Orthognathic surgery

By- Dr. Sonal Anchlia

Orthognathic surgery

- is the art and science of diagnosis, and treatment of facial disproportion.
- These disproportion may be congenital or aquired

Basic Therapeutic Goals for Orthognathic Surgery

- Function: obtain normal mastication, speech, ocular function and respiratory function.

- Aesthetic: facial harmony and balance.

- Other possible benefit :
- TMJ dysfunction
- Sleep apnoea
- Traumatic occlusion and dental health

Patient Evaluation

- History
- Clinical examination
- Investigations
- Initial diagnosis
- Treatment plane
- Presurgical orthodontic
- Post –surgical orthodontic

Chief Complaints

- Understanding what patient concern, motivation, expectation. That provide insight to psychological health of the patient
- Patient who maintain unrealistic expectations are best not treated

History

The purpose of history is to identify the patient's orofacial problems and their causes.

- Congenital deformity
- Trauma
  -
  -

- Medical history: bleeding disorder, autoimmune disease, any pathological condition.

- Dental history: previous restorative, orthodontic, periodontal, facial pain treatment.

Clinical evaluation

- Patient seated comfortably.
- Frankfort line parallel to the floor.
- Teeth in centric occlusion and lips relaxed

Frontal Assessment

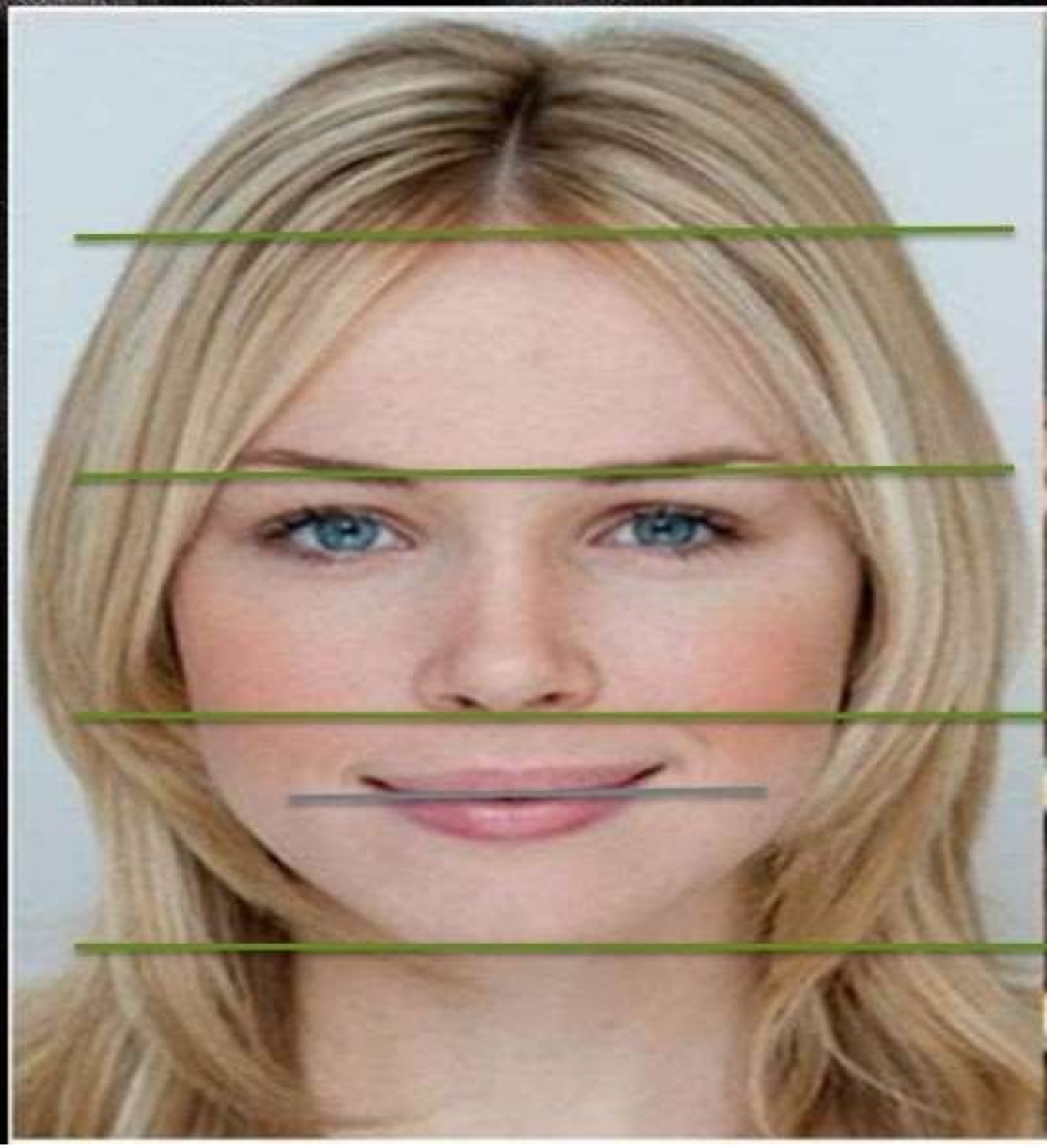
Facial proportion

The full face is divided into three equal parts

Upper part from hair line to the glabella (or eyebrow)

Middle part from glabella to the base of the nose

The lower part from the base of the nose to the chin which is subdivided into two parts, the upper lip forms one-third of it and the lower lip and the chin two-thirds of it



Incisal lengths (incisal edge positions

- ***Is the most important determinant in smile creation because it serves as a reference point to decide the proper tooth proportion and gingival levels.***

- ***Degree of tooth display:***

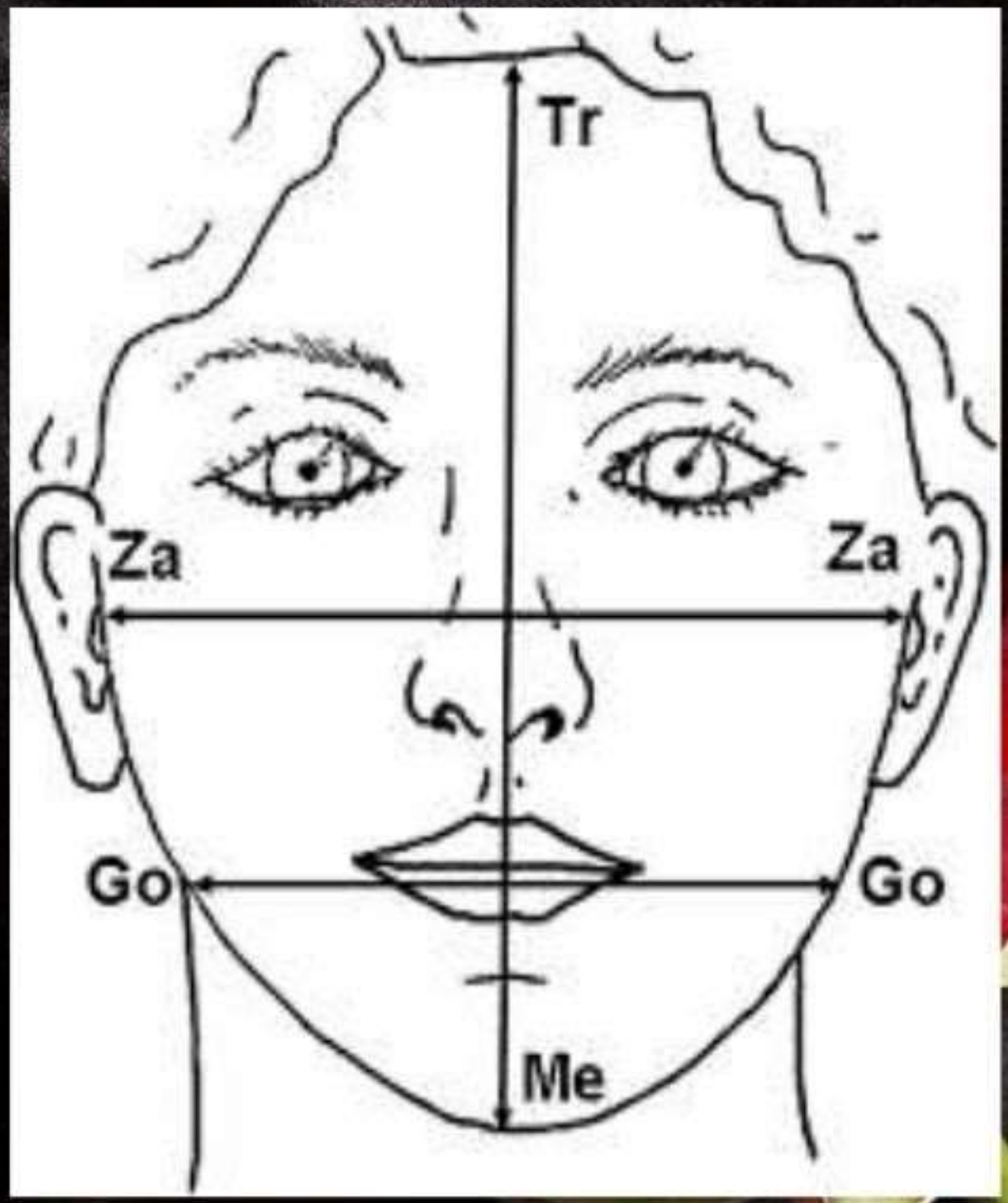
a. *2 mm of incisor edge show at rest*

b. *about 2 mm of gingival show When smiling*

vertical evaluation

- Symmetry :

1. **Bizygomatic:** between zygion points the most lateral point of the zygomatic arch.
2. **Bigonial** : width of lower third

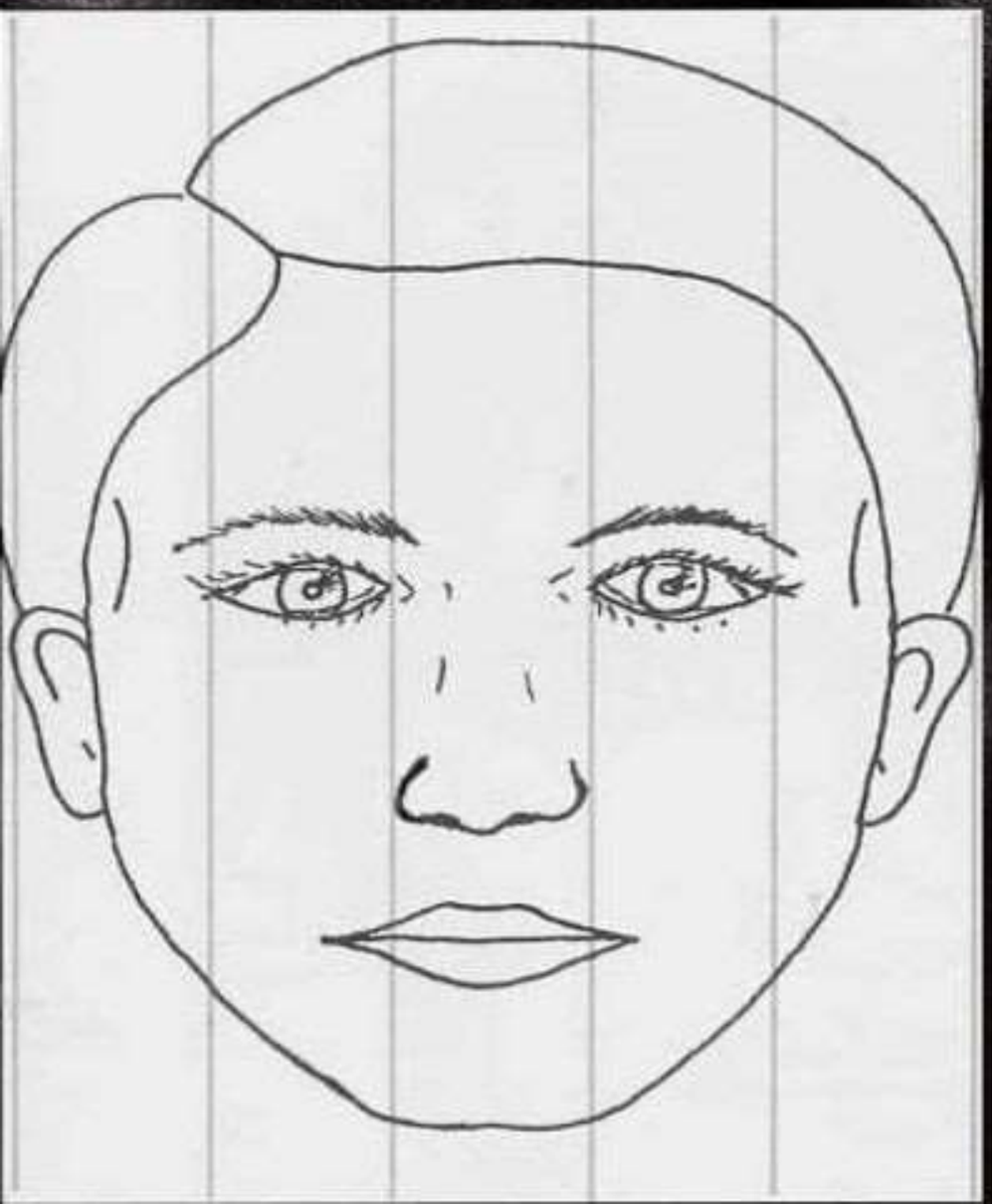


- High to width proportion are 1,3 : 1 for female and 1,35 : 1 for males

- Bigonial width should be 30% less than bizygomatic width

transverse evaluation

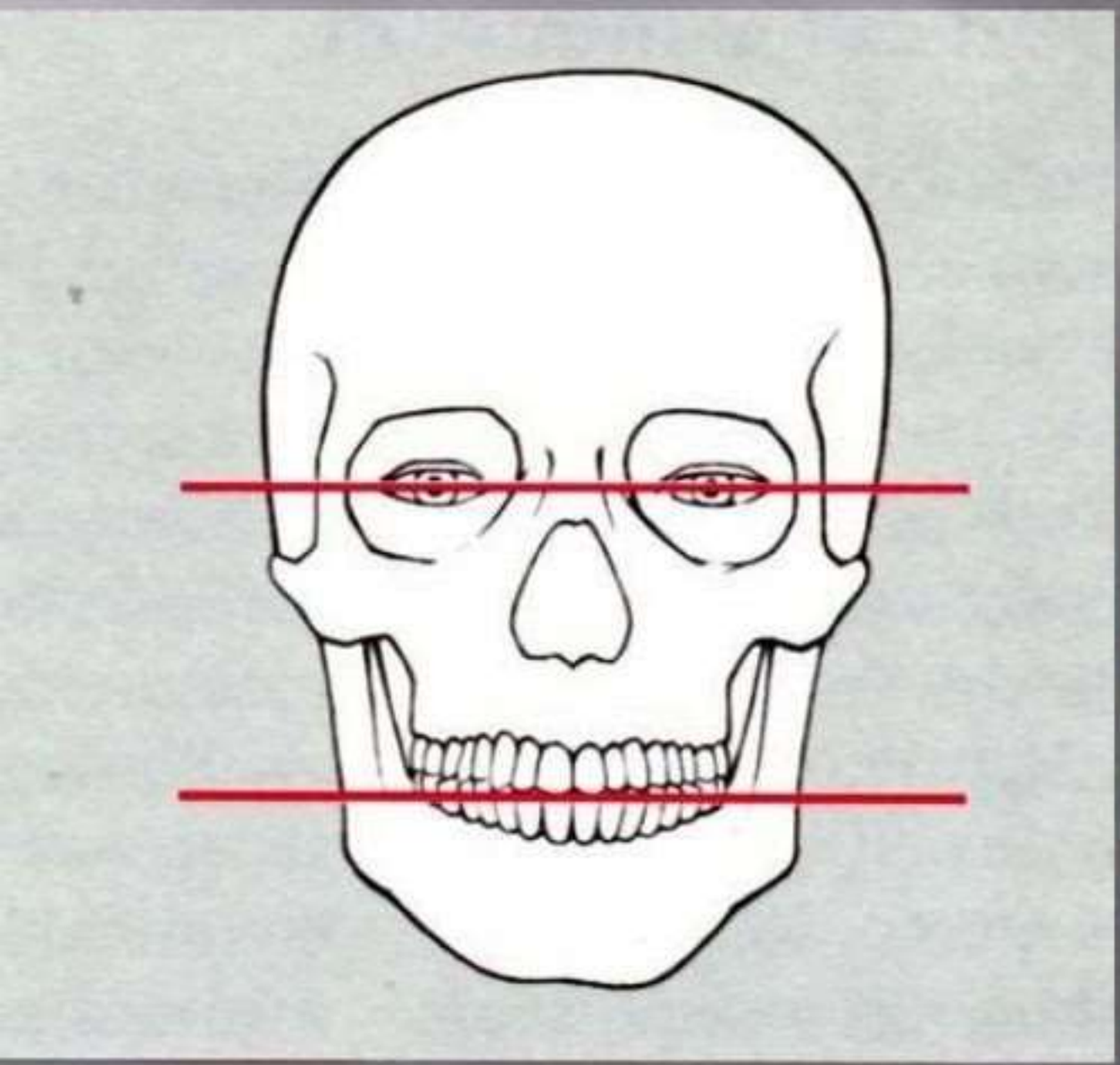
1. Role of fifth



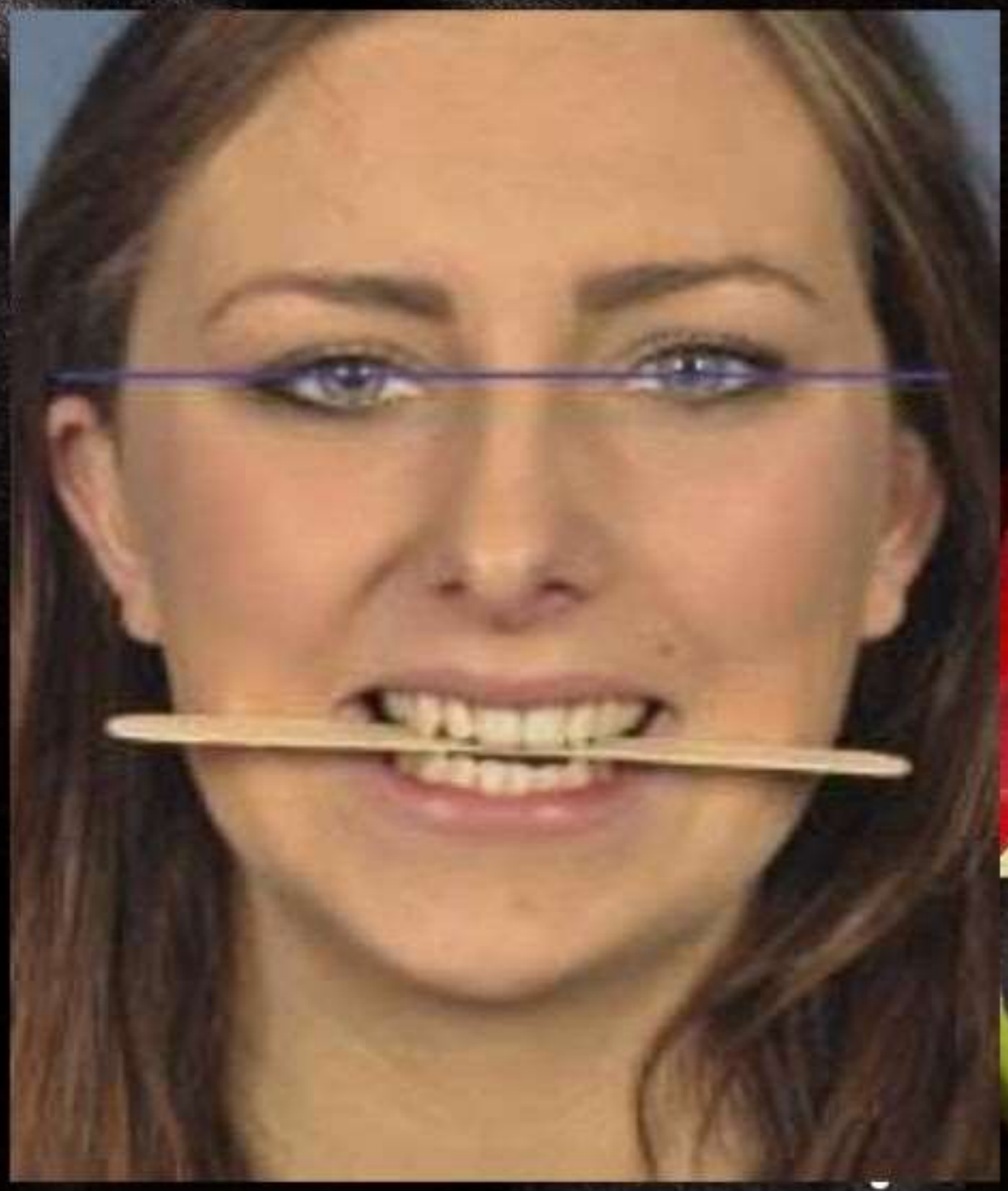
2.intercanthal
interpapilary distance

Anterior occlusal plane :

Parallel to interpupillary line .



Cant occlusion



Upper third evaluation

- Shape and symmetry: the temporal areas, frontal areas, eyebrows, and supraorbital rims

- abnormality in this area often associated with craniofacial syndromes, these areas usually with normal limits in individuals with dentofacial deformaties.

Middle third evaluation

. *Eyes and orbits:* intercathal and inertpupillary distance.

- The vertical symmetry of inner and outer canthi of both eyes,(a true horizontal line will bisect the inner and outer canthi).

