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Bar attached fixed removable prosthesis: A clinical case report on full mouth reconstruction

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Abstract

Tooth loss occur as a result of caries, periodontal disease, trauma resulting in partial edentulism. Such prolonged edentulousness that are left untreated can cause hindrance for a normal rehabilitation procedure. A 46 year old female patient reported to Department of Prosthodontics with a complaint of missing anterior and posterior teeth in maxillary and mandibular arch. Rehabilitation was planned in accordance with PMS philosophy after establishing proper occlusal plane using Broadrick Occlusal Plane Analyser. Prosthesis was a cross between fixed and removable type with bar attachment in maxillary arch and mandibular arch was rehabilitated using fixed partial denture. The functionally fixed prosthesis can compensate with problems of the removable restoration and at the same time provide comfort and success of the fixed prosthesis.

Keywords: Fixed removable prosthesis, Pankey–Mann–Schuyler (PMS), full mouth rehabilitation, Broadrick occlusal plane Analyser (BOPA), bar attachment

Introduction: Case Report

A 46 year old female patient reported to Department of Prosthodontics with a complaint of missing anterior and posterior teeth and wanted rehabilitation for the same. Patient had lost her teeth due to trauma 4 years back and had restored the maxillary and mandibular anteriors with fixed partial denture. Her maxillary anterior FPD got fractured 6 months back. Also she was not satisfied with mandibular anterior FPD as it was labially inclined and had increased visibility. (Figure 1 and 2)

TMJ examination was done and maximum mouth opening was found to be 42mm. No deviation, deflection, clicking present on opening and closing of TMJ. Also it was non tender on palpation. To determine whether there was VD loss, VDO was measured clinically using Niswongers method and phonetics and concluded that there was loss of vertical dimension

As there was insufficient abutment support available, fixed partial denture option was ruled out.

The provided different treatment options for this patient were

- Cast partial denture
- Implant supported prosthesis
- Fixed removable prosthesis

Implant prosthesis and CPD options were ruled out as patient was in need of a fixed prostheses that was cost effective. So it was decided to fabricate fixed removable prosthesis in Maxillary arch and conventional fixed partial denture in mandibular arch.

Treatment Plan

Surgical phase: As Interocclusal space for posterior restorations was reduced, alveoloplasty was performed in the posterior region of maxillary arch IRT 24, 25, 26, 14, 15.

Endodontic phase: Root canal treatment was planned IRT 23 and Intentional RCT IRT 13 (abutment for her earlier FPD) 16, 37, 34, 44-(those were supra erupted teeth) 33,43 which were labially inclined.

Prosthetic Phase: Goals to be attained are:

- Establishing anterior guidance
- Establishment of occlusal plane
- Rehabilitation of lost vertical dimension
- Restoration of function and esthetics



Fig 1&2: Preoperative photograph

An organized approach to oral rehabilitation was introduced by Dr Pankey utilizing the principles of occlusion advocated by Schuyler, known as the Pankey–Mann–Schuyler (PMS) Philosophy of Oral Rehabilitation).The patient’s casts were mounted on a semi-adjustable articulator (Hanau wide vue Articulator;) using a face-bow transfer and centric relation record.

Lower occlusal plane analysed using Broadrick occlusal plane analyser and acrylic index was made to transfer the occlusal plane to patient mouth. Treatment RPD was delivered in the established anterior guidance and occlusal plane with increased VD up to 2mm and monitored for 2 month to evaluate patient’s adaptation to the new VDO. Re-establishing the lost vertical dimension was done incrementally |during 2 month trial period and regular follow up was done. No muscle tenderness and temporomandibular discomfort was reported by the patient (Fig 3 and 4).

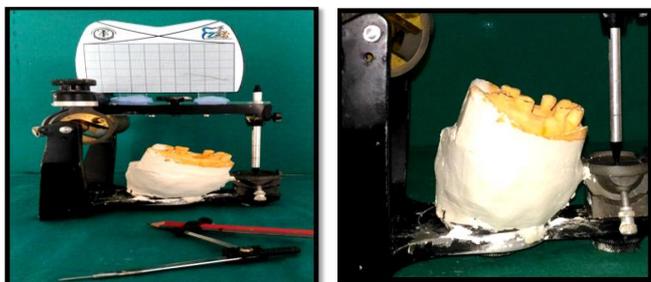


Fig 3&4: Broadrick occlusal plane analyser

Tooth preparation was done in mandibular arch and temporary restorations were given. After restoring one quadrant, that served as guide for tooth preparation in the opposite quadrant. Later that was replaced with ceramic facing fixed partial denture. After rehabilitation of the lower arch we proceeded with the restoration of upper arch. (Fig 5 and 6)



Fig 5: Temporization in lower arch



Fig 6: Fixed partial denture in lower arch

Tooth preparation was done IRT 16, 18, 28 done and impression was made in putty impression material and cast poured and send to lab for metal framework of bar attachment connecting FPD IRT 16, 17, 18, crowns 28, 13 and coping on 23. Metal framework try in was done in the patients mouth and pick up of impression of the same was taken in rubber base impression material. (Fig 7).



Fig 7: Fixed bar attachment

The final prosthesis consist of fixed bar which is cemented to mouth and it has a detachable part that is the removable part of prosthesis. The photograph of the prosthesis is shown below. (Fig 8, 9, 10)



Fig 8: Removable part of prosthe



Fig 9: Final prosthesis



Fig 10: Post operative photograph

Discussion

Rehabilitation must be planned in such a way that maintains healthy masticatory system. For restoration of posterior teeth, group function occlusion was the choice of occlusal scheme. Group function refers to distribution of lateral forces to a group of teeth rather than assigning all forces to one particular tooth. Lateral and protrusive excursive movements in patients mouth was in harmony with PMS philosophy.

Prosthesis was a cross between fixed and removable type and had the following advantages:

1. Patient can remove a part of the prosthesis herself which aids in better oral hygiene.
2. No palatal extension - enhanced her speech, and thermal perception
3. Bar provided a splinting effect.
4. The 2mm gap provided between the bar and soft tissue aids in self cleansing action of prosthesis.
5. The resilient attachment here spreads the functional load over both the retained tooth structure and the edentulous ridge.
6. As it is a tooth and tissue supported prosthesis force gets distributed uniformly over tooth and tissue.
7. Minimally invasive- good treatment option for systemically compromised patients.
8. More economical compared to implant supported prosthesis.

Conclusion

Fixed removable prosthesis is a cost effective treatment option in prosthetic dentistry which fulfills objectives of rehabilitation such as support, stability, retention characteristics similar to a fixed prosthesis and also esthetics and hygiene maintenance of a removable prosthesis. In this clinical report, raising vertical dimension of occlusion using removable partial denture and following fixed restoration using bar attachment based on accurate diagnosis showed successful full mouth rehabilitation.

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