A case for cast partials in an era of Implant Prosthodontics

Manish Mittal1, Satish R Iyer2, Ratandeep Singh Ahuja3, Anil Kumar S4

ABSTRACT:
Tooth loss leads to lack of masticatory function, esthetics and self confidence.
Proper diagnosis and treatment planning is required to provide a successful denture to completely or partially edentulous patients. In this era of implant prosthodontics, removable cast dentures are still the most ideal and viable treatment option for rehabilitation of such cases.

This paper describes a case report wherein a partially edentulous patient was rehabilitated with esthetically pleasant, functionally convincing and comfortable removable cast dentures.

Key words: metal denture base, Mclean’s Technique

Introduction
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Case Report

A 64 years old male retired J CO of Indian Army reported to Prosthodontic division of Army Dental Centre, Research & Referral with chief complaints of all upper and few lower back teeth missing since 2 years and difficulty in chewing. Medical history was non contributory. Extra oral examination revealed a square tapering facial form and a concave facial profile. On intra oral examination, a completely edentulous class I maxillary arch with V shaped palate, a partially edentulous Kennedy's Class II mod I mandibular arch (missing teeth 36,37,46,47 and 48), a favourable floor of the mouth and a normal tongue were noted.

He was diagnosed to be a case of complete maxillary edentulism and Kennedy's Class II mod I partial mandibular edentulism. It was planned to rehabilitate him with removable cast maxillary complete and mandibular partial dentures.

**The following clinical and lab procedures were carried out for his oral rehabilitation:**

- Primary impressions were made for both arches.
- Final impression for the upper arch was made with ZOE impression paste (Neogenate, Septodont).
- Lower diagnostic cast was surveyed, mouth preparation was done followed by functional impression using McLean’s technique and resurveying.
- The master casts were blocked out (Fig1), duplicated with reversible hydrocolloid to obtain refractory casts.
- The casts were hardened using dipping hardner.
- Wax patterns were fabricated, sprues were attached, followed by investing and the casting (Fig 2).
- Castings were finished and polishing was done (Fig 3).
- Occlusal rims were fabricated and jaw relations were recorded.
- Teeth arrangement was carried out and try in was done.
- Conventional flasking and curing of dentures were completed.
- The final prostheses were inserted in situ and occlusion was verified (Fig 4).

A definite improvement in retention and stability was noted as compared to the conventional prosthesis in possession by the patient. It improved his esthetics, phonetics, function, comfort as well as social and psychological status.

**Discussion**

According to GPT-8, removable partial denture can be defined as any prosthesis that replaces some teeth in a partially dentate arch & it can be removed from the mouth and replaced at will. The requisites for a cast partial denture are that the dentist should have the adequate clinical knowledge and technical expertise. Technician should be able to translate 2-D diagrams & written instructions into 3-D reality and should be well versed with techniques of finishing the RPD.1

**The indications of cast dentures are as under:**

- To replace several teeth in the same quadrant or in both quadrants of the same arch.
- As a temporary replacement for missing teeth in a child.
- As a rehabilitative option for replacement of missing teeth for those who don't want fixed prostheses or implants.

Proper evaluation of the actual dental and periodontal situation, periodontal treatment, maintenance of good oral hygiene, and regular post insertion check-ups are also of major importance in minimizing the sequel associated with wearing of removable partial dentures (RPDs), such as caries, progression of periodontal disease, and residual ridge resorption.2

While planning treatment for edentulous patients, the dentist is confronted with myriad combinations of edentulous spaces and remaining teeth. Owing to current trends in treatment planning for replacing missing teeth, the confidence level of general dental practitioners in UK for RPDs was 100% (acrylic based) and 99.5% (metal based) as against implants being 81.4%.3 Moreover, one of the studies by Hebel Ken and his coworkers stated that implants require training that is not sufficiently addressed in most undergraduate dental programs;4 placing an implant takes comparatively longer time to complete and can be more demanding, especially if bone & soft tissues are inadequate.

Following a conservative approach, the cast denture modality of treatment was chosen. Cast...
dentures are more stable, retentive and friendlier to oral structures with less chances of fracture as compared to conventional acrylic dentures. The alternative treatment option of implant supported prosthesis was ruled out as it was not cost effective as well as the patient negated surgery. This article outlines numerous advantages of cast partial dentures viz prevention of acrylic warpage, less tissue changes under base, less porosity, thermal conductivity and less deformation in function. All these factors enhance the patient’s comfort, biomechanics of the prosthesis, and the prognosis of the abutments. In addition, the concept and design of the denture could have an impact on the incidence of mechanical failures of the framework. The reverse circlet clasps were planned on both the premolar abutments to utilize the distobuccal undercuts.

The patient was guided, motivated and instructed to maintain good oral hygiene while using the prosthesis. The patient was followed up for a year with minor clasp adjustments.

To conclude, a properly designed cast denture along with a well planned comprehensive treatment contributes to the preservation of the remaining teeth, bone and the soft tissues. It also improves speech, mastication and esthetics. Removable partial denture should be an end itself, not a stepping stone to a full denture.

Fig 1: Blocked out upper and lower master casts
Fig 2: Sprues attached to the wax pattern
Fig 3: Final finished and polished castings
Fig 4: Final prostheses inserted in situ

References