

# Fondamenti di Chirurgia Ortognatica

R.Rizzo CMF UNITS

# Chirurgia Ortognatica

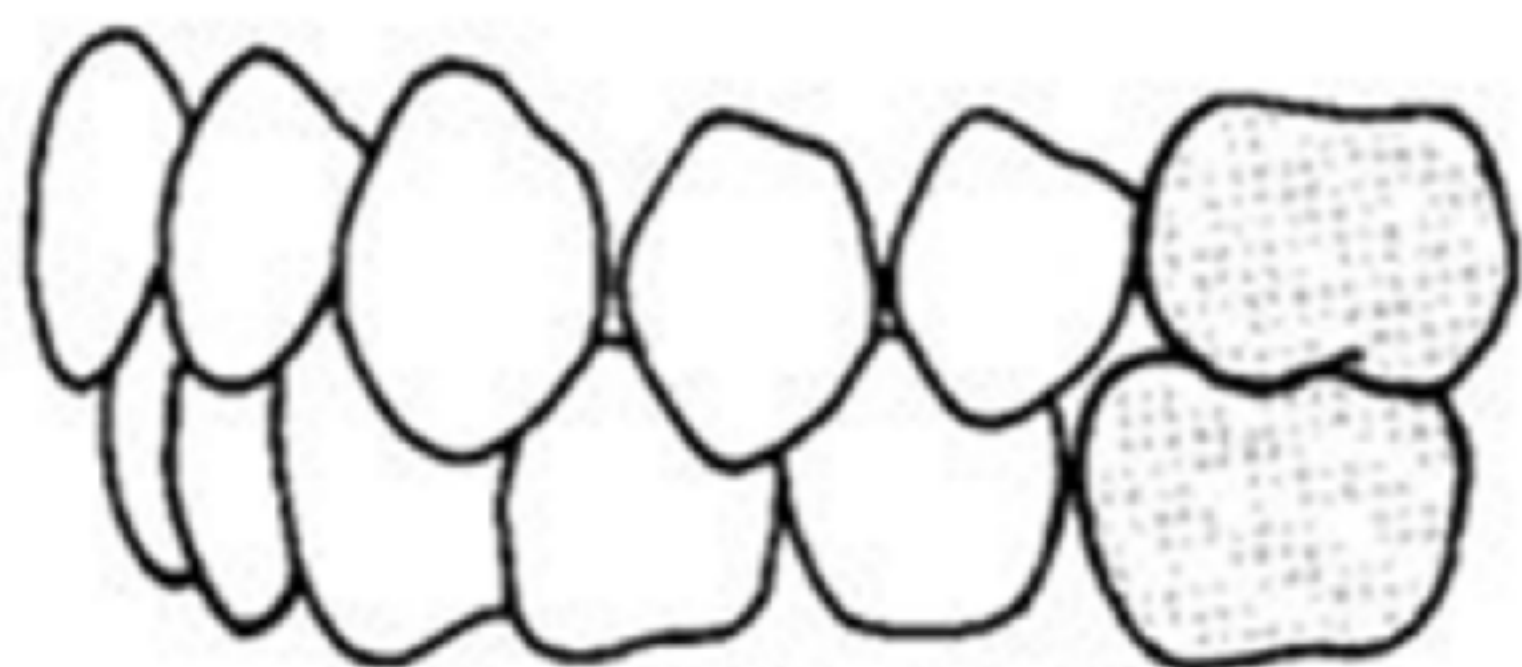
- Corregge le deformità dello scheletro facciale, muovendo i segmenti ossei e gli elementi dentari con essi
- Su soggetti a fine crescita
- Indicazioni: prognatismo-retrognatismo-discrepanza scheletrica verticale con morso aperto o profondo
- Di per sé non sono situazione che mettono a rischio la vita ma rendono difficile la masticazione, la respirazione,

# Chirurgia Ortognatica

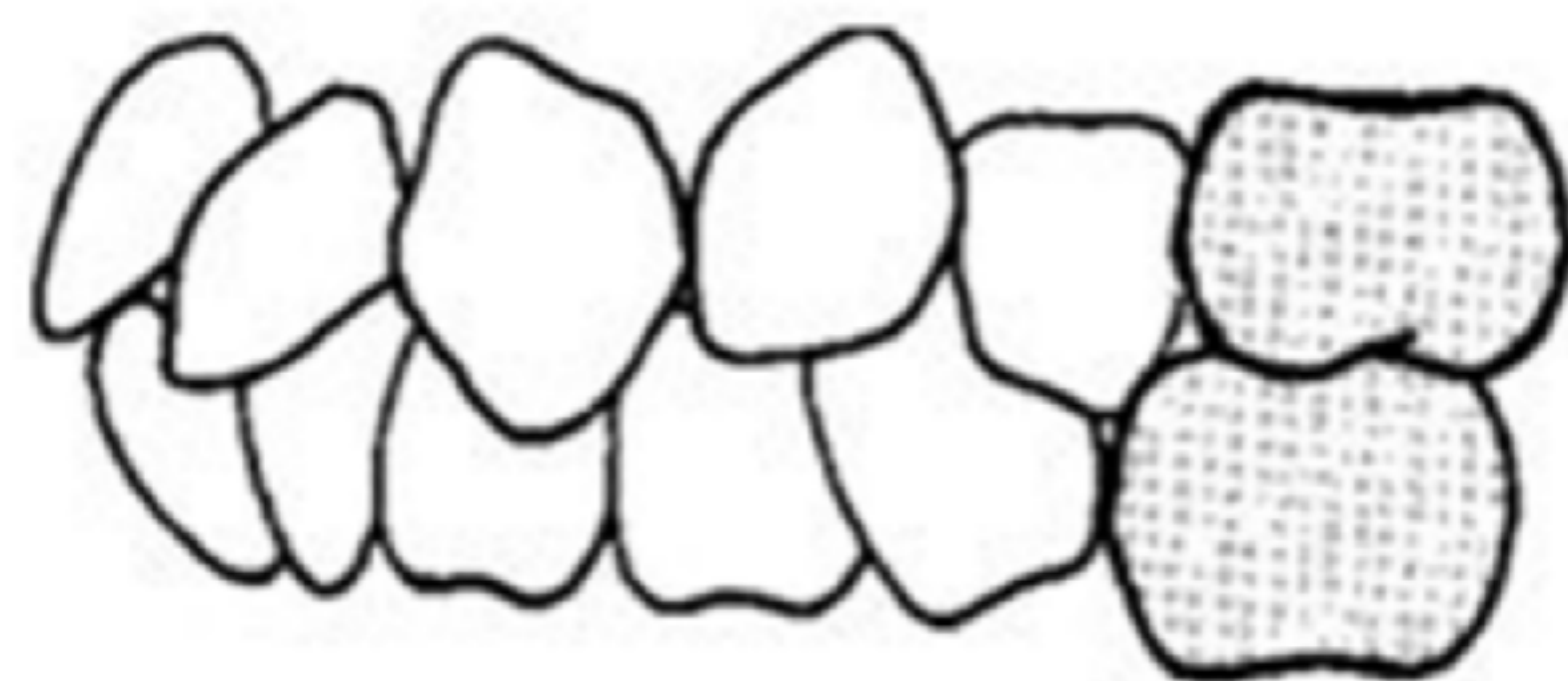
- Anomalie dento-facciali severe da richiedere il trattamento chirurgico  
2,7% popolazione statunitense (1998).
- Disagio estetico
- Problemi funzionali: deglutizione, masticazione, fonazione, respirazione
- Ridotta qualità della vita, ridotta autostima, insicurezza, sindrome depressiva.
- Tra 41 e 90% dei pazienti le motivazioni sono di ordine estetico

# Chirurgia Ortognatica

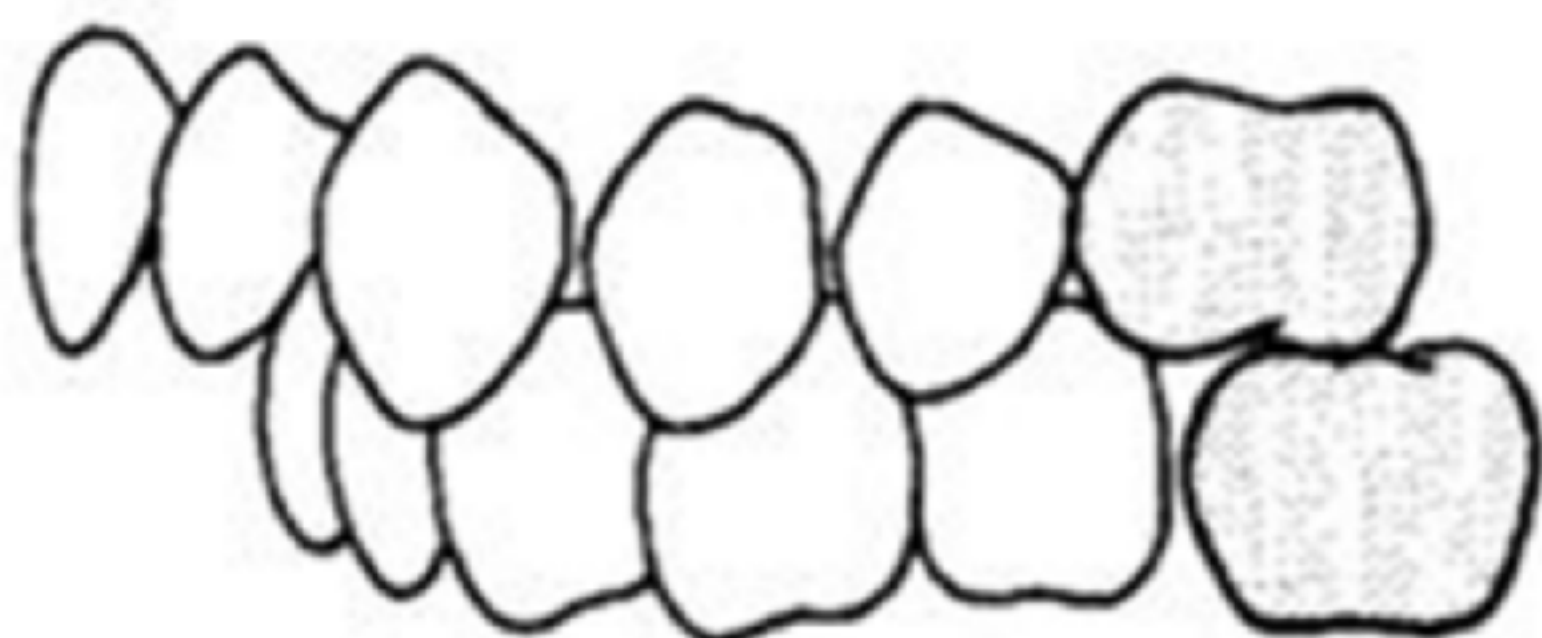
- Alla base vi è una crescita non coordinata tra mascellare e mandibola
- Alla modifica di posizione delle basi ossee si accompagna sempre una modifica della morfologia del volto; ciò fa sì che alla modifica di posizione dei mascellari segua rinoplastica e/o mentoplastica.
- Malocclusioni dentali —> Ortodonzia
- Malocclusioni scheletriche —> Chirurgia



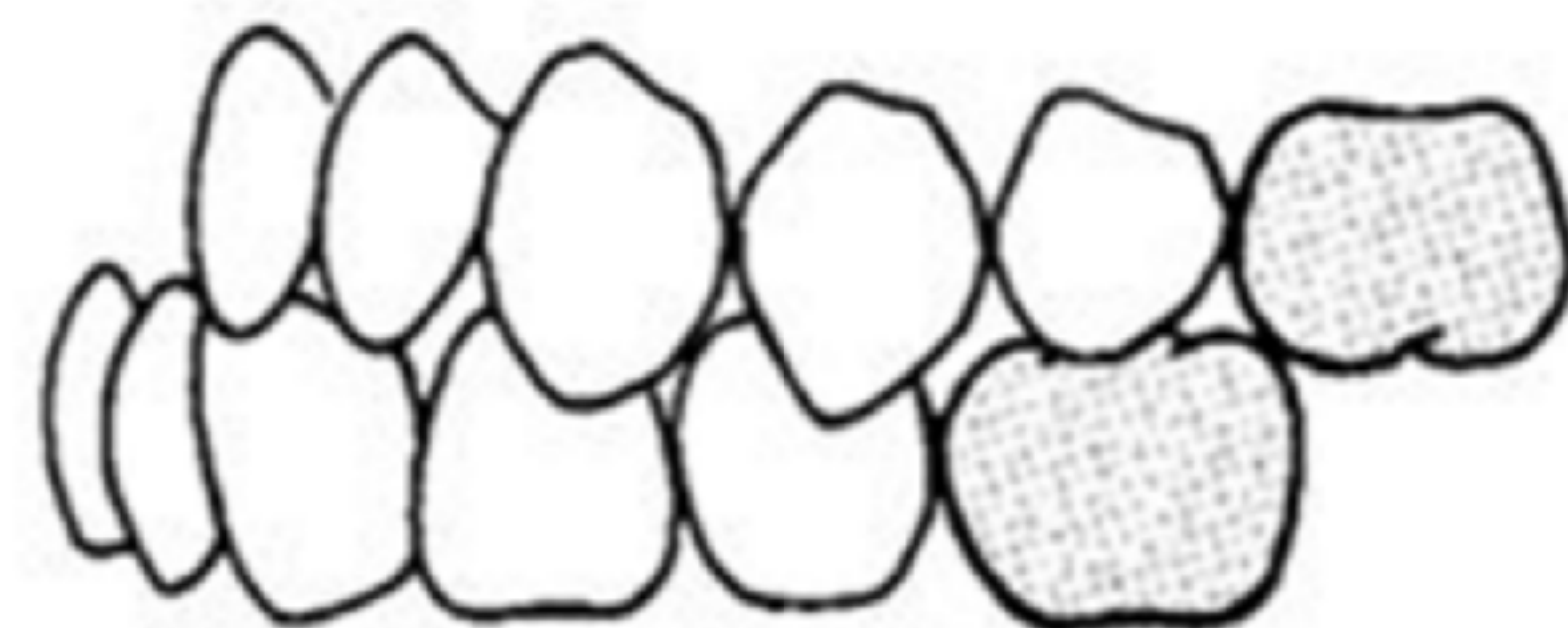
Normal Occlusion



Class I Malocclusion



Class II Malocclusion



Class III Malocclusion



Class I



Class II



Class III

**A**



Class I



Class II



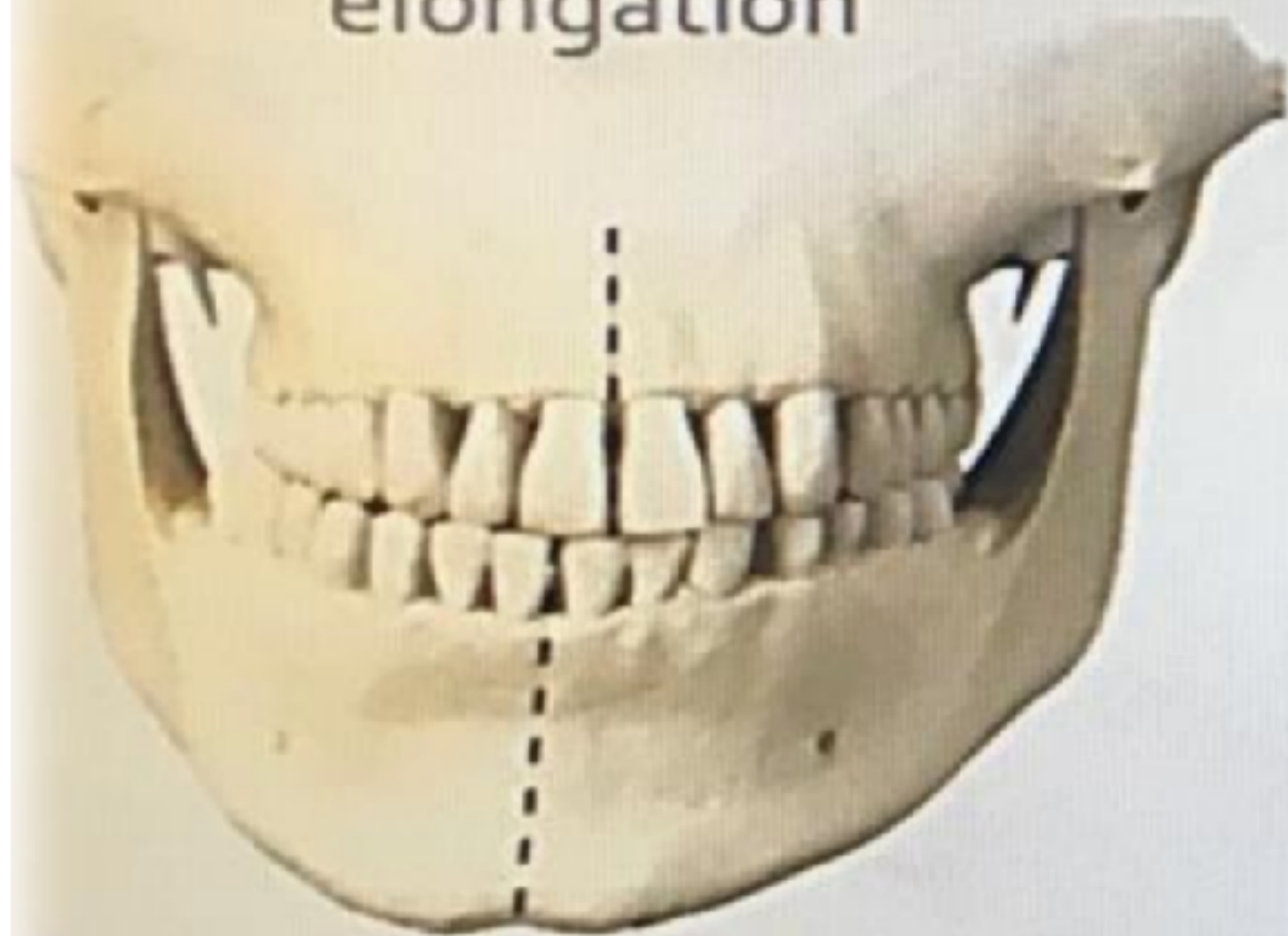
Class III

**B**

# Malocclusioni

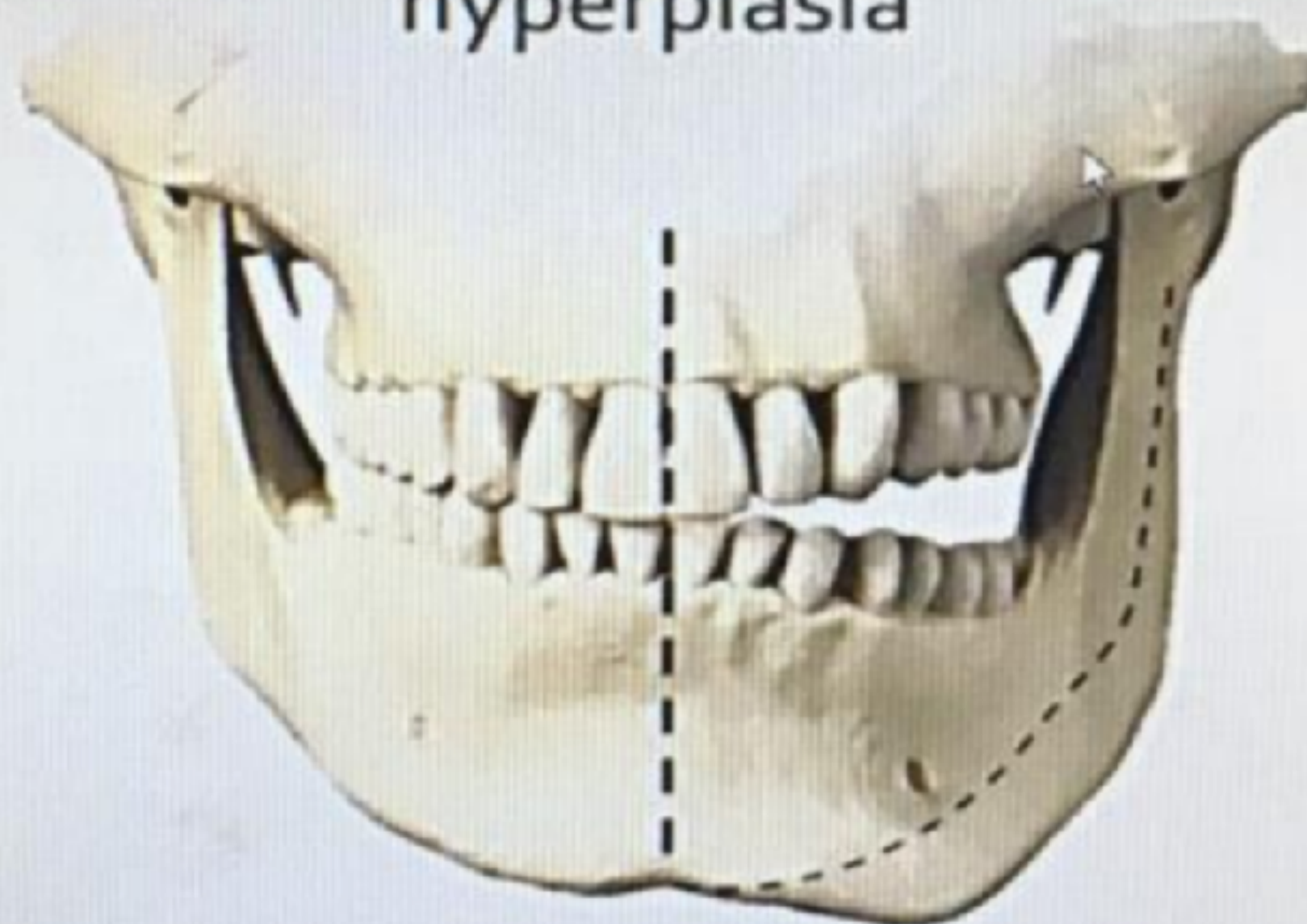
- Classe 1 rapporto di classe 1 con possibilità di protrusione e retrusione
- Classe 2 distoposizione mandibola per micrognatia o retrognatia o protrusione mascellare
- Classe 3 mesioposizione mandibola per prognatismo, macrognatia o ipoplasia mascellare
- Brachicefali e Dolicocefali
- Alterazioni trasversali per eccessiva o insufficiente crescita di una emimandibola: allungamento mandibolare e iperplasia mandibolare

