



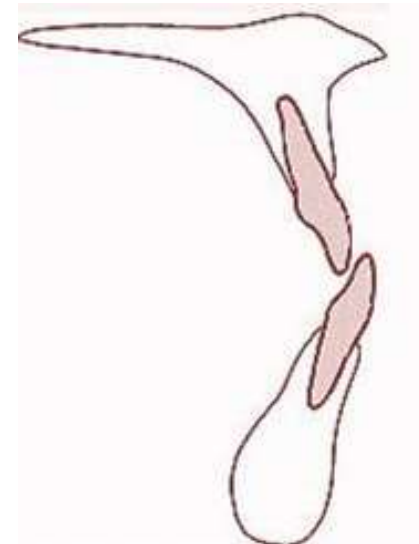
CL III malocclusion

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The British Standards Definition of Class III incisor relationship includes those malocclusions where the lower incisor edge occludes anterior to the cingulum plateau of the upper incisors

Angle's classification of class III : the mesiobuccal cusps of the maxillary 1st occluding at least 1/2 cusp distal to the buccal grooves of the mandibular 1st molars.



Class III malocclusion is the least common type of malocclusion, it varies among different ethnic groups, the prevalence is about 2% - 5% of different population. It is most prevalent in **Asian population**; it is slightly more in black than white Americans.



Classification

1. **True class 3**, anterior crossbite cases with bilateral buccal occlusions in class III.
2. **Class 3 subdivision**, anterior crossbite cases with one of the bilateral buccal occlusions in class 1 and the other in class 3.



3. Pseudo class 3, bilateral class 1 buccal occlusions and majority of teeth in anterior crossbite

With any crossbite, it is essential to check for a displacement of the mandible on closure from a premature contact into maximal interdigitation. In Class III malocclusions this can be ascertained by asking the patient to try to achieve an edge-to-edge incisor position. If such a displacement is present, the case is **pseudo Class III** malocclusions and the prognosis for correction of the incisor relationship is more favourable.



Etiology

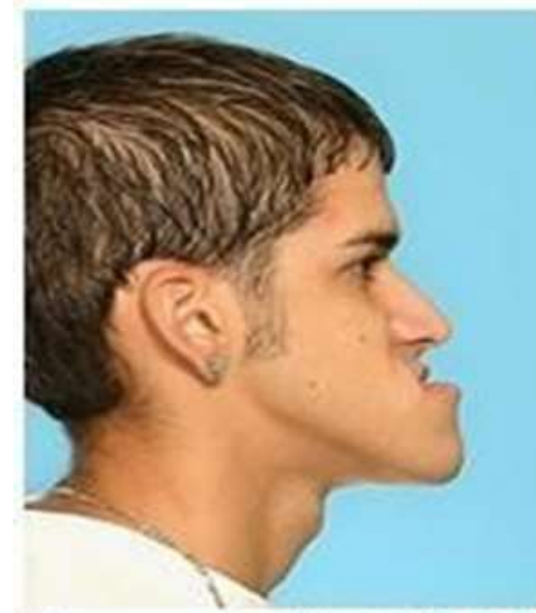
1. Skeletal Pattern

The skeletal relationship is the most important factor in the etiology of most Class III malocclusions, and the majority of Class III incisor relationships are associated with an underlying Class III skeletal relationship.

The **growth pattern and the size** of the jaws are greatly affected by heredity (genetic base)

It result either from :

- Mandibular excess
- Maxillary deficiency
- Both of them.



2. Soft Tissues

In the majority of Class III malocclusions the soft tissues **do not play a** major etiological role. In fact the reverse is often the case, with the soft tissues tending to tilt the upper and lower incisors towards each other so that the incisor relationship is often less severe than the underlying skeletal pattern. This **dento-alveolar compensation** occurs in Class III malocclusions because an anterior **oral seal** can frequently be achieved by upper to lower lip contact. This has the effect of moulding the upper and lower labial segments towards each other. The main exception occurs in patients with increased vertical skeletal proportions where the lips are more likely to be incompetent and an anterior oral seal is often accomplished by tongue to lower lip contact.

