Case Report
Journal of Pierre Fauchard Academy (India Section), *Vol 36(4), DOI: 10.18311/jpfa/2022/31393, December 2022 p. 147-151*
ISSN (Print) : 0970-2199
ISSN (Online) : 2405-772X

Prosthetic Management Following Anterior Segmental Mandibular Resection: A Case Report

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Abstract

The rehabilitation of a patient in the Kennedy class IV situation demands biomechanical balance and aesthetic improvement. Larger defects usually lead to increased movement of the prosthesis, due to the compromised mucosal support and a longer edentulous span of the prosthesis. The article describes the prosthetic management of a patient following partial mandibular resection. The long span of missing teeth and the unavailability of a sufficient number of abutments are challenges for prostheses. This case report describes an inexpensive technique for the fabrication of attachment retained prosthesis over castable bar assembly for rehabilitating the long-span Kennedy class IV situation.

Keywords: Extracoronal Attachment, Hybrid Prosthesis, Kennedy Class IV Partial Denture, Segmental Mandibulectomy

1. Introduction

It is a challenging task to rehabilitate patients with maxillofacial defects as they experience alterations in the normal oral/craniofacial environment, which results from surgical resections, maxillofacial trauma, congenital defects, and developmental anomalies. The defects are categorized as acquired, congenital, or developmental. Acquired defects are the result of trauma or disease and its treatment[1].

Anterior mandibular composite resection creates the need for a Kennedy class IV partial denture. Following these resections, the occlusion of the posterior teeth is rarely altered and the pattern of mandibular movements is usually normal. In large defects, masticatory efficiency is compromised because of the long edentulous span[2].

The goals of prosthodontic treatment aim to improve articulation, provide lip support, reduce drooling of saliva, and restore function and esthetics[3]. In patients with jaw defects and severely resorbed edentulous ridges, a fixedremovable hybrid prosthesis is the best treatment of choice to restore defective tissues. This hybrid prosthesis fulfils the objectives of function such as retention, stability, and support characteristics as in fixed prosthesis and requirement of esthetic, hygiene maintenance, and care of a removable prosthesis[4,5]

2. Case Report

A 40-year-old female patient reported to the Department of Prosthodontics, Institute of Dental Sciences, Bareilly with the chief complaint of difficulty in chewing food, impediment of speech, and unpleasant esthetics. The patient had undergone anterior mandibular resection 10 months ago for treatment of ossifying fibroma of the mandible. The patient had reduced lip support of the anterior mandibular region. Intraoral examination revealed a fully dentulous maxillary arch and only 37, 38, 47, and 48 were present in the mandibular arch. Other post-resection findings included the reduced movement of the tongue and decreased depth of lingual and labial vestibules in the mandibular anterior region. This limits the space available for the flange of the prosthesis. Orthopantomograph (Figure 1) showed resection of the mandible from the left first molar region to right first molar region representing Cantor and Curtis classification Class 5 with a completely dentate maxillary arch.

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Various treatment options which could be considered were tooth-supported overdenture, cast partial denture with the use of intra-radicular attachment, or a semi-precision extra-coronal attachment. Tooth-supported overdenture or intra-radicular attachment was not considered as a treatment modality for they required intentional endodontic treatment of the remaining teeth. Previously the treatment which was taken into consideration was the mandibular cast partial denture with extra coronal (Preci vertex) attachment. But the prosthesis was unsatisfactory as it was unstable during speech and mastication. Then another treatment modality was planned for the fabrication of attachment retained prosthesis over castable bar assembly.

- The diagnostic impression was made in alginate (DPI Algitex) and the cast was poured in type 3 dental stone (Kalabhai Mumbai). Abutment teeth (37, 38, 47, 48) were prepared to receive all metal restoration (Figure 2-A). A two-stage Putty light body impression of the mandibular arch was made and poured in die stone

