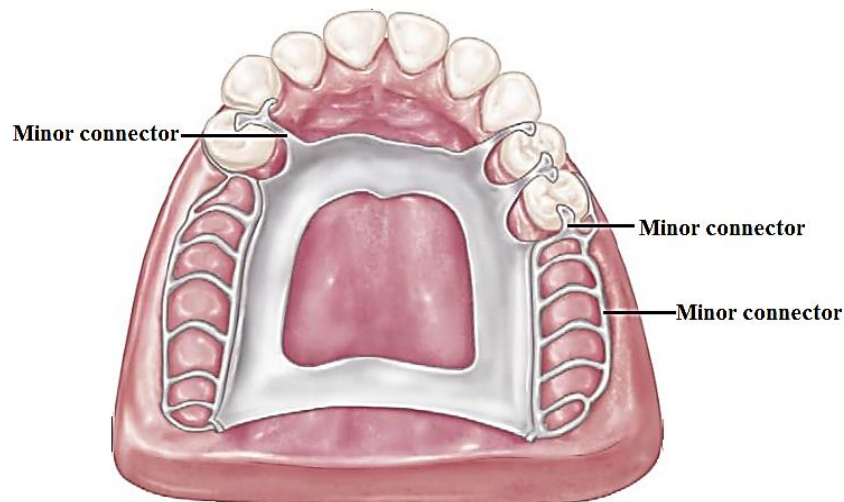
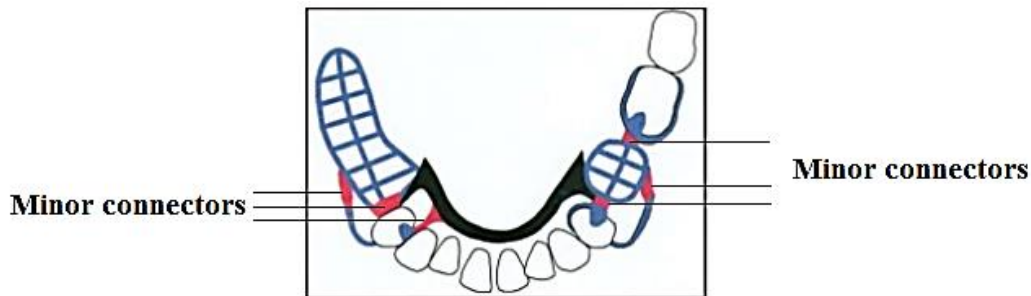


MINOR CONNECTORS

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

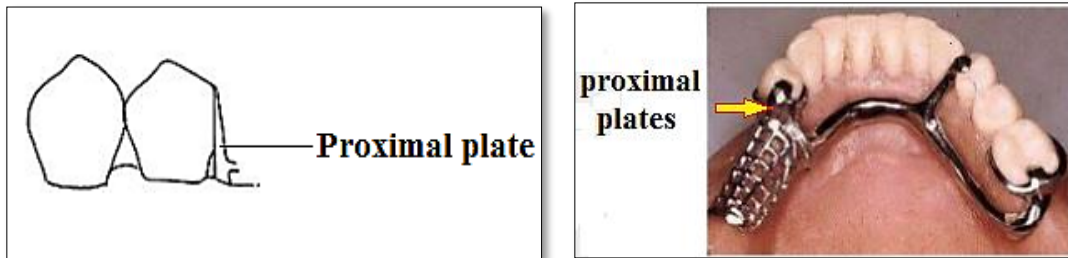
There are four types of minor connectors based on *location* and *function*:

1. Proximal minor connectors.
2. Embrasure minor connectors.
3. Surface minor connectors.
4. 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

