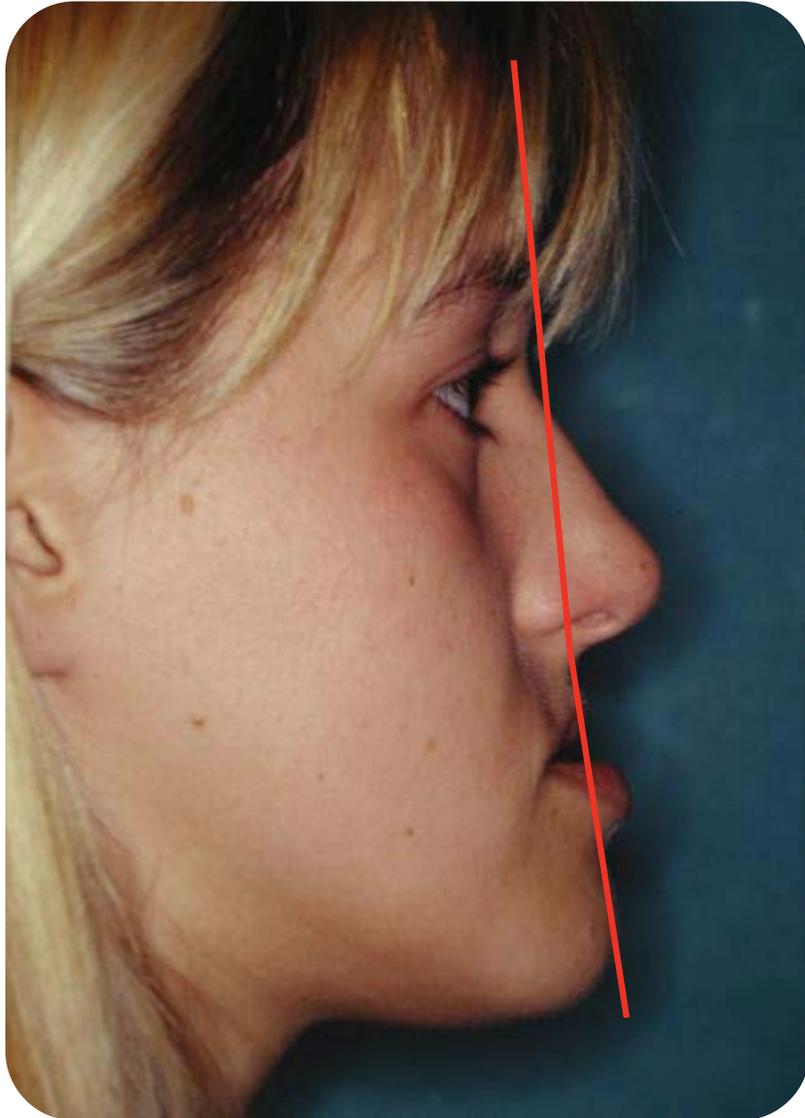
Efficienza



Benessere del Paziente



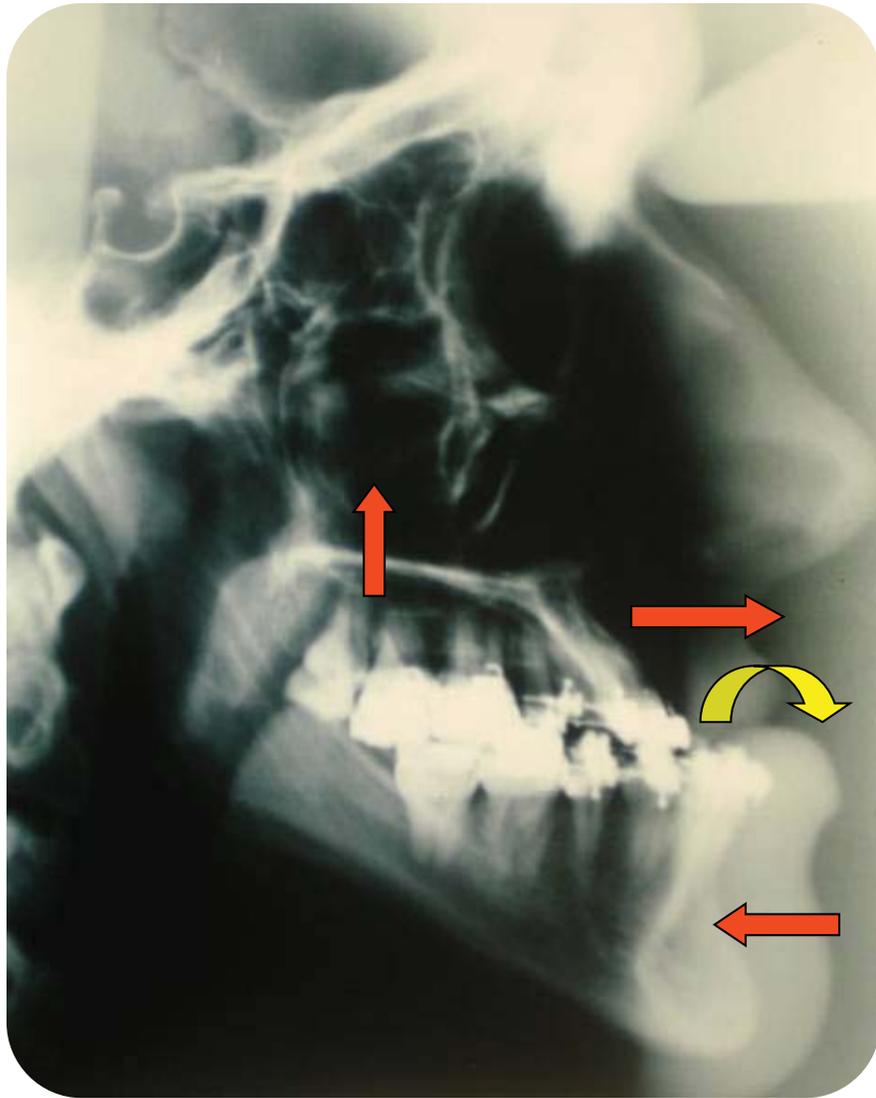
ANGOLO DI CONVESSITÀ FACCIALE

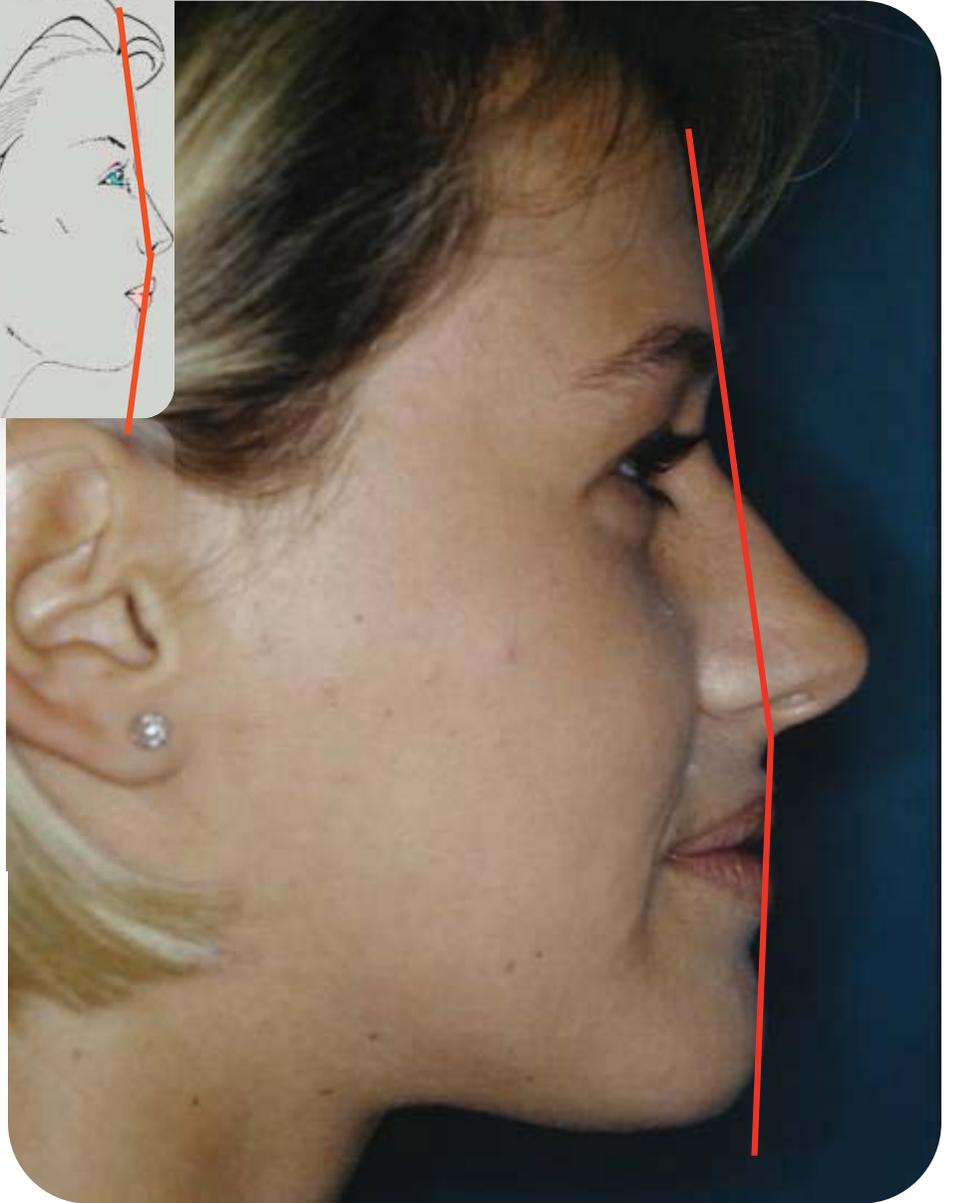
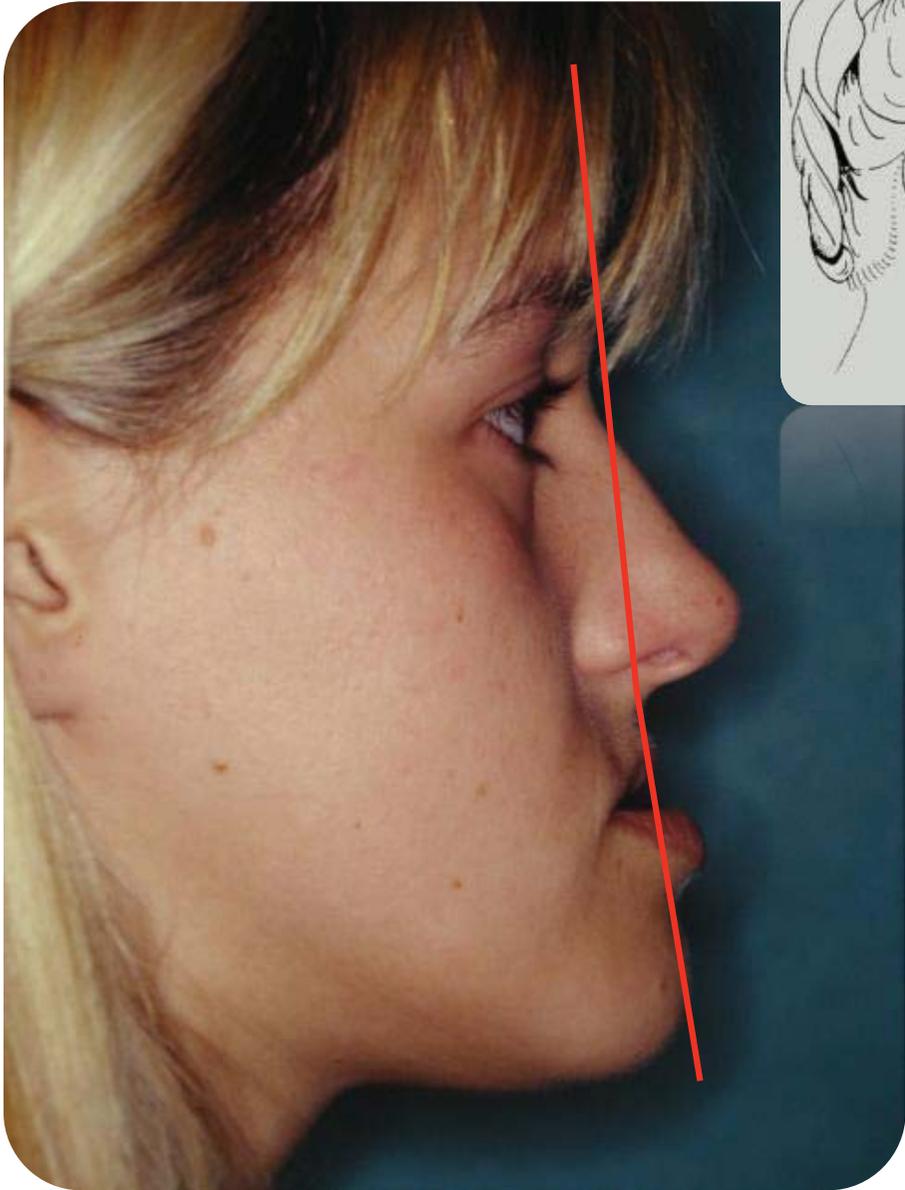


ANGOLO DI CONVESSITÀ FACCIALE
glabella - Sn - pogonion

V.N.: 165° - 175°

Osteotomia mascellare di avanzamento (7 mm) e di impattamento posteriore (4 mm.)
Osteotomia mandibolare di arretramento (4 mm.)





