

An over-shadowed treatment modality – the tooth supported overdenture.

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Abstract

Loss of alveolar bone is a extremely worrisome after the loss of natural teeth. Overdenture is a good and economical treatment modality in means of preservation, retention and stability of prosthesis and thereby increase the patient's quality of life. This case report will help us understand the role and benefits of tooth support in overdentures even after the advent of dental implants.

Key words: - Edentulism, Overdentures, Post and Core, Overlay dentures.

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Introduction

India has acquired the label of 'aging nation' with 7.7% of its population being more than 60 years old.^[1] The proportion of elderly persons in the population of India rose from 5.63 percent in 1961 to 7.5 percent in 2001 and it has been estimated that edentulism would soon become 12% of the world population.^[2] Tooth loss is one of the most inevitable effect of aging and a large number of people are using dentures wherein the prevalent prosthesis is complete dentures. A complete denture patient goes through a sequel of events like loss of discrete tooth proprioception, progressive loss of alveolar bone, transfer of occlusal forces from the teeth to the oral mucosa and the most depressing sequel is the loss of patient's self-confidence.^[3] The tooth supported overdenture on the other hand, allows occlusal forces to be transmitted to the alveolar bone by the periodontal ligament of the preserved teeth and prevents residual ridge resorption and this principle helps preserve bone.^[4] Hence, we can say that the concept of overdenture helps in bone preservation and also delays complete edentulism. According to GPT 9,

overdenture is any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants. It is also called as overlay denture or overlay prosthesis.⁵ Since the advent of dental implants, the tooth supported overdenture has become an overshadowed treatment modality. In cases of insufficient bone availability and economic reasons, practitioners should favour this treatment to the traditional complete denture therapy.

This treatment is simple, effective and requires a multidisciplinary approach. In this article, a case report of an overdenture with cast copings with short dowels has been discussed.

Case Report

A 67-year-old male patient reported to the Department of Prosthodontics with the chief complaint of difficulty in chewing due to missing teeth. There was no relevant medical history. Intraoral examination revealed well-formed maxillary and mandibular ridges in

class I ridge relationship (Fig. 1). Only 32, 33, 44 and 45 were present in the mandibular arch. Grade II mobility was present in 32 and deep proximal caries was present in 45. Radiographic examination revealed poor bone support in 32 and long roots in 33. The patient was explained the various treatment modalities, which were –

1. Extraction of the remaining teeth followed by conventional complete denture.
2. Implant supported overdenture.
3. Tooth supported overdenture.

The patient opted out of implant supported overdentures due to financial constraints and opted for tooth supported overdentures because it involved retained some of his natural teeth thus providing added retention.

Procedure -

The entire treatment was planned and divided into three stages:

1. **Surgical phase:** Extractions were performed for 32 and 45.
2. **Endodontic phase:** Root canal treatment was performed for 33 and 44. De-coronation of 33 and 44 was done maintaining 1 mm of tooth structure supra-gingivally.
3. **Prosthetic phase:** Seven days after the completion of the root canal treatment, teeth were reduced to receive custom-made post and core copings in the following steps:

- Preliminary impressions were made using irreversible hydrocolloid impression material. (DPI, Algitex, India) and diagnostic casts were poured in dental stone. (B.N Chemicals)
- Teeth were prepared. Root canals were thoroughly cleaned, shaped, and anti-rotational grooves were placed to receive the dome-shaped copings with radicular

extensions into the roots for added retention. For an impression of post-space and fabrication, self-cure acrylic resin (supplied as powder and liquid) was used (DPI, RR Cold cure resin). Polycarbonate plastic posts were used for the direct impression of post-space. Petroleum jelly was applied in the post-space before starting the impression. Pick up impression was made using elastomeric impression material (Photosil, DPI).

- The metal coping patterns were prepared in the dental laboratory using inlay was (Bego, Germany) and the castings were retrieved, finished, and cemented onto the teeth using Glass Ionomer Cement (GC Fuji I, GC America Inc., IL, USA).

- Dentures were then fabricated conventionally wherein final impressions were made and jaw relation registered.

