INTRODUCTION

Full-mouth rehabilitation is one of the most complex treatment procedures to be managed in dental applications. An interdisciplinary approach in management of full mouth rehabilitation with the oral surgeon, periodontist and prosthodontist for management of protrusion of maxilla and excessive vertical maxilla, gummy smile, midline diastema, loss of all posterior teeth with no distal abutment respectively is an ideal approach.

Correction of maxillary vertical excess surgically was not accepted by the patient as it required surgical procedures. Nowadays, both patients and dentists are more conscious of the impact of the gingiva on the beauty of the smile, particularly the periodontist who can contribute greatly to fix patients’ smiles.

Assessment of the vertical dimension is important for the management, and careful comprehensive treatment plan is required for each individual case. Articulated study casts and diagnostic wax-up can provide important information which is helpful for the evaluation of treatment options. Tolerance of changes to vertical dimension of occlusion is usually confirmed with the clinical evaluation of the patient having a diagnostic splint or provisional prosthesis.

Rehabilitation of partially edentulous arch can be challenging when it is a distal extension situation classified under Kennedy’s class I and class II situations. In such a condition, a fixed partial denture cannot be fabricated because of missing distal abutment. Implant-supported prosthesis can be planned, but it is sometimes not feasible due to insufficient amount of bone and economic reason. So, in such situation an acrylic partial denture or a cast partial denture is largely preferred. Cast partial dentures are made retentive by the use of retainers and precision attachment components. Precision attachments could be extracoronal and intracoronal. Attachment-retained cast partial dentures facilitate both esthetic and functional replacement of missing teeth. Studies have shown a survival rate of 83.35% for 5 years, of 67.3% up to 15 years, and of 50% when extrapolated to 20 years.

This paper describes a case report of a patient which is restored by a conventional and minimally-invasive technique for full mouth rehabilitation.

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Case Report

A healthy 55 years female presented to our department of prosthodontics with chief concern of unesthetic appearance, poor chewing function as a result of several missing posteriors. The patient’s expectations were to receive a smile makeover that would allow her to function better. She requested a treatment that avoided implant placement.

On examination patient has a convex profile, gummy smile, midline diastema (fig 1). The intraoral and radiographic examination verified that maxillary bilateral premolar and molars and mandibular molars were lost however the patient said she never had used fixed or removable partial denture. On intra oral occlusion she had severe deep bite with the upper anterior overlapping beyond mandibular labial gingival margin (fig 2), presenting maxillary Class I Mod I and Mandibular Class II situation.

Treatment Objectives focused on the preservation of the health of remaining teeth and supporting structures, to enhance aesthetics by smile correction by providing gingivectomy and midline diastema correction, to enhance chewing efficiency by providing semi precision attachments for posterior edentulous arches.

Diagnostic impression was made using irreversible hydrocolloid (Tropicalgin, Zhermack, Italy) material was made and study model was obtained. Mandibular 3rd molars, being mesially angulated was advised for extraction as they would hinder further prosthetic management (fig 3). The cast was then mounted using interocclusal record at corrected VDO (vertical dimension of occlusion) on a semi adjustable articulator after facebow transfer (fig 4) (Hanau wide-Vue, Whip mix Corporation, Louisville, KY) (Hanau Spring-Bow) A maxilla-mandibular occlusal bite registration was used to determine the CR (centric relation) occlusal record. Mock tooth preparation was done on diagnostic cast.

Diagnostic was up was done (fig 5), followed by impression and cast was then made of the wax up, for fabrication of vacuum formed matrix to serve as a guide for crown lengthening and also fabrication of provisional auto polymerization crowns. After tooth preparation for all the teeth. Periodontal correction of gummy smile was done with crown lengthening, gingivectomy of 2 mm was performed on 11,21,12,22 using vacuum formed matrix as a guide (fig 6) and periodontal dressing was given.

Interim fixed prosthesis was fabricated and was cemented with temporary cement, protrusive contact, groups function, esthetic and phonetics were assessed with provisional posterior RPD to maintain the VDO. After crown lengthening, the clinical crown height was increased by 1.5 – 2 mm and compensatory incisal 2 mm reduction was achieved, an interim RPD (removable partial denture) was simultaneously fabricated using interocclusal record and used as a guide for the definitive oral rehabilitation (fig 7). While patient was wearing provisional restoration for 3 months occlusal stability and TMJ was periodically checked. With the provisional restoration being satisfactory to the patient, it was decided to reproduce the temporary VD (vertical dimension) state onto the final restoration. Following which tooth preparation was refined and definitive impression was made with polyvinyl siloxane impression material using putty wash technique (fig 8), working cast was poured using die stone was surveyed and mounted with help of temporary interocclusal record.

The wax pattern was prepared for PFM and Rhien 83 extracoronal castable attachments was attached distal to the distal abutment using surveyor. Maxillary unilateral attachment and Mandibular Cast partial denture with attachment was fabricated in the laboratory. Casting, finishing, metal coping try-in and shade selection were done. The metal framework trial was done in the patient’s mouth for the accuracy of fit. Cast structure framework was checked up for stability and precision and jaw relation were recorded. Posterior arrangement and PFM crowns were prepared and try in (fig 9) was carried out. Clinical adjustments were made, followed by glazing of PFM crowns and acrylization of attachment retained partial denture. Crown PFM were cemented with the CPD attached (fig 10). After the final setup, routine check-ups were performed in every 3 months for one year. The final result satisfied the patients chief complaints with combined fixed partial denture and semi precision retained CPD (Figure 11) which produced stable occlusion obvious, improvement in the mastication and better esthetics. The patient was trained about insertion and removal of the prosthesis followed by home care instructions. The 1-, 3-, and 6-month follow-up was found to be satisfactory in terms of function, esthetics, and maintenance of the prosthesis.

Figure 1 Pre Operative Extra Oral

Figure 2 Pre Operative Intra Oral

Figure 3 Pre Operative X-Ray
DISCUSSION

In the present society, the esthetic consideration in the prosthetic rehabilitation is a need of the hour. The aim was not replacement of the lost tooth structure, but also to improve esthetics, correction of an improper bite position and restoration of the lost vertical dimension. As concluding on clinical choices depends on various factors including patients needs, finances, time and motivation.

Normal crown lengthening procedure for maxillary anterior teeth followed by prosthetic replacement of original height more apically was sufficient in achieving the esthetics.

Vertical dimension of occlusion (VDO) is also an important aspect to carefully monitor. It should be restored not increased. In the present report, the patient was carefully analyzed for 3 months to evaluate the adaptation to the determined OVD with a fixed interim prosthesis.

The precision attachments are not new but their use being uncommon, these attachment-retained removable partial denture (RPD) has been a long-standing form of treatment in Prosthodontics. The available restorative space along with the number of teeth missing and the periodontal health of the abutment teeth pose a significant challenge while determining the design and fabrication of specific RPD attachments for extracoronal fittings. A semi-precision attachment system was selected to achieve optimum retention, stability, and enhancing the esthetics, and also are less costly, easy to fabricate and also can be cast in alloy. Adherence to precision techniques, proper diagnosis and periodic recall preventative therapy will result in successful treatment and preservation of the patient's existing dentition9.

CONCLUSION

The success of a prosthodontic rehabilitation requires crucial balance between the modern and conventional treatment plans, meeting the esthetics and functional expectations of the patient. Full-mouth rehabilitation with attachment-retained partial dentures are one such type of prosthodontic treatment modality.

References


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