Partial Denture

Mandibular major connectors

M.Sc Maha ALmhnaa

Lecture 3

Mandibular major connectors

Six types of mandibular major connectors are:

1- Lingual bar.
2- Linguoplate (lingual plate).
3- Sublingual bar.
4- Lingual bar with cingulum bar (continuous bar).
5- Cingulum bar (continuous bar).
6- Labial bar and buccal bar

1- Lingual bar:

Characteristic and location:

1- Half pear shaped in cross section with bulkiest portion inferiorly located.
2- The major connector must be contoured so that it does not present sharp margins to the tongue and cause irritation by an angular form.
3- Superior border tapered to soft tissue (gingival tissue). located at least 4 mm inferior to gingival margins .
5- Inferior border located at the ascertained height of the alveolar lingual sulcus when the patient's tongue is slightly elevated and should be slightly round when the framework is polished. A round border will not impinge on the lingual tissue when the denture bases rotate inferiorly under occlusal loads.

Indications:

1- The lingual bar should be used for mandibular removable partial dentures where sufficient space exists between the slightly elevated alveolar lingual sulcus and the lingual gingival tissue (at least 8 mm).
2- The lingual bar is the mandibular major connector of choice if sufficient bracing and indirect retention can be provided by

clasp and indirect retainers, and if future additions of prosthodontic teeth to the framework to replace extracted natural teeth are not anticipated

3- Diastema or open cervical embrasures of anterior teeth.

4- Overlapped anterior teeth.

Contraindications:

1- Less than 8 mm between the marginal gingival and the activated lingual frenum and floor of the mouth.

2- Lingually inclined teeth.

3- An undercut lingual alveolar ridge which would result in an excessivespace between the bar and the mucosa.

2- Linguoplate(lingual palate):

The linguoplate is a lingual bar with superior border extending upwards to contact cingula of anterior teeth and lingual surface of involved posterior teeth on their high of contour. Upper border should follow the natural curvature of the supracingular surfaces of the teeth and should not be located above the middle third of the lingual surface except to cover interproximal spaces to the contact points. The half-pear shape of a lingual bar should still form the anterior border providing the greatest bulk and rigidity. All gingival cervices and deep embrasures must be blocked out parallel to the path of placement

to avoid gingival irritation and any wedging effect between the teeth. The linguoplate does not in itself serve as indirect retainer. When indirect retention is required, definite rests must be provided for this purpose. Both the linuoplate and the cingulum bar should ideally have a terminal rest at each end regardless of the need for indirect retention.

Indications:

1- When the space from the free gingival margins to the slightly elevated floor of the mouth is less than 8 mm.

2- In Class I when a removable partial denture will replace all mandibular posterior teeth, a lingual plate should be used.

3- When the remaining teeth are periodontally weakened; the lingual plate may be used to splint these weak teeth, and to distribute applied forces over the remaining teeth in group function to provide support to the prosthesis.

4- When the future replacement of one or more incisor teeth will be facilitated by the addition of retention loops to an existing linguoplate.

Contraindications:

1- Overlapped anterior teeth, that leads to small gaps between the superior1. edge of the plate and the teeth.

2-Lingually inclined teeth.

3- Open cervical embrasures where the plate would be visible, so a lingual bar with continuous bar or labial bar should be considered.

4- Diastema.

3- Sublingual bar:

A modification of the lingual bar that has been demonstrated to be useful when the height of the floor of the mouth does not allow placement of the superior border of the bar at least 4 mm below the free gingival margin. The shape of the sublingual bar remains essentially the same as that of a lingual bar, but placement is inferior and posterior to the usual placement of a lingual bar, lying over and parallel to the anterior floor of the mouth.

Indications:

1- Where the height of the floor of the mouth in relation to the free gingival margins will be less than 6 mm.

2-Bracing and indirect retention can be provided by clasps and indirect retainers and future additions of prosthetic teeth to the framework are not anticipated.

3- In the presence of an anterior lingual undercut that would require considerable block out for a conventional lingual bar.

4- Diastemas and open cervical embrasures of anterior teeth.

5- Overlapped anterior teeth.

Contraindications:

1-Where a lingual bar or lingual plate will suffice.

2- Where bracing and/or indirect retention must be provided by contact of the major connector with the teeth.

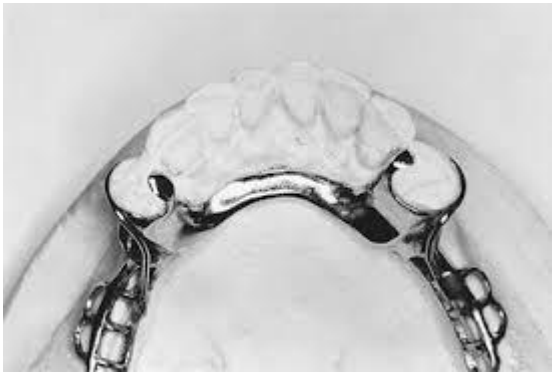
3- Where future additions of prosthetic teeth to the framework are anticipated.

4-Remaining natural anterior teeth severely tilted toward the lingual.

5- Interference with lingual tori.

6- High attachment of a lingual frenum.

7- Interference with elevation of floor of mouth during functional movements.



4- Lingual bar with cingulum bar(continuous bar):

This type of mandibular major connector consists of lingual bar with another bar crossing the lingual surface of lower anterior teeth located on or slightly above the cingula of anterior teeth .

Characteristics and location:

1-The lower bar should be shaped and located same as lingual bar major connector component when possible.

2-The upper bar should be half oval in cross section, thin (1mm), narrow (3 mm) metal strap located on cingula of anterior teeth,

scalloped to follow interproximal embrasures with inferior and superior borders tapered to tooth surfaces.
3-The two bars should be joined by rigid minor connectors at each end.
4-Terminal rests should be placed at each end of the upper bar.

