Management Of Deep Bite

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Introduction

- Deep overbite presents an orthodontist with challenge in any of its many forms.
- Diagnosis ,treatment planning and appropriate mechanics form an backbone of successful orthodontic treatment.

Etiological Consideration

- According to etiological stand point over bite can be differentiate into developmental deep bite and acquired deep bite.

Developmental (Genetic) Deep Bite

- Skeletal over deep over bite with a horizontal growth pattern is a common malocclusion.
- Dentoalveolar deep bite caused by supra occlusion of the incisors, these cases the interocclusal clearance is usually small meaning the over bite is functionally a pseudodeep bite.

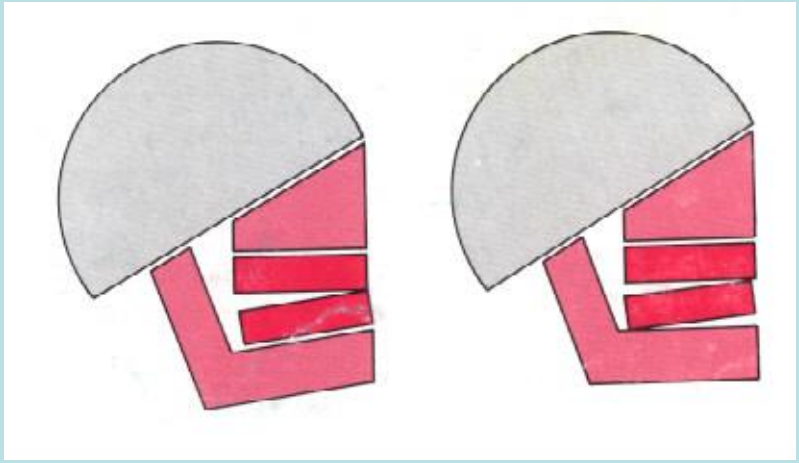
Acquired Deep Bite

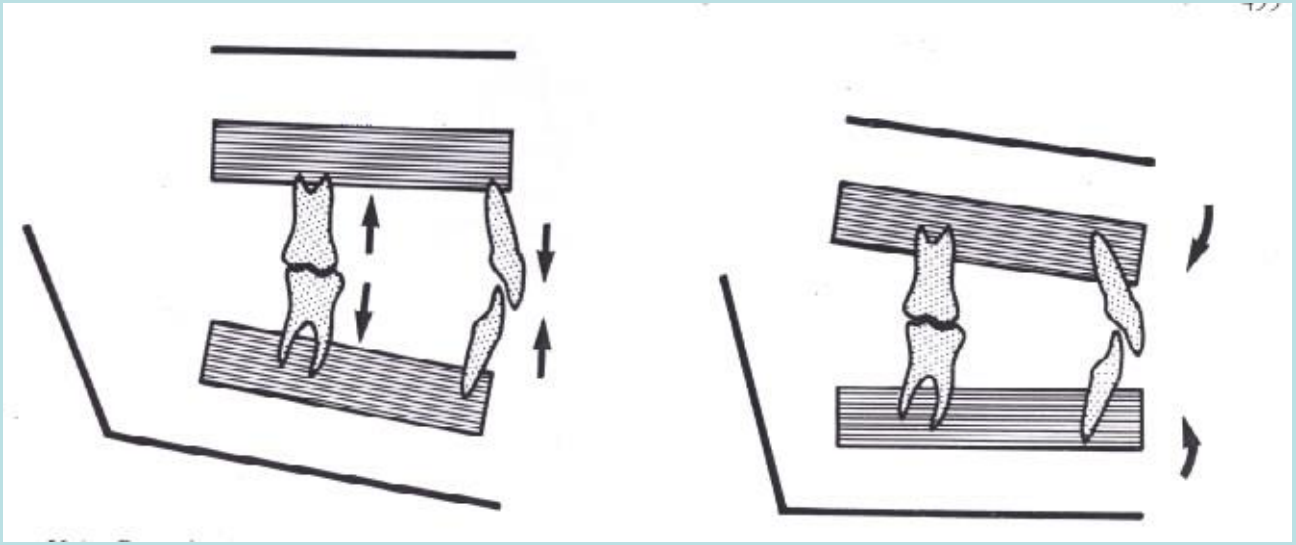
- A lateral tongue thrust or postural position frequently can produce acquired deep bite this type of function produce a infra-occlusion of the posterior teeth which intern leads to a deep over bite, the freeway space is large which is favorable for dentofacial orthopedics functional appliance treatment.
- E.g. class II div. II.

