Management of distal extension edentulous situation – A case report

Ranjith. R¹, B. Devi Parameswari^{2*}, Annapoorni³, Dhevishri. S⁴

^{1,4}Post Graduate, ²Associate Professor, ³Head of the Department, Dept. of Prosthodontics, Meenakshi Ammal Dental College and Hospital, Chennai, Tamil Nadu, India

***Corresponding Author: B. Devi Parameswari**

Email: drdeviparameswari@gmail.com

Abstract

Restoring the partially edentulous arch especially in a situation where the posterior teeth are missing is always a challenging job for a prosthodontist. These distal extension needs a careful attention and meticulous treatment planning. Placement of implant in these areas will not be economical to all the patients, conventional and contemporary treatment options are available for treating long span distal extension edentulous situations. This case report describes the management of missing posterior teeth with a cast partial denture for a patient with reduced masticatory efficiency.

Keywords: Cast Partial denture, distal extension case, Masticatory function, Removable Partial Denture, surveying, retainers.

Introduction

Restoration of partially edentulous arches are not an easy task for prosthodontists in fulfilling the necessary attributes of the patients. Prosthetic rehabilitation of partially edentulous jaws involves various techniques for specific patients. Partial edentulous arch with distal extension classified under Kennedy class I & class II situation.^[1] In a condition where distal abutment is missing, the fixed partial denture cannot be fabricated, removable partial dentures are utilized to improve both aesthetic and masticatory function. However, partial dentures may not contribute greatly to mastication, as these are considered slightly inferior when compared with fixed partial dentures.^[2] Situations like financial, systemic or local conditions like amount of bone available for implant supported prosthesis limits the treatment options and precludes the use of fixed prosthesis. In such cases, a well designed RPD can be an excellent alternative treatment option.^[3]

This case report describes a patient with maxillary bilateral distal extension Kennedy's class I condition which is prosthetically restored by a cast partial denture.

Case Report

A 40-year-old male reported to the Department of Prosthodontics & Implantology, Meenakshi Ammal Dental College and Hospital with chief complaint of missing teeth in upper right and left back teeth region. The patient was a mixed diet consumer and demanded a restoration which improves his masticatory efficiency. A detailed examination revealed a satisfactory oral hygiene. On intraoral examination, the patient exhibited with missing 17, 26, 27. (Figure1).

Figure 1: Pre-operative view.

Diagnostic impression were made with alginate, (ZHERMACK HYDROGUM 5, GERMANY) irreversible hydrocolloid impression material. The intraoral picture and mounted diagnosed casts showed maximum inter-arch space between the edentulous space and the opposing remaining natural teeth. Diagnostic models were analyzed and were surveyed.

Figure 2: Diagnostic impression

Complete clinical and radiographic examination were made. Mock up mouth preparations were done on the diagnostic

models and desired preparations were executed on teeth intraorally in the patient's mouth. After evaluating the condition, treatment plan was decided with the design of framework, RPI system on 15, 16 with rest seats and 24, 25 with embrasure clasps. (Figure 3).

Figure 3: Rest seat preparation and final impression of maxially arch

Final mouth preparations were made in the patient's mouth and final impressions were made in putty and monophase polyvinyl silicone impression material (Aquasil Lv ultra, smart wetting impression, Dentsply, Detrey GmbH, Germany). The impressions were sent to the laboratory and master casts were obtained. Master cast surveying procedure was carried out to block out the undercuts. Refractory casts were made using phosphate bonded investment. Wax patterns were contoured using preformed wax patterns and sent to the laboratory for investing and casting procedures. (Figure 4).

Figure 4: Metal framework

The casted cast partial (metal) framework was finished and polished in the conventional manner was obtained from laboratory and was tried in the patient's mouth for proper seating.

The occlusal rims were made and teeth setting was done. Wax trial revealed proper alignment and occlusion in patient's maximum intercuspation position. (Figure 5).

Figure 5

After obtaining a satisfactory consent from the patient, the trial partial denture was sent to the laboratory for acrylization and finishing. Acrylized and finished cast partial denture was delivered to the patient. Review and follow-up revealed that the patient had provided evidence of better and superior masticatory efficiency. (FIGURE 6).

Figure 6

Discussion

There are several treatment options for the rehabilitation of partial edentulism. The procedure explained here, in this rehabilitation of this patient is an innovative way of restoring the partial edentulous arches for increasing their masticatory efficiency. However, depending on several given diagnostic factors and patient's perspective, best suitable treatment option should be selected for the patient.

Clasp – type removable partial dentures should be used whenever ideal and possible because of their economical value, ease of fabrication and easy maintenance and known results over these years the impact strength, compressive strength of the alloys with acrylic resins are better than the non-metallic acrylic denture.^[4]

Krall et al, in 1998 investigated to prove that removable partial dentures are an important factor for increase in nutritional intake and help patients in maintaining a healthy diet.^[5] However, other investigators have stated that partial tooth loss results in altered food acceptability, just as edentulism is associated with poor diet and compromised nutrition in these patients.^[6,7] 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.^[8]

Conclusion

Success of the prosthodontic treatment relies on the proper selection of denture type to provide adequate retention, stability, and aesthetics. Conventional treatment planning (cast partial denture) is the suitable treatment option for situations like unilateral or bilateral distal extension cases. For fabrication of these type of prosthesis, a trained clinician and good lab support is mandatory. And supporting teeth with good periodontal status are recommended for CPD abutments in these cases.

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Conflict of Interest

None.

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