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Rehabilitation of Partially Edentulous Patient with Cast Partial Dentures

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ABSTRACT:

Introduction: The dentist has always had a difficult time rehabilitating partial edentulous patients when fixed partial dentures (tooth or implant supported) are contraindicated or impossible. In these circumstances, however, a cast partial denture serves as the best solution. Despite the fact that it is the most ideal treatment modality, it is not practised commonly by the dentist due to lack of interest, training, laboratory support, cost and lack of confidence.

Methodology: A 58 years old male patient came to the Department Of Prosthodontics and Crown & Bridge with the chief complaint of missing teeth in upper and lower back region since 1 year. Teeth missing on clinical examination were 15,16,17,25,27,36,37, and hemisection was done in 46. We discussed all the treatment options with the patient after examination and history we decided to restore patient's edentulous arches with cast partial dentures.

Discussion: Cast Partial Denture has been shown to be a successful method of replacing lost teeth. It will not only improve the prosthesis' stability and retention but also boost

the patient's confidence, improve speech, taste sensation, and heat perception. Precision, durability, resistance to distortion, inherent cleanliness, reduced weight and bulk are the advantages of metal foundation.

Conclusion: Implant assisted Prosthodontics has become a contemporary choice for replacing natural teeth, but conventional methods of fabricating removable partial dentures remain an important prosthetic consideration. In this case report the patient aesthetic and functional requirement were fulfilled with cast partial dentures.

INTRODUCTION

Removable partial denture is utilized to improve the aesthetic and masticatory function. It fulfils the necessary requirement of patient. Denture patient were reported handicapped and have less masticatory performance. [1-10]

The prospect of a good aesthetic result frequently motivates the patient to wear a denture [11] and aesthetics can be more important than function for many individuals. [12,13] A desire to enhance chewing ability is the second most frequent reason given for seeking dental treatment. [14] Rehabilitation of partially edentulous patients where fixed partial dentures and implants are contraindicated or not possible due to some reasons has always been a challenge for dentist. Though cast partial denture serves as the best option in these type of cases. Inspite of being the most ideal treatment modality in restoring the partially edentulous cases , it is not used regularly by the dentist. Lack of interest, training, laboratory support, cost and lack of confidence restricted its use. As a profession we have been so enamored with our new technologies that we seem to have lost our collective common sense, a feature extremely important in designing a cast partial denture. Cast partial denture is a treatment modality which has been proved through ages for treating partially edentulous patients but still not used regularly mainly because of the economic viability and fabrication difficulties. The removal partial denture has several advantages such as appearance, speech mastication, preventing the undesirable movement of the tooth, maintaining the health of the masticatory system and it also improves the distribution of the occlusal loads. The desire to enhance chewing ability is the second most frequent reason given for seeking dental treatment, the first being aesthetics [14]. In this case report the patient's aesthetic and functional requirements were fulfilled with cast partial dentures.

METHODOLOGY / CASE

A 58 years old male patient reported to the Department Of Prosthodontics and Crown & Bridge with the chief complaint of lost teeth in upper and lower back region. Teeth missing on clinical examination were 15,16,17,25,27,36,37. Patient had metal crown in 14 and 16. Hemisection was performed in 46 due to furcation involvement in department of conservative dentistry and endodontics. We discussed all the treatment options with the patient after examination and history we decided to restore patient's both the edentulous arches with cast partial dentures. Patient didn't opt for implant supported denture due to financial constraints and patient doesn't want any surgical procedures.

RESULTS / TREATMENT PROCEDURE

Firstly, Diagnostic impressions were made for both the maxillary and mandibular arches using irreversible hydrocolloid (Alginate). Diagnostic casts were made using Type III gypsum product (Dental stone) and were articulated on the Hanau articulator for diagnostic and treatment purpose (Figure 1).



Figure 1: Articulated maxillary and mandibular Diagnostic Casts

for diagnostic and treatment purpose Surveying was done on the maxillary and mandibular casts to locate for soft and hard tissue undercuts and to create rest seats. Rest seats were made on 14,18, 24,28,33,35,38,43 and 47. After mouth preparation final impressions were made with elastomeric impression material and master casts were obtained. Master cast was duplicated using reversible hydrocolloid in a duplicating flask (Figure 2).