- Premature loss of deciduous molars or early loss of permanent posterior teeth can cause an acquired secondary deep over bite, particularly if the contiguous teeth are tipping into the extraction sites.
- The wearing away of the occlusal surface or teeth abrasion can produce an acquired secondary deep over bite in some patients.

- Deep over bite can be localized in either

1. Dentoalveolar
2. skeletal.





Dentoalveolar deepover bite

Skeletal deep over bite

Dentoalveolar deep over bite

1. Deep overbite caused by infraocclusion molars has the following symptoms.
2. Molars are partially erupted.
3. Interocclusal space is large.
4. A lateral tongue thrust and posture are present.
5. The distance between the maxillary and mandibular basal plane and occlusal plane are short.

- Deep over bite caused by over eruption of the incisors has the following symptoms:

1. Incisal margins of the incisors extend beyond the functional occlusal plane.
2. Molars are fully erupted.
3. Curve of spee is excessive(compensating curve).
4. Interocclusal space is small.

Skeletal Deep Over Bite

- Is characterized by a horizontal type of growth pattern.
- Anterior facial height is short, particularly the lower facial third, where as posterior facial height is long.
- The horizontal cephalometric planes (sella-nasion, palatal, occlusal and mandibular planes) are parallel or convergent.
- Interocclusal clearance is usually small

The inclination of the maxillary base is significant in the evaluation of the treatment plane for this type of problem.

1. An extreme horizontal growth pattern can be at least partially compensated by an up and forward inclination of the maxillary base (anti-inclination).
2. The combination of the horizontal growth pattern with a downward and forward inclination (retroinclination) of the maxillary base results in a more severe skeletal deep bite.

Vertical Malocclusion – Deep Bite

Excessive over bite – deciduous dentition.

- Over bite is the considered to be excessive when the incisors overlap by more than half.
- Genuine deep bite in a deciduous dentition where the lower anterior teeth are covered completely as result of an increased in the height of the upper anterior alveolar process.
- An excessive overbite may be encountered during any developmental period of dentition.

Deep bite with class III malocclusion

- Deep bite conjunction with mandibular prognathism and inverted over bite.
- This vertical deviation can be related with any anteroposterior or transverse malocclusion.

Length of the clinical crown

- Deep bite in a patient with long crowns of the incisors but without any increase in height of the anterior alveolar process.

Closed bite caused by loss of posterior teeth

- Gingivally supported closed bite resulting from premature extraction of teeth in the mixed dentition.
- Pathologically the closed bite is caused by an increased forward and upward rotation of the mandible, resulting form lack of posterior dental support.

Functional Classification

According to Hotz and Muhlemann (1952) one should different between two types:

1.True deep over bite.

2.Pseudodeep overbite.

True deep over bite

1. Infraocclusion of molars.
2. Large freeway space.

- The prognosis for successful therapy with functional method is favorable.