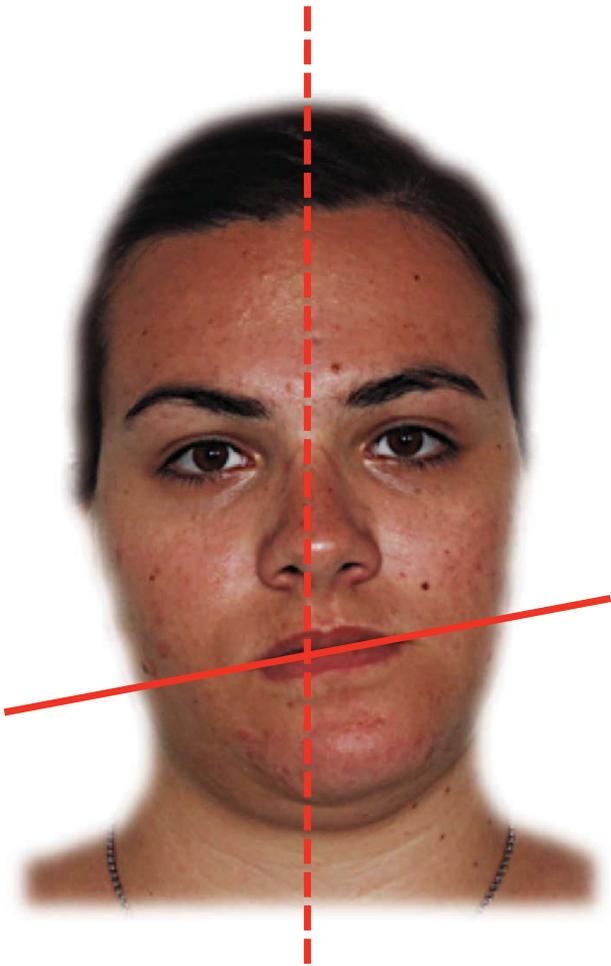
Il dubbio è
scomodo ma
solo gli imbecilli
non ne hanno. -
Voltaire

Il mondo però cambia...

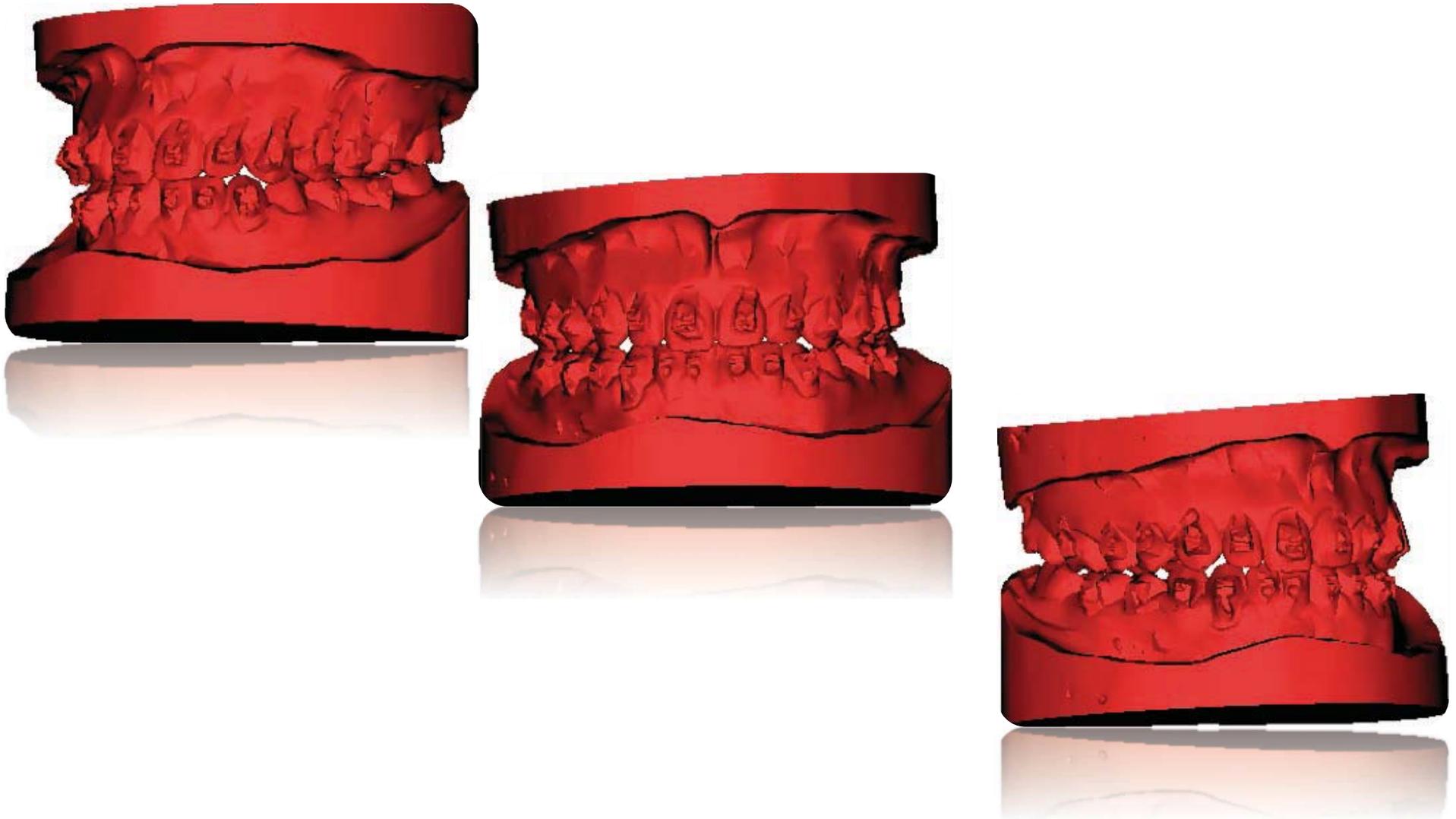
Nuove tecnologie

Migliore estetica



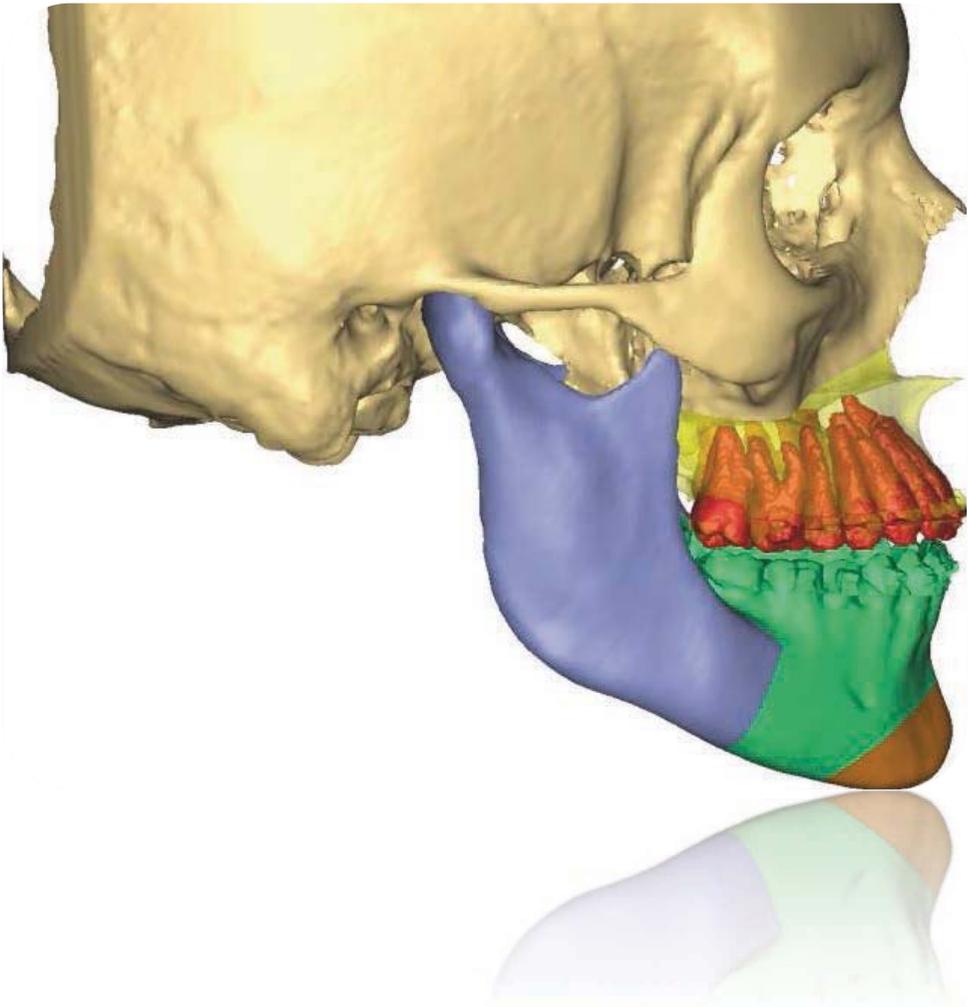
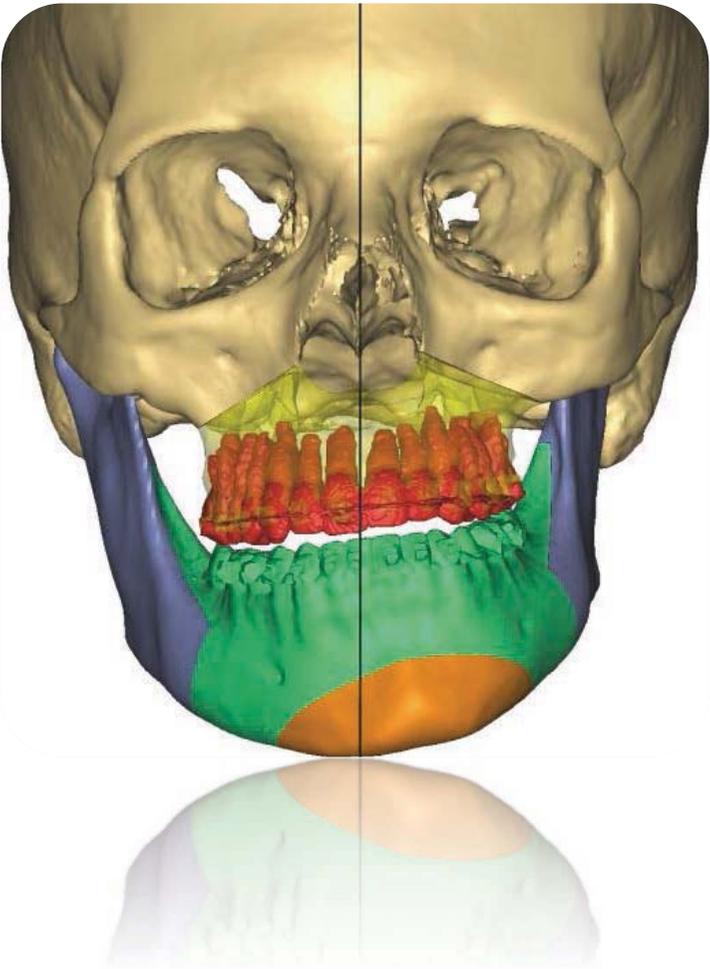