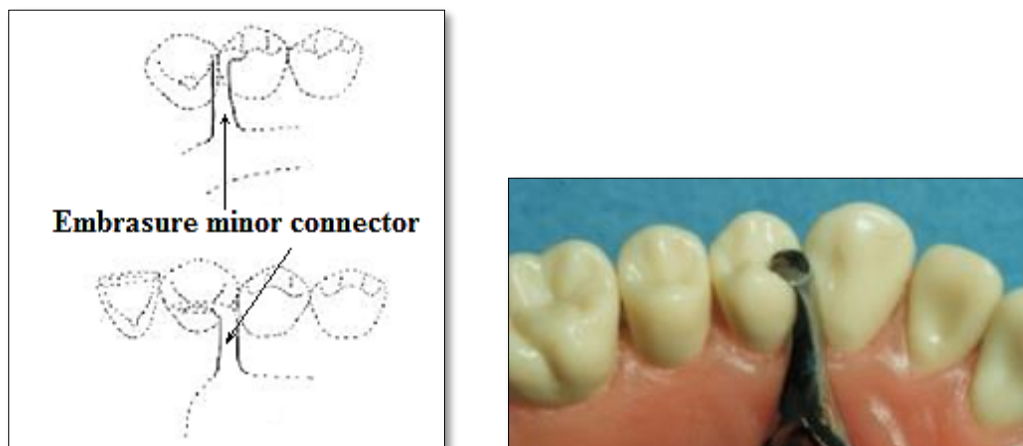
Proximal minor connectors contact an abutment tooth adjacent to an edentulous space. Proximal minor connectors are usually term *proximal plates* but are sometimes call *guiding plates*.



2. Embrasure minor connectors

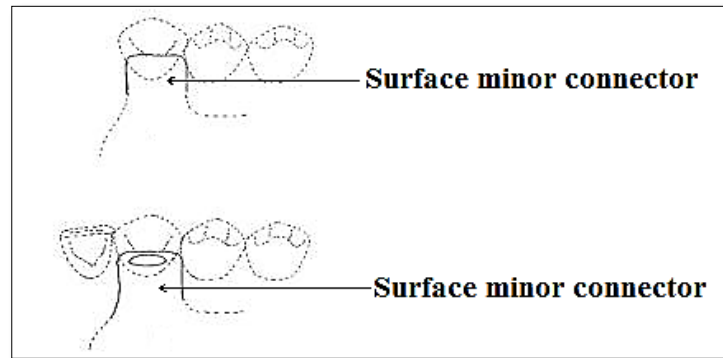
Embrasure minor connectors are located between two teeth. Their functions are to:

- 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).



3. Surface minor connectors

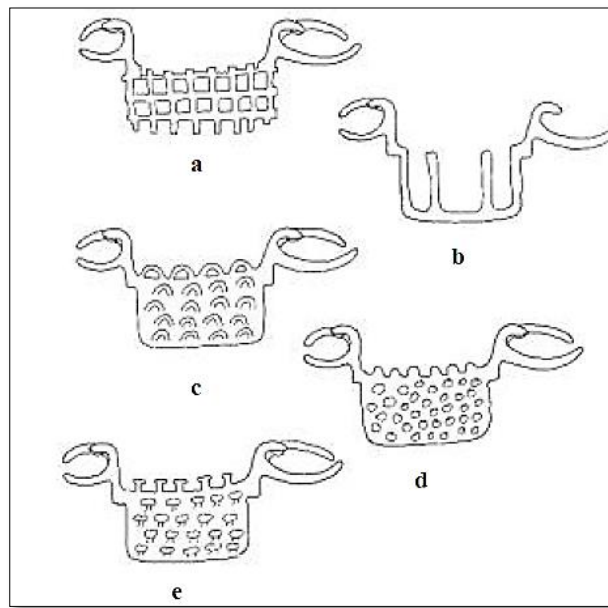
Surface minor connectors are located on the lingual surface of incisors and canines. They connect lingual rests to the major connector. Their junction with the major connector is a rounded right angle and they taper toward the occlusal (incisal). The lateral borders extend into the proximal embrasures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



4. Denture base retention mechanism

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.
- d. Retentive bead.
- e. Retentive posts.



