

Minor connectors

Minor connectors: the connecting **link** between the **major** connector or **base** of a removable partial denture and the other units of the prosthesis, such as the clasp assembly, indirect **retainers**, occlusal rests, or cingulum rests.

It **arises** from major connector thus joining major connector to these units.

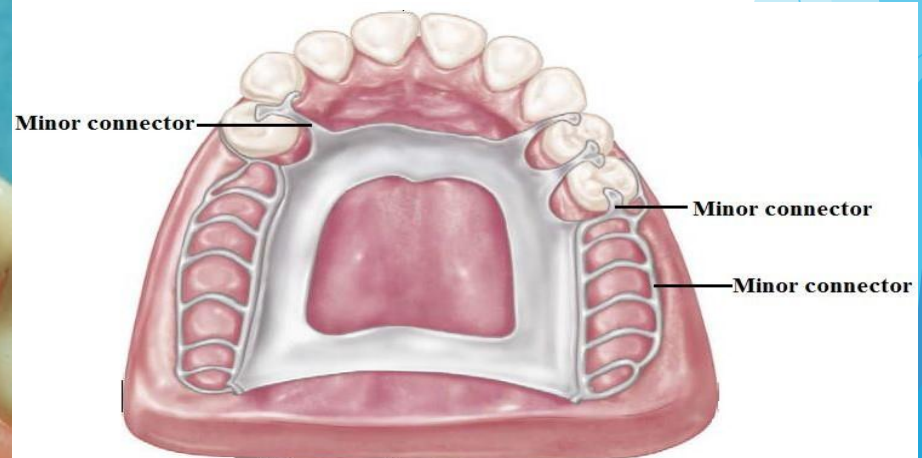
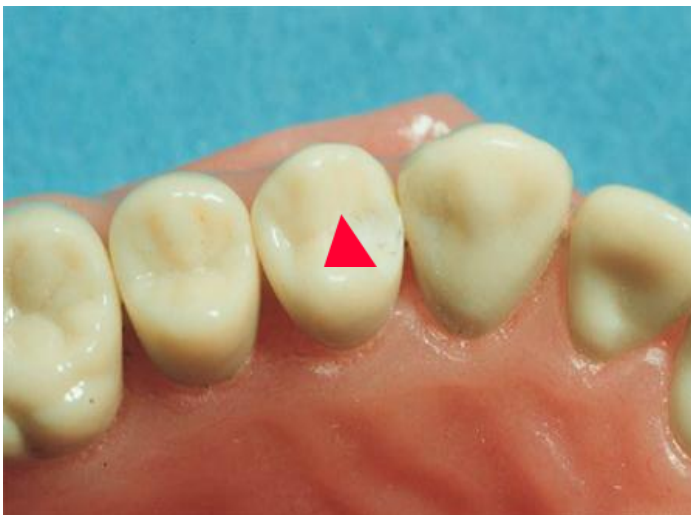
In addition to the joining function, the portion of denture **framework** by which the denture base is attached, is the minor connector.



Types of minor connectors

There are four types of minor connectors based on **location** and **function**:

