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RESEARCH ARTICLE

REHABILITATING LONG EDENTULOUS SPAN WITH HYBRID PROSTHESIS - A CASE REPORT

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Abstract

Hybrid prosthesis is a fixed-removable type of prosthesis with semi-precision attachment. Hybrid prosthesis fulfils the objectives of the rehabilitation such as retention, stability and support characteristics similar to a fixed prosthesis and aesthetics & hygiene maintenance of a removable prosthesis. When implant, FPD, and conventional RPD are contraindicated or not accepted by the patient, one can go for hybrid prosthesis. Unlike removable restoration, fixed- removable prosthesis offers considerable advantages of preventing lateral movement and selective movement of prosthesis on occlusal loading. Therefore, it minimizes the transfer of stress over abutment tooth and provide a biomechanical advantage in long- span partial edentulism. This case report presents a case of the prosthetic rehabilitation of long edentulous span in the maxillary anterior region with fixed-removable type of hybrid prosthesis with semi-precision attachment.

Introduction:-

The primary goal of prosthetic dentistry is to restore the form, function, comfort, and appearance of the patient by replacing missing teeth and surrounding tissues with a prosthesis. Various prosthetic options for partially edentulous patients include an interim removable partial denture (RPD), cast partial denture, a fixed dental prosthesis (FDP), and implant-retained prosthesis.[1] However, Conventional fixed partial denture is not recommended in a long-edentulous span. The dental implant as a treatment of choice also not possible in all the cases if there is deficient bone. Therefore, combining fixed prosthesis with removable denture using precision/semi-precision attachment always remains an alternative treatment modality to conventional clasp- retained removable prosthesis.[2]This hybrid prosthesis fulfils the objectives of the rehabilitation such as support, stability, and retention characteristics similar to a fixed prosthesis and aesthetics and hygiene maintenance of a removable prosthesis.[1] In such prosthesis patient compliance will be good.

As per glossary of prosthodontics term (GPT) an attachment can be defined as ‘a mechanical device for the fixation, retention, and stabilization of a prosthesis’.[3] Further, an attachment can be classified according to the method of fabrication as precision or semi-precision and mode of retention as intracoronal and extra coronal.[4]

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According to glossary of prosthodontics term (GPT), Precision attachment is a retainer consisting of a metal receptacle and a closely fitting part which is machine made.

A Semi-Precision attachment is fabricated by the direct casting of plastic, wax, or refractory patterns. They are considered "semi-precision" since during casting various factors will influence the accuracy. Therefore, the resulting components, vary to a small degree. They are less costly, easy to fabricate and can be cast in alloy. They are generally extra coronal and resilient.[5]

Unlike removable restoration, fixed- removable prosthesis (RPD with attachment) offers considerable advantages of preventing lateral movement and selective movement of prosthesis on occlusal loading. Therefore, it minimizes the transfer of stress over abutment tooth and provide a biomechanical advantage in long- span partial edentulism.[4] The attachment retained RPD significantly improves the retention, functional efficiency corresponding to a fixed prosthesis and aesthetics and hygiene maintenance of a removable prosthesis. Since the RPD in the hybrid prosthesis does not contain flange, patient will not face any problem with phonetics. However, the biomechanical factor must be taken into account during treatment planning for therapeutic results. From the patient's perspective, a removable prosthesis with attachment offers more retention, masticatory efficiency and aesthetics due to decreased mobility of prosthesis than the one fabricated without attachment.[6]

Treatment with a hybrid denture is an affordable choice to fulfil the patient's aesthetic demands along with providing a good prognosis for the prosthesis and preservation of the remaining dentition. This article presents a case report of prosthodontic rehabilitation of a patient with long span edentulous area in the maxillary anterior region using an attachment-retained (hybrid) prosthesis.

Case Report

A 22 yrs old male patient reported to the Department of Prosthodontics, of Dr.R Ahmed Dental College and Hospital, complaining of multiple missing anterior teeth. Patient had history of trauma which led to extraction of upper right central incisor to left canine. Patient had no relevant systemic condition or any prior dental treatment. Intra-oral examination revealed missing upper right central incisor to upper left canine (Fig.1). Radiographic examination revealed that the bone support of abutment teeth was adequate.

Fig. 1:- Pre-op.

Patient was explained of the various treatment options for his clinical situation. Because of long edentulous span conventional fixed partial denture was ruled out. The patient was not willing for a removable prosthesis and did not want a second surgical intervention associated with an implant-supported prosthesis. Considering the clinical findings, a fixed-removable type of hybrid prosthesis taking upper right lateral incisor, canine and left premolar as abutments was planned for the rehabilitation of this long span Kennedy Class 4 partially edentulous space. The option of afixed-removable prosthesis was acceptable by the patient and hence, the procedure was carried out. The patient was thoroughly explained about the treatment procedures, the outcome and informed consent was obtained.