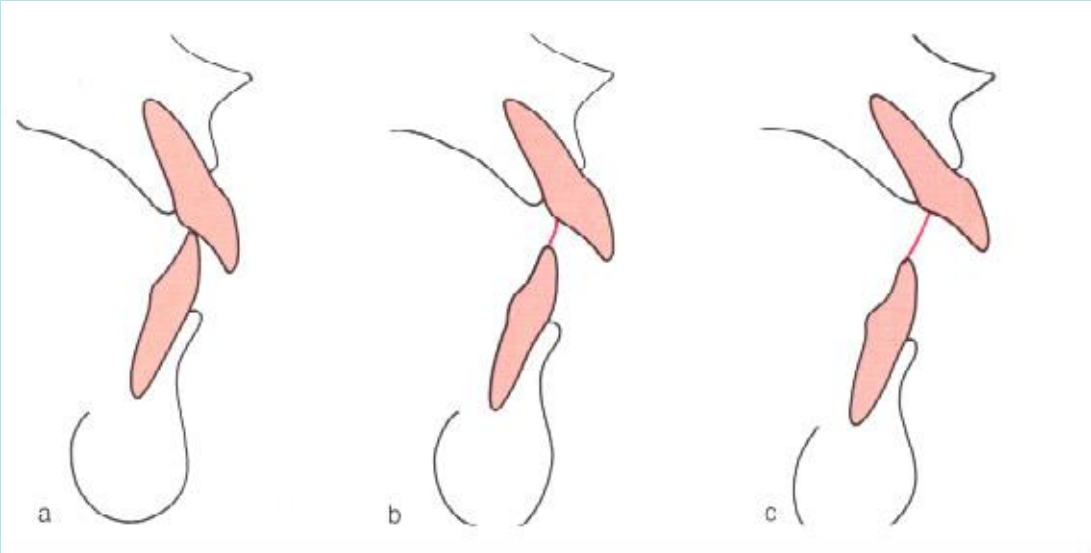
Pseudo deep over bite

1. Molars are fully erupted.
2. Over eruption of the incisors.

- The prognosis for successfully therapy with functional method is unfavorable.

- If the freeway space is small, extrusion of the molars adversely effect the rest position and may create TMJ problems or cause a relapse of the deep overbite.

- Occlusal position.
- Pseudo deep bite with small freeway space.
- True deep overbite with large freeway space.


a
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Dentoalveolar

Cephalometrically features are :

1. Deep over bite in a case of vertical growth type, combined with anti-inclination of the maxilla.
2. Lingual tipping of the lower incisors and infra-position of first molar.
3. As downward and backward rotation of the mandible is to be expected, the prognosis for therapeutic bite opening is favourable.

Skeletal Deep Bite

Cephalometrically features are :

1. Deep over bite is caused by the marked horizontal growth direction of the mandible, which is not compensated by the anti-inclination of the maxilla.
2. Dento-alveolarly, the skeletal displasia is increased by the lingo-version of the upper anterior teeth.

