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Fractured denture and its re-processing

Dentures fabricated in heat cure acrylic resin can get fractured in due course of time due to wear of the resin or due to accidental impact forces. Mandibular denture easily slips while cleaning and a fall to the floor causes fracture. Dentures functioning against natural teeth (single denture) flex frequently during mastication and fracture.^{1,2,3} Careless deflasking can fracture new dentures in the laboratory. If the fracture line is clean, realigning the fractured segments and the repair becomes easier. Multiple fracture lines and loss of teeth further complicates the process. Reprocessing or repair of the fractured denture is usually carried out with self cure acrylic resin. Incorporation of glass or aramid fibres and steel wires has been tried as reinforcement but with variable results. Fractured denture is an emergency situation and many patients will be handicapped without a denture. The process of repairing is effectively simplified with the advent of newer techniques and materials. A simplified process is described and which can be undertaken in the lab attached to any clinic.

1. Fractured segments of the denture are

aligned and the position is reinforced with super glue. (Fig. 1,2,3)

2. A cast is made in putty silicone impression material. Mixed putty is closely adapted to the tissue surface of the aligned denture and both the denture and putty are placed over a glass plate. This will provide firm support to the putty cast. Once the curing is completed, the denture can be separated from the cast. (Fig.4,5)

3. In order to create space for the repair resin, 3mm of the denture base is removed from both sides. Area to be removed is marked first. (Fig.6)

4. The fractured edge is reduced with tungsten carbide trimmer. A curved outline is followed to increase the surface area. More area ensures better bonding of the repair resin with the denture base resin. The edge can be carefully sandblasted and which may improve the bonding. (Fig.7)