Enlarged tongue (Macroglossia) or anterior tongue posture (thumb sucking, mouth breathing), in which the tongue lies low in the oral cavity are to be a local factors in Class III development



3. Dental factors:

- Rarely upper labial segment (ULS) retroclination and lower labial segment LLS proclination.
- Hypodontia or microdontia in the upper arch
- Impacted upper teeth

4. Congenital Abnormalities

A transverse as well as anteroposterior restriction of the mid-face growth can occur in cases of **cleft lip and palate** with a normal mandible, markedly when the patient has undergone the surgical repair. This can be attributed to restraining effect of scar tissue following surgical intervention. Limitation in vertical growth of the maxilla can also be seen

Extra oral features of CL III

1. Facial profile is concave.
2. Long face (mostly increased lower facial height).
3. Well-developed mandible.
4. Under-developed maxilla



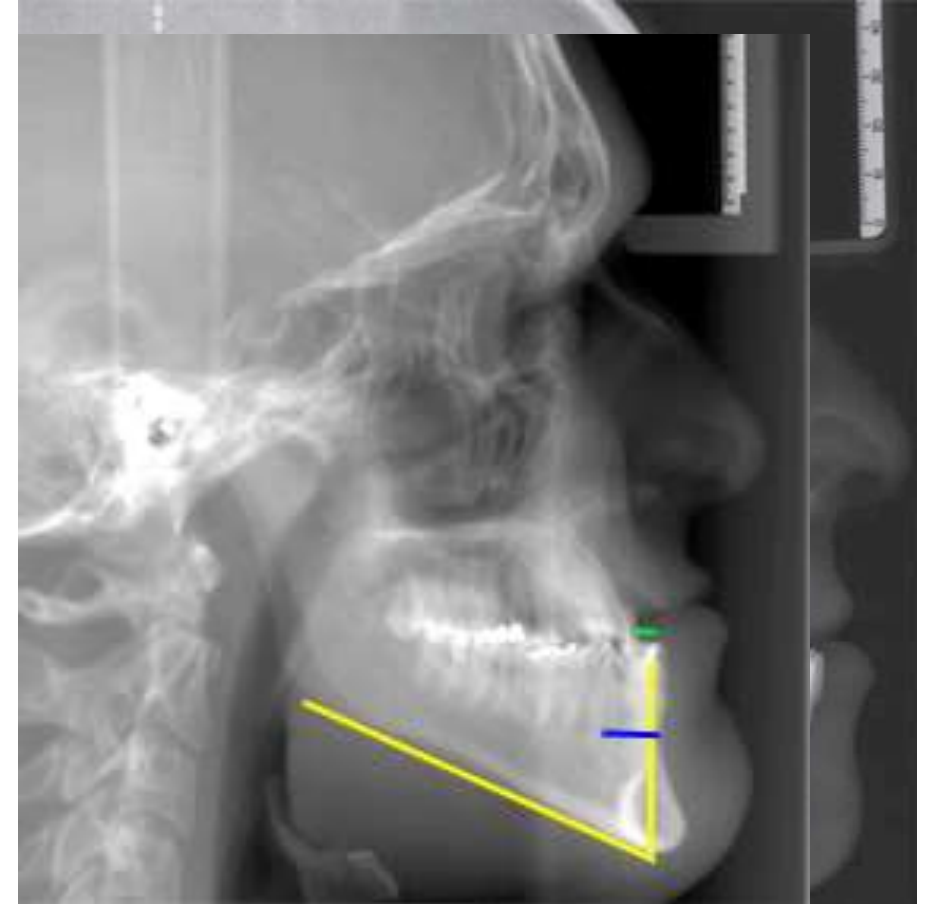
Intra oral features of CL III

1. *Class III incisors relationship.*
2. *Class III molar relationship.*
3. *Class III canine relationship.*
4. *Edge to edge incisors or reverse overjet according to the severity of cases A posterior cross-bite unilateral or bilateral due to a constricted maxillary arch, a unilateral buccal crossbite is usually associated with lateral displacement of the mandible to obtain maximal intercuspation.*
5. *Upper incisors are often crowded and proclined. Lower incisors may be slightly crowded or even spaced. Frequently lower incisors are retroclined.*

Radiographic features of CL III

Cephalometric studies have shown that, compared with Class I occlusions, Class III malocclusions exhibit the following:

- *Reduced maxillary length.*
- *More anteriorly placed glenoid fossa so that the condylar head is positioned more anteriorly leading to mandibular prognathism.*
- *More retruded position of the maxilla leading to maxillary retrusion.*
- *Increased mandibular length.*
- *obtuse gonial angle.*



Aims of Treatment of CL III malocclusion

- 1. *Reduce Crowding*** : in maxilla by expansion and or proclination of upper incisors, in mandible by extraction.
- 2. *Correction of Reversed Overjet***: either by proclination of upper incisors or retroclination of lower incisors, or by both.
- 3. *Correction of incisal either deep bite or open bite.***
- 4. *Correction of Buccal Segment***: in both anteroposterior and lateral dimensions.