Digitalizzazione delle arcate dentarie e dell'occlusione finale

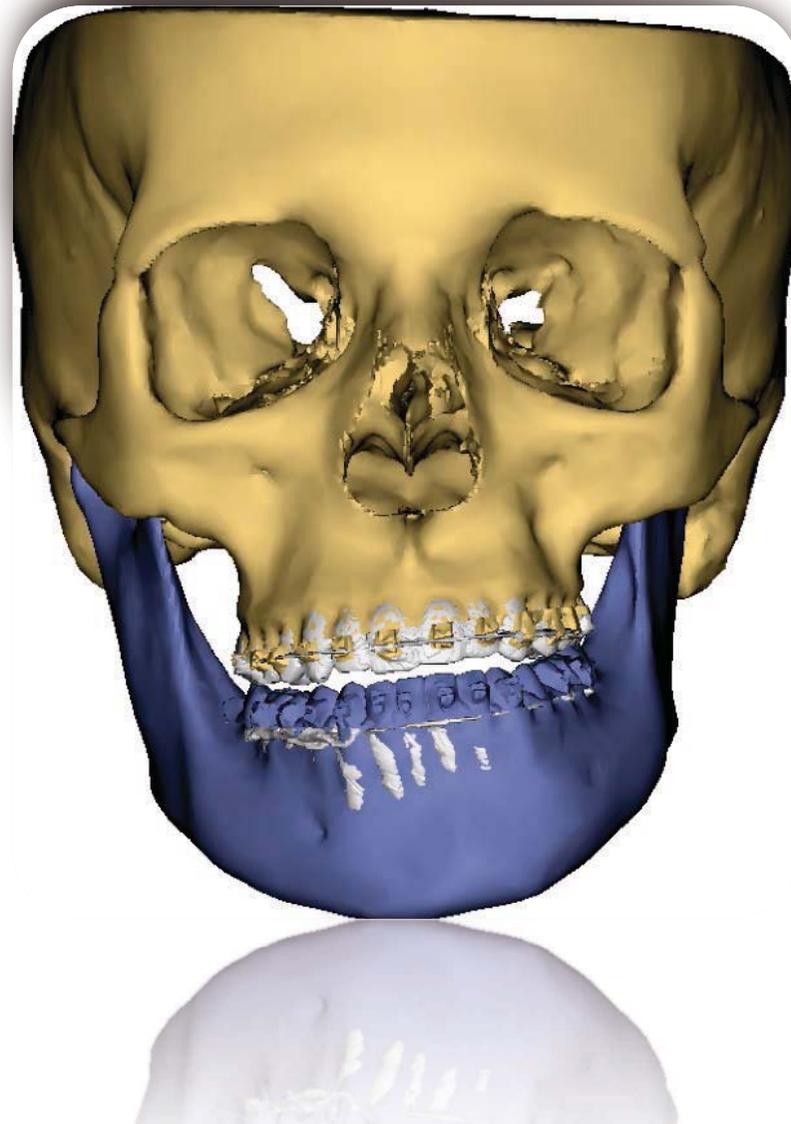


PROPLAN CMF®
Case Report – ME15-NEB-JER
Dr. Romano
Orthognathic surgery

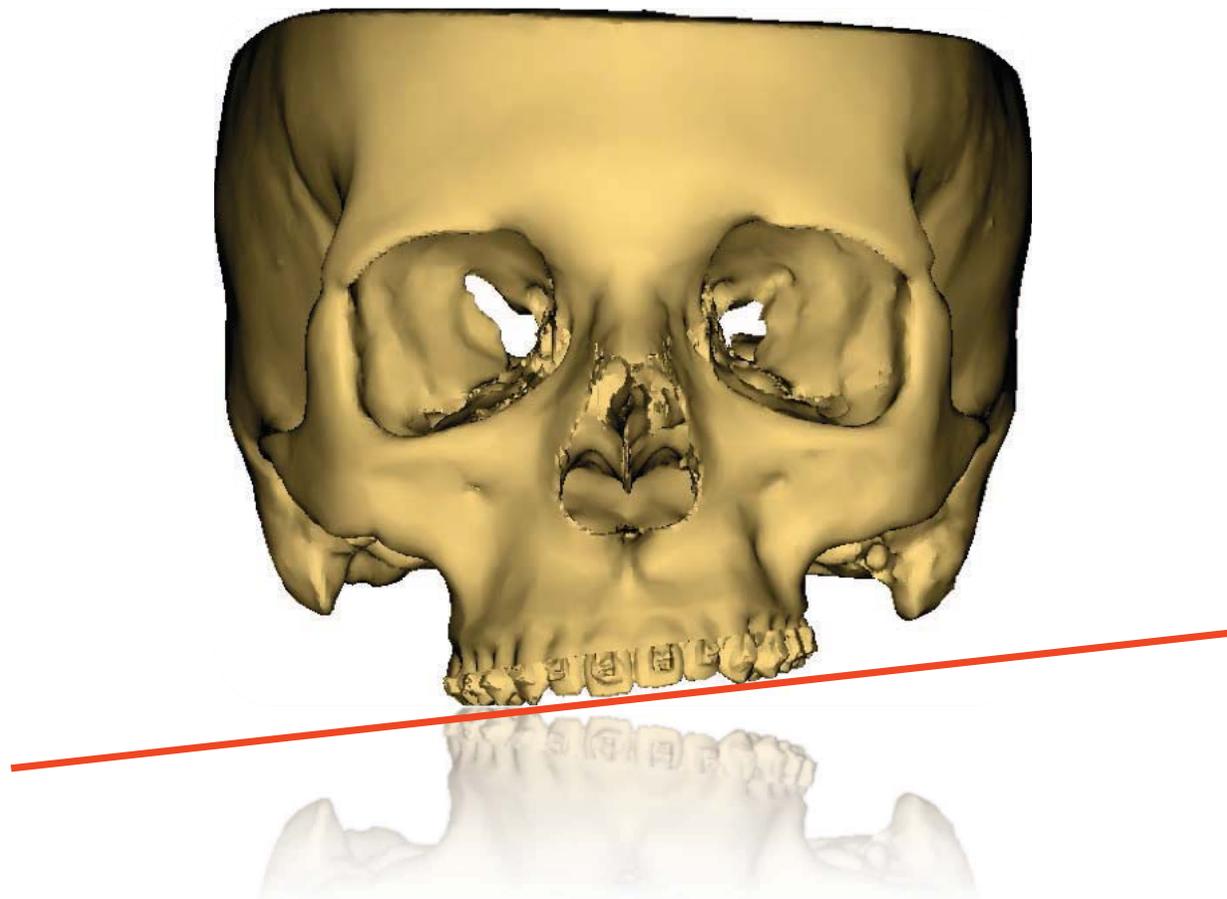
© 2009 DE
COMPOSABLE DePuySynthes Materialise



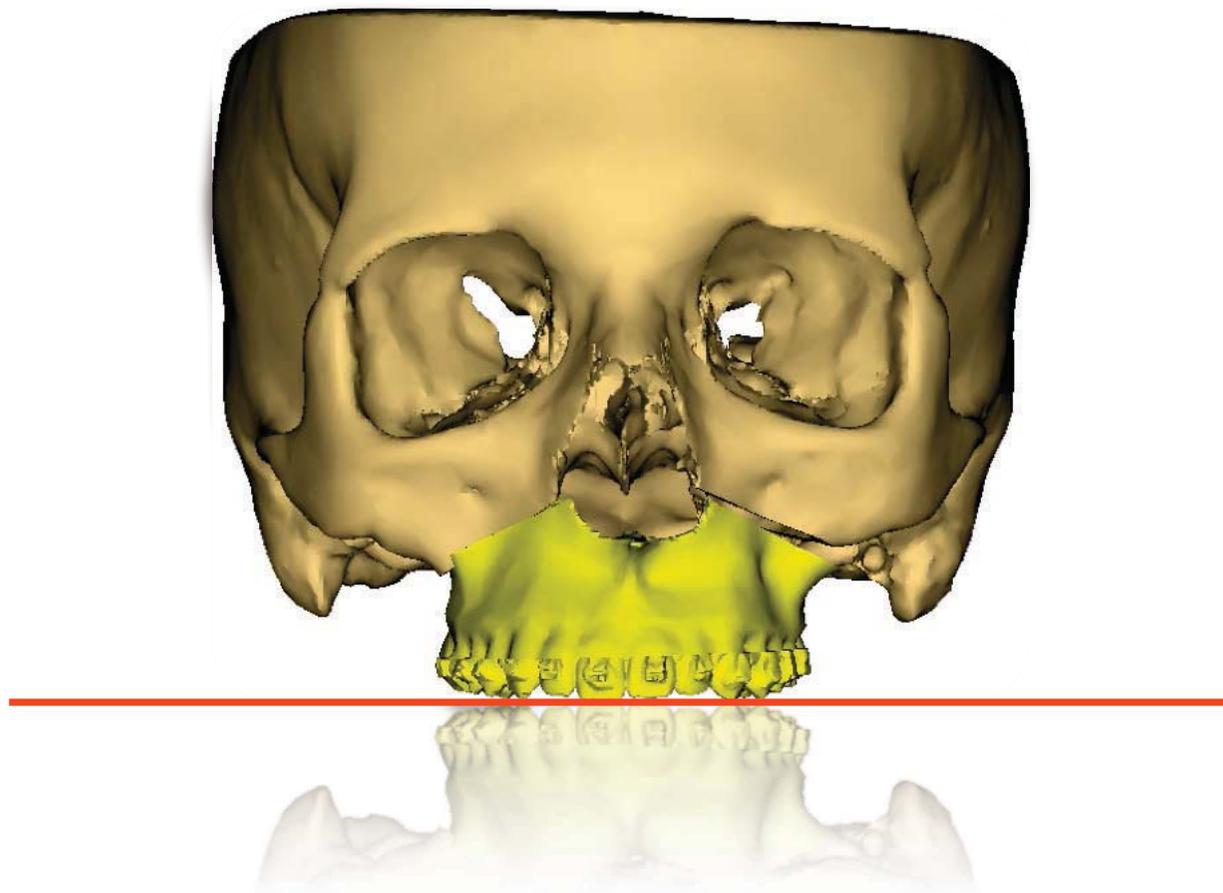
Digitalizzazione delle arcate dentarie e dell'occlusione finale