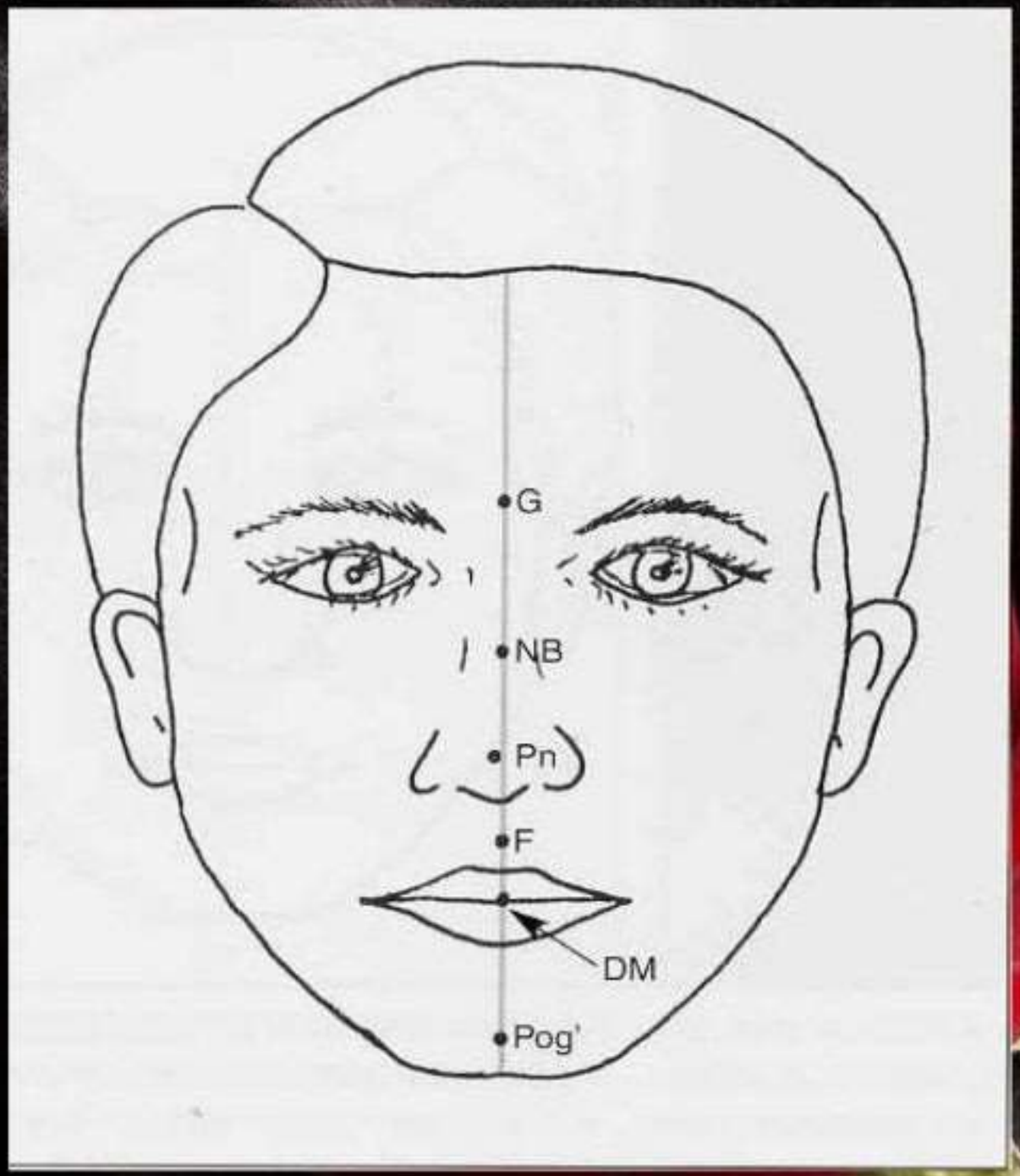
- The eyelids examination (ptosis, entropion , ectropion)

Nose:

the symmetry of the nose,

Glabella, dorsum, tip, alar base.

Proportion of alar base width to the nasal length (N-Prn) (0.60).



Lower third evaluation

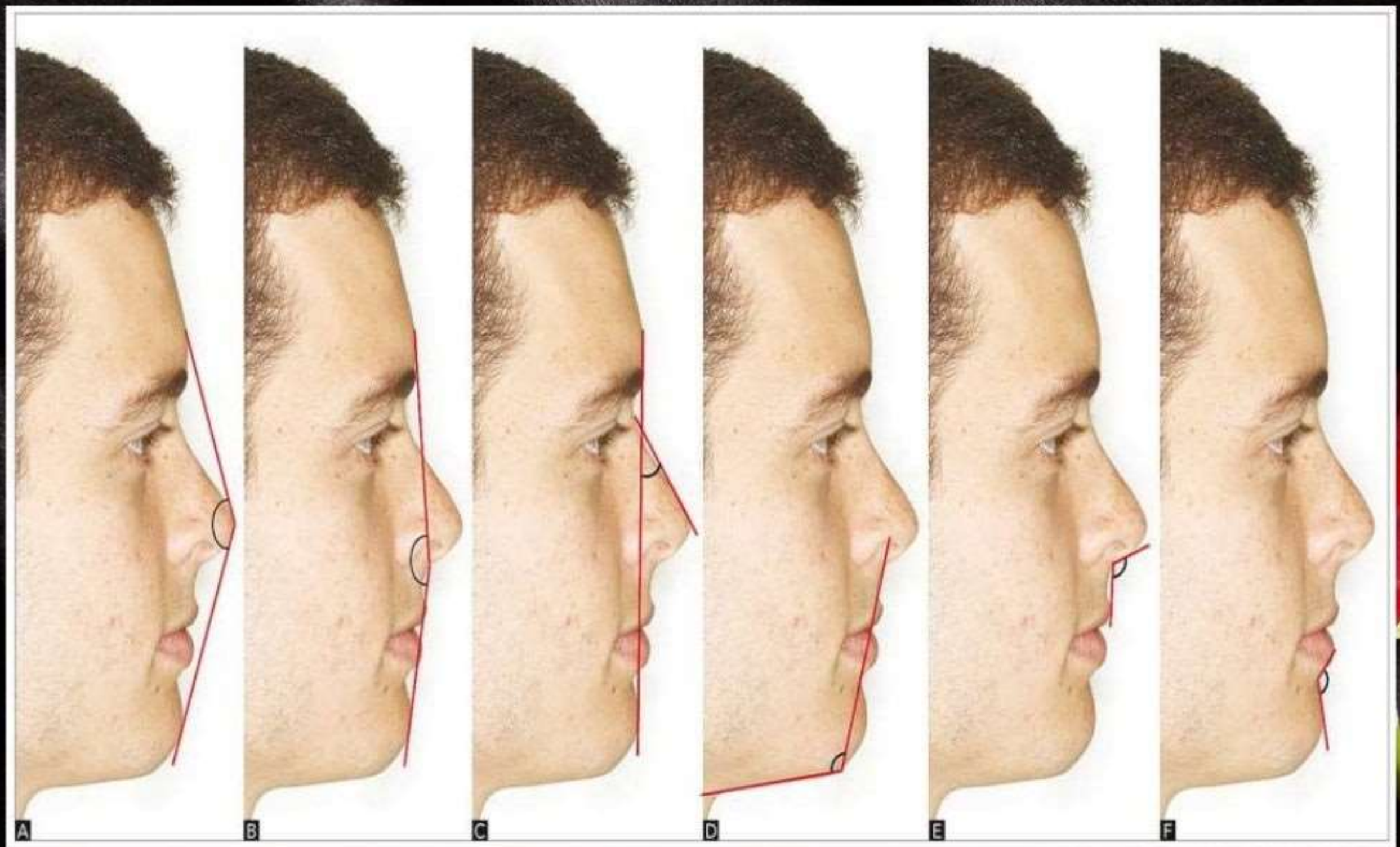
.Balance: the upper lip 1/3 of lower lip.

.Lips:

symmetry of the lips at rest and at smiling asymmetry exists in

1. Intrinsic lip deformity (patients with cleft) .
2. Facial nerve dysfunction.
3. An underlying dental-skeletal asymmetry.

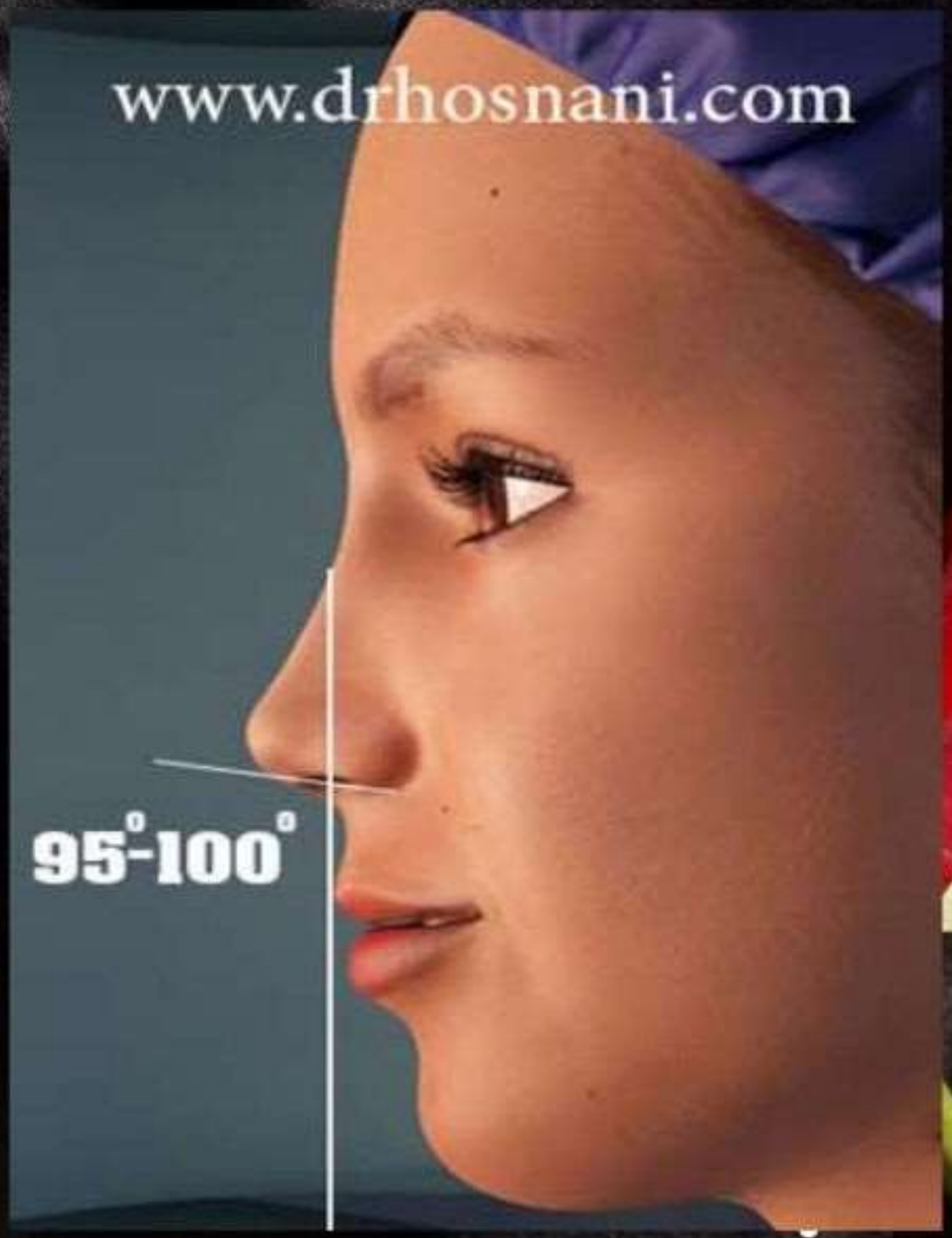
Profile assessment



Profil view

Nasolabial angle

- should be 90 -+ 10 degree
- It guid the upper lip support by the maxillary incisors
- Influenced by decrease in vertical maxillary dimention
- Increased in C II
- Decreased in CIII
-



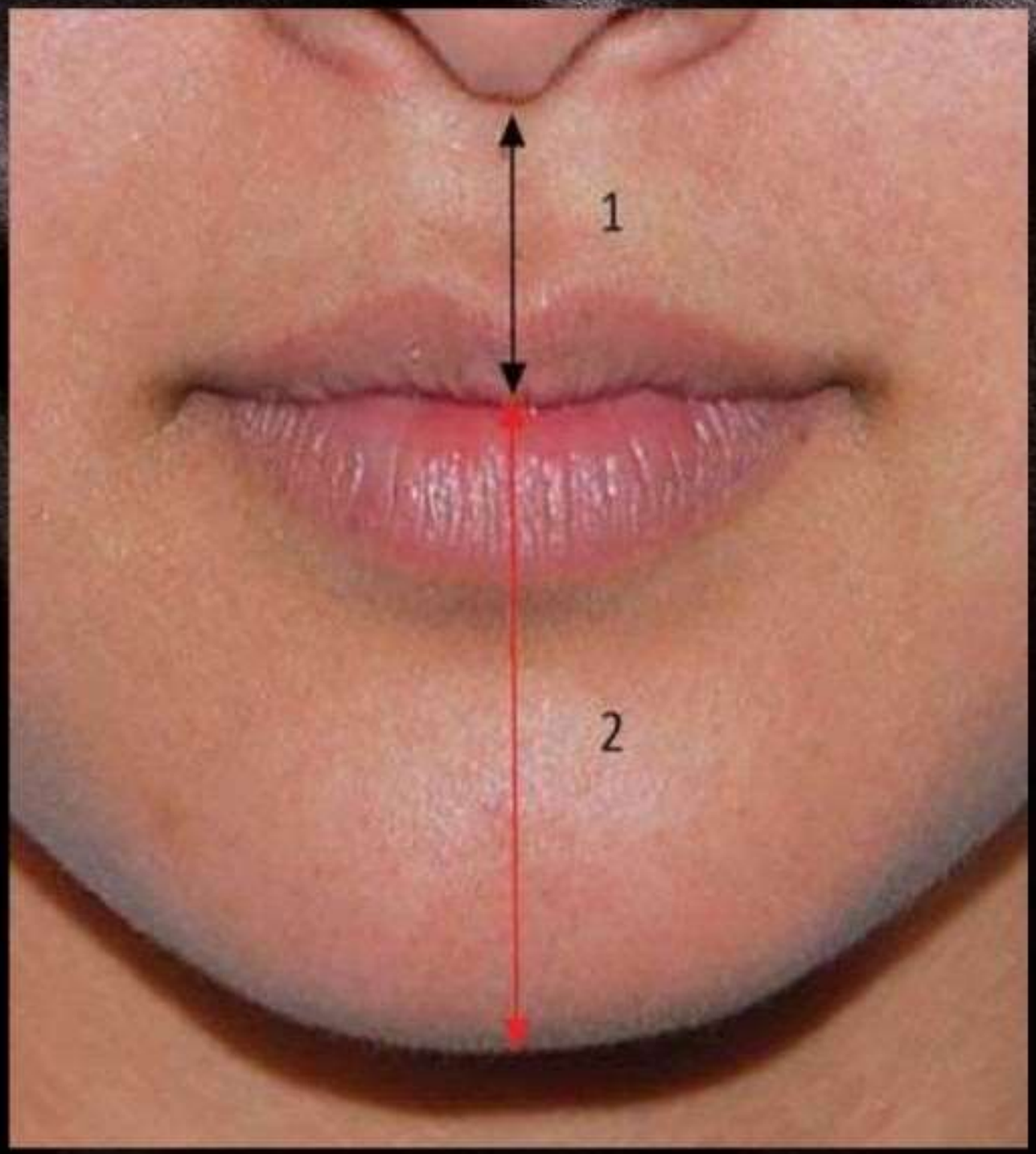
Submental and neck examination

In esthetic examination can be divided to

1. Mandibular angle definition.
2. Neck-chin angle(110).
3. Neck-chin length. The distance from pogonion to the neck- chin angle (42 ± 6mm)

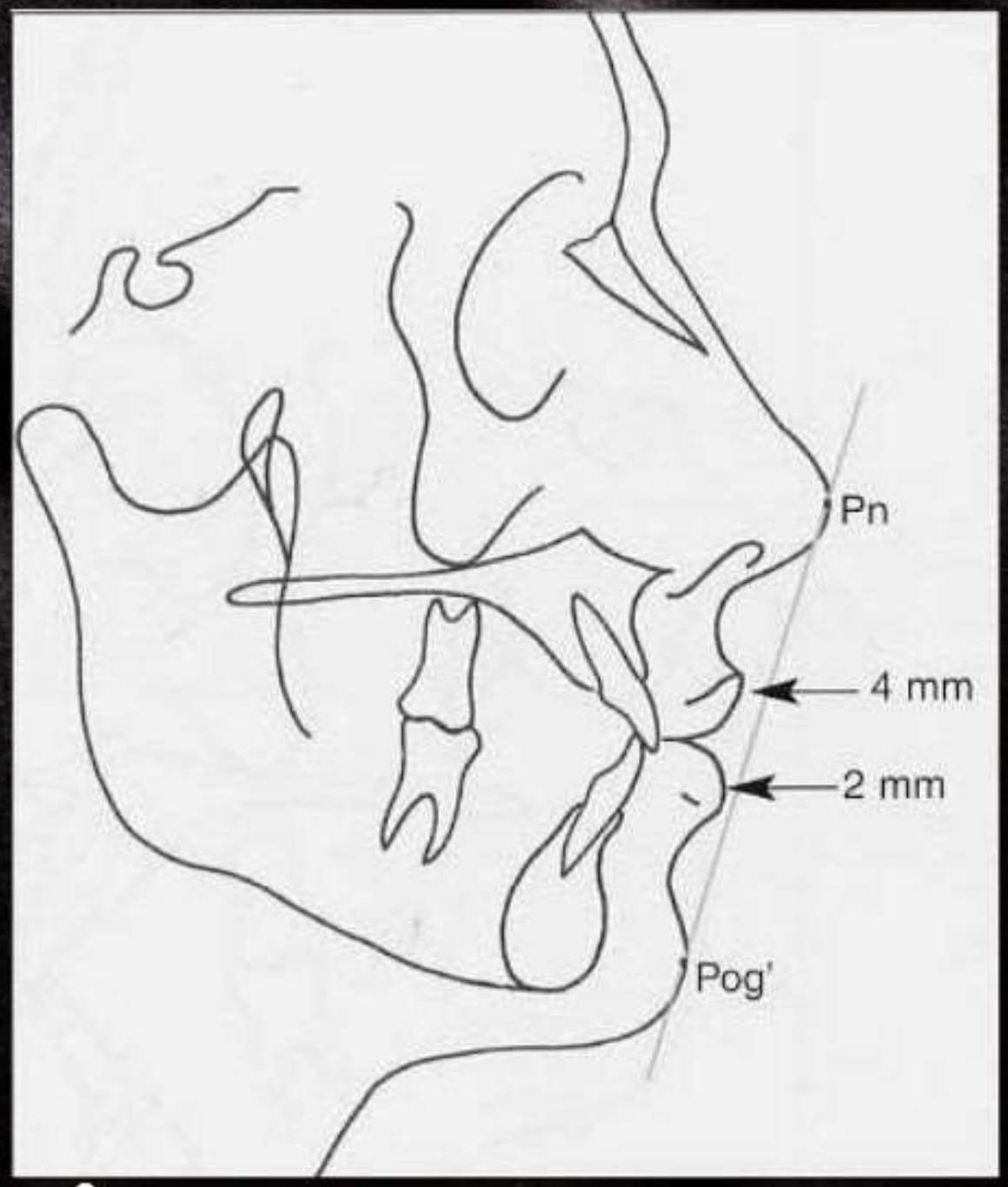
- Identify The posterior and inferior border of mandible.
- The parotid hypertrophy.
- Skin laxity, lipomatosis.