The Goals of Early Class III Treatment

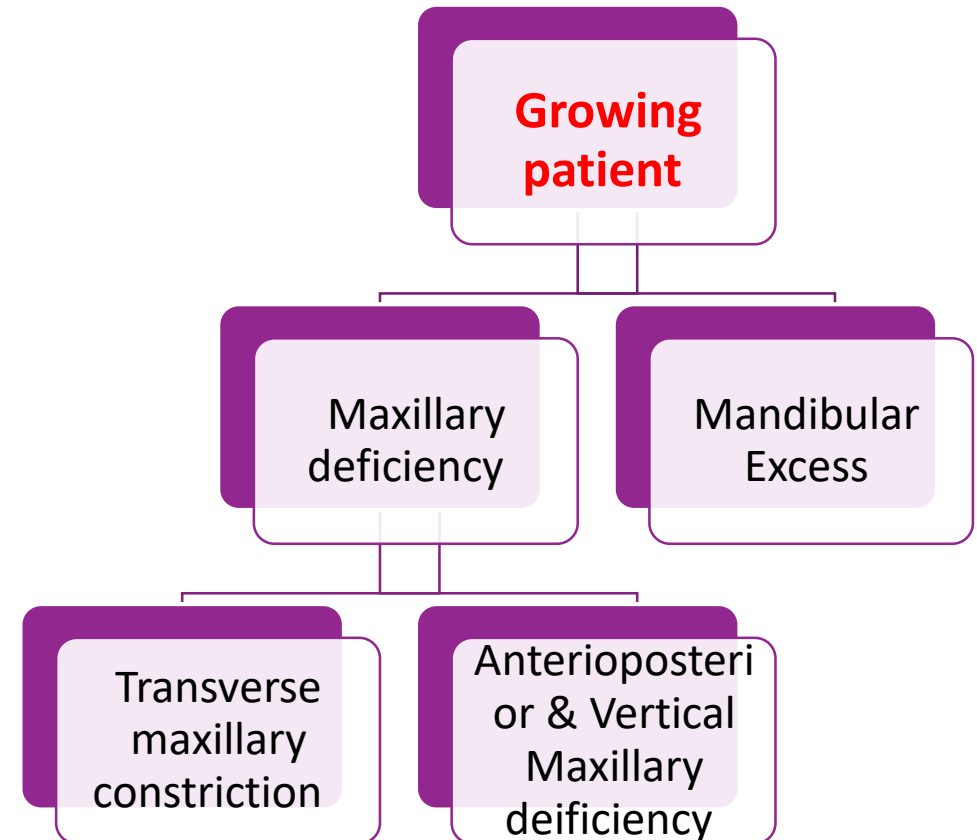
- Preventing progressive irreversible soft tissue or bony changes.
- Improving skeletal discrepancies and provide a more favorable environment for future growth.
- Improving occlusal function.
- Simplifying phase II comprehensive treatment and minimizing the need for orthognathic surgery.
- Providing more pleasing facial aesthetics, thus improving the psychosocial development of a child

Treatment of Skeletal Class III

1. Treatment of Growing Patient

This treatment must take in consideration whether the problem is due to maxillary deficiency or mandibular excess or both of them :

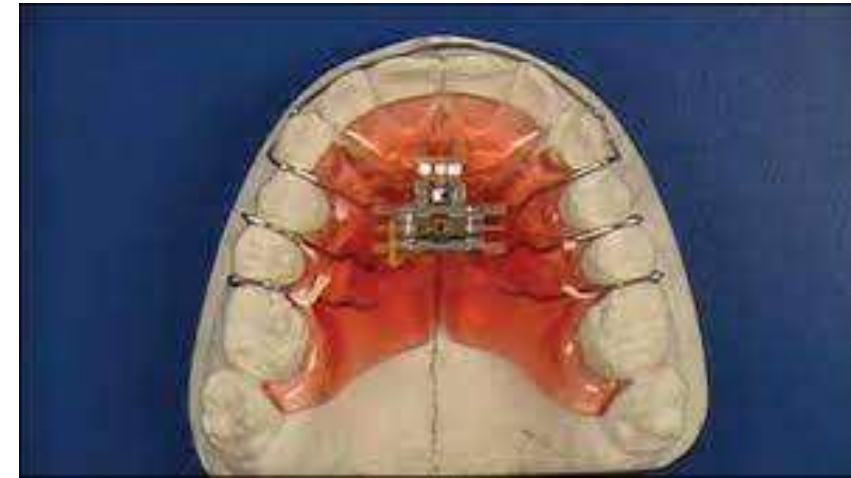
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A. Transverse maxillary constriction.