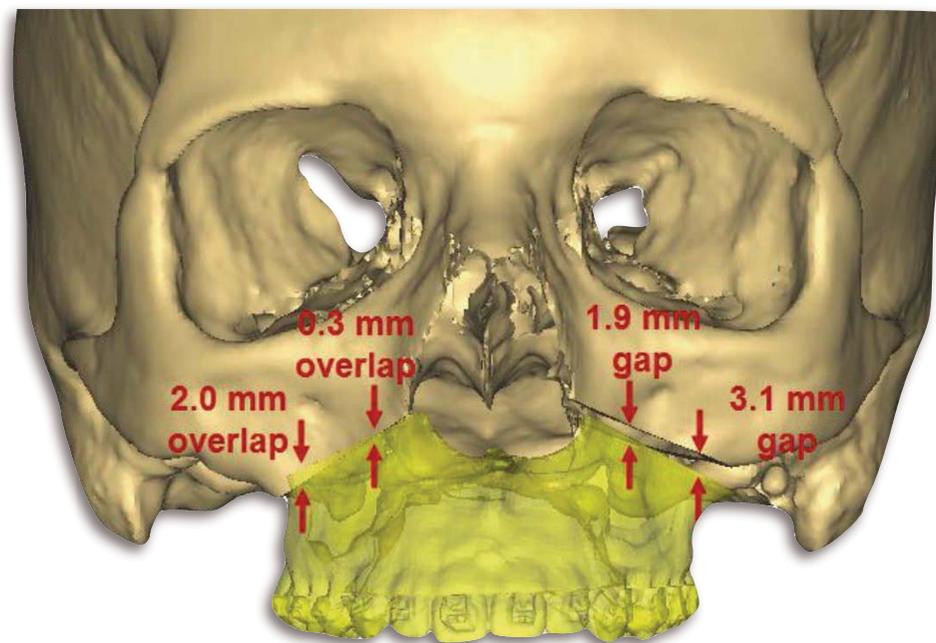
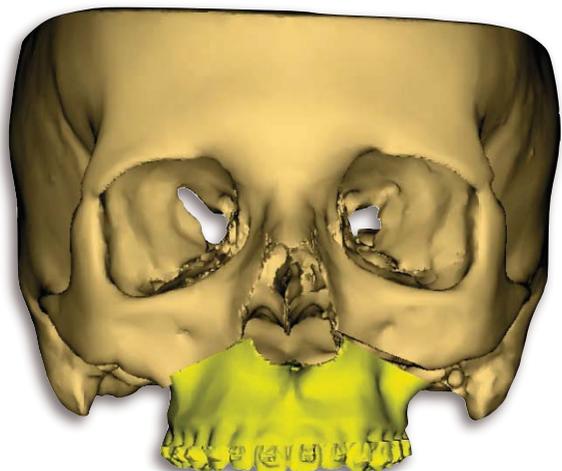
Correzione del piano occlusale



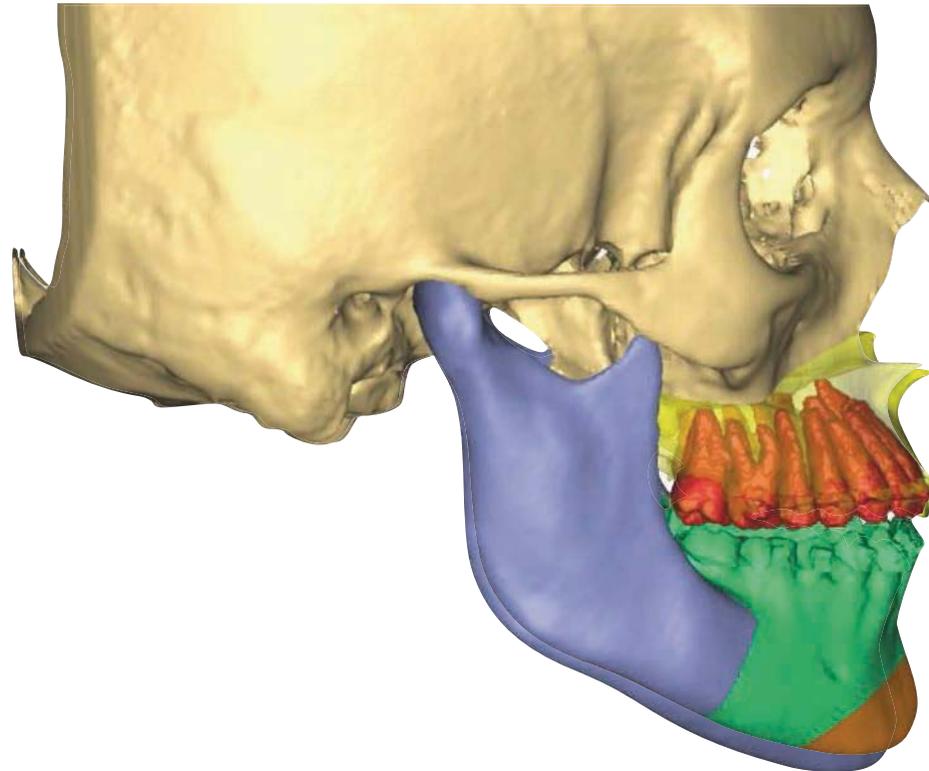
Correzione del piano occlusale



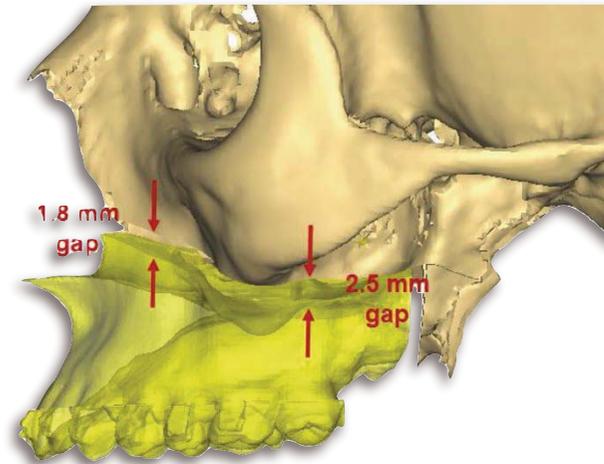
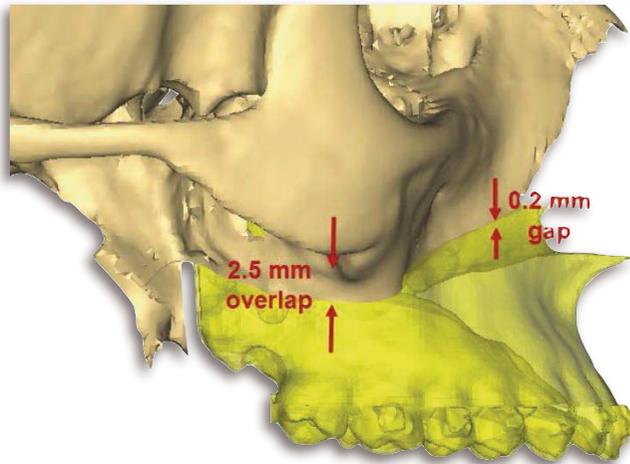
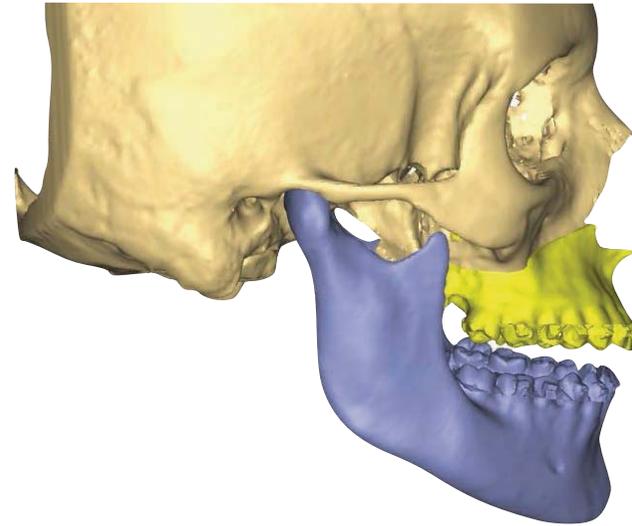
Correzione del piano occlusale



