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Cast Partial Denture Improving Emergence and Masticatory Function - A Case Report

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Abstract: *Removable partial dentures in the form of a cast partial denture are becoming extinct as a treatment option for patients who cannot receive a fixed prosthesis. In most of the cases where a fixed prosthesis is not indicated, they are still the treatment of choice especially in medically compromised patients. However, most of the patients are reluctant to wear because of the maintenance associated with them. Making a complex designed cast partial denture does not solve the problem but rather complicates it. A cast partial denture design should be kept simple. When kept simple, the prosthesis in itself becomes self-cleanable.*
Key words*: Cast Partial, Masticatory, Removable Partial Denture, Attachments*

I. Introduction

Restoration of partially edentulous arches is not an easy task for a clinician where the clinician has to give due consideration in fulfilling the necessary requirement of the patients. Removable partial denture is utilized to improve the aesthetic and masticatory function. It fulfils the necessary requirement of patient. Masticatory performance and bite force as the objective measurement in evaluating masticatory function. Denture patient were reported handicapped and have less masticatory performance.[1-6]

Partial dentures may not contribute greatly to mastication; as masticatory efficiency of the fixed partial dentures will be considerably superior compared to the removable partial dentures. However, there are situations, when financial, systemic or local conditions preclude the use of fixed Prosthodontics. In such cases a well - designed removable partial denture (RPD) can be an excellent treatment alternative.[7, 8]

A removable partial denture with a retained attachment system is one of the treatment modalities which may assist a prosthodontist to achieve better functions and aesthetics in substituting missing teeth and oral structures. An attachment is defined as "A mechanical device for the fixation, retention and stabilization of a prosthesis". [9] This article describes the case report of a cast partial denture designed for Kennedy's class I in mandibular arch without compromising the principles of RPD designing.

II. Case report

A 45 year old female patient reported Department of Prosthodontics, Faculty of dental sciences, IMS, B.H.U. Varanasi with the chief complaint of her missing teeth in lower jaw. The patient was mixed diet consumer and demanded a restoration which improves the appearance and masticatory efficiency. On clinical examination and analysis of the mounted diagnostic models, the patient exhibit with missing teeth, 35, 36, 37, 44,45,46,47 regions (Figure.1)

A detailed examination revealed oral hygiene was satisfactory and her periodontal pocket depths were less than 2-3 mm in all remaining teeth. The diagnostic casts made and mounted in the semi adjustable articulator. Diagnostic models were analyzed and were surveyed. Mock up mouth preparations were done on the diagnostic models and the desired preparations were executed on the teeth intraorally in the patient's mouth.

After evaluating the condition treatment plan decided that design of framework, RPI system on 34 and 43 cingulum rest on 33 and lingual plate as major connector. Final mouth preparations were made in the patient's mouth and final impressions were impression was made with putty and monophase polyvinyl siloxane impression material (Aquasil Lv Ultra, Smart Wetting Impression Material, Dentsply, Detrey Gmbh, Konstanz, Germany)(Figure.2a,2b). The casts were poured in die stone (Ultrarock, Kalabhai Karson Pvt Ltd, Mumbai, India).Master cast surveying procedure was carried out to block the under cuts and refractory casts were made using phosphate bonded investment material(Figure 3a,3b). Wax pattern were contoured using preformed wax patterns (Figure 4). The refractory model with the wax pattern was invested and casting procedure was carried out. The casted cast partial denture was finished and polished in the conventional manner. The metal framework was tried in the patients' mouth for proper seating (Figure.5). The occlusal rim was made and teeth setting was done and to check for proper alignment and tried again (Figure.6). After curing the satisfactory consent was obtained from the patient and the cast partial denture was delivered to the patient (Figure.7 a, 7b). Two year

follow-up, the patient had provided evidence of better face profile and he reported superior masticatory efficiency.

III. Discussion

There are several treatment options for the rehabilitation of partial edentulism. Depending on several given diagnostic factors and a patient's perspective, best treatment plan should be selected for the patient The procedure explained in the rehabilitation of this patient is an innovative way of restoration of partially edentulous arches with increased masticatory efficiency and appearance. The decision to use attachments in removable partial denture design should be carefully considered. Clasp-type removable partial dentures should be used whenever practical because of their lower cost, ease of fabrication and maintenance, and the predictability of results. The cast partial denture fabrication metal framework will be trained in the patient's mouth and will be subjected to acrylization. The impact strength, compressive strength of the alloys with acrylic resins is better than the non metallic acrylic denture.

Krall and others investigated to state that the presence of removable partial denture is an important for nutritional intake and the replacement of missing teeth could help people maintain a healthy diet.[10] 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 change.

