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RESEARCH ARTICLE

REHABILITATION OF MANDIBULAR ARCH USING CAST PARTIAL DENTURE AND FIXED TREATMENT MODALITY

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Abstract

Successful restoration can be done with plenty of contemporary and conventional treatment planning. Attachment retained partial dentures are one such kind of treatment modality in prosthodontics. Studies have also demonstrated that precision-attachment partials last longer, wear less, need fewer adjustments, look better, work better, less destructive, protect abutment teeth, and are easier to clean. In this case report patient's functional and aesthetic expectations were met by using a combination of Porcelain fused to metal (PFM) restorations and semi-precision attachments.

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Introduction:-

Rehabilitation of a partially edentulous patient is determined to a greater extentby the number, position, and salvagability of the existing teeth as well as, the expectations and demands of the patient from the prosthesis.

Rehabilitation of Class I and Class II Kennedy's partially edentulous arch can be quite challenging for the support availability, retention, and stability needs of the prosthesis.[2] Fixed dental prosthesis using the remaining teeth to replace a distal extension situation may not be a feasible option because of unfavorable biomechanical factors. Sometimes, it is not uncommon where fixed optionthrough the entire tooth or bone support is not possible. In such cases connecting a fixed prosthesis to a castpartial denture by using precision/semi-precision attachments may be a viable option.[3] Asuccessful prosthesis in such challenging situationsrequires meticulous planning in carefully selectedcases to offer optimal esthetic and functional results.Precision attachments offer considerable advantagesin dentistry because of their flexibility in the optionsavailable and their use in various clinical situations.[4]

The desire to balance between functional stability and cosmetic appeal in partial dentures gave rise to the development of Semi Precision Attachments, since then, it has always been surrounded by an aura of mystery. The use of semi Precision Attachments for partial denture retention is a practice builder for the better class of dentistry and helps to elevate the general standard of partial denture prosthetics. This work is not given with the idea of discrediting the usual type of partial denture work, which of necessity, must be used principally because of economic reasons. But it is presented with a feeling it is the finest that can be given in partial denture construction. The precision attachment is sometimes said to be a connecting link between the fixed and the removable type of partial denture because it incorporates features common to both types of construction.It can be described as a retainer used in fixed and removable partial denture construction consisting of a metal receptacle and a closely fitting part, the former is usually contained within the normal or expanded contours of the crown of the abutment tooth, and the latter is attached to a pontic or the denture framework.

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Case report:
A 63-year-old male patient reported to the department of Prosthodontics complaining of inability to masticate and unaesthetic facial appearance. The patient also complained of a dislodged lower fixed partial denture concerning his lower anterior teeth and missing teeth on the lower right back tooth region.

On clinical examination, the teeth present were 11-17, 21-27, and 31, 33-37, 41-43 which were periodontally sound. Dislodged Porcelain fused to a metal anterior bridge with 31, 33, 34, 35, 41, 42, and 43. 31, 41, 42 was grossly decayed teeth with little coronal structure (Figure 1). On radiographic examination, periapical radiolucency was seen wrt only 31, 32, and 41. The soft tissue of the saddle area was firm and resilient.

Diagnostic casts were made and the maxillary cast was oriented on to the semi-adjustable articulator with a hanau facebow record and the mandibular cast was mounted with a centric interocclusal record to evaluate the restorative space and for the choice of options available. Based on the clinical, radiographic examination and diagnostic cast examination, the treatment was planned in a sequential manner - oral prophylaxis, necessary endodontic therapy wrt 31, 32, and 41 (Figure 2) followed by fixed treatment modality replacing the dislodged prostheses and attachment retained partial dentures. The vertical dimension was not altered and occlusal plane was established. Anterior guidance was established and then, the already prepared teeth were modified retraction done (Figure 3) and impressions made.

Metal substructures were fabricated for the mandibular anterior teeth, with rigid extra coronal precision attachments (Figure 4)[OT CAP, Rhein 83 Inc, USA] with a vertical freedom of movement and an activation portion was cast on the distal surface of 43.[5,6]

Extra coronal OT CAP is castable attachments with elastic retention. The patrix portions were positioned during the fabrication of the crown wax patterns and the casting procedures were executed. Additional care was taken during the finishing and sandblasting procedures. This procedure facilitates long-term repair and attachment activation/replacement.[7]

The metal copings were clinically examined and the marginal fit was verified. The metal copings were placed on the prepared teeth and pick up impression was made with elastomeric impression material. Cast partial denture framework trial was done along with the bisque trial of mandibular anterior teeth (Figure 5). A Centric interocclusal record was taken. The artificial teeth were selected and positioned using the form, occlusal plane, and color reference. The O-Ring is held into the denture base acrylic by a metal ring (Figure 6). To ensure adequate seating during FDP cementation, the prostheses were attached extraorally, and glass ionomer cement was used (Figure 7).

The patient received oral hygiene care instructions and was educated on maintenance care of his prostheses (Figure 8). Routine follow-up was done after 24 hours, 1 week, and 6 months duration to evaluate abutment teeth condition as well as general and oral health.

Figure 1:- Pre Operative Frontal View.

Figure 2:- Intra Oral View Of Post And Core Using Fiber Post.

Figure 3:- Core Build Up Done And Tooth Preparation Modified Gingival Retraction Done.

Figure 4:- Metal Try In.

