RPD Framework Components

FRAMEWORK COMPONENTS

- **Major connectors: connects opposing sides of RPD.**
  - **Mx: full palate, AP strap, horseshoe, palatal strap**
  - **Md: lingual bar, lingual plate**
- **Minor connectors: joins smaller components to major connector.**
  - **Approach arms, proximal plates, denture base retention, misc parts that hold RPD together.**
- **Direct retainer clasp assemblies: clasp grasps abutment tooth and resists removal of RPD.**
  - **Assemblies: rest, retentive clasp, reciprocation (clasp or lingual plate), proximal plate**
- **Indirect retainers and rests.**

Major Connectors

Rigidity is primary requirement.

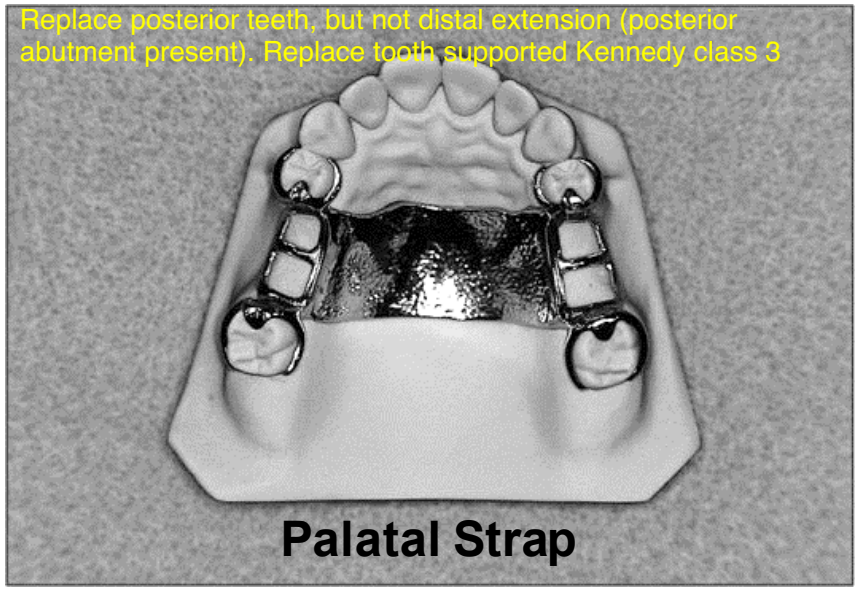
If flexible, youre damaging the teeth it contacts

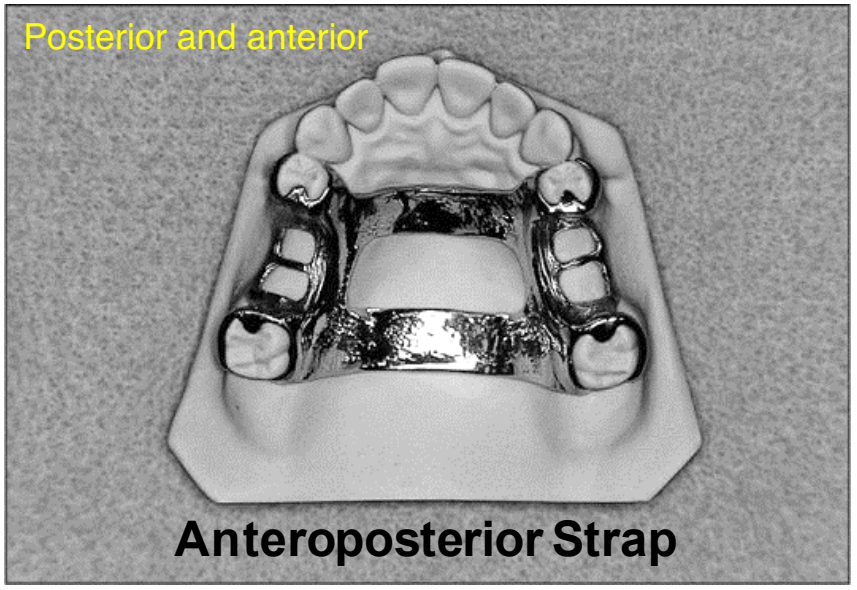
- **Must provide <u>cross arch stabilization</u> uniting all parts of RPD and dentition into one cohesive unit.**
- **There are no unilateral RPDs.**

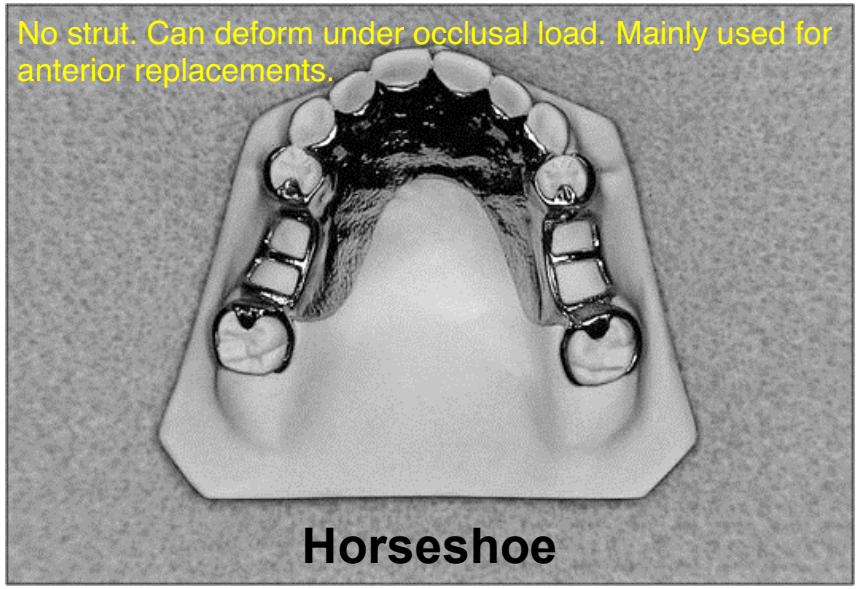
You need cross stabillization. You could aspirate these.