Hemimandibular  
elongation



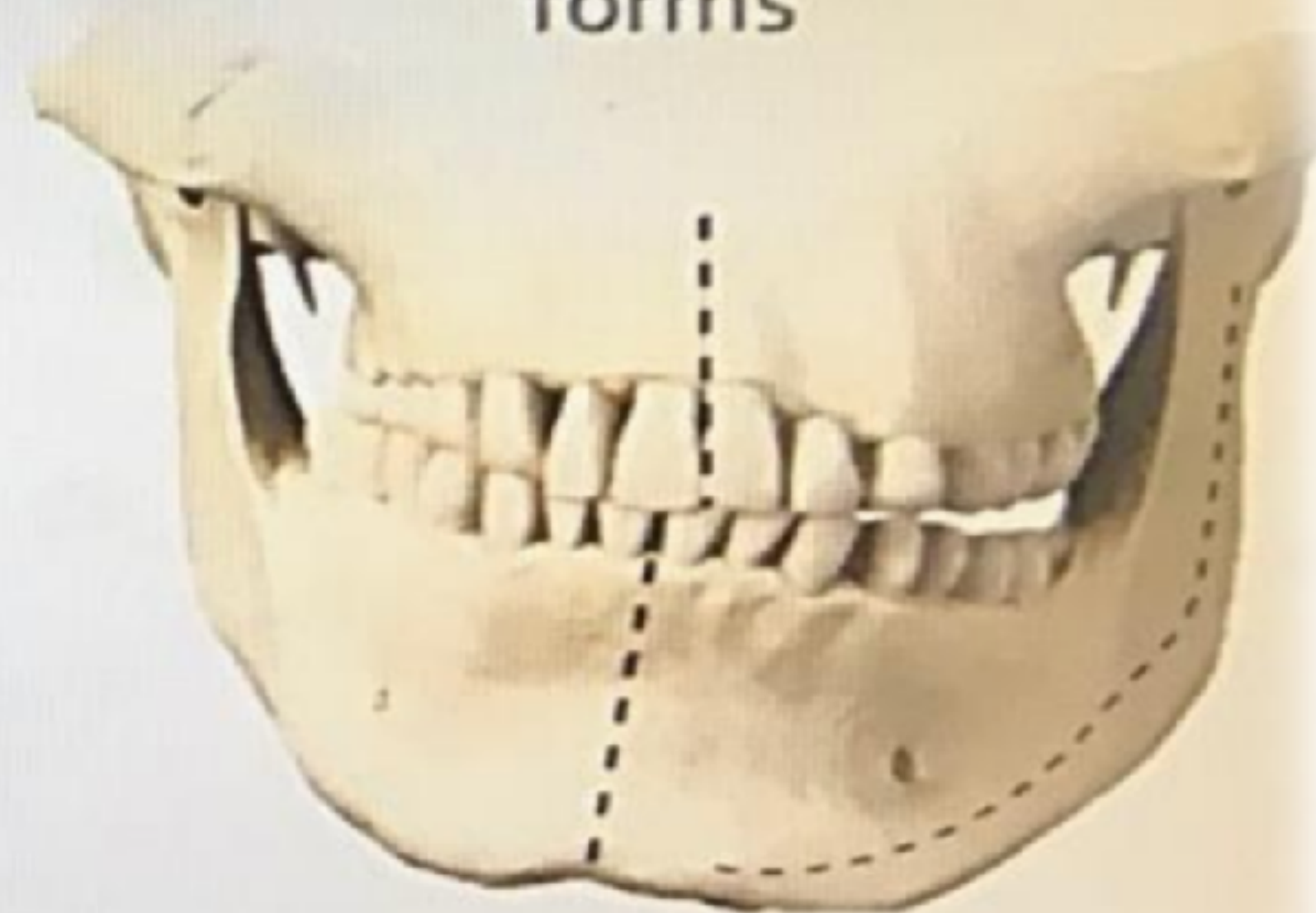
Transverse

Hemimandibular  
hyperplasia



Vertical

Hybrid  
forms



Mixed forms

# Chirurgia Ortognatica: obiettivi

| Table 35.4 Goals for orthognathic surgery |                                                                   |
|-------------------------------------------|-------------------------------------------------------------------|
| Basic therapeutic goals                   | Examples                                                          |
| Functions                                 | Normal mastication, speech, ocular function, respiratory function |
| Aesthetics                                | Establishment of facial harmony and balance                       |
| Stability                                 | Prevention of short- and long-term relapse                        |
| Minimising of treatment time              | Provision of efficient and effective treatment                    |

# Chirurgia Ortognatica

- TRADIZIONALE: trattamento ortodontico prechirurgico di decompensazione (18-24 mesi)+intervento+trattamento ortodontico postchirurgico (5-11 mesi)
- SURGERY FIRST: intervento+trattamento ortodontico di decompensazione

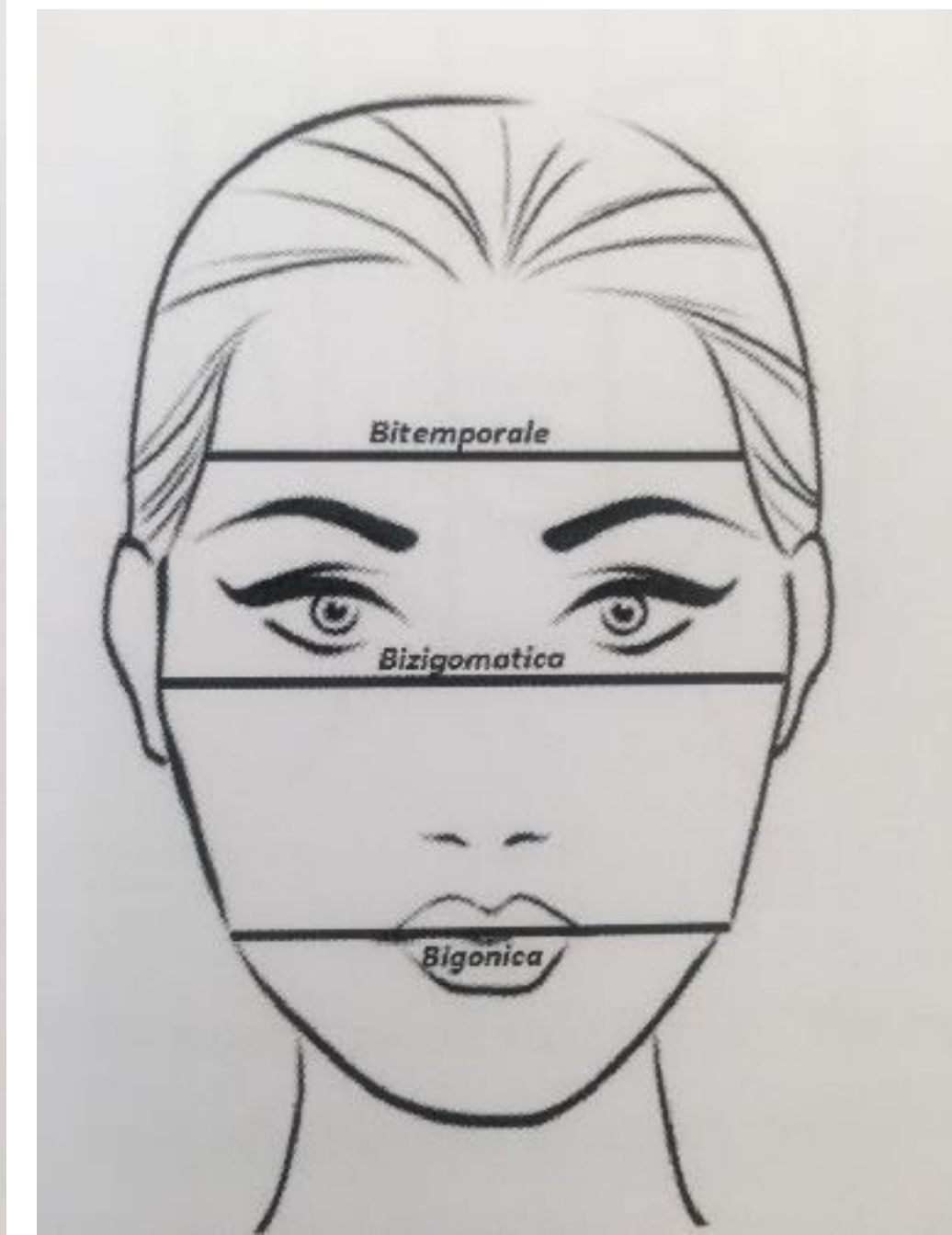
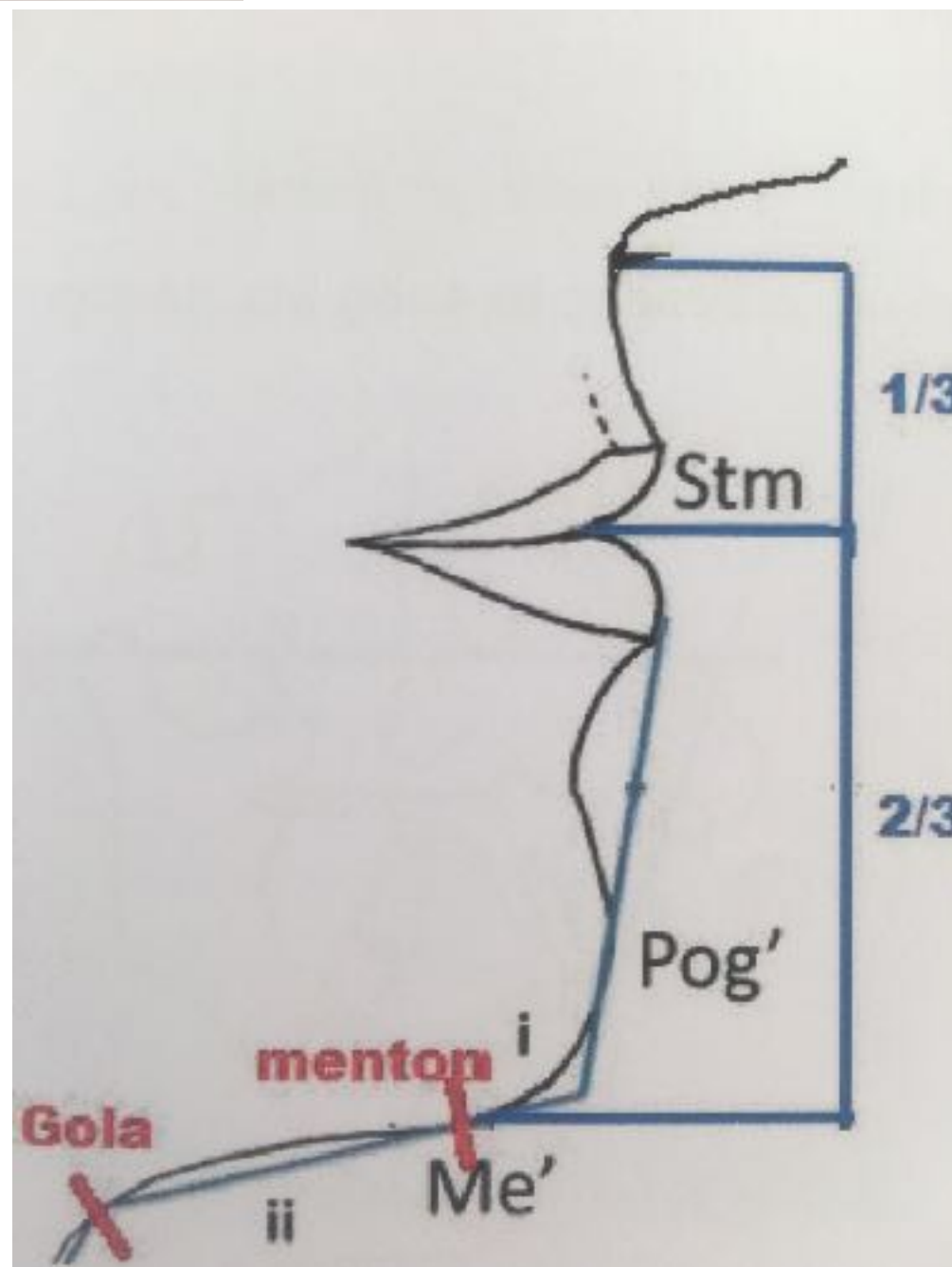
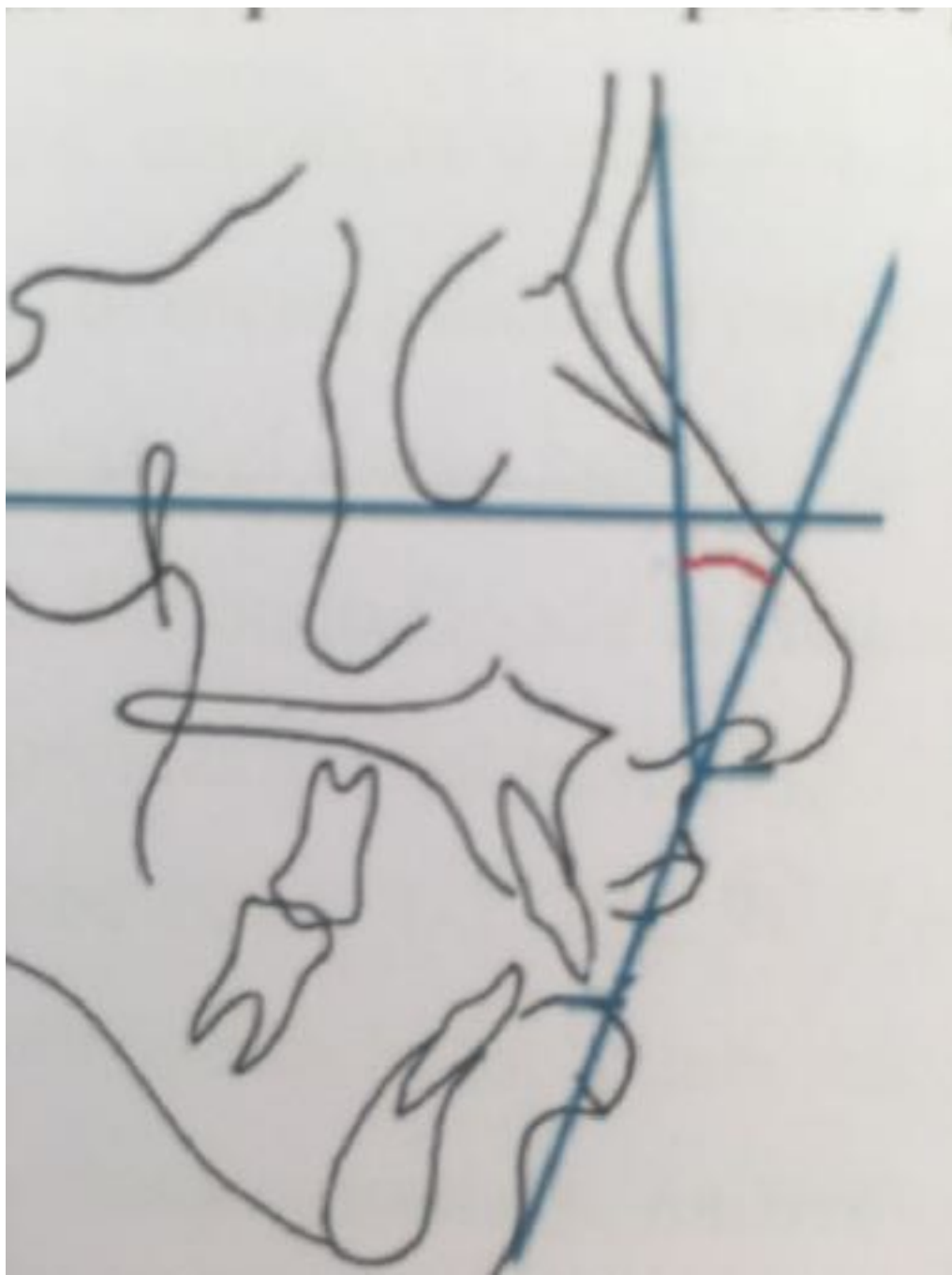
# Chirurgia Ortognatica

- esame obiettivo
- esame fotografico rigoroso
- esame radiografico
- esame cefalometrico
- esame dei modelli in gesso
- acquisizioni digitali
- pianificazione digitale