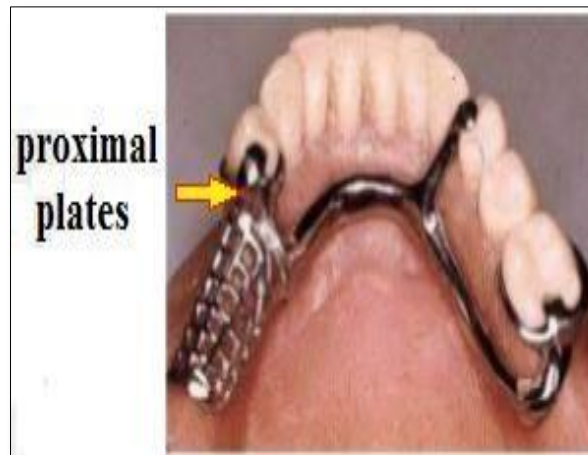
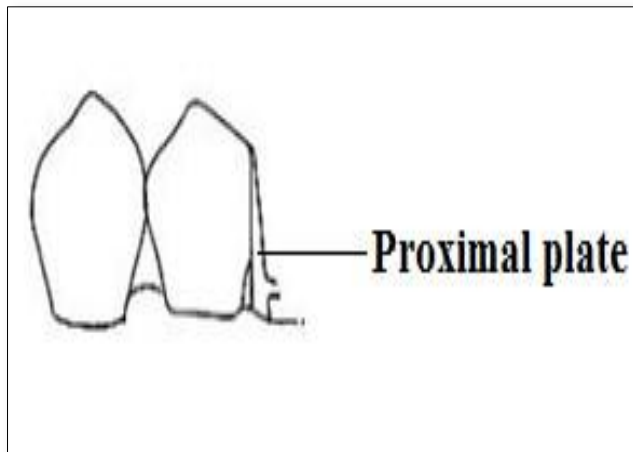
1. Proximal minor connectors.
2. Embrasure minor connectors.
3. Surface minor connectors.
4. Minor connector for bar clasp
5. Denture base retention mechanism.



The **denture base** is also a **minor** connector since it attaches the **prosthetic teeth** to the **denture base retention**.

.1 Proximal minor connectors

Proximal minor connectors contact an abutment tooth adjacent to an edentulous space. **Proximal** minor connectors are usually term **proximal plates** but are sometimes call **guiding plates**.



2. Embrasure minor connectors

Embrasure minor connectors are located **between** two teeth. Their functions are to:

- a. Connect **rests** and **clasp** arms to the major connectors.
- b. Contact interproximal **guiding** planes thus helping to determine the path of placement of the RPD.
- c. Provide **frictional** retention by contact with the guiding planes on the teeth.
- d. Help **reciprocate** the force of the direct retainer.
- e. Unite the dental arch by substituting for lost proximal tooth contacts.
- f. Distribute forces (**bracing**.)



mesial and **distal** minor connectors and **proximal plates** adjacent to the edentulous areas should **swing** back to join the major connector in a rounded acute angle in order to increase **gingival** exposure.



3. Surface minor connectors

Surface minor connectors are located on the **lingual** surface of **incisors** and **canines**. They connect lingual rests to the major connector. Their junction with the major connector is a **rounded right** angle and they taper toward the **occlusal** (incisal). The lateral borders extend into the proximal embrasures to hide these edges from the tongue.



4-(Those that serve as an approach arm for a **vertical** projection or **bar-type** clasp.

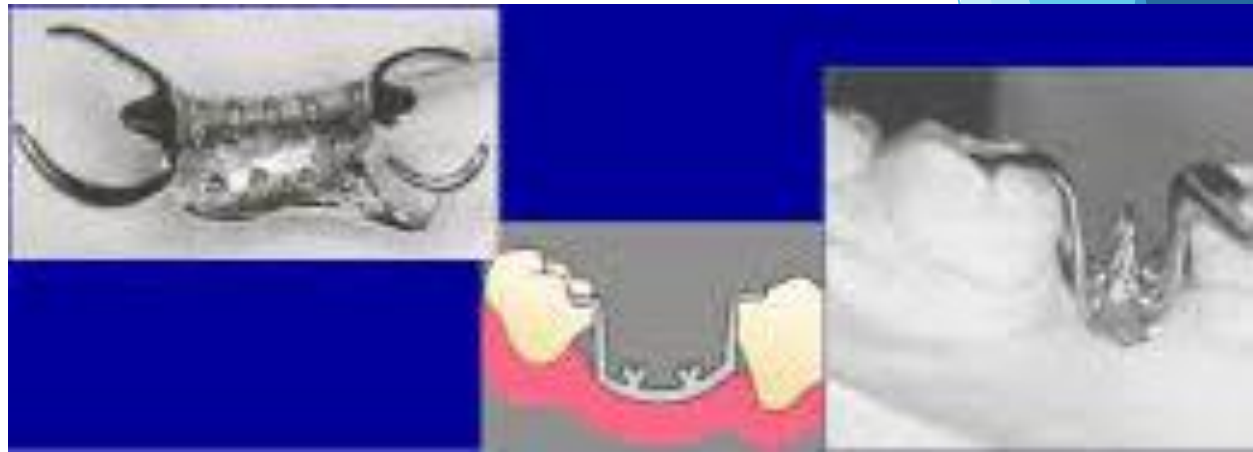
- - Minor connector for vertical projection of bar type clasp approaches the tooth from an **apical** direction rather than from an **occlusal** direction, the approach arm should display a smooth, even **taper** from its origin to its terminus.
- - Minor connector for vertical projection of bar type clasp must not cross a soft tissue **undercut** (need **parallel** block out.