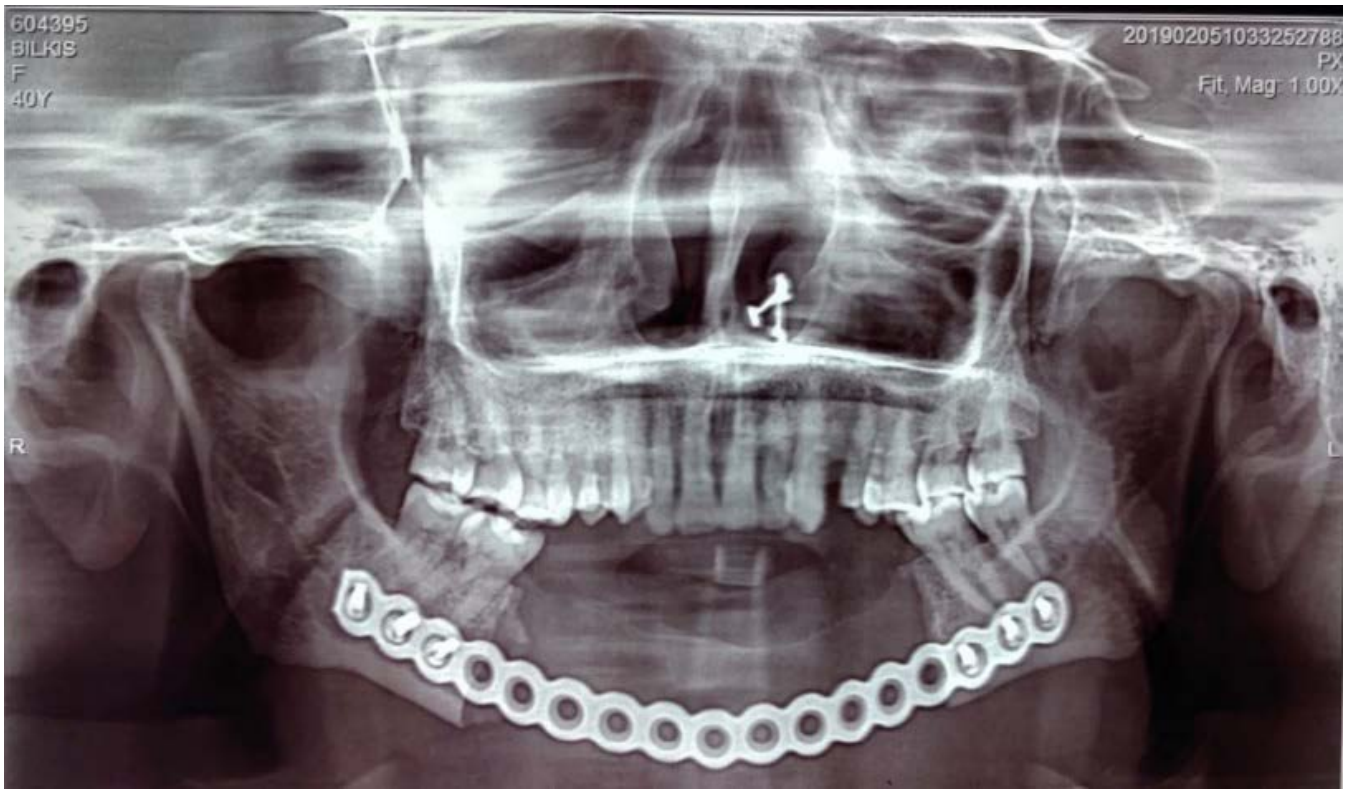


Figure 1. A radiograph showing mandibular discontinuity reconstructed using titanium Reconstruction plate.



Figure 2. **(A)** Prepared abutments. **(B)** Metal framework cemented on the abutments.



Figure 3. Jaw Relation on articulator.

(Type 4 Ultrock kalabhai) and temporary crowns were cemented over the prepared tooth.

- The mandibular cast was duplicated in agar for fabrication of the bar assembly (Preci-Horix) and the refractory cast was obtained. This assembly was cast. The metal framework was finished and polished. The crowns were cemented with resin cement (Figure 2-B).
- The undercuts below the bar were blocked and an addition silicone (Photosil Dpi) impression was made. Jaw relation was done (Figure 3) and teeth were arranged. Try-in was done to verify the aesthetics, phonetics, and occlusion (Figure 4-A). The trial dentures were flasked, packed in heat cure (DPI Pyrex), and cured. The dentures were finished and polished.
- Metal housings with female attachment were placed on the bar intraorally and the fit of the denture was verified. The housings were attached to the denture with self-cure acrylic resin (Figures 4-B & C).