Function 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 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 rigidity.*
4. *It might help in retention and stability of the prosthesis.*
5. *Through its connection to the guiding plane; it helps as a bracing element.*
6. *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

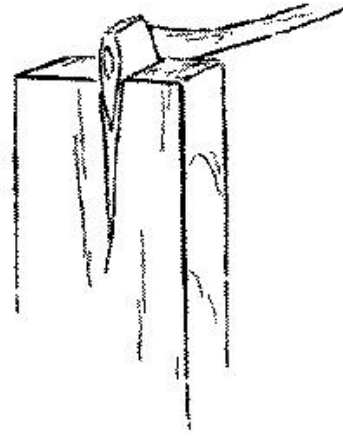
lingual aspect of the abutment tooth. This way sufficient bulk is ensured with the least interference to placement of the artificial tooth.



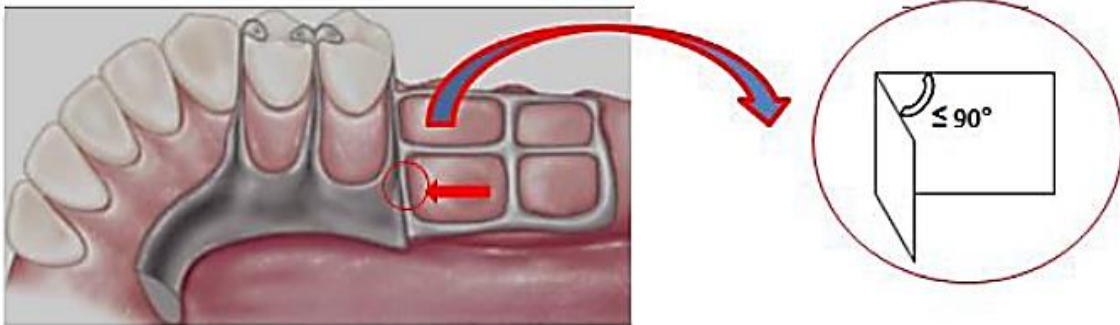
5. It should passing vertically from the major connector and covers as little of the gingival tissue as possible.



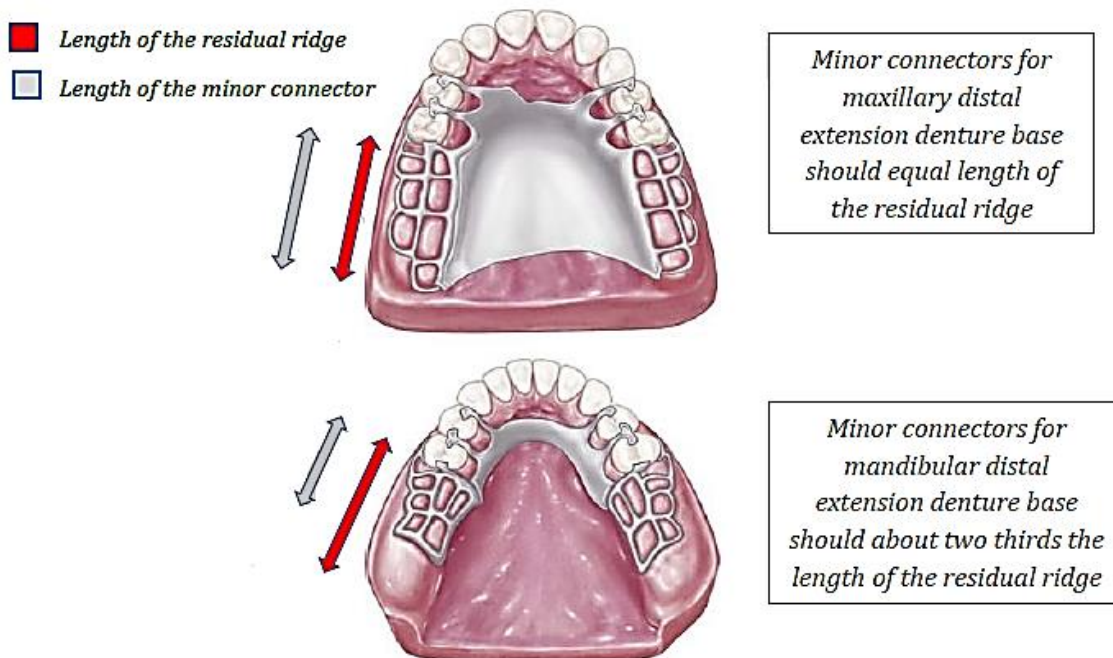
6. The minor connector cross the free gingival area must be relieved in order not to impinge the tissue.
7. The deepest part of the interdental embrasure should have been blocked out to avoid interference during placement and removal, and to avoid any *wedging effect* on the contacted teeth.