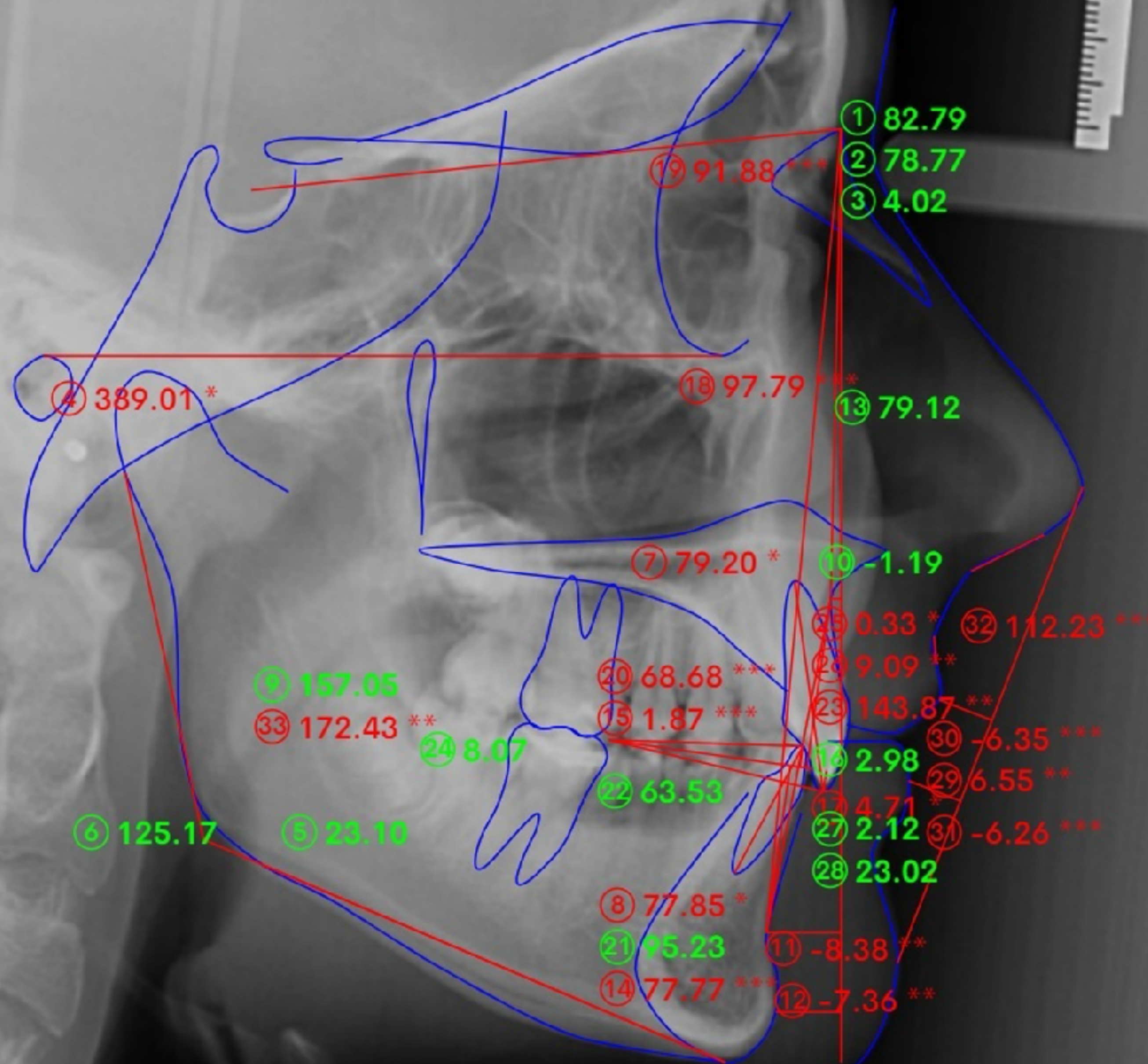
# Chirurgia Ortognatica

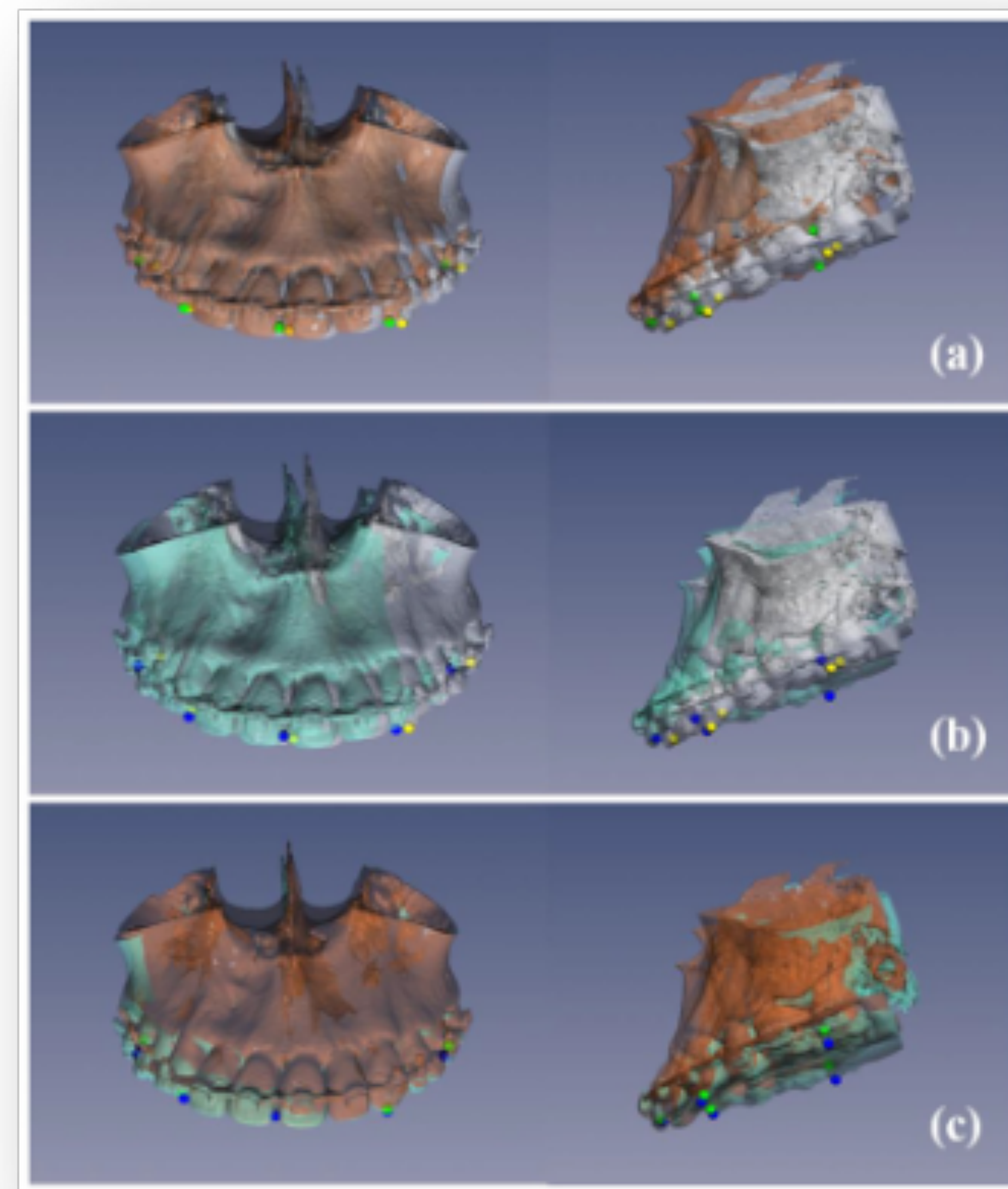
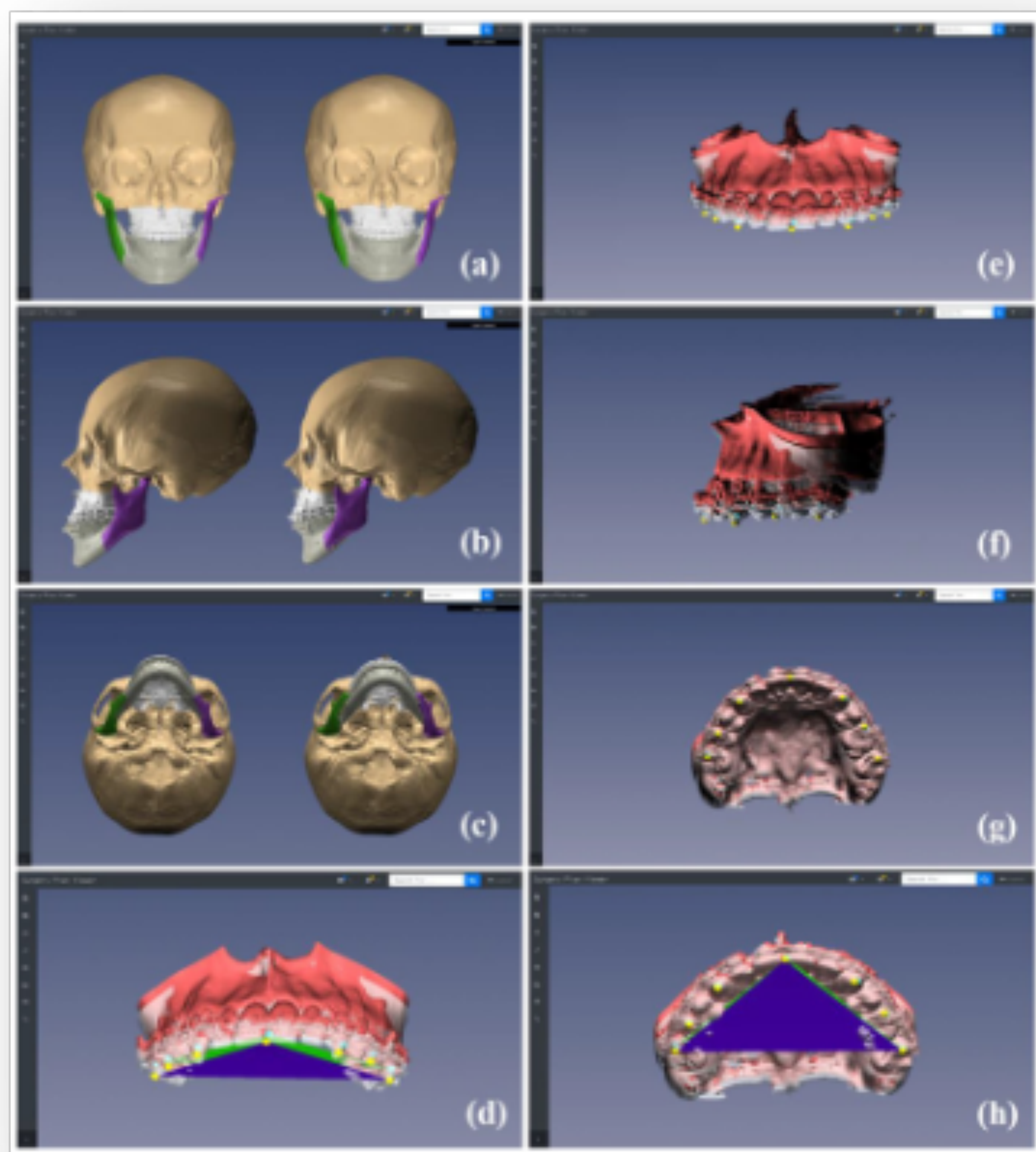
- 1898 St. Louis E. Angle e V. Blair osteotomia ramo orizzontale
- 1957 Vienna H. Obwegeser osteotomia ramo sagittale
- 1969 Vienna H. Obwegeser osteotomia Le Fort I
- 1973 necessità di decompensazione prechirurgica
- 1991 osservazione che muscoli e occlusione nella nuova posizione facilitano la correzione ortodontica postchirurgica—> surgery first

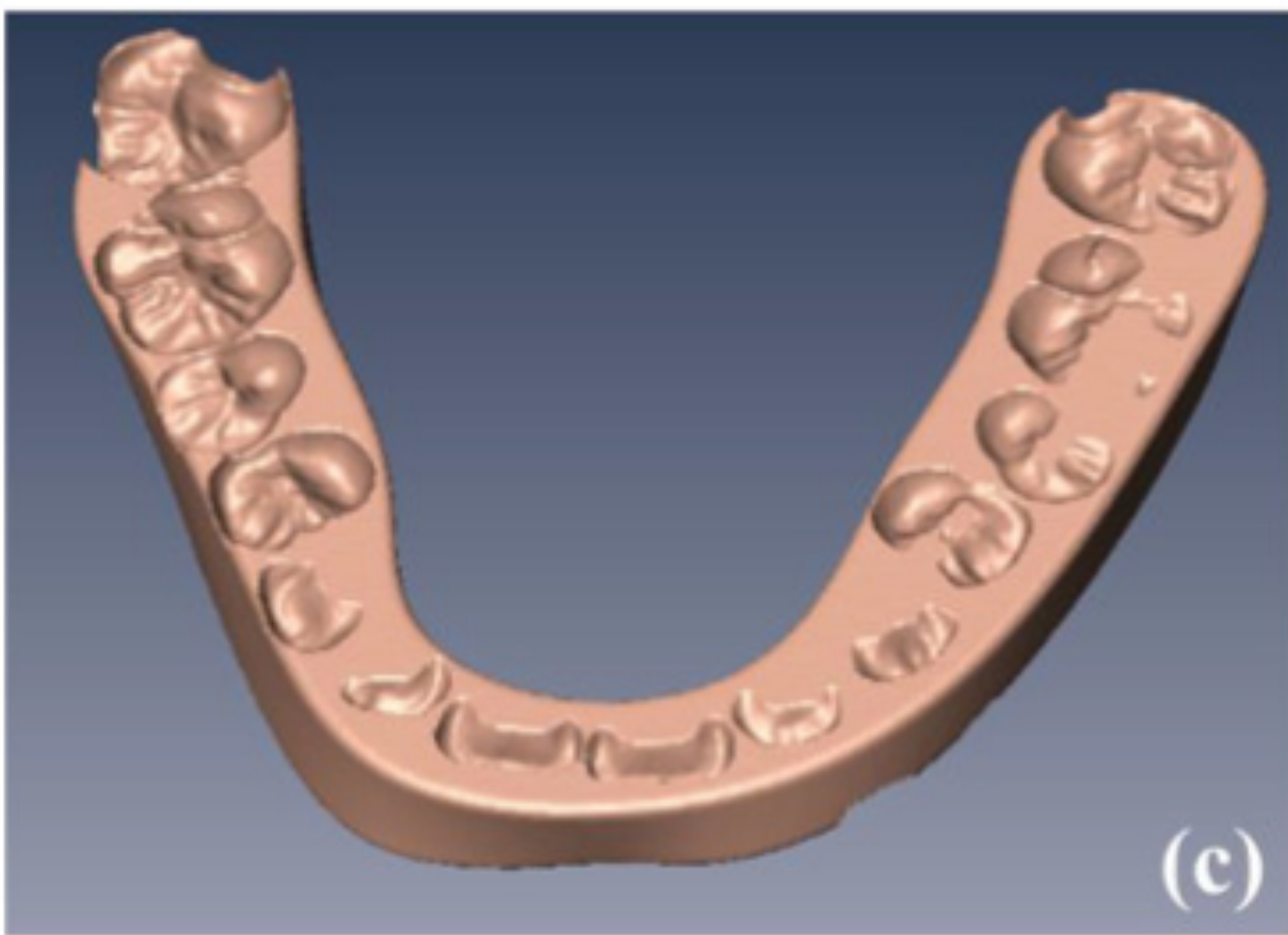
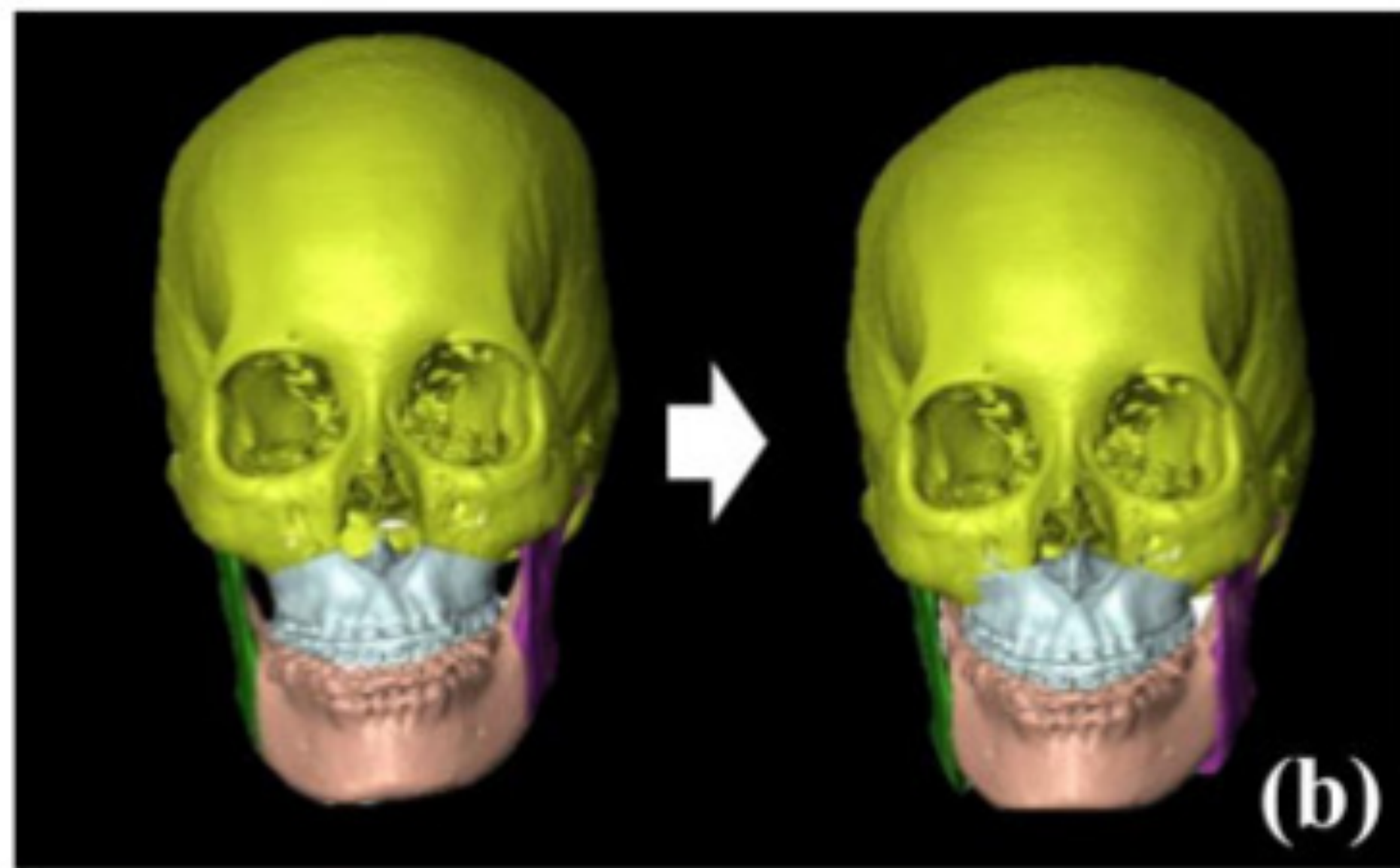
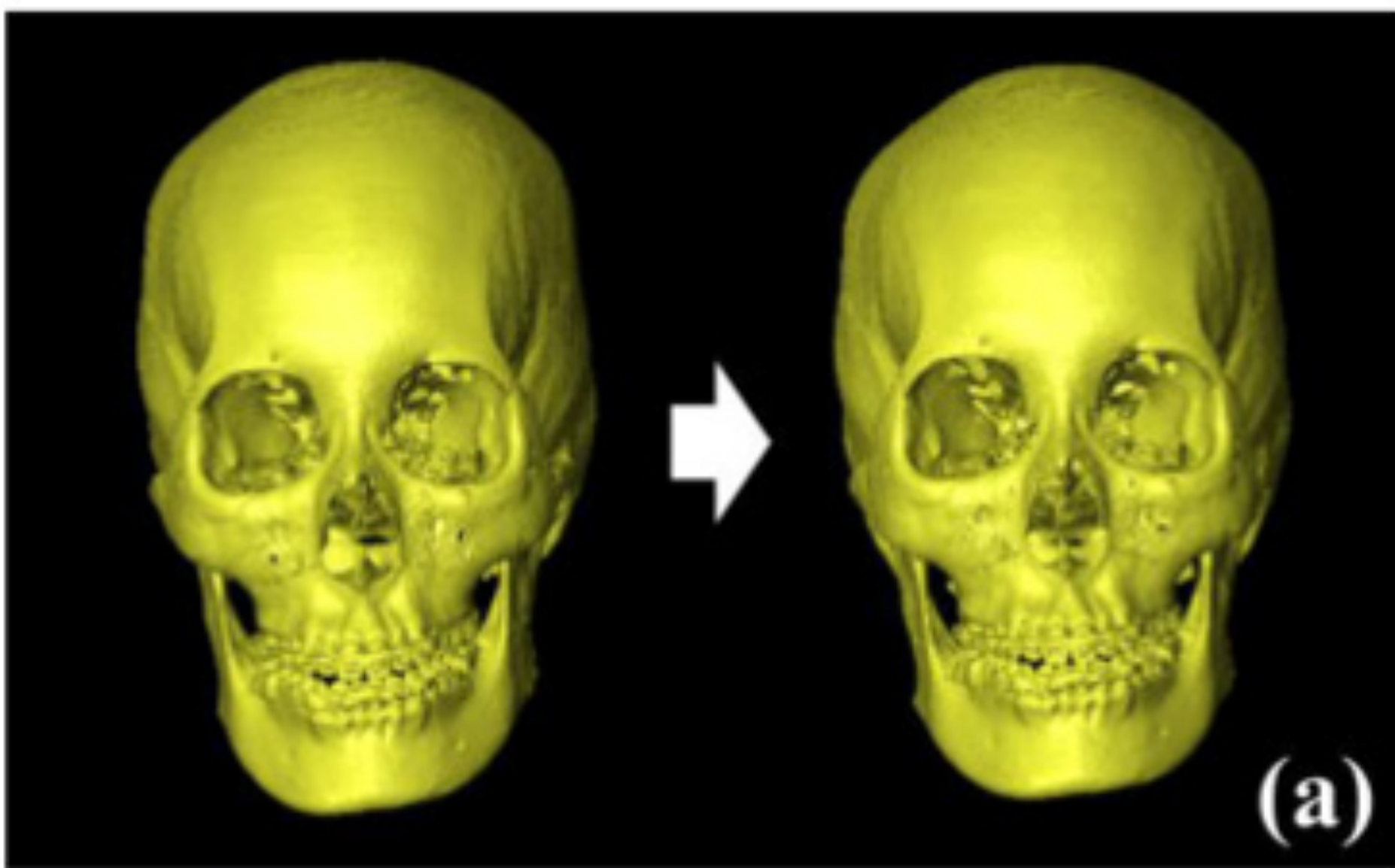
# Chirurgia Ortognatica



- ① SNA
- ② SNB
- ③ ANB
- ④ Bjork sum
- ⑤ FMA
- ⑥ Gonial angle
- ⑦ APDI
- ⑧ ODI
- ⑨ Combination factor
- ⑩ A to N-Perp(FH)
- ⑪ B to N-Perp(FH)
- ⑫ Pog to N-Perp(FH)
- ⑬ FH to AB
- ⑭ A-B to mandibular plane
- ⑮ Wits appraisal
- ⑯ Overjet
- ⑰ Overbite
- ⑱ U1 to FH
- ⑲ U1 to SN
- ⑳ U1 to UOP
- ㉑ IMPA
- ㉒ L1 to LOP
- ㉓ Interincisal angle
- ㉔ Cant of occlusal plane
- ㉕ U1 to NA(mm)
- ㉖ U1 to NA(deg)
- ㉗ L1 to NB(mm)
- ㉘ L1 to NB(deg)
- ㉙ Upper incisal display
- ㉚ Upper lip to E-plane
- ㉛ Lower lip to E-plane
- ㉜ Nasolabial angle
- ㉝ Extraction Index