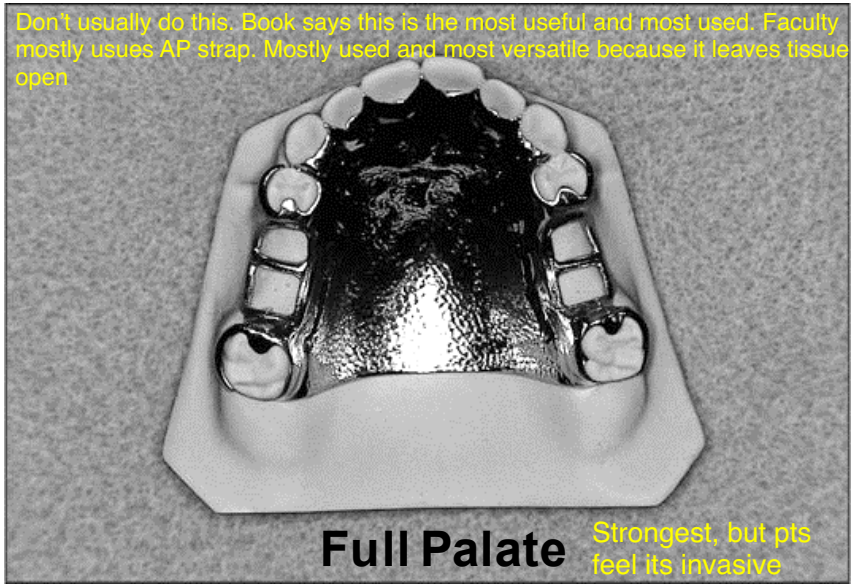
Strap min width is 8mm

Maxillary Major Connectors









Lingual plate or step away 6mm (3mm for mn)

Fig 2-14 In the maxillary arch, borders of a major connector should be positioned at least 6 mm from the free gingival margins. Otherwise the major connector should be carried onto the lingual surfaces of the teeth in the form of plating.

Fig 2-15 In the mandibular arch, borders of the major connector should be positioned at least 3 mm from the free gingival margins. Otherwise the major connector should be carried onto the lingual surfaces of the teeth in the form of plating.

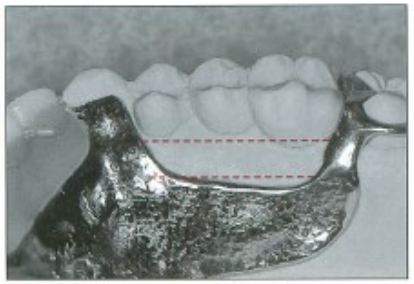


Fig 2-16 The borders of the major connector should run parallel to the gingival margins of the remaining teeth.

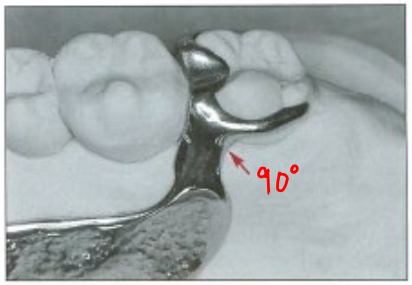


Fig 2-17 Gingival margins should be crossed at right angles (*arrow*) to minimize coverage of the delicate marginal tissues. gentle turn, no corners

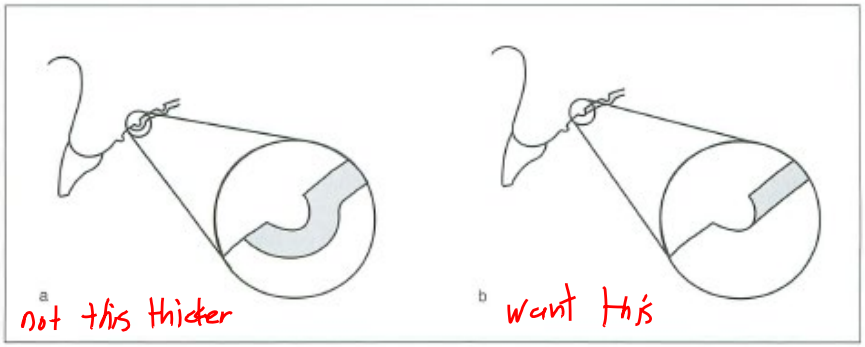


Fig 2-18 *(a)* The anterior border of a maxillary major connector should not end on the anterior slope of a prominent ruga. This produces a noticeable prominence that may interfere with the patient's comfort and speech. *(b)* The anterior border of the major connector should be terminated on the posterior slope of a prominent ruga. In this manner, the edge of the prosthesis may be blended with the existing soft tissue contours.

Rules for Mx MCs: pg. 30

- Max MC borders 6mm away from gingival margins.
- Mand MC borders 3mm away from gingival margins.
- MC borders parallel to gingival margins.
- Anterior border of MC behind palatal rugae.

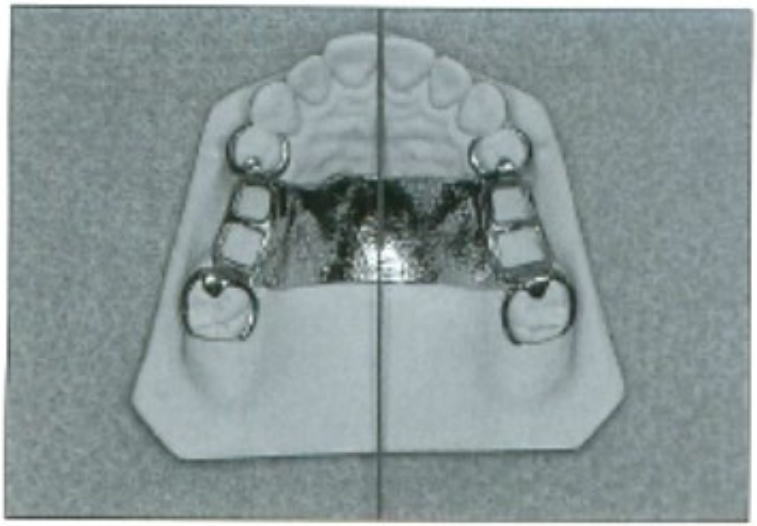


Fig 2-19 The borders of a maxillary major connector should always cross the palatal midline at 90 degrees.

