

CASE REPORT

Rehabilitation of a severe anterior ridge defect with a fixed-removable prosthesis- A case report

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ABSTRACT

Background: Significant anterior ridge abnormalities might be difficult to restore with prosthesis. To attain good speech and aesthetics necessitate, is not only the restoration of the missing teeth but also the closure of the problematic region. One recommended treatment option for individuals with substantial ridge abnormalities is the Andrews bridge which is a fixed-removable prosthesis.

Case report: A 35-year-old female patient reported with the principal complaint of spacing in her lower front teeth and difficulty in phonetics with poor appearance. On clinical examination spacing was seen in the maxillary central incisor and lateral incisors along with pro-clination and 31,32,33,41,42,43 teeth were missing and the edentulous defect area was coming under Seibert's Class III category. Rehabilitation of such defect with an Andrews bridge described in this case report, which used natural teeth as abutments for its permanent component and a detachable superstructure.

Conclusion: Andrew's bridge prosthesis replaces the missing teeth and corrects the ridge defect area and restore speech and appearance. **Key words:** Andrew's bridge, Fixed partial denture, Rehabilitation, Resorbed ridge, Removable partial denture.

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INTRODUCTION

Prosthetic rehabilitation of significant anterior ridge defects is often a challenge. Inadequate open gingival embrasures, food impaction, and saliva percolation during speaking can all result from the loss of residual ridge contour.¹ In these situations, it is necessary to rebuild the inadequate supporting tissues to replace the missing teeth with a prosthesis that looks natural. These defects can be fixed by surgical intervention or by artificial substitutes.^{2,3} Andrew's bridge, a fixed-removable prosthesis first introduced by Dr. James Andrews of Amite Louisiana (Institute of Cosmetic Dentistry, Amite, LA, USA),⁴ is one of the treatment modalities indicated in patients with significant ridge defects. It consists of fixed retainers and removable pontics.⁵ Another benefit of Andrew's bar system is that it is removable and allow the maintenance of hygiene and offering the best possible aesthetics and phonetics in cases involving significant loss in supporting tissues when the alignment of the opposing arches or aesthetic

position of the replacement teeth presents challenges.⁶ In contrast to surgical correction and rehabilitation after implant placement, the fixed, removable prosthesis offers a faster, more effective alternative to therapy.⁷⁻¹¹ This case study illustrates how to make a fixed, removable partial denture by employing the Andrews Bridge idea to attach a removable prosthesis to permanent retainers on each side of the edentulous gap using a bar and sleeve. This prosthesis design satisfies all requirements for appearance, comfort, phonetics, hygiene, and appropriate stress distribution to the soft tissue and abutments.

CASE REPORT

A 35-year-old female patient reported to the Department of Prosthodontics at SRM Dental College, Rampuram, Chennai, with the complaint of spacing in her lower front teeth. A thorough medical and dental history was gathered. According to her medical history, her lower anterior teeth were extracted eight years ago due to periodontitis. The patient received a detachable

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partial denture after having teeth removed. The patient did not use the detachable prosthesis since she was dissatisfied. She intended to get the lost tooth replaced at this point.

Gingival health around the rest of the abutment teeth was satisfactory, and the oral hygiene maintenance was good. Extra oral examination revealed reduced lip support and intraoral examination revealed diastema between the maxillary central incisor and lateral incisor and all the maxillary anterior teeth were proclined. Single unit PFM crown was observed in 21, which was done six years back. Teeth 31,32,33,41,42,43 were found missing in mandible (Figure.1) coming under Seibert's Class III (i.e., lacking in both height and breadth). The choice was taken to create a unique cast bar and sleeve design for Andrews' bridge. The detachable acrylic component of the Andrew's bridge replaces ridges, improved phonetics, and supported the facial muscles. Another benefit is the patient's ability to remove Andrew's bridge for better access to the pontic region for greater cleanliness. The treatment was started after obtaining written informed consent from the patient.



Figure 1: Intraoral view.