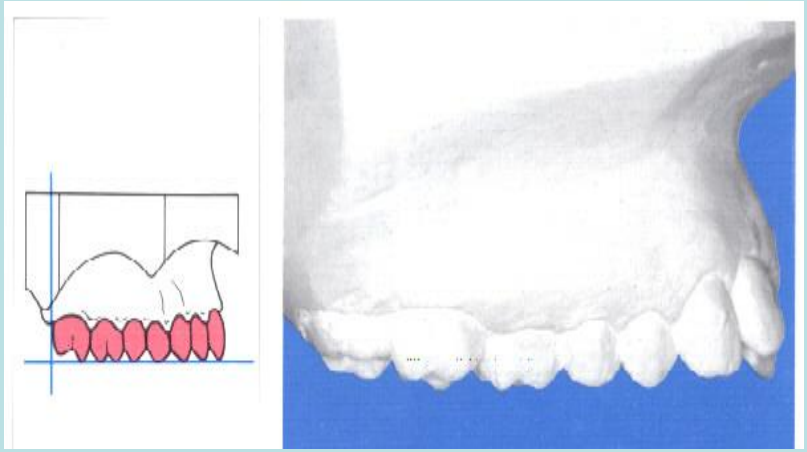
Deep overbite cephalometric features

Dentoalveolar

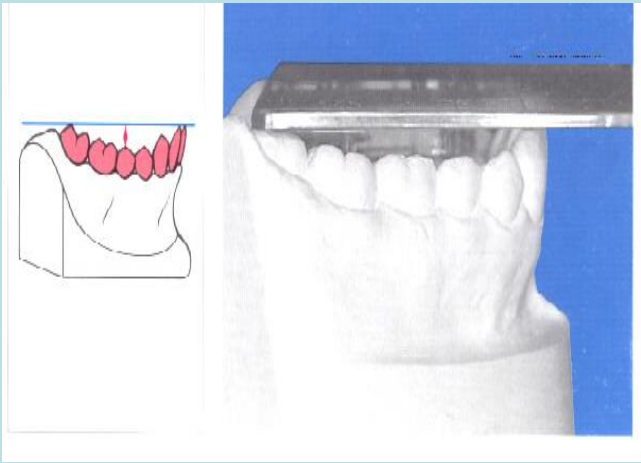
skeletal

Vertical plane –normal incisor position

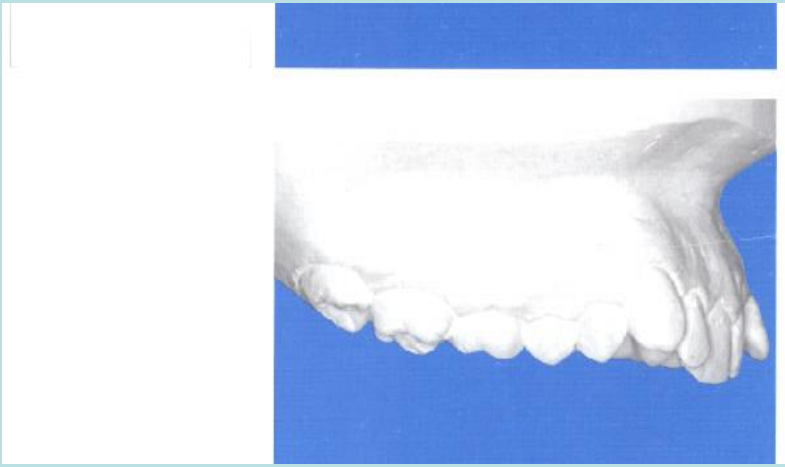
- In a correct vertical relationship the incisal edges contact the occlusal plane.
- The occlusal plane and the tuberosity plane perpendiculartо it.
- The occlusal plane is defined by the tangent which runs through the tips of the mesiobuccal cusps of the first molars and the buccal cusp of the premalars