- **If possible, symmetry is desirable.**
- **Borders of mx MC cross mid palate at right angle.**

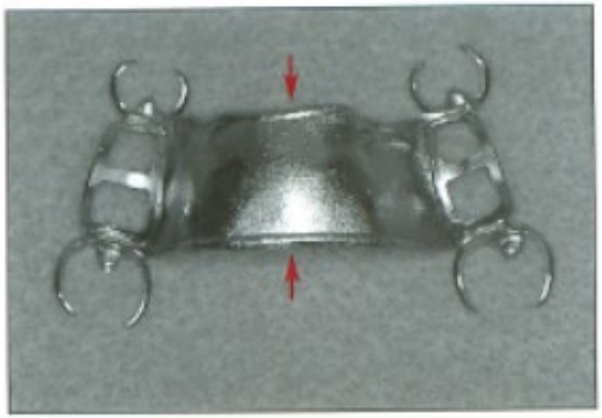
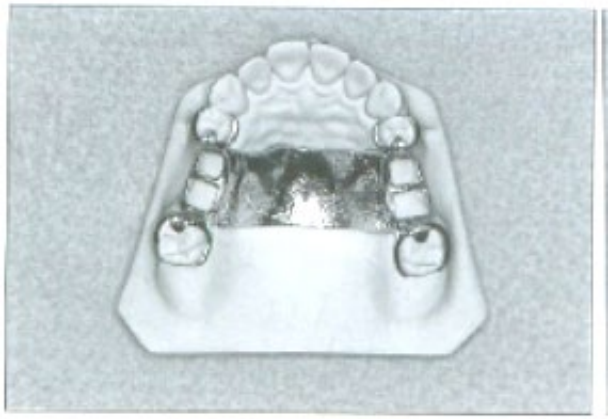


Fig 2-23 Maxillary major connectors should display minor elevations *(arrows)* at those borders that contact the palatal tissues. These elevations are termed *bead lines* and are intended to prevent the collection of food particles under the prosthesis.

- **Mx MC have bead lines on the intaglio surface to prevent food collection under RPD.**
- **0.5 – 1.0 wide and deep.**

No bead lines on lower. Mucosa over bone is much thinner and not keratinized like palate. Ppl cant tolerate

Bar vs. Strap



- **Bars must be bulky to be rigid.**
- **This was necessary with earlier materials such as gold alloys.**

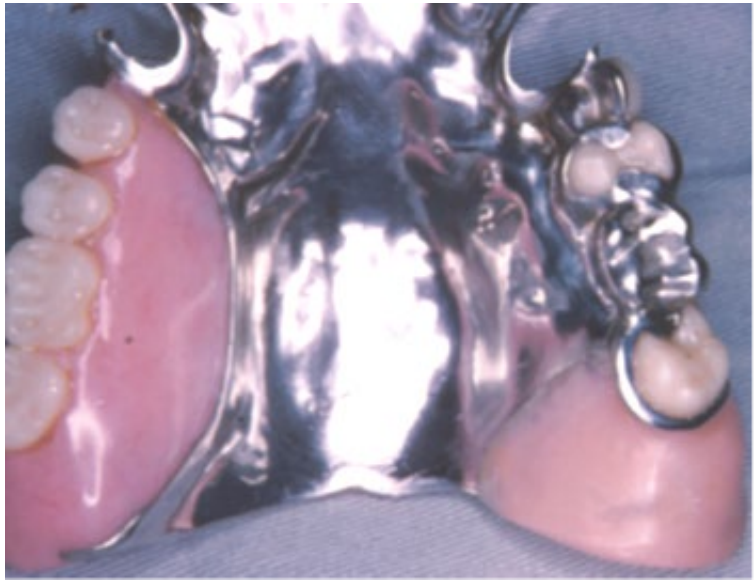
- **Straps are wider in AP dimension (minimum 8mm), but thin in cross section.**

Default, preferred. Contacts tissue less, teeth stay healthier. Usually there is a reason you can't use L bar. Most are L plates. E.g. infringe upon L frena with metal.

Horseshoe

Palatal strap

Anterior posterior strap type



Full palate

Fig 2-14 In the maxillary arch, borders of a major connector should be positioned at least 6 mm from the free gingival margins. Otherwise the major connector should be carried onto the lingual surfaces of the teeth in the form of plating.

Fig 2-15 In the mandibular arch, borders of the major connector should be positioned at least 3 mm from the free gingival margins. Otherwise the major connector should be carried onto the lingual surfaces of the teeth in the form of plating.

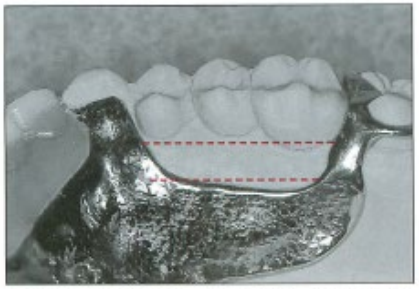
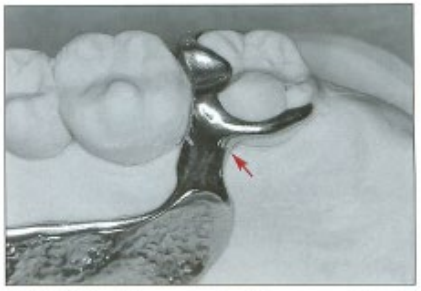


Fig 2-16 The borders of the major connector should run parallel to the gingival margins of the remaining teeth.