Upper lip length

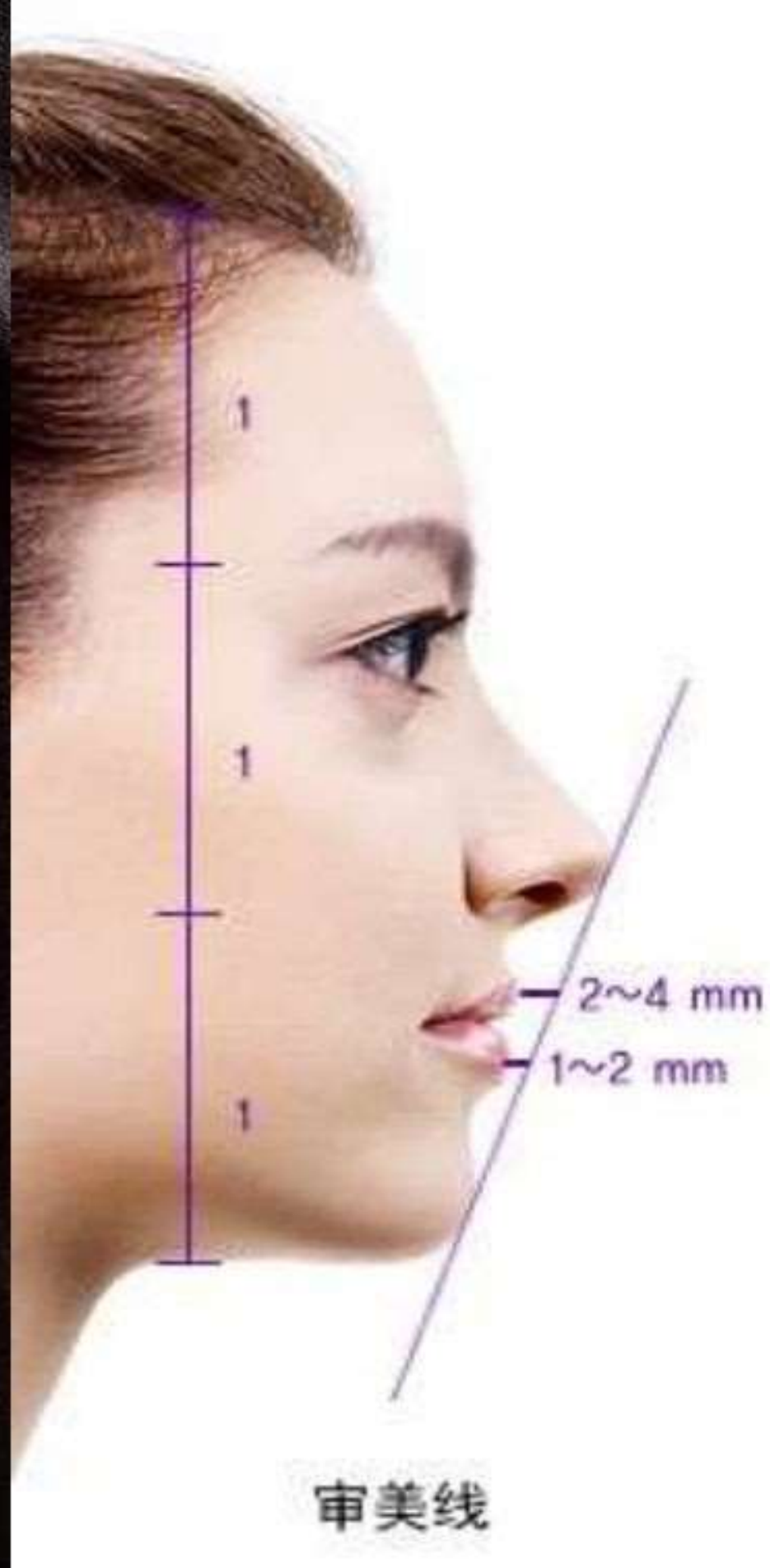


- Measured from subnasale to lower lip
- 22 -+2 mm for male and 20 -+2 for female
- It increase with age

Ricketts line

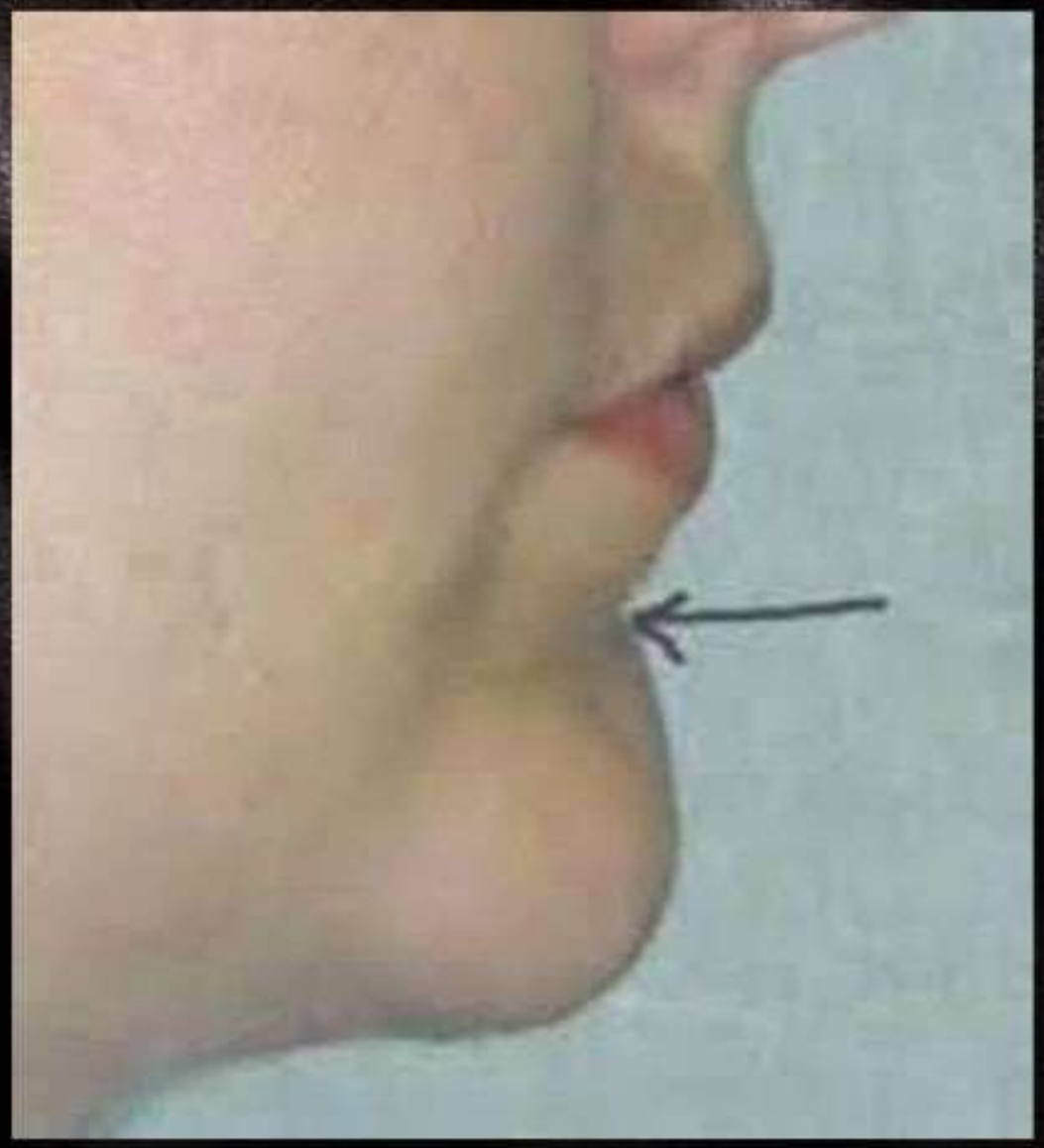


- Line drawen from nasal tip to soft tissue pogonion
- Upper lip are 4mm and lower lip 2 mm behind it
- Allow assessment of anteroposterior relationships of the lips



审美线

Labiomental angle



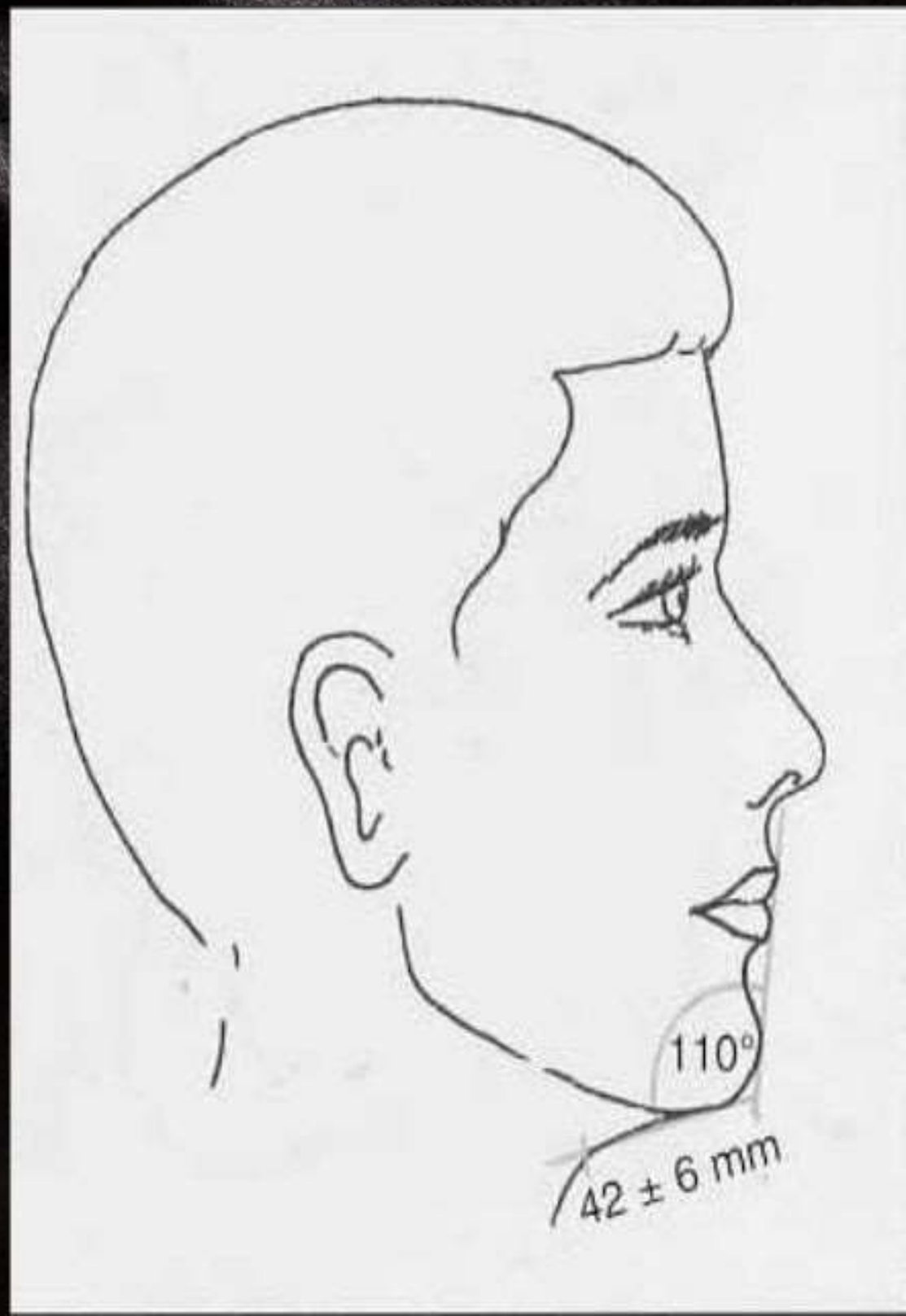
- 120 -+ 10 degree
- more Acute in class II occlusion
- More obtuse in class III occlusion


A

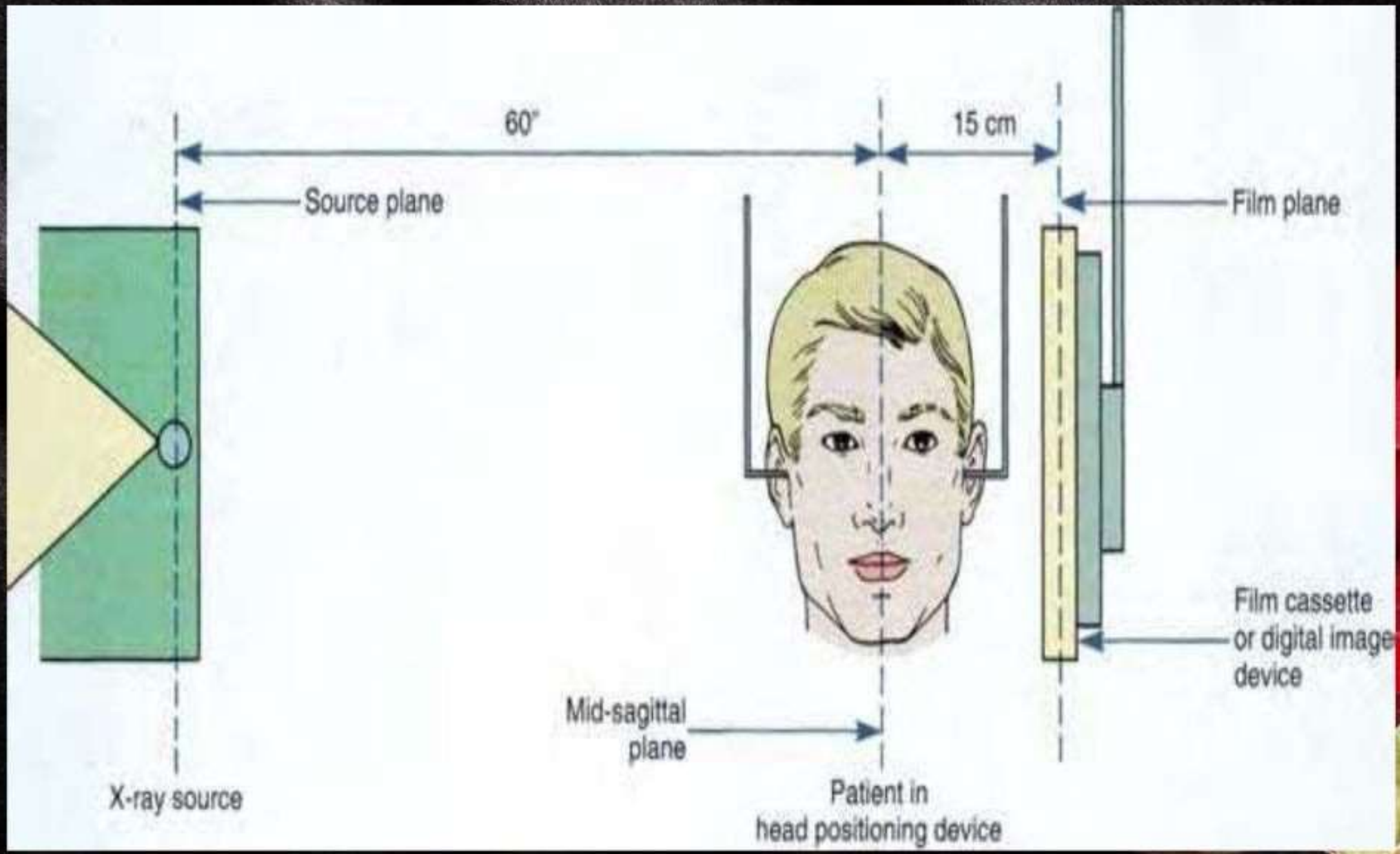

B

Lower Lip-Chin -Throat Angle

- between line drown from lower lip to Pog and submental line Normally 110°±8.
- Acute angle in CIII.
- Increase in CII.
- Distance from neck throat angle to Menton 42±6mm.
-



Lateral cephalometric analysis

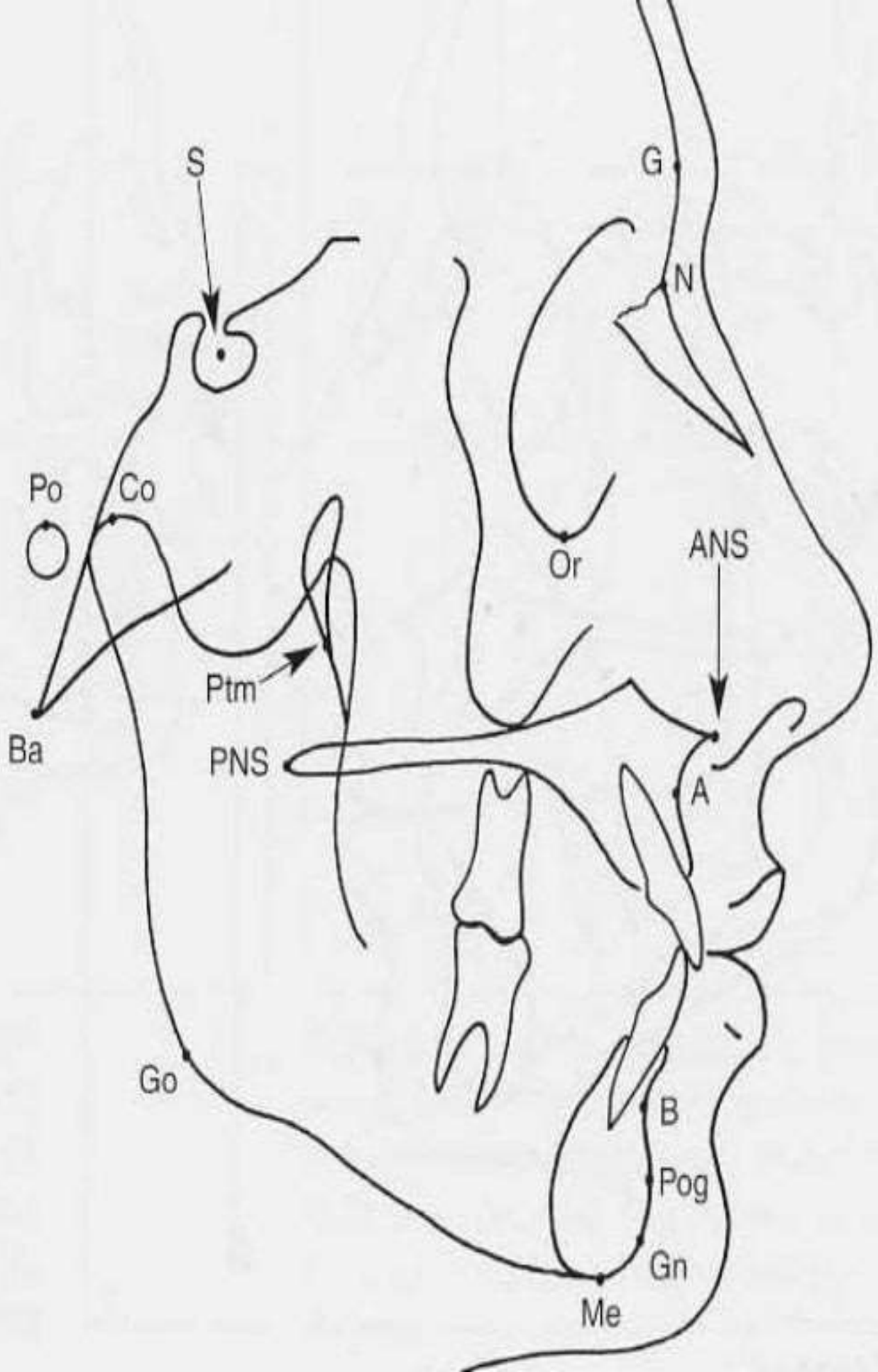


Benefit of cephalograph in orthognathic surgery

Cephalometric analysis helpful in establishing the relation of:

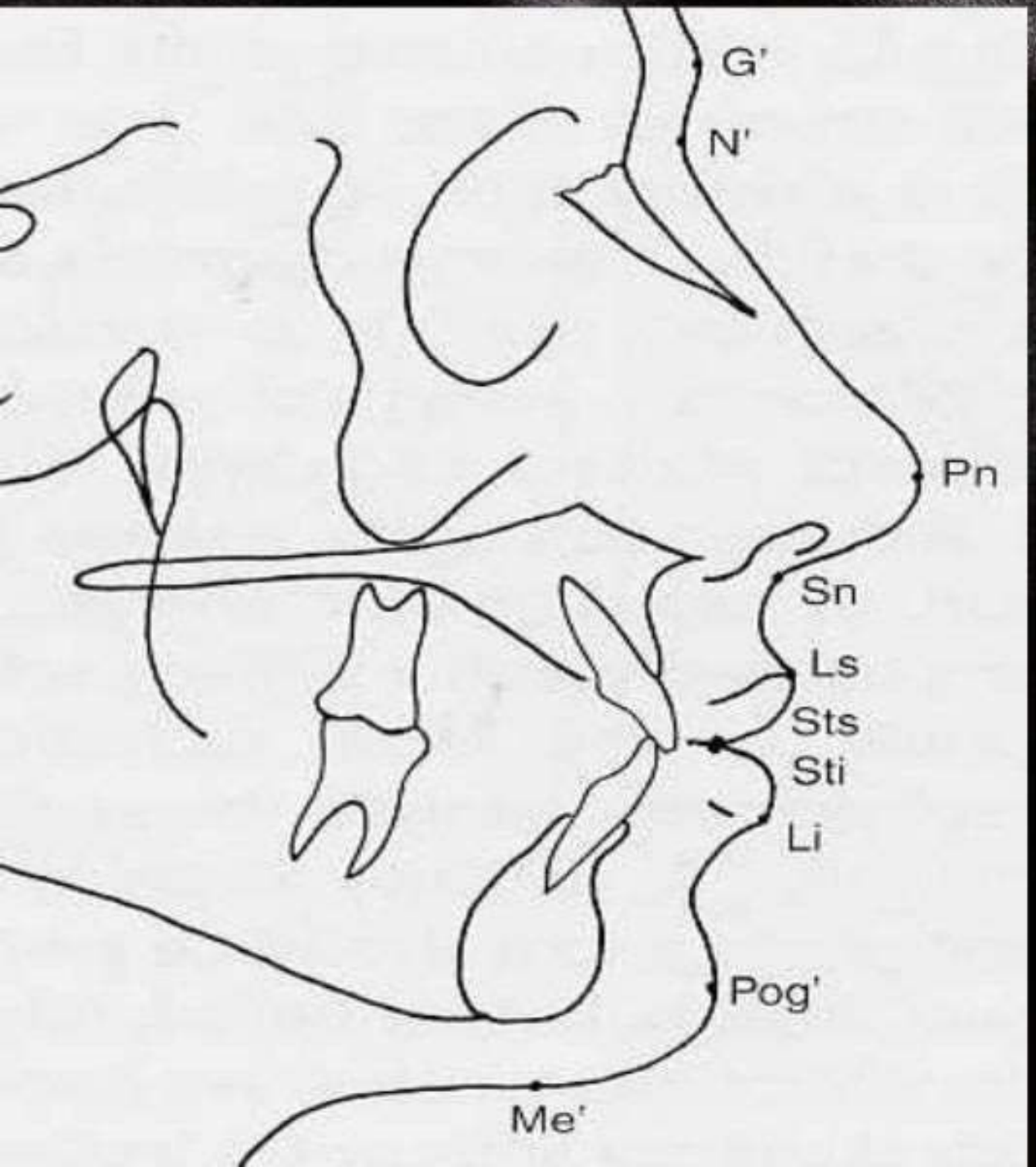
- The maxilla and mandible to the base of skull.
- The maxilla to mandible.
- The maxillary teeth to maxilla.
- The mandibular teeth to mandible.
- The upper incisors to lower incisors.

skeletal analysis



- S sella. G glabella
- N nasion .
- ANS.
- PNS.
- Point A.
- Point B.
- Me menton.
- Pg pogonion.
- Go gonion.
- Ar articulare.
- Co condylion.
- Or orbitale.
- Po porion.

