

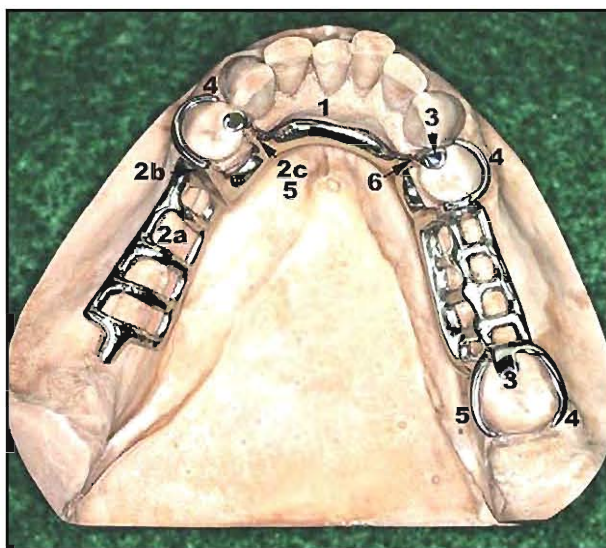
Component Parts of a Removable Partial Denture

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The removable partial denture consists of seven main components (Fig. 1) and these are essential for the success of the treatment for the partially edentulous patient.

1. Major connectors
2. Minor connectors
3. Rests
4. Direct retainers
5. Reciprocal components (as parts of a clasp assembly)
6. Indirect retainers (if the prosthesis has distal extension bases)
7. One or more bases (each supporting one to several replacement teeth)

Figure 1: 1, lingual bar major connector; 2a, minor connector by which the resin denture base will be attached; 2b, minor connector, proximal plate, which is part of clasp assembly; 2c, minor connector used to connect rests to major connectors; 3, occlusal rests; 4, direct retainer arm, which is part of the total clasp assembly; 5, stabilizing or reciprocal components of clasp assembly



Major connectors

A major connector is the component of the partial denture that connects the parts of the prosthesis located on one side of the arch with those on the opposite side (Fig. 1). There are several designs for the maxillary and mandibular major connector and each serves for certain purposes (Fig. 2 & 3)



Figure 2: Maxillary major connector



Figure 3: Mandibular major connector

The major connector is that unit of the partial denture to which all other parts are directly or indirectly attached. This component also provides cross arch stability to help resist displacement by functional stresses.

To *function effectively* and *minimize potentially damaging* effects, all major connectors must:

1. Be rigid.

A flexible major connector may cause severe damage to the hard and soft tissues of the oral cavity. Flexibility allows forces to be concentrated on individual teeth and segments of the residual ridges. This may lead to tooth mobility or tooth loss. The concentration of forces upon small segments of the residual ridges may cause resorption of the hard and soft tissues. This may result in decreased ridge height and decreased support for the associated denture bases.

2. Protect the associated soft tissues.

The Major connector must not permit impingement upon the free gingival margins of the remaining teeth. The marginal gingivae are highly vascular and susceptible to injury from sustained pressure.

3. Provide a means for obtaining indirect retention where indicated.

Removable partial denture that is not supported at each end of an edentulous space tends to rotate about a fulcrum line. The most common method for controlling this movement is through the use of one or more indirect retainers. For practical purposes, indirect retainers will always take the form of rests. When properly positioned, these rests can minimize the rotational movements of prosthesis.

4. Provide a means for placement of one or more denture bases.

Generally, the type of major connector will be dictated by the number and location of edentulous areas. Certain major connectors are indicated for anterior tooth replacement, while others are not. Some major connectors may be selected for tooth-supported removable partial dentures, but not for tooth-tissue-supported applications. In each instance, a major connector must allow appropriate placement of the associated denture base(s).

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5. Promote patient comfort.

The edges of a major connector should be contoured to blend with the oral tissues. This is particularly true for major connectors that cross the anterior palate. The anterior border of a maxillary major connector should not end on the anterior slope of a prominent ruga (Fig 4a). The additional thickness produced by metal coverage will create a noticeable prominence on this section of the palate, and may interfere with the patient's comfort and speech. Instead, the anterior border of the major connector should be terminated on the posterior slope of a prominent ruga (Fig 4b).

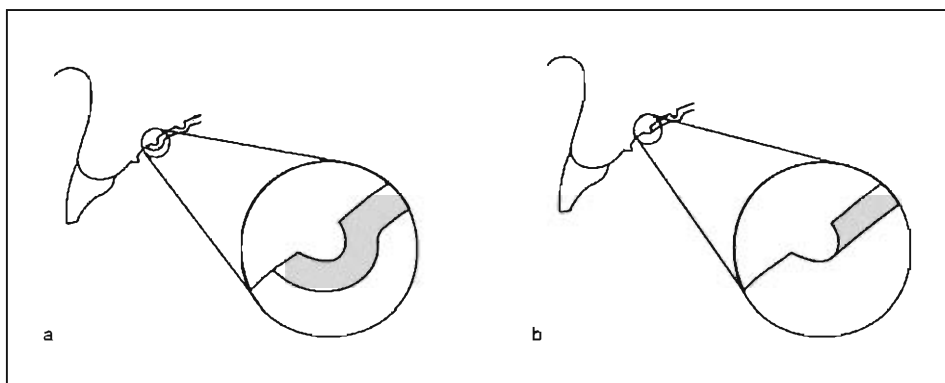


Figure 4: (a) the anterior border of a maxillary major connector should not end on the anterior slope of a prominent ruga. (b) The anterior border of the major connector should be terminated on the posterior slope of a prominent ruga

The major connector is a component part of the removable partial denture, as mentioned earlier. The **chief functions of a major connector** are to 1) unify the major parts of the prosthesis, 2) distribute the occlusal force throughout the arch to selected teeth and tissue, 3) cross-arch stabilization to minimize the torque to the teeth. It is through the major

connector that other components of the partial denture become unified and effective.