5- **Gridwork** minor connectors that connect the **denture** base and teeth to the major connector.

The denture base retention minor connector is the means by which the **plastic** denture base is **mechanically** attached to the framework. There are several types of denture base retention minor connectors:

- a. Retentive mesh.
- b. Retentive lattice.
- c. Retentive loops.
(nail headed)
- a. Retentive bead
- b. Retentive **posts**.



A- Mesh type

Flatter

Potentially more rigid

Less retention for acrylic
if openings are small

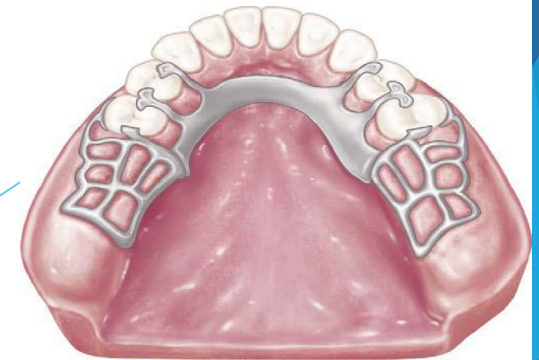
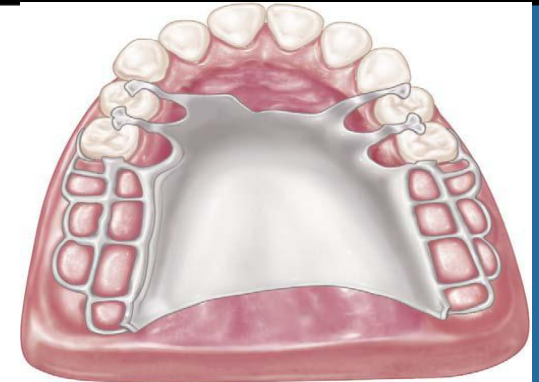


B- Lattice Type

Potentially superior retention

Interferes with setting of teeth, if
struts are too thick

This type can be relined easily after
ridge resorption.



Functions of minor connectors

- The primary function of a minor connector is to join the denture parts to major connector.
- The minor connector serves other purposes:

1. To transfer functional stress to
2. the abutment teeth.



This is a *(prosthesis-to-abutment function)* of the minor connector. **Occlusal forces** applied to the artificial teeth are transmitted through the **base** to the underlying ridge tissue if that base is primarily tissue supported. Occlusal forces applied to the artificial teeth are also transferred to abutment teeth through occlusal **rests**. The minor connectors arising from a rigid major connector make possible this transfer of functional stress throughout the dental arch.

2- To transfer the effect of the retainers, rests, and stabilizing components throughout the prosthesis.

This is an (*abutment-to-prosthesis function*) of the minor connector. Thus forces applied on one **portion** of the denture may be resisted by **other** components placed elsewhere in the arch for that purpose. A stabilizing component on **one side** of the arch may be placed to resist **horizontal** forces originating on the opposite side. This is possible only because of the **transferring** effect of the minor connector, which supports that **stabilizing** component, and the **rigidity** of the major connector.



.3- Provide unification and make denture rigid.