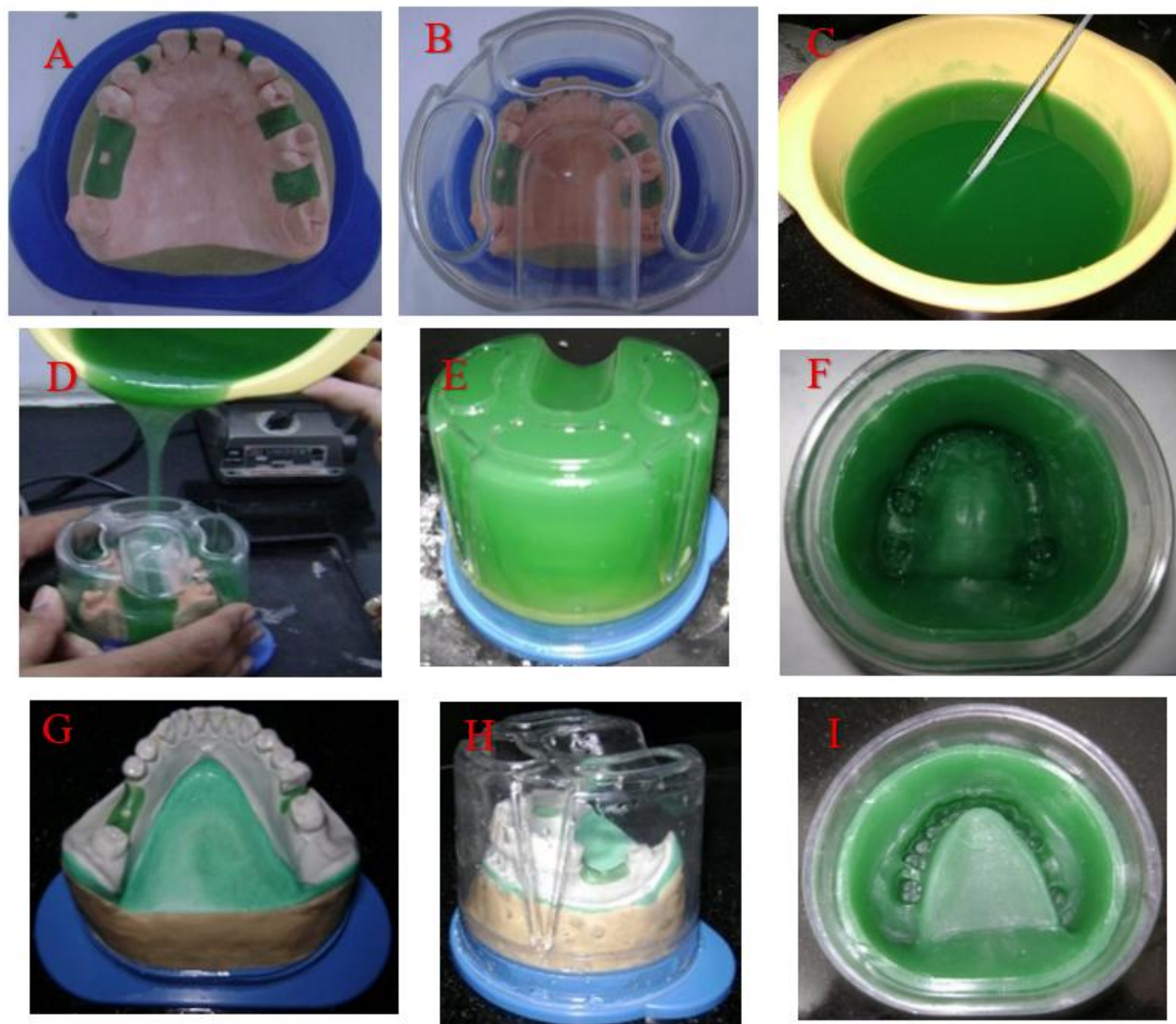


Figure 2: Duplication of Master casts using reversible hydrocolloid in a duplicating flask