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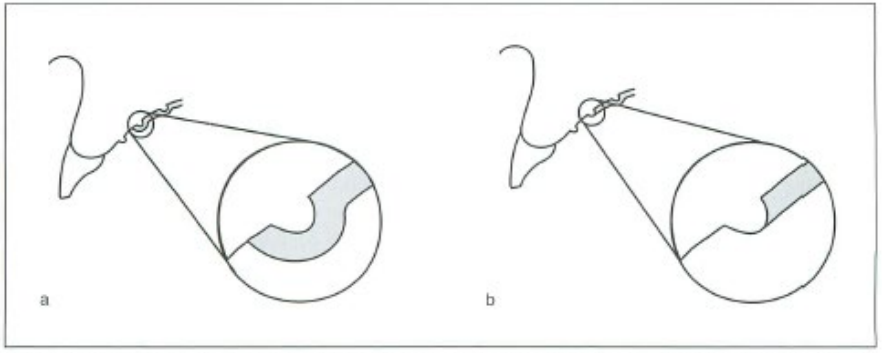
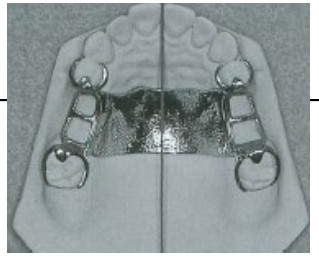


Fig 2-18 *(a)* The anterior border of a maxillary major connector should not end on the anterior slope of a prominent ruga. This produces a noticeable prominence that may interfere with the patient's comfort and speech. *(b)* The anterior border of the major connector should be terminated on the posterior slope of a prominent ruga. In this manner, the edge of the prosthesis may be blended with the existing soft tissue contours.

Occasionally, problems with phonetics may be encountered. This may be related to the extensive soft tissue coverage exhibited by complete palate major connectors.

Review of structural requirements for maxillary major connectors

1. The borders must be placed a minimum of 6 mm from gingival margins or extended onto the lingual surfaces of the teeth (see Fig 2-14). The location is determined by the need for support, stabilization, and/or oral hygiene.
2. Relief is normally not required under maxillary major connectors.
3. Borders that extend onto the anterior palate should blend with the palatal anatomy. This may be accomplished by positioning borders on the appropriate slopes of the rugae (see Fig 2-18).
4. The anterior and posterior elements of an anteroposterior palatal strap should be at least 8 mm wide (see Fig 2-31). The posterior strap should be located in the farthest posterior position possible without contacting the movable soft palate.
5. All borders should taper slightly toward the underlying soft tissues.
6. Both anterior and posterior borders should cross the maxillary midline at right angles, never diagonally (see Fig 2-19).
7. For those major connectors that present open central areas, the medial borders should be positioned at the junctions of the horizontal and vertical surfaces of the palate. For gently curved palates, the proper locations must be approximated. Appropriate placement is necessary to minimize patient awareness and potential discomfort.
8. Thickness of the metal should be uniform throughout the palate.
9. Borders of the metal framework should be gently curved, never angular (see Fig 2-21).
10. The metal should be smooth but not highly polished on the tissue surface (ie, intaglio).
11. All borders that contact soft tissues should display bead lines (see Fig 2-23). The bead lines should become less distinct as they approach the gingival margins of the teeth.



Review of indications for maxillary major connectors

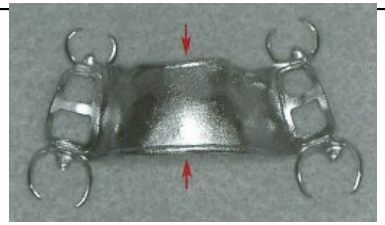
1. If the periodontal support of the remaining teeth is weak, more of the palate should be covered. A wide palatal strap or a complete palate is indicated.
2. If the remaining teeth have adequate periodontal support and little additional support is needed, a palatal strap or anteroposterior palatal bar may be used.
3. For long-span distal extension bases where rigidity is critical, an anteroposterior palatal strap or complete palate is indicated.
4. When anterior teeth must be replaced, an anteroposterior palatal strap, complete palate, or horseshoe major connector may be used. The final selection must be based on modifying factors such as number and location of missing posterior teeth, periodontal support of remaining teeth, and type of opposing occlusion.
5. If a torus is present and is not to be removed, an anteroposterior palatal strap, anteroposterior palatal bar, or horseshoe major connector may be used. Final selection must be based on modifying factors.
6. A horseshoe connector should be used very sparingly. Flexure of this major connector may permit the concentration of forces upon individual teeth or localized segments of the maxillary arch.
7. A palatal bar is rarely indicated.