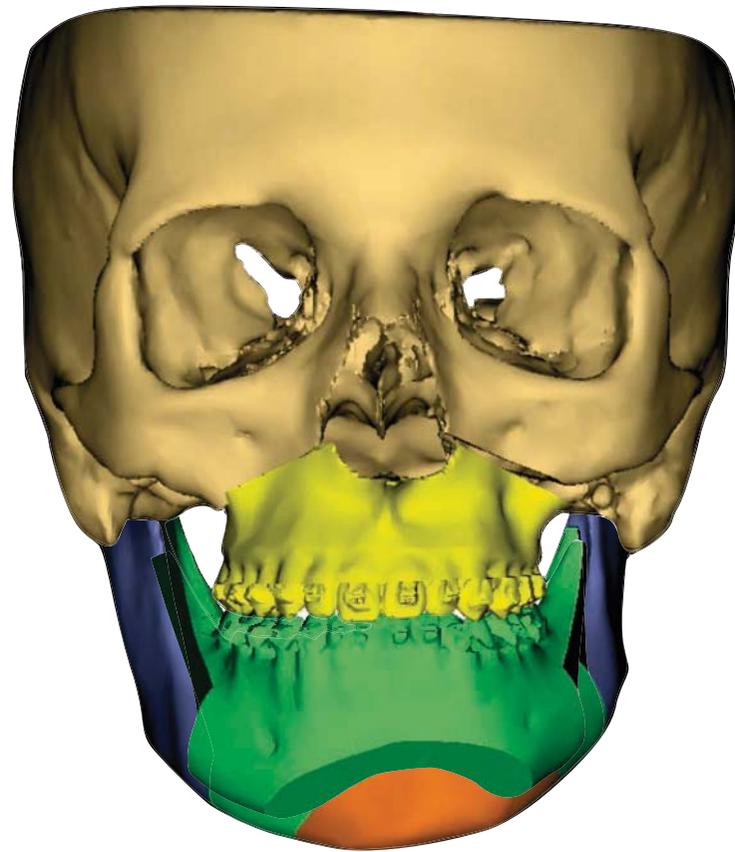
Movimenti sagittali del mascellare



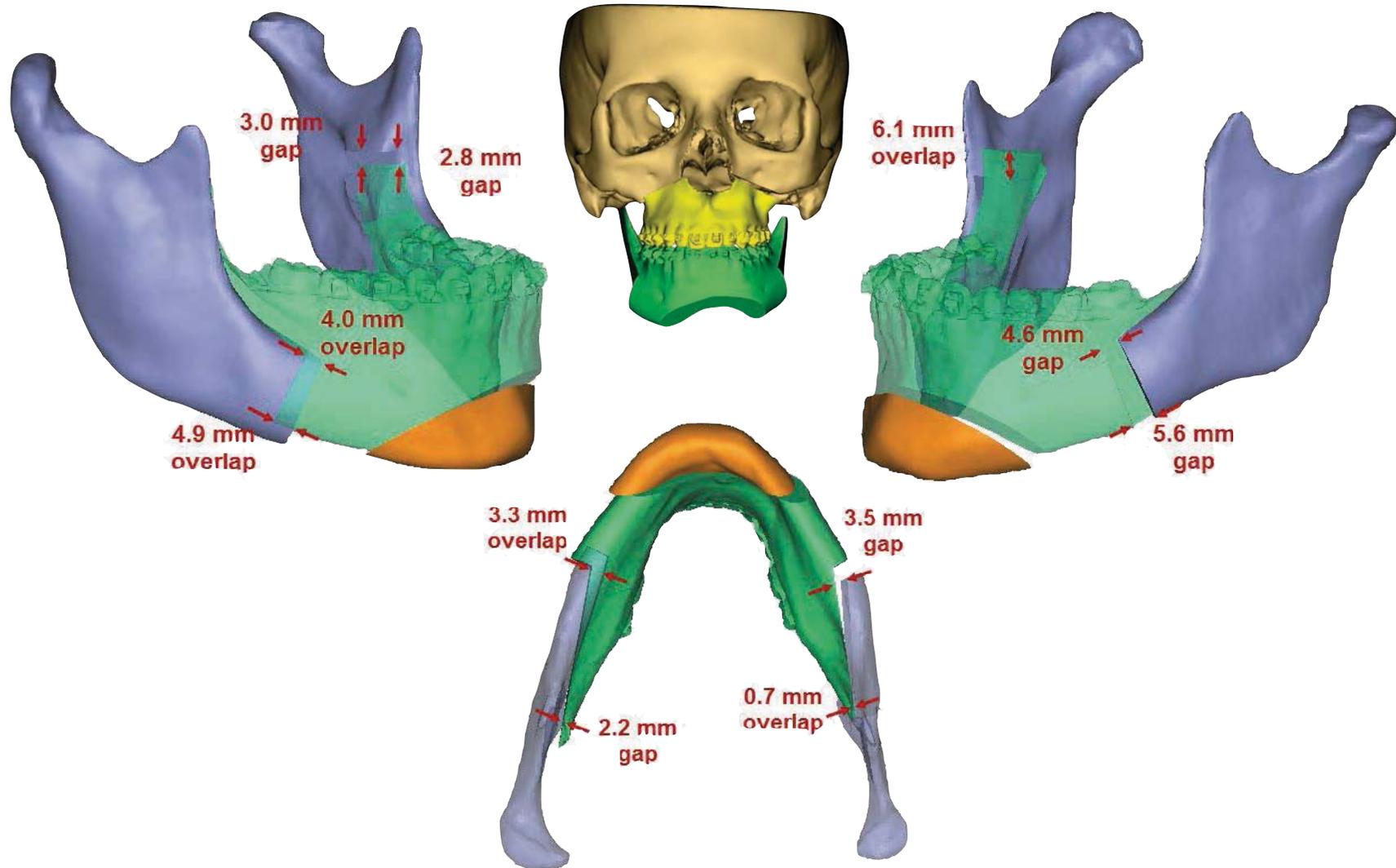
Movimenti sagittali del mascellare



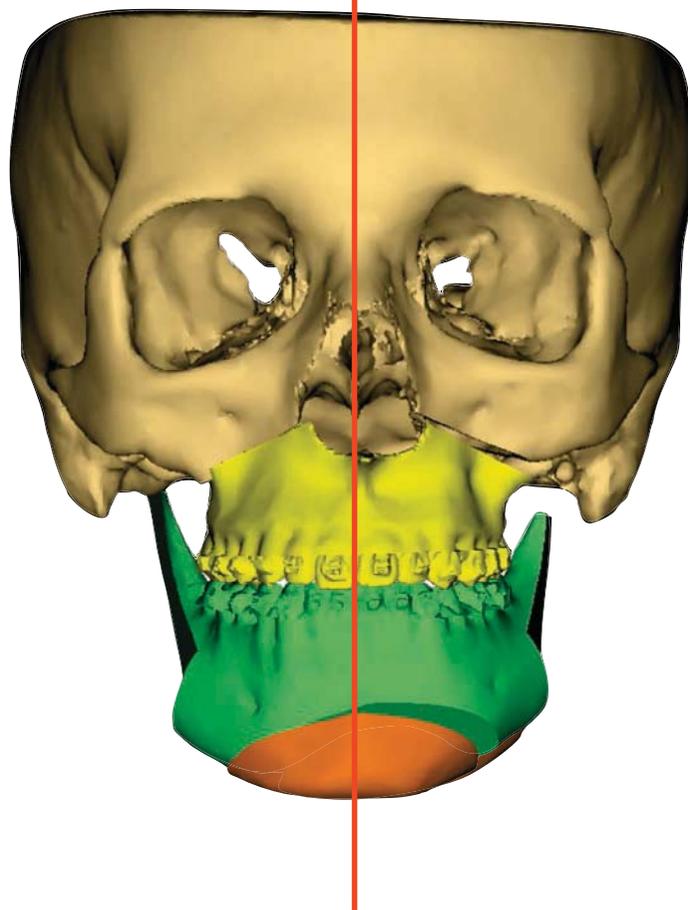
Correzione del piano occlusale mandibolare



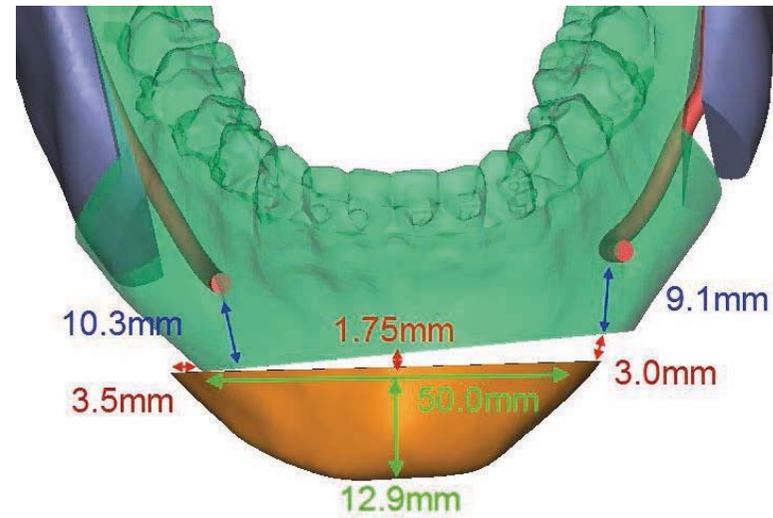
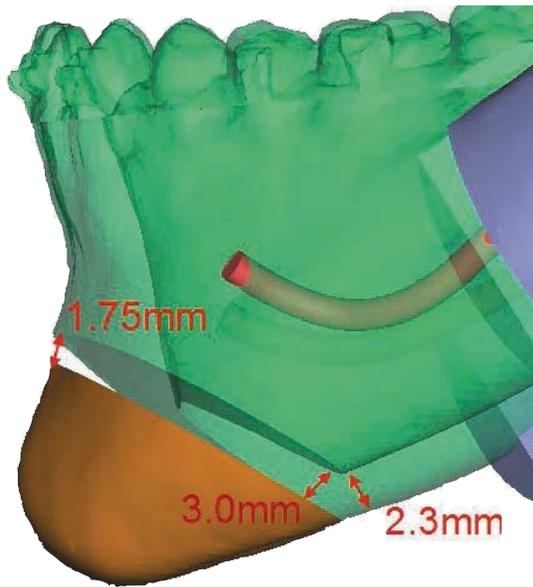
Correzione del piano occlusale mandibolare

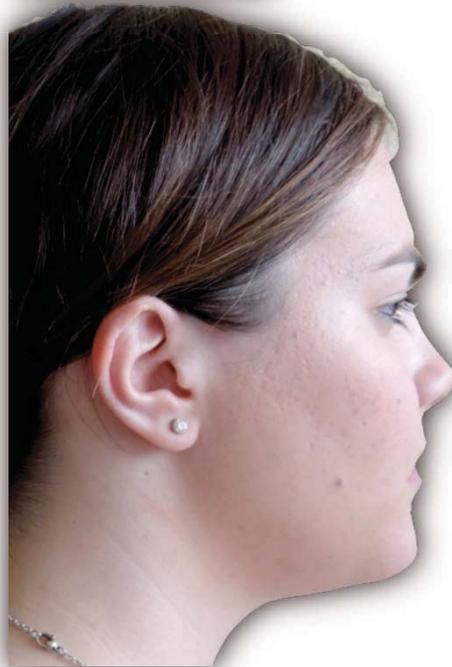


Mentoplastica



Mentoplastica





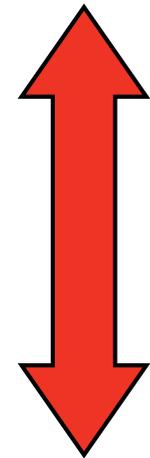
Chirurgia ortognatica

Determinanti anatomiche

- Tessuti molli
- Scheletro
- Denti



Funzione



Estetica

Diagnosi integrata

Liposculpture according Coleman technique and 3D photos evaluation







TO O

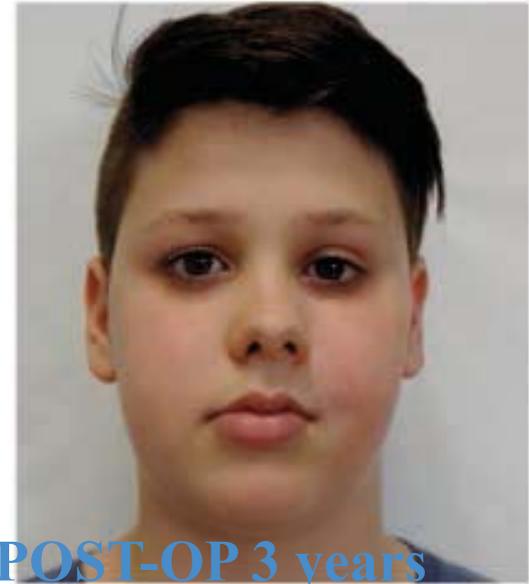




PRE-OP



POST-OP 1 year



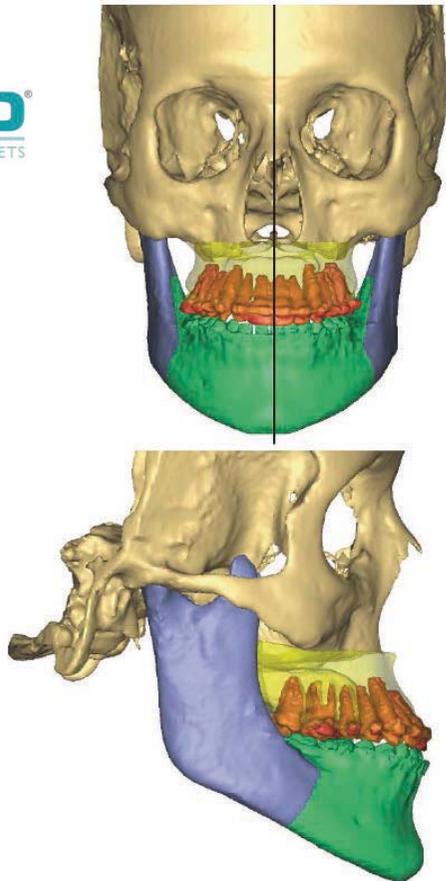
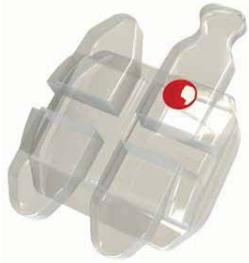
POST-OP 3 years