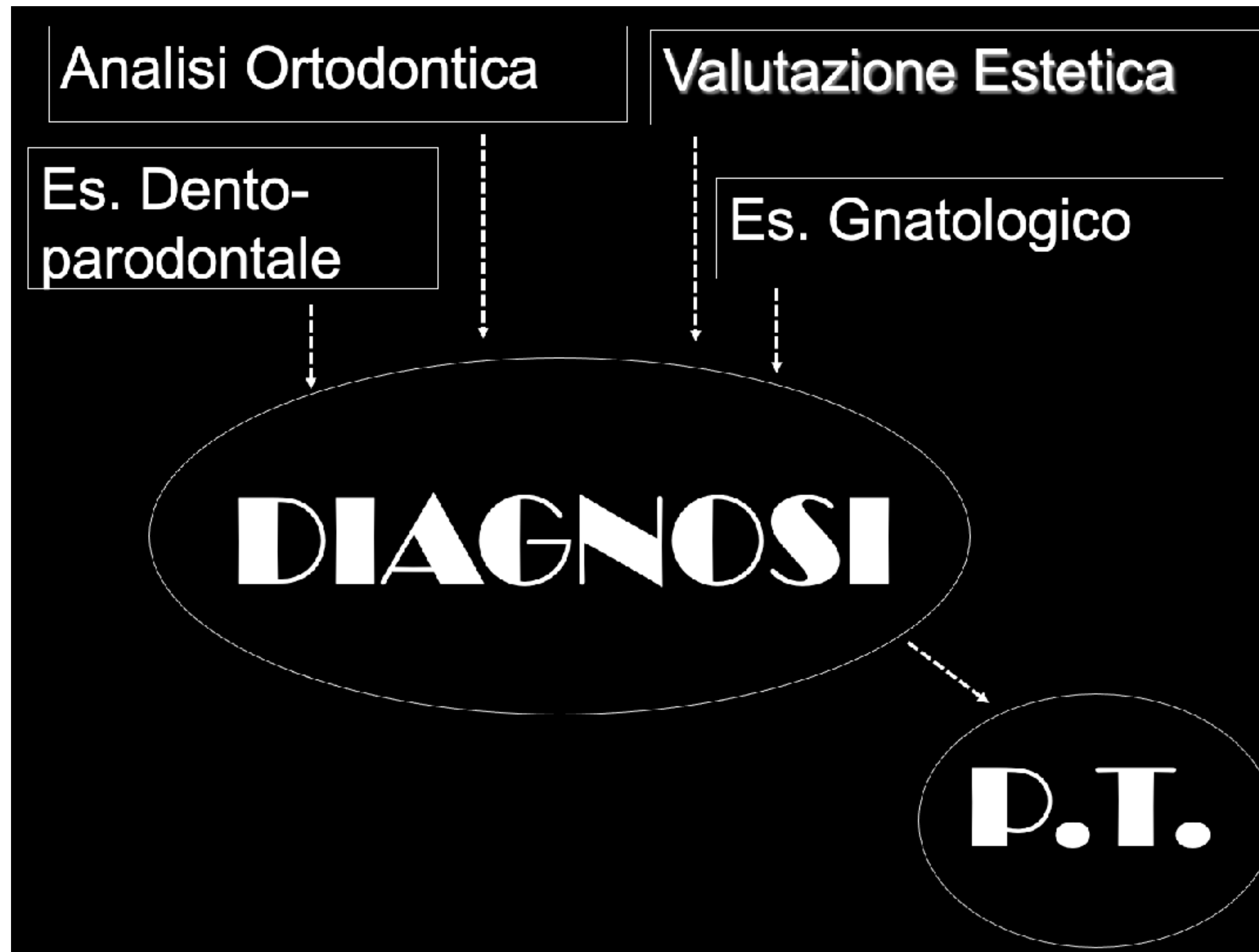




# Chirurgia Ortognatica

- VTO chirurgico analogico o digitale (Visual Treatment Objective)
- VTO ortodontico
- VSP Virtual Ortognatic Surgery Planning

# Chirurgia Ortognatica



# Chirurgia Ortognatica

Problematiche Trasversali

Problematiche Verticali

Ipodivergenti

Iperdivergenti

Problematiche Sagittali

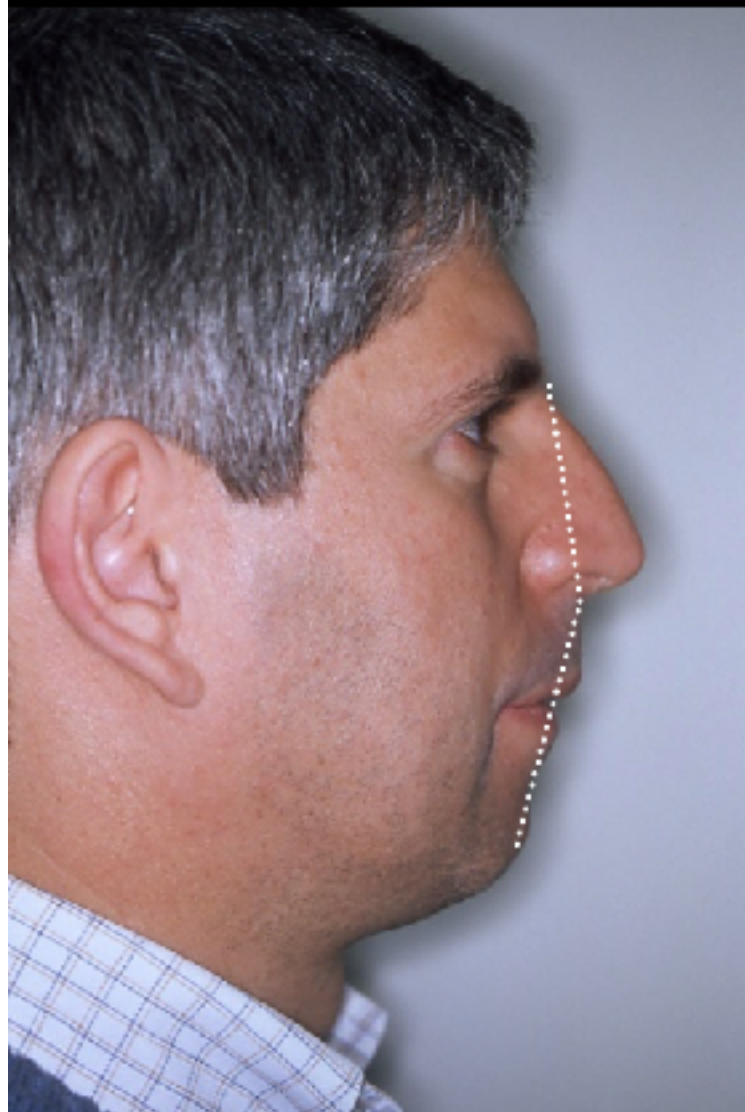
SecondeCassi

Terze Classi

Individualizzazione del piano di trattamento  
in rapporto alle reali esigenze del paziente

# Chirurgia Ortognatica

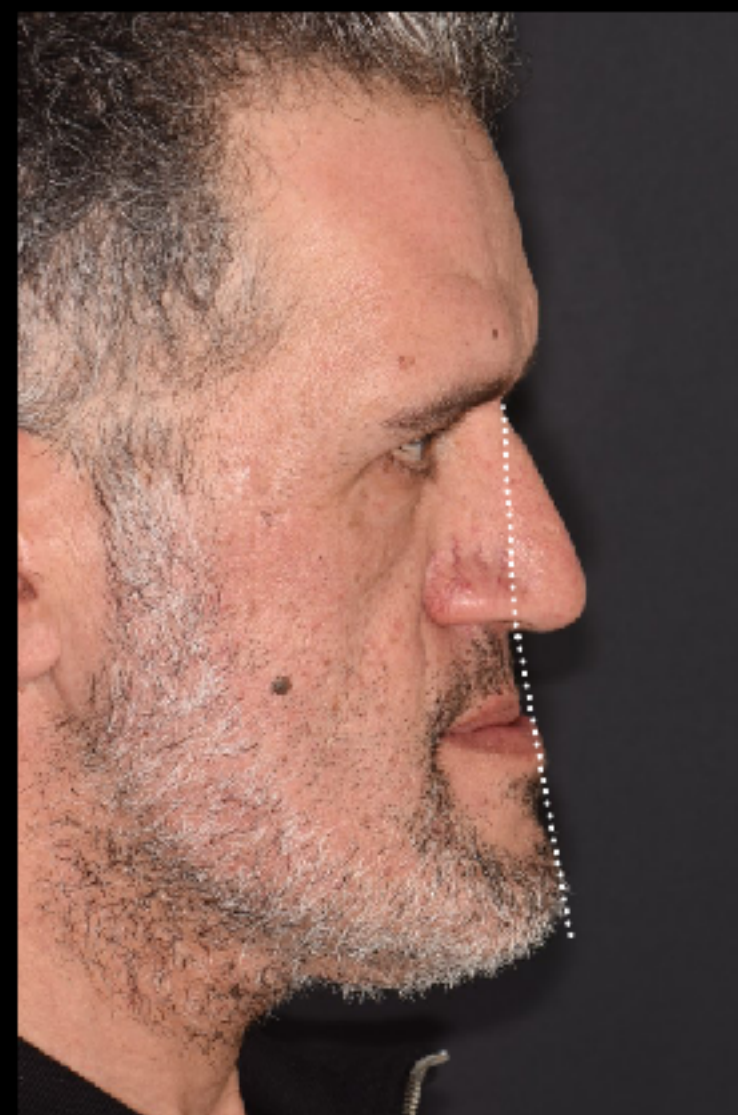
## MALOCCLUSIONE E FORMA DELLA FACCIA



**Convesso**

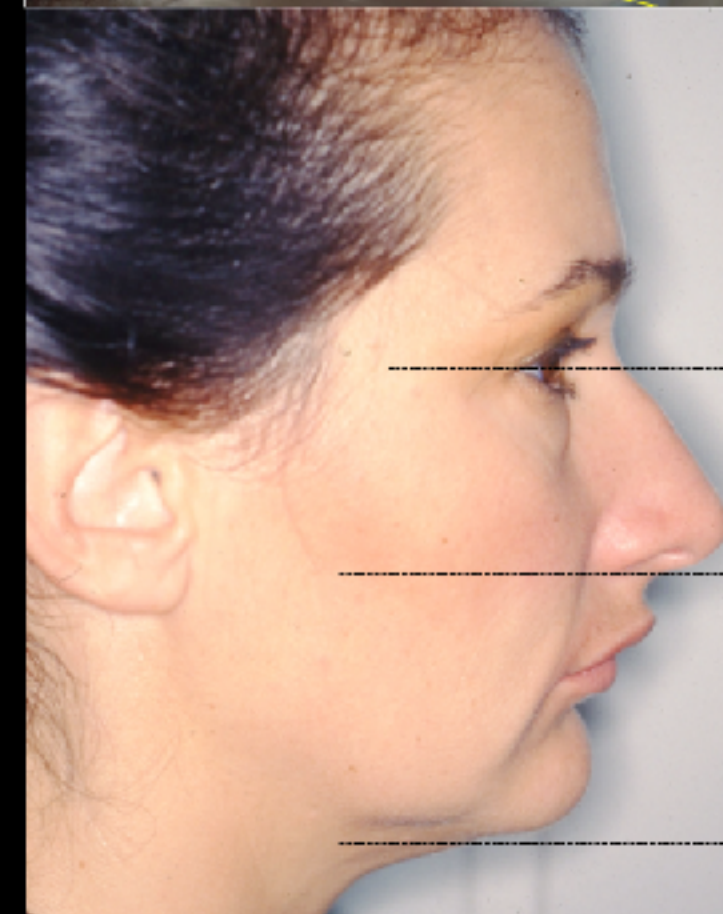
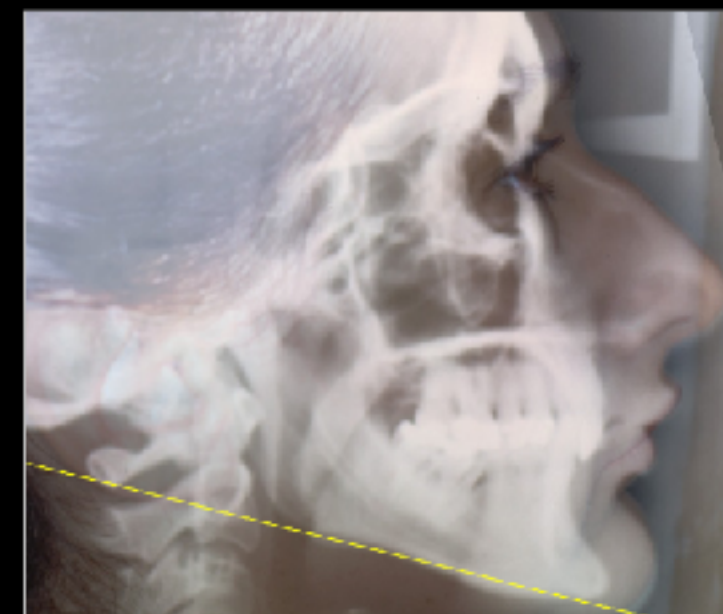


**Normale: 175°**

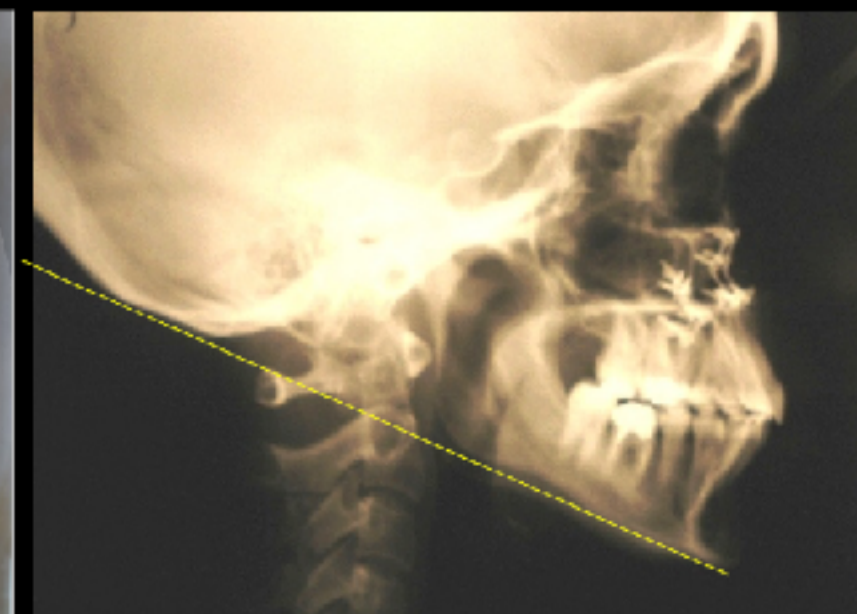


**Concavo**

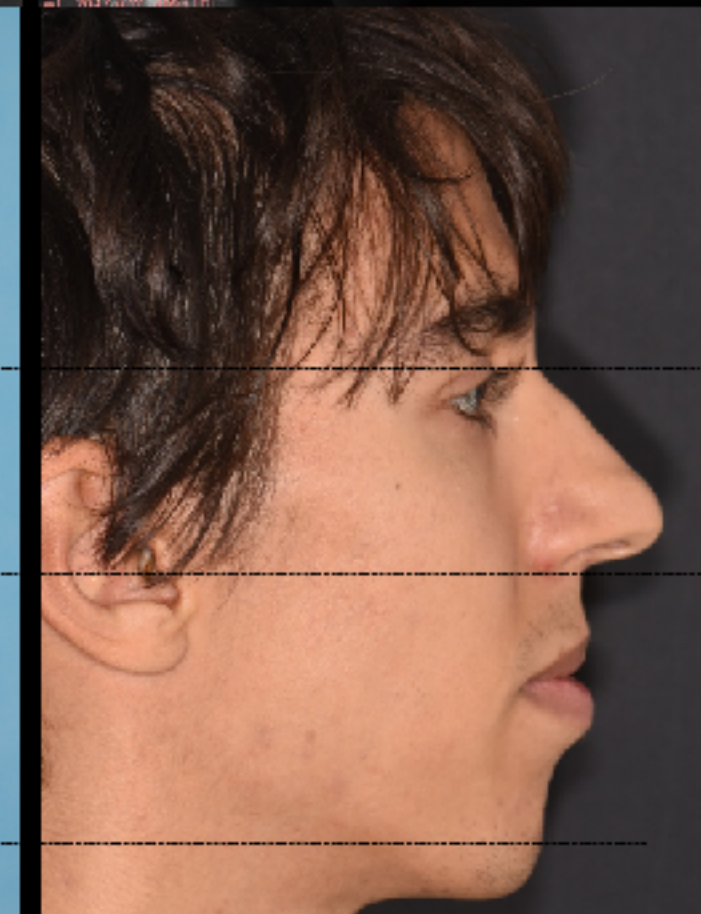
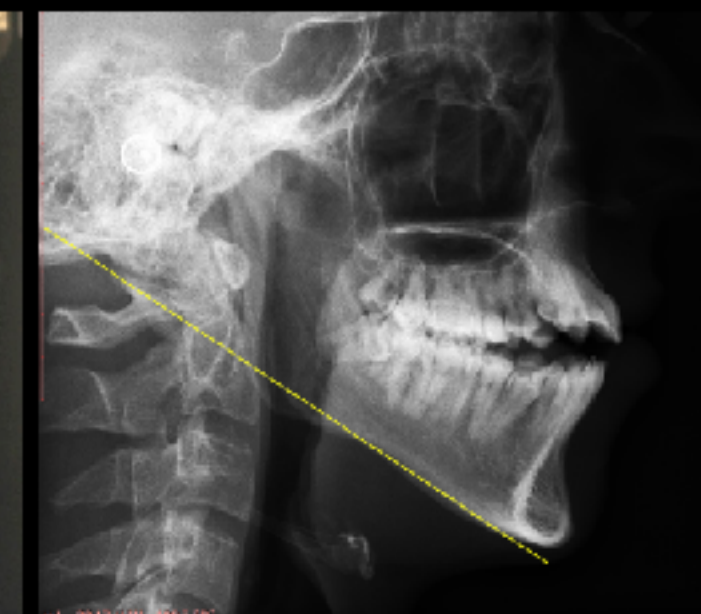
## Modelli Facciali