Mandibular major connectors

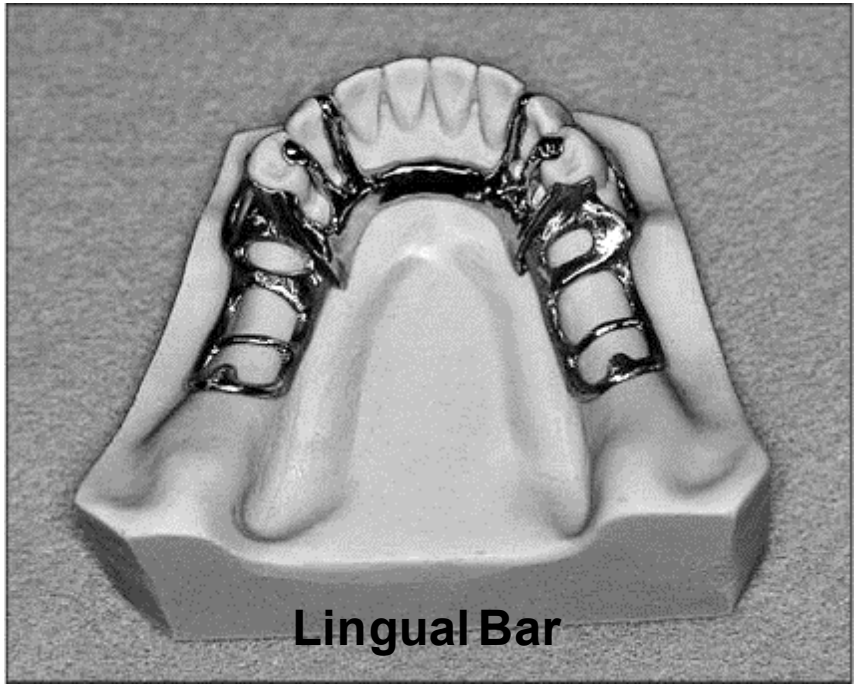
Special structural requirements

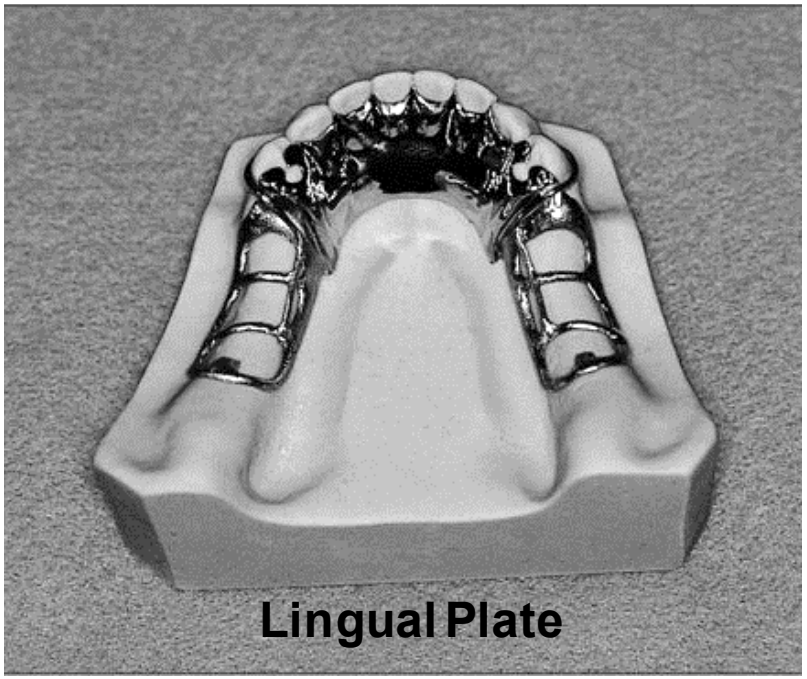
In general, mandibular major connectors are long and relatively narrow. Therefore, special consideration must be given to the design of such connectors. Mandibular connectors must be rigid without being so bulky that they compromise patient comfort. Furthermore, mandibular major connectors must not impinge upon the movable floor of the mouth, the associated frena, or mandibular tori.

Unlike maxillary major connectors, for which relief is infrequently required, mandibular major connectors often warrant relief between the rigid metal surfaces and the underlying soft tissues. The amount of relief is dependent upon several factors. For an entirely tooth-supported prosthesis, little or no relief is needed because the denture does not tend to move in function. For a distal extension removable partial denture, however, a moderate amount of relief my be indicated because this type of prosthesis tends to rotate during function. Relief prevents the mar-

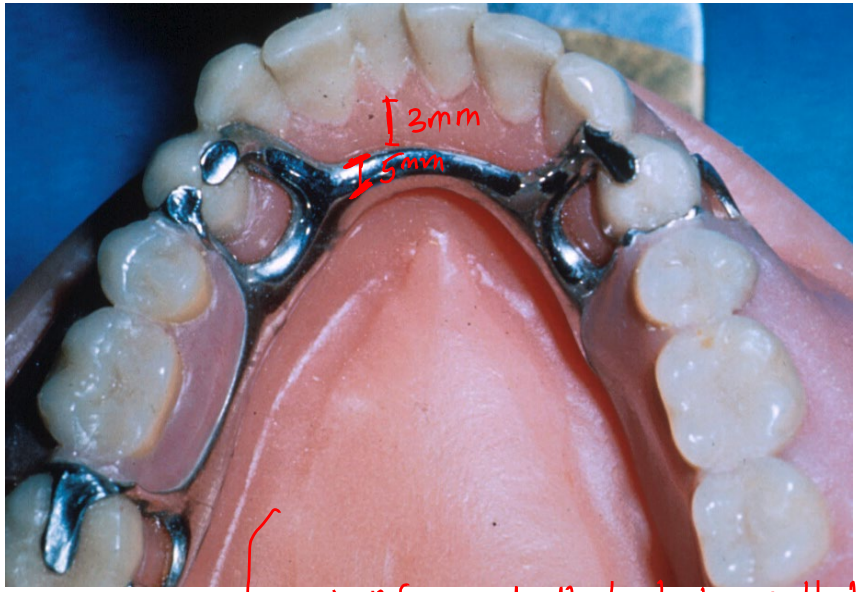


Mandibular Major Connectors





Mandibular Major Connectors: Lingual Bar and Lingual Plate



- Lingual bar is the default choice
- May have to opt for lingual plate if:
  - Anterior lingual space is small (<8mm)
  - Anterior teeth have questionable prognosis
  - More strength is desired, more posterior teeth are missing.
  - Able to avoid mandibular tori.

Ask patient to raise tongue to the palate and measure to judge anterior lingual space.

Fig 2-37 A penodontal probe may be used to measure from the gingival margins to the floor of the mouth.

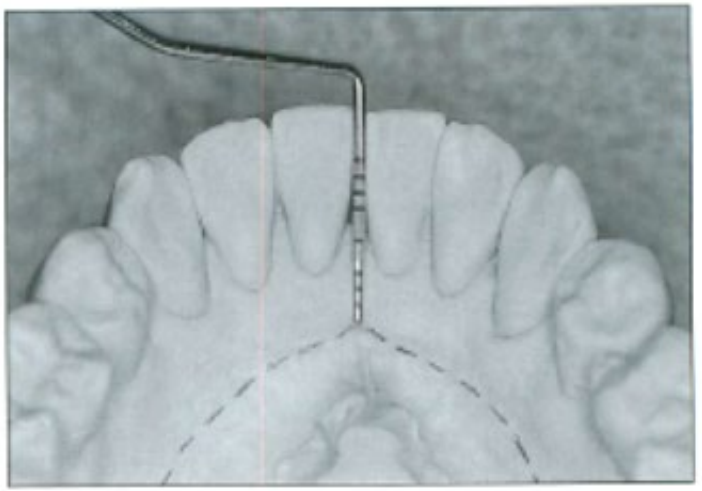


Fig 2-38 Intraoral measurements (see Fig 2-37) may be transferred to the corresponding dental cast.

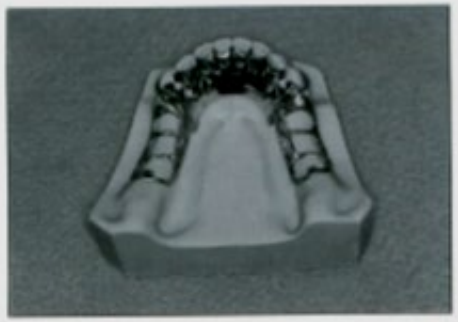


Fig 2-39 Lingual plate major connector.