Areas of concern in a Kennedy partial denture designing that need to be self-cleansing are surfaces of framework near the proximal surfaces of abutment, area under the major connector and interproximal areas. During the course of follow up, the partial denture was evaluated at these three places to check the efficiency of both self-cleansing ability and patient care, by recording denture plaque index.[11]

IV. Conclusion

Dentists are disappointed after delivery of cast removable partial dentures because their patient refuses or is unable to wear the denture and the treatment is therefore deemed unsuccessful. When so many patients do not comply with treatment, it is instructive to reflect on why and how the treatment is performed. The restoration of the partially edentulous exhibits a challenging decision making in planning the treatment without compromising the patient's needs. The technique followed in the treatment of this patient is a simple but yet effective treatment plan for providing an optimum treatment for an individual.

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Figures

Figure 1. Intraoral view

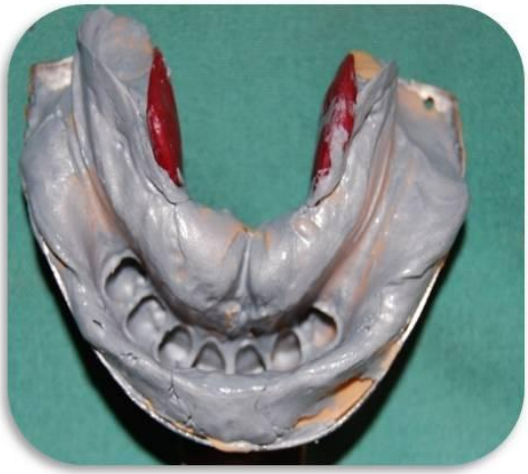

Figure 2a. Final impression

Figure 2b. Wash impression with light body elastomeric impression material

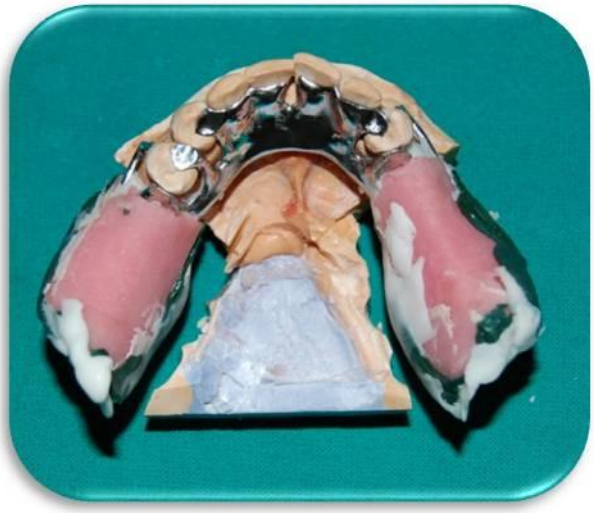

Figure .3 a Initial Preparation of altered cast

Figure .3b Preparation of altered cast

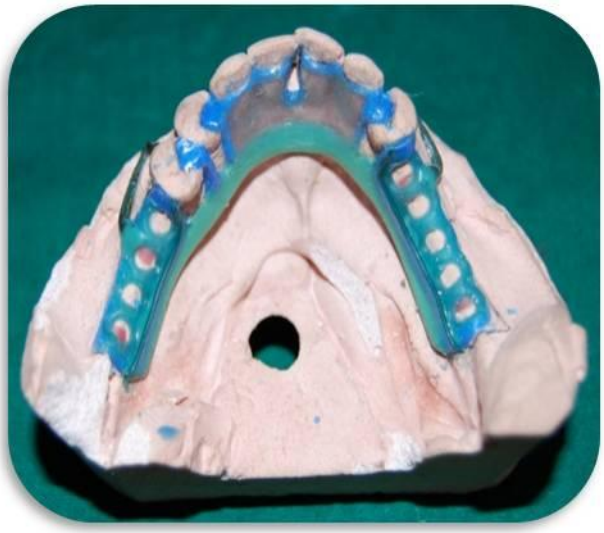

Figure 4.Wax pattern fabricated

Figure 5. Frame workplace in mouth

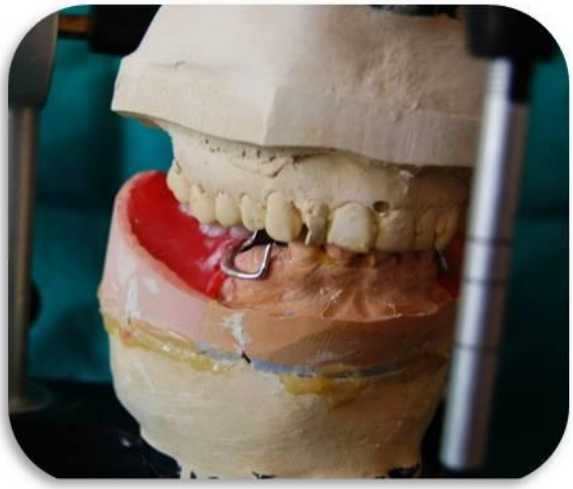

Figure 6. Teeth arrangement

Figure 7 a. Denture insertion

Figure 7 b.Final prosthesis

Legends –

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