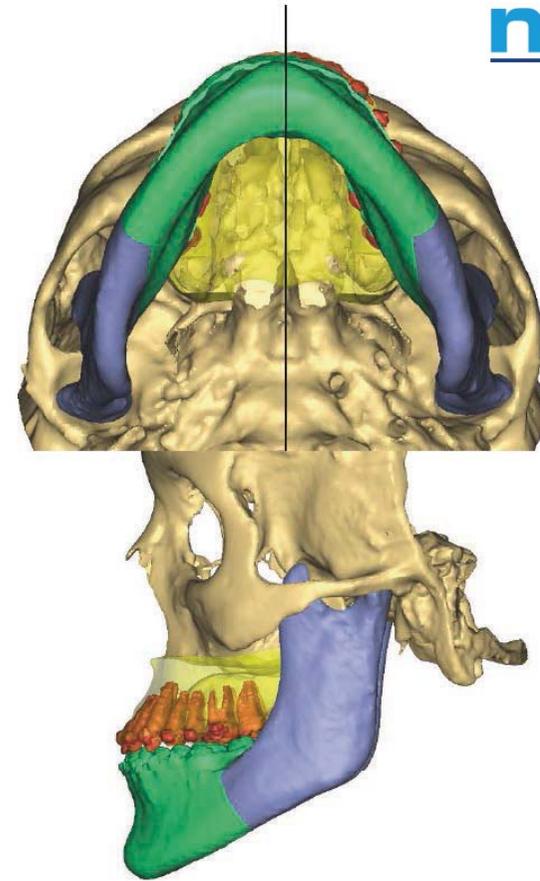


Surgical Plan: BSSO and Le Fort I osteotomies

 **mitho**
INNOVATIVE CERAMIC BRACKETS

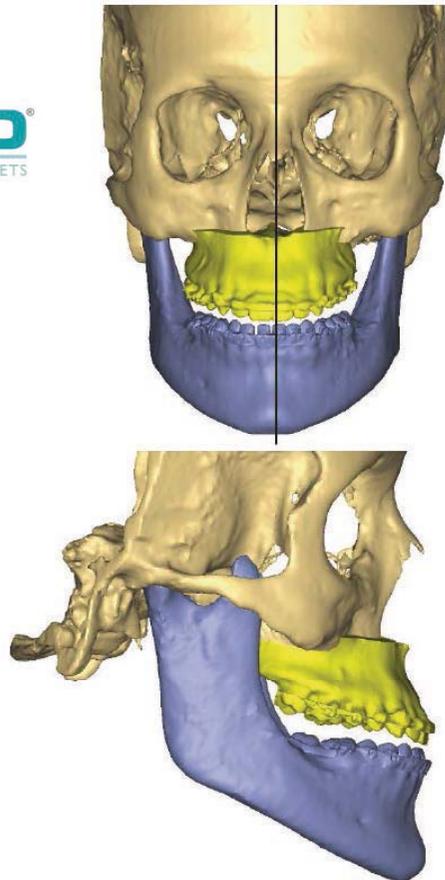


 **mitho**
METAL BRACKETS

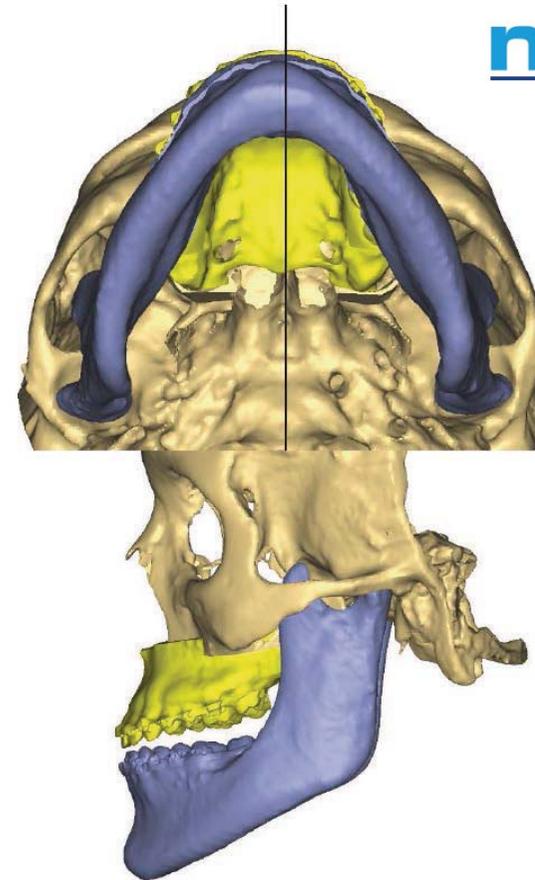


Surgical Plan: Intermediate position (Maxilla movement first)


INNOVATIVE CERAMIC BRACKETS

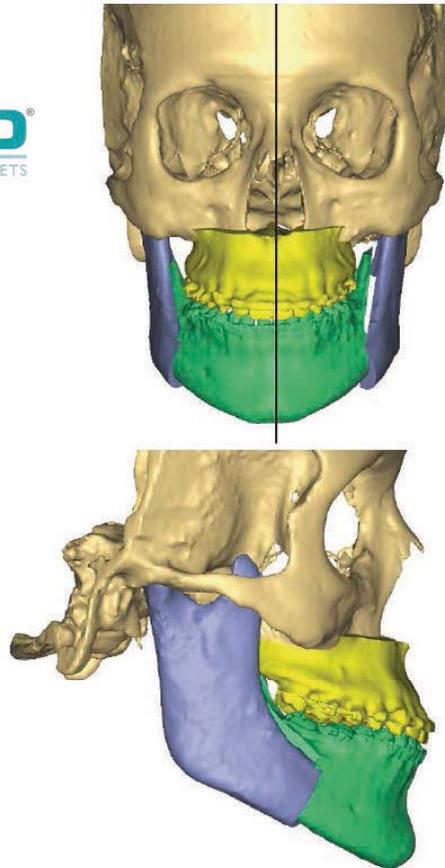



METAL BRACKETS

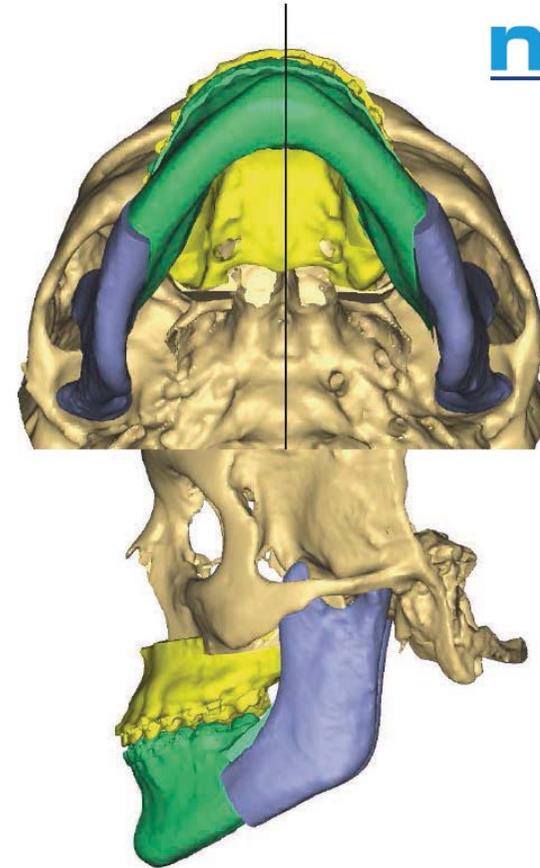


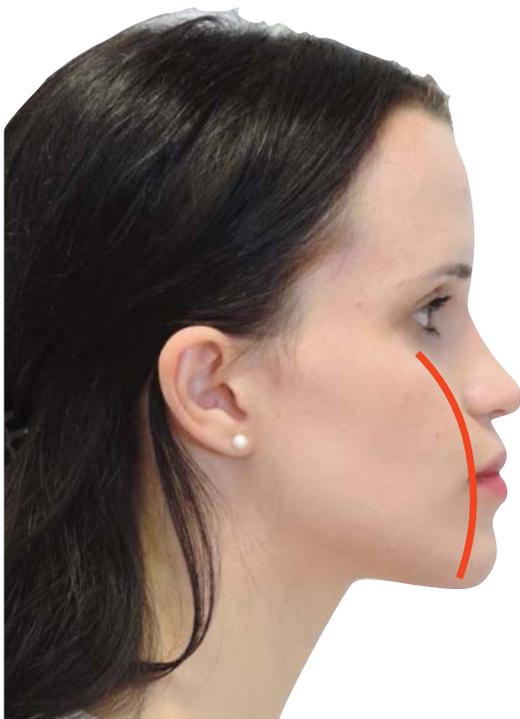
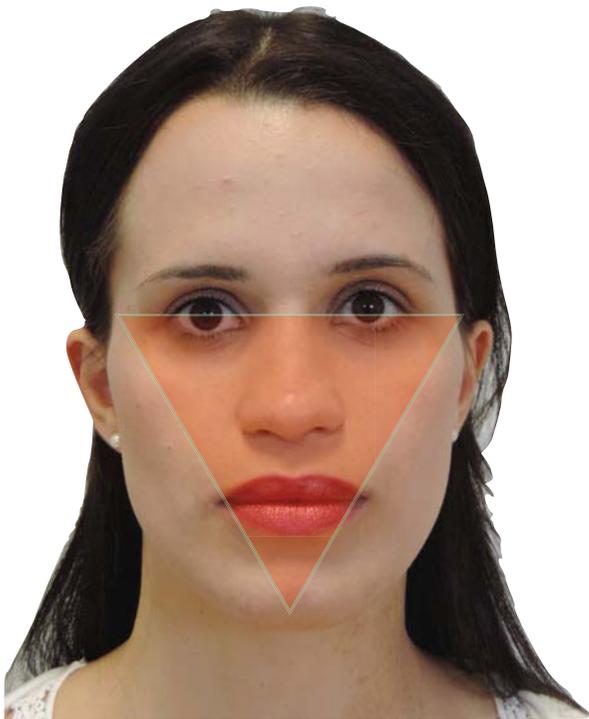
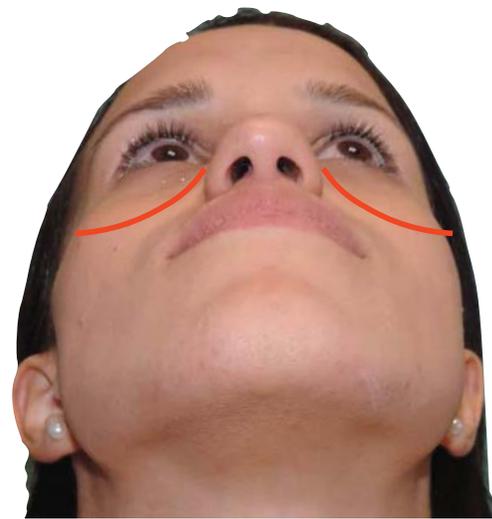
Surgical Plan: Final position

mitho
INNOVATIVE CERAMIC BRACKETS



mitho
METAL BRACKETS





Obstructive sleep apnea syndrome (OSAS)

SNA 82°

SNB 80°

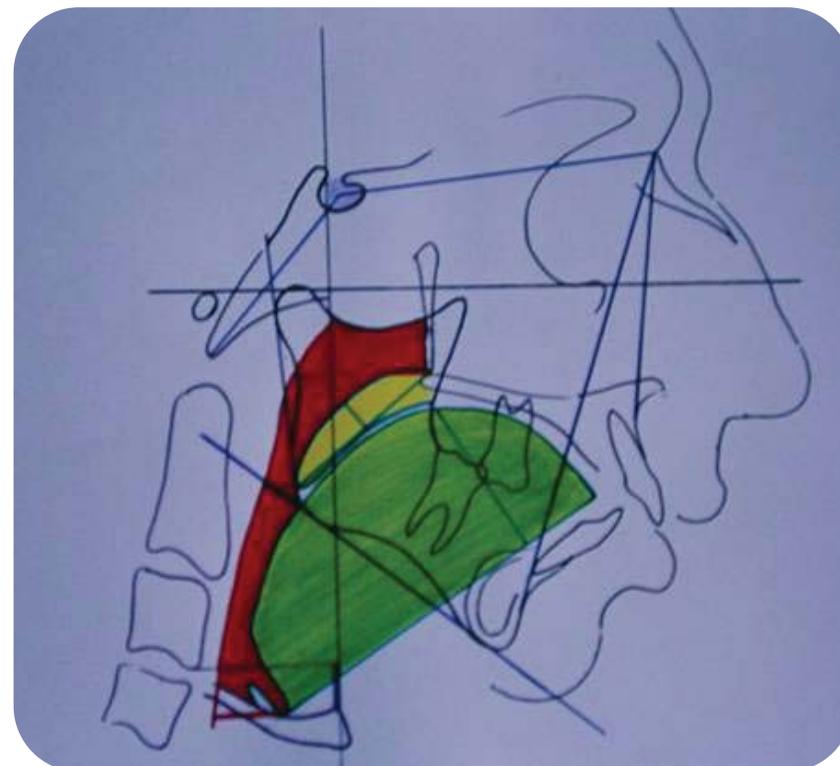
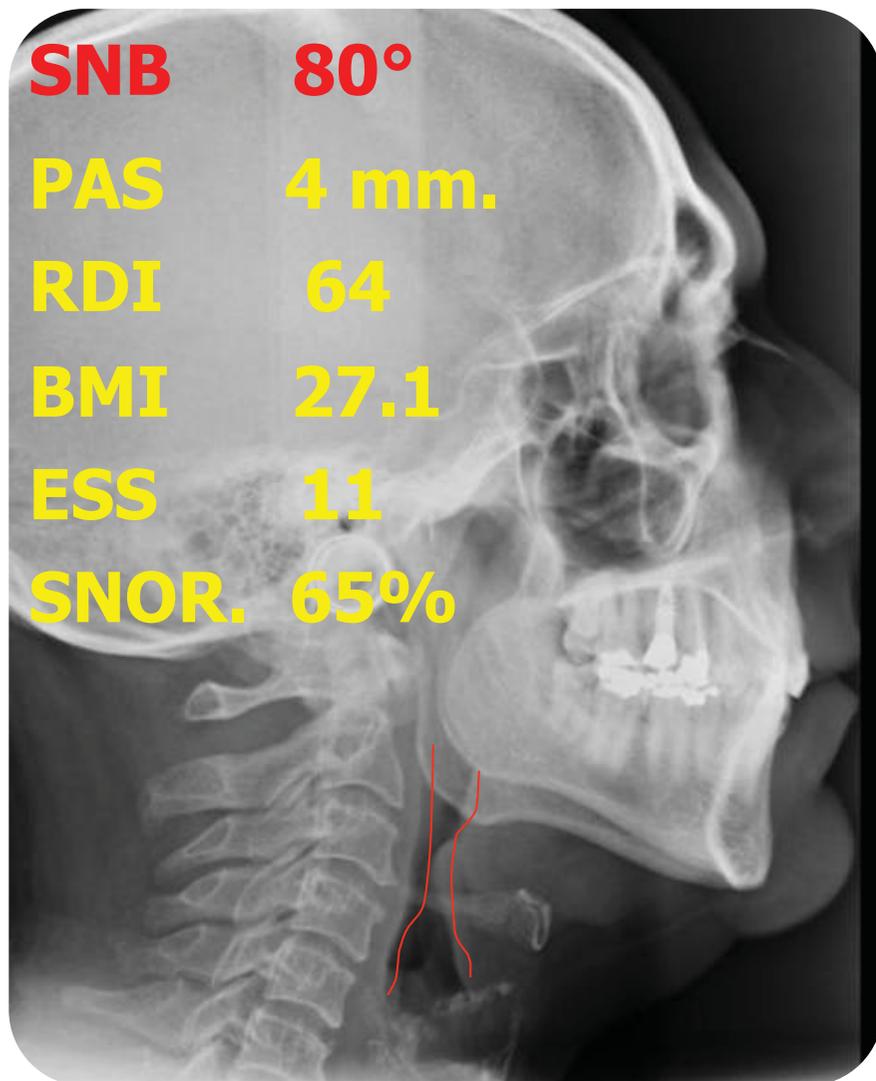
PAS 4 mm.