Fig 2-40 The superior border of a lingual plate major connector should display a scalloped appearance.

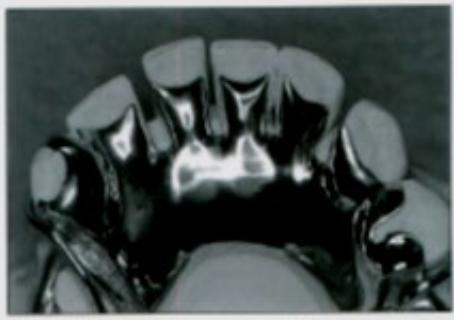


Fig 2-41 A lingual plate may include "step backs" to minimize or eliminate the visibility of metal.

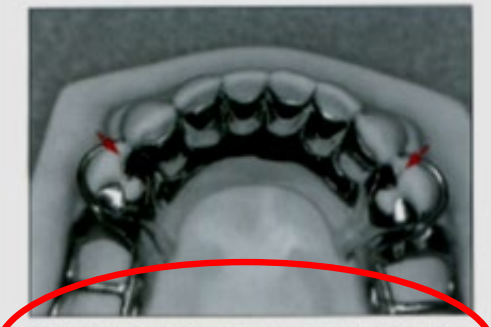


Fig 2-42 A lingual plate must be supported by rests (arrows) located no farther posterior than the mesial surfaces of the first premolars.

Fig 2-43 In certain applications, the lingual surfaces of the anterior teeth may be covered, while the lingual surfaces of one or more posterior teeth may be left uncovered.

Review of indications for mandibular major connectors

1. For a tooth-supported removable partial denture, the lingual bar normally is the mandibular major connector of choice.
2. When there is insufficient room between the floor of the mouth and the gingival margins (< 8 mm), a lingual plate should be used. This major connector also is indicated for patients with large inoperable tori and patients with high lingual frenum attachments.
3. When the anterior teeth have reduced periodontal support and require stabilization, a lingual plate is recommended.
4. When the anterior teeth exhibit reduced periodontal support and large interproximal spaces, a modified lingual plate (ie, step-back design) or double lingual bar should be used.
5. When a removable partial denture will replace all mandibular posterior teeth, a lingual plate should be used.
6. A labial bar is rarely indicated.

Major Connector

Minor Connectors

- Denture base retention
- Infrabulge approach arm
- Proximal plates

Retentive clasp assemblies

Retention

Stability

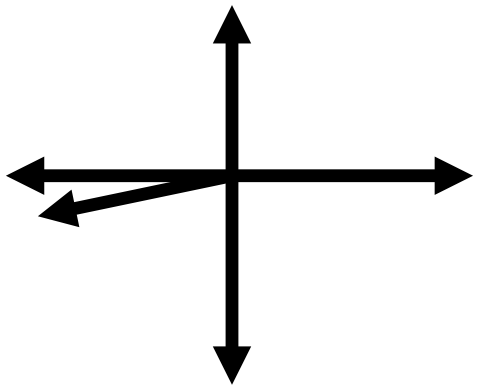
SUPPORT

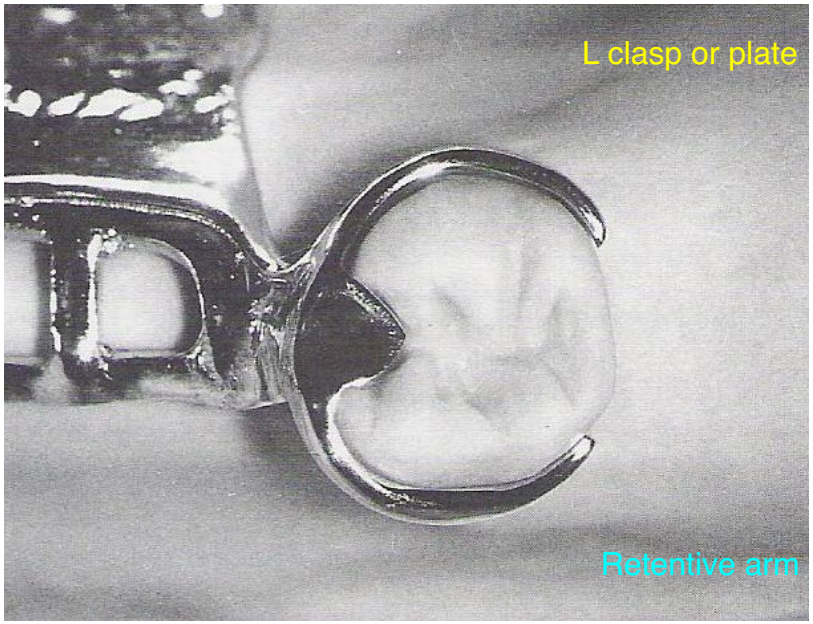
Retentive Clasp Assembly

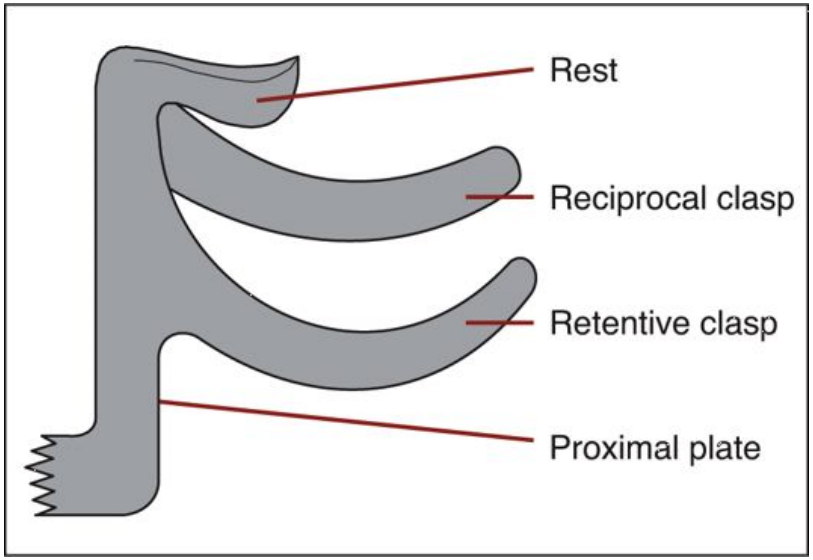
Support- Resistance to occlusal or vertical seating forces.

