

Occlusion Guided Immediate Single Complete Denture Repair: A Case Report

Dr. Soman Biniwale¹, Dr. Sunil Kumar MV²

¹Final Year Post Graduate, Jaipur Dental College, Jaipur, Rajasthan, India

²Head of the Department, Department of Prosthodontics, Crown & Bridge and Implantology, Jaipur Dental College, Jaipur, Rajasthan, India
soman.biniwale2016[at]gmail.com

Abstract: In day to day dental practice single complete denture fracture is often seen condition. Denture repair is possible using conventional methods when broken fragments can be aligned in its actual position. But in conditions where one of the broken denture fragments is missing and denture cannot be aligned, using occlusion as a guide for repair can be done as explained.

Keywords: Occlusion, Immediate, Single complete denture, Denture repair

1. Introduction

In routine dental practice we come across repair of broken denture. Normally denture pieces are attached with different things. But when broken pieces are difficult to realign where there are multiple broken fragments present or one of the broken pieces is missing, in this kind of situation the following technique can be useful in repairing the denture.

2. Case Report

A 75 years old male reported to the Department of Prosthodontics, Jaipur Dental College, Jaipur, Rajasthan with a chief complaint of broken upper denture.

On intraoral examination:

- 1) Maxillary arch was completely edentulous. (Fig. 1)
- 2) Mandibular arch was partially edentulous with generalised gingival recession and attrition. Number of teeth missing i.r.t. 31,32,36,37,41,42,44,46,47. Grade II mobility was seen i.r.t. 33 and 35. (Fig. 2)



Figure 1 Figure 2

On radiographic examination:

- 1) Ridge resorption in maxilla.
- 2) Horizontal bone loss i.r.t 33, 35, 38, 43, 44, 45, 48.
- 3) Furcation involvement i.r.t 38, 48.
- 4) Periapical radiolucency i.r.t 33. (Fig. 3)

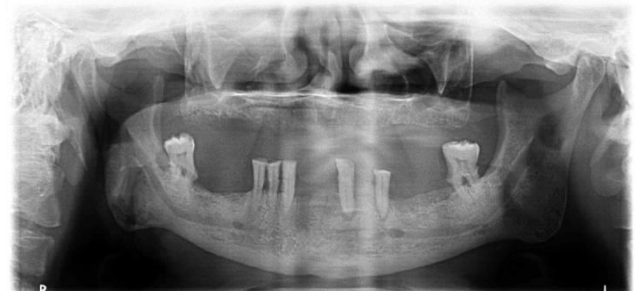


Figure 3

After examination of broken maxillary complete denture, which was in two pieces, when tried to realign the denture, it was noticed that one fragment was missing. (Fig. 4, 5)



Figure 4 Figure 5

Since fracture line was not merging and one fragment was missing from the denture, it was difficult to realign and stabilize the denture. That's why impression of mandibular arch was made with dentulous perforated metal stock tray using Alginate (Dentsply). Impression was poured with Type III gypsum material (Kalabhai). Cast was retrieved after material had set. (Fig. 6, 7)

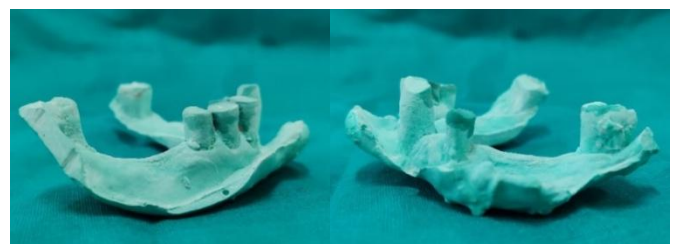


Figure 6 Figure 7

*Note: base was not poured intentionally to get access to the fracture line from polished surface.

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Denture pieces were tried to align one by one according to occlusion. (Fig. 8)

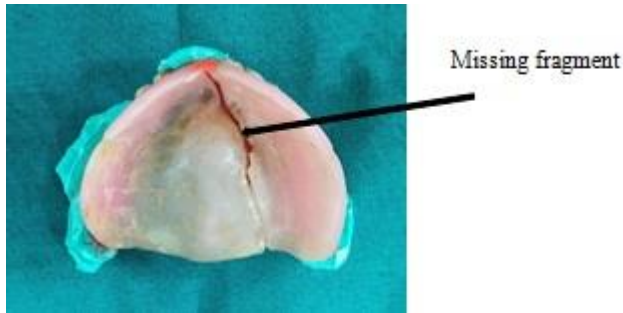


Figure 8

Once the teeth got occluded properly both the pieces were sealed to lower cast using modelling wax (Pyrex).(Fig. 9, 10)