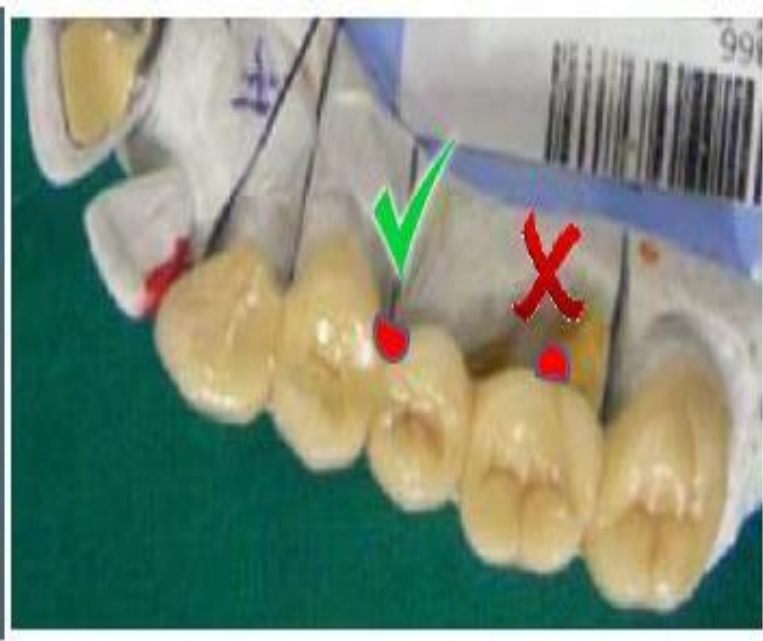
4- It might help in retention and stability of the prosthesis. Through its connection to the guiding plane; it helps as a **bracing** element.

5- Share in the **path** of insertion and **removal** maintenance.

Forms and location of minor connector

1. All types of minor connector must have sufficient **bulk** to be rigid; otherwise the transfer of functional stresses to the supporting teeth and tissue will not **be effective**.





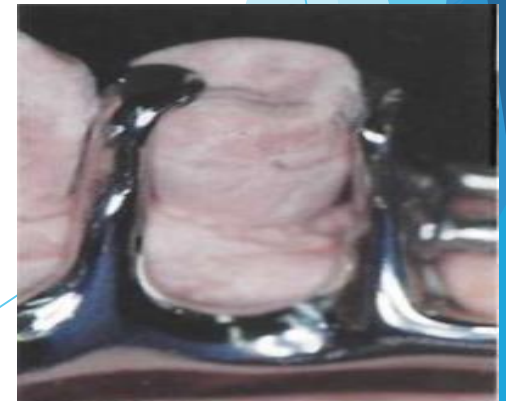
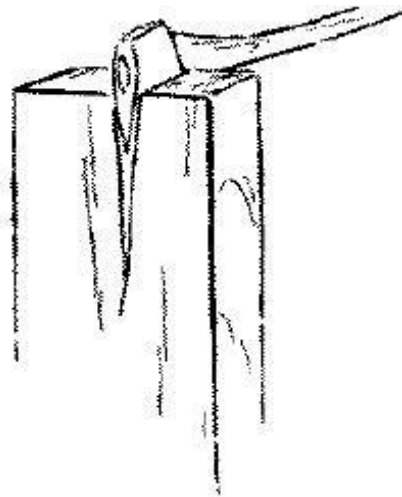
- 2- Minor connectors placed into **embrasures** between two adjacent teeth should not be located on a **convex** surface. Instead it should be located in an embrasure where it will be **least noticeable** to the tongue.
3. Minor connector that contacts the **guiding** plane surface of the abutment teeth adjacent to an edentulous space. Here the minor connector must be broad **buccolingually** to use the guiding plane to the fullest advantage, and thin **mesiodistally** to place a prosthetic tooth in a natural position.

4- When an artificial tooth will be placed against a **proximal** minor connector, the minor connector's greatest **bulk** should be toward the lingual aspect of the abutment tooth. This way sufficient bulk is ensured with the least **interference** to **placement** of the artificial tooth.

5- It should pass **vertically** from the major connector and covers as little of the gingival tissue as possible.