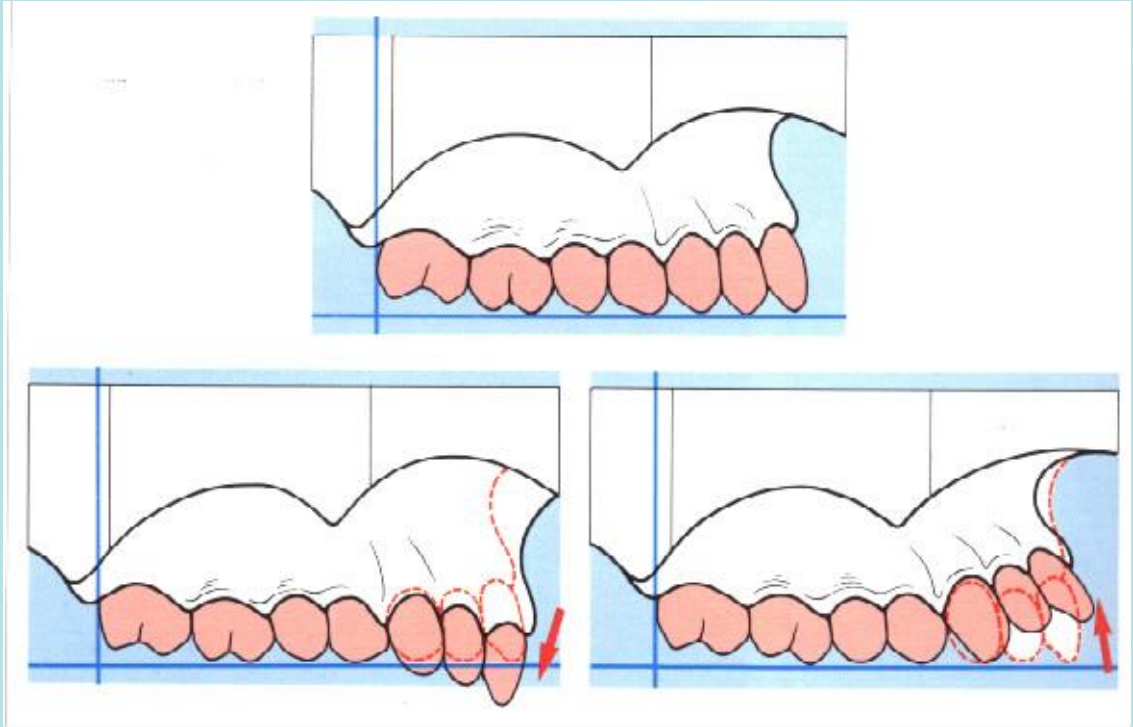


- The depth of the cure of spee is defined as the distance from the vertx of the curvature to the side of a plastic template placed over the lower arch.
- The templates touches anteriorly the incisal edges and posteriorly the distsl-most molar cusps.

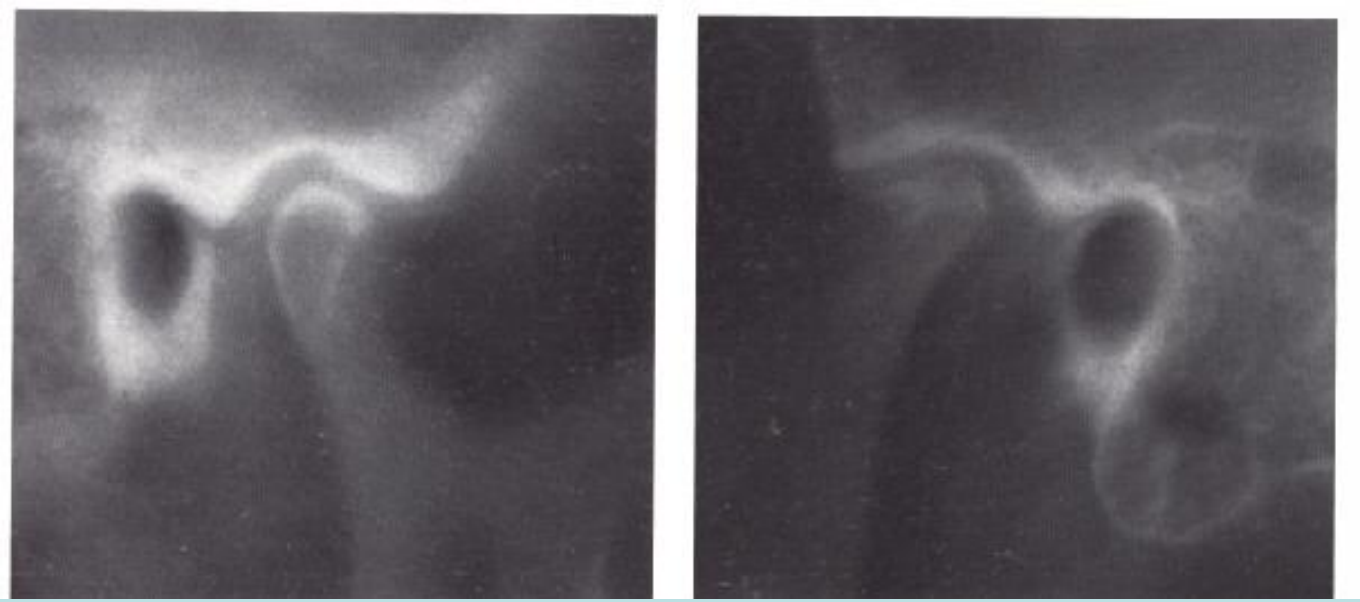


- Supraversion of the incisors with overeruption in relation to the occlusal plane





