Partial Denture

Maxillary major connectors

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Lecture 2

Maxillary major connectors:

Six basic types of maxillary major connectors are considered:

1- Single palatal strap.

2- Combination anterior and posterior palatal strap-type connector.

3- Palatal plate-type connector.

4- U-shaped palatal connector.

5- Single palatal bar

6- Anterior-posterior palatal bars.

1- Single palatal strap:

Bilateral tooth-supported prosthesis, even those with short edentulous spaces, are effectively connected with a single, broad palatal strap connector, particularly when the edentulous areas are located posteriorly. Its width should confine within the boundaries of supported rests. Such a connector can be made rigid without objectionable bulk and interference with the tongue. It is less objectionable by patients because it could be made wide and thin, and it helps to distribute the force of stress over a wide area. Also its have half oval shape with its thickest point at the center, such thickness of major connector does not appreciably alter palatal contours. The Strap should be 8 mm wide or approximately as wide as the combined width of a maxillary premolar and first molar.

Indications:

Class III or Class III, modification1 Partially edentulous arch (short edentulous span).

Contraindications:

1- Tooth-tissue supported partial Dentures (Class I and Class II).

2- Present of palatal tori.

3- Extremely long tooth supported edentulous space.

2- Combination anterior and posterior palatal strap-type connector:

This is a rigid palatal major connector. The anterior and posterior palatal strap combination may be used in almost any maxillary partial denture design. A posterior palatal strap should be flat and a minimum of 8 mm wide. Posterior palatal connectors should be located as far posteriorly as possible to avoid interferences with the tongue but anterior to the line formed by the junction of ten hard and soft palates. The anterior connector may be extended anteriorly to support anterior tooth replacement if there is anterior missing area.

The strength of this major connector design lies in the fact that the anterior and posterior components are joined together by longitudinal connectors on either side, forming a square or rectangular frame. Each component braces the others against possible torque and flexure; therefore, it is the least flexible type of these types of major connectors.

Indications:

1- Class III or Class III, modification 1 particularly edentulous arch with long span edentulous space or spaces.

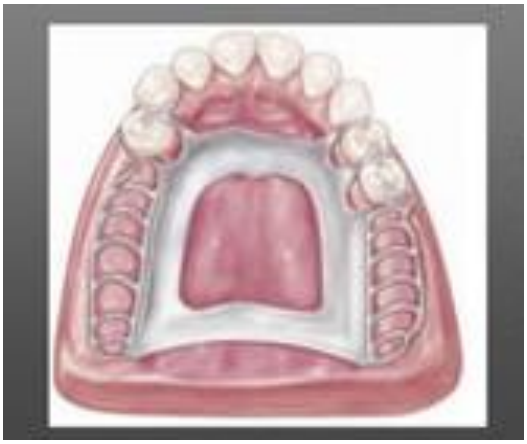
2- Class I and II arches in which excellent abutment and residual ridge support exists, and direct retention can be made adequate without the need for indirect retention.

3- Class IV arches in which anterior teeth must be replaced with a removable partial denture.

4- Inoperable palatal tori that do not extend posteriorly to the junction of the hard and soft palates.

Contraindications:

When there is an inoperable maxillary torus that extends posteriorly to the junction of the hard and soft palate.



3- Palatal plate –type connector (complete palate):

The words palatal plate are used to designate any thin, broad, contoured palatal coverage used as a maxillary major connector and covering one half or more of the hard palate.

Characteristics and location:

1-A uniformly thin plate that reproduces the anatomic contours of the palate (anatomic replica form) for full palatal metal casting supported anteriorly by positive rest seats and designed for the attachment of acrylic resin extension posteriorly.

2-The anterior border must be kept 6 mm from the marginal gingivae, or it must cover the cingula of the anterior teeth.

3-Posterior border must be terminated at the junction of the hard and soft palates; extended to hamular notch area(s) on distal extension side(s); at a right angle to median suture line.
4-more acceptable to tongue and underling tissue due to its uniform thinners and the thermal conductivity

Indications

1-When the remaining teeth are periodontally compromised, complete palatal coverage permits distribution of the applied force to the remaining teeth, as well as to the palatal tissue.
2- In Class II arch with large posterior modification space and some missing anterior teeth.
3-When the last remaining abutment tooth on either side of a Class I arch is the canine or first premolar tooth, especially when the residual ridges have undergone excessive vertical resorption.
4- In most situations in which only some or all anterior teeth remain.
5-When relining is anticipated.