6. The minor connector cross the free gingival area must be **relieved** in order not to impinge the tissue.
7. The **deepest** part of the interdental embrasure should have been **blocked out** to avoid interference during placement and removal, and to avoid any **wedging effect** on the contacted teeth.



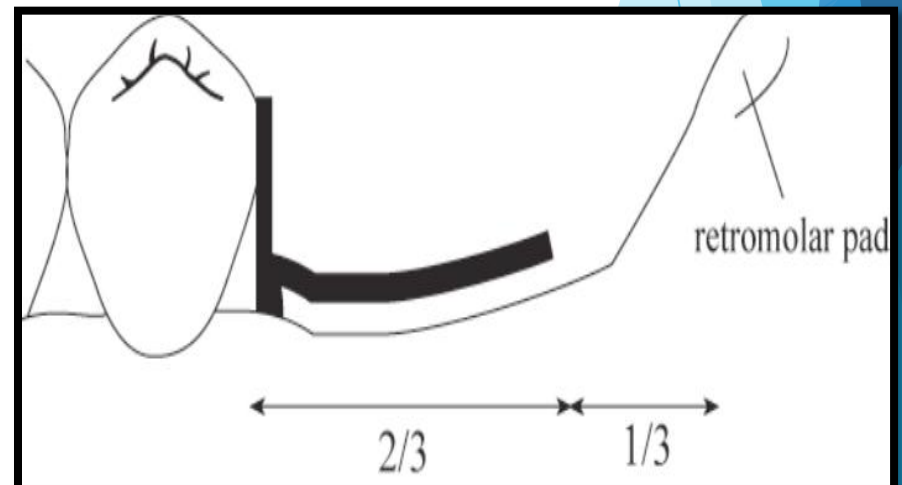
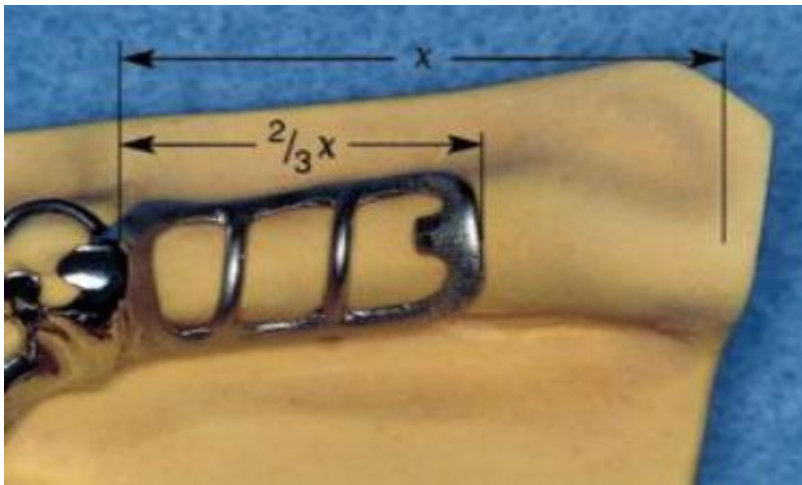
8. Minor connector that covers the edentulous area to join denture base to major connector should be completely **embedded** within the denture base.

9. The junctions of these mandibular minor connectors with the major connectors should be strong **butt-type** joints; angles formed at the junctions of the connectors should not be **greater** than **90°**, thus ensuring the most advantageous and strongest mechanical connection between the acrylic resin denture base and the major connector.