Tomographic of theright left temporomandibular joints in full inter cuspation.
differences between the right and left sides regarding the shape of the condyles, the roof of the fossa, and the with of the joint space.
Right ---the condyle and the roof of the fossa are flattened severly; the condyle is dislocated anteriorlyin the glenoid cavity



Adolescent with classII,division I malocclusions and lip dysfunction (lip biting or sucking) are most frequently affected by TMJdisorders. For this reason,orofacial dysfunctions must also be assessed as a part of the functional analysis as they may lead to unbalanced loading of the joints and thus trigger off tempromandibular joint disturbances in adolescents.

Factors effecting the overbite

- **Growth of body of maxilla.**

  Vertical growth of the maxilla pushes the mandible downwards and backward thus increasing in anterior facial height and its is due to vertical growth of the maxilla.
- **Ramus height**

  The length of the ramus increased it cause the mandible to move away from the maxilla and therefore increase the interocclusal space, if growth of ramus length was restricted its slow down the eruption of the posterior teeth but it did not stop eruption of the anterior teeth leading to an deep overbite.

- ***Madibular condyle***

  Proportionate or disproportionate growth to the rest of the mandible can occur which will effect the over bite.

  Molar height

  Degree of eruption of posterior teeth.

  Incisor height

  Degree of eruption of incisors.

- The degree of overbite was related to the mesiodistal dimension between the upper and lower incisor teeth.

Morphological features

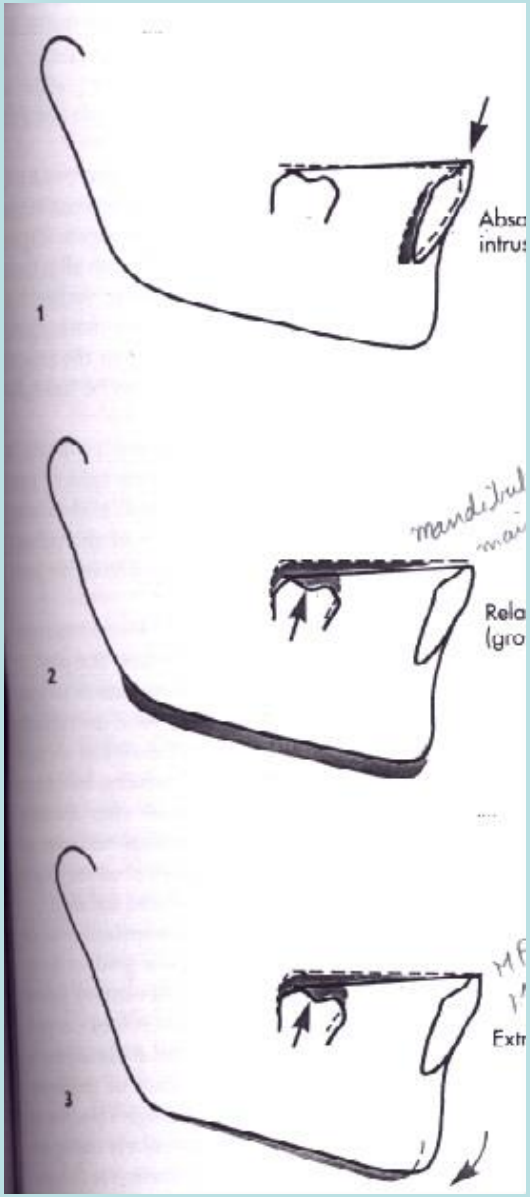
The mandible in skeletal deep over bite shows certain distinct feature.

1. Ramus is broad anteroposteriorly with a big coronoid process indicating a strong temporalis muscle.
2. Flaring of gonial process laterally seen indicating a strong massceter action with the absence of the anti-gonial notch.
3. The ramus and corpus length or almost equal.
4. Mandibular symphysis is broad but short vertically.