Stability- Resistance to horizontal or torsional forces.

Retention- Resistance to vertical dislodging forces.





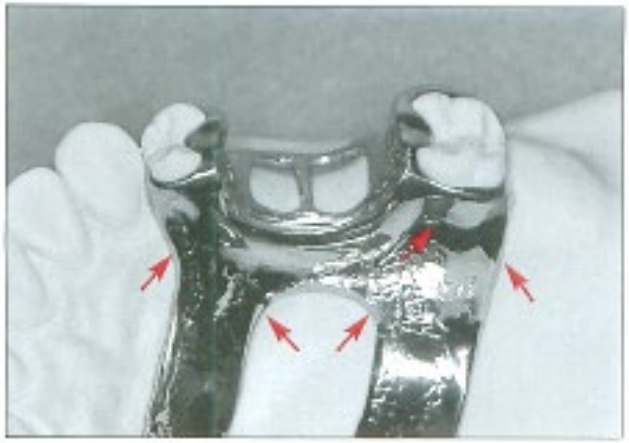


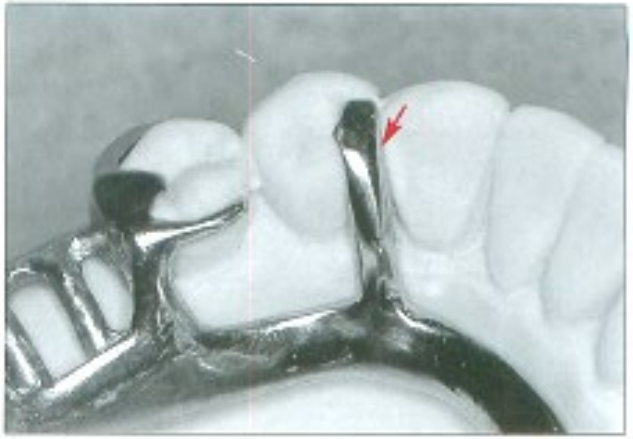
- **Clasp assembly on abutment tooth**
- **4 components**
- **3 functions**
  - **Retention**
    - **1) Clasp**
  - **Support**
    - **2) Rest**

    Prevent framework from being pushed down any further
  - **Stability**
    - **3) Clasp**
    - **4) Proximal plate**

      (if adjacent to edentulous space)

Lingual reciprocation





- **Reciprocation for stability may be provided by either:**
  - **Lingual plates.**
  - **Lingual clasps.**

Retentive Circlet Clasp

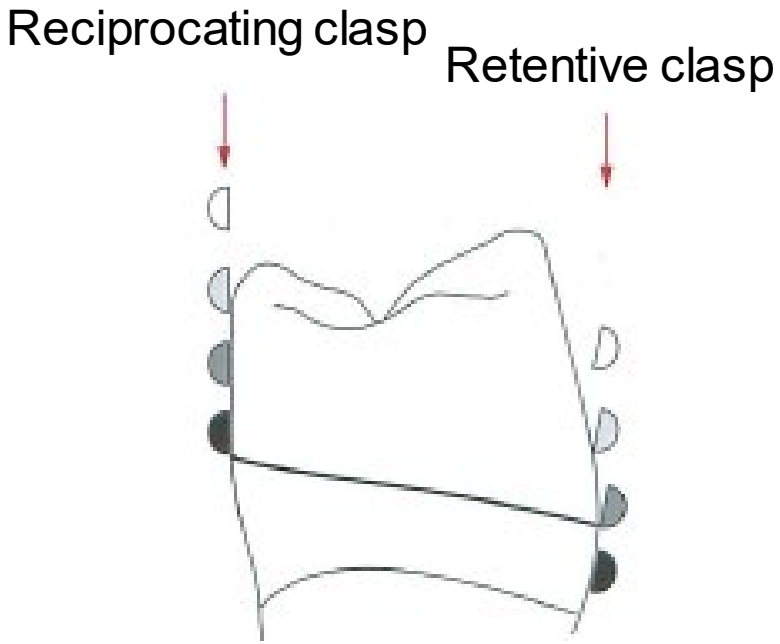
Buccal Surface

Shoulder and midsection above survey line
Not flexible

- **Only terminal 1/3 of retentive clasp is flexible.**
- **Flexes (active) over height of contour and then relaxes (passive) after reaches its undercut position (.010”).**

