Case Study
A Simple Effective Cast Partial Denture For Kennedy's Class III Modification I In Maxillary arch And Class I In Mandibular Arch - A Case Report

Ashish.R.Jain¹, Rathinavel Pandian.M², Jacob Mathew Philip³, C.J .Venkata Krishnan⁴, R. Pradeep⁵, Narasimman.M⁶
¹,²Senior Lecturers, ³Reader, ⁴Research Scholar, ⁵,⁶Readers, Department of Prosthodontics, Tagore Dental College and Hospitals, Chennai, India.
Email: dr.ashishjain_r@yahoo.com


Abstract
Conventional fixed partial dentures, implant supported Fixed Partial Dentures (FDPs) and removable partial dentures are the most common treatment modalities for the aesthetic and functional rehabilitation of partially edentulous patients. Removable cast partial dentures are used as definitive removable prostheses when indicated. Removable 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. This article describe the case report of a cast partial denture designed for Kennedy's class III modification I in maxillary arch and Kennedy's class I in mandibular arch without compromising the principles of RPD designing.

Keywords: Cast Partial Denture, removable prosthesis, Kennedys class III And class 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. Restoration of partially edentulous arches by fixed partial dentures is the treatment of choice by any patient and with advances in the field of fixed partial dentures and implant supported prosthodontics, the field of partial removable prosthodontics has suffered both in research as well application. 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\(^1\). However, there are situations, when financial, systemic or local conditions preclude the use of fixed Prosthodontics\(^2\). In such cases a well - designed removable partial denture (RPD) can be an excellent treatment alternative.\(^3-4\)

One of the drawbacks of an RPD that prevents its use by patients is the change it induces in the quality and quantity of plaque\(^5-7\). This article describe the case report of a cast partial denture designed for Kennedy's class III modification I in maxillary arch and Kennedy's class I in mandibular arch without compromising the principles of RPD designing.

Case Report
A Female patient aged 38 years reported to the Department of Prosthodontics, (Tagore Dental College, Chennai, India) for the treatment of her missing teeth in both upper and lower jaw. The patient was mixed diet consumer and demanded a restoration which improves the appearance and masticatory efficiency. A full mouth radiograph was obtained. On clinical examination and analysis of the mounted diagnostic models, the patient exhibited missing canines, right and left first premolars, second premolars and first molar in upper jaw (Kennedy's class III modification I ), right and left first and second molar in lower jaw (Kennedy's class I) (figure 1). A detailed examination revealed oral hygiene was satisfactory and her periodontal pocket depths were under 3mm in all remaining teeth. Maxillary and mandibular arch impressions were made using alginate (Tulip Alginate Impression Material, Cavex,Holland Bv, Haarlem Holland). The diagnostic casts are 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. Final mouth preparations were made in the patients 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). 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. Wax pattern were contoured using preformed wax patterns (figure 2). 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 (Figure 3). The metal framework was tried in the patients’ mouth for proper seating. The occlusal rim was made and proper alignment was done and tried again. After curing the satisfactory consent was obtained from
the patient, and the cast partial denture was delivered to the patient (figure 4). Three year follow-up, the patient had provided evidence of better face profile and he reported superior masticatory efficiency.

**Discussion**
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 are better than the non metallic acrylic denture. Planning of direct retainers with available and non-available undercuts that would place the retentive arms in most esthetic location was done first, followed by support and reciprocation. Use of functional impression that would compound the indirect retention was then planned, followed by the design of major connectors. 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. 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.

**Conclusion**
The restoration of the partially edentulous arch 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.

**References**

**Figures**

Fig-1 Pre Operative Intraoral photographs with Kennedy's Class III Modification I in maxillary arch and Kennedy's Class I for mandibular arch.

Fig-2 Wax Pattern for Kennedys Class III modification I and Kennedys Class I

Fig-3 Finished Maxillary and Mandibular Cast Partial Denture
Fig 4: Occusal view of inserted prosthesis