RDI 64

BMI 27.1

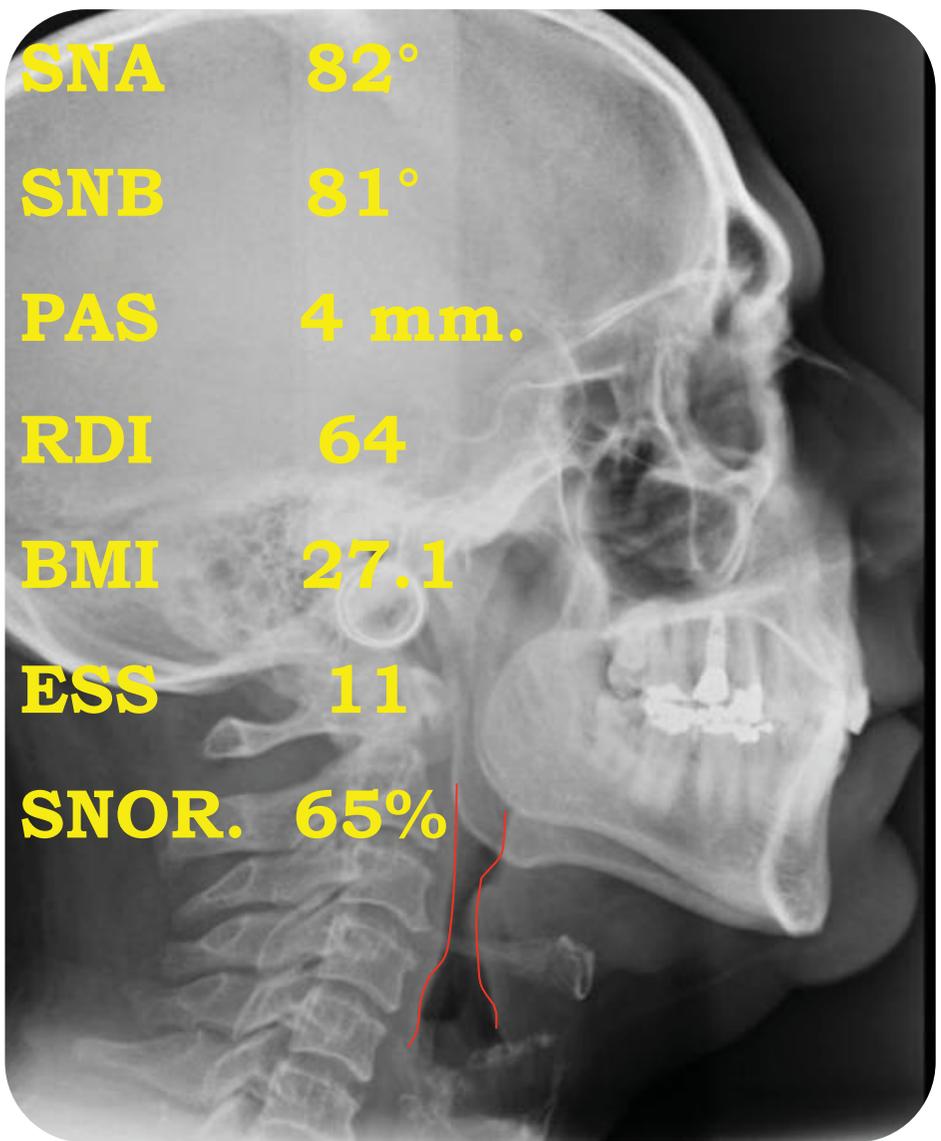
ESS 11

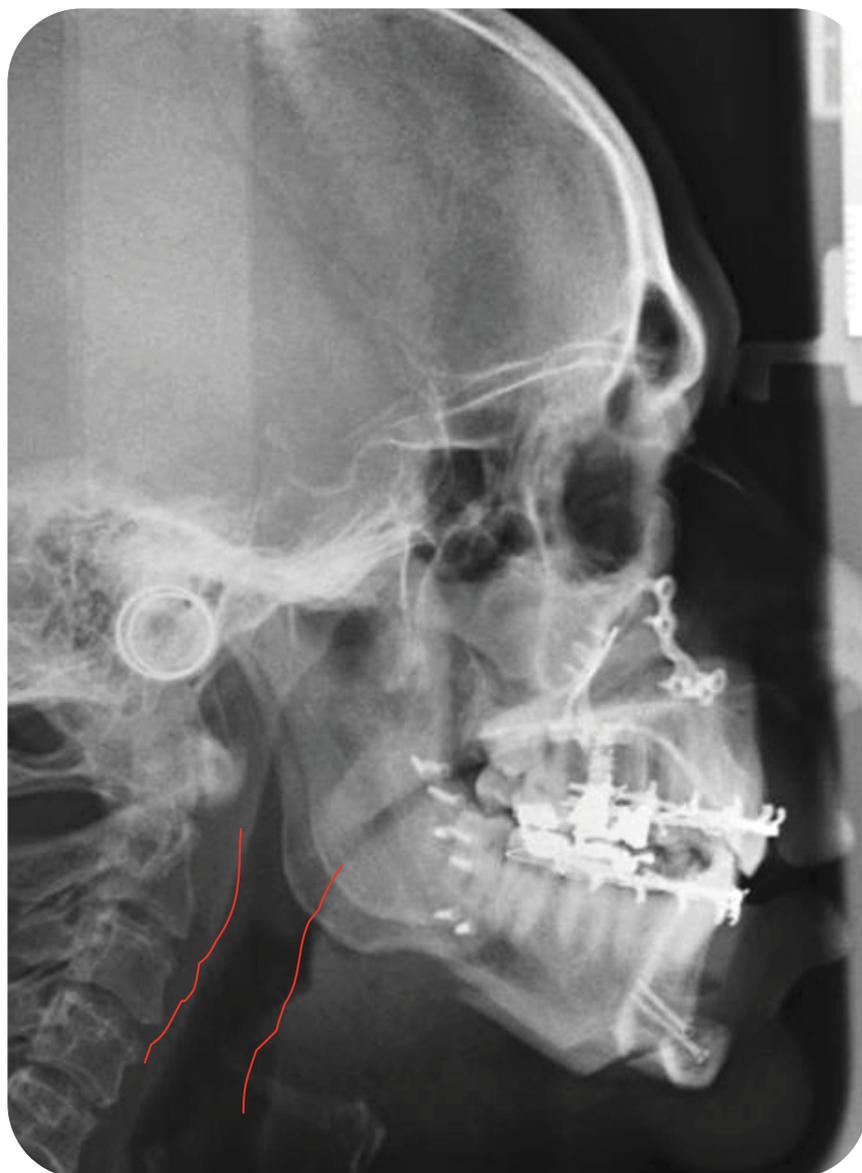
SNOR. 65%



- Apnee > 10 sec. soprattutto notturne per collasso dello **Spazio Aereo Posteriore (PAS)**
- Riduzione della PO₂ ed aumento della CO₂
- Complicanze polmonari e cardiache
- Diagnosi polisomniografica

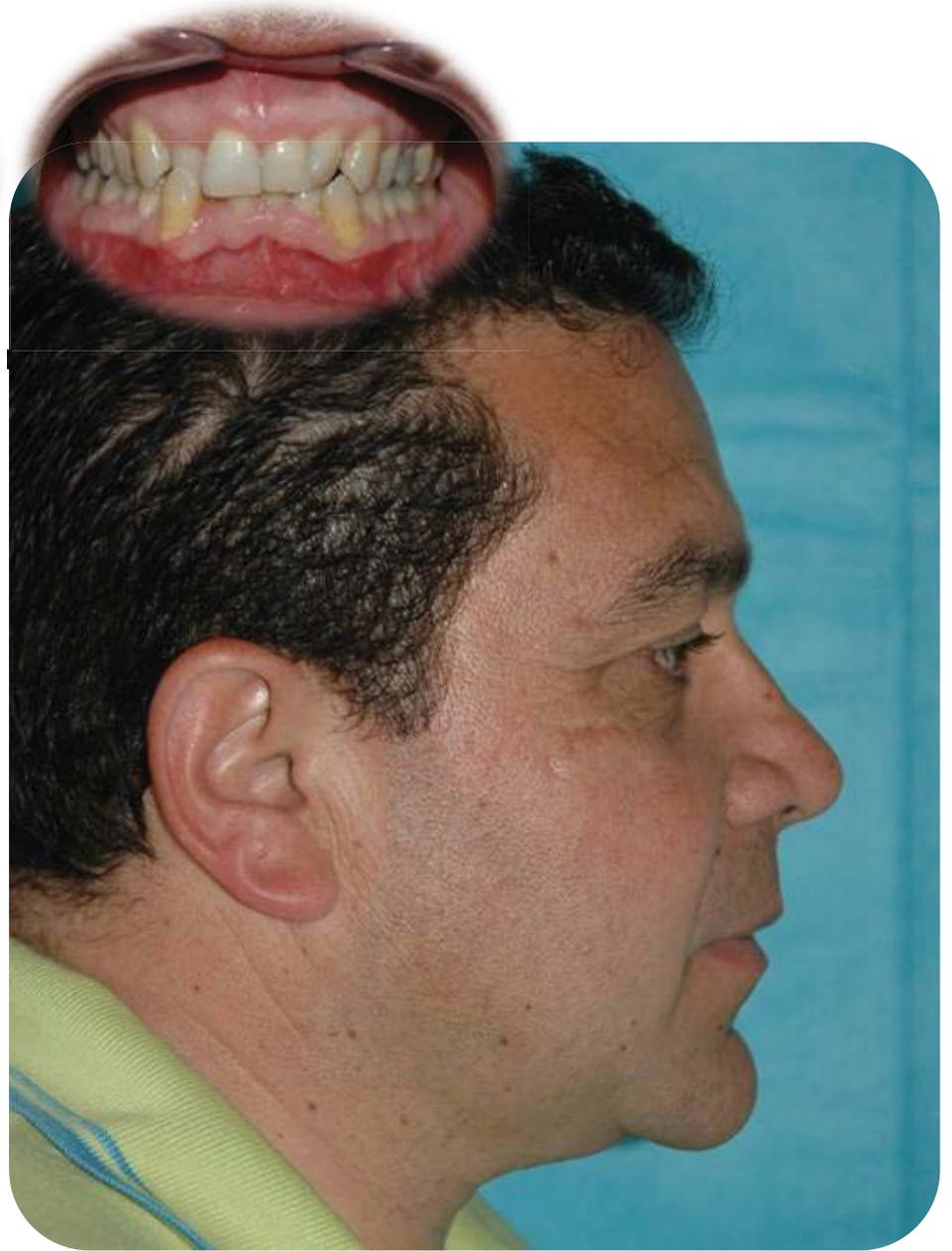
SNA 82°
SNB 81°
PAS 4 mm.
RDI 64
BMI 27.1
ESS 11
SNOR. 65%