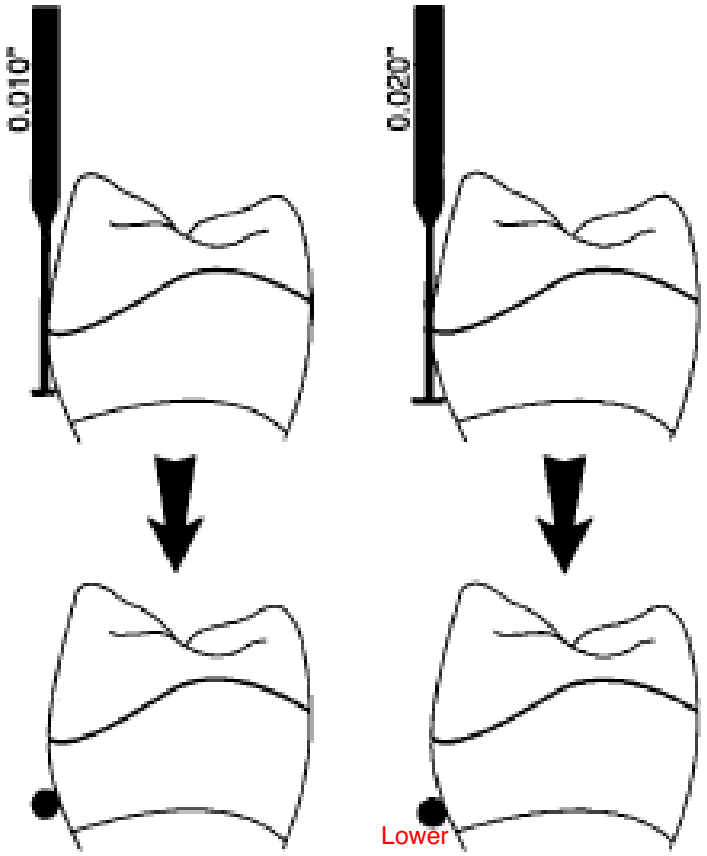
Reciprocating Clasp

Lingual Surface



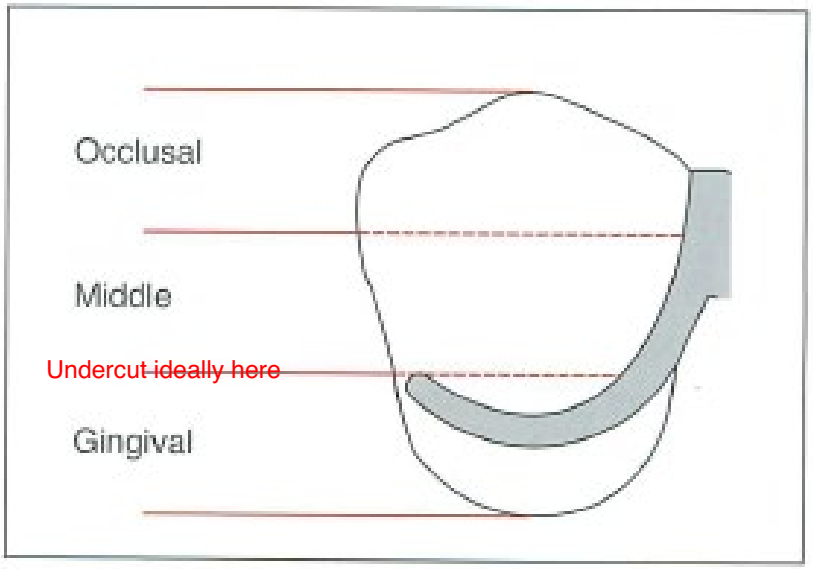
- **As framework is seated, reciprocating clasps stabilizes abutment tooth as retentive clasp flexes over survey line.**

Amount of retentive undercut

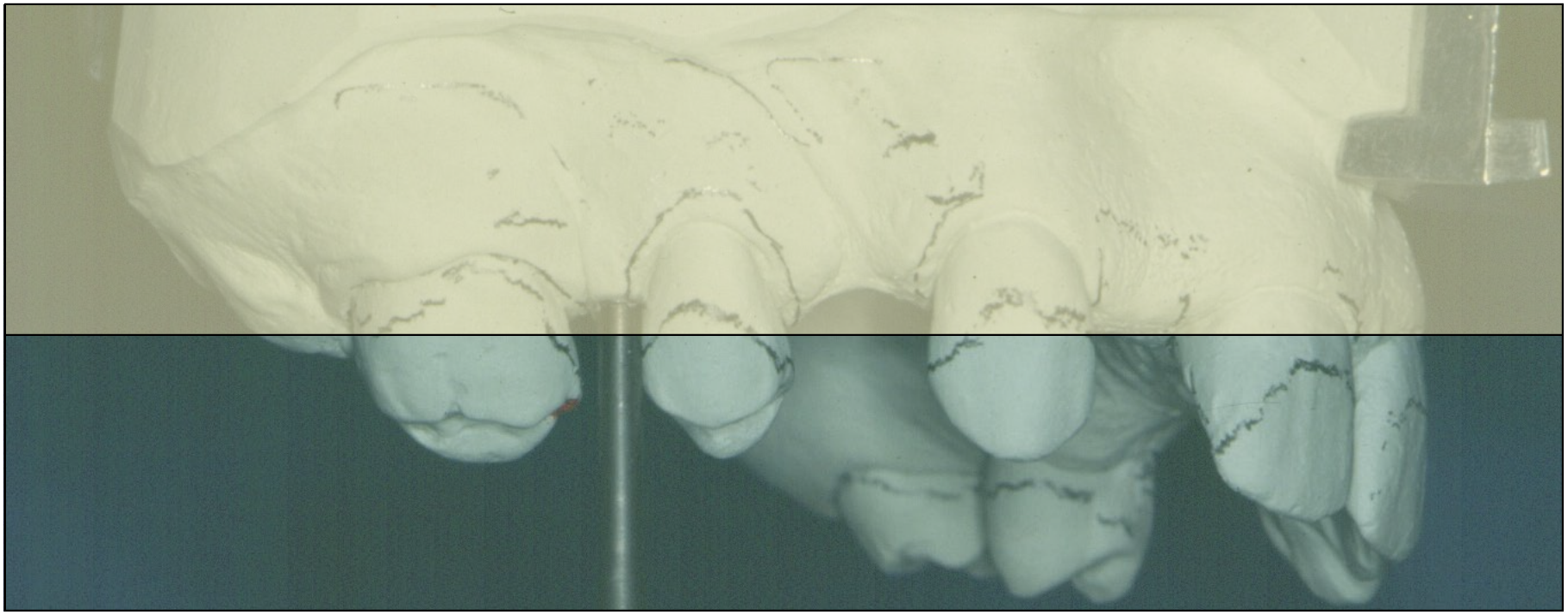


- **Single stripe**
  - **10/1000 of an inch**
  - **0.010”**
  - **Undercut for all cast clasps**
- **Double stripe**
  - **20/1000 of an inch**
  - **0.020”**
  - **Undercut for wrought wire**

Rule of Thirds



- **The retentive clasp should have a curved shape with the retentive tip pointing occlusally.**
- **The circlet clasp should lie low on the buccal surface of the tooth, for esthetics and to avoid occlusal interference.**
- **The retentive undercut should be located at the junction of the middle and gingival third of the buccal surface.**



- ***<u>All parts of framework are inflexible</u>***
- **<u>Except</u> retentive tip of cast clasps and WW clasps.**
- **Anywhere the framework touches tooth structure below the survey line, it is touching in undercut area.**
- **Before metal framework is cast, the areas below survey line, not to be used for retention, are blocked out to provide relief of the rigid framework from contacting tooth.**