Figure 9 Figure 10

Once the denture got stabilized a single layer of modelling wax sheet (Pyrex) was adapted on the polished (palatal) surface of denture throughout the fracture line to support repair acrylic resin material. Wax layer was sealed at the peripheries. (Fig. 11)



Figure 11

Self-cure pink acrylic resin power and liquid (DPI) were mixed according to polymer and monomer ratio. In dough stage material was packed in fracture line area and removal of excess material was done. (Fig. 12)



Figure 12

Once the material had polymerized, the wax layer from the polished (palatal) surface was removed and denture was separated from the opposing mandibular cast. After separation damaged upper left central incisor was replaced from the denture base using acrylic denture tooth. (Fig. 13)



Figure 13

Finishing and polishing was done.¹ (Fig. 14, 15)



Figure 14 Figure 15

Repaired maxillary denture was inserted in patient's mouth and occlusion was checked. (Fig. 16, 17, 18)



Figure 16



Figure 17



Figure 18

3. Discussion

Fracture of denture bases is a common problem, midline fracture in maxillary complete denture is often seen in single complete dentures.

This can be result of alveolar bone resorption, fabrication errors, excessive stress concentration, sudden impact and wear of denture teeth.² Flexion of the denture around midline which will lead to loss of stability of denture can be resulted from resorption of alveolar bone² in maxillary arch. Fabrication errors include excessive thinning of maxillary denture from palatal surface to relieve midpalatine raphe and deep root carving, excessive accentuated labial frenal notches that act as stress raising features, leads to increase in crack propagation.² Excessive forces generated in a complete denture opposing natural teeth, due to this, stresses will concentrate more on denture.² Impact fracture can result from dropping of denture during cleaning or in patients with neuro muscular disorders.²

Farmer³ explained clinical factors related to single denture failure include: improperly contoured mandibular occlusal plane, high frenum attachments, occlusal scheme, occlusal forces, the denture foundation, denture base thickness.

In our case, patient was not educated regarding regular follow up, maintenance of denture, for procedures like relining, rebasing, for fabrication of new denture after particular period of time. Maximum tissue coverage was absent which resulted in loss of denture retention and stability.² Mandibular occlusal plane correction was not done.⁴ Maxillary posterior teeth were arranged too buccally, so when patient occludes, denture tends to flex around midline. Wear of occlusal surface and functional cusp was present; no amalgam stops, composite or metal restoration were given; due to which non-functional cusps also act as functional cusps, which will hinder during lateral movements and causing instability to denture plus denture will tend to flex at midline. Bilaterally balanced occlusion was not given. Mandibular occlusal table was not narrowed buccolingually.³ High impact acrylic resin denture base³, Acrylic resin denture base reinforced with fibres or metal, Metal denture base was not used to increase strength. These all causes must have led to denture fracture in our patient.

Now patient wanted denture to be repaired, as patient was in hurry, he wanted an immediate denture repair. So, we decided to do so. But when we tried to align the denture, we noticed that one small fragment was missing from the denture (Fig. 19).



Figure 19

That's why the technique we decided to use occlusion as guide for single complete denture alignment for its repair (Manual Maxillomandibular fixation technique)⁵ to repair as explained above.

4. Conclusion

To reduce the denture fracture probability in single complete denture certain aspects should be considered as follows:

- 1) Patient education: patient can be educated regarding physiologic bone resorption, chewing pattern, need of maintenance and regular check-up of denture, fabrication of new denture after particular period of time.
- 2) Thorough patient evaluation and proper treatment planning.
- 3) Maximum tissue coverage through proper impression technique.
- 4) Selection of teeth and teeth arrangement.
- 5) Bilaterally balanced occlusion to provide better stability.
- 6) High impact acrylic resin or Metal fused acrylic or Metal denture base should be used as a choice of denture base material to provide better strength to denture.

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Author Profile



Dr. Soman Biniwale– pursuing Postgraduation (Final Year) in field of Prosthodontics, Crown, Bridge & Implantology in Jaipur Dental College & Hospital, Jaipur, Rajasthan, India.



Dr. Sunil Kumar MV, Head of the Department, Department of Prosthodontics, Crown & Bridge and Implantology, Jaipur Dental College, Jaipur, Rajasthan, India