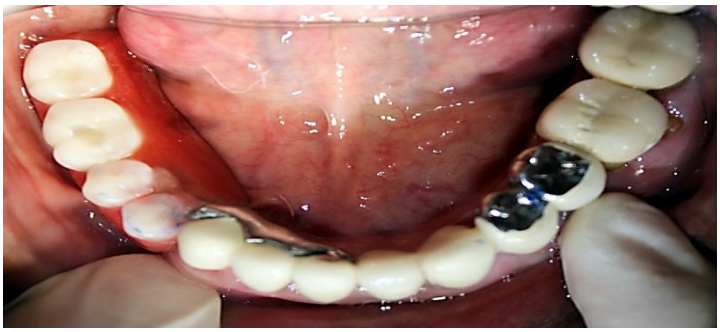

Figure 5:- Cast Partial Denture And Bisque Try In.

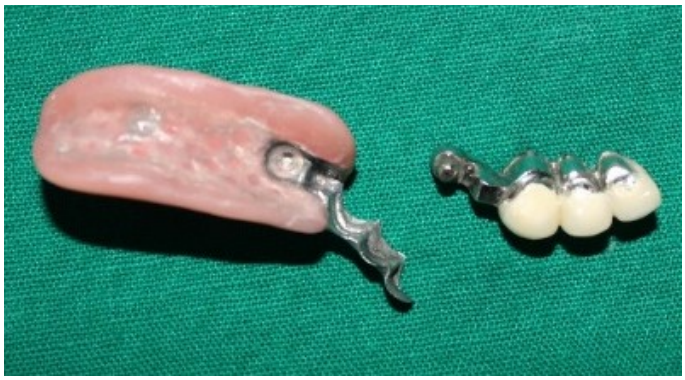

Figure 6:- Finished Prostheis.

Figure 7:- Post-Operative Intra-Oral Occlusal View.

Figure 8:- Satisfied Patient: Frontal View.

Discussion:-

The precision attachment denture has long been considered advantageous in dentistry as it combines fixed and removable prosthodontics in such a way as to create the most esthetic partial denture possible. They have been used in removable and fixed prosthetics for years and have contributed to the success of RPDs, overdentures, segmented

fixed prosthetics, and implants. Removable partial dentures fabricated with Semi precision attachments for retention and support are the best prosthesis available to dentistry where fixed restorations are contraindicated.[8]

In this case report, it provided improved esthetics and elevated psychological acceptance of the prosthesis. Appropriate use of attachments may eliminate the need for facial clasp arm while providing acceptable retention, support, and stability to the prosthesis– attachment is concealed within the contours of abutment teeth or the body of RPD. Cross arch load force transmission and prosthesis stabilization was also improved with attachments particularly when rigid precision attachments are used. In the case of distal extension base, removable partial denture prosthesis attachment positioned between the abutment and extension bases incorporate broken stress philosophy that limits the potentially damaging forces imparted to the abutment as these attachments permit vertical, horizontal/rotational movement of the denture bases during function relative. Compared to conventional clasp retained partial denture they give better retention and stability, less liable to fracture, more esthetic, less food stagnation, less bulky and more aesthetic than clasp. Lateral forces in the abutment during the insertion and removal are eliminated and more axial force during functions are achieved.

Few retrospective studies available show a survival rate of 83.3% for 5 years, 67.3% up to 15 years, and 50% when extrapolated to 20 years.[9,10] Other studies have also demonstrated that precision-attachment partials last longer, wear less, need fewer adjustments, look better, work better, are less destructive, protect abutment teeth and are easier to clean.[11]

Conclusion:-

Challenges in Prosthetic rehabilitation in distal extension situations can be overcome by the use of smart devices like precision attachments which can provide a superior, effective prosthesis in esthetics and function. Appropriate planning and meticulous execution are key to success in treating such cases.The decision to use Precision Attachments in a removable partial design should be carefully considered.Clasp type removable partial denture's should be used whenever practical because of their lower cost, ease of fabrication and maintenance, and the predictability of results. However, if Precision Attachment removable partial denture is the treatment of choice because of esthetics, abutments alignment, or the need for greater cross arch bracing, it must be used with a thorough knowledge and understanding of prosthodontics principles and attachment use as well as an awareness of the intricacies and special problems associated with the Precision Attachments.

References:-

1. Douglass CW, Watson AJ. Future needs for fixed andremovable partial dentures in the United States. TheJournal Prosthetic Dentistry, 2002; 87(1):9-14.
2. Henderson D Steffel VL. McCraken's Removablepartial denture prosthodontics .4th Ed, St Louis, C.V.Mosby, 1973.
3. GopinadhAnne. Full mouth rehabilitation using fixedpartial denture & cast partial denture with attachmentsand conventional lower denture - A case report.International Dental Journal of StudentsResearch;5(1):25-28.
4. Burns DR, Ward JE. Review of attachments forremovable partial denture design: 1. Classification andselection. Int J Prosthodont1990; 3:98-102.
5. Schillingburg HT, Hobo S, Whitsett LD, Jocobi R, Brackett SE. Fundamentals of fixed prosthodontics. 3rd ed. Chicago (IL): Quintessence Publishing Co.
6. Preiskel H. Precision Attachments for Free-End SaddleProstheses. Br Dent J 1969;127: 462-468.
7. Feinberg E. Diagnosing and Prescribing Therapeutic Attachment-Retained Partial Dentures. Nys Dent J.1982;48(1):27-29.
8. Feinberg E, Feinberg E: Successful precision attachmentremovable partial dentures. http://www. wardny.org/ files/articles/, 2002.
9. Owal B: Precision attachment retained removable partialdentures: Part1. Technical long-term study. TheInternational Journal of Prosthodontics, 1991;4(3):249-257.
10. Owal B: Precision attachment retained removable partialdentures: Part 2. long-term study of ball attachments.International Journal of Prosthodontics, 1995; 8(1):21-28.
11. Feinberg E: Diagnosing and prescribing therapeuticattachment-retained partial dentures. New York StateDental Journal, 1982; 48(1):27-29.