Methods can be used for palatal expansion:

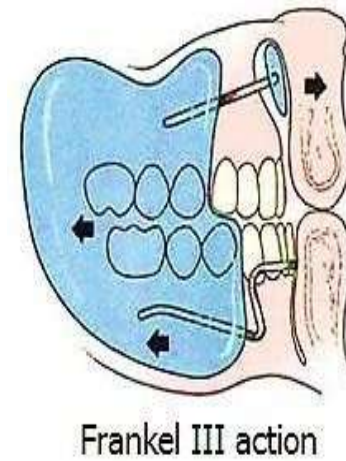
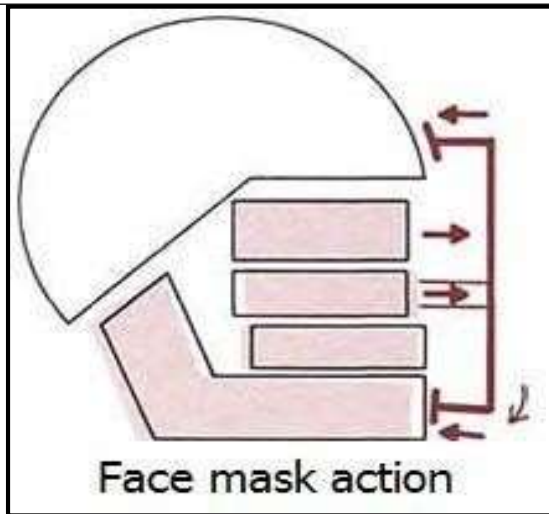
1. Removable plate with jackscrew
2. Quad helix
3. Hyrax appliance



Anteroposterior and vertical maxillary deficiency

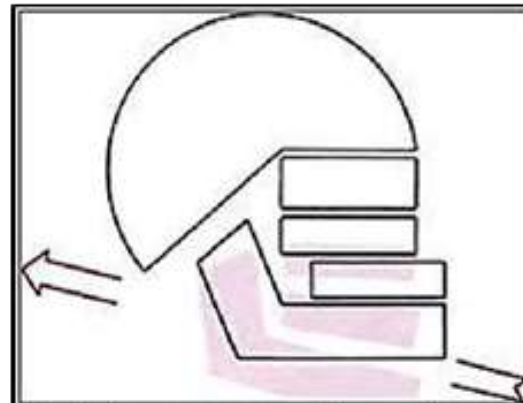
Face (Delaire) Mask

Frankel III appliance



Mandibular Excess

Chin Cup: used to inhibit or redirect mandibular growth. It is indicated with normal or reduced lower facial height **under the age of 7 years**. The major effect of chin cup is modification of mandibular growth vertically, downward and backward rotation of the mandible which decreases the anteroposterior projection of the chin by making the face longer



Note : For a child with sever prognathism, no treatment should be attempted until orthognathic surgery can be done at the end of the growth period

2. Treatment of Adult and Non-Growing Patients

Treatment in the adult age is limited to **Orthodontic Camouflage** or **Orthodontic Decompensation** in an effort to prepare the patient for surgery. Camouflage can be achieved by proclining the maxillary incisors and tipping the mandibular incisors lingually. Single arch extractions, 1st premolars extraction only in the mandibular arch, are frequently done to create space for the retraction of the mandibular anterior segment. CL III elastics in combination with fixed appliance are frequently used in an effort to tip/retract the mandibular incisors.

