

CLASS III MALOCCLUSION

Class III malocclusion is the least common type of occlusal relationship in many communities occurring in less than 50%, therefore it is seen relatively less frequently in orthodontic practice.

It can be defined as the advancement of the lower 1st permanent molar half a cusp or a cusp to the upper 1st molar with a reversal overjet.

According to the British Standards definition, the Class III incisor relationship includes those malocclusions where the lower incisor edge occludes anterior to the cingulum plateau of the upper incisors.

The aetiological factors that affected in cl III :

Skeletal pattern

The skeletal relationship is the most important factor in the aetiology of most Class III malocclusions, and the majority of Class III incisor relationships are associated with an underlying Class III skeletal relationship. Cephalometric studies have shown that, compared with Class I occlusions, Class III malocclusions exhibit the following:

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

The first two of these factors are the most influential. Class III malocclusions occur in association with a range of vertical skeletal proportions, ranging from a reduction of overbite to an increase in the prominence of the chin.

- ❖ *There is evidence to indicate that Class III skeletal patterns exhibit less maxillary growth and more mandibular growth than Class I skeletal patterns.*

Soft tissues

In the majority of Class III malocclusions the soft tissues do not play a major aetiological 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.

Dental factors

Class III malocclusions are often associated with a narrow upper arch and a broad lower arch, with the result that crowding is seen more commonly, and to a greater degree, in the upper arch than in the lower. Frequently, the lower arch is well aligned or even spaced.

- ❖ Class III malocclusions occur when the lower incisors are positioned more labially relative to the upper incisors. Therefore an anterior crossbite of one or more of the incisors is a common feature of Class III malocclusions.
- ❖ Another common feature of Class III malocclusions is buccal crossbite, which is usually due to a discrepancy in the relative width of the arches.

Treatment objectives and limitations :

1. **Reduction of crowding:** in upper arch it is necessary to create a space for crowding by expansion and proclination of upper incisors, while in the lower arch extraction of teeth may be needed for creation of space in treatment of crowding and retroclination of the lower incisor.
2. **Correction of reversed overjet:** in very mild cases, it can be treated by upper incisors proclination & lower incisors retroclination either by fixed or removable appliance.

*In severe skeletal discrepancy >>> surgery.

3. **Correction of incisal overbite:** This could be a deepbite or anterior open bite, the correction of deepbite depends on the correction of reversed

overjet, open bite correction better to be limited for minor cases by fixed appliances for extrusion of upper and lower incisors.

4. **Correction of crossbite**: unilateral crossbite associated with initial contact and translocated closure of the mandible can be corrected by expansion of upper jaw, the bilateral crossbite can be accepted unless there is very narrow upper arch with crowding, so it is possible to expand the upper arch either try rapid maxillary expansion or by expansion screw.

Treatment options of class III malocclusion:

1. Accepting the incisor relationship

In mild Class III malocclusions, particularly those cases where the overbite is minimal, it may be preferable to accept the incisor relationship and direct treatment towards achieving arch alignment.

Also some patients with more severe Class III incisor relationships are unwilling to undergo comprehensive treatment involving orthognathic surgery which would be required to correct their incisor relationship; so upper arch alignment will be done.

2. Orthopedic treatment

Orthopedic correction of Class III malocclusions aims to enhance or encourage maxillary growth and/or restrain or re-direct mandibular growth.

Orthopedic correction of class III malocclusion include the use of following:

- Protraction face-mask used to advance the maxilla, sometimes rapid maxillary expansion has to be used in conjunction with protraction face-mask therapy.
- Screws or mini-plates are used in the posterior maxilla and anterior mandible for Class III elastics.
- A combination of these two techniques – elastics are run between skeletal anchorage in the maxilla and a face mask.
- Chin cup – this has the effect of rotating the mandible downwards and backwards with a reduction of overbite

3. Orthodontic camouflage

- ✓ Correction of an anterior crossbite in a Class I or mild Class III skeletal pattern can be undertaken in the mixed dentition. When the unerupted permanent canines are high above the roots of the upper lateral incisors.

- ✓ Extraction of the lower deciduous canines at the same time may allow the lower labial segment to move lingually slightly.
- ✓ Orthodontic correction of a Class III incisor relationship can be achieved by proclination of the upper incisors, retroclination of the lower incisors or a combination of both. (what is the effect on overbite???)
- ✓ Space for relief of crowding in the upper arch can often be gained by expansion of the arch anteriorly to correct the incisor relationship and/or transverse expansion to correct buccal segment crossbites.
- ✓ Expansion of the upper arch to correct a crossbite will have the effect of reducing overbite....why??? which is a disadvantage in Class III cases.
- ✓ Space is required in the lower arch for retroclination of the lower labial segment, and therefore extractions may be required unless the arch is naturally spaced.
- ✓ Intermaxillary Class III elastic traction from the lower labial segment to the upper molars can also be used to help move the upper arch forwards and the lower arch backwards but care is required to avoid extrusion of the molars which will reduce overbite.

4. Surgery

In proportion of cases, the severity of the skeletal pattern of class III and/or the presence of a reduced overbite or an anterior open bite preclude orthodontics alone, and surgery is necessary to correct the underlying skeletal discrepancy.

It has been suggested that surgery is almost always required if the value for the ANB angle is below -4° and the inclination of the lower incisors to the mandibular plane is less than 80° .

- ❖ In Class III malocclusions a normal or increased overbite is an advantage, as sufficient vertical overlap of the upper incisors with the lower incisors post-treatment is vital for retention and stability.

Believe You Can, and You're Halfway There

GOOD LUCK