5. The edges are treated with monomer for about 3 minutes. (Fig.8)³

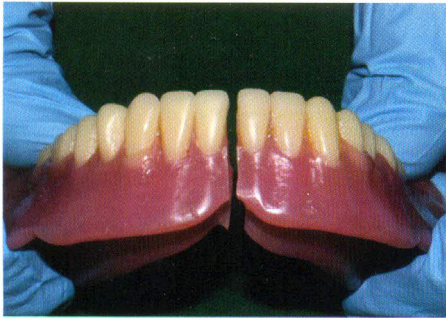


Figure 1
Fractured mandibular denture

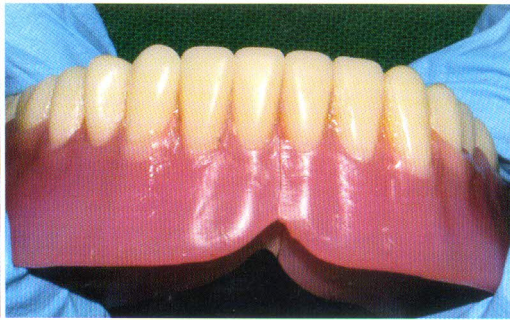


Figure 2
Fractured segments are aligned



Figure 3
Tube of super glue

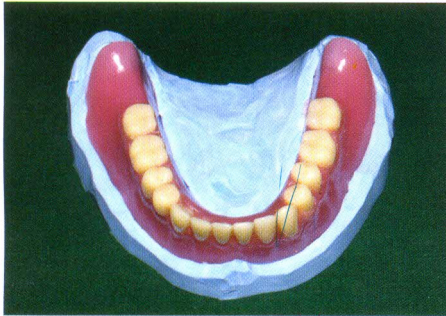


Figure 4
A cast is made for the denture with addition curing silicone putty



Figure 5
Putty cast separated from the denture



Figure 6
3mm of denture base is removed from both sides of the fracture

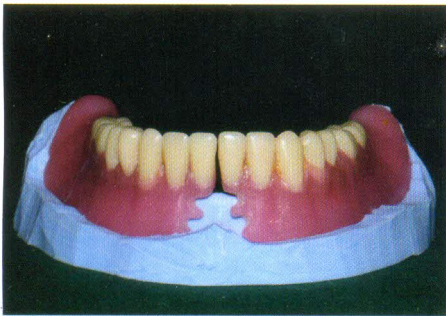


Figure 7
Space created for the repair resin

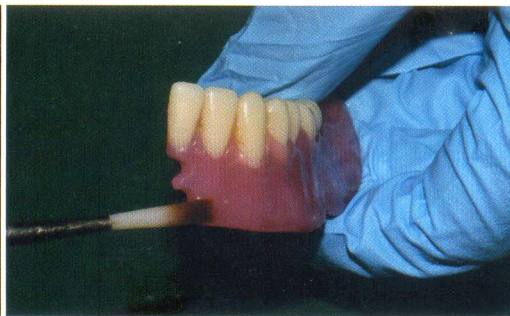


Figure 8
The modified edges are treated with monomer



Figure 9
The space filled with autopolymerising acrylic resin

6. Denture segments are well seated on the putty cast placed on glass plate and the space is filled with self-cure resin. The mixed resin is loaded from both sides separately. (Fig.9,10)

7. The resin is allowed to cure for a minimum period of 12 hours. Optionally it can be subjected to pressure pot curing. The denture is then trimmed and polished to the original contour. (Fig.11,12,13)

8. Another situation is described where a

tooth also is lost at the fracture line. Repair is done in two stages. First the denture base is repaired and then the tooth is added to it. As in the previous case the segments are aligned and united with super glue. A cast is made in putty silicone followed by creation of space for the repair resin. (Fig.14,15,16)

9. Denture base portion is built with self-cure resin from labial and lingual surfaces. It is allowed to cure before adding the tooth. (Fig.17,18)



Figure 10
Lingual view of the repaired denture

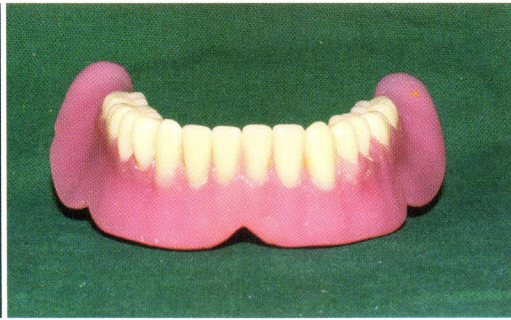


Figure 11
Finished and polished denture



Figure 12
Lingual view of the finished denture



Figure 13
Repaired area

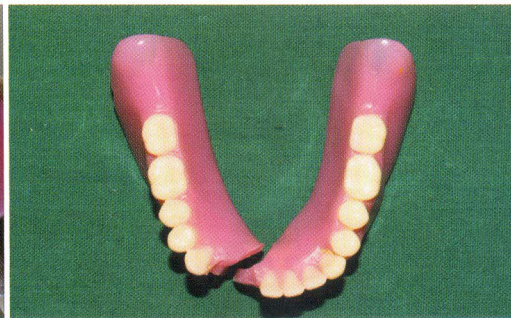


Figure 14
Fractured denture with loss of one tooth

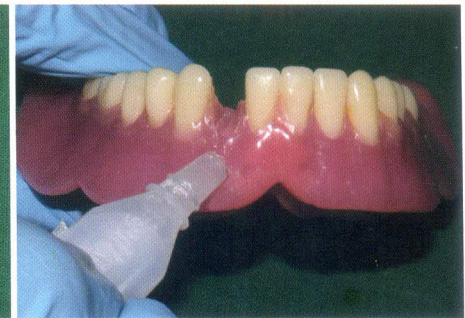


Figure 15
Fractured segments aligned and united with super glue



Figure 16
Denture segments positioned on putty cast. Space created for the repair resin



Figure 17
In the process of repair, self cure resin is added to the denture base portion