- Teeth arrangement was done and dentures were tried-in.

- Dentures were acrylized and finished and polished.

- Dentures were delivered, occlusion was checked and verified and post-insertion instructions were given. Follow-up was done at intervals of 3 months for one year. Orthopantomogram after one year showed healthy periodontium in 33 and 44.

Discussion

The concept of conventional tooth-retained overdentures is a simple and cost-effective treatment which delays the process of residual ridge resorption, improves denture foundation area and increases masticatory efficiency.^[3] Crum and Rooney^[6] graphically demonstrated in a 5 year study an average loss of 0.6 mm of vertical bone in the anterior part of the mandible of overdenture patients through cephalometric radiographs as opposed to 5.2 mm loss in complete denture patients. Rissin et al. in 1978 compared

masticatory performance in patients with natural dentition, complete denture and overdenture. They found that the over-denture patients had a chewing efficiency one-third higher than the complete denture patients.^[7] Another advantage of overdenture prosthesis is proprioception is maintained^[8] so patient can feel directional sensitivity; dimensional discrimination; canine response and tactile sensitivity.^[9]

Overdenture prosthesis can serve as treatment modality for patients with congenital defects such as oligodontia, cleft palate, cleidocranial dystosis and Class III occlusion. So as a treatment modality, a tooth supported Overdenture is very much at the forefront incorporating preventive prosthodontics concepts.

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FIGURES:



Figure 1 – Intra-oral photographs of Maxilla and Mandible after cementation of copings



Figure 2 – Dentures in occlusion



Figure 3 – Cameo and Intaglio surfaces of the overdenture



Figures 4 – Before and after overdenture

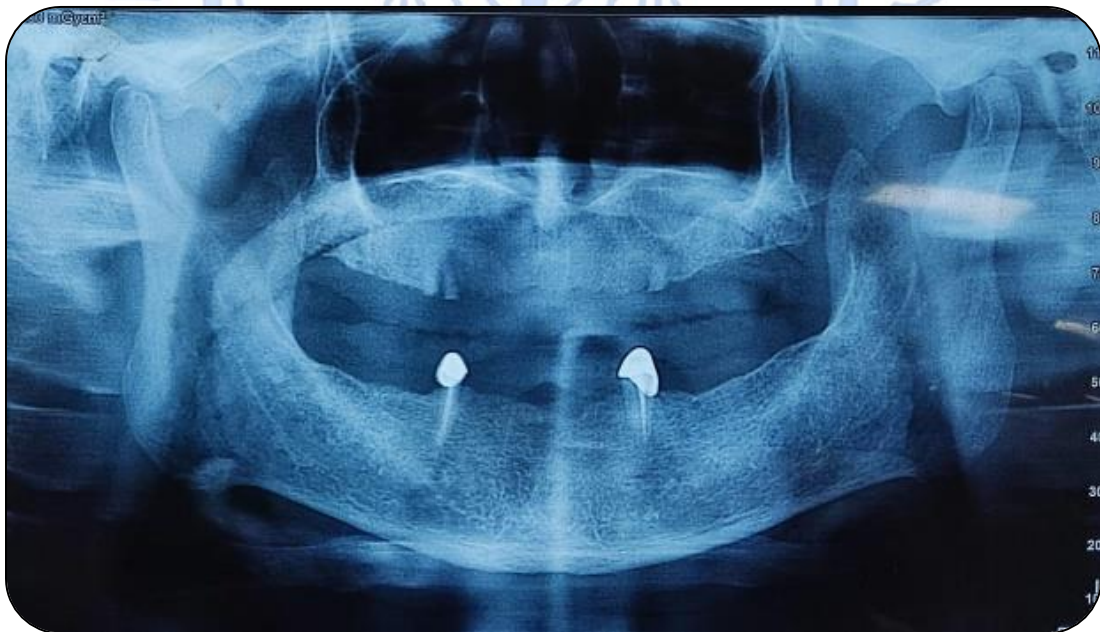


Figure 5 – OPG – One year follow up