Major connectors should be ***designed and located*** with the following guidelines in mind:

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1. Major connectors should be free of movable tissue.
2. Impingement of gingival tissue should be avoided.

It is recommended that the borders of the maxillary major connector be located a minimum of 6 mm away from and parallel to the gingival margins (Fig. 5). As for the mandibular major connector, there should be a minimum of 4 mm below the gingival margin (Fig. 6).

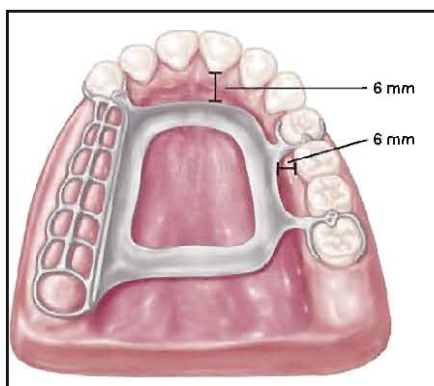


Figure 5: borders of a major connector should be positioned at least 6 mm from the free gingival margins

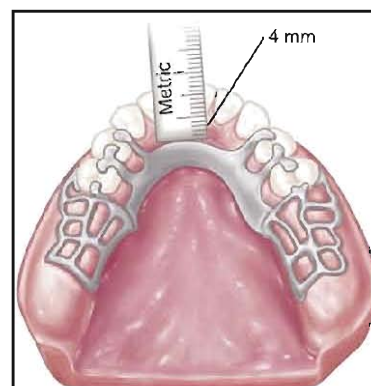


Figure 6: borders of the major connector should be positioned at least 4 mm from the free gingival margins

3. The borders of the major connector should run parallel to the gingival margins of the remaining teeth (Fig. 7).

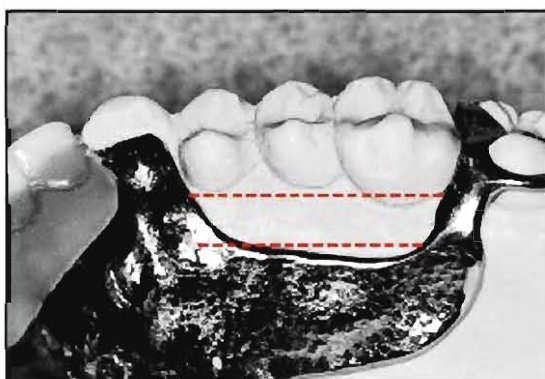
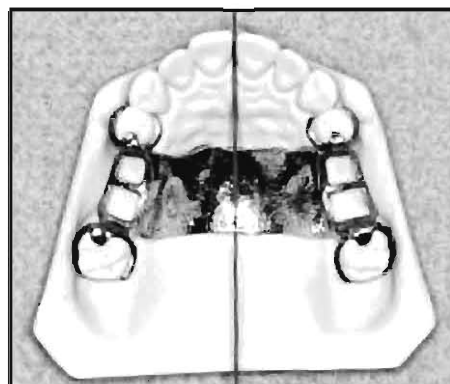


Figure 7: The borders of the major connector should run parallel to the gingival margins of the remaining teeth.

- The major connector should be as symmetrical as possible. In addition, the borders of a maxillary major connector should cross the palatal midline at right angles not obliquely (Fig. 8).

Figure 8: The borders of a maxillary major connector should always cross the palatal midline at 90 degrees.



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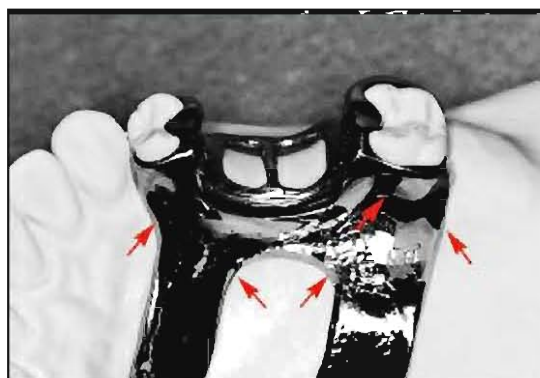
- Bony and soft tissue prominences should be avoided during placement and removal (Fig. 9).



Figure 9: Coverage of tori should be avoided if possible. The tissues covering tori are extremely thin and susceptible to irritation.

- The major connector should show smooth, rounded contours (Fig. 10). Sharp angles and corners may cause patient discomfort and produce areas of stress concentration within a removable partial denture framework. Areas of stress concentration may lead to structural fatigue and prosthesis fracture.

Figure 10: All major connectors should exhibit smooth, rounded contours (arrows).



7. Relief should be provided beneath a major connector to prevent its settling into areas of possible interference, such as an elevated median palatal suture.
8. Major connectors should be located and/or relieved to prevent impingement of tissue that occurs because the distal extension denture rotates in function in the mandible.

Characteristics of major connectors that contribute to the ***maintenance of health of the oral environment and the wellbeing of the patient*** may be listed as follows:

1. Made from an alloy compatible with oral tissue.
2. Rigid and provide cross-arch stability through the principle of broad distribution of stress.
3. Do not interfere with and are not irritating to the tongue.
4. Do not substantially alter the natural contour of the lingual surface of the mandibular alveolar ridge or of the palatal vault.
5. Do not impinge on oral tissue when the restoration is placed, removed, or rotated in function.
6. Cover no more tissue than is absolutely necessary.
7. Do not contribute to retention or trapping of food particles.
8. Have support from other elements of the framework to minimize rotation tendencies in function.
9. Contribute to the support of the prosthesis.

REFERENCES

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