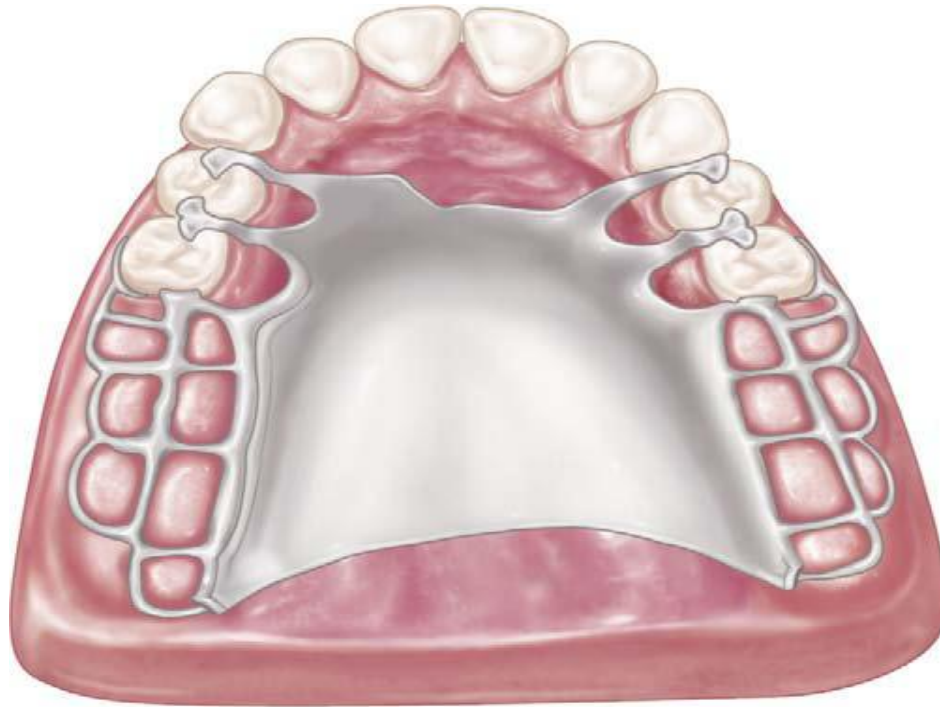
10. Minor connector for **mandibular distal extension base** should extend posteriorly about **two thirds** the length of the edentulous ridge **and should have elements on both lingual and buccal surfaces.**

11. Such design will not only add **strength** to the denture base but also may **minimize distortion** of cured base from its inherent strains caused by processing.



10. Minor connectors for **maxillary distal extension denture** base should extend entire length of the residual ridge and should be of a ladder-like or mesh-like.

The medial extent of the minor connector depends on the lateral extent of the major palatal connector.



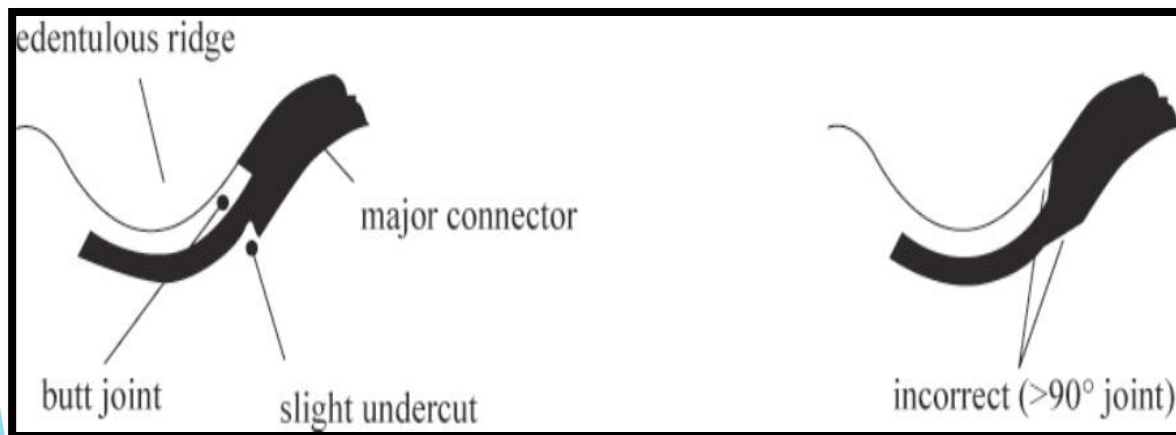
Finishing line

It is the junction of **minor** connector that join denture **base** to major connector.

The minor connector must be joined to the major connector in angle **not greater than 90°**, to ensure rigidity of acrylic denture base and to help lock the acrylic resin to the major connector. The acrylic resin denture base must join the major connector in a **smooth, even fashion**. Any irregularity or step between the two surfaces will **irritate** the tongue.

