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Repair of complete denture

Heat polymerizing acrylic resin, since its introduction several decades ago, has been the material of choice for the construction of denture bases for numerous reasons:

* Excellent appearance
* Ease in processing
* Reparability
* Economical
* stable in oral environment

However, it is associated with two important clinical disadvantages:

* low flexure fatigue (bending force)
* impact resistance

bending forces are developed mainly during mastication because of poor adaptation of the denture to the underlying mucosa, improper occlusion, morphology of the palate, excessive masticatory forces, or denture deformation during use. Those forces in long term contribute to fatigue of the material.

Impact forces are created during an accidental fall into washbasin or onto floor.

**Causes of fracture of denture:**

* during function
* dropped on hard surface

Denture repair do more good in less time than most other dental procedure the advantage of acrylic denture base it is easy to work easy to repair.

**Requirements of repair:**

1- must restore the original strength.

2-must be dimensionally stable.

3-must match the original color.

Classification of fractured dentures:

1. according to location of fracture:
2. midline fracture
3. any part fracture
4. according to extent of fracture:
5. without broken or missing part and/or teeth
6. with broken or missing part and/or teeth
7. according to timing of fracture
8. early fracture
9. delayed fracture
10. according cause of fracture
11. operator
12. patient

Midline fracture (mainly in the maxilla).

Causes:

**a**) No or insufficient relief in the midline. Mid palatine raphae (M.P.R.) (Early fracture)

**b**) Ridge resorption with loss of relief effect. (Delayed fracture)

In the mandible with

**a-**severe resorption the mentalis muscle encroaches on the crest of the lower ridge. When this combined with relief over the genial tubercles the anterior part of the lower denture tends to be made thin & is prone to fracture.

**b-**fatigue of the denture produced by repeated flexing of the denture during cleaning by the patient or during function.

Materials used for repair:

1-cold cure acrylic

2-light cure acrylic

3-heat cure acrylic

Cold cure acrylic has the advantage over heat cure acrylic:1-cheaper 2-faster 3-the denture base never warpaged due to heat.

**Types of repair:**

1. midline fracture repair
2. any part fracture repair
3. missing part fracture repair
4. tooth fracture repair
5. post dam repair

**Laboratory procedure for repairing fractured denture base:**

**A- midline fracture repair:**

1-Accurate reassemble of broken parts if not the denture will neither fit nor occlude properly

2-Apply sticky wax to the fractured line to maintain the two pieces in correct position. Do not allow the sticky wax to flow into the fractured lines, only cover the fracture line from the polished surface

3-Reinforce the parts by attaching one or more old burs or plastic sticks to the occlusal surfaces

4-Block any undercut in the tissue side of the denture by wax & apply separating medium to the fitting surface.

5-A cast is poured into the denture using quick set plaster.

6-After setting remove the two pieces of the denture gently and cleaned from any traces of sticky wax.

7-Coat the cast with separating, set aside to dry.

8-Fractured edges are beveled toward the polished surface & reduced to form a groove of 8-10mm along the fractured line.

9-The pieces of the denture are reassembled on the cast. Self-cure resin is applied to the fractured area until the area is overfilled.

11-The denture is removed from the cast, remove the excess by burr.

12-Finished & polished in a conventional manner, then insert it in the patient’s mouth.

**B- Any part fracture repair:**

1. hold the pieces of the fractured appliance together
2. flow sticky wax at the fracture line
3. any undercut on the fitting surface is block out with wax
4. the fitting surface is painted with separating medium
5. we make an index using fast setting plaster
6. after the plaster sets the denture is lifted off the index and the edges are beveled toward the outer surface. This will provide fresh acrylic to allow a better repair as well as provide more surface area for the repair acrylic to bond to.
7. The pieces of the denture are reassembled on the cast. Self-cure resin is applied to the fractured area until the area is overfilled.
8. The denture is removed from the cast, remove the excess by burr.
9. Finished & polished in a conventional manner, then insert it in the patient’s mouth.

**C- missing part fracture repair:**

1-Small piece broke of the border can be fashioned by placing warmed molding plastic on the remaining border & then recontouring the missing area by placement in the patient mouth. After proper contouring a cast is poured into the denture. The modeling plastic is removed & self-cure resin is used to fill the area of the missing border. Then the resin is cured & polished.

2-an alternate method is to made an alginate impression with the denture placed in patient mouth, after pouring the cast either self-cure acrylic is applied to replace the missing part or wax is added & carved to resembled the broken denture part, followed by flasking, packing, curing, finishing & polishing.

**D- tooth fracture repair:**

if the tooth will come out intact just replace the tooth with self-cure acrylic.

If the tooth is fractured, we need to select another tooth of the same size and shade for the repair.

1-Fractured tooth is cut away with bur. Some care is taken to preserve the free gingival marginal area of the acrylic if possible.

2-The area lingual to the fractured tooth is reduced using a small bur.

3-The mold & shade of the tooth is determined & selected.

4-Place the new tooth in position.

5-Fix the tooth labially by sticky wax, a plaster index can be made by applying a layer of plaster on broken tooth & also include one tooth on each side.

6-Tooth to be repaired is removed together with all wax around it.

7-Tooth is then placed again exactly in its original position aided by plaster index.

8-Self cure acrylic resin is added from the lingual side until repair is over filled.

9-The denture then removed from the cast, then finished & polished in the conventional manner.

**E. post dam repair:**

this denture had a problem with retention. Error in posterior palatal seal area (post dam).

1. Take impression of the posterior area by using wax
2. After block out of the undercuts in the denture a cast is poured into the denture itself
3. The posterior area of the denture is removed
4. Care is taken to create a land area around the denture especially in the posterior area
5. The denture is removed from the cast
6. The posterior area corresponding to the palatal seal is a good reproduction of the inner surface of the denture with the impression wax. Remember the green stick had been molded in the patients mouth and the retention was seen to have been increased.
7. Auto polymerizing resin is painted on the cast and additional resin is added on the denture surface
8. The denture and cast is assembled applying firm figure pressure to remove the excess resin
9. Finishing and polishing is done as described previously.