THREE POSSIBLE WAYS FOR INTRUSION

- True intusion is achived by moving the root apices closer to the lower border.
- Relative intrusion of the incisors is achived by keeping them where they are ,while the mandible grows and the posteriors teeth erupt
- Apparent intusion is achived by extrusion of posteriors teeth

THREE POSSIBLE WAYS FOR INTRUSION



ABSOLUTE INTRUSION

RELATIVE INTRUSION

EXTRUSION

Principles of intrusion

- Controlling force magnitude

Lowest magnitude of force capable of intruding must be used.

Heavier forces may not increase the rate of intrusion, but

1. Increase in the rate of root resorption
2. the side effects felt by the anchorage unit.

- Anterior single point contacts

  Not inserted in brackets-torque may be introduced

  If lingual root torque is present intrusive forces reduced.

  Undesirable curves may be introduced in wire.

Point of force application

- If the force is passed through center of resistance of any tooth it will intrude the tooth without producing any labial or lingual rotation of the tooth.
- Procumbent incisors must be handled carefully
- Because the intrusive force is farther from the center of resistance ,a much greater moment occurs and much more lingual root movement occur

- There are two ways to handle it:

1. To apply the vertical force lingual to the center of resistance either with a continuous intrusion arch or three piece intrusion arch.
2. To retract the anterior teeth first and produce more upright axial inclinations and then proceed with intrusion

Selective intrusion

- In classII division 2 cases ,the central incisors should be intruded using intras-egmental intrusion, so first central should be intruded more than the laterals
- Indiscriminately placing an alignment segment into the four incisor will level them by erupting the laterals to the level of the centrals rather than intruding the centrals ,also movements are produced which cause the roots to converge mesially.

Control of reactive units

- Basic side effects could be anticipated from intrusion mechanics.
- ↦ Alters the plane of occlusion of the buccal segment , it is caused by the moment produced by the intrusion arch on the buccal segments. in maxilla, the plane of occlusion steepens in the mandible it flattens.

To minimize this side effect,several steps must be taken:

1. In the anchorage unit , incorporate as many teeth as possible
2. Keep the force of the intrusion arch as low as possible
3. Transpalatal arch in he maxilla or a lingual arch in the mandible
4. Do as much retraction initially as possible to decrease the length of the moment arm.

Avoiding extrusive mechanics

1. Extensive mechanics ,such as class II and class III elastics and cervical headgear with high outer bows to the maxillary arch.
2. Placement of reverse cure of spee in the loxer arch wire to prevent extrusion of premolars,because patients who need genuine intrusion

Treatment of skeletal deep over bite

1. The treatment of skeletal deep over bite required consideration of the sagittal dimensions most skeletal deep over bite or combined with class ii sagittal intercuspation.
2. During the growth period, the unfavorable inclination of the jaw bases should be corrected. This can be achieved by the use of extra-oral forces or partly by an functional therapy.

3. Growth inhibition of the upper jaw and growth promotion in the lower jaw combines with dentoalveolar changes should result in the improvement of deep over bite. Treatment can be performed by using headgear in combined with an activator.
4. Distalization and elongation of the upper first permanent molar is the first step. The eruption of the teeth in the posterior segment can be guided properly trimmed activator.

5. Dentoalveolar compensation for a deep bite is needed especially in skeletal deep over bite treated after the growth period completed. This compensation can be achieved by the extrusion and distalization of the maxillary molars. Aided by second molar extraction intrusion and labial tippping of the lower incisors with leveling of the curve of spee further benefits the dentoalveolar compensation.

Dentoalveolar Deep Over Bite

True Deep Over Bite

1. In true deep bite the choice of treatment is extrusion of posterior teeth.
2. If a lateral tongue thrust is present, a lateral tongue crib is added to the palatal plate.

Treatment of acquired deep bite

- Treatment being carried out during eruption levelling of the curve of spee can be carried out by the use of an activator.
- Anterior bite plane can be used.