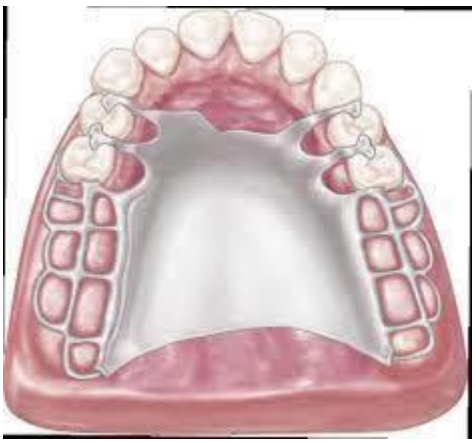
Contraindications:

When less than complete palatal coverage is necessary and there are sufficient remaining natural teeth to use a palatal plate or strap major connector.

Advantages:

1-Provides the ultimate rigidity.
2- Provides maximum support, retention, bracing, and direct-indirect retention from the palate.
3-Fairly simple design.
4- Few metal teeth edges.
5- Easy to add new prosthetic teeth to framework.

6-Can be easily converted to an interim complete denture.



4- U-shaped palatal connector(horse shoe palatal connector):

U-shaped palatal connector is the least desirable of maxillary major connectors.

Indications:

1- When a large inoperable palatal torus exists.

2- Occasionally when several anterior teeth are to be replaced.

Disadvantages:

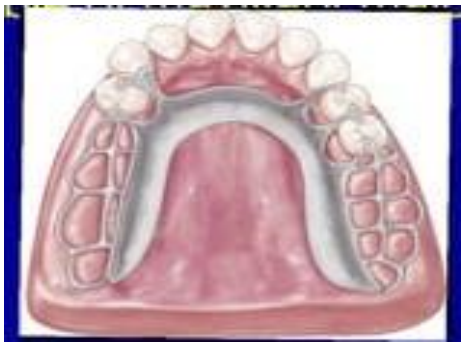
1- Its lack of rigidity (compared with other designs) can allow lateral flexure under occlusal forces, which may induce torque or direct lateral force to abutment teeth.

2- The design fails to provide good support characteristics and may permit impingement of underlying tissue when subjected to occlusal loading.

3- Bulk to enhance rigidity results in increased thickness in areas that are a hindrance to the tongue.

Many maxillary partial dentures have failed for no other reason than the flexibility of a U-shaped major connector. To be rigid, the U-shaped palatal connector must have bulk where the tongue needs the

most freedom, which is the rugae area. Without sufficient bulk, the U-shaped design leads to increased flexibility and movement at the open ends. In distal extension partial dentures, when tooth support posterior to the edentulous area is non-existent, movement is particularly noticeable and is traumatic to the residual ridge.



5- Single palatal bar:

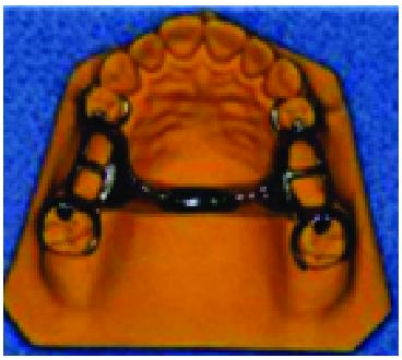
-To differentiate between a palatal bar and a palatal strap, a palatal connector Component of less than 8 mm in width is referred to as a bar.

- It's run across the palate, having narrow half oval shape in its cross section with its most thickness in the center.

-Have poor support from the hard palate due to narrow anterio posterior width

-Not used anterior to the premolar region due to interference to the tongue.

-Used only when 1 to 2 teeth are loss on each side because has poor vertical support, and in Kennedys CL III cases, because present the teeth anteriorly and posteriorl to the edentulous space



6-Combination anterior and posterior palatal bar-type connector(ring design):

this combination of major connectors exhibits many of the same disadvantages as the single palatal bar. To be sufficiently rigid and to provide the needed support and stability, these connectors could be too bulky and could interfere with tongue function and speech. The anterior bar is a flat bar located as far posteriorly as possible to avoid rugae area coverage and tongue interferences. It should be 6 mm away from the gingival margin. The posterior bar is half oval in section located as far posteriorly as possible but still entirely placed on the hard palate. The two parts are joined by flat longitudinal elements on each side of palate .

Indication:

It may be used in any partial denture design. It should be made bulky thus it will be objectionable by patient.

Beading of the maxillary cast

It is the scribing of a shallow groove (not in excess of 0.5 mm in width or depth) on the maxillary master cast outlining the palatal major connector exclusive of rugae areas.

The purposes of beading are as follows:

1-To transfer the major connector design to the investment cast.

2- To provide a visible finishing line for the casting.

3- To ensure intimate tissue contact of the major connector with selected palatal tissue.