

## CHAPTER 6

### DENTURE BASES

#### DEFINITION

A denture base is that part of a denture which rests on the foundation areas and to which teeth are attached.<sup>1</sup>

#### FUNCTIONS

The functions of denture bases are to:

1. Attach the prosthetic teeth to the RPD.
2. Transfer occlusal forces to the abutment teeth and, in tooth-tissue supported RPDs, to the denture foundation area.
3. Replace the missing alveolar tissue in bulk and appearance.
4. To provide bracing, retention, and in tooth-tissue supported RPDs direct- indirect retention.

#### DESIRABLE CHARACTERISTICS

Classic lists of requisites for the "ideal" denture base appear in McCracken's<sup>2</sup> and Applegate's<sup>3</sup> textbooks. These requirements reworded, expanded and slightly modified are:

1. Be dimensional stable during fabrication, use, repair and reline/rebase.
2. Be chemically inert or at least compatible with the oral tissues.
3. Not have a taste or odor and should not pick up a taste or odor from oral fluids.

4. Have a surface which is dense to avoid harboring of oral fluids and microorganisms.
5. Be capable of adapting accurately to the master cast.
6. Be capable of being adjusted, finished and polished with instruments available in the dental office.
7. Be abrasion resistant.
8. Be capable of being cleaned by usual oral hygiene techniques and materials.
9. Be of low initial cost and inexpensively repaired and relined/rebased.
10. Be capable of being repaired and relined/rebased by customary dental techniques.
11. Be a good thermal conductor.
12. Have a low specific gravity for maxillary RPDs and a specific gravity similar, to or slightly greater than, the tissues it is replacing for mandibular RPDs.
13. Have resilience and impact strength sufficient to permit the use of a thin base.
14. Chemically bond to prosthetic tooth materials and RPD alloys.
15. Be strong enough to resist the stresses which will be applied to it.
16. Be capable of being colored to match the various mucosa colors and retain this color with time, use, and cleansing.
17. Not soften or warp in hot water or other cleansing solutions.

There is no denture base material which meets all of these requirements. However, the currently used denture base

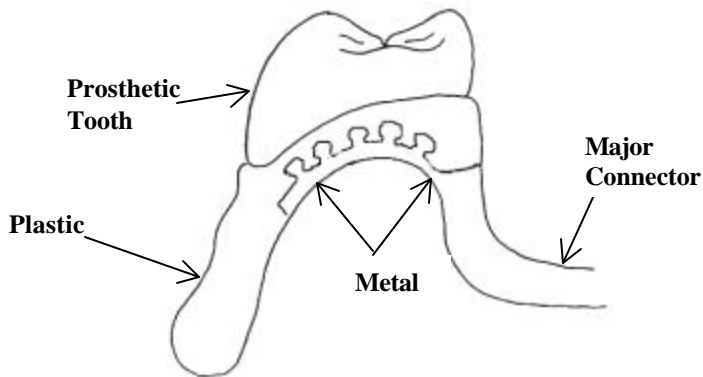
materials (metal and plastic) are very satisfactory.

## TYPES

There are two types of RPD denture bases: (1) metal, and (2) plastic.

### THE METAL DENTURE BASE

The metal denture base (Fig. 6-1) has metal in contact with the edentulous ridge. Prosthetic teeth are attached to the metal base with a plastic base or by cementation to a retentive post.



**Fig. 6-1.** A metal denture base

#### INDICATIONS:

1. A tooth supported edentulous space where further bone resorption is not anticipated.
2. When a facing, tube tooth, metal pontic, or metal reinforced denture tooth is to be used.
3. A tooth-tissue supported edentulous space when the "floating denture base" concept is being used.

#### CONTRAINDICATIONS:

1. Tooth-tissue supported edentulous space.

2. Tooth supported edentulous space where bone resorption is expected.

#### ADVANTAGES:

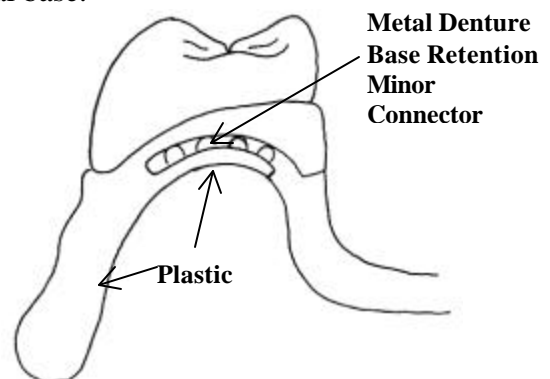
1. Very rigid.
2. High thermal conductivity. Thermal conductivity may be decreased if plastic is processed onto the metal base.
3. Very stable form.
4. High abrasion resistance.
5. Less porous than plastic and therefore easier to clean.

#### DISADVANTAGES:

1. More difficult to adjust tissue surface than a plastic base.
2. More difficult to relin the metal tissue surface.
3. Metal not esthetic.

### THE PLASTIC DENTURE BASE

The plastic denture base (Fig. 6-2) has plastic in contact with the edentulous ridge. It is used more frequently than the metal base.



**Fig. 6-2.** A plastic denture base

#### INDICATIONS:

1. Tooth-tissue supported edentulous spaces.
2. Tooth supported edentulous spaces where bone resorption will necessitate a reline/rebase.
3. Where considerable missing alveolar tissue must be replaced.
4. Where esthetics is a primary concern.

#### CONTRAINDICATIONS:

1. Single tooth edentulous spaces.
2. Where protrusive or lateral occlusal guidance will be on the prosthetic teeth.

#### ADVANTAGES:

1. Can be easily relined.
2. Easy to fabricate, adjust, finish and polish, and repair.
3. Plastic 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.

Has the potential to be dimensionally unstable.

Note: The high impact plastic denture base materials such as Lucitone 199 have

improved resistance to abrasion and fracture.

#### REFERENCES

1. The glossary of prosthetic terms. 6th ed. St. Louis, C V Mosby, 1994.
2. Henderson D, McGivney G P, Castleberry D J. McCracken's removable partial prosthodontics. 7th ed. St. Louis, C V Mosby 1985:131.
3. Applegate O C. Essentials of removable partial denture prosthesis. 2nd ed. Philadelphia, W B Saunders, 1960:140.