**Ipodivergente o Brachicefalico**

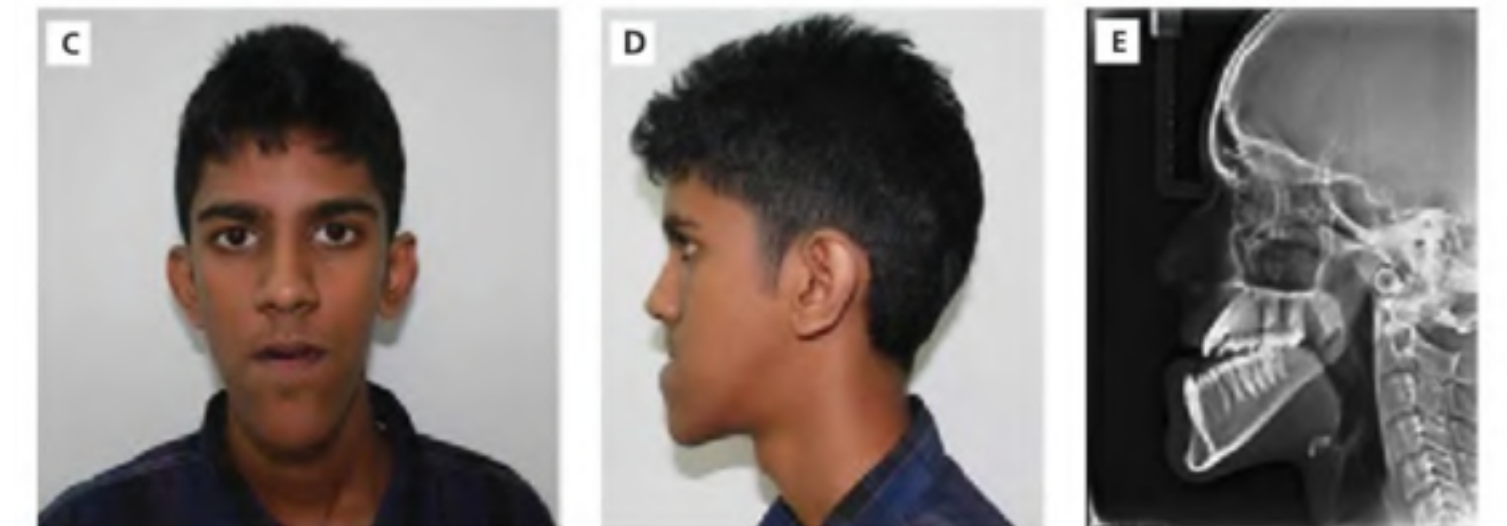
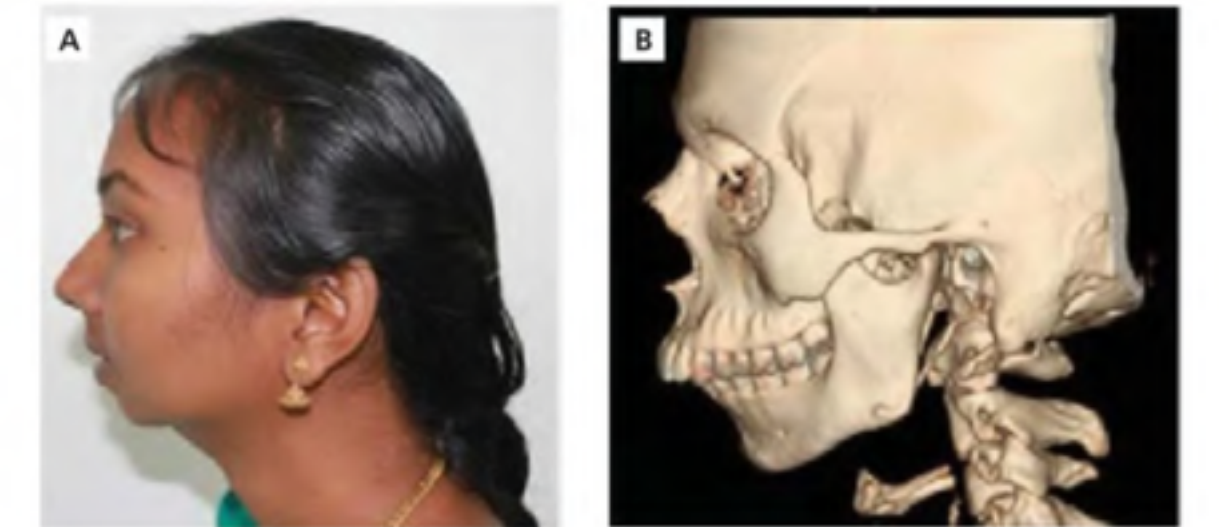
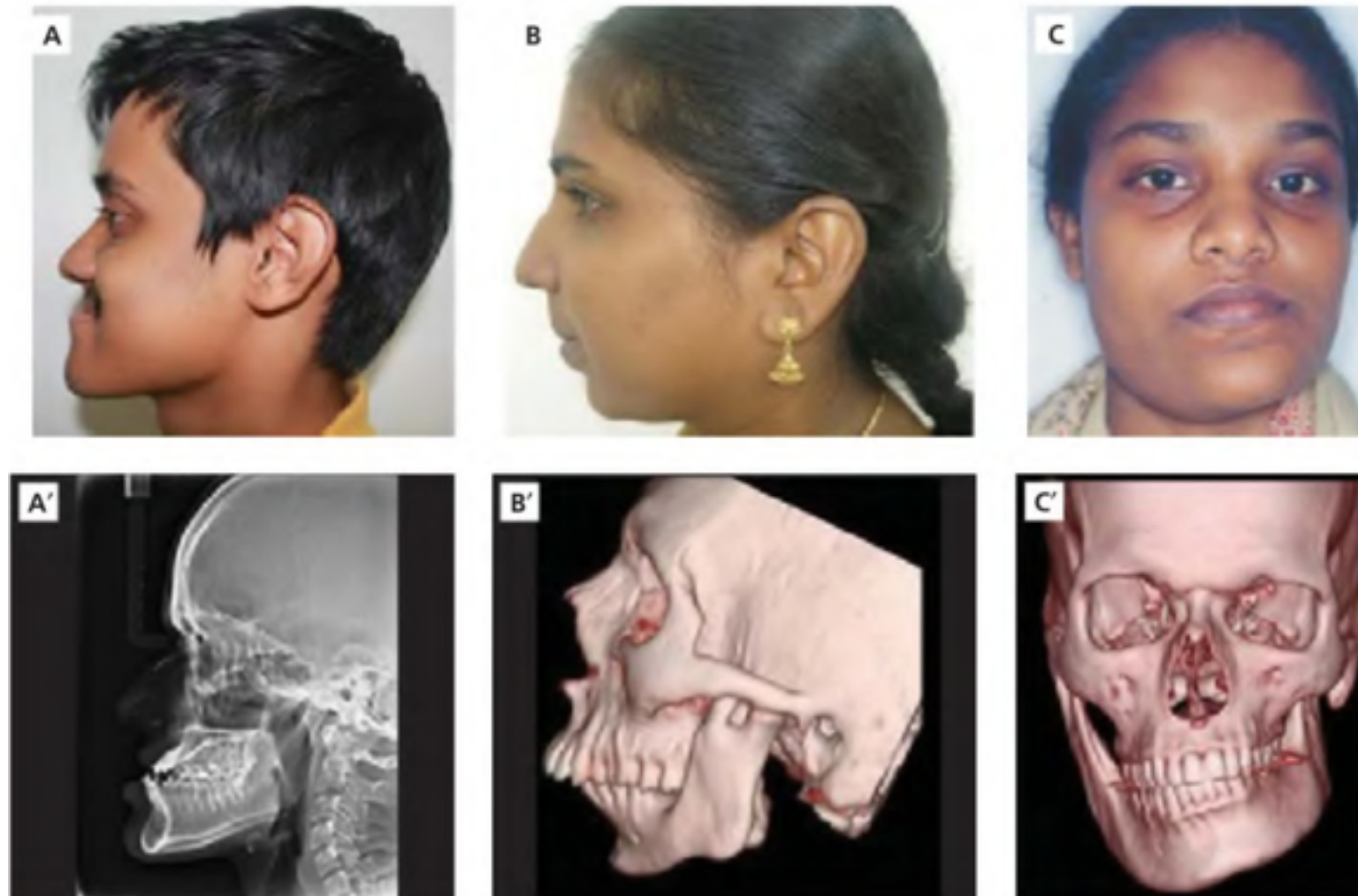
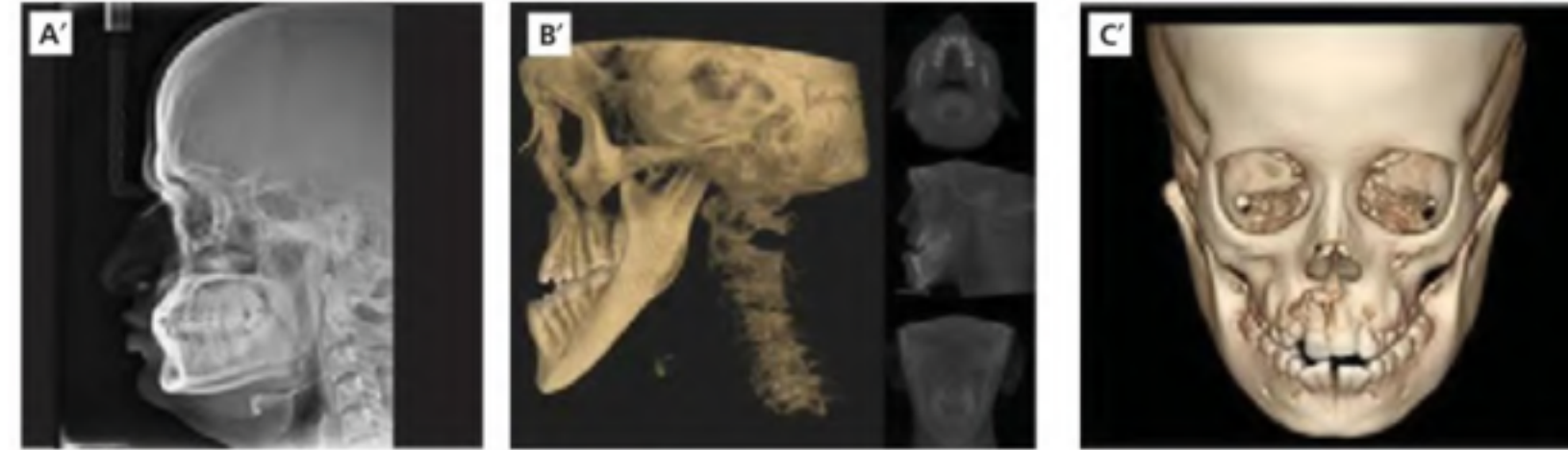
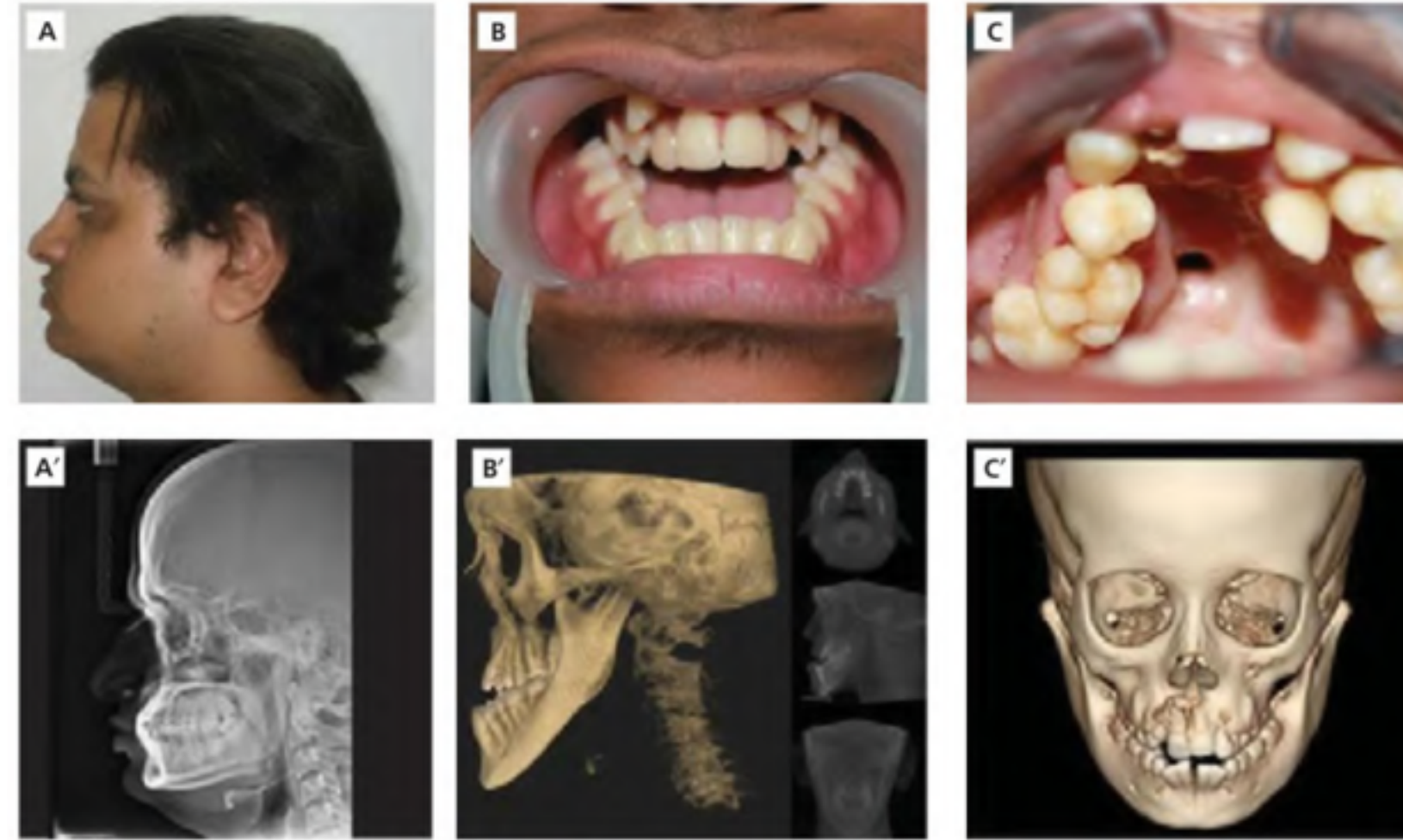