Diagnostic impressions of the maxillary and mandibular arches were made with irreversible hydrocolloid (Alginate) (Algitex). The casts were poured with Dental stone and were articulated.Interim RPD was fabricated for shade matching and for the patient to use it till the delivery of final prosthesis. The upper right canine, lateral incisor and left first premolar were prepared and impressions were made with addition silicone, followed by which Facebow transfer was done and the casts were articulated. Since lateral incisor is considered as weaker abutment, canine was also taken as abutment and joint crown was planned. Temporary crowns were cemented and the interim RPD was delivered. The castable male part of the Ceka preci-sagix attachment (Fig.2) was attached to the wax pattern with the aid of a paralleling mandrill to ensure parallel placement (Fig.3). The PFM crowns with the sagix attachment were cemented (Fig.5) and impressions were made to fabricate final RPD (Fig.6).

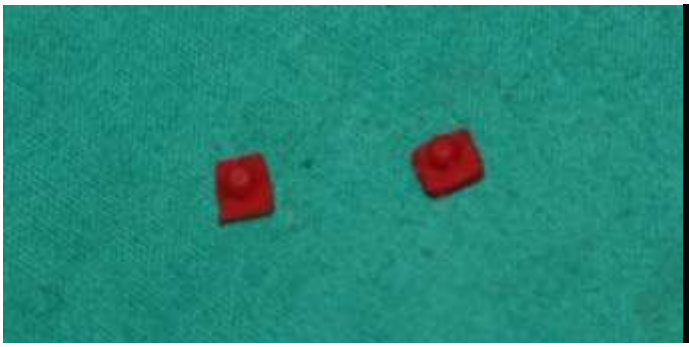

Fig. 2:-

Fig. 3:-

Fig. 4:-

Fig. 5:-

The removable partial denture was tried for passive fit and then the female rider clip was placed in male part (Fig.7,8) and picked up from the sagix into the partial denture using self-cure acrylic in a chairside procedure (Fig.9).

Fig. 6:-

Fig. 7:-

Fig. 8:-

Fig.9:-

Fig.10:- Post-op.

Fig. 11:-

Discussion:-

There is various treatment modalities present for the rehabilitation of partially edentulous state, such as clasp-retained RPD, FDP and an implant- retained prosthesis. The patient was not willing for a removable prosthesis and did not want a second surgical intervention associated with an implant-supported prosthesis. Tooth supported FDP was not a viable option because of compromised biomechanics of the prosthesis in the long- edentulous span. Removable prosthesis with the attachment was planned as treatment of choice due to the benefit of aesthetic, retention and improved functional efficiency over conventional clasp retained RPD.

Preci-sagix is the sagittal ball attachment with segmented female for partial dentures and implant applications. It has a wide range of applications, long lasting retention, snap mechanism, easy replacement of parts and is relatively inexpensive. [5]

A fixed- removable prosthesis is an efficient and cost- effective treatment option for long span partially edentulous condition. There are multiple advantages of such prosthesis, namely, retention and stabilizing qualities of a fixed prosthesis along with freedom in teeth arrangement, hygiene maintenance and aesthetics of removable prosthesis. Besides these advantages, the attachment allows the prosthesis to be inserted and removed several times without losing retention. At the same time, it also splints the teeth and provides favorable biomechanics.[7,8]

However, the biomechanical factor must be taken into considerations when using attachment retained RPD. Repeated removal and placement of prosthesis result in wear of the retention clip, requiring periodic replacement of the clip. Other possible disadvantages include splinting of teeth together, minimum abutment height of 4mm required for attachment functionality and laboratory techniques need an expert dexterity in fabricating this prosthesis. Daily oral hygiene maintenance and care of the prosthesis are required on the part of the patient. The long- term success of the prosthesis requires knowledge of important laboratory techniques, clinical skills, and proper execution of all the clinical and laboratory procedures. In terms of clinical success, the fixed- removable bridge meets all the demands of function and aesthetic appearance with the added benefit of facilitating the careful postoperative evaluation of oral soft tissue.[9]

Conclusion:-

Dental technology has come to borderline with the use of attachments in treatment of partially edentulous condition. The acceptance of RPDs has increased when used along with precision attachments. It is therefore incumbent upon clinicians to ensure that the best evidence-based treatment plan is developed for the partial edentulous patient. Hence, the clinician should take the leading role in the selection of appropriate attachment and prosthesis design for each patient.

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Conflict of Interest:
None.

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