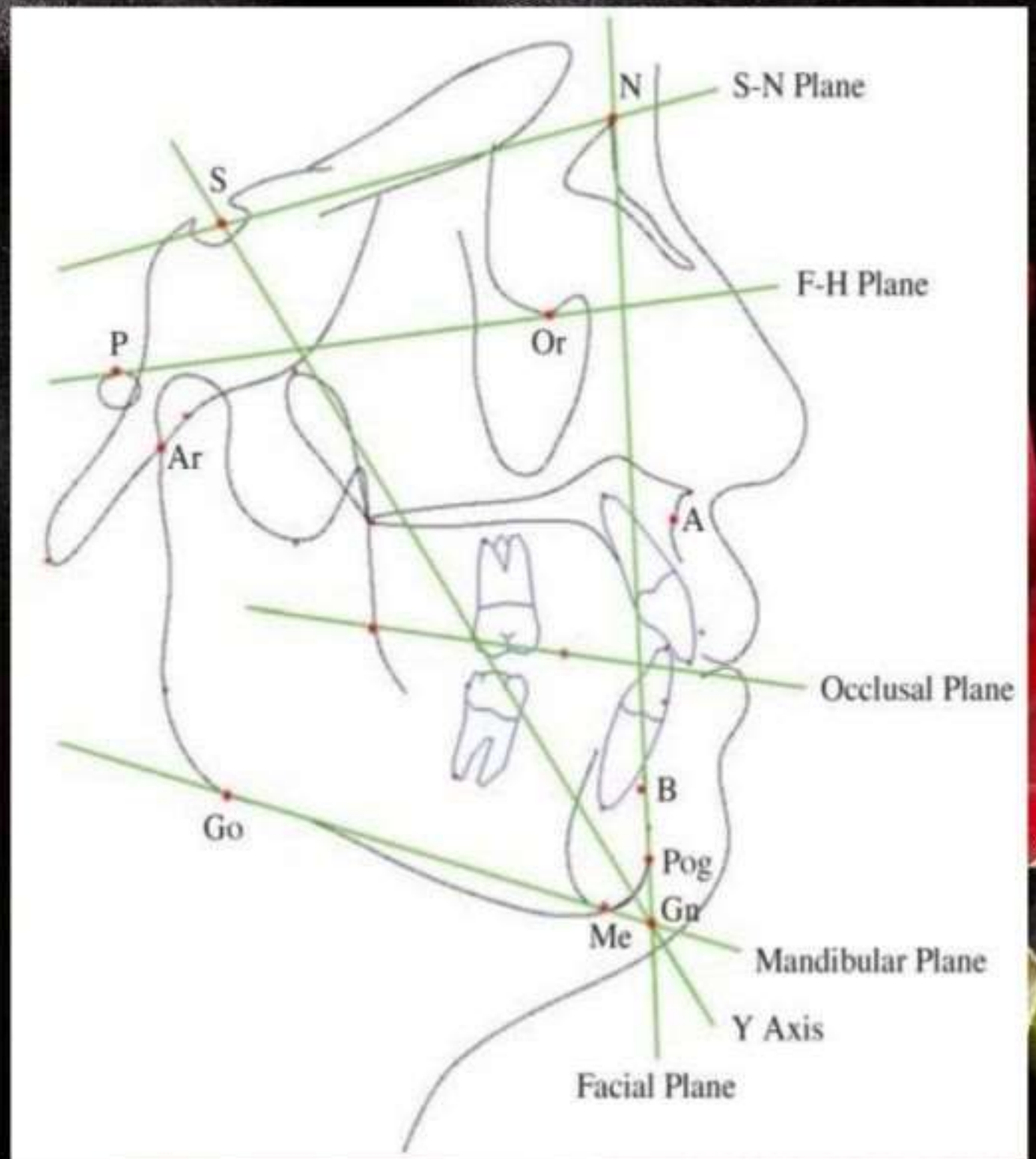
Soft tissue analysis



- Soft tissue glabella(G).
- Soft tissue nasion (N).
- Pronasale (Pn).
- Subnasale (Sn).
- Labrale superior (Ls).
- Labrale inferior (Li).
- Stomion superius(Sts).
- Stomion inferior(Sti).
- Soft tissue pogonion(Pog).
- Soft tissue menton(Me).

Skeletal planes

- Frankfort plane
- Anterior cranial base (SN)
- Occlusal plane
- Mandibular plane

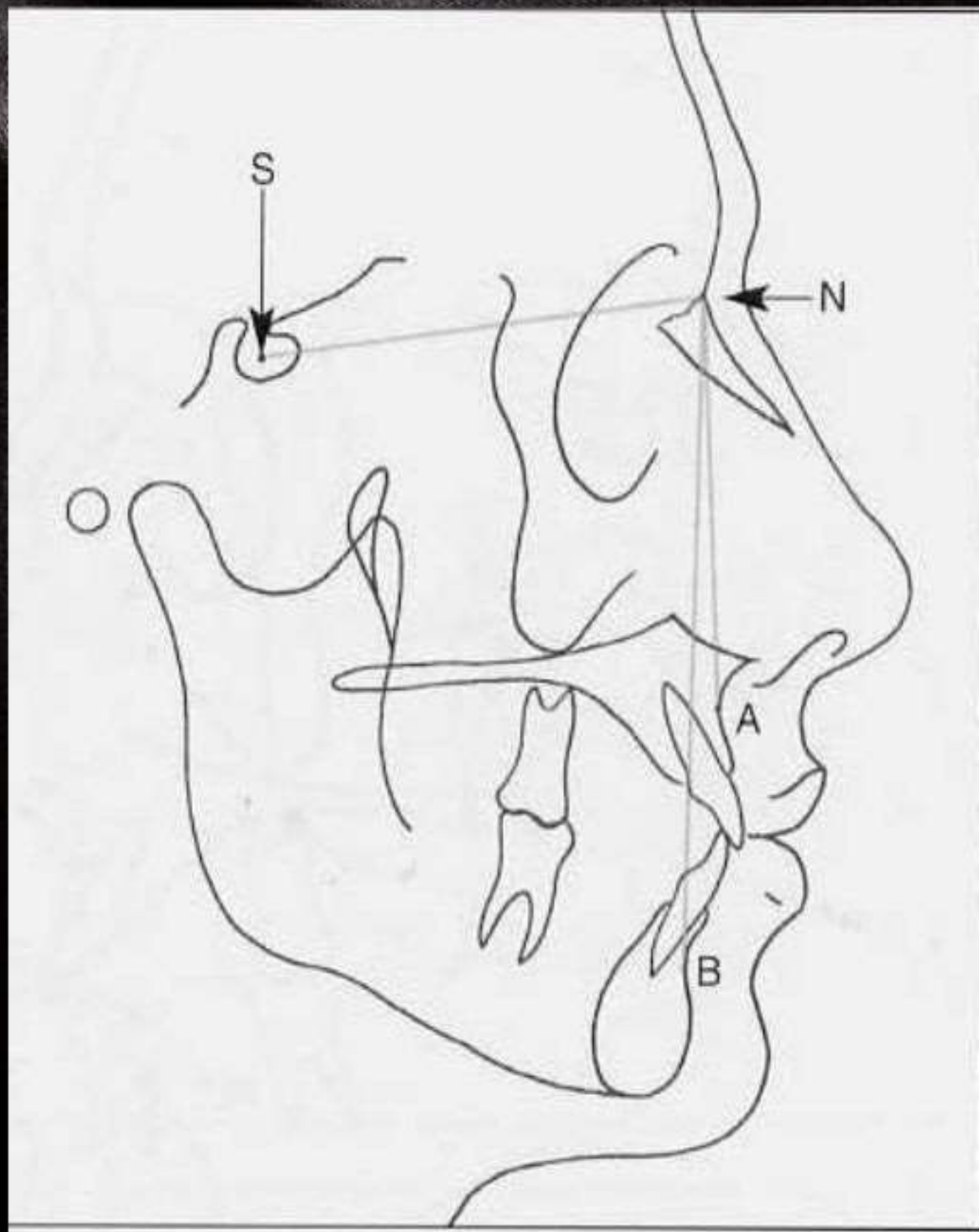


Mean angular skeletal cephalometric values

SNA	81°±3
SNB	78°±3
ANB	3°±2
SN/MxP	8°±3
SN/MP	35°±4
FPLOP	8°±4
NSAr	125°±5
SArGo	140°±6
ArGoMe	128°±7
MxP/MP	27°±4
UI/MxP	109°±6
UI/LI	130°±6
LI/MP	93°±6

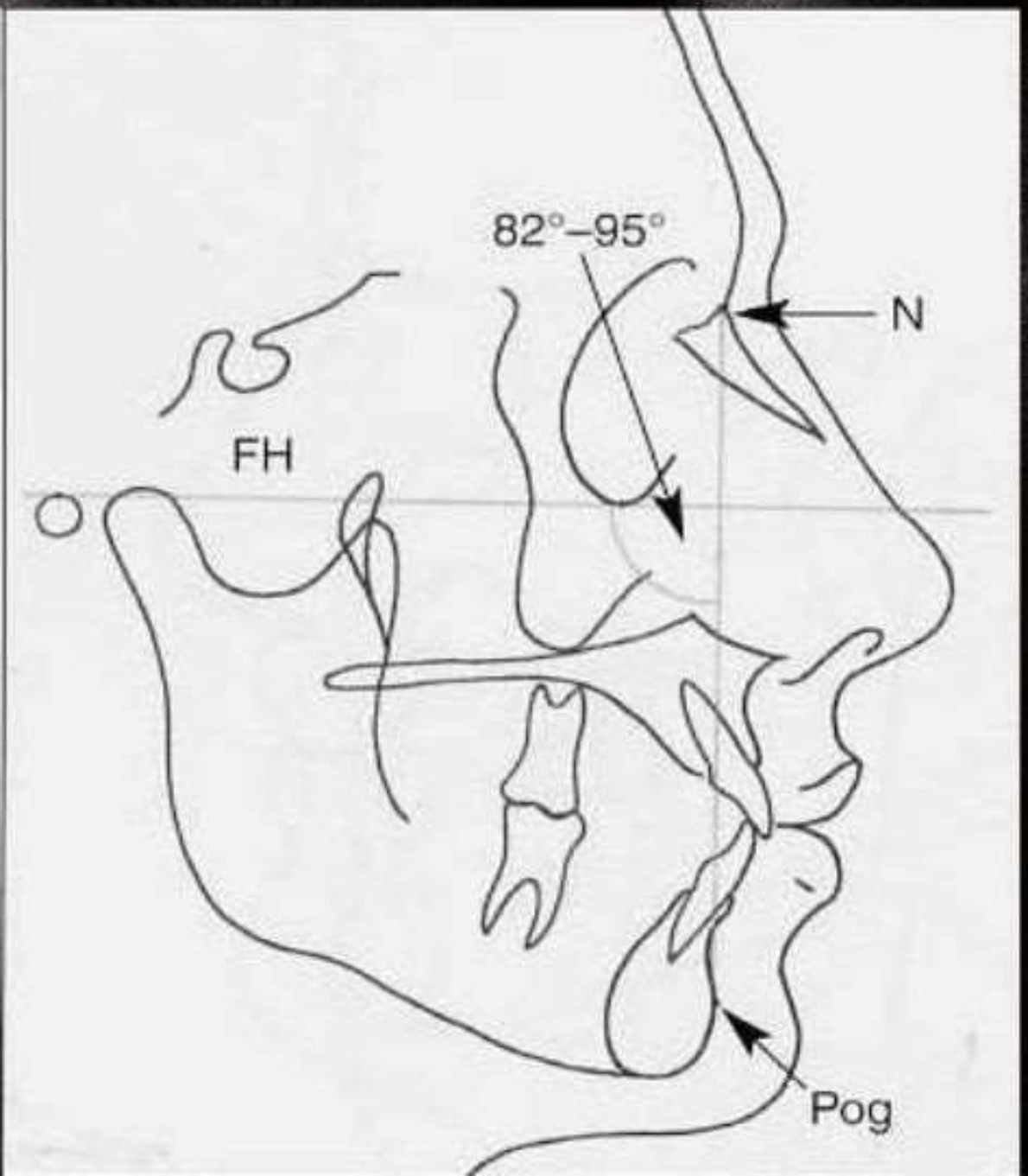
Skeletal anteroposterior relation ship

- SNA 81°± 3.
- SNB 78°± 3.
- ANB 3°± 2.



Facial angle(downs)

- Anteroposterior position of mandible to cranium base(n-pog).



Dental models analysis

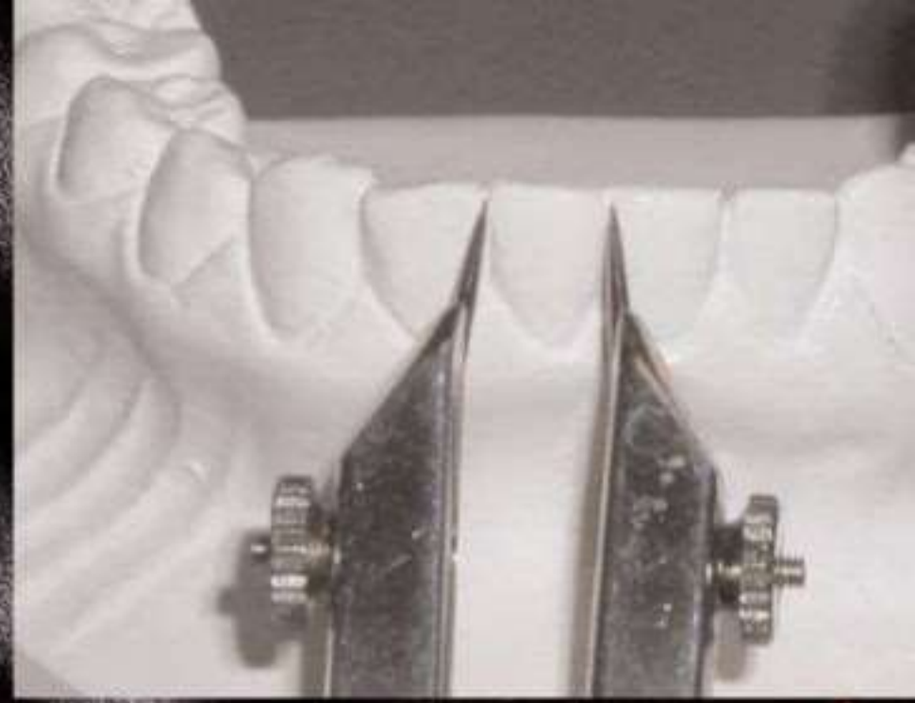
1. Tooth size analysis

2. Arch width analysis.

3. Curve of spee.

4. Curve of welson

5. Tooth arch symmetry.



Presurgical orthodontic treatment

Relieve of crowding

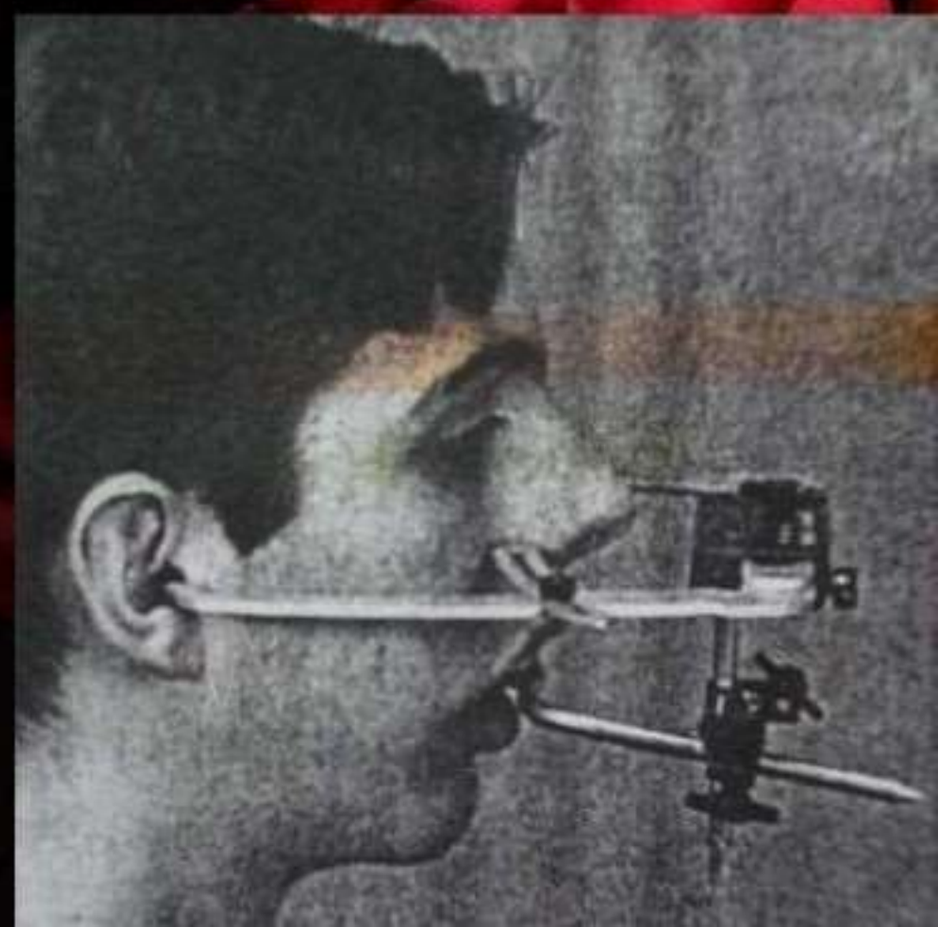
Level and align arches

Decompensate

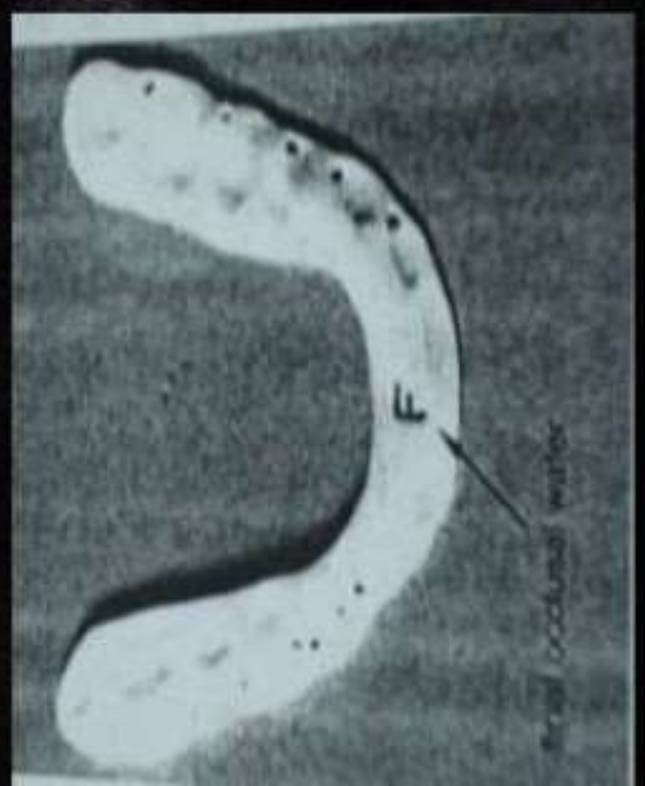
Achieve root divergence at surgical site

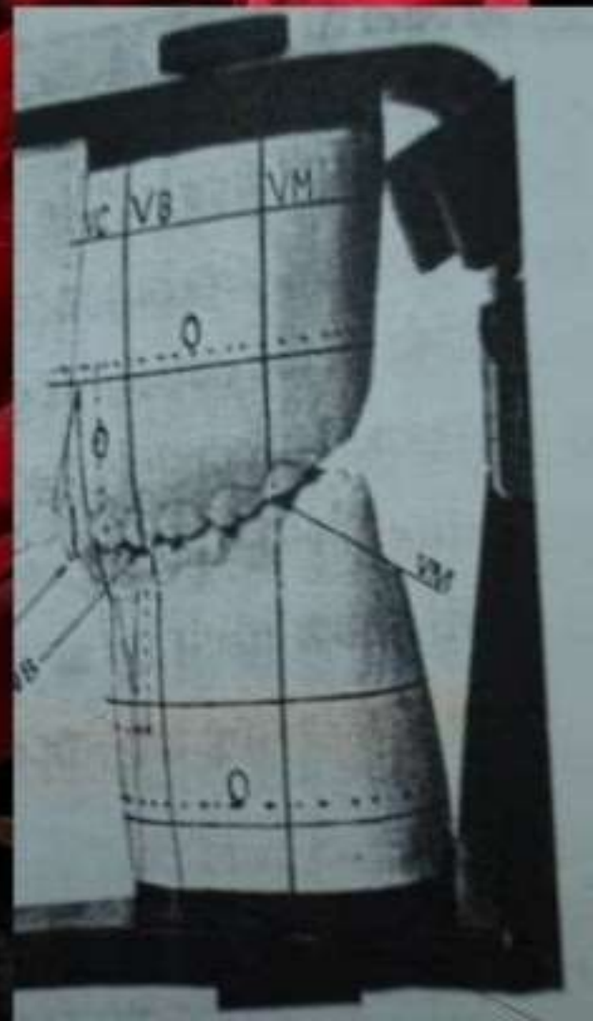
model surgery technique:

- Impressions
- Occlusal record
- Face bow registration.
- Face bow transfer to the articulator and mounting of maxillary cast.
- Mounting of mandibular cast