Function of finishing line:

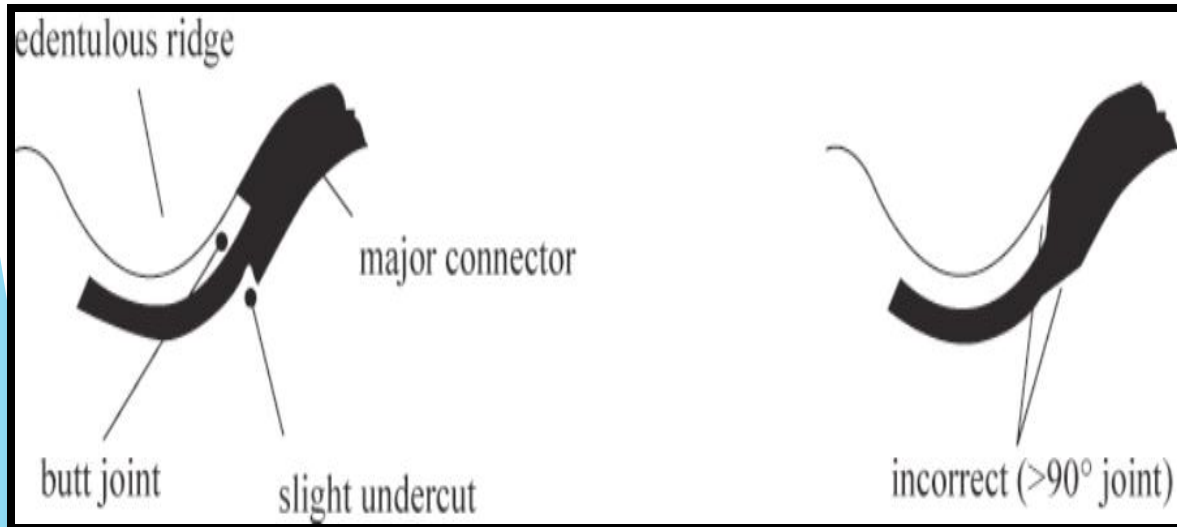
1. A finish line creates a **definite limit** to the plastic of the denture base, in this way the plastic ends in a bulk of material. Thin areas of plastic are **weak** and



2- **Undercut** finishing line provides **mechanical retention** for the plastic denture base.

-3-Finish line provides a **smooth transition** from the plastic base to the removable partial denture metal framework.

If the finishing line is located on the outer surface of major connector, it is called **external finishing line**. If it is located on the inner or tissue surface, it is called **internal finishing line**.

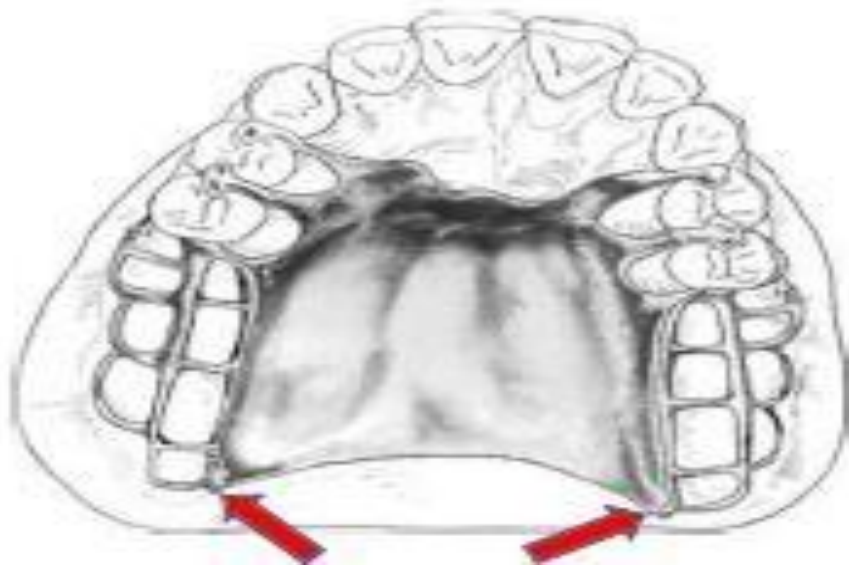


If the finishing line is located too far **medially**, the natural contour of the **palate** will be altered by the **thickness** of the junction and the acrylic resin supporting the artificial teeth, when the palatal contours are restored, enhancing **speech** and contributing to a natural **feeling** for the patient.