Figure 18
Repair of base portion is completed first

10. Matching tooth is selected and trimmed so that there is adequate space between the denture base and the tooth. The tooth is then positioned with modeling wax. Waxing up and carving is then completed. (Fig.19)

11. Labial surface of the denture is covered with putty silicone to form a splint. The incisal edges of replaced and other teeth should be included in the splint. (Fig.20,21)

12. Dewaxing is done by pouring hot water through the lingual surface. The splint is re-

moved and wax elimination is completed. A mark is incorporated on the lingual surface of the splint to indicate the position of the replaced tooth. The splint with the tooth is placed back on the denture. (Fig.22,23)

13. Self cure acrylic resin in pourable consistency is introduced through the lingual surface. Gentle vibration with a spatula will ensure complete filling of the space which was previously occupied by the wax.

14. Allow overnight curing before trimming

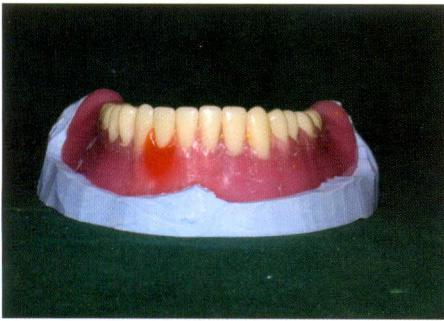


Figure 19
Selected tooth is waxed up into the space. The wax portion is carve and polished

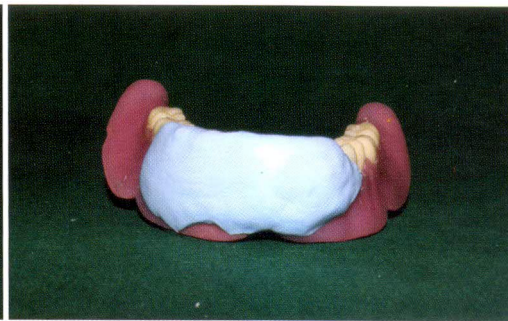


Figure 20
A putty splint is made covering the anterior teeth and the incisal edge



Figure 21
Putty in lingual view



Figure 22
Putty splint with the tooth after dewaxing

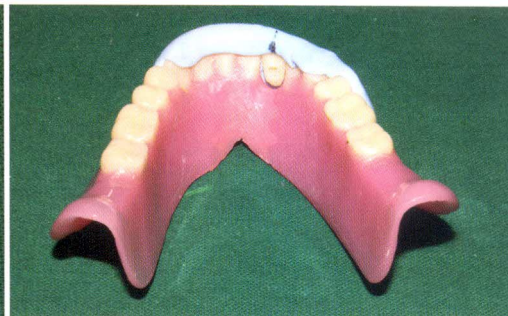


Figure 23
Splint with replaced tooth positioned back after dewaxing

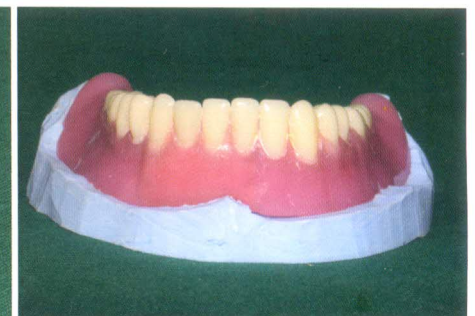


Figure 24
Processing completed with self cure acrylic resin



Figure 25
Lingual view of the denture after finishing

and polishing. (Fig.24,25)

The conventional system of denture repair uses a plaster cast which has limitation to copy undercut areas. Fractured segments were united with sticky wax which gets softened with the exothermic heat of the setting plaster and dimensions can also

change due to setting expansion. To counteract this, two sticks were used as additional reinforcements. In the present technique, putty cast takes care of many of the inadequacies of the plaster cast. Super glue is a superior substitute to sticky wax. Simplicity, accuracy, better results, copying of undercuts and avoidance of separating medium can be considered as superiority of the present technique.

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