Indications

1- When a lingual plate is indicated but the open cervical embrasures of anterior teeth would objectionably display metal in a frontal view.

Contraindications

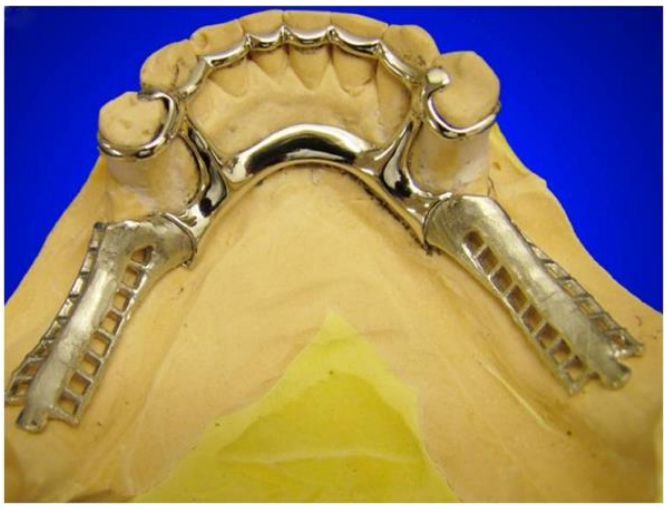
1-Any contraindication for a lingual bar.
2-Any contraindication for a lingual plate except open cervical embrasures.
3- Wide diastemas.

Advantages:

1-More rigid than lingual bar.
2-Covers less tooth and tissue surface than lingual plate.
3- Because the gingival tissues and the interproximal embrasures are not covered, a free flow of saliva is permitted and the marginal gingiva receives natural stimulation.

Disadvantages:

1-Very complex design.
2- May be objectionable to patient because there are four edges exposed to the tip of the tongue.
3- Tendency to trap food debris



5- Cingulum bar (continuous bar):

Indications:

1- When a lingual plate or sublingual bar is otherwise indicated but the axial alignment of the anterior teeth is such that the excessive block out of interproximal undercuts would be required.

2- Height of activated lingual frenum and floor of the mouth at the same level of marginal gingiva.

3- Inoperable tori or exostosis at the same level as the marginal gingiva.

4- Severely undercut lingual alveolus.

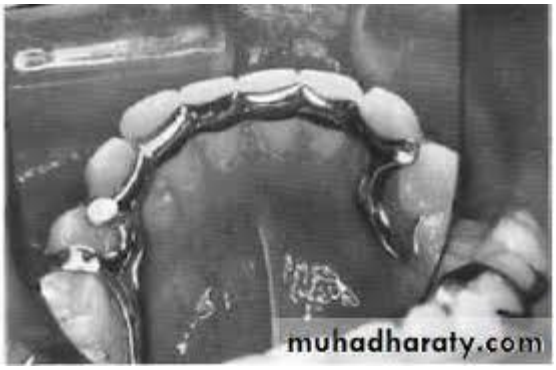
5- Concern that a major connector traversing the gingival sulcus will cause a periodontal problem.

6- Considerable gingival recession.

Contraindications:

1- Anterior teeth severely tilted to the lingual.

2- When wide diastema exists between the mandibular anterior teeth and the cingulum bar would objectionably display metal in a frontal view.



6- Labial bar and buccal bar:

These bars are situated in the labial or buccal sulcus. Superior border located at least 4 mm inferior to labial and buccal gingival margins and more if possible. Inferior border located in the labial-buccal vestibule at the juncture of attached (immobile) and unattached (mobile) mucosa. It is always flatter and broader than the lingual bar and must be relieved in the canine eminence area. This type of mandibular major connector used in few situations and it is the least one used as mandibular major connector.

Indications:

1- When lingual inclinations of remaining mandibular premolar and incisor teeth cannot be corrected, preventing the placement of a conventional lingual bar connector.

2- When severe lingual tori cannot be removed and prevent the use of a lingual bar or a lingual plate major connector.

3- When severe and abrupt lingual tissue undercuts make it impractical to use a lingual bar or lingual plate major connector.

Contraindications:

1- When a lingual major connector may be used.

2- The facial tori or exostosis.

3- The facial alveolar ridge is undercut,

4- High facial muscle attachment which would result in less than 4 mm of space between the superior edge of the labial bar and the marginal gingiva of the teeth

7-Hinged continuous labial bar:

A modification to the linguoplate is the hinged continuous labial bar. This concept is incorporated in the swing-lock design, which consists of a labial or buccal bar that is connected to the major connector by a hinge on one end and a latch on the other end. Support is provided by multiple rests on the remaining natural teeth. Stabilization and reciprocation are provided by a linguoplate contacting the remaining teeth and are supplemented by the labial bar with its retentive struts.

Retention is provided by a bar type of retentive clasp arms projecting from the labial or buccal bar and contacting the infrabulge areas on the labial surfaces of the teeth.

Indications:

1- Missing key abutments (such as canine). By using all the remaining teeth for retention and stability.

2- Unfavorable tooth contours. When existing tooth contours (uncorrectable by recontouring with appropriate restorations) or excessive labial inclinations of anterior teeth prevent conventional clasp designs.

3- Unfavourable soft tissue contours. Extensive soft tissue undercuts may prevent proper location of component parts of a conventional removable partial denture.

4- Teeth with questionable prognosis (because all of the remaining teeth function as abutments in the swing-lock denture).

Contraindications:

1- Poor oral hygiene and lack of patient motivation.

2- Shallow buccal or labial vestibule.

3- High frenal attachment (labial or buccal frenum)