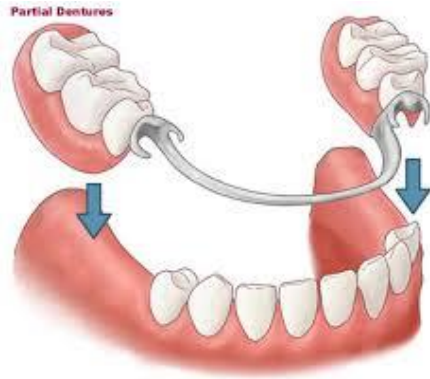


Prosthetic Dentistry

PARTIAL DENTURE : LEC 9: DENTURE BASE

Dr. Azhar Alawadi

Denture base: the part of R.P.D. that rests on the foundation tissues and to which teeth are attached.



Functions of denture base:

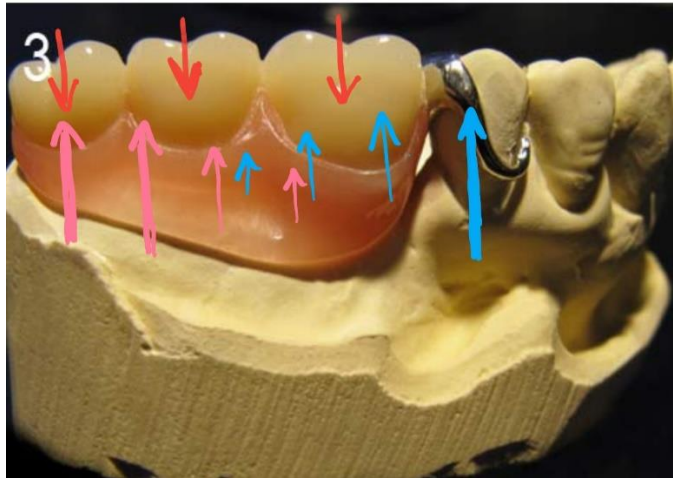
1. Masticatory functions as the denture base transfer the occlusal stresses to the underlying supporting oral structures.
2. Aesthetic or cosmetic function as it reproduces the looks and contours of the missing oral structures.
3. Stimulation of the underlying tissues by massaging them due to vertical movements of the denture base, which may stimulate these tissues to maintain their form and health.

Types of denture base according to support:

1. Tooth supported partial denture base. It is merely spanning between two abutment teeth which undertake occlusal forces. The denture base will prevent the horizontal migration of abutment teeth, as well as preventing the vertical migration of the opposing teeth (A).
2. Tooth-tissue supported denture base. The base must contribute to the support of the denture (B).

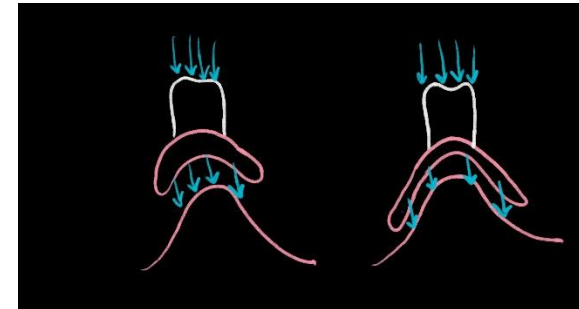


The edentulous part closer to the terminal abutment is primarily by the rest on the abutment, however, further distal to that, the support derived from the underlying tissues becomes more important.



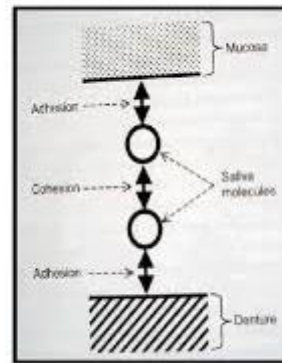
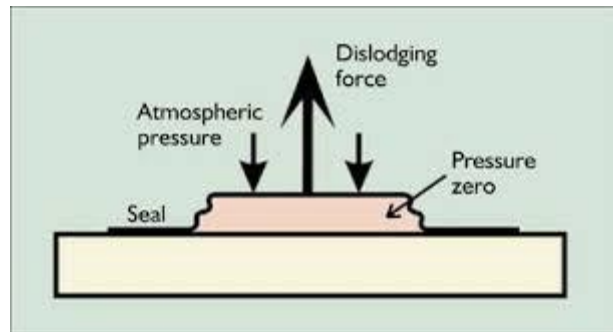
Maximum support from the residual ridge may be obtained by using broad, accurate denture bases, which spread the occlusal load equally over the entire area available for such support (snowshoe principle).

Therefore support should be the primary consideration in selecting, designing, and fabricating a distal extension partial denture base. It must be made of a material that can be relined or rebased



when it becomes necessary to reestablish tissue support for the distal extension base. Secondary retention is provided by the intimate relationship of denture bases, Retention of denture bases has been described as the result of the following forces:

- A- Adhesion.
- B- Cohesion.
- C- Atmospheric pressure.
- D- Physiological molding of the tissue around the polished surfaces of the denture.
- E- Effect of gravity on the mandibular denture.



TYPES OF DENTURE BASE ACCORDING TO MATERIAL

I- RESIN TYPE DENTURE BASE

It is most widely used type of denture base because of easy fabrication and easy of attachment to metal framework.

INDICATION

1- Distal extension ridge

The resin denture base is indicated for distal

extension cases (class I and class II) because of the support of the denture by tissue and ridge and denture base, so there will be need for relining.

