

# Deep Bite- An Overview

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## ***Abstract:***

***Deepbite is one of the commonly encountered vertical discrepancy. When there is an excessive overbite, the patient is said to have andeepbite. As with many of the orthodontic problems, deepbite can also be skeletal or dental. It is important for us to diagnose a deep bite case properly and plan treatment accordingly.***

***Keywords: deep bite, management, soft tissue considerations***

## **INTRODUCTION:**

Malocclusion can occur in three planes of space i.e. sagittal, transverse and vertical plane. Dental vertical relationships can be divided into four major categories: anterior open bite, anterior deep bite, posterior open bite and posterior collapsed bite with overclosure. The maxillary dental arch being larger than the mandibular dental arch allows the maxillary anteriors to overlap the mandibular anteriors. This overlapping of the mandibular teeth occurs in both the horizontal as well as vertical direction. The horizontal overlap is called as overjet while the vertical overlap is termed overbite. Thus a condition where there is an excessive vertical overlapping of the mandibular anteriors by maxillary anteriors is termed as deep bite. Unfavorable sequelae of this malocclusion predisposes a patient to periodontal involvement. Abnormal function, improper mastication, excessive stresses, trauma, functional problems,

bruxism, clenching and temporomandibular joint disturbance make geriatric dental service a losing battle unless overbite can be controlled.

If the maxillary incisors overlap the mandibular incisors by 5% to 25%, it is considered normal. If the overlap is between 25% to 40%, it is increased overbite, it is said to be deepbite if the overlap is more than 40%. The prevalence of deepbite in Indian children is 12-20 %.

#### **Classification:**

According to its origin, deep bite is classified as Dental or skeletal deep bite. Dental deep bite can be because of infraocclusion of molars or because of supra eruption of incisors. Skeletal deep bite can be due to clockwise rotation of maxilla or counter clockwise rotation of mandible or a combination of both.

According to function deep bite can be true or pseudo deep bite. True deep bite is due to infraocclusion of molars and this is usually associated with lateral tongue posture or lateral tongue thrust. Pseudo deep bite is due to supra eruption of incisors. The incisal edges are well above the functional occlusal plane in these cases.

Depending on the extent of deep bite, it can be Incomplete or complete deep over bite. It is said to be complete deep bite if there is a contact between the incisal edge of the lower incisor with the upper incisor or palatal mucosa. It is incomplete deep bite, if there is no contact.

Akerly in 1977, classified deepbite into four types:

Type 1: the lower incisors occlude with the palatal mucosa causing mucosal trauma away from the palatal gingival margin

Type 2: The lower incisors occlude with and traumatise the palatal gingival margins of the upper incisors

Type 3: Traumatic occlusion leads to stripping of the lower labial and the upper palatal gingivae

Type 4: The incisors sheer past each other causing wear on the palatal aspects of the upper incisors and sometimes on the labial aspect of the lower incisors. This may be associated with loss of posterior dental support and/or a parafunctional habit.

#### **ETIOLOGY :**

They are classified into 2 factors:

- a. Inherent factors
- b. Acquired factors

#### **INHERENT FACTORS :**

1. Tooth morphology:  
An individual who has anterior teeth with long crowns will appear to have a greater overbite than another person with short crowns, even though the contact relationship of the incisors in both cases may be the same. Therefore, any measurement of the degree of overbite should be derived not only from the amount that the maxillary incisor overlaps the labial surface of the mandibular tooth but also from the point on the palatal surface at which the opposing tooth strikes.
2. Skeletal pattern :  
The deep overbite may be a reflection of skeletal pattern that is reflected to the total malocclusion. Excessive overbite is most commonly found in class II malocclusions. Some times it is present with class I and class III malocclusion.
3. condylar growth :  
In normal individuals, the growth at the head of the condyle occurs in an upward and backward direction. Mandibular growth is expressed as a downward and forward displacement<sup>2</sup>  
Acquired factors :
  1. muscular habits:  
Severe clenching or grinding habits or hypertonicity of the masticatory muscles may cause depression of the posterior teeth. Excessive tooth wear also may result in a loss of vertical height.

2.changes in tooth position:

Premature loss of deciduous molar teeth may permit mesial drifting of the first permanent molars with subsequent impactions or crowding of bicuspid teeth. This anterior displacement of the posterior support of the dentition may lead to the development of an excessive overbite.

3.the loss of posterior supporting teeth:

In the adult dentition, extraction of molar or bicuspid teeth without replacement will permit adjacent teeth to drift toward the space. Such migration often causes abnormal axial inclinations and a deepening of the bite or commonly called as collapsed bites. This frequently directs excessive trauma against maxillary incisor teeth, and anterior displacement may result.

