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RESTORING TEETH AND LARGE TISSUE DEFECT USING ANDREW'S BRIDGE – A CASE REPORT

Dental Science

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ABSTRACT

A patient with several missing teeth in the anterior aesthetic region along with ridge defect poses a greater challenge for prosthodontic rehabilitation. In such cases treatment using fixed partial denture (FPD) may not be feasible because of the extent of edentulous span and the periodontal conditions of the abutment teeth. This case report aims to present a case with multiple missing mandibular anterior teeth along with large soft tissue and hard tissue defect. The fixed removable Andrew's bridge system provides a good prognosis if diagnosed and planned meticulously.

KEYWORDS

Andrew's Bridge, Fixed Removable Partial Denture, Precision Attachment, Residual Ridge Defects, Rhein 83 Attachment

INTRODUCTION:

When several missing teeth require replacement removable partial denture (RPD) is usually the prosthesis of choice. It restores the required function and aesthetics for the patient. But most of the patients demand fixed prosthesis because of better esthetics, better function and has an obvious psychological impact on the patient. Fixed prosthesis cannot always be indicated especially when several teeth are missing, the remaining teeth in the dentition are periodontally compromised, arch relationship not permitting proper fixed prosthesis design and some defects are present in the edentulous region. In such situations it is wise to select a combination of fixed partial prosthesis and removable partial prosthesis, which is going to tackle most of the existing problems in the compromised dental arches. The fixed partial denture-removable partial denture system was introduced by Dr James Andrews of Amite, Louisiana, USA in 1965, when fixed or removable partial dentures were not successful in treating ridge defects.[1] This system incorporates a fixed component on the abutment teeth with removable pontics.[2] The fixed component is made of porcelain fused to metal crowns that are joined together by casted bar cemented on to the prepared abutments. The removable component consists of acrylic teeth on acrylic base to which metal or plastic sleeve tract are embedded. This technique, with some technical variations, possesses the advantages and complexity of fixed removable restorations. The principal advantage is the flexibility in placing denture teeth, while the major technical problems are related to crown length and soldering. The physiologic advantages are effective oral hygiene and increased stability of the splinted teeth. The location of the bar near the gingival margin and the decreased mobility of the splinted teeth support two principles of physics in increasing the stability of the abutments.The indications for fixed-removable Andrews's bridge system are -1) Several missing teeth along with defect in the edentulous ridge; 2) Patients whose residual ridge has a relationship to the opposing dentition that would prohibit the esthetic placement of the pontics of a fixed partial denture; 3) Patients requiring diastemas to harmonize the natural dentition[3] (2) Failure of removable partial denture because of discomfort related to its palatal extension; 3) Long edentulous space where fixed partial denture has failed; 4) Cleft palate patients[4].

The aim of the present article is to describe a case, having multiple missing mandibular anterior teeth along with large soft tissue and hard tissue defect, who was restored successfully by using fixed-removable Andrews's bridge system.

CASE REPORT:

A 22 year old male reported with a chief complaint of missing several lower front teeth. Patient suffered a road traffic accident 6 month back, which resulted in extraction lower anterior teeth. Intraoral examination revealed missing mandibular incisors, and left canine and first premolar, along with large soft tissue and hard tissue defect (Fig: 1). Loss of vestibular depth in lower anterior region. Periodontal health was found to be good. Pulpal health of right canine and left second premolar was assessed with electronic pulp vitality testing and radiographic examination, which indicated normal pulpal status. The various treatment modalities were thoroughly explained to the patient, starting from polymethyl methacrylate partial denture, cast partial denture, fixed removable partial denture, to bone grafting followed by tooth supported or implant supported fixed partial denture. Considering the large residual ridge defect and unwillingness of patient for bone grafting the option of tooth supported or implant supported fixed partial denture was eliminated.Considering patient's economic status and desire for a restoration with less coverage, fixed – removable partial denture (Andrew's Bridge) was chosen as the treatment.

Informed written consent was obtained from the patient. Oral prophylaxis was performed first. Diagnostic impression was made and cast was poured. Selected abutments 35 and 43, were prepared for metal ceramic restorations.[5] (Fig: 2) The gingival retraction was done using gingival retraction cord (Ultrapak**)** and putty wash impression (Affinis, Coltene) was made.

(Fig: 1)

(Fig: 2)

The maxillary and mandibular casts were mounted, and the wax pattern was fabricated in Blue Inlay Wax (Bego, USA) comprising of a rectangular bar connecting copings on both the prepared teeth. Along with it, a stud for Rhein 83 attachment was also attached in the middle of the bar. The pattern was casted in Nickel chrome alloy (Wiron 99, Bego, USA). The cast metal framework was tried in patient, checked for clearance from the the basal tissues and opposing tooth (Fig: 3). The framework was again tried in after application of Porcelain (Ceramco 3, Dentsply, USA). Afterwards, the framework was reseated on the cast and a trial wax up was made for the pontic region. Try in of denture wax up done. A metal sleeve and a Rhein 83 attachment was incorporated within the final denture (Fig: 4). On the insertion

(Fig: 3)

(Fig: 4)

appointment first the fixed component was tried and verified for occlusion and then removable flange was inserted, adjusted and verified for occlusion. This was followed by cementation of the fixed component by type-1 luting GIC cement (Fig: 5). After 30 minutes the acrylic pontic was delivered. (Fig: 6).

(Fig: 5)

(Fig: 6)

DISCUSSION:

Removable prosthesis are less retentive, less stable and have poor comfort as compared to fixed prosthesis. The advantages of the Andrew's bridge system are adequately reported in the literature, which includes better aesthetics, hygiene along with better adaptability and phonetics. It is comfortable and economical for patients. There is no palatal or lingual extension as in the case of removable partial dentures. Good soft tissue response due to less soft tissue impingement. This type of prosthesis is more retentive and stable with minimal extension. The system avoids transfer of unwanted leverage forces to the abutment teeth by acting as a stress breaker. Preiskel6 listed few more advantages of this system. Those are the RPD with reduced bulk (minimal vertical and horizontal extensions), good retention with little wear. Duplicate removable prostheses can be made quickly because special transfer sleeves are available. In this particular case, it was difficult to fabricate a tooth or implant supported fixed partial denture as there was loss of residual ridge due to trauma, resulting in large soft and hard tissue defect. Such treatment required extensive bone grafting surgery, which is not only less predictable, also adds donor side morbidity, expenditure, risk of surgery and obvious physchological implant on patient. On the other hand, replacement of residual ridge defect required a flange prosthesis, which could either be removable partial denture or fixed removable Andrew's bridge system. Also removable flange gives the desired lip support restoring facial esthetics, opportunity for better hygiene maintenance and easier repair of the flange prosthesis. Thus Andrew's bridge system provides an excellent alternative to fixed partial denture and removable partial denture.

CONCLUSION:

Andrews Bridge system is a fixed-removable prosthesis that is indicated in patients with few missing teeth and large localized ridge defects. This functionally fixed prosthesis successfully replaces the missing teeth along with complete closure of the defect, restores speech and esthetics.

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