A) Maxillary Master cast; B) Maxillary Master cast placed in duplicating flask; C) Temperature of agar must not exceed 140 degree F; D) Care must be taken to pour agar slowly so flask does not fill too rapidly; E) Duplicating flask completely filled with Agar; F) Maxillary mold ready to be filled with investment material; G) Mandibular Master cast; H) Mandibular Master cast placed in duplicating flask; I) Maxillary mold ready to be filled with investment material Phosphate bonded investment material was poured to obtain a refractory cast. Cast was placed in a drying oven at a temperature b/w 180-200 degree F for 2-3 hours. Beeswax was heated in a wax pot to a temperature of 280-300 degree F than Using wire holder cast was immersed in hot beeswax for surface treatment(Figure 3).

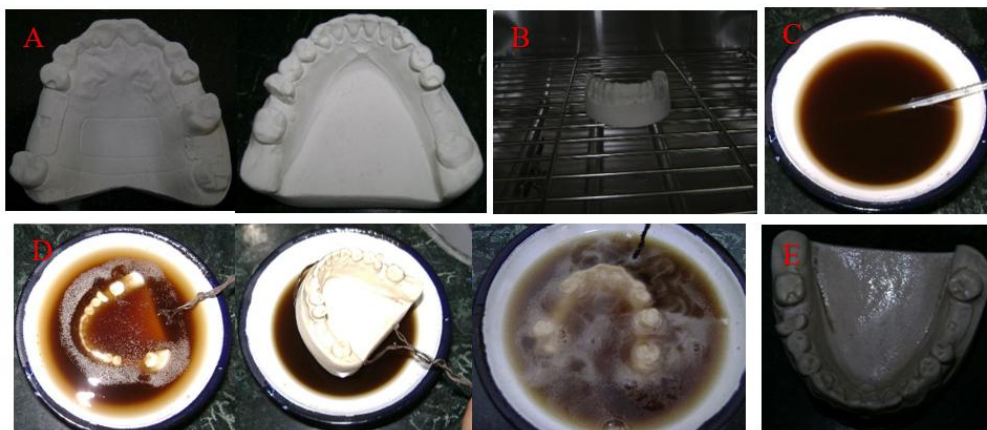


Figure 3: Surface Treatment of Maxillary and Mandibular Refractory Cast

A) Maxillary and Mandibular Refractory Cast; B) Cast placed in a drying oven; C) Beeswax was heated in a wax pot to a temperature of 280-300 degree F; D) Using wire holder cast was immersed in hot beeswax; E) Surface treated refractory cast Antero-posterior palatal strap was the major connector of choice in maxilla whereas lingual bar major connector in mandible. Beading was also done for close adaptation of denture base to prevent food lodgement in maxillary cast. Pre-formed wax patterns were adapted on the refractory cast and sprues were attached (Figure 4).