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. 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.
11. 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.



12. 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.
13. Minor connector for vertical projection of bar type clasp must not cross a soft tissue undercut (need parallel block out).

Finishing line

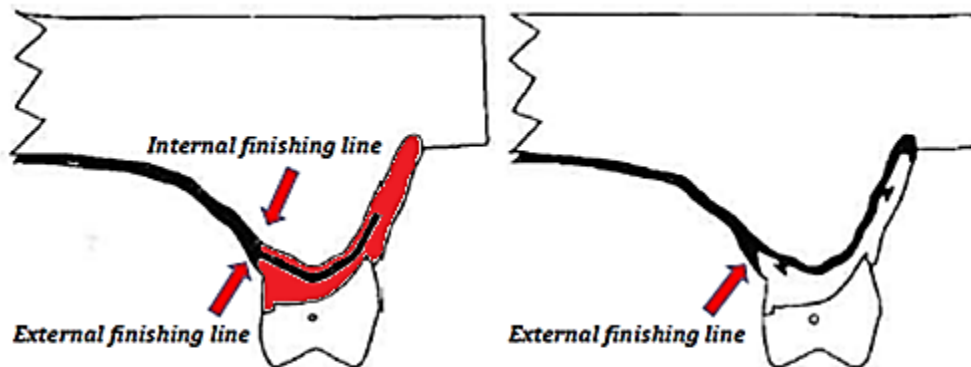
It is the junction of minor connector that join denture base to major connector.

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 subjected to fracture.
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.



*Frontal sections through lingual finishing lines of palatal major connectors.
Right image: Through full cast metal base major connector. Left image:
Through resin denture base.*

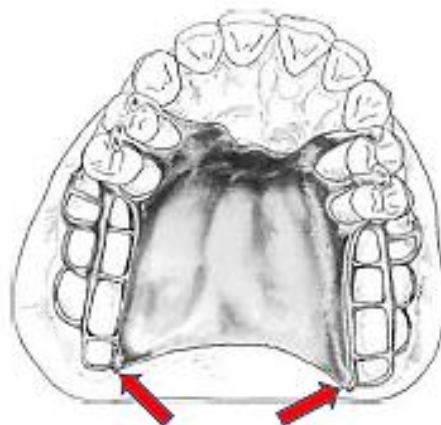
If the finishing line is located on the outer surface of major connector, it is called *external finishing line*. If it is located on the inner or tissue surface, it is called *internal finishing line*.

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

- 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.

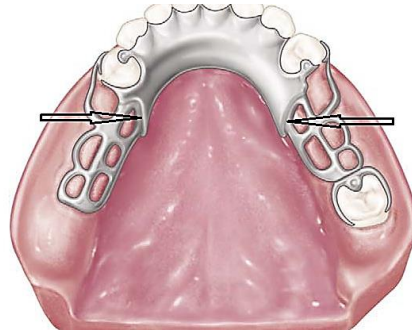
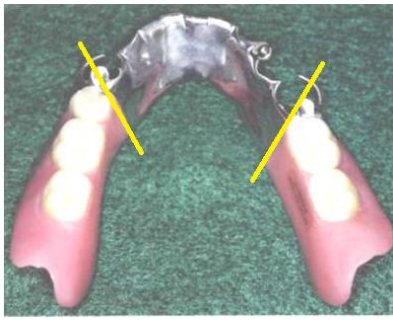


- Junction of major connector and minor connector at palatal finishing lines should be located **2 mm** medial from an imaginary line that would contact lingual surfaces of missing posterior teeth.
- Extension of finishing line to area of pterygomaxillary notch provides for attachment of border portion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



2. **Horizontal 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.