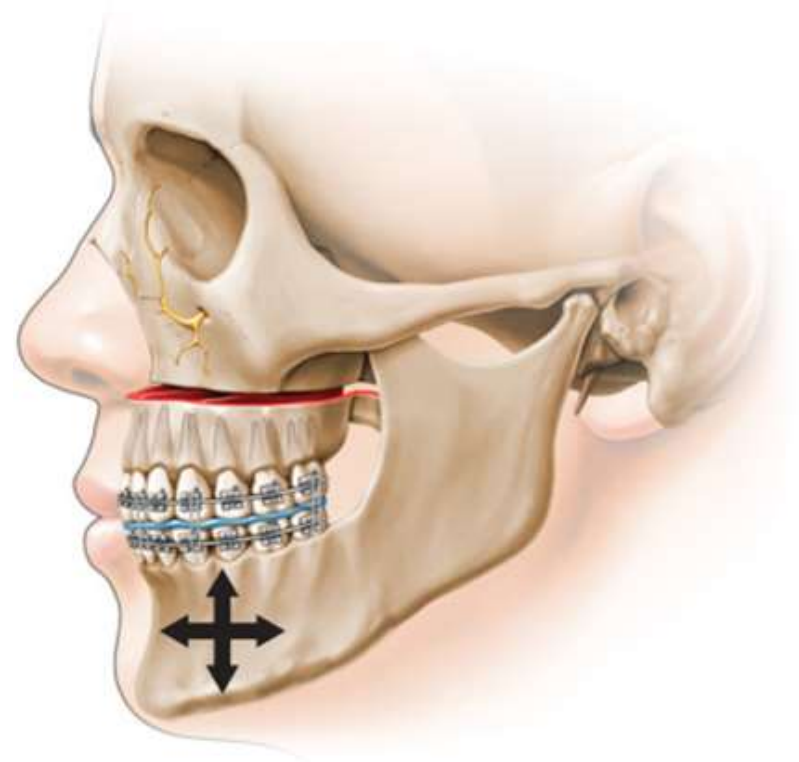
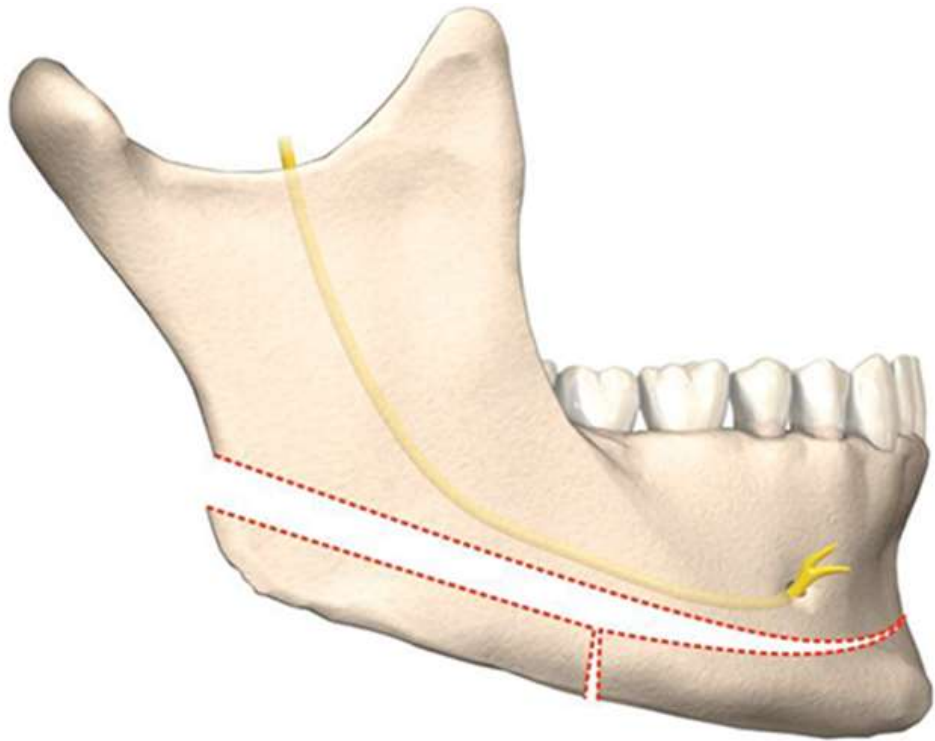
In a more severe cases and after the growth is ceased, **Orthognathic Surgery** is indicated. It is suggested for patients with an ANB angle of greater than -4° . The current surgical methods are:

1. **Ramus osteotomy to set back a prognathic mandible.**



2. Mandibular inferior border osteotomy to reduce chin height or prominence.

3. Le-Fort osteotomy to advance a deficient maxilla, often segmented to allow for transverse expansion if indicated



Thank
you