PROCEDURE

1. Teeth 34 and 44 were chosen as abutments, and then preparation was done with a juxta-gingival finish line for receiving full coverage metal ceramic retainers (Figure 2 and Figure 3).



Figure 2: Tooth preparation and gingival retraction in 34



Figure 3: Tooth preparation and gingival retraction in 44

2. Impressions were made using the putty wash impression technique. (Aquasil, Dentsply Intl, New York, PA) with a stock tray, and models were poured with type IV dental stone. (Golden Stone, Golden Stone Ramaraju Traders, Chennai).

3. A wax pattern for the retainer was fabricated on prepared abutments, and a semi-precision plastic bar was attached to the patterns, 3mm above the residual alveolar ridge, to simulate bar attachment. Custom bar attachment (Ref no: 0220BB, OT Multiuse bar; Rhein 83) and position clips (Ref no- 023CPA) were used to aid retention for the removable partial denture component. Two halves of the bar were connected to meet a horizontal bar in the midline to improve the stability of the removable prosthesis. Then the casting was done in the laboratory using Chromium Cobalt alloy.

4. After finishing and polishing, the metal framework was tried into the patient's mouth and evaluated for marginal fit, accuracy and space between ridge and bar. (Figure.4)



Figure 4: Metal framework trial

5. The wax occlusal rim over the partially edentulous area was fabricated on the model, and a tooth set was done and evaluated for aesthetics. (Figure.5)

6. After the teeth arrangement and wax trial, the removable partial denture component was processed using heat-cured poly methyl methacrylate resin. (Heat cure, DPI, Mumbai, India). Female components of the semi-precision attachment, i.e., metal housing and plastic sleeves, were placed over each half of the metal bar before

packing the acrylic resin. Ceramic veneering over the metal copings of the retainers was done according to the selected shade.

7. Bar and crown assembly was now cemented over the prepared abutments. A removable denture was placed over the bar and evaluated for retention and stability. (Figure.6)



Figure.5 Wax-try in



Figure 6 : Cementation of the crowns with removable prosthesis

8. Instruction for hygiene and prosthesis maintenance was given, and the patient was recalled for follow-up after 24 hours and seven days.

DISCUSSION

Rehabilitation of missing anterior mandibular teeth with severe ridge defects using a fixed, removable prosthesis such as Andrew's bridge is a pragmatic approach to significant patient concerns, such as retention, stability, aesthetics, hygiene and economy. Many authors have concluded that fixed, removable partial dentures are particularly indicated for patients with extensive supportive tissue loss and when the alignment of the opposing arches and esthetic arch position of the replacement teeth creates difficulties. The Andrew's bridge, with its acrylic saddle, provides lip support, improves esthetics, and phonetics, eliminates food traps and can be removed by the patient for hygiene access.⁵⁻⁹ Preiskel described other advantages of this system, such as reduced bulk (minimal vertical and horizontal extensions) of the removable prosthesis, good retention, and minor wear. This

type of prosthesis has minimal soft tissue trauma and a close fit between the fixed and removable components used in it.¹⁰ The same removable prostheses can be made quickly because unique transfer sleeves are available. The clinician can also adapt Andrew's bridge concept to the implant systems to meet patients' needs. **In this case report custom bar attachment, OT multiuse bar and position clips were used for retention. Apart from this attachment life care devices are also available in market.**⁸

Literature shows few cases of failure of this approach. The losses are mainly due to casting defects.⁸ However, this was eliminated by attaching retainers to the bar in a single casting. The patient was comfortable with the outcome and had pleasing esthetics and phonetics.

CONCLUSION

Andrews Bridge system is a fixed-removable prosthetic option which, on its judicious application in patients with few missing teeth and significant localized ridge defect, provides functionally fixed prosthesis that successfully replaces the missing teeth along with the closure of the defect, restores speech, esthetics, lip support, patient friendly in terms of hygiene maintenance, cost and time.

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CONFLICT OF INTEREST:

The authors declared that there is no conflict of interest.

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