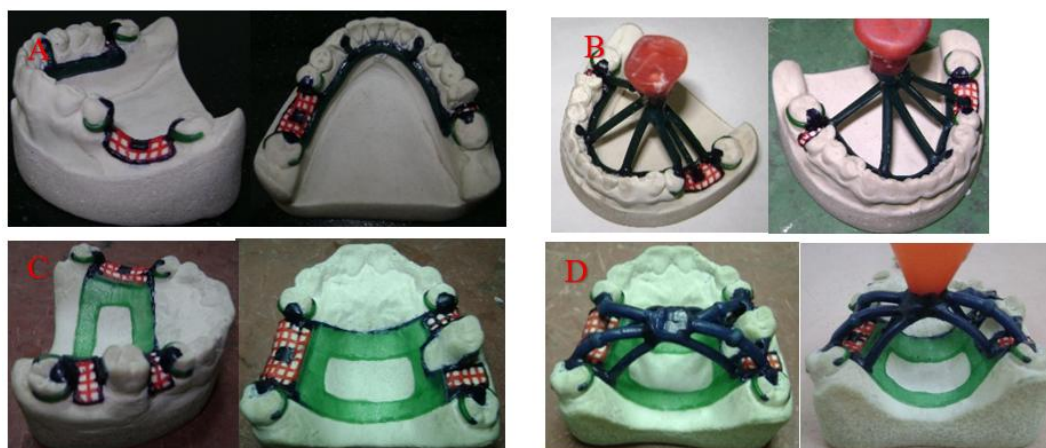


Figure 4: Refractory Cast With The Wax Pattern

A) Pre-formed wax patterns were adapted on the mandibular refractory cast; B) Sprues attached on the mandibular refractory cast; C) Pre-formed wax patterns were adapted on the maxillary refractory cast; D) Sprues attached on the maxillary refractory cast Investing and Casting was done to obtain the metal framework, Framework was then finished and polished (Figure 5).

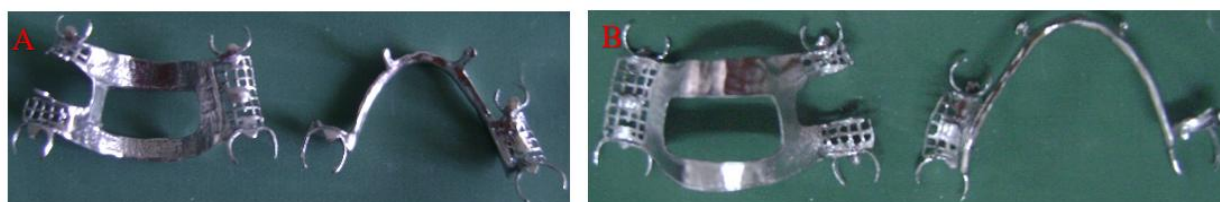


Figure 5: Finished and polished Metal Framework

A) Polished surface of maxillary and mandibular metal framework; B) Intaglio Surface of maxillary and mandibular metal framework Seating Of The Framework On The Cast was done and Metal framework was tried in the patient's mouth for proper seating (Figure 6).

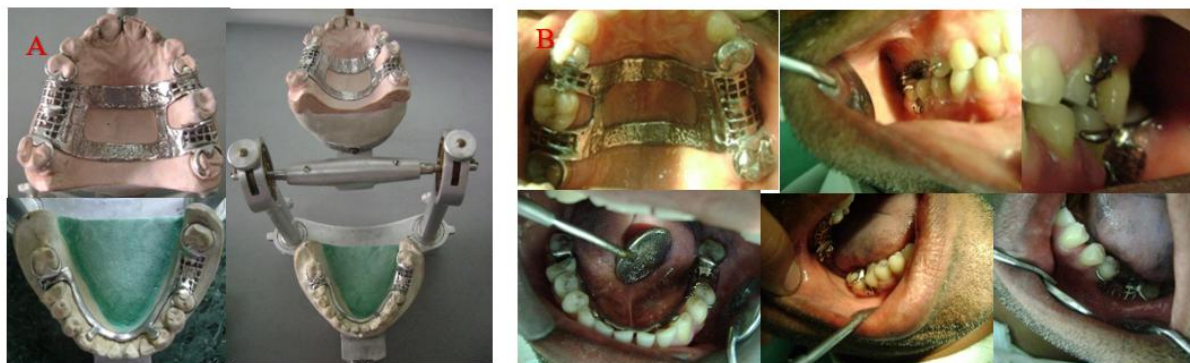


Figure 6: Seating Of The metal Framework

A) Seating Of metal Framework On The of maxillary and mandibular Cast; B) Metal Framework tried in the patient's mouth for proper seating Maxillomandibular relation was recorded and teeth setting were done than tryin of teeth were done in patient's mouth. After try-in flasking, dewaxing and packing was done. Cast partial dentures were removed from the flask & finishing and polishing was done. Seating of the cast partial denture on the cast was done and then insertion of maxillary and mandibular cast partial dentures were done in patient's mouth (Figure 7).