❑ If the finishing line is located too far **buccally**, it will be most difficult to create a natural contour of the acrylic resin on the **lingual** surface of the artificial teeth.

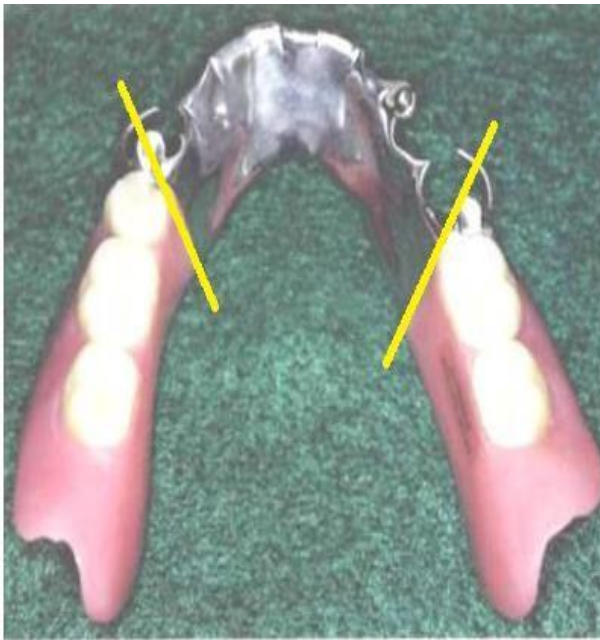


- Junction of major connector and minor connector at palatal finishing lines should be located **2 mm** medial from an **imaginary** line that would contact lingual surfaces of missing posterior teeth.
- Extension of finishing line to area of **pterygomaxillary notch(hamular)** provides for attachment of border portion of resin base through **butt-type joint** pterygomaxillary notch (arrows)



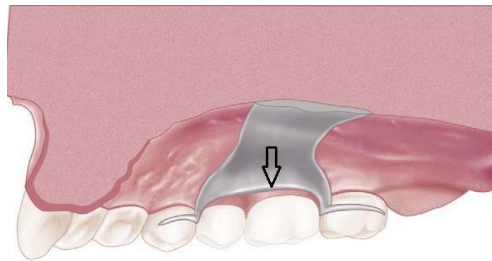
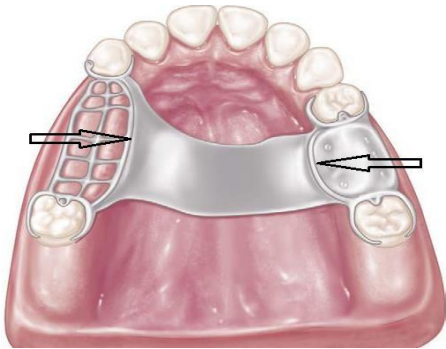
Types of finishing line:

1 Vertical finishing line: It is the finishing line at the junction of ladder area and major connector in free end extension cases (Class I and Class II) in mandibular arch, and Class III or Class IV mandibular arch with labial bar major connector.



.2Horizontal finishing line :

It is the junction of major connector and ladder area and it extends horizontally forming an **undercut** area that support acrylic resin that carrying artificial teeth, this type of finishing line is detected in all maxillary partial denture cases and in Class III and Class IV mandibular cases.



Tissue stop : a small projection of metal at the distal end of an extension base frame that contacts the cast and prevents downward movement of the plastic retention area during packing with resin

Functions : is to prevent distortion of the framework by pushing it tissue ward during Denture fabrication and mastication