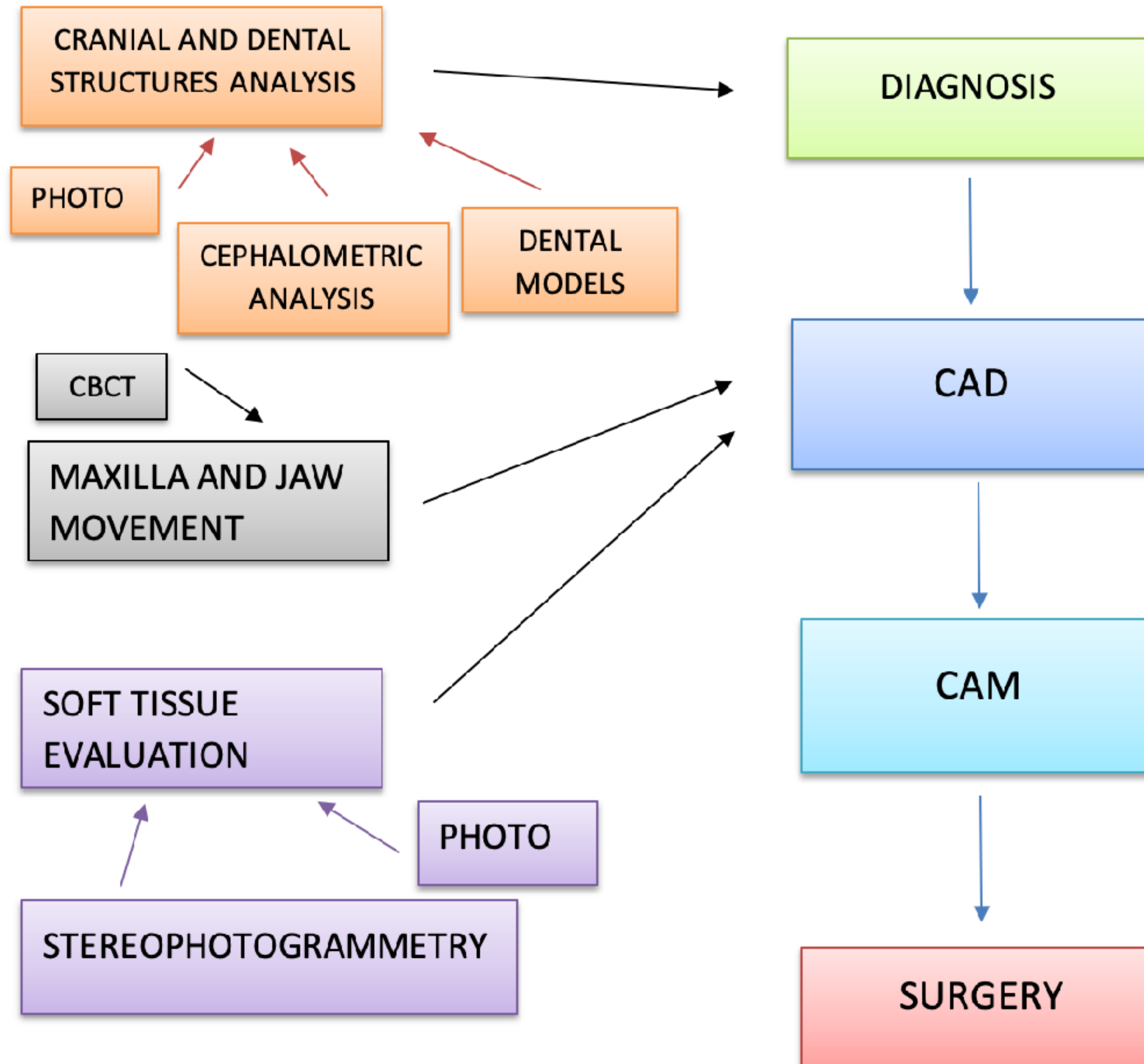
**Normodivergente o Mesocefalico**



**Iperdivergente o Dolicocefalico**

# Chirurgia Ortognatica





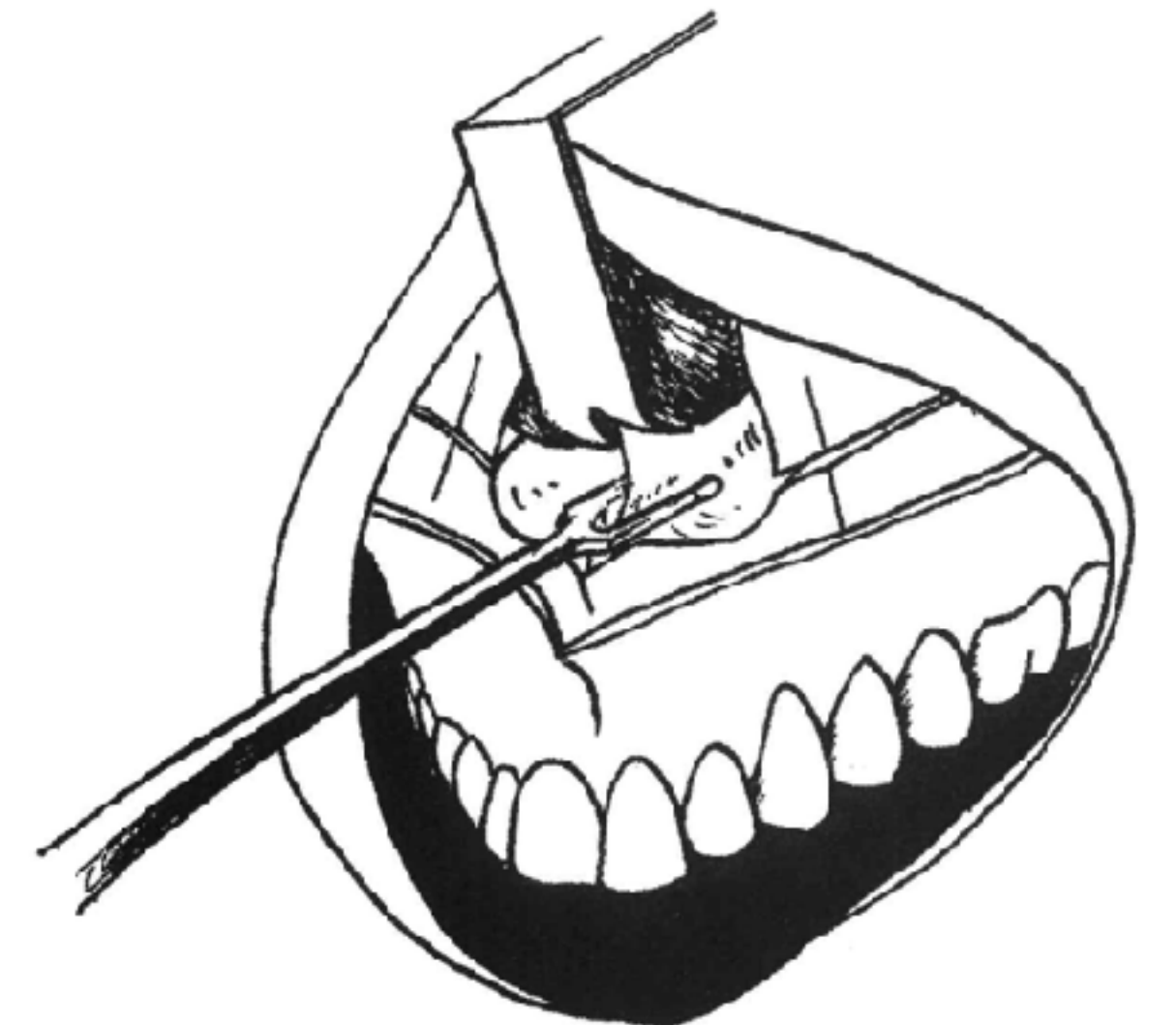
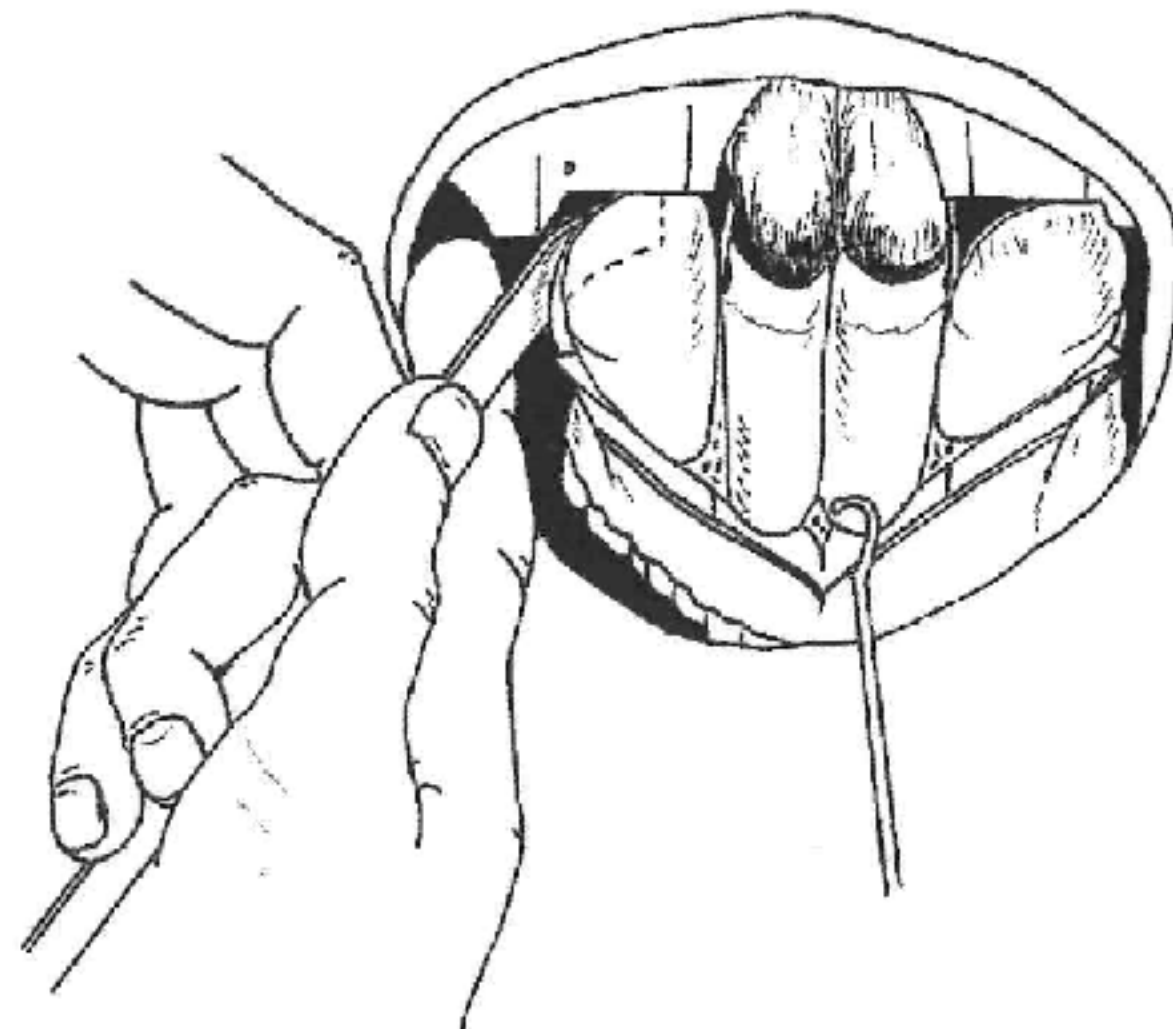
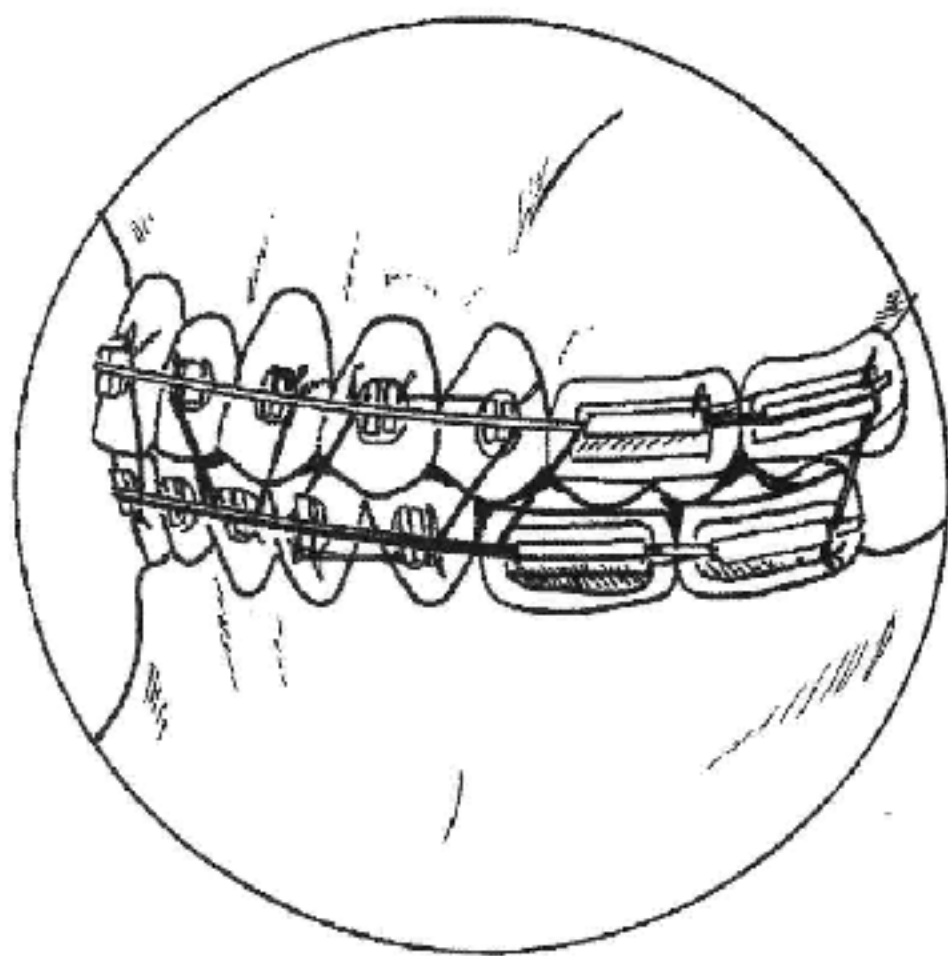
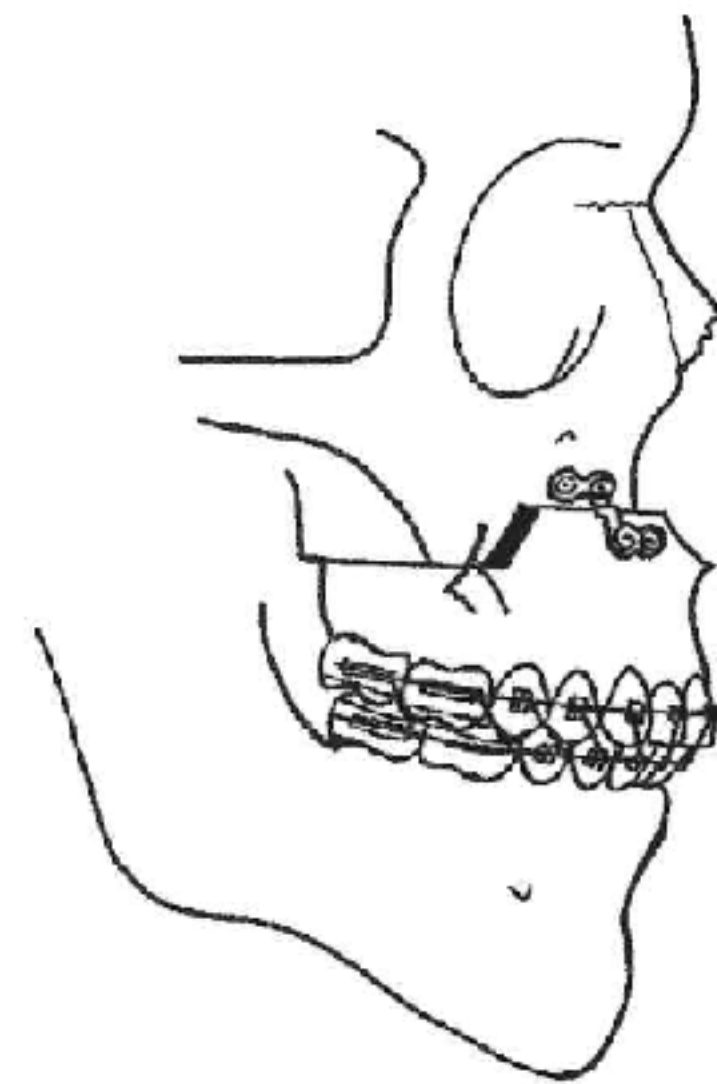
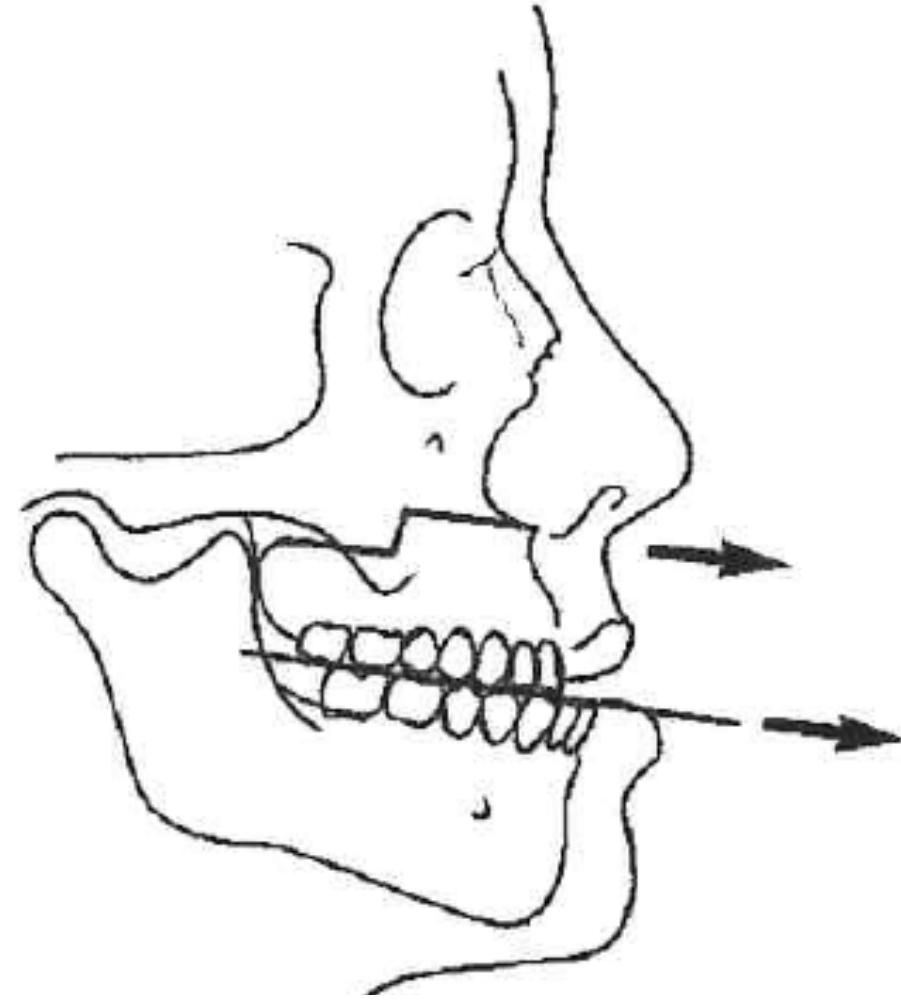
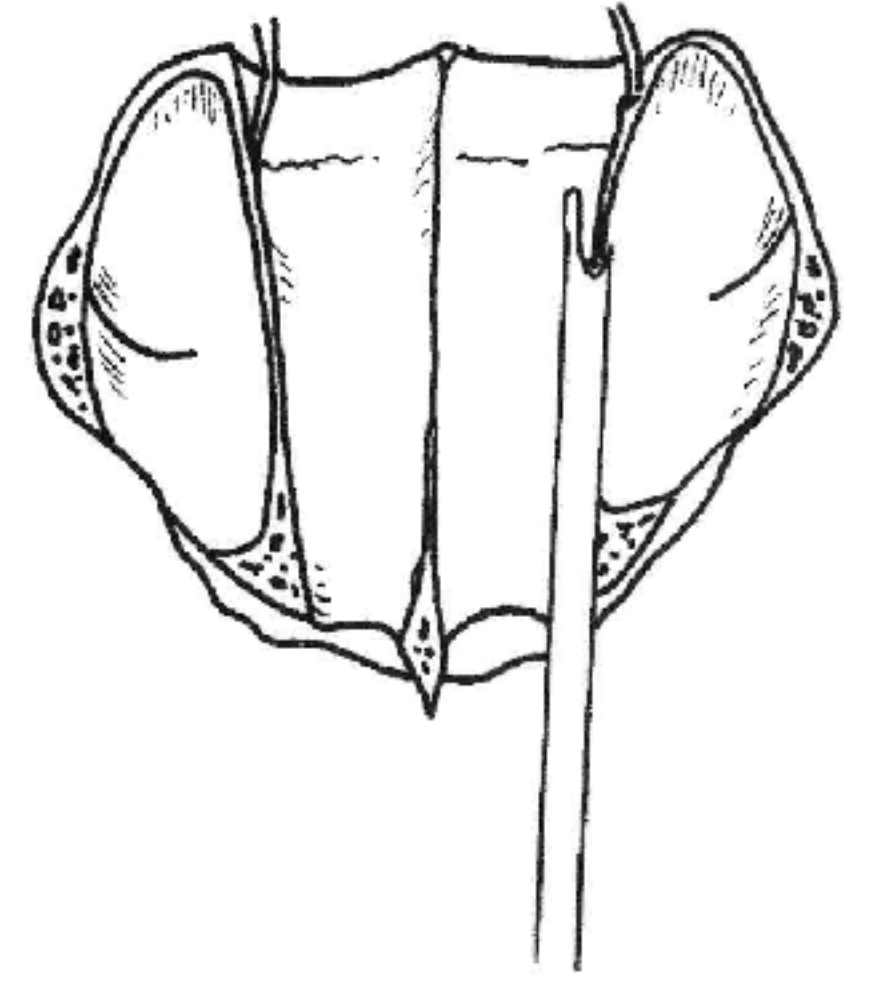
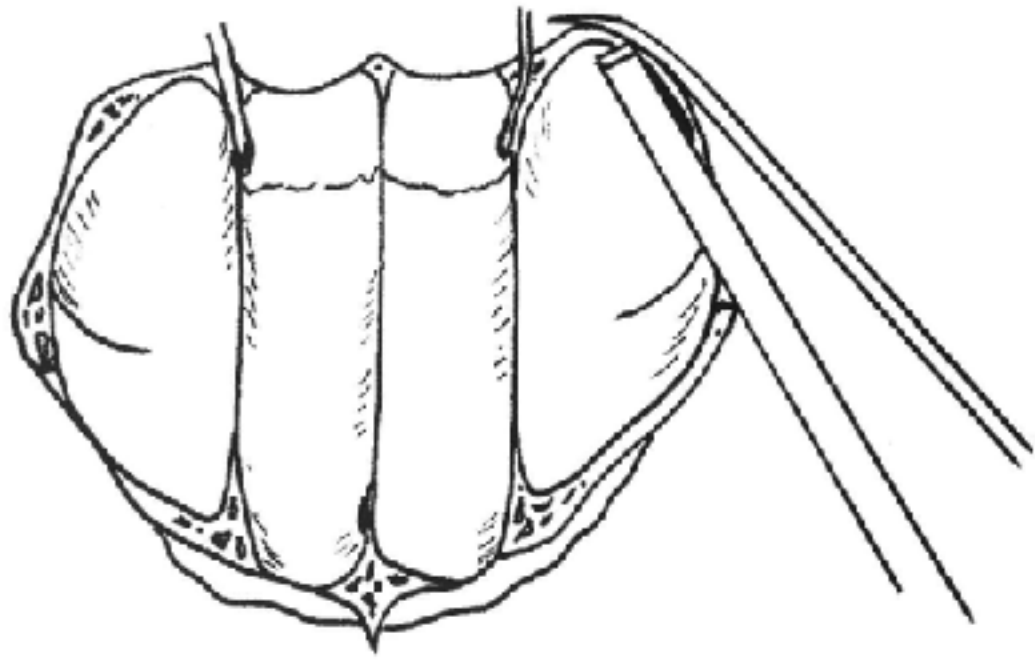
# Chirurgia Ortognatica

| Typical presentation of maxillofacial deformities |                                              |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                      |                                                                                                                                                                                                       |
|---------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   |                                              | Clinical features                                                                                                                                                                                                                                                                                                                                    | Skeletal assessment                                                                                                                                                                                                                  | Dental assessment                                                                                                                                                                                     |
| Maxilla                                           | Sagittal deficiency                          | <ul style="list-style-type: none"> <li>Concave facial profile</li> <li>Retrusive upper lip</li> <li>Acute nasolabial angle</li> <li>Alar base narrow</li> <li>Lack of dental display</li> </ul>                                                                                                                                                      | <ul style="list-style-type: none"> <li>SNA decreased</li> <li>SNB normal</li> <li>ANB decreased</li> </ul>                                                                                                                           | <ul style="list-style-type: none"> <li>SNA decreased</li> <li>SNB normal</li> <li>ANB decreased</li> </ul>                                                                                            |
|                                                   | Sagittal excess                              | <ul style="list-style-type: none"> <li>Convex facial profile</li> <li>Obtuse nasolabial angle</li> </ul>                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>SNA increased</li> <li>SNB normal</li> <li>ANB increased</li> </ul>                                                                                                                           |                                                                                                                                                                                                       |
|                                                   | Vertical excess<br>(long face syndrome)      | <ul style="list-style-type: none"> <li>Convex profile</li> <li>Lower facial height increased</li> <li>Alar base constricted</li> <li>Nasolabial angle obtuse</li> <li>Excessive gingival show</li> <li>Excessive incisor show</li> <li>Lip incompetence</li> <li>Mentalis strain with lip closure</li> <li>Chin vertically long, retruded</li> </ul> | <ul style="list-style-type: none"> <li>Lower facial height increased</li> <li>SNA decreased</li> <li>SNB decreased</li> <li>ANB increased</li> <li>Mandibular plane angle steep</li> <li>Palatal occlusal plane increased</li> </ul> | <ul style="list-style-type: none"> <li>Class II, Class I</li> <li>Anterior open bite</li> <li>Maxillary arch constricted</li> <li>Curve of Spee, flat-accentuated</li> <li>Dental crowding</li> </ul> |
|                                                   | Vertical deficiency<br>(short face syndrome) | <ul style="list-style-type: none"> <li>Concave facial profile</li> <li>Lower facial height decreased</li> <li>Nasolabial angle acute</li> <li>Alar base widened</li> <li>Lack of incisor show</li> <li>Chin protruded</li> </ul>                                                                                                                     | <ul style="list-style-type: none"> <li>Lower facial height decreased</li> <li>SNB increased</li> <li>ANB negative</li> <li>Palatal occlusal plane decreased</li> <li>Edentulous appearance</li> </ul>                                | <ul style="list-style-type: none"> <li>Class II, Class I</li> <li>Deep bite</li> <li>Crowding</li> <li>Curve of Spee is reverse</li> <li>Mandibular plane angle—acute</li> </ul>                      |
| Mandible                                          | Deficiency                                   | <ul style="list-style-type: none"> <li>Convex profile</li> <li>Retruded chin</li> <li>Lower lip everted</li> <li>Deep labiomental crease</li> <li>Mentalis strain with lip closure</li> </ul>                                                                                                                                                        | <ul style="list-style-type: none"> <li>SNA normal</li> <li>SNB decreased</li> <li>ANB increased</li> <li>Ar-Gn decreased</li> </ul>                                                                                                  | <ul style="list-style-type: none"> <li>Class II</li> <li>Mandibular incisors proclined</li> <li>Maxillary incisor retroclined</li> <li>Curve of Spee accentuated</li> </ul>                           |
|                                                   | Excess                                       | <ul style="list-style-type: none"> <li>Concave profile</li> <li>Midface appears deficient</li> <li>Lower third broad</li> <li>Lower lip thin</li> </ul>                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>SNA normal</li> <li>SNB decreased</li> <li>ANB decreased</li> </ul>                                                                                                                           | <ul style="list-style-type: none"> <li>Class II</li> <li>Maxillary incisor proclined</li> <li>Mandibular incisors retroclined</li> </ul>                                                              |

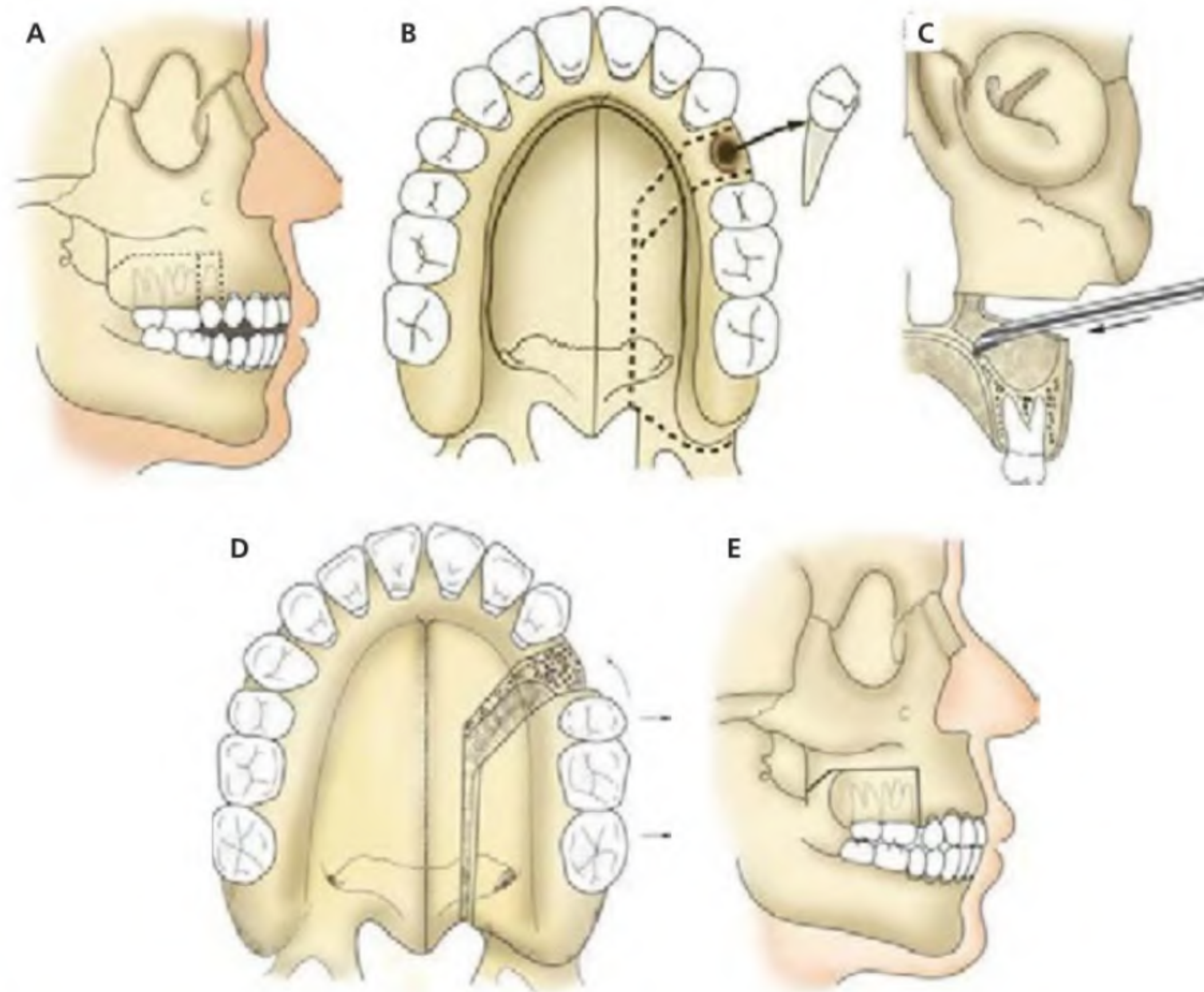
# Osteotomie Mascellari

- Le Fort I: fino a 10-12mm in avanti e 6-8 verso l'alto/basso
- Le Fort I a più frammenti: mediana o in sede canina
- Ostetotomia mascellare segmentale anteriore: estrazione IVi e arretramento anteriore
- Osteotomia settoriale postero-laterale ad intrudere i settori posteriori.