4.lateral tongue thrusting habit:

A lateral tongue thrust or postural position frequently can produce an acquired deep overbite. This type of dysfunction produces an infraocclusion of posterior teeth, which in turn leads to a deep bite. In these cases the free way space is usually large, which is favorable for functional appliance treatment

### **DIAGNOSIS:<sup>3</sup>**

#### **1) Clinical examination:**

##### **A) Extraoral examination**

Full face and profile evaluations are made with the head in the natural position. By relating the parts of face to one another, the patient's principal esthetic problems are identified. The extra-oral examination shows following features in deep bite cases.

1. Full-face examination typically discloses that the patient has a short, square face and an edentulous appearance.
2. When the jaws are at rest, or when the patient is speaking or smiling, the maxillary incisors are hidden behind the upper lip.
3. The upper lip curves downward and the corners of mouth are below the occlusal line.
4. When the mandible is in centric occlusion, distinct skin folds are seen lateral to the oral commissure.
5. A study of the middle third of the face shows broad nasal alar bases and large nostrils.
6. The posterior part of face appears wide because of prominent mandibular angles.
7. Large masseter muscles are attached to the laterally flared gonial processes.
8. Analysis of the lower third of face reveals that the naso-labial angle is essentially normal or obtuse.
9. There is distinct chin button, which is made more apparent by a deep mentolabial fold.
10. Large anteriorly attached masseter muscles and small gonial angles add to square appearance of the patients face.
11. Studying the angle formed between lower border of mandible and Frankfort horizontal plane can assess deep bite relationship. Normally the two planes intersect at the occipital region. If the two planes meet beyond occipital region, it indicates a deep bite case.

##### **B) Intraoral examination**

In general intraoral examination of deep bite shows

- 1) Absolute transverse maxillary excess.
  - 2) The maxillary arch is broad and the palatal vault is typically flat.
  - 3) Maxillary buccal crossbites are commonly associated with interdental spacing.
  - 4) Gingival recession with maxillary and / or mandibular incisors is seen.
- 2) *Cephalometric analysis:*
- 1) Reduced Jarabak Ratio
  - 2) Reduced lower anterior facial height
  - 3) Increased ramal length
  - 4) Reduced Y-axis
  - 5) Reduced Gonial angle
  - 6) Reduced mandibular plane angle

- 7) Near Parallel horizontal reference planes
- 8) Forward rotation of mandible
- 9) Increased interincisal Angle

#### **TREATMENT PLANNING CONSIDERATIONS:**

##### **Soft Tissue Consideration:<sup>4</sup>**

##### **Interlabial Gap:**

In patients with large interlabial gaps the goal should be to reduce it or to maintain it. Any extrusive mechanics in the molar area should be avoided

##### **INCISION - STOMION DISTANCE:**

A 3 to 4 mm incision - stomion distance is esthetically pleasing. Any attempt to correct deep overbite with extrusion of molars increases this distance with concomitant increase in the interlabial gap

##### **SMILE LINE:**

For patients with a gingival smile, the goal should be to prevent extrusion of posterior teeth at any cost.

##### **LIP LENGTH :**

In patients with short upper lip, the treatment option of choice in these patients is to correct deep overbite by intrusion of upper incisors.

##### **LIP TONICITY**

In patients with hyperactive and tense lips, proclining the upper and lower incisors can result in relapse, owing to muscle pressure.

##### **SKELETAL CONSIDERATION:**

The vertical dimension of the patient has to be considered in treatment planning. In patients with increased lower vertical dimensions, extruding the posteriors further should be avoided.

#### **TREATMENT OPTIONS:**

##### **Extrusion Of The Posterior Teeth:**

This method is often indicated in patients having a steep occlusal plane and in growing children, in whom posterior eruption can be tolerated without ultimately hinging the mandible open. It is contraindicated in non growing vertical growers. Extrusion of molars of an average of 1mm results in 2 to 2.5 mm of bite opening.

##### **Intrusion Of The Anterior Teeth:**

Bite opening in patients with a vertical growth pattern should be accomplished by means of intrusion of incisors. The deep bite correction in these patients by means of extrusion of molars may worsen their facial profile. Also in adults, where bite opening is aimed for, intrusion of incisors should be our first choice. Increasing the lower anterior facial height by extrusion of molars may not always be a stable situation in adult patients. However, root resorption is a common side effect.

The maxillary incisors should be moved in the vertical direction that improves their relationship to the resting lip position, and the tooth-to-lip position should be monitored constantly throughout treatment.

##### **Uprighting Or Distalizing The Posterior Teeth:**

When the posterior teeth are made upright or when they are distalized, because of the wedge effect, the mandible will auto rotate downward and backward and help in correcting the deep bite

##### **Proclining The Anterior Teeth:**

With every five degree proclination of the incisors, the overbite gets reduced by 1 mm.

**CONCLUSION:**

Deep overbite can be corrected by many ways like intrusion of anterior teeth, extrusion of posterior teeth or a combination of anterior intrusion and posterior extrusion, proclining the anterior teeth or sometimes even surgically. However, it should be decided which method will be more beneficial or which will improve the patients facial appearance and functional efficacy based on correct diagnosis and other considerations.

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