Preventive Prosthodontics – A Boon

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Abstract
Extraction of the last remaining teeth and replacement with complete dentures has many consequences. The patient has to adapt to a new situation with respect to speech, chewing, swallowing, and so forth. The patient also has to accept edentulousness, which may lead to psychological problems and social isolation. Furthermore, extraction of teeth leads to a reduction of the alveolar ridge, which causes changes in denture base adaptation, vertical dimension of occlusion, and occlusal contacts. The retention of roots to support/retain an overdenture has been shown to reduce residual ridge resorption, improve stability and to retain proprioception.

Keywords: Onlay dentures, Overlay dentures, Preventive prosthodontics

Introduction
An Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate future prosthodontics problems. Overdenture therapy envisages essentially a preventive prosthodontic concept since it attempts to conserve the few remaining natural teeth and prevent ridge resorption. An Overdenture is a removable partial denture or a complete denture that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants. Although widespread interest in overdenture techniques is relatively recent, the basic principle of covering retained teeth or roots with dentures is by no means new. Overdentures are also named as onlay dentures or overlay dentures.
1958 **Miller** described a technique to use vital teeth with a coping-thimble arrangement for overdenture support, which initiated a revitalization of interest in the philosophy and technique of overdenture use. According to Basker et al., overdentures are prostheses constructed to gain support and retention from retained roots (or dental implants). In essence, the retention of roots to support/retain an overdenture has been shown to reduce residual ridge resorption, improve stability and to retain proprioception.

**Case Report**

A 58-year-old female patient reported to the Department of Prosthodontics and Crown & Bridge with the chief complaint of poor esthetics and a desire for replacement of the missing upper teeth since 2 months. History of present illness revealed extractions of few maxillary teeth 4 months back due to pain and mobility. There was no medical history relevant pertaining to the case. Past dental history revealed partially edentulous maxillary and mandibular arches since 4 months and endodontic treatment of remaining maxillary teeth since 2 months. Local examination revealed retained 13, 14, 22, 24, 31, 32, 33, 35, 36, 41, 42, 43 and 45 and faulty fixed partial denture with respect to 33, 34 and 35 (Fig. 1). Intra oral periapical radiograph revealed endodontically treated teeth with respect to 13, 14, 22 and 24. Option of maxillary complete denture after full mouth extraction and maxillary tooth supported overdenture were presented to her. Patient was not willing for the extractions of remaining teeth in maxillary arch.

**Treatment**

Maxillary and mandibular primary impressions were made with irreversible hydrocolloid (Tulip Alginate Impression Material, Cavex Holland BV, Holland). Tooth preparation for metal copings with respect to 13, 14, 22 and 24 were done (Fig. 2). Impression with irreversible hydrocolloid was made and cast with type V stone (Denflo HX, Class 5 Diestone, Prevest Denpro Limited, Digiana) was poured (Fig. 3). Wax pattern for copings using blue inlay wax (Blue Inlay Casting Wax, Kerr Corporation, USA) were made on the master cast and casting was done using Ni-Cr alloy and cast metal copings were fabricated (Fig. 4). Metal copings with respect to 13, 14, 22 and 24 were tried and then cemented in patients mouth (Fig. 5). Preliminary impression of the maxillary arch with irreversible hydrocolloid was made and immediately poured with Type III **Dental stone** (Kalstone: Kala Bhai Pvt Ltd., Mumbai, India). Full spacer wax using modelling wax (Hiflex Modelling wax, Prevest Denpro Limited, Jammu) was adapted on the primary maxillary cast and special tray with autopolymerizing polymethylmethacrylate resin (DPI-RR Cold Cure) 2 mm short of all the sulci was fabricated. The border moulding was then done with green stick impression compound (DPI Pinnacle Tracing Sticks) and secondary impression was made with zinc oxide eugenol (DPI Impression Paste) as for the conventional denture technique and poured with Type III stone to prepare master cast (Fig. 6). Temporary denture base with autopolymerizing polymethylmethacrylate resin was fabricated and maxillary occlusal rim using modelling wax was made to record jaw relation. Vertical jaw relation and arbitrary centric jaw relation were recorded (Fig. 7). Acry rock teeth (Ruthinium Dental Products Pvt. Ltd, India) were selected and maxillary teeth arrangement was done as for the conventional dentures. After that try in was completed to the patient’s satisfaction. In addition to the trial insertion for the denture, accuracy of the fit of secondary copings of acrylic denture base over the metal copings was verified. Denture was then acrylyzed with heat cure polymethylmethacrylate resin (Trevalon, Dentsply) (Fig. 8). After finishing and polishing of the overdenture, it was adjusted in patient’s mouth, relined with soft reliner (GC Reline ™ Soft) and then inserted (Fig. 9).

**Discussion**

Extraction of the last remaining teeth and replacement with complete dentures has many consequences. The patient has to adapt to a new situation with respect to speech, chewing, swallowing, and so forth. The patient also has to accept edentulousness, which may lead to psychological problems and social
isolation. Furthermore, extraction of teeth leads to a reduction of the alveolar ridge, which causes changes in denture base adaptation, vertical dimension of occlusion, and occlusal contacts. To make a gradual transition from a natural dentition to complete dentures possible, overdenture therapy is recommended by prosthodontist. Where complete upper overdentures are concerned, tissue displacement (and associated tissue fluid displacement) usually does not occur at the time of insertion of the denture and a denture adhesive may be required over the first 24–48 hours. The patient should be advised (of this possible transient retentive aid) before the insertion visit to avoid the patient developing a negative stereotype towards the dentures and/or the clinician.

References
**LEGENDS:**

Fig. 1: Pre-treatment view: partially edentulous with remaining 13, 14, 22 and 24

Fig. 2: Tooth preparation for metal copings

Fig. 3: Irreversible hydrocolloid Impression and Cast

Fig. 4: Wax pattern for copings on the master cast and Cast metal copings with respect to 13, 14, 22 and 24

Fig. 5: Cementation of metal copings with respect to 13, 14, 22 and 24

Fig. 6: Primary Cast, Special tray with full spacer, secondary impression and Master cast

Fig 7: recording of the jaw relation

Fig 8: Tissue surface of the denture

Fig 9: Denture Insertion