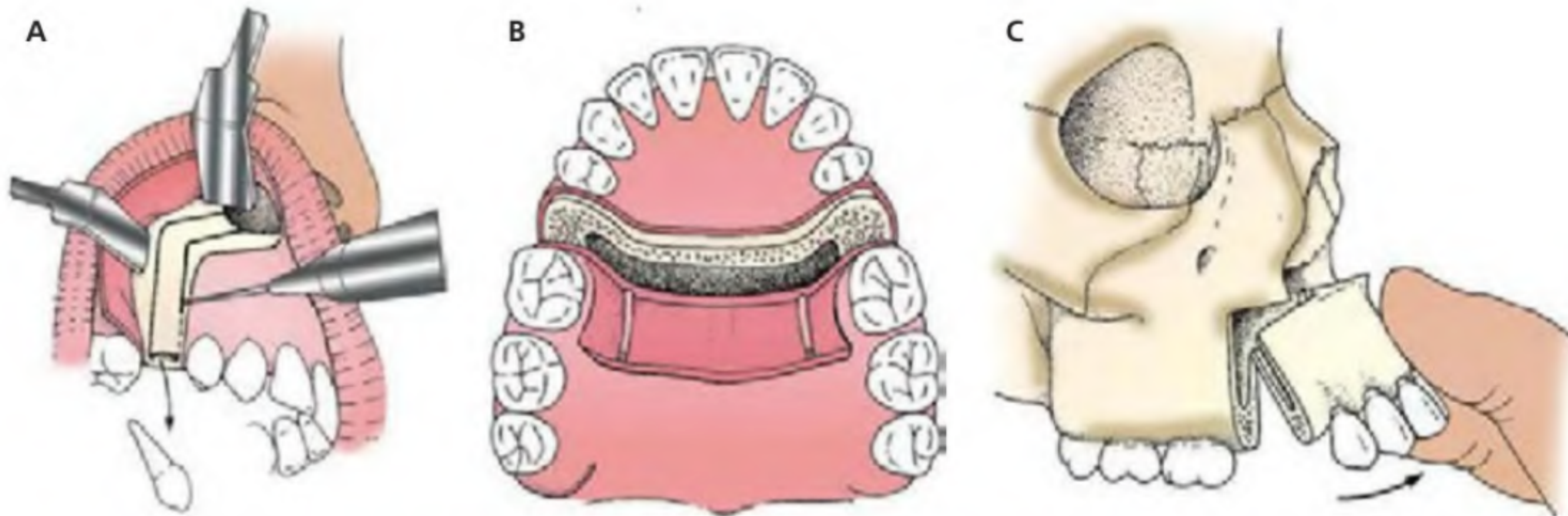
# Le Fort I



# Osteotomia settoriale posteriore

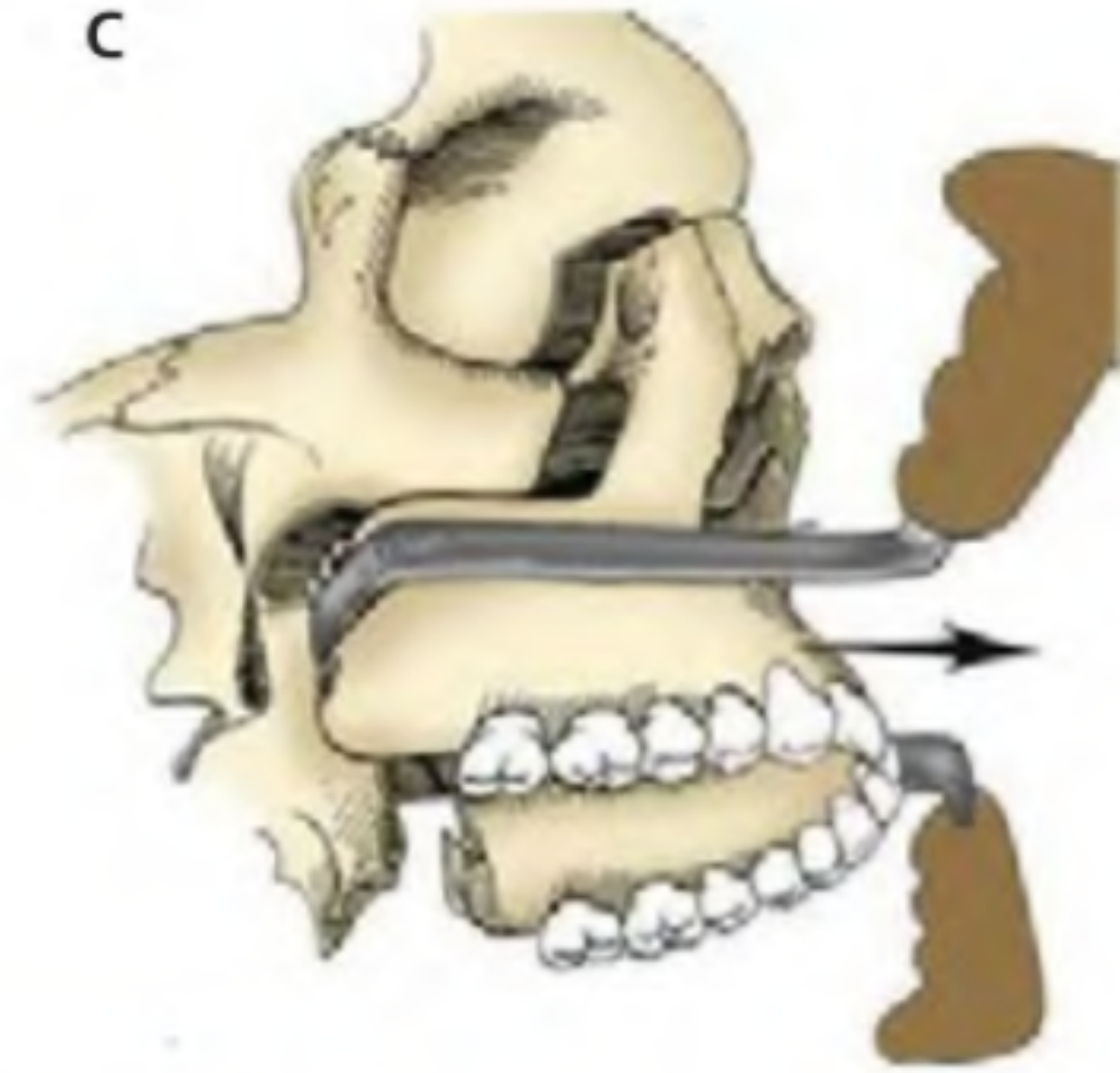
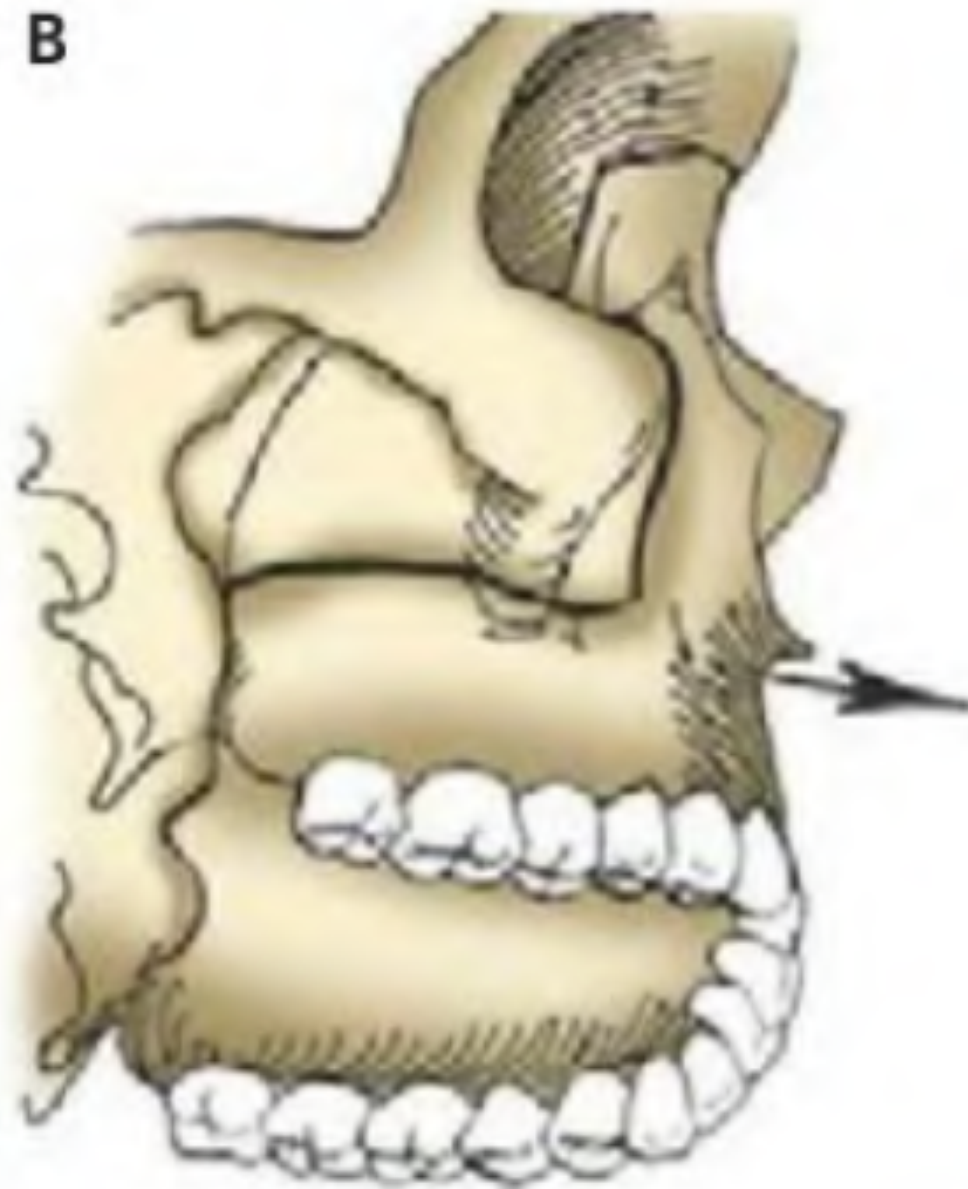
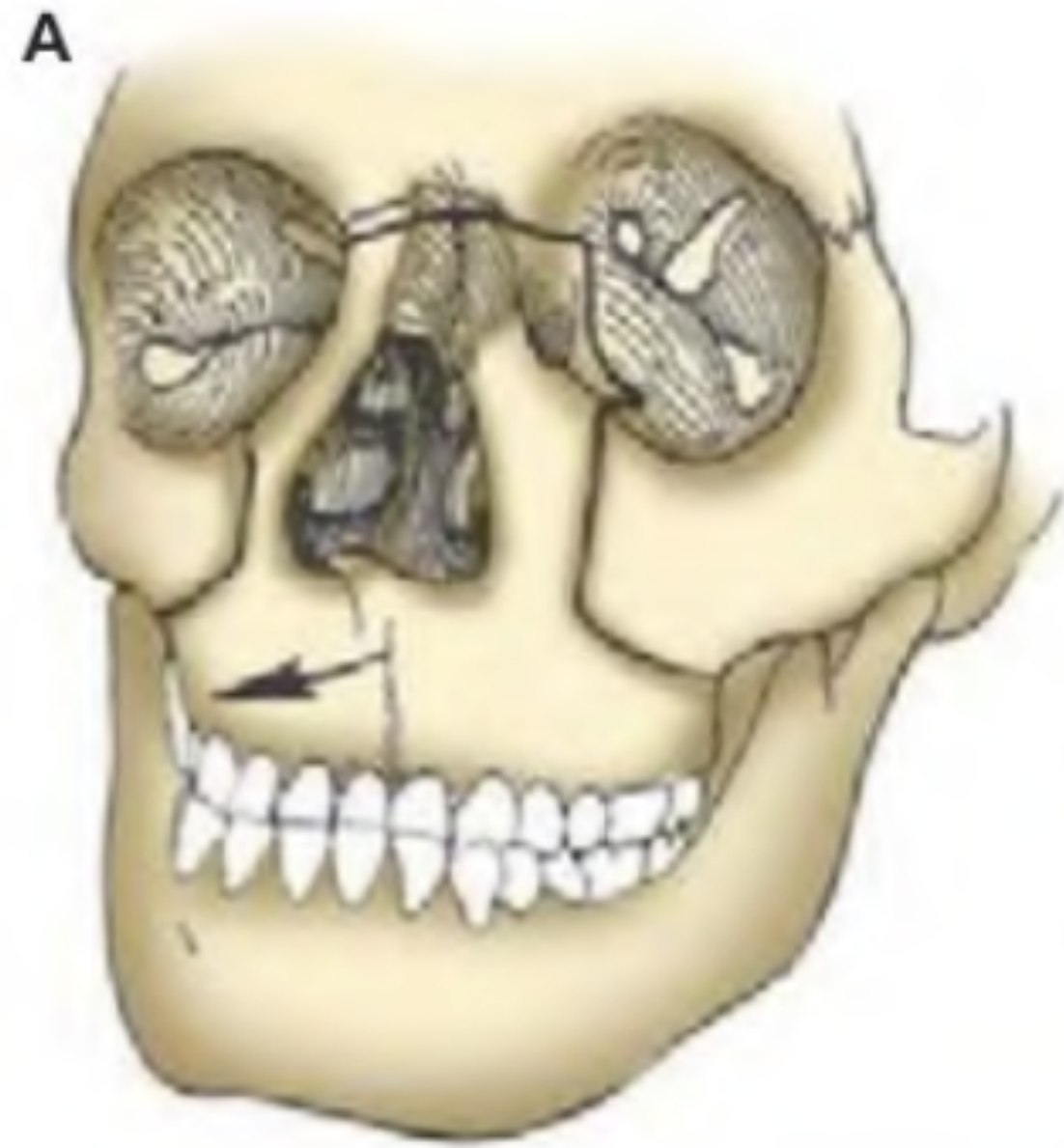


# Osteotomia segmentale anteriore

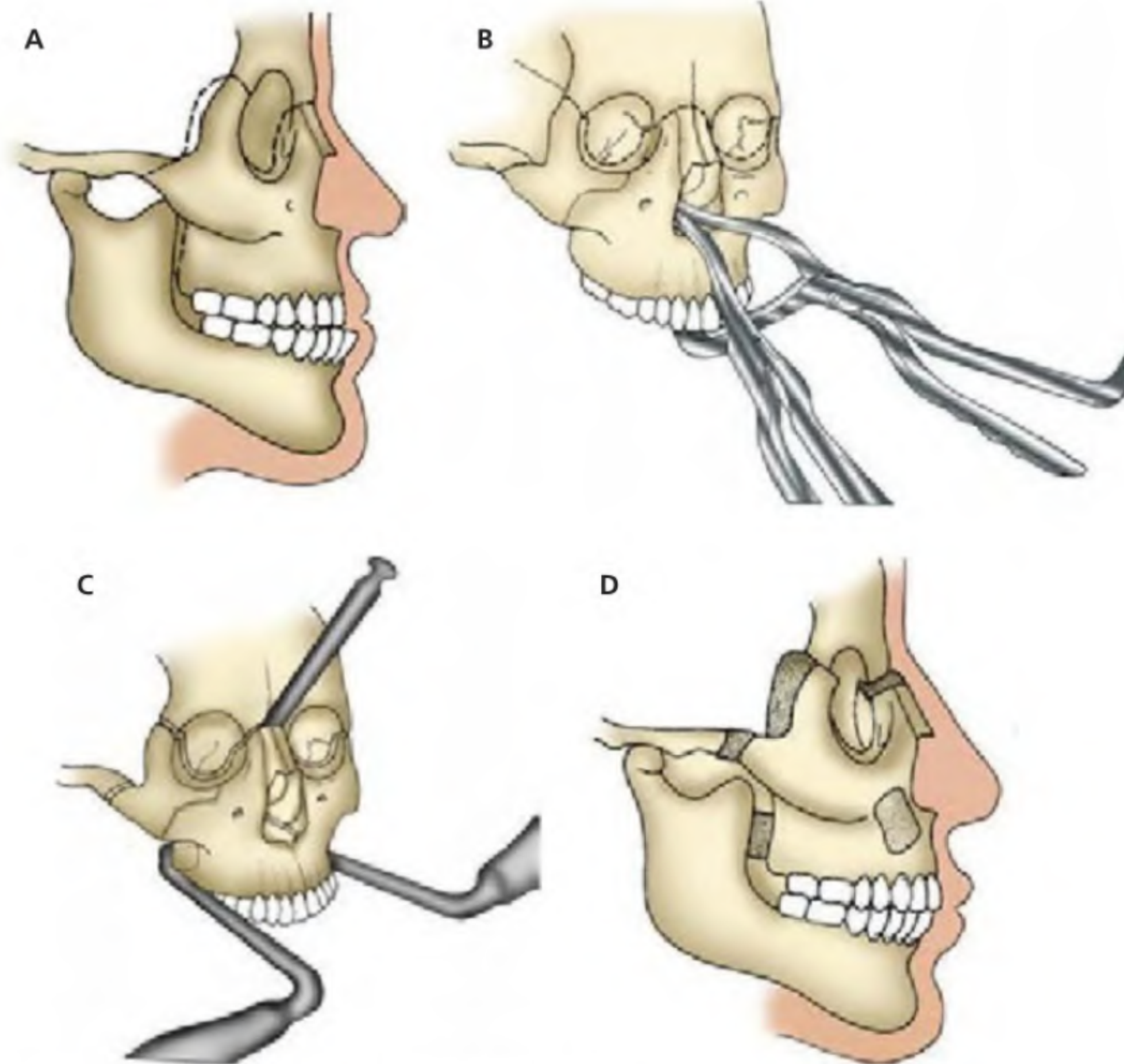


**Fig. 35.19** Wunderer technique for repositioning anterior segment: **A** Buccal bone cut. **B** Transpalatal incision made; flap elevated and palatal cut made. **C** Maxillary segment separated.