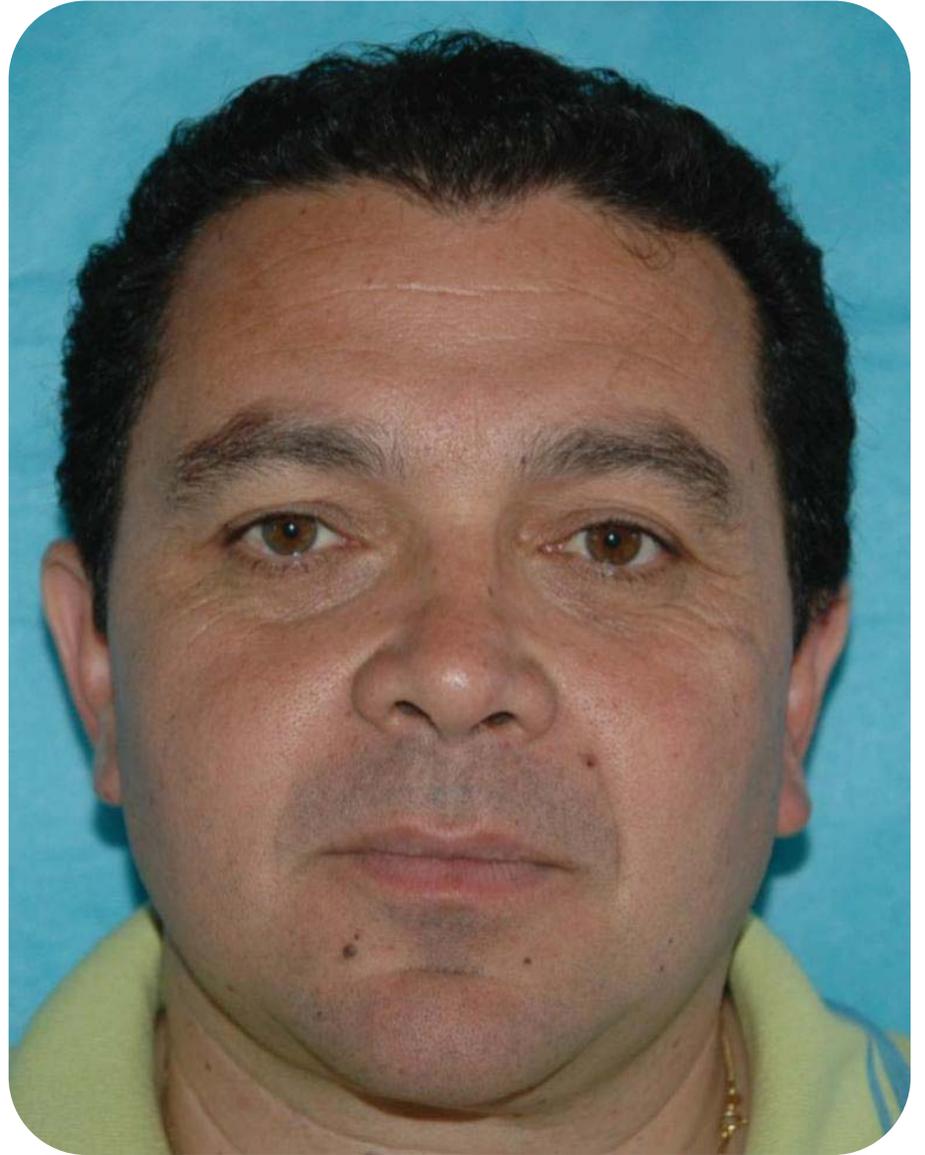




SNA	98°
SNB	96°
PAS	14 mm.
RDI	2
BMI	28.0
ESS	0
SNOR.	0%







Chirurgia delle OSAS totalmente digitalizzata

Campione di pazienti

•19 soggetti (16 maschi e 3 femmine)

•Età: media 44,58 (min. 26; max. 66; SD 10,37).

•4 pazienti: trattamento combinato ortodontico-chirurgico

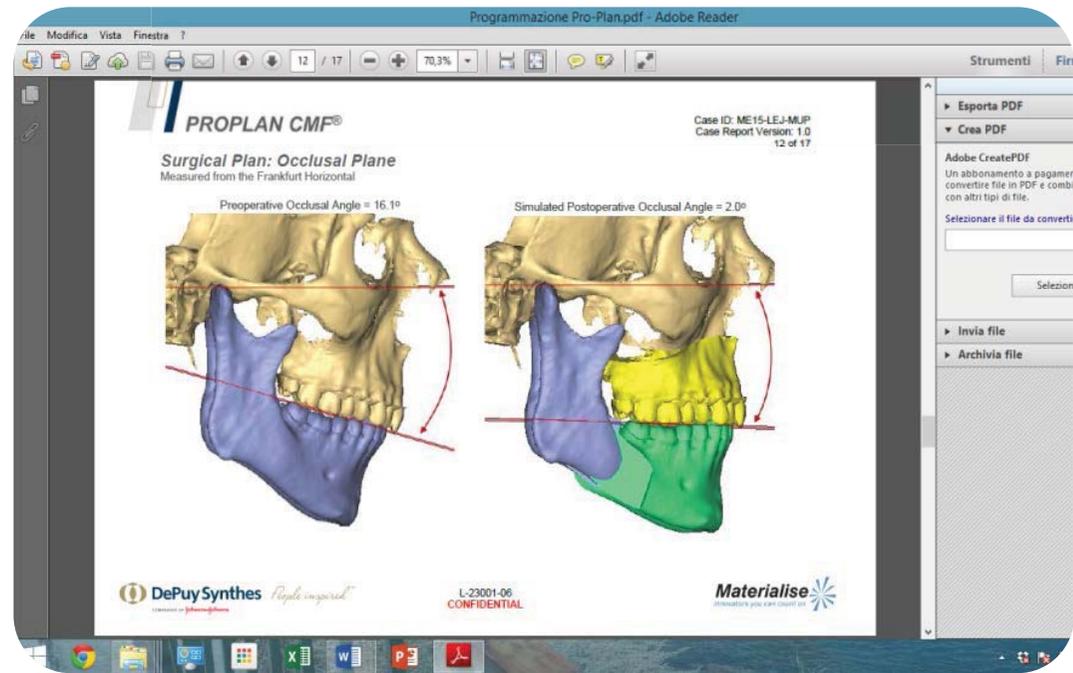
Paziente	Sesso	Età	BMI	Ortodonzia pre-chirurgica
B. L.	M	50	25,2	Si
B. G.	M	66	31,7	No
C. F. A.	M	60	31	Si
C. M.	M	42	23,4	No
C. M. A. R.	M	40	27	No
D. D. M.	M	37	27,4	No
D. G.	M	39	26,6	Si
D. A. S.	F	29	29,7	No
G. M.	M	51	27,4	No
G. G. L.	M	26	30	No
L. V.	F	40	22,7	Si
L. B.	F	43	30,5	No
P. G. E.	M	46	33	No
R. A.	M	57	25	No
R. A.	M	37	34,9	No
S. F.	M	54	32,4	No
S. F.	M	47	33,9	No
T. L.	M	34	33,9	No
V. A.	M	49	27,1	No

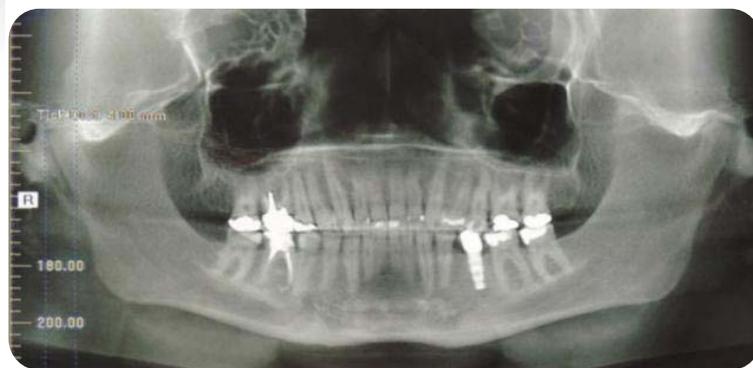
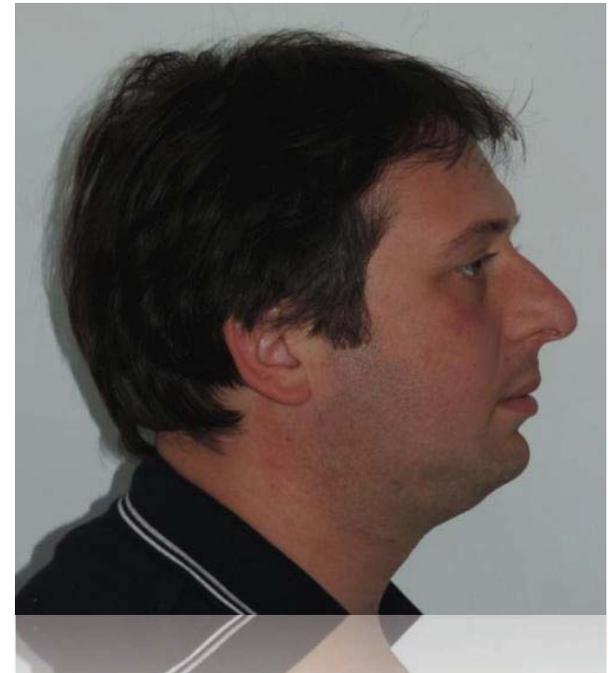
Caratteristiche dell'intervento

- **Osteotomia mascellare Le Fort I**
- **Osteotomia sagittale dei rami mandibolari**
- **(Mentoplastica)**

La counterclockwise rotation del piano occlusale permette di limitare l'entità dell'avanzamento maxillo-mandibolare, con risultati estetici migliori

	Media	SD	Min	Max
Avanzamento mascellare sup	0,89 cm	0,26 cm	0,7 cm	1 cm
Avanzamento mandibola	1,28 cm	0,33 cm	1 cm	2 cm





MONITORAGGIO NOTTURNO CARDIORESPIRATORIO COMPLETO

Sig. ZANOTTI EMANUELE aa 33

05.04.2013

Peso 90 Kg Altezza 175 cm PA 133/100 mmHg Classe NYHA I BMI 29 Kg/mq

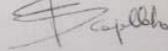
INDICAZIONI: Ipertensione arteriosa giovanile

Esame eseguito in analisi automatica e verifica successiva manuale.
Criteri di refertazione adottati in base alle linee guida AIPO 2011. Con IPOPNEA si è definita una riduzione del flusso aereo almeno del 50% rispetto al tratto precedente con desaturazione del 3%. L'ODI è stato calcolato in base alla presenza di desaturazioni $\leq 4\%$.
Il tempo trascorso in decubito supino è pari al 49.2% del tempo di registrazione (8 h).
Il pattern ventilatorio è stato caratterizzato da eventi prevalentemente misti e centrali (202/272) con AHI 34/h. Durante l'esame, si sono verificate numerose ipoventilazioni con desaturazioni ossiemoglobiniche importanti sia come numerosità (ODI 17.2/h) per un totale di 138 eventi, che per gravità (SaO2 media dei picchi 95% ma con numerosi episodi al di sotto del 90%). Il monitoraggio ECG notturno ha messo in evidenza rari BESV senza forme complesse. Assenza di bradi aritmie..

CONCLUSIONI

Quadro con alta probabilità per eventi respiratori nel sonno

Il Cardiologo
Dr. FRANCESCO SCAPELLATO



AHI 34/h

SpO2 media: 95%

BMI 29 Kg/m2