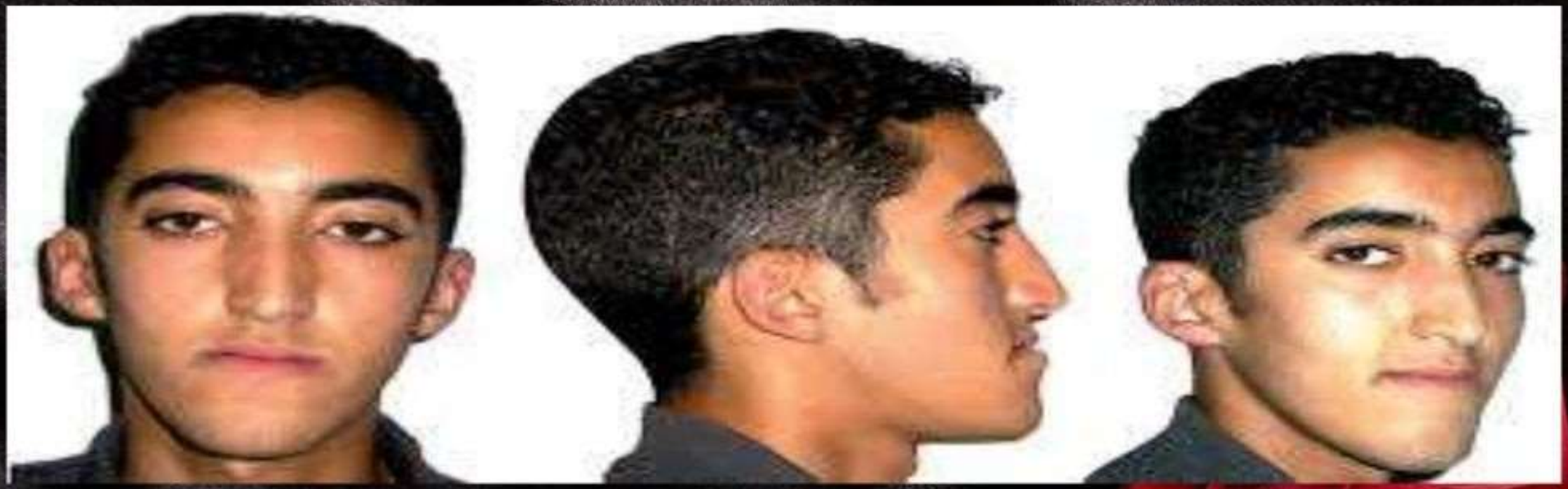
- Maxillary model surgery.
- Intermediate occlusal wafer.
- Mandible model surgery.
- Final occlusal wafer fabrication





Surgical treatment

Mandibular excess

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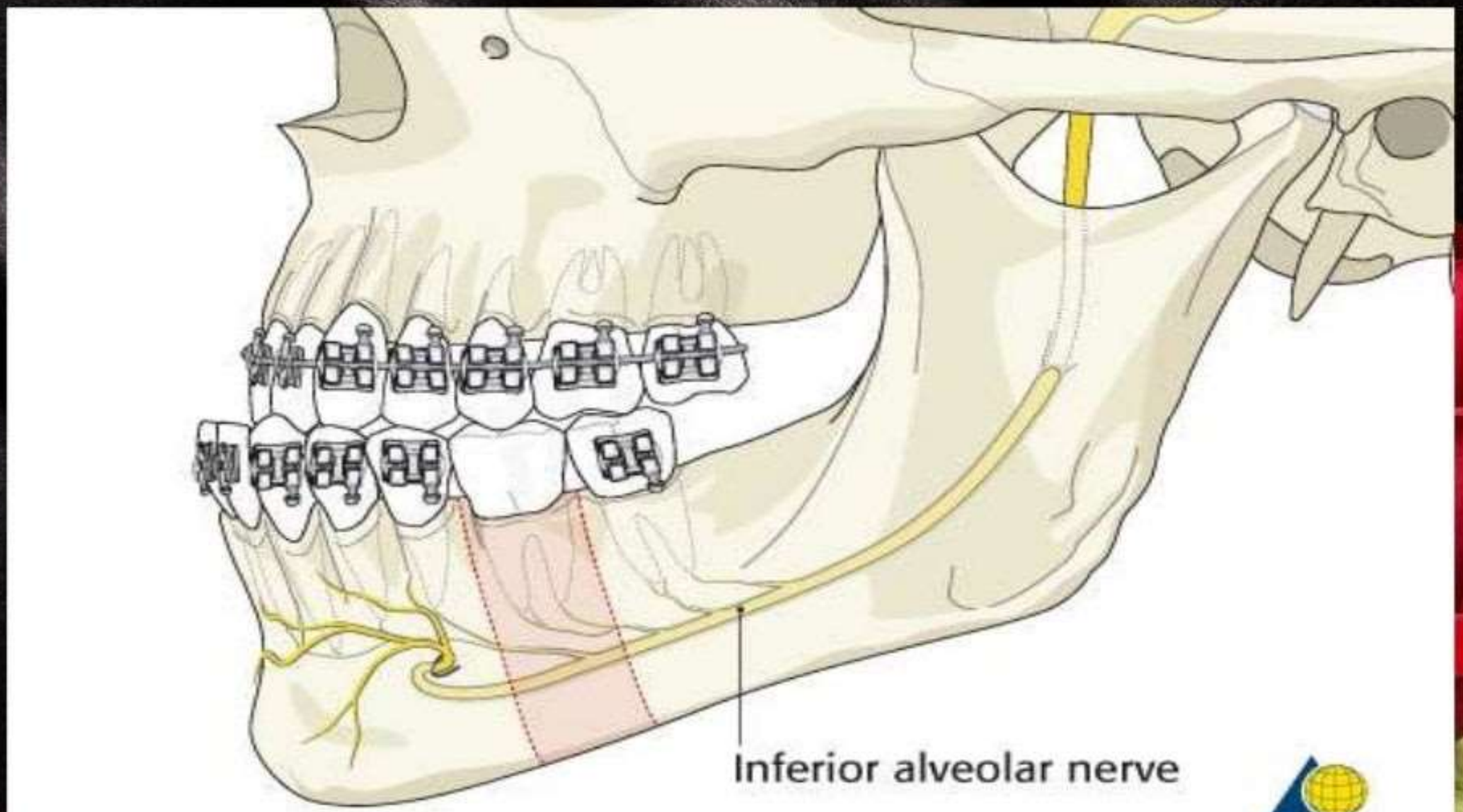
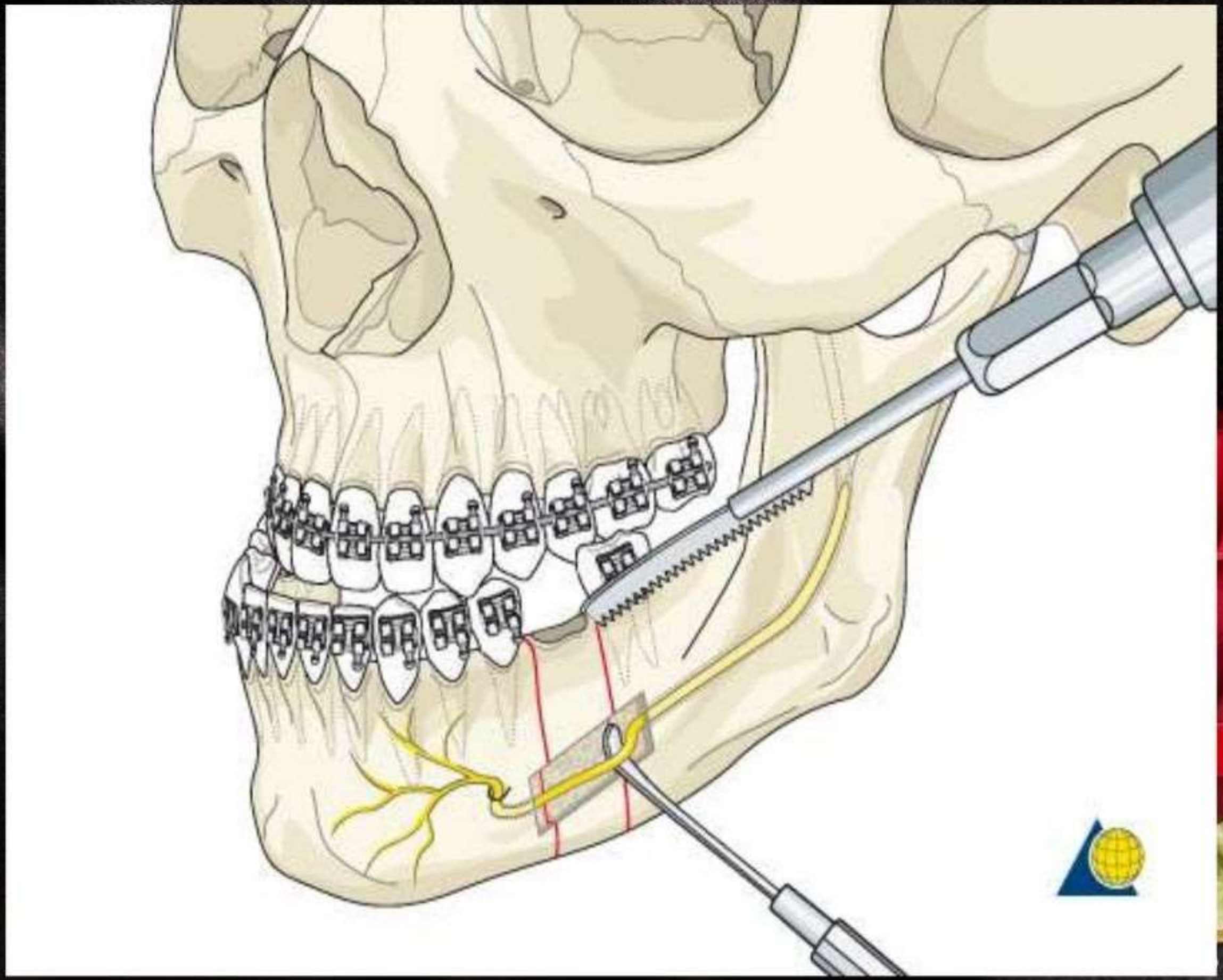
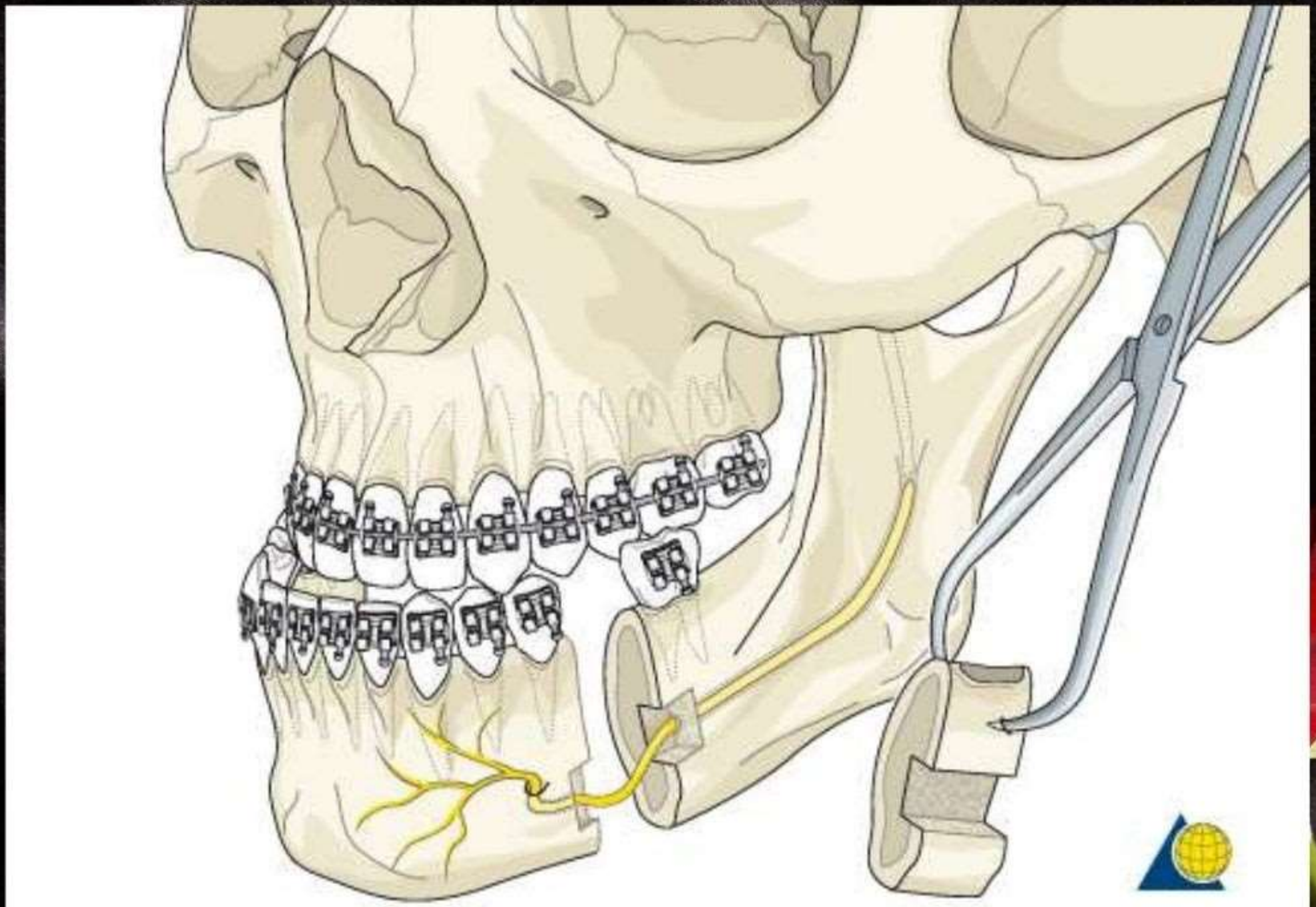
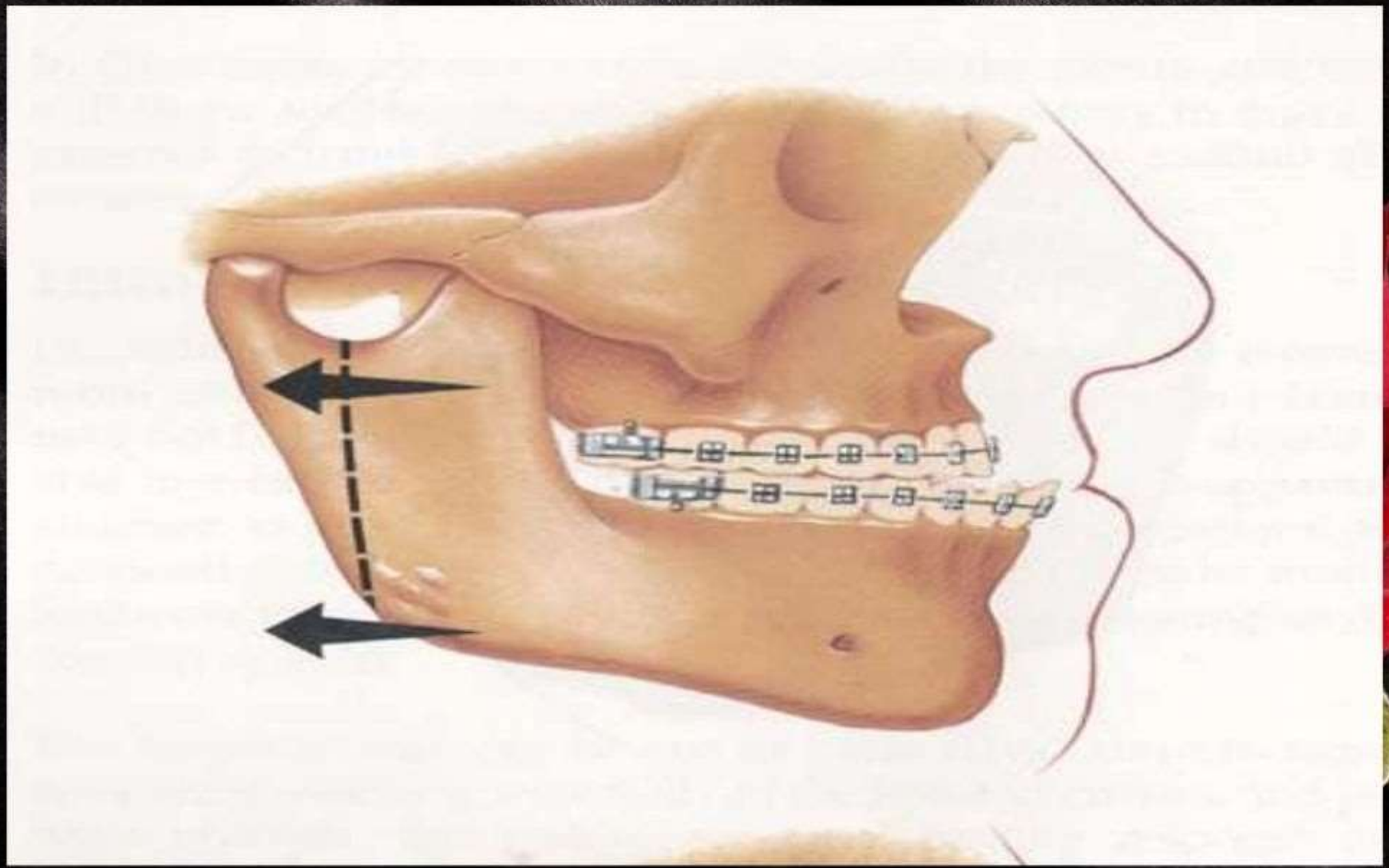
Body osteotomy



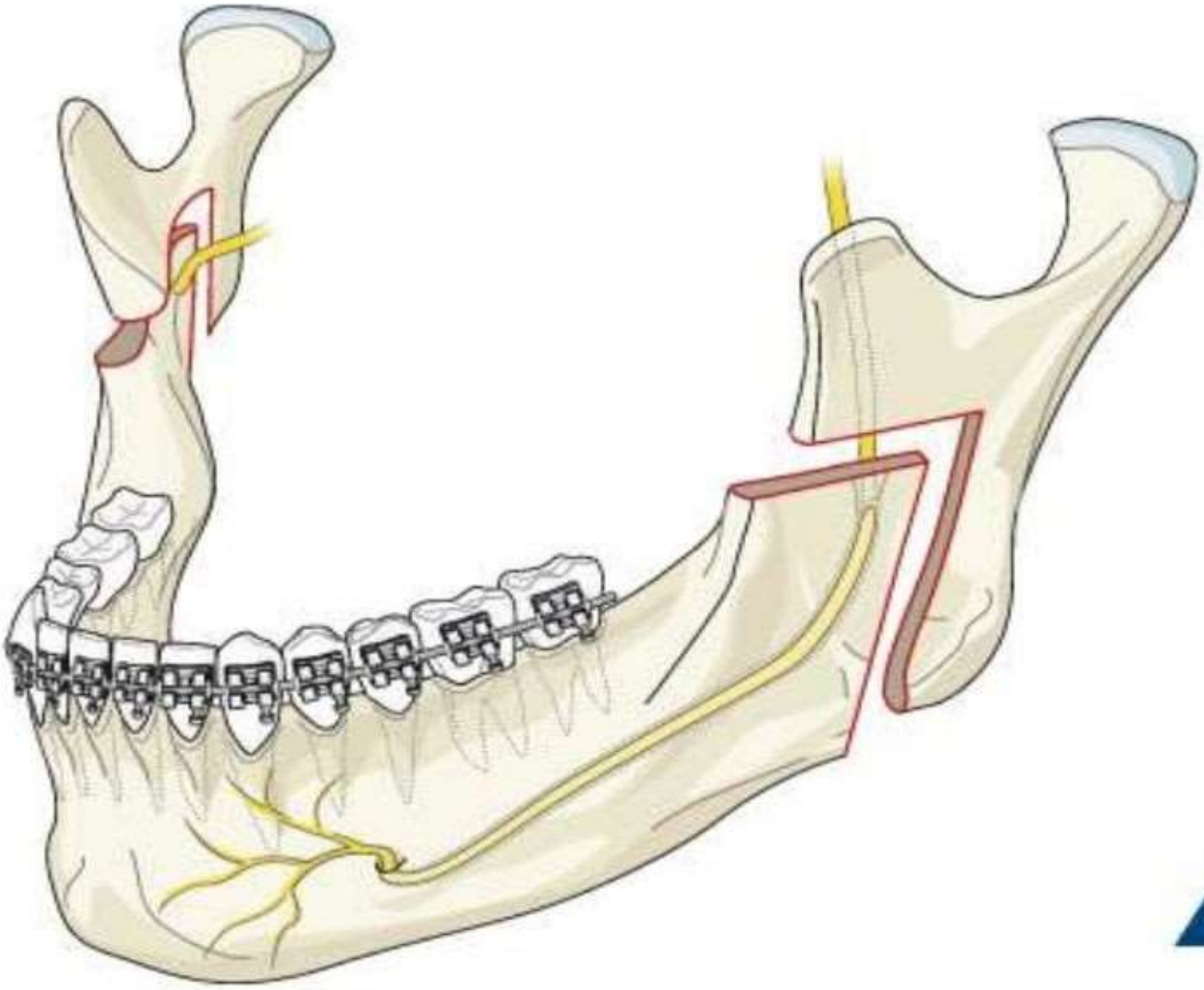




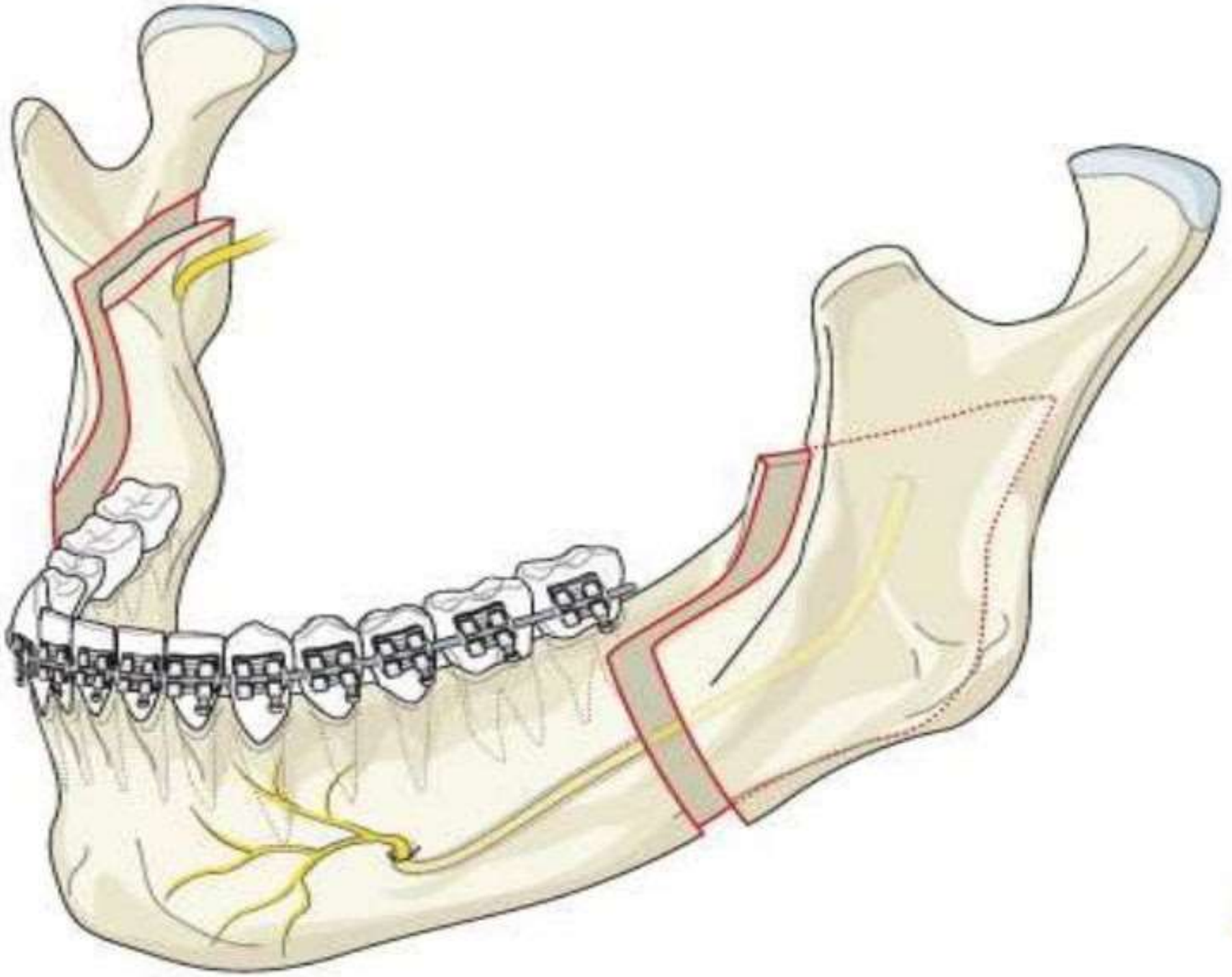
Subcondylar osteotomy

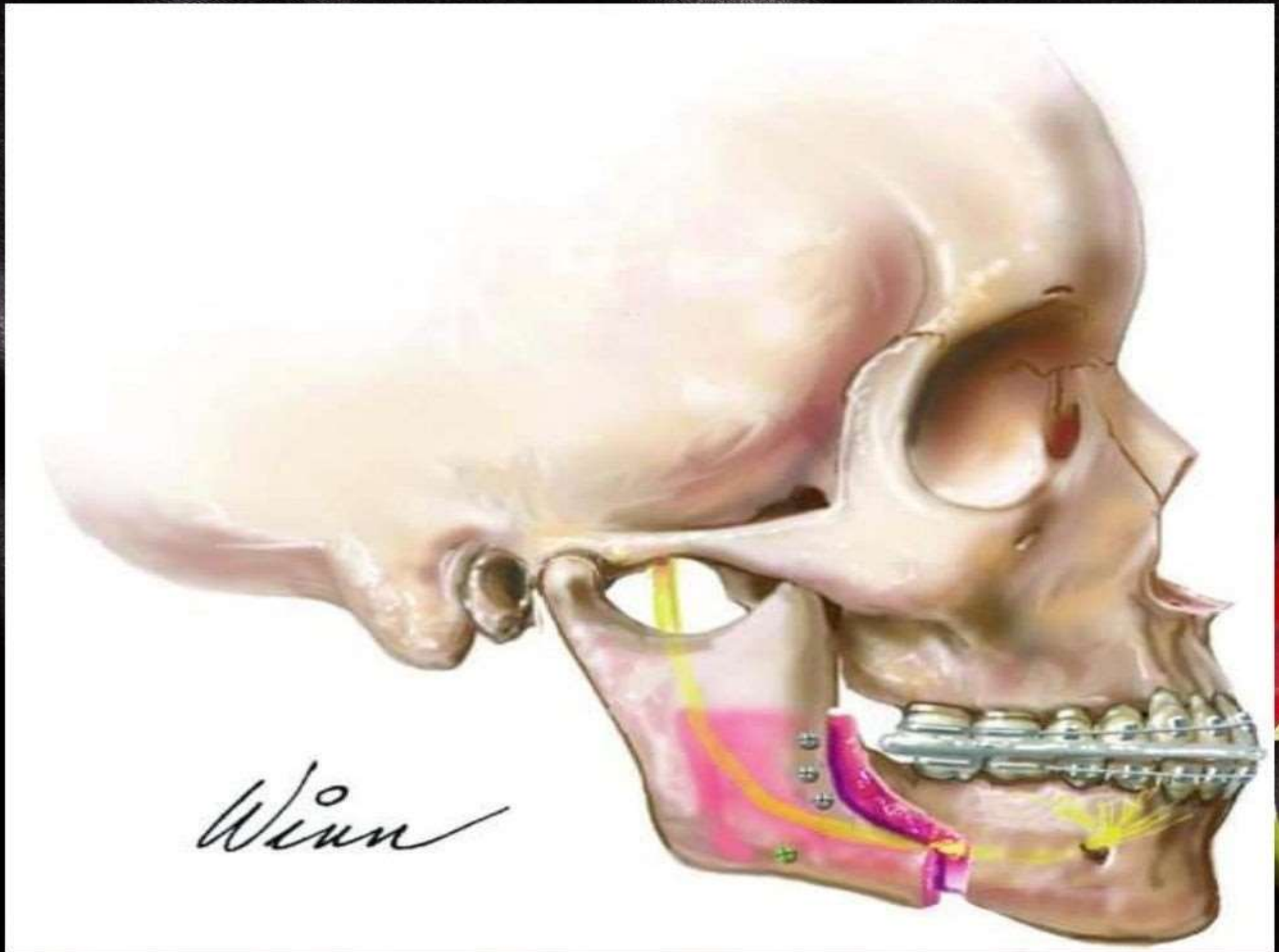


Inverted L osteotomy



Saggital split osteotomy



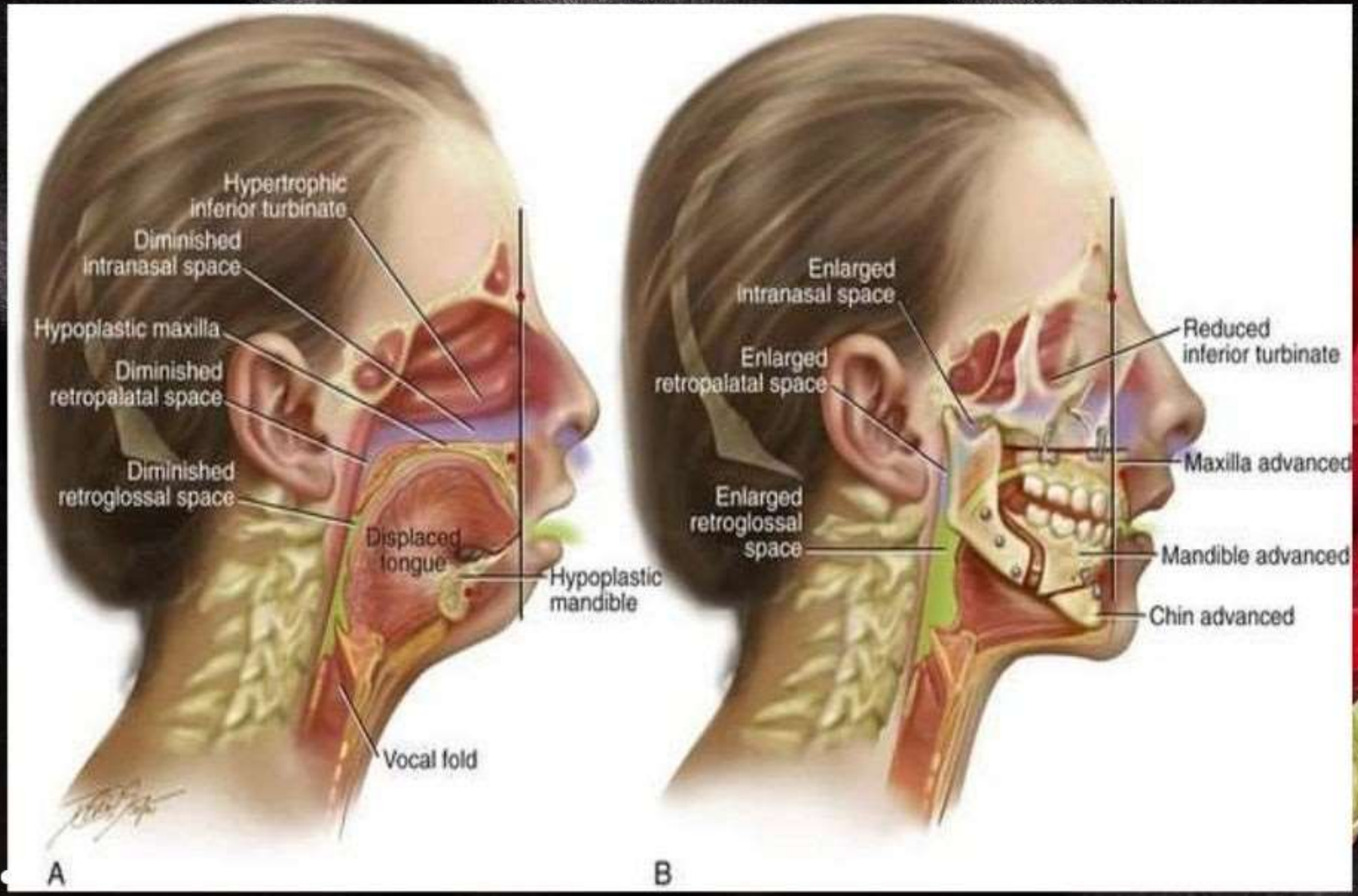


Mandibular deficiency


Before
Lips Together


After
Lips Together

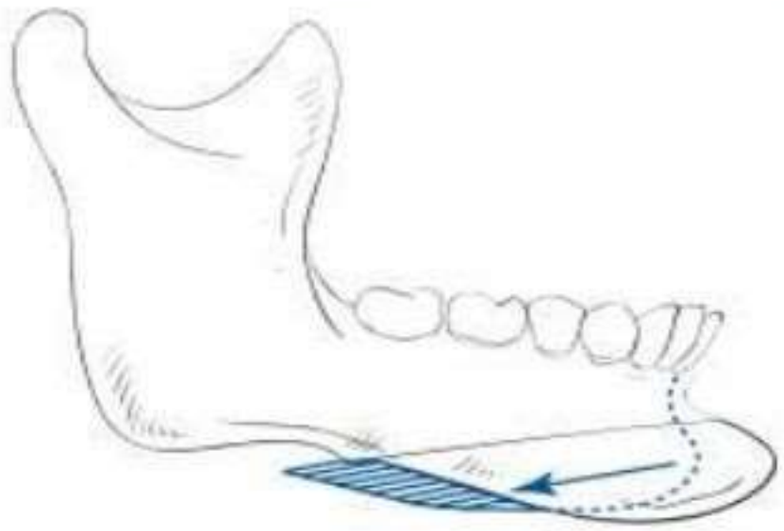
Saggital split osteotomy



Total subapical osteotomy

Genioplasty


Dolphin



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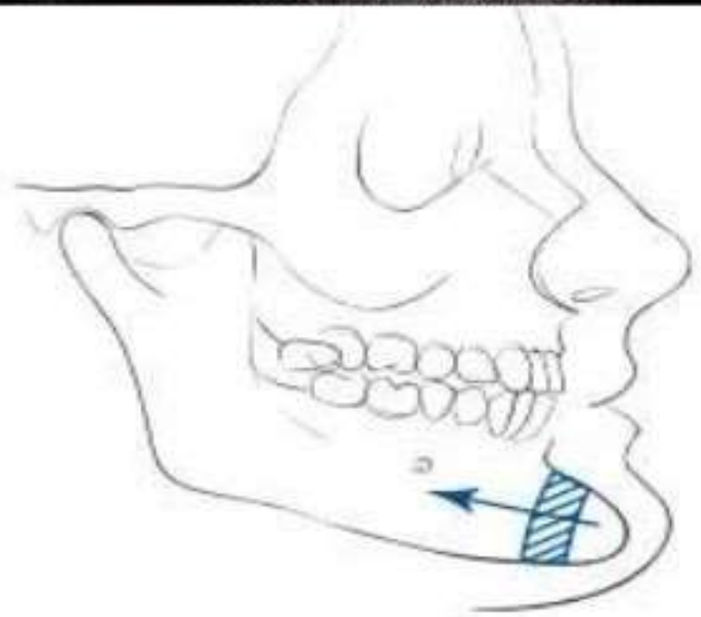

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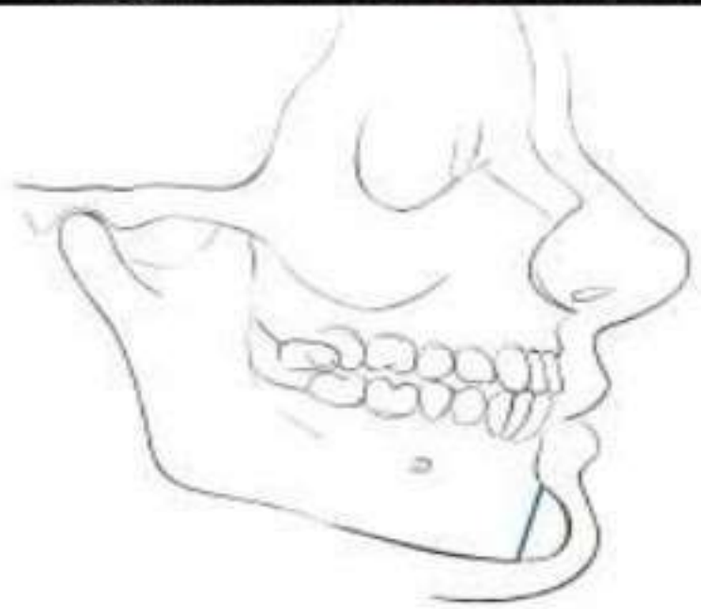

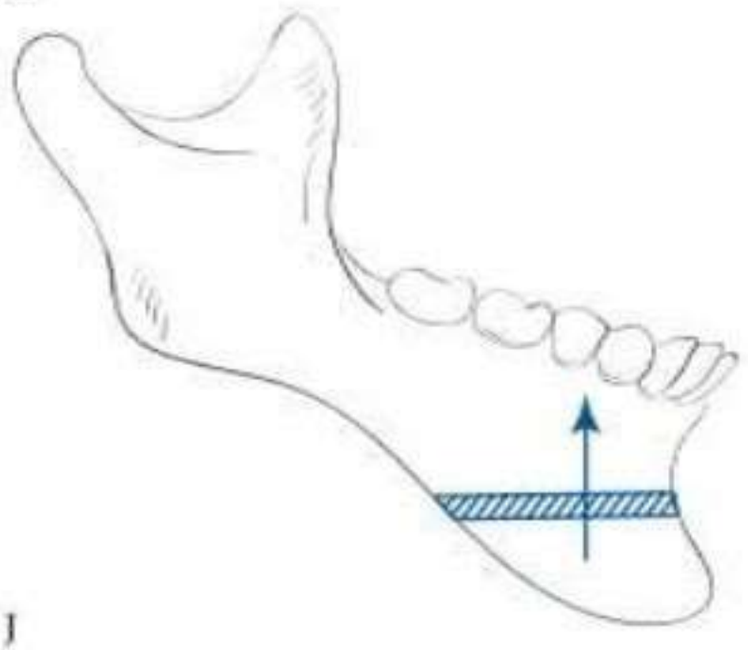

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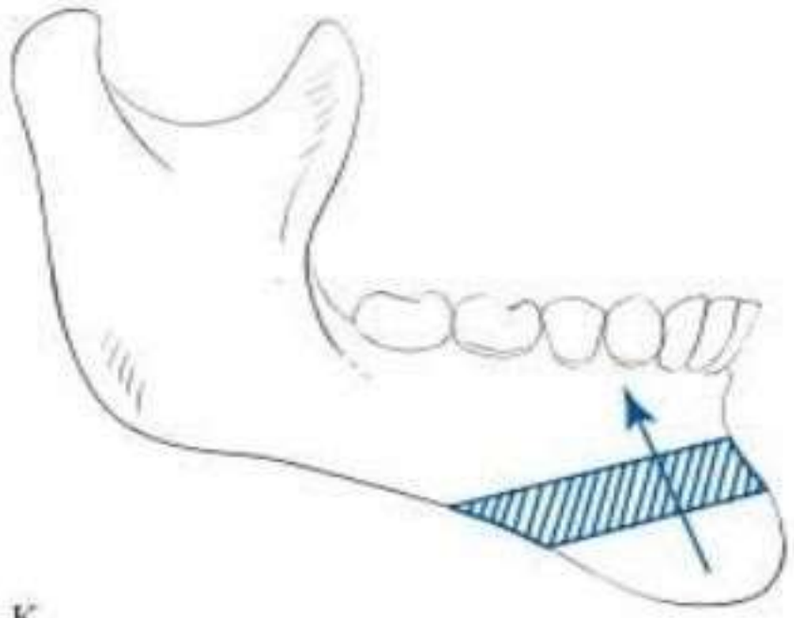

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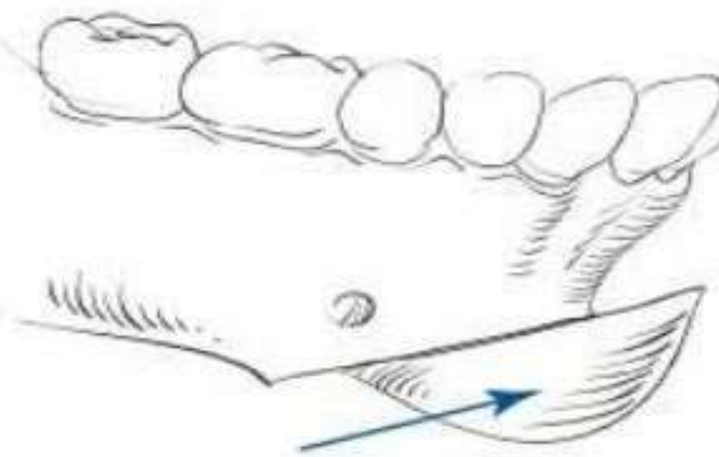

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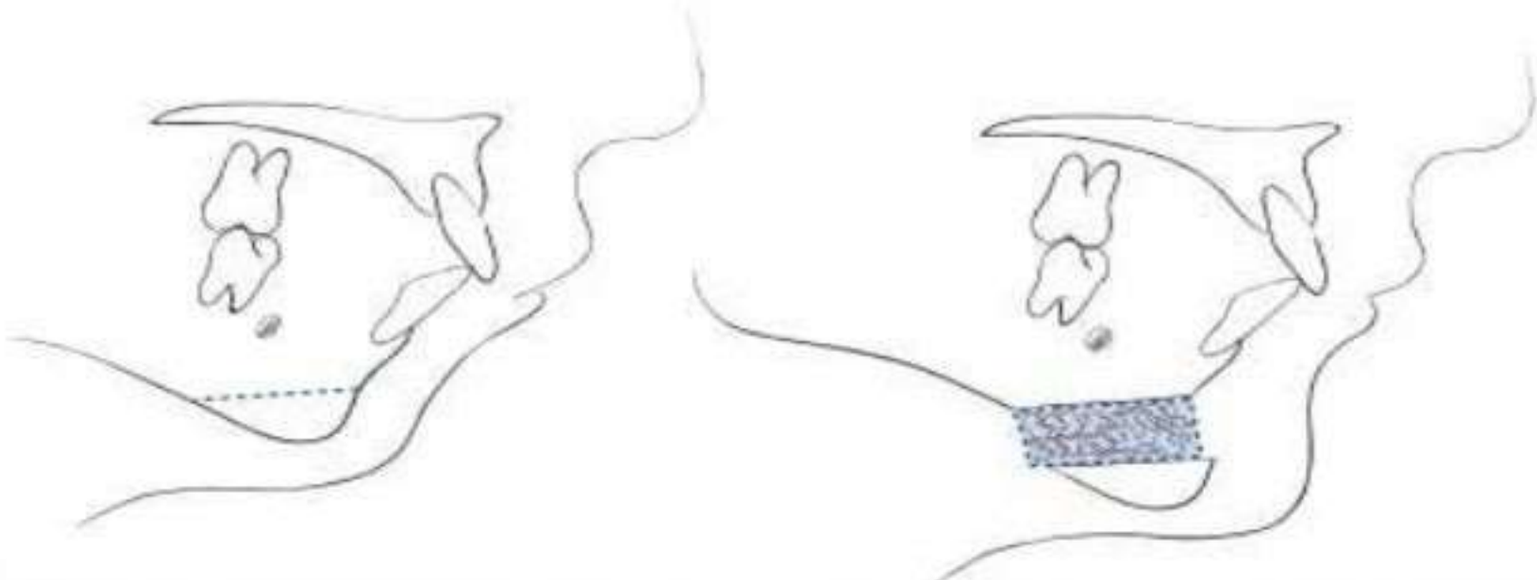

M


A
B
C

Maxillary excess

- Vertical Maxillary Excess

- Rest position of a patient with vertical maxillary excess demonstrating " incompetent lips "

- Smile view of a patient with vertical maxillary excess

Teeth in Class I alignment

Powered by Ortho2

Teeth in Class II malocclusion

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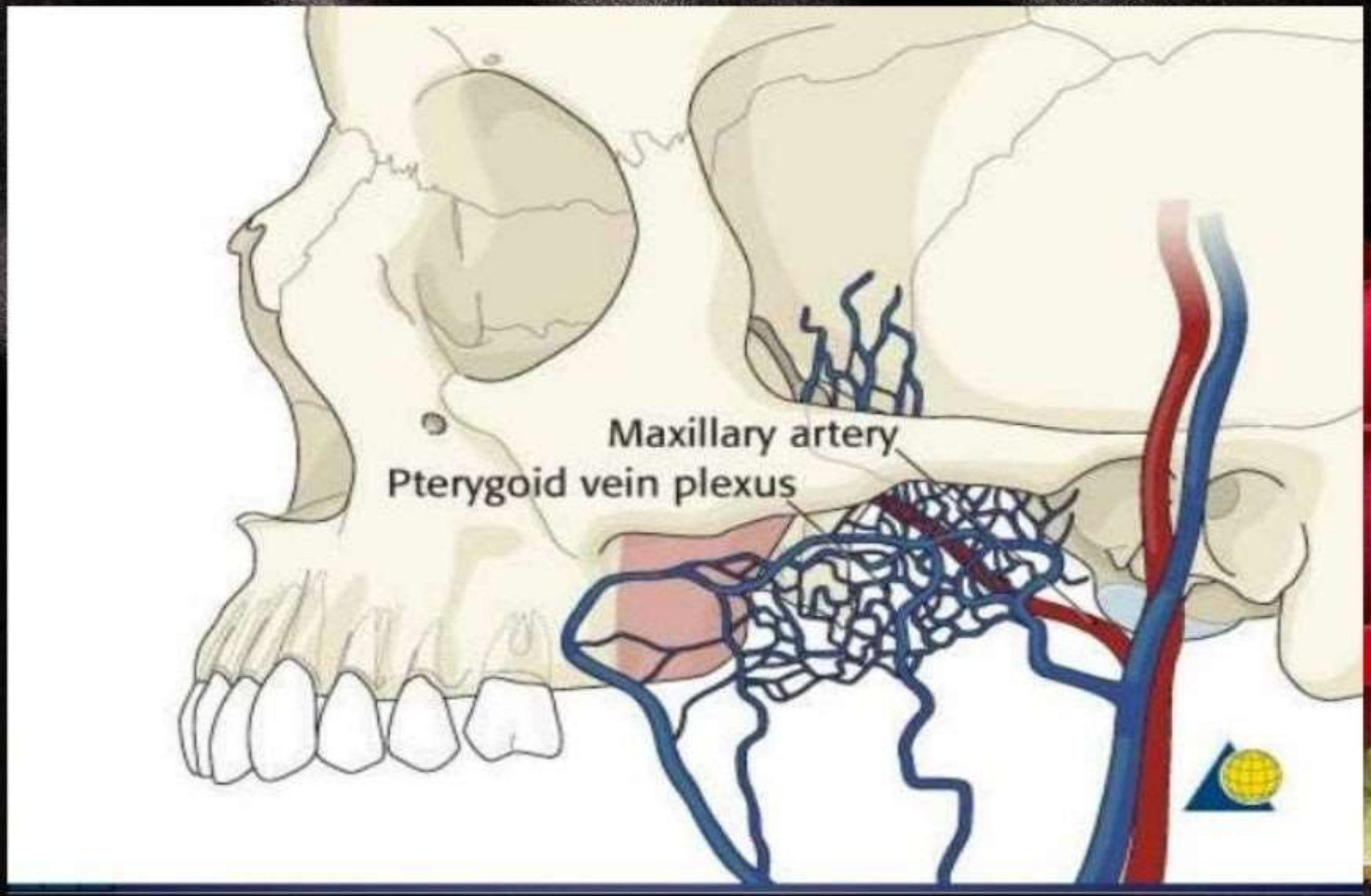
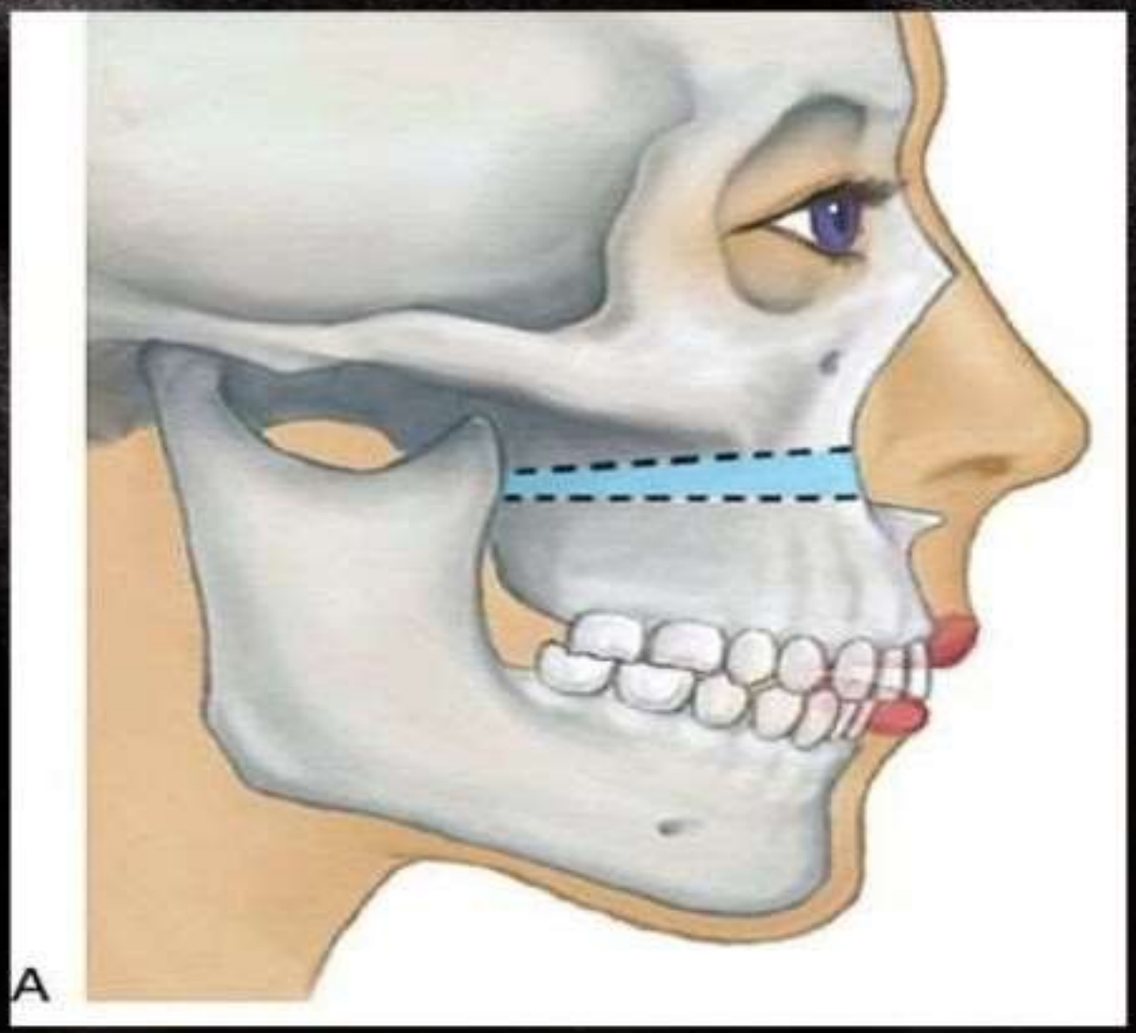
Maxillary and midface deficiency

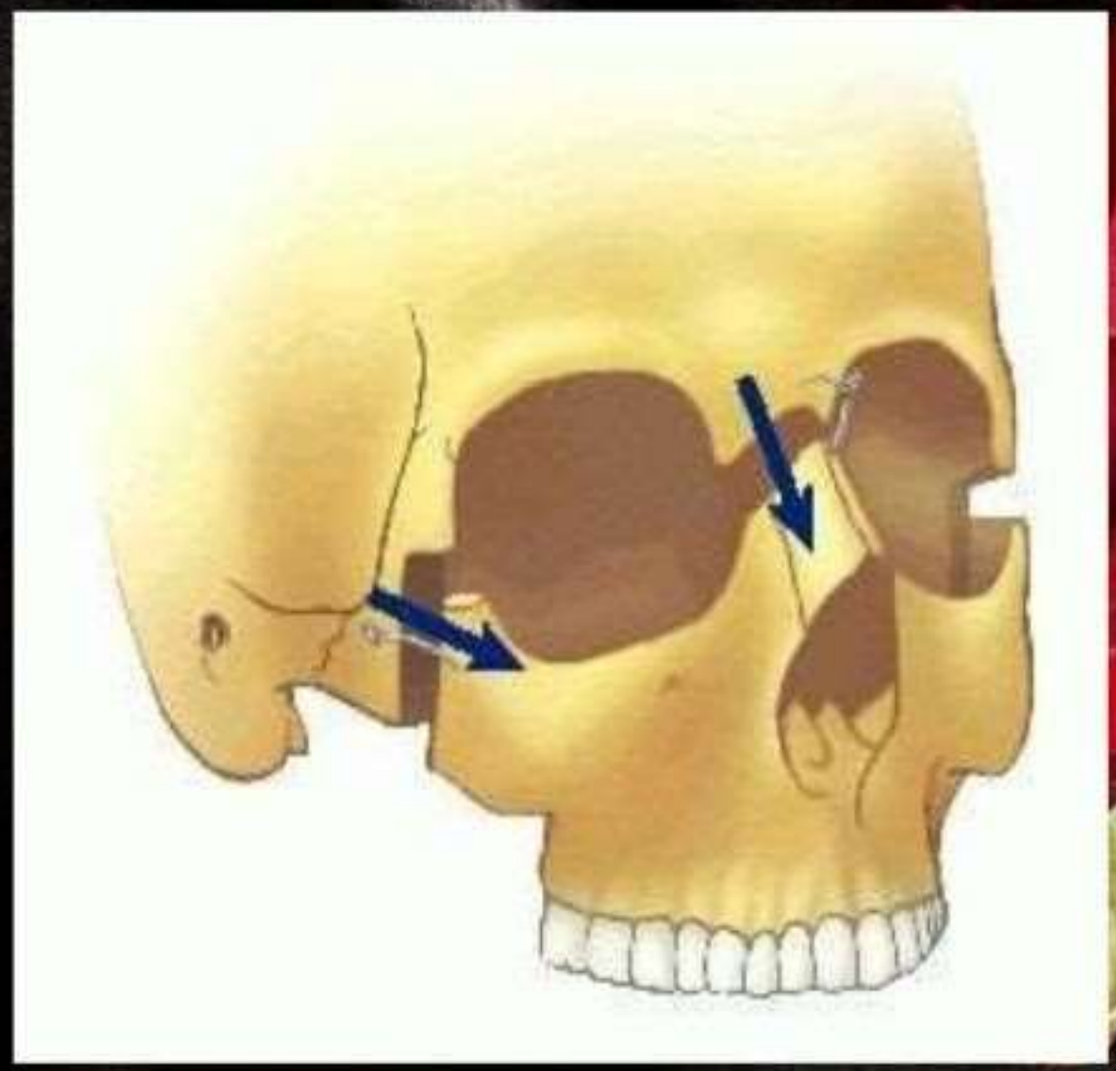
Lefort osteotomy



Lefort I osteotomy



Lefort II osteotomy



Distractor osteogenesis

definition

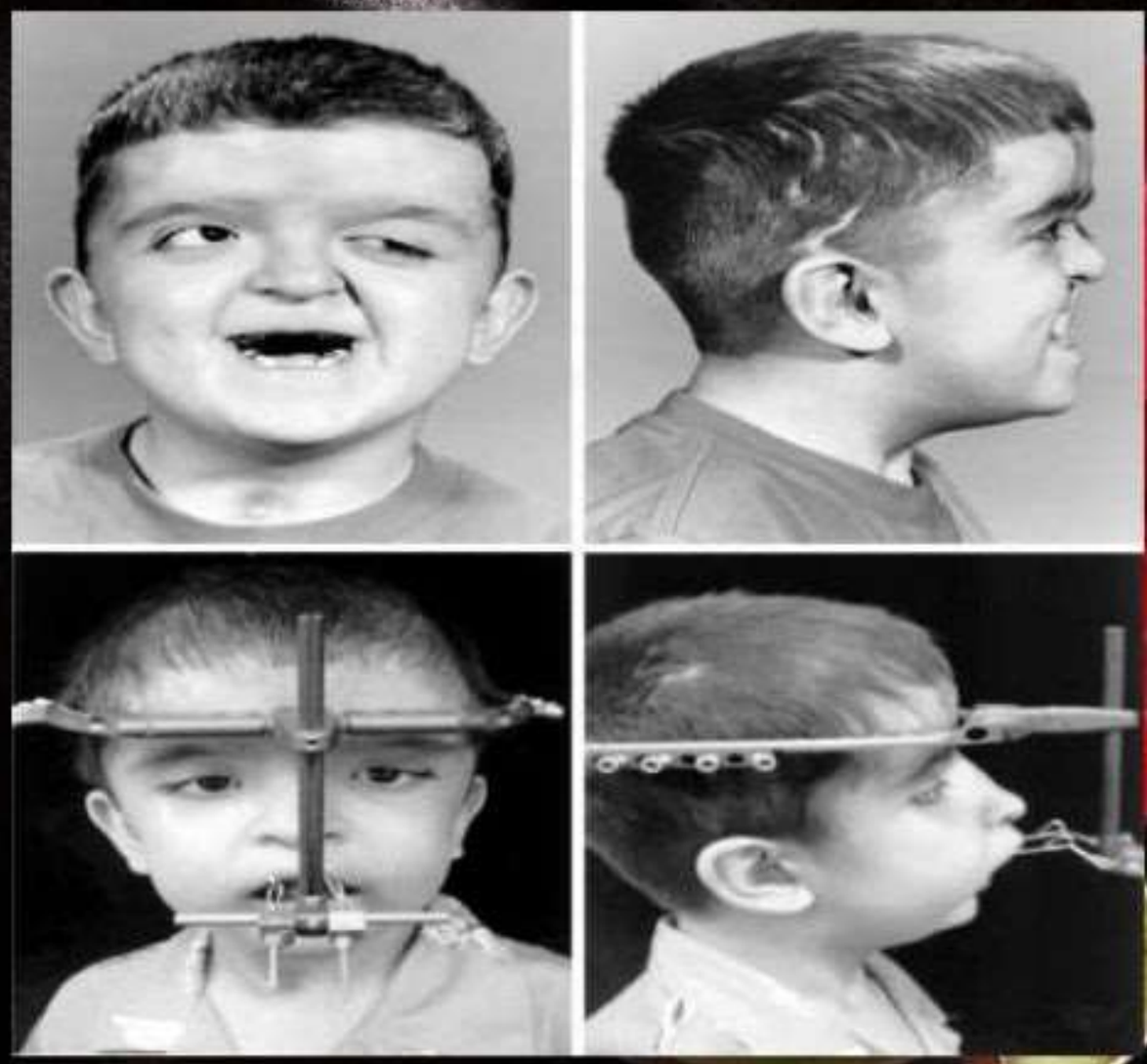
Distraction osteogenesis is the creation of neoformed bone and soft tissue by gradual and controlled displacement of a bone fragment using ridged stretching device delivers tensile force to the developing callus at the site of the bone cut

Treating craniofacial deformities (HFMS, Crouzon, post trauma ,post resection, cleft palate…ect)

Types of distractors

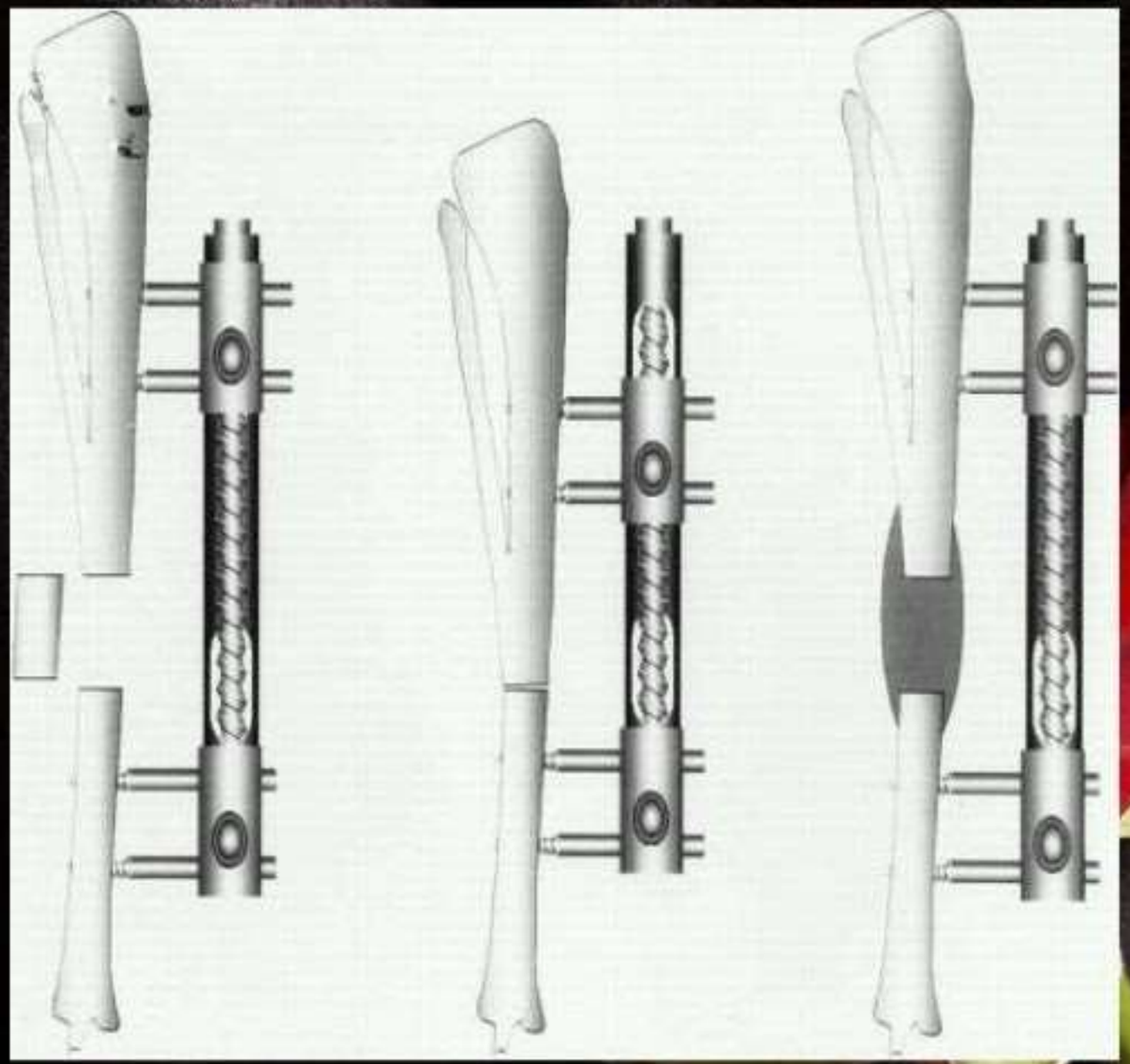
Intraoral distractor

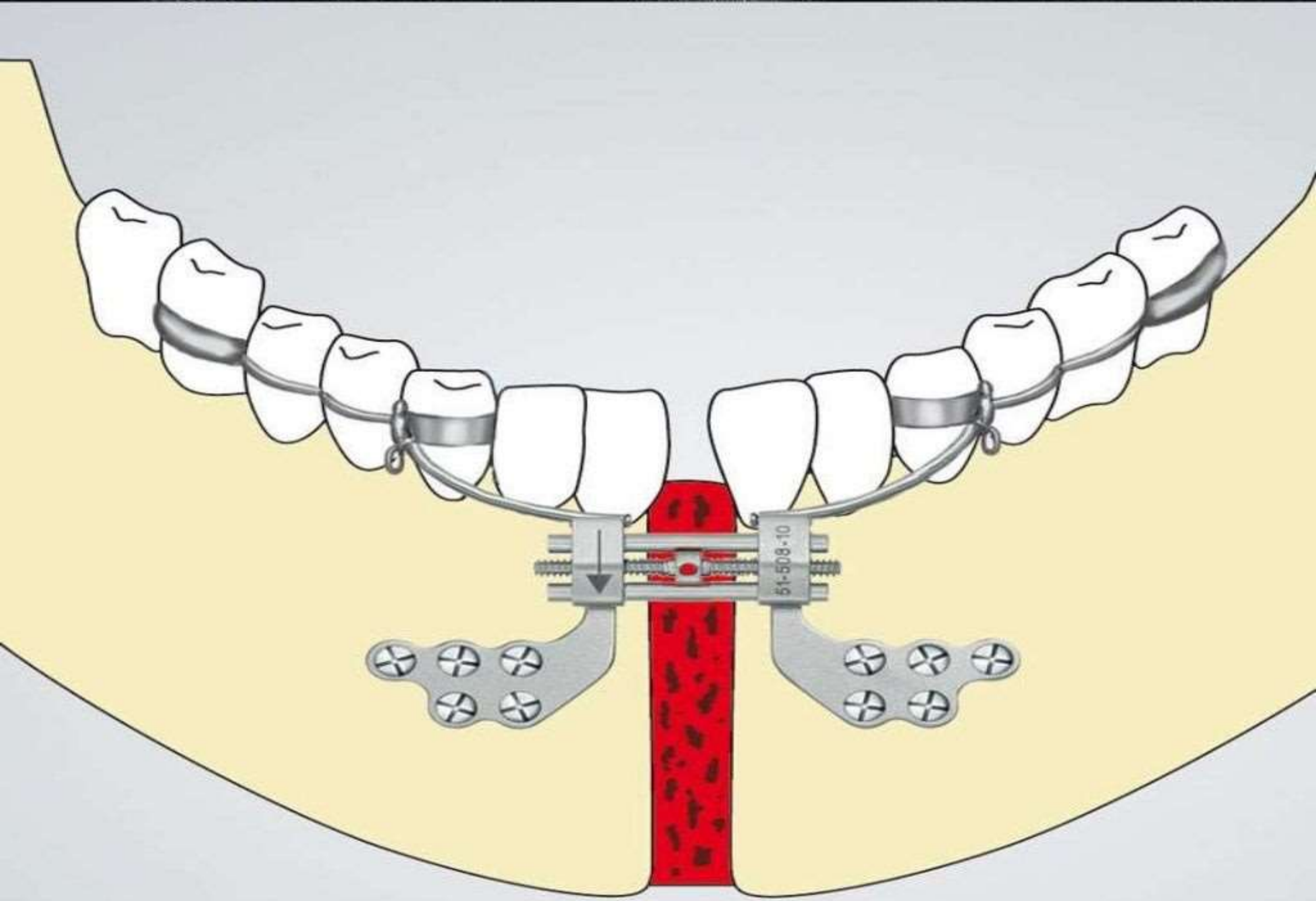
Extra oral distractor



Terminology of distractors

- Latency period
- Distraction period
- Consolidation period
- Remodelling period

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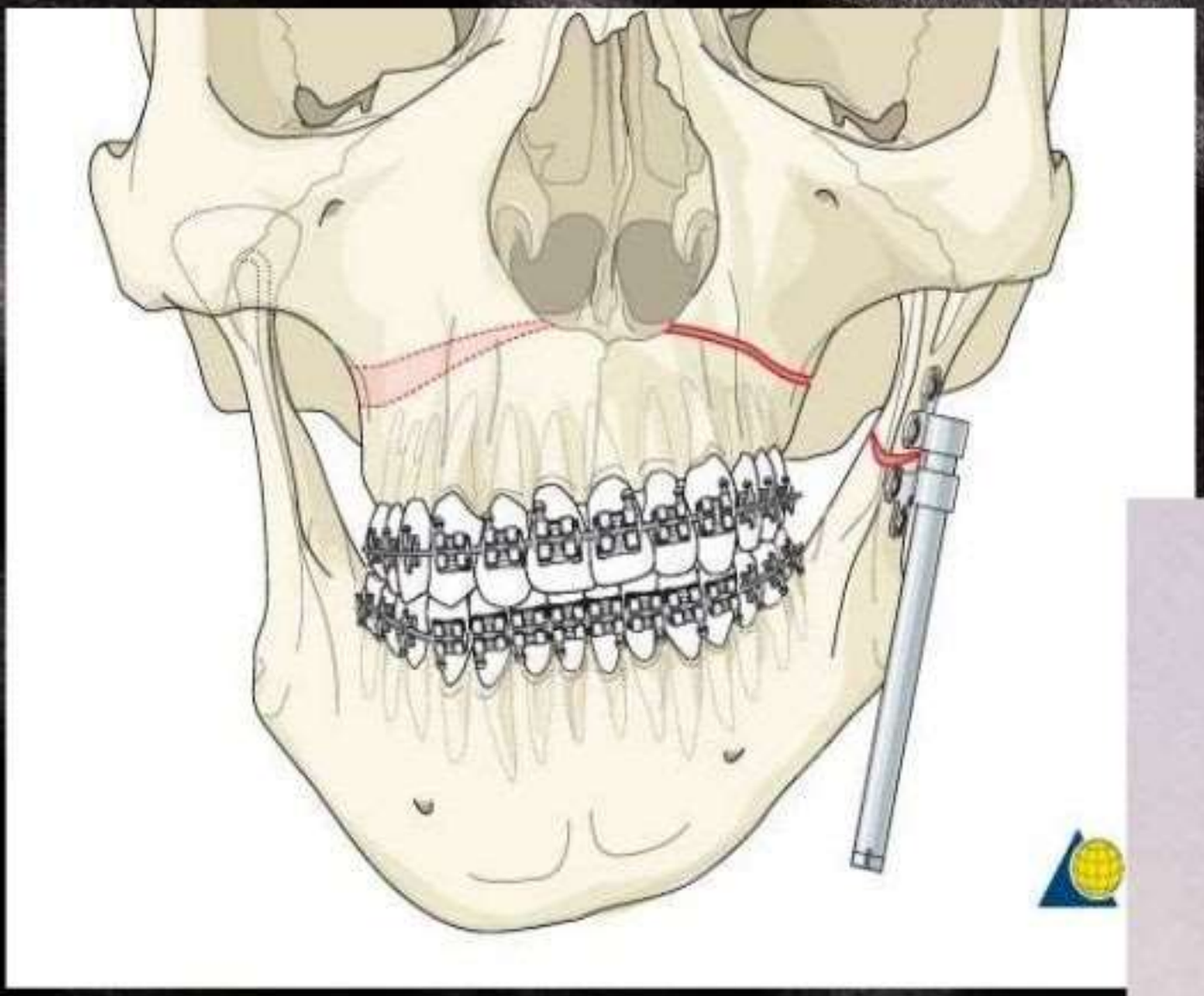
Hemifacial microsomia




A Sugar

Pierr robin syndrom

Alveolar distraction

indication

i.Sever atrophied edentulous ridge

ii.Segmental deficiencies for implant placement or functionally & esthetically for crown bridge placement

iii.Narrow alveolar ridge (horz. Distraction)

iv.Gradual vertical movement of ankylosed tooth or osteointegrated implant with surrounding bone

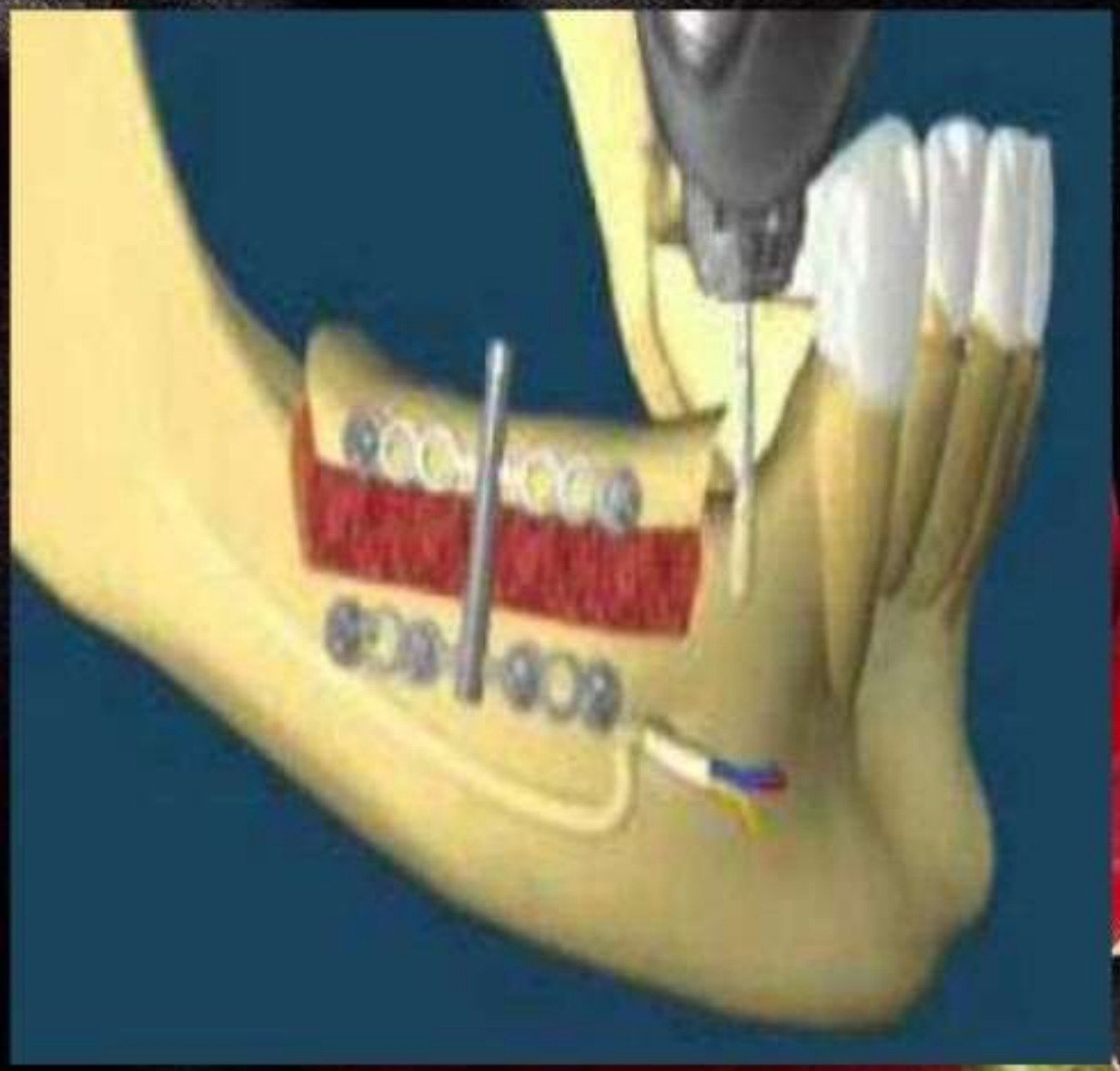
Advantages

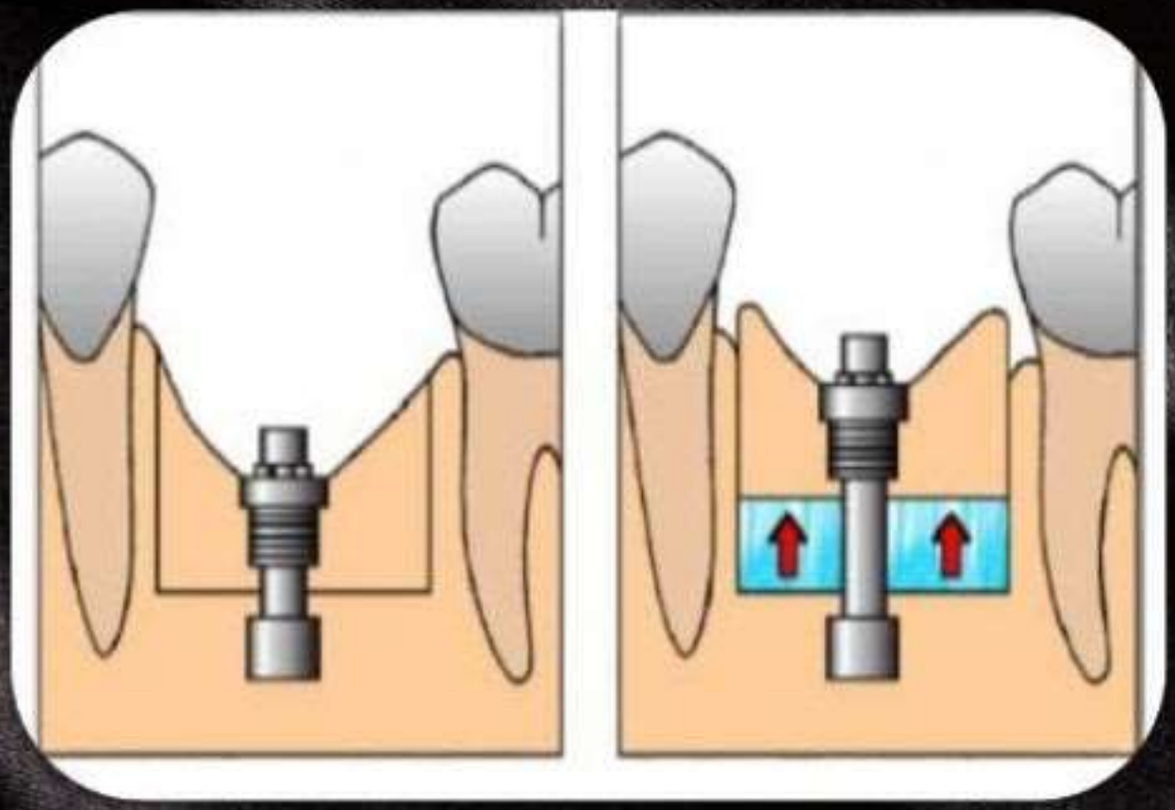
I.No bone graft needed with hard & soft tissue obtained

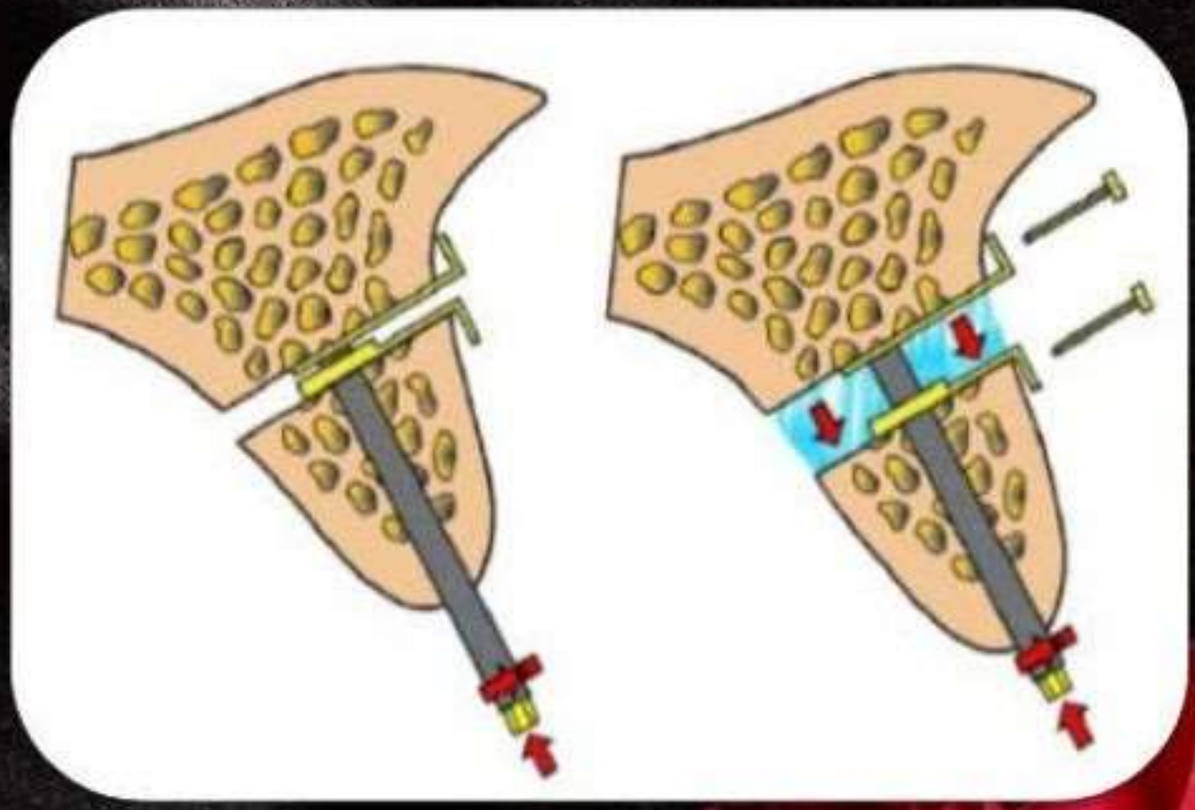
II.Less possiblities of bone exposure & graft resorption

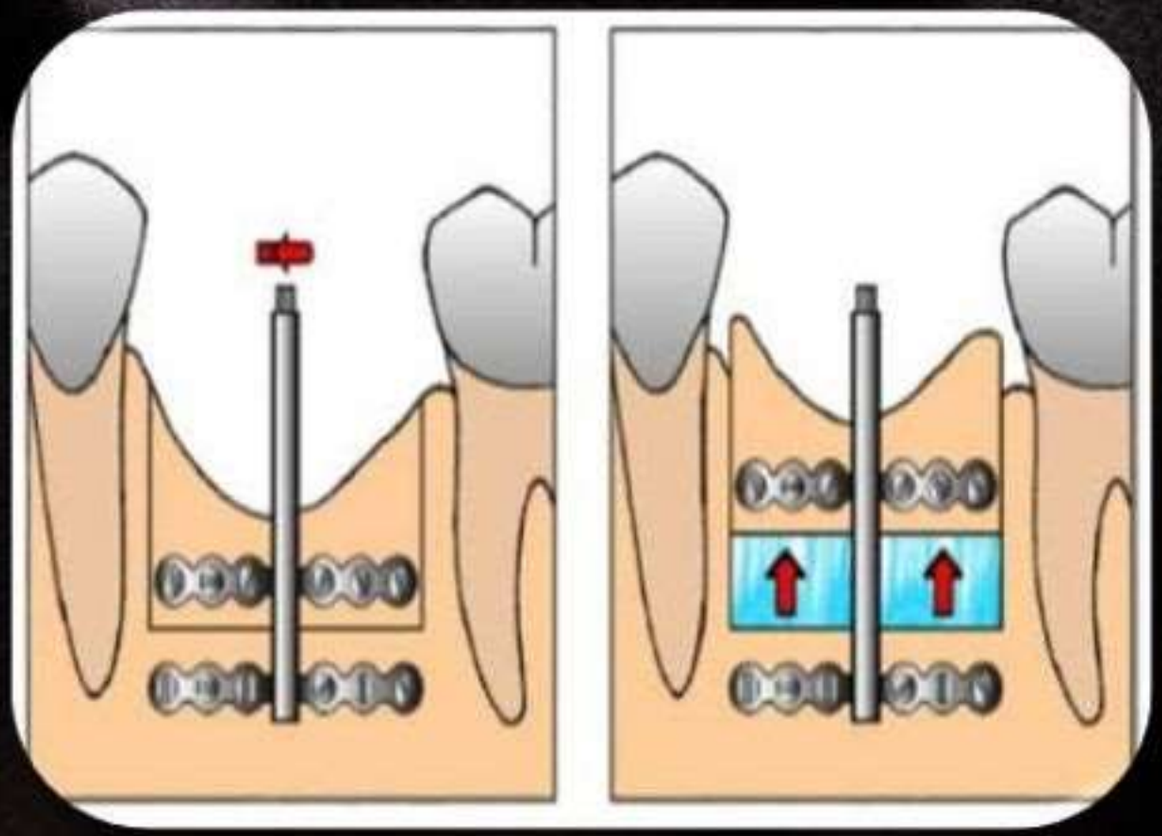
III.More esthetic

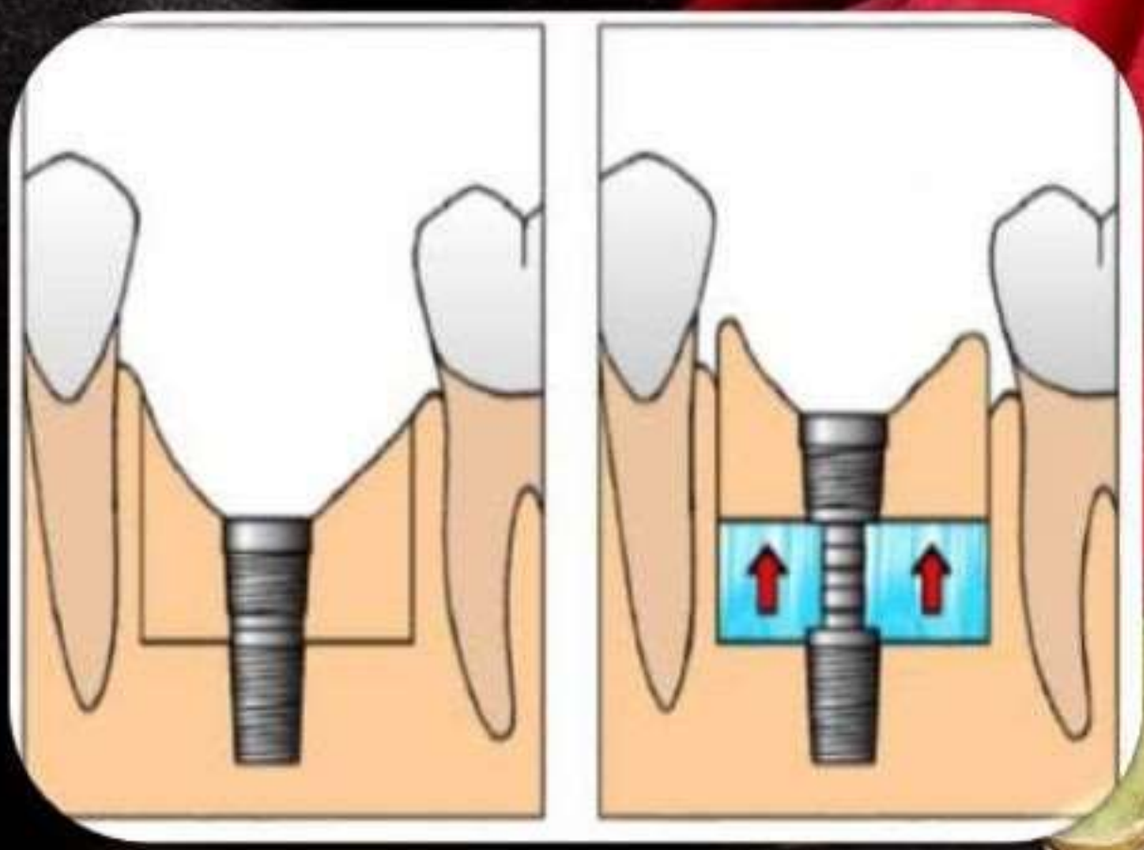
IV.Allows the use of complementary regeneration techniques when outcome not satisfactory











Thank you