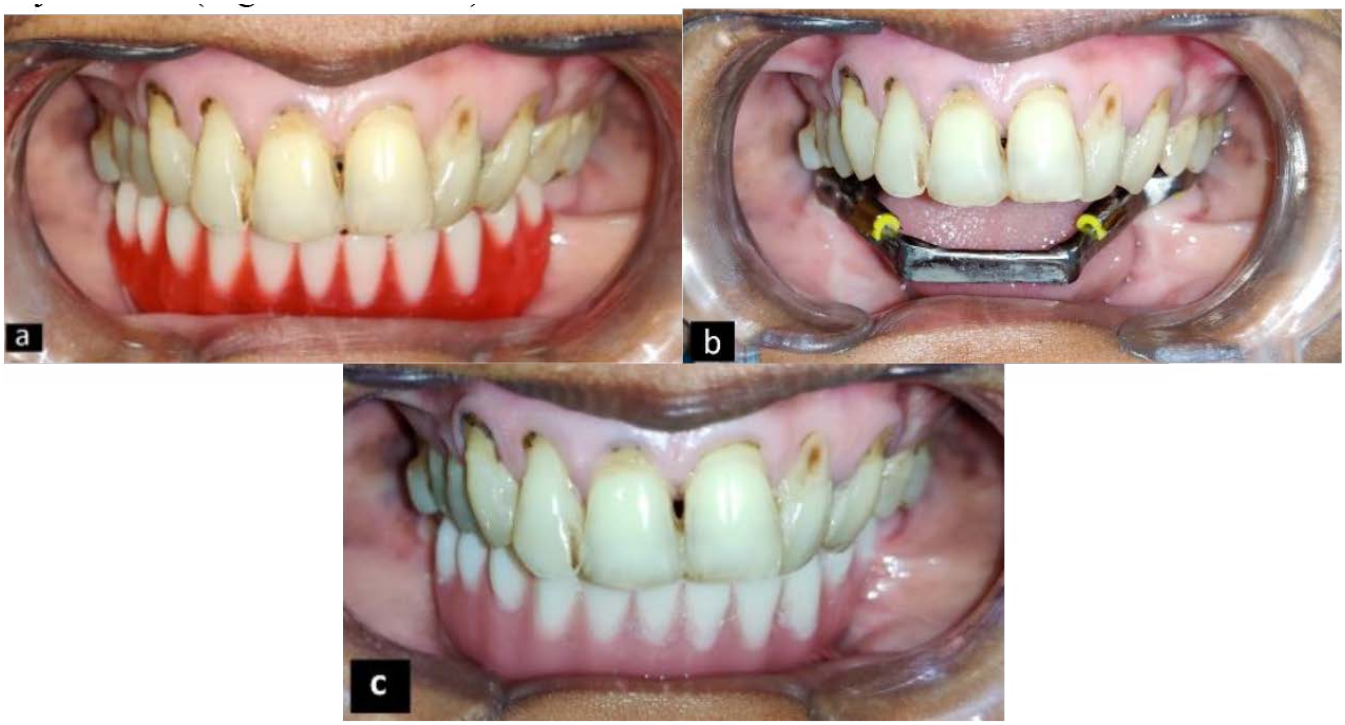


Figure 4. **(A)** Try-in. **(B)** Yellow clip and Metal housing placed over the bar. **(C)** Final prosthesis.

3. Discussion

- A prosthodontist faces numerous problems in the rehabilitation of patients with mandibular defects such as inadequate denture bearing area which is available for support, lesser number of remaining teeth, the obliterated floor of the mouth, history of radiation, and associated psychological trauma[6]. All these factors compromise the design, stability, and retention of the prosthesis. Within these circumstances, it becomes a herculean task to restore the function and esthetics of these patients.
- Placing the implant was a questionable procedure as no bone was available in the anterior region. Fixed-removal dental prosthesis (Andrews bridge) presented a viable and non-complex solution to denture retention and stability. It was propagated by Dr. James Andrews. The Andrews bridge consists of a bar and sleeve with the bar firmly attached to abutment teeth and a sleeve that fits over the bar to support a flange that contains the replacement teeth[7]. This is an efficient and cost-effective treatment option for the long-span partially edentulous ridge. It allows for the replacement of teeth with an acrylic denture flange to replace the lost soft tissue[8]. The physiologic advantages of this hybrid prosthesis are increased prosthesis stability and satisfactory oral hygiene[9].
- This case report presented a technique for the fabrication of a fixed removable prosthesis to rehabilitate the long-span Kennedy class IV defect. Bar and clip attachment can be effectively used to retain tooth-supported prostheses. Repeated removal and insertion of the prosthesis can result in fatigue of the retention clip, resulting in decreased retention and replacement of the clip periodically. Daily meticulous oral hygiene maintenance and adequate care of the prosthesis are required by the patient[10].

4. Conclusion

It is difficult to rehabilitate patients with maxillofacial defects because of various limiting factors like reduced mouth opening, inadequate denture-bearing tissues, obliterated vestibules, and reduced amount of support. In such cases, the most suitable treatment modality can help in restoring the esthetics, function, and quality of life of these patients. This article justified the technique for fabricating fixed-removable hybrid prostheses using precision attachment over bar assembly for the rehabilitation of long-span Kennedy class IV defect. The technique is cost-effective but demands much skill, care, and precision from the dentist and the laboratory technician.

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