

# RESTORATION OF ESTHETICS AND VERTICAL DIMENSION OF OCCLUSION WITH CONVENTIONAL OVERDENTURE

Nadeem Yumus

1. Associate Professor, Department of Prosthodontics, Crown & Bridge, Faculty of Dentistry, Jamia Millia Islamia, New Delhi

## Abstract

For any dental treatment to be successful three factors i.e. mastication, phonation and esthetics, are very important and should be given special consideration during treatment. Treatment of edentulous patients has been done by conventional complete dentures since long back. However, the satisfaction rate of the conventional maxillary and mandibular complete denture is very low; especially of mandibular dentures. Most of the complete denture patients report problems like unstable mandibular denture, inability to chew, pain and soreness. Moreover, if some preventive measures are taken and severely attrited or hopeless teeth are planned to save rather extracting them, the conventional overdenture can be planned which may be helpful in improving the treatment prognosis by increasing comfort, retention, stability and masticatory efficiency. In the present case the patient's existing dentition was severely attrited resulting in inability to chew and decrease vertical height of the face. An overdenture was planned for him. When delivered the patient was satisfied with that.

**Key words:** Edentulous Dentition, Overdenture, Removal Partial Denture

## Introduction

M.M. Devan has stated "It is more important to preserve what already exists than to replace what is missing".<sup>1</sup> Overdenture is an example of preventive prosthodontics treatment. The patients, who have hopeless dentition and are advised for total extraction, may feel embarrassed and may get psychological trauma after extraction of all teeth. In these patients overdenture is one of the simple and viable treatment option. Some people may argue that the immediate dentures can be given in those patients where total extraction is advised to prevent psychological trauma. But an immediate denture cannot restore proprioceptive mechanism which remains present under an overdenture with natural teeth.

### Types of overdentures:

Overdentures can either be tooth supported or implant supported. Tooth supported overdentures further may be divided into non-coping, with coping and with attachments type of overdentures. Examples of attachments may be studs, bars and magnets etc.

### Rationale of overdentures:

One of the most important rationales of the overdenture is to maintain the teeth as part of the alveolar bone. By retaining the teeth, the alveolar bone is preserved and the proprioceptive mechanism also remains maintained and functional.<sup>2,3,4</sup>

The support for the overdenture will be more as compared to complete dentures. Patients will be able to withstand more occlusal load. His skills of handling the dentures in mouth will be increased. And of course, the retention of the overdenture will be improved.

### Advantages of overdentures:

Following are the advantages of the overdentures-

- Simplicity of fabrication.
- Better stability.
- Better retention.

- Better support.
- Periodontal maintenance.
- Possibility of roofless dentures.
- Cost effective.
- Superior patient acceptance as compared to complete dentures.
- Later on can be converted to complete dentures.

### Disadvantages of overdentures:

Disadvantages of the overdentures include-

- Susceptibility to caries.
- Over contoured and under contoured flanges due to bony undercuts.
- Chances of encroachments of inter-occlusal gap.
- Meticulous oral hygiene is required.
- Sometimes esthetics is compromised.

### Indications of overdentures:

Indications of overdentures are-

- Probability of loss of teeth in younger patient.
- Cleft palate patient with malformed and ectopically erupted teeth.
- Microdontia and malformed teeth like amelogenesis imperfecta and dentinogenesis imperfecta.
- In patients who have poor prognosis for complete dentures.

### Contraindications of overdentures:

Following are the contraindications of the overdentures-

- Patients who have lack of motivation for oral hygiene.
- Uncooperative patients.
- Mentally and physically handicapped patients who cannot maintain oral hygiene.

**Case report**

A 55 years old male patient reported to the department of prosthodontics with chief complaint of difficulty in eating and poor appearance. Patient was medically fit and did not have any systemic illness. Extra oral examination of the patient revealed decreased lower facial height (Figure 1).

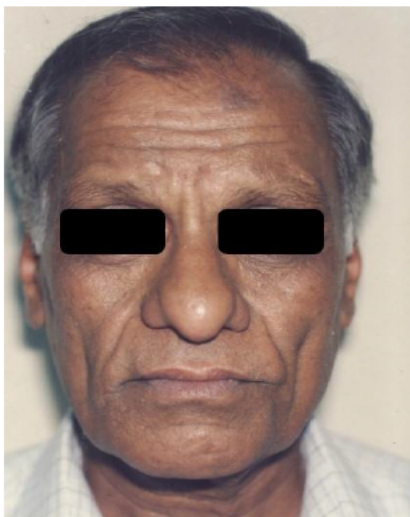


Figure 1: Extra oral photograph of the patient.

While on intra oral examination it was found that teeth 14, 15, 17, 26, 27, 35, 36, 37, 46, 47 were missing and almost all the remaining teeth were found attrited (Figure 2).



Figure 2: Intraoral photograph of the patient.

Out of all attrited teeth, maxillary anterior teeth were severely attrited. When measured, an inter-occlusal gap of 12 mm was recorded. Also, there was calculus deposition and staining of the teeth.

**Treatment planning**

Following treatment options were suggested to the patient-

- Extraction of all severely attrited maxillary anterior teeth followed by fabrication of removable partial dentures.
- Endodontic treatment of maxillary anteriors followed by post and core & porcelain fused to metal crowns and fabrication of removable partial dentures for missing teeth.

- Endodontic treatment of maxillary anteriors and fabrication of copings for them followed by overdentures.
- Endodontic treatment of maxillary anteriors and fabrication of non-coping type of overdentures.

Patient did not want extraction of his teeth and his economic condition was also not sound. Hence, non-coping type tooth supported overdenture for maxillary arch and removable partial denture for mandibular arch was planned for this patient.

**Treatment**

First of all thorough oral prophylaxis of the patient was done then endodontic treatment of teeth 11, 12, 13, 21, 22 and 23 was performed with step back technique. Diagnostic impressions of maxillary and mandibular arches were made with irreversible hydrocolloids and casts were poured with dental stone. These casts were surveyed to have an idea of undercut areas with the help of Ney's surveyor. Crowns of teeth 11, 12, 13, 21, 22 and 23 were modified with diamond burs. All the undercuts and sharp edges were removed from these teeth. Also, the sharp line angles of other remaining maxillary and mandibular teeth were made smooth by enameloplasty.

Custom made trays were fabricated on diagnostic casts with double wax sheet spacer and self-cure acrylic resin. The spacer was removed from the trays and impressions of maxillary and mandibular arches were made with polyvinyl siloxane. The impressions were poured with dental stone and final casts were obtained. All the undercuts areas on the final casts were blocked with dental plaster and occlusal rims were made covering all maxillary anterior teeth. The occlusal rims were adjusted in the patient's mouth for esthetics and inter-occlusal gap and jaw relations were recorded. Casts with occlusal rims were articulated and teeth setting was done. After a successful try-in, processing of the dentures was done and the maxillary overdenture and mandibular removable partial denture were delivered to the patient (Figure 3 & 4).



Figure 3: Intraoral photograph of the patient with prosthesis.



At the time of delivering the dentures, instructions regarding the need of oral hygiene in case of teeth supported overdenture were especially given to the patient. Patient was recalled after twenty four hours for post insertion adjustment. He was satisfied with the esthetics and functional ability of the overