

# MALOCCLUSION

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# Skeletal Pattern

# Cephalometric Analysis

- ▣ Used to evaluate the relationships between the teeth, soft tissue and the skeleton. The Lateral Cephalometric Radiograph gives the orthodontist a sagittal view of the skeletal, dental and soft tissues. An analysis can then be performed by tracing or digitizing the radiograph and making the appropriate measurements.

# Skeletal Patterns

- ▣ Cephalometric analyses reveal to the orthodontist the skeletal component of the patient's malocclusion.
- ▣ We can classify patients as a :
  - Class I Skeletal Pattern
  - Class II Skeletal Pattern
  - Class III Skeletal Pattern
- ▣ These patterns often correspond with the Angle Classification but not necessarily all the time. Understanding the skeletal pattern is essential for choosing the proper treatment mechanics.

# Class I neutral occlusion

- ▣ The maxillary and mandibular base according to each other and to the skull bases normally in sagittal (anteroposterior) positions ( $ANB=2^\circ$ ). mild class II or class III skeletal pattern can be seen, but these inclination will be compensated with the change of incisor inclination.
- ▣ Anterior crowding or less frequently commonly diastema can be seen. We see this malocclusion due to the arch-dental length incompatibility or local factors. Its dental malocclusion.

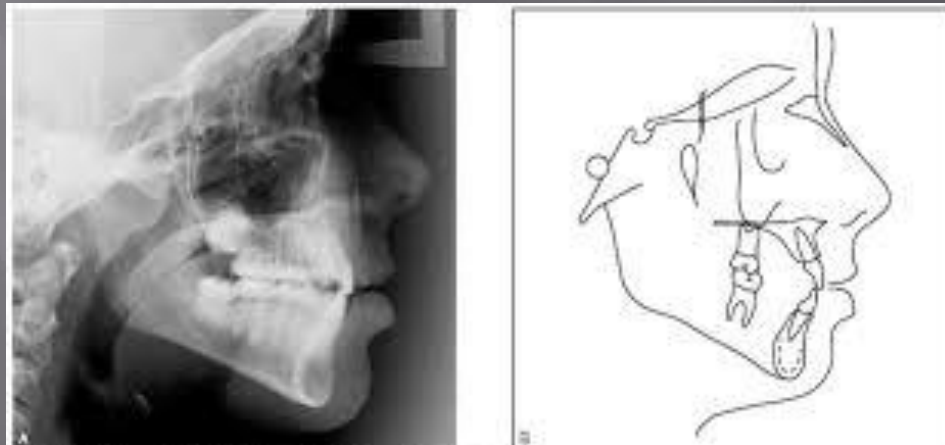
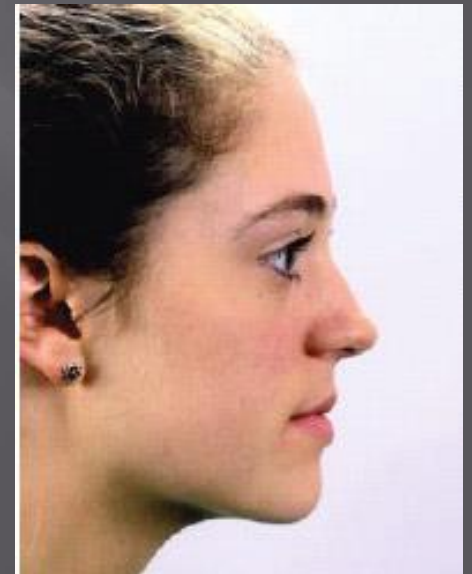
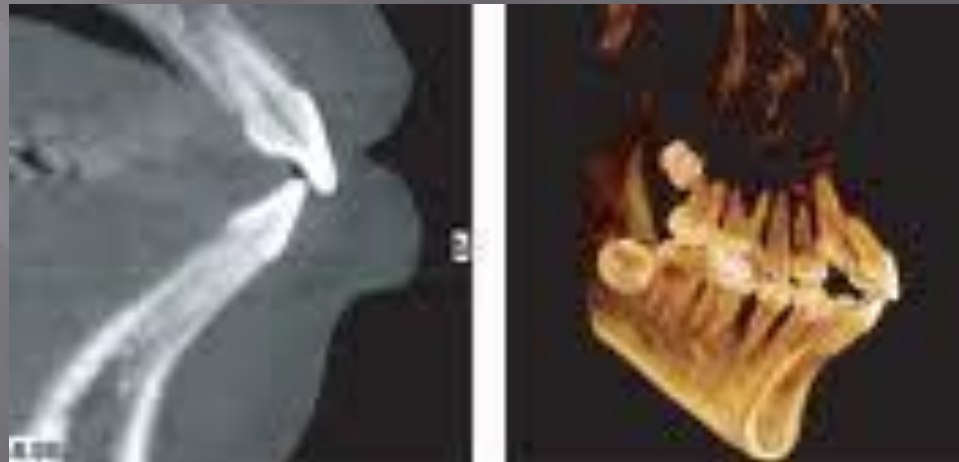


FIGURE 4 - Initial lateral cephalometric radiograph (A) and cephalometric tracing (B).

- ▣ If the drift has not occurred due to early loss of deciduous first molars, the buccal occlusion is class I. may be class I unilateral or bilateral relationship.
- ▣ If there is no crowding in this area the Canine also close in class I.
- ▣ profile is straight
- ▣ muscles are often balanced



- ▣ may be accompanied by a transverse or vertical direction problems. (openbite connected to sucking habits).
- ▣ can be seen bimaksiller protrusion. in this case, the upper and lower incisors labially inclined and lips outward overturned.



# Class II distocclusion

- ▣ Buccal occlusion closing in unilateral or bilateral class II or as cusp to cusp.
- ▣ according to incisors relations separated into form is division 1 and division 2.





# Class II division 1

- ▣ Molars in a unilateral or bilateral class II relationship
- ▣ has increased overjet
- ▣ Maxilla forward and / or mandible is located behind
- ▣ ANB angle increased
- ▣ profile convex, the tip of the chin flat
- ▣ Teeth may or may not be crowded



- ▣ lower anterior teeth is often super eruption and deepbite seen. but it can also be seen openbite
- ▣ maxillary and mandibular incisors labial inclined.
- ▣ In the rest maxillary incisors above the lower lips and the lower lips will be in contact lingual to the maxillary incisors.
- ▣ if the lower lip, placed in front of the upper incisors, the lower lip tilted out side.

- ▣ Hypotonic upper lips
- ▣ mouth breathing is often seen because the lips closure is not provided. For this reason at rest the tongue not approach the palate and cheek muscles so it will increase the impact on maxillary arches. therefore, the maxillary premolar region narrowed and the dental arch form is often v shaped instead of u shaped.
- ▣ Unbalanced muscle structure

# Class II division 2

- ▣ Molars in a unilateral or bilateral class II relationship
- ▣ Teeth may or may not be crowded
- ▣ Extreme uprighting in upper incisors. Lower incisors can cause trauma to the gums. Maxillary lateral incisors labial inclined. Canine also may be labial inclined.



- ▣ Mandibular incisors also upright and supererupted. Upper incisors can cause trauma to the palatal mucosa.
- ▣ Increase in overbite.
- ▣ There are deep curve of Spee
- ▣ Commonly wider upper arch
- ▣ There are strong muscular structure

- ▣ There is no retardation in the mandibular base. More retrusion observed in the dento-alveolar of mandibular. Maxilla locks mandibular.
- ▣ Condyle is forced posteriorly in the articular fossa.
- ▣ Has a concave profile, prominent the tip of the chin.
- ▣ Decreased in the lower face height
- ▣ ANB angle increased
- ▣ Labiomental sulcus is evident

# Class III mesiocclusion

- ▣ Classified into two groups
  1. True (skeletal) class III
  2. Pseudo (functional) class III

# True (skeletal) class III

- ▣ May be hereditary or acquired
- ▣ Mandibular permanent first molar, located in the mesial of the maxillary first permanent molar. Its may be unilateral or bilateral.
- ▣ Incisors closed in crossbite or abandoned
- ▣ Maxilla in the behinde and / or mandible is located on the front. has increased the length of the mandibular corpus.
- ▣ Upper incisors labial inclined.
- ▣ Upright in the lower incisors





- ▣ Tongue placed on the base of the mandible, so narrowing may occur in the maxilla. often show crossbite. For this reason, show crowding especially in the maxillary dental arch.
- ▣ Decrease in the ANB angle and show negative assess.
- ▣ general has increased in Face Height
- ▣ Wide gonial angle

# Pseudo (functional) class III

## ▣ Causes:

1. Local causes (premature contact)
2. In mixed dentition, maxillary incisors continuing crossbite.
3. pain, large tonsils
4. nasal breathing can not be carried due to airway problems
5. small premaxilla due to the lack of maxillary lateral incisors.
6. large tongue or due to the short lingual frenulum so tongue positioning in the bottom.

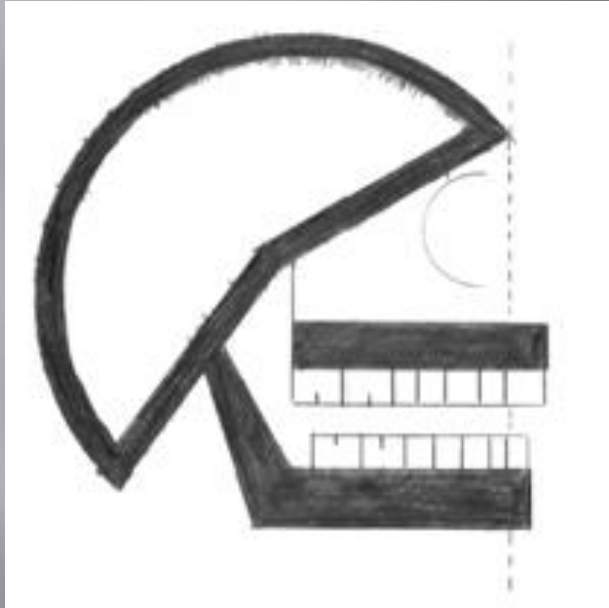
- ▣ There is no family history
- ▣ When the patient holds the mouth slightly open we see a class I molar-canine relationship, but when it has close in the occlusion we see class III or abandoned.
- ▣ Normal mandibular length, mandible located ahead.
- ▣ When the patient holds his mouth slightly open we see straight profile

- ▣ Maxillary incisors in Upright position, mandibular incisors in the normal axial incline or inclined labial.
- ▣ in cases of pseudo class III, can grow in a horizontal direction

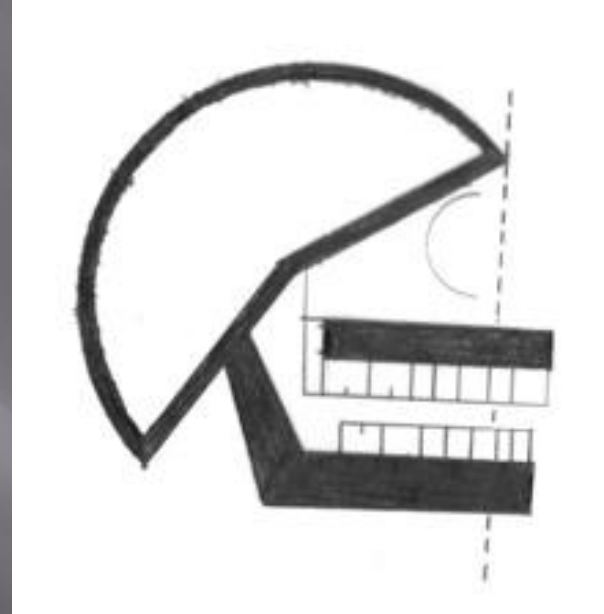
# Prognathism

- ▣ Prognathism is a skeletal protrusion.
- ▣ Bimaxillary Prognathism (Protrusion) is present when both jaws protrude forward of the normal facial limits.
- ▣ Maxillary Prognathism (Protrusion) is present when the maxilla protrudes forward of the normal limits of the face.
- ▣ Mandibular Prognathism (Protrusion) is when the mandible protrudes forward of the normal limits of the face.

# Prognathism



Normal



Bimaxillary Prognathism



**Mandibular Prognathism (Protrusion)**

# Retrognathism

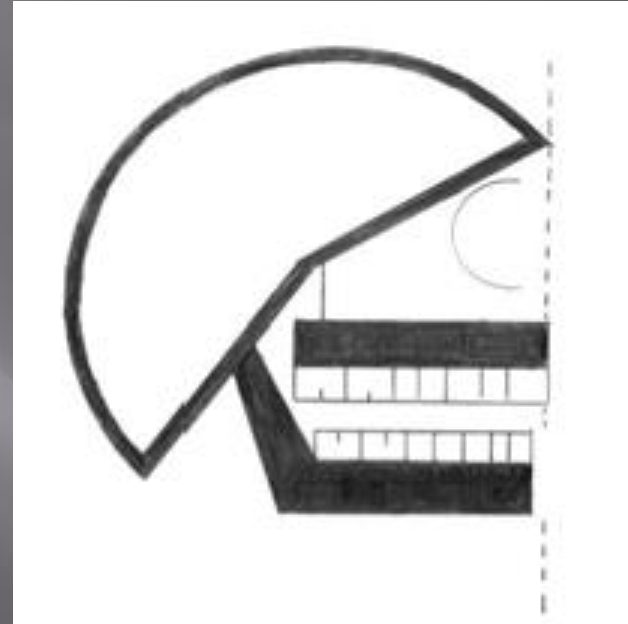
- ▣ Retrognathism is a skeletal retrusion.
- ▣ Bimaxillary Retrognathism (Retrusion) is present when both jaws are posterior to the normal limits of the face.
- ▣ Maxillary Retrognathism (Retrusion) is present when the maxilla is posterior to the normal limits of the face.
- ▣ Mandibular Retrognathism (Retrusion) is present when the mandible is posterior to the normal limits of the face.



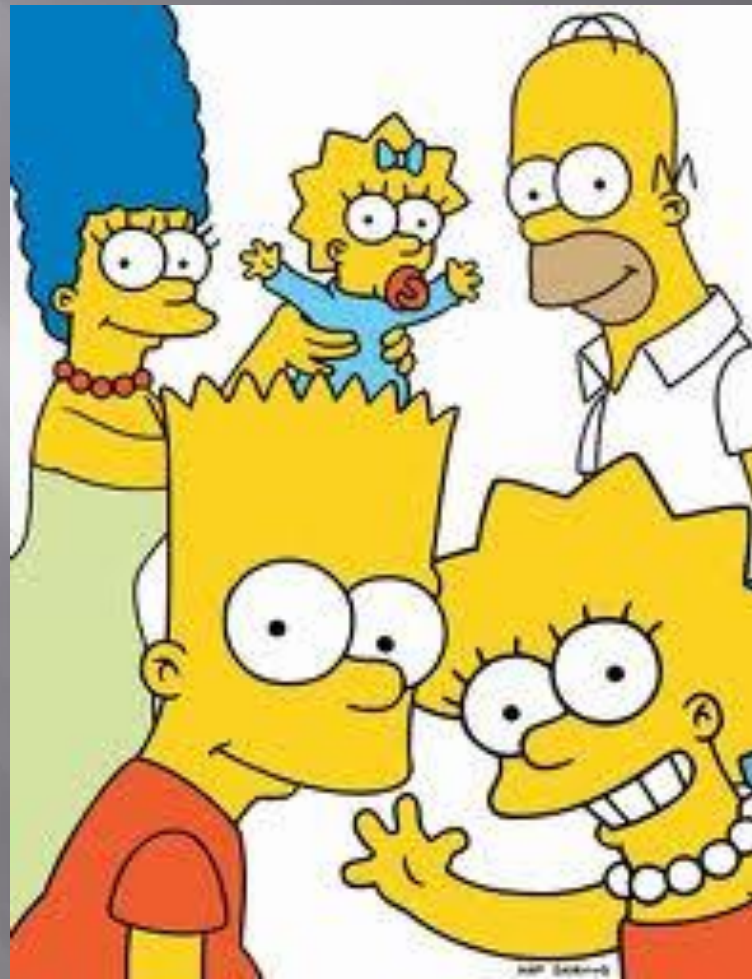
# Retrognathism



Normal



Bimaxillary Retrognathism



Mandibular Retrognathism (Retrusion)

# Dentoalveolar Protrusion

- Dentoalveolar Protrusion is present when the anterior teeth are positioned forward of the normal limits of the basal bone.
- Bimaxillary Dentoalveolar Protrusion is present when the anterior teeth of both jaws are forward of the normal limits of the basal bone.
- Maxillary Dentoalveolar Protrusion is present when the maxillary anterior teeth are forward of the normal limits of the basal bone.
- Mandibular Dentoalveolar Protrusion is present when the mandibular anterior teeth are forward of the normal limits of the basal bone.

# Dentoalveolar Protrusion



Normal



Bimaxillary Protrusion

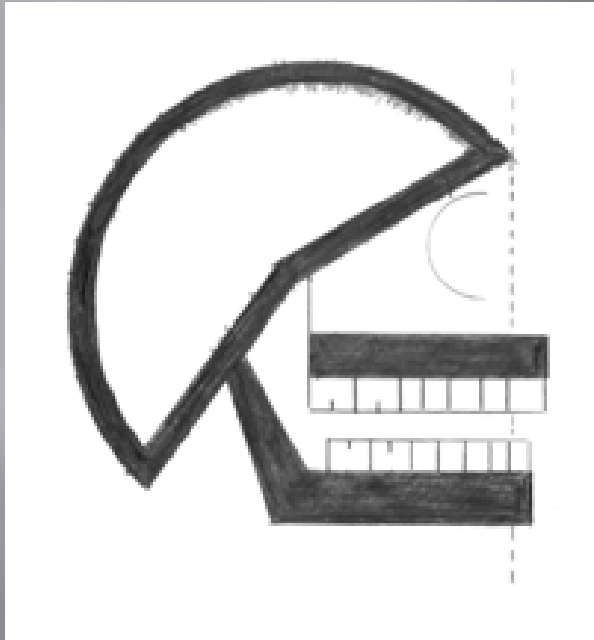
# Bimaxillary Dentoalveolar Protrusion



# Dentoalveolar Retrusion

- ▣ Dentoalveolar Retrusion is present when the anterior teeth are posterior to the normal limits of the basal bone.
- ▣ Bimaxillary Dentoalveolar Retrusion is present when the anterior teeth of both jaws are posterior to the normal limits of the basal bone.
- ▣ Maxillary Dentoalveolar Retrusion is present when the anterior teeth of the maxilla are posterior to the normal limits of the basal bone.
- ▣ Mandibular Dentoalveolar Retrusion is present when the anterior teeth of the mandible are posterior to the normal limits of the basal bone.

# Dentoalveolar Retrusion



Normal



Bimaxillary Retrusion