2- Long span ridge

In class III and class IV edentulous cases because of possibility of tissue changes underneath the denture base and there will be need for future relining.

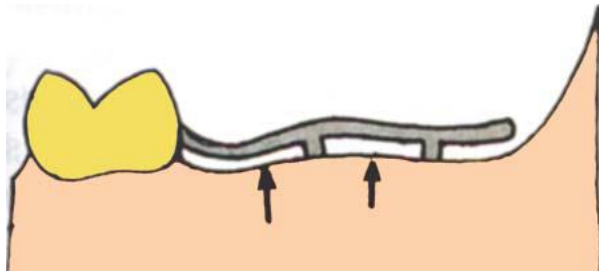
3- In cases of immediate partial denture

Since after healing period there will be need for relining so that resin denture base will be needed for such cases.



Acrylic resin bases are attached to the partial denture framework by means of minor connector; the method of attachment is mainly mechanical by undercuts or holes. Relief over the basal seat areas of

the master cast is used; after casting, the portion of the retentive framework to which the acrylic resin base will be attached will stand away from the tissue surface sufficiently to permit a flow of acrylic resin base material beneath its surface and provide mechanical retention.



Relief under the mesh should not be started immediately adjacent to the abutment tooth but should begin 1.5-2 mm from the abutment tooth. This will create a metal to tissue contact immediately adjacent to the tooth.

The retentive framework for the base should be embedded in the base material with sufficient thickness of resin (1.5 mm) this becomes necessary during the denture adjustment period or during

relining procedures. Thickness is also necessary to prevent weakness and fracture of the acrylic resin base material surrounding the metal framework.

Mechanical attachment of plastic denture base materials to the metal framework may has several DISADVANTAGES:

- 1- Oral fluids and microorganisms seep between the metal and plastic surface and eventually stain, resulting in an objectionable black line at the metal-plastic interface.
- 2- To provide mechanical retention; the denture base must be designed with considerable bulk.
- 3- The flexing of the plastic denture base at the finish lines weakens the plastic resulting in fracture.

The technique of bonding plastic to metal surface is being introduced into removable partial denture fabrication. These recently developed adhesive techniques and materials, and future developments, will eliminate the disadvantages of mechanical retention of plastic only and may alter the design and

fabrication of removable partial denture base retention minor connector in the near future.

ADVANTAGES

- 1- Can be easily relined.
- 2- Easy to fabricate, adjust, finish, polish, and repair.
- 3- Resin is more esthetic than metal.

DISADVANTAGES

- 1- More porous than metal and therefore more difficult to clean.
- 2- Requires more bulk for rigidity than metal.
- 3- Easily abraded.
- 4- Easily fractured.
- 5- Plastic is a poor thermal conductor.
- 6- Has the potential to be dimensionally unstable.

I- METAL TYPE DENTURE BASE

It is made of either:

- 1- Gold and platinum: but these materials are so expensive.
- 2- Cobalt chromium: this is more being in use

nowadays.

3- Recently, the titanium being used as a denture base and in oral implant because of its excellent properties.



The metal type denture base has the ability to stimulate the underlying tissues that will maintain the integrity of the bone by preventing bone resorption.

INDICATION

- A- Short span (tooth born removable partial denture).
- B- When there is no enough inter-ridge space for artificial teeth (inadequate intermaxillary space)

because of over eruption of opposing teeth.

ADVANTAGES

1- Accuracy and Permanence of Form.

Cast metal bases not only more accurately than denture resins but also can maintain their accuracy of form without change in the mouth.

Because of its accuracy, the metal base provides an intimate contact that contributes considerably to the retention of denture prosthesis. Permanence of form of the cast base is also ensured because of its resistance to abrasion from denture cleaning.

2- Comparative Tissue Response

The inherent cleanliness of the cast metal base contributes to the health of oral tissue when compared with an acrylic resin base. The reasons for this are the greater density and the bacteriostatic activity contributed by ionization and oxidation of the metal base. Acrylic resin bases tend to accumulate mucinous deposits containing food particles.

3- Thermal Conductivity

Temperature changes are transmitted through the

metal base to the underlying tissue, thereby helping to maintain the health of that tissue. Freedom of interchange of temperature between the tissue covered and the surrounding external influences (temperature of liquid, solid foods, and inspired air) contributes much to the patient's acceptance of a denture and may help prevent the feeling of the presence of a foreign body.

4- Weight and Bulk

Metal alloy may be cast much thinner than acrylic resin and still have adequate strength and rigidity. Sometimes weight and thickness may be used to advantage in denture bases. In the mandibular arch, the weight of the denture may be an asset in regard to retention.

On the other hand, extreme loss of residual alveolar bone may make it necessary to add fullness to the denture base to restore normal facial contours and to fill out the buccal vestibule to prevent food from being trapped in the vestibule beneath the denture.

In such situations an acrylic resin base may be preferable to the thinner metal base.

DISADVANTAGES

- 1- Difficult to reline, adjust, and rebase.
- 2- It is expensive.
- 3- The errors that occur in posterior palatal seal area cannot be corrected with metal denture base.
- 4- Poor esthetic.

Types of artificial teeth

1- ACRYLIC TEETH

It has the ability to be attached chemically to the denture base.

2- PORCELAIN TEETH

It is attached to the denture base by mechanical mean, either by pin that will be processed in denture base and a hole is presenting the base of the tooth allowing its attachment by cementation.

3- METAL TEETH

Some cases the molar teeth may be processed as part

of the denture base by casting procedure this is indicated in cases of limited inter-maxillary spaces.