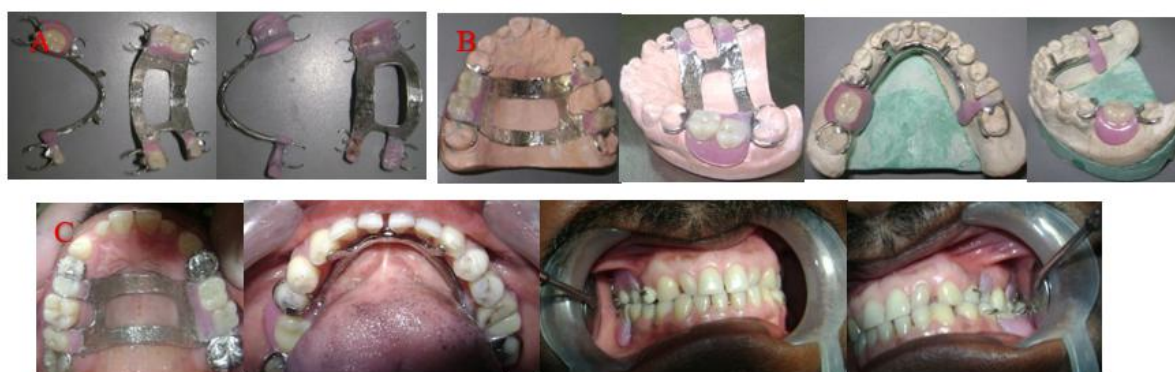


Figure 7: A) Finished and polished Cast partial dentures; B) Seating of the cast partial dentures on the cast; C) insertion of maxillary and mandibular cast partial dentures in patient's mouth Post insertion instruction was given to the patient. One year follow-up has been done and the patient had provided evidence of better face profile, aesthetic and he reported superior masticatory efficiency.

DISCUSSION

Many treatment options are available for rehabilitation of partially edentulous patients. The first treatment option for partially edentulous are conventional metal framework and metal clasps removable partial denture. This is a non-invasive and low cost option. Precision, durability, resistance to distortion, inherent cleanliness, reduced weight and bulk are the advantages of metal foundation [15].

Plaque accumulation can occur in poor RPD design that will best keep the edentulous ridges and abutment teeth. So diagnosis should be carefully made and the treatment should be carefully planned. Ali Afjal Khan et al reported an increase in aesthetics and masticatory efficiency following treatment with CPD to replace missing teeth in a partially edentulous individuals[16].

Krall and others investigated to state that the presence of removable partial denture is important for nutritional intake and the replacement of missing teeth could help people to maintain a healthy diet. Other investigators have reported that partial tooth loss results in altered food acceptability, just as edentulism is associated with poor diet and compromised nutrition and tooth loss may cause dietary changes [17].

Care should be taken during the designing of framework, which is crucial for aesthetic reasons. For RPD, clasps are used as direct retainers, the clasp location, type of clasp, material of clasp and their number plays a major role [18].

There are several treatment options for rehabilitation of partial edentulism, including the use of conventional or implant retained fixed prosthesis. Newer technologies like CAD CAM, precision milled attachments, impression materials have played a vital role in improving the quality of RPD [19].

Cast Partial Denture has been shown to be a successful method of replacing lost teeth. It will not only improve the prosthesis' stability and retention but also boost the patient's confidence, improve speech, taste sensation, and heat perception[20]. However the success of these type of prostheses is governed by the proficiency of the clinician and skilfulness of the technician since establishing the occlusion not only enhances the masticatory abilities but is also closely related to the muscles of mastication[21].

CONCLUSION

Implant assisted Prosthodontics has become a contemporary choice for replacing natural teeth, but conventional methods of fabricating removable partial dentures remain an important prosthetic consideration. In this case report the patient aesthetic and functional requirement were fulfilled with cast partial dentures.

CPD is an effective method of replacing missing teeth in partially edentulous patients when the condition is properly diagnosed and hard & soft tissues contours are delineated. It would provide sufficient aesthetics with the patient desire along with improvement in retention, function, speech, taste sensation and heat perception.

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