# Osteotomia Le Fort II

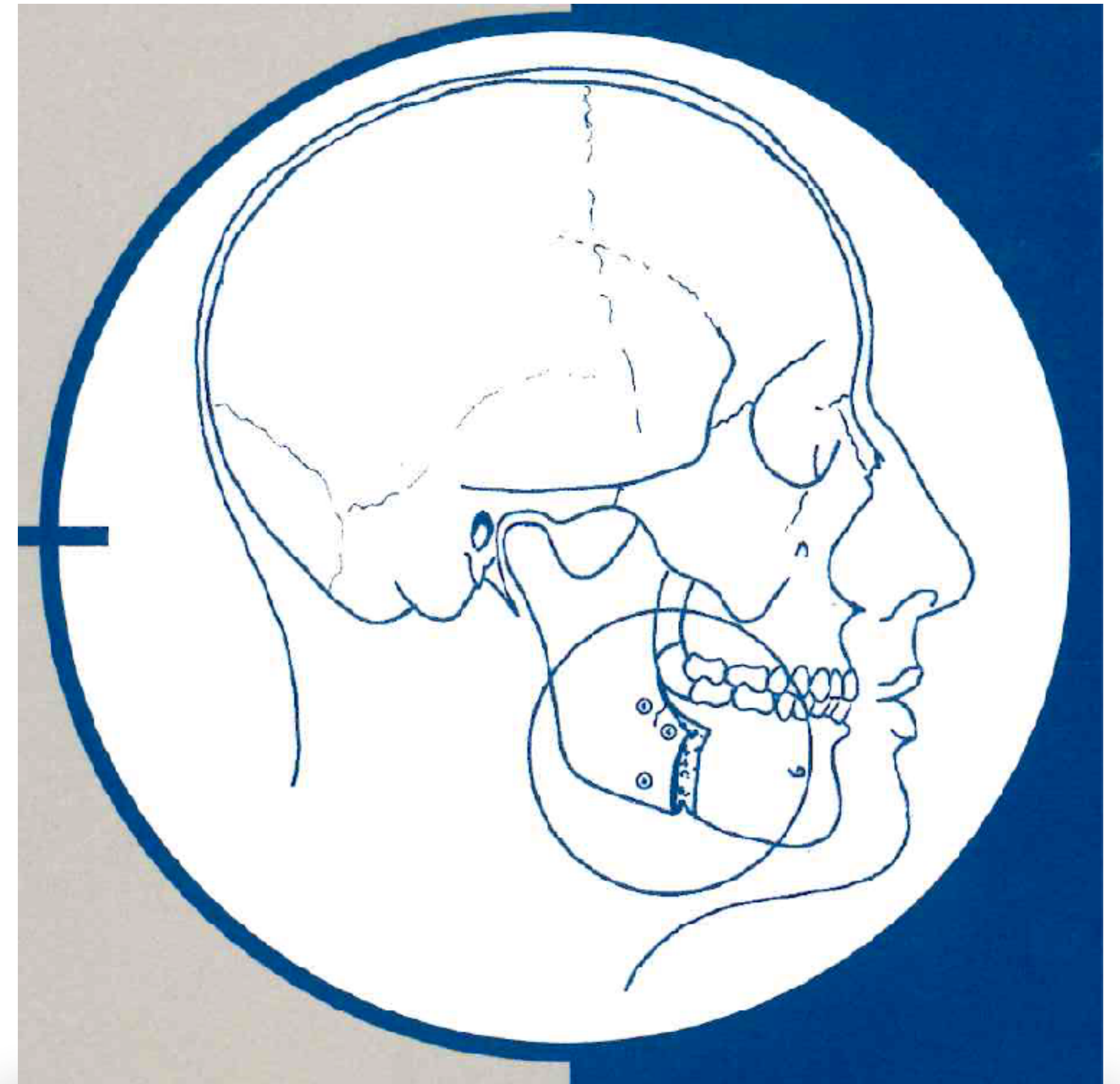


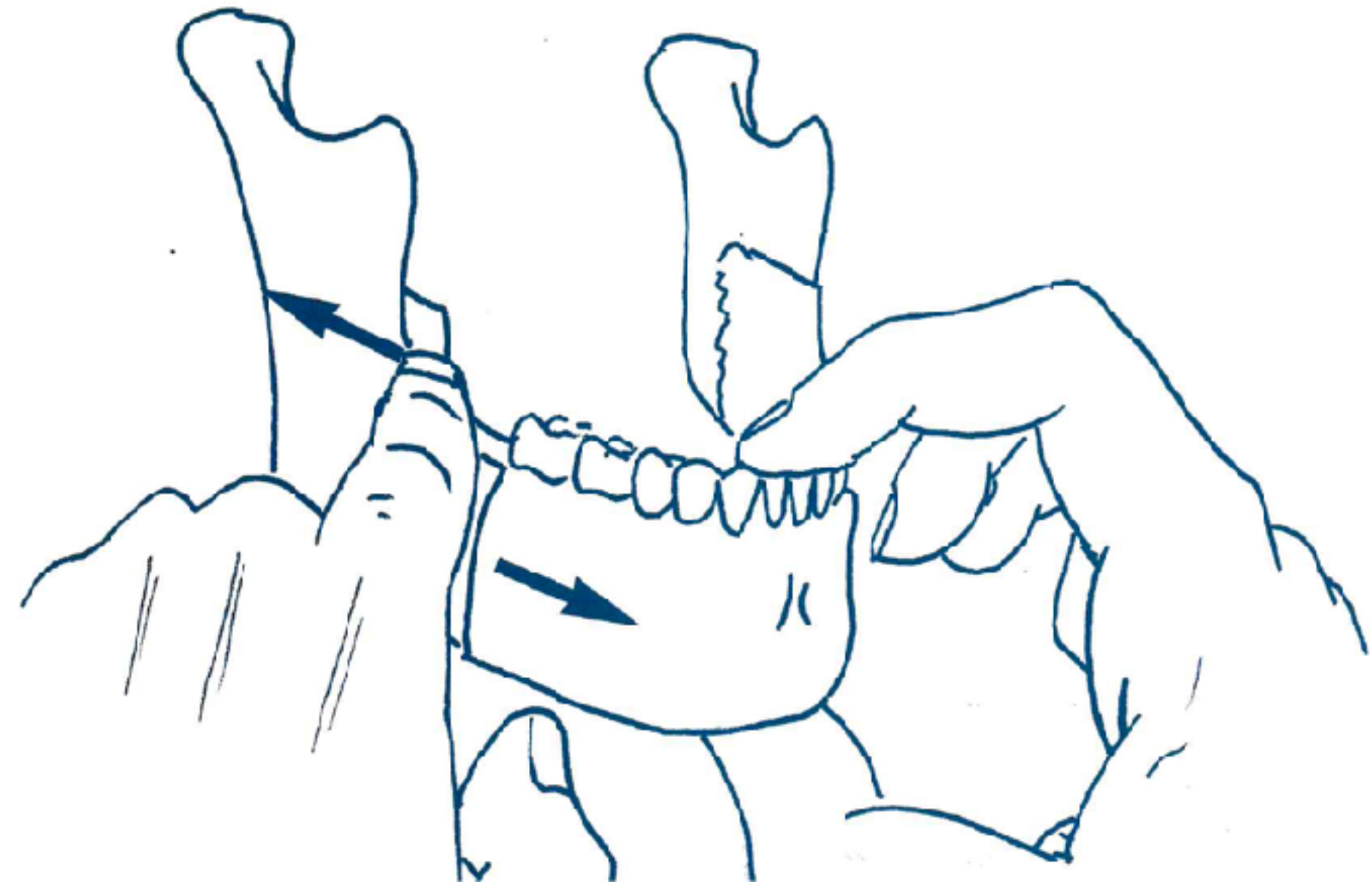
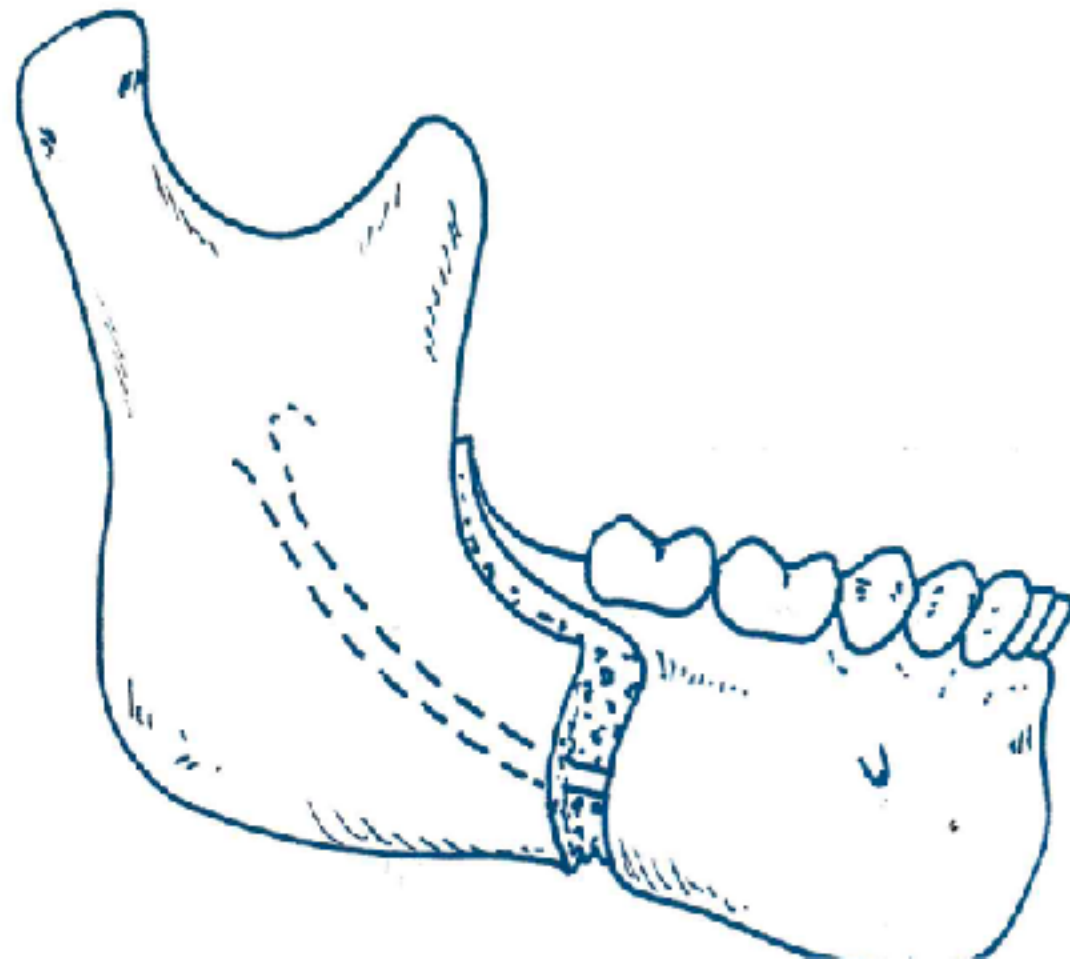
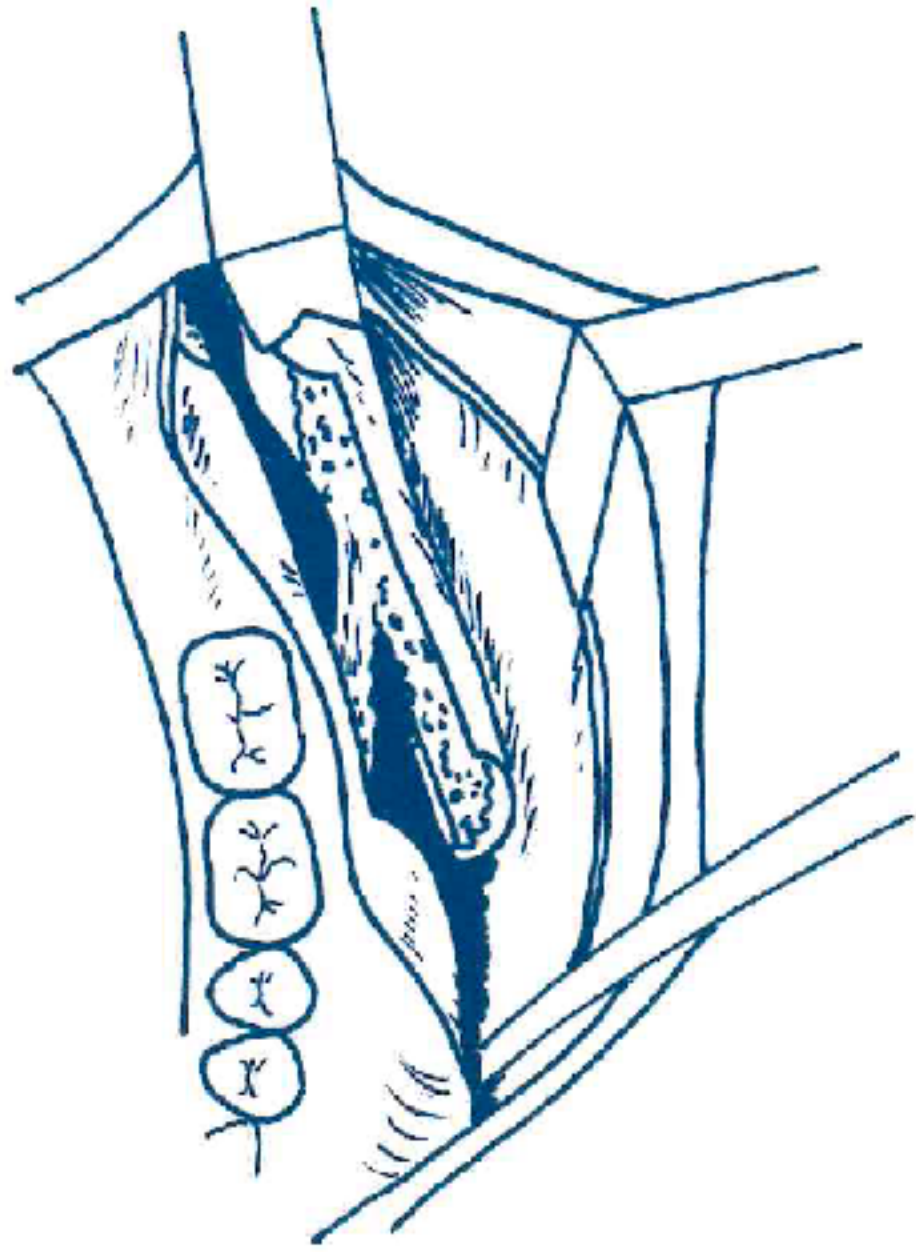
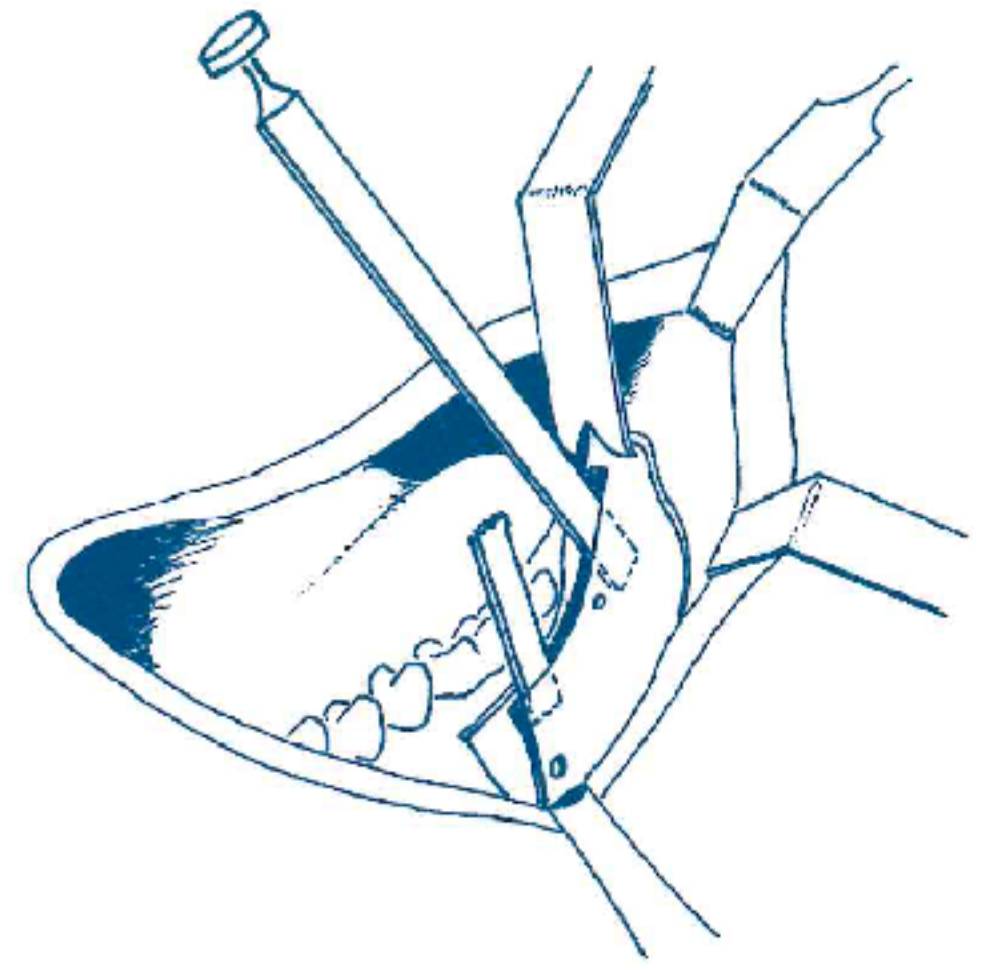
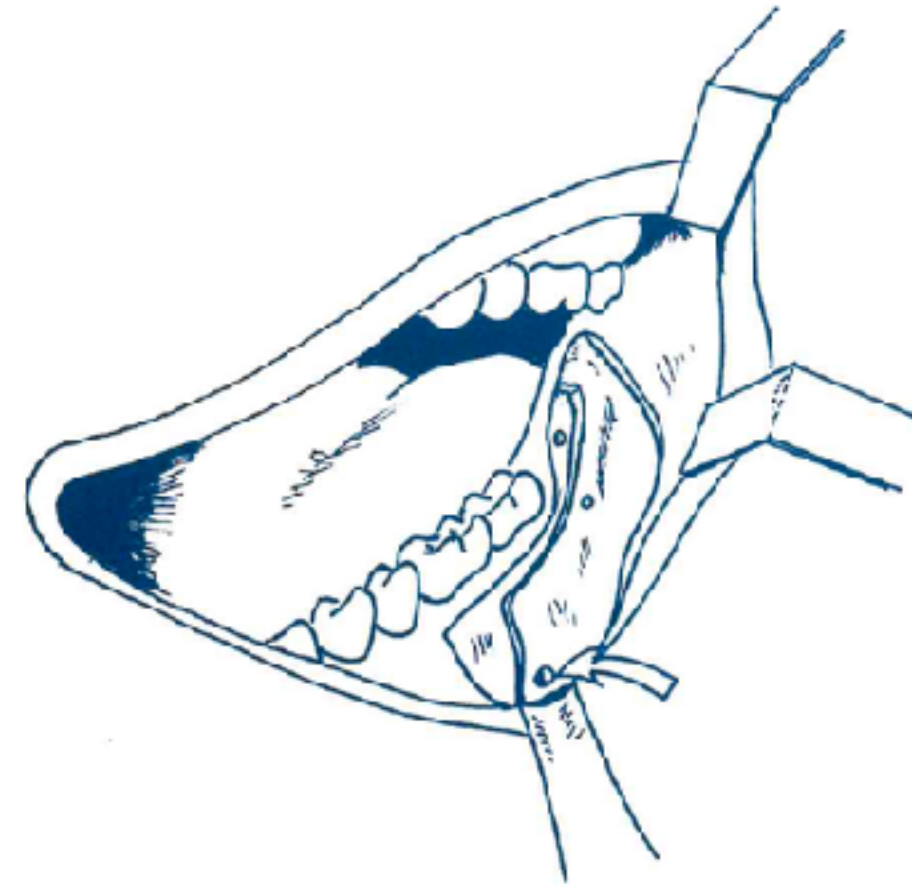
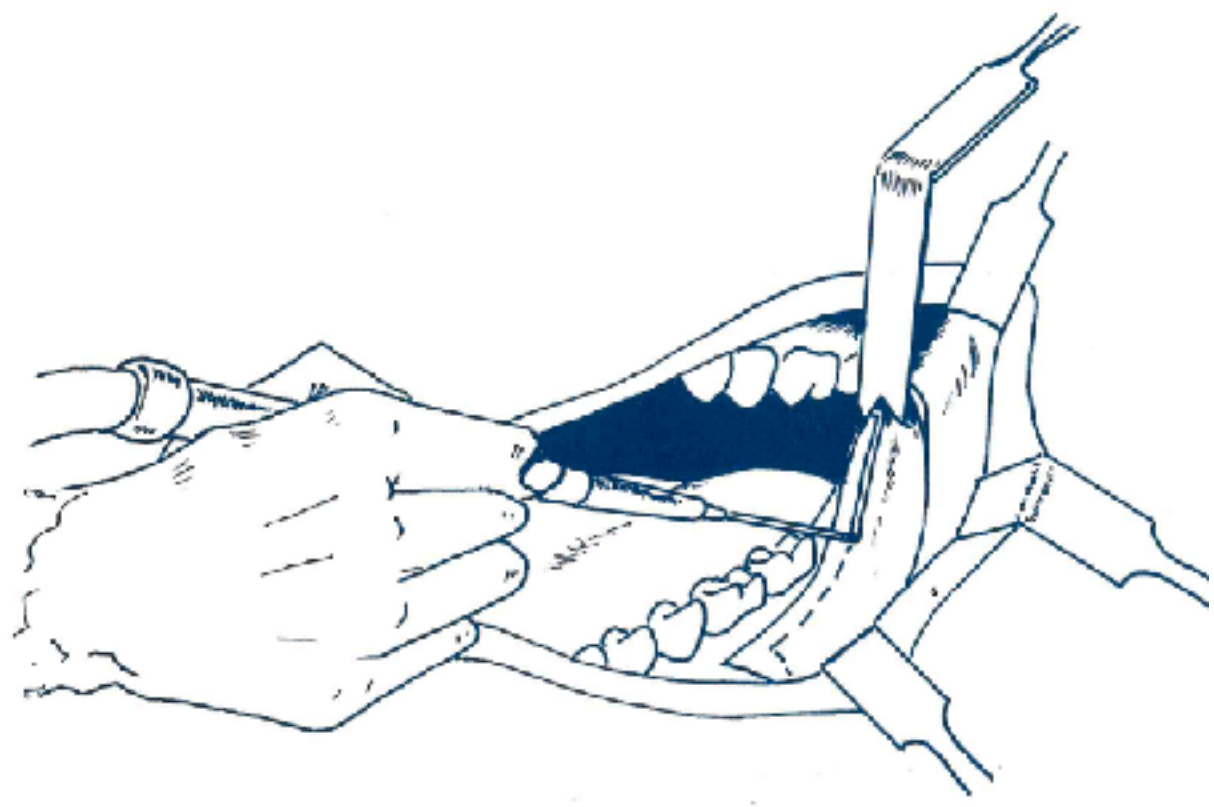
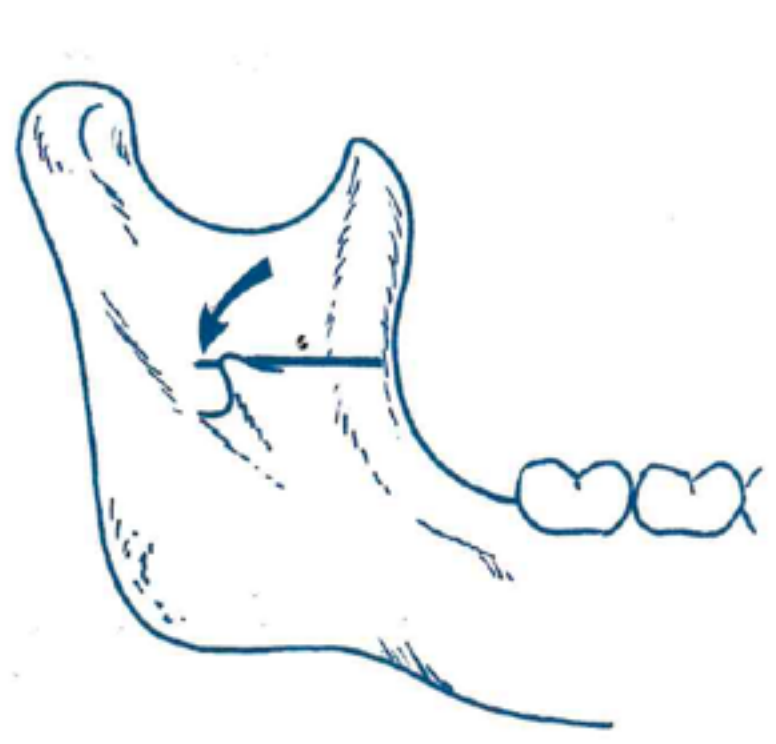
# Osteotomia Le Fort III



# Osteotomie di Mandibola

- BSSO: Bilateral Split Sagittal Osteotomy
- Osteotomie segmentarie intraforaminali
- Genioplastica





# Chirurgia Ortognatica

- All'intervento segue un periodo di contenzione e di tipo ortodontico per finalizzare il risultato.