

CLASS I MALOCCLUSION

Class I occlusion can be defined by Angle's classification as: the mesiobuccal cusp of the upper permanent molar occlude with the developmental groove of the lower first permanent molar.

This class I occlusion can be divided into:

- ✓ **Normal class I occlusion** that mean class I molar relationship and at the same time the upper canine cusp tip located in the embrasure between the lower canine and first permanent premolar, and class I incisor relationship according to the British Standards incisor classification is that: 'the lower incisor edges occlude with or lie immediately below the cingulum plateau of the upper central incisors'. In addition to that there is no tilted or malposed tooth or teeth, and the anteroposterior relationship of occlusion is normal and there is normal overjet and normal overbite more over there is normal transverse and vertical relationship.
- ✓ **In some subject** the anteroposterior occlusal relationship is normal but there is a discrepancy either within the arches and/or in the transverse or vertical relationship between the arches, this called class 1 malocclusion, the discrepancies include:
 - a) Crowding and irregularities of the teeth.
 - b) Discrepancy in the transverse relationship (crossbite).
 - c) Increase overbite (deepbite).
 - d) Anterior openbite.
 - e) Localized malpositions.
 - f) Spacing.

Aetiology of class I malocclusion:

1. **Skeletal:** In Class I malocclusions the skeletal pattern is usually Class I, but it can also be Class II or Class III with the inclination of the incisors compensating for the underlying skeletal discrepancy. Milder transverse discrepancies are often seen in Class I cases. Increased vertical skeletal proportions and anterior open bite can also occur where the antero-posterior incisor relationship is Class I..

2. **Soft tissue factors:** In most Class I cases the soft tissue environment is favourable and is not an aetiological factor. The major exception to this is bimaxillary proclination, where the upper and lower incisors are proclined. This may be racial in origin and can also occur because lack of lip tonicity results in the incisors being moulded forwards under tongue pressure.
3. **Dental factors:** Dental factors are the main aetiological influences in Class I malocclusions. The most common are tooth/arch size discrepancies, leading to crowding or, less frequently, spacing. The size of the teeth is genetically determined and so, to a great extent, is the size of the jaws. Environmental factors can also contribute to crowding or spacing. For example, premature loss of a deciduous tooth can lead to a localization of any pre-existing crowding. Local factors also include displaced or impacted teeth, and anomalies in the size, number, and form of the teeth, all of which can lead to a localized malocclusion. However, it is important to remember that these factors can also be found in association with Class II or Class III

Aims in class I malocclusion treatment:

1. To improve esthetic of the patient.
2. To improve function of the teeth and jaw.

Treatment of Class I malocclusion:

1. ***Crowding and irregularities of the teeth:*** Crowding is the most common complaint for which patients seek orthodontic treatment, especially that of the anterior region which compromises facial esthetics. It may be in the anterior or posterior regions of one or both the dental arches. It may be mild, moderate or severe, unilateral or bilateral, localized or generalized.

Crowding may be caused due to a number of causes, and multiple factors act together in many cases, of which are:

1. Tooth size-arch length discrepancy, where arch length is lesser than tooth material that leads to the crowding of teeth.
2. Premature loss of deciduous teeth.
3. Prolonged retention of deciduous teeth.
4. Presence of supernumerary teeth.

5. Macrodontic teeth.
6. Altered path of eruption.

Three aspects can be considered in the treatment of crowding:

- ✓ The position, presence, and prognosis of remaining permanent teeth.
- ✓ The site and the degree of crowding which is usually calculated in millimetres per arch or quadrant.
- ✓ The patient's profile.

The common site of crowding either:

In the upper arch:

1. Lateral incisors which crowded labially or palatally.
2. Canines which is either buccally or palatally displaced.
3. 2nd premolars which is crowded palatally.
4. Second and third molars which may be buccally displaced.

In the lower arch:

1. Lower lateral incisors crowded lingually.
2. Canines buccally crowded.
3. 2nd premolars lingually crowded.
4. Second and third molar displaced mesioangular or impaction.

The treatment of crowding either:

Spontaneous relief of crowding by extraction of the deciduous dentition neighboring to the displaced tooth like in case of upper and lower lateral incisors by extraction of the upper and lower primary canines and the spontaneous improvement occurs in the first six months after extractions.

If the alignment is not complete after one year so then further improvement will require active tooth movement with appliances, or we can relief the crowding by creation of space by any method of space creation according to the degree of crowding.

In case of buccally or palatally displaced canine >> extraction of upper or lower first premolar according to the position of the canine and use either fixed or removable orthodontic appliances.

In case of 2nd premolar we can extract it if it completely excluded from the dental arch, or we can align it if the first premolar is a badly carious tooth by using fixed or removable orthodontic appliances.

Note:

Extraction of teeth in very mild crowding may result in residual spacing of the arches unless fixed appliances can be used for tooth movement. In more severe crowding spontaneous space closure may be beneficial but may not allow relief of irregularity without the use of appliances.

The simple irregularities of the upper arch can be treated with removable appliances, malposition of teeth requiring torqueing or bodily movement needs to be carried out with fixed appliances.

2. **Crossbite:** Crossbite of the buccal teeth which either unilateral or bilateral crossbite correct by expansion either removable appliance or fixed appliance.
3. **Increased overbite (deepbite):** Need correction if it is producing gingival trauma, it can be corrected by using simple anterior bite planes to permit vertical growth of the posterior buccal segment (this is by removable appliance).

While in case of requirement a correction in the incisor angulations to achieve correct interincisal angle >>> it need fixed appliance to produce torqueing movement.

4. **Openbite:** Requiring vertical movement (extrusion) of the incisor teeth or (intrusion) of posterior teeth which can be achieved only with the use of fixed appliance.
5. **Spacing:** Generalized spacing is rare and it is due to either hypodontia or small teeth in a well-developed arches. Orthodontic management of generalized spacing is frequently difficult as there is usually a tendency for the spaces to re-open unless permanently retained. In milder cases it may be wiser to encourage the patient to accept the spacing, or if the teeth are narrower than average, acid-etch composite additions or veneers can be used to widen them and thus improve aesthetics.

In severe cases of hypodontia a combined orthodontic–restorative approach to localize space for the provision of prostheses, or implants, may be required. In case of proclination of teeth: removable appliance or fixed appliance could be used.

6. **Median diastema:** is a space between the central incisors, which is more common in the upper arch.

It is important to take a periapical radiograph to exclude the presence of a supernumerary tooth which, if present, should be removed before closure of the diastema is undertaken. As median diastemas tend to reduce or close with the eruption of the canines, management can be subdivided as follows.

- Before eruption of the permanent canines intervention is only necessary if the diastema is greater than 3 mm and there is a lack of space for the lateral incisors to erupt. Care is required not to cause resorption of the incisor roots against the unerupted canines.
- After eruption of the permanent canines space closure is usually straight forward. Fixed appliances are required to achieve uprighting of the incisors after space closure.
- ✓ Prolonged retention is usually necessary as diastemas exhibit a great tendency to re-open, particularly if there is a familial tendency, the upper arch is spaced or the initial diastema was greater than 2 mm.
- ✓ In view of this it may be better to accept a minimal diastema, particularly if no other orthodontic treatment is required. Alternatively, if the central incisors are narrow a restorative solution, for example veneers, can be considered.
- ✓ If it is thought that the frenum is a contributory factor, then frenectomy should be considered following space closure....???

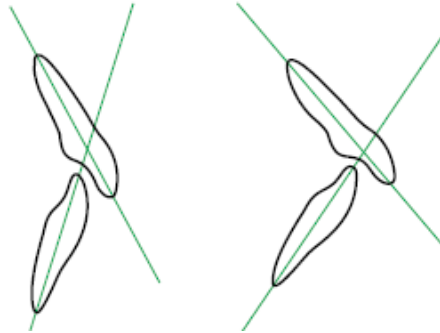
7. **localized malposition:** Could be result from the abnormality of the tooth germ (canines and 2nd premolar). Which are the most commonly affect teeth. Treatment depend on general state of the dental arch whether it is crowded or spaced.

Usually the last tooth that erupted in the segment are displaced like upper canine, upper laterals, upper and lower 2nd premolar and upper and lower third molars. Such displacement can be treated by relief of crowding.

8. Bimaxillary proclination:

Bimaxillary proclination is the term used to describe occlusions where both the upper and lower incisors are proclined. Bimaxillary proclination is seen more commonly in some racial groups (for example Afro-Caribbean).

When bimaxillary proclination occurs in class I malocclusion the overjet increased due to the angulation of incisors.



Management is difficult because both upper and lower incisors need to be retroclined to reduce the overjet. Retroclination of the lower labial segment will encroach on tongue space and therefore has a high likelihood of relapse following removal of appliances. For these reasons, treatment of bimaxillary proclination should be approached with caution and consideration should be given to accepting the incisor relationship.

- ✓ If the lips are incompetent, but have a good muscle tone and are likely to achieve a lip-to-lip seal if the incisors are retracted, the chances of a stable result are increased. However, the patient should still be warned about the stability of the case.
- ✓ Where bimaxillary proclination is associated with competent lips, or with grossly incompetent lips which are unlikely to retain the corrected incisor position, permanent retention is advisable.

Post treatment retention:

This depend on the:

1. Severity of the case.
2. Type of tooth movement.
3. Type of treatment.

Never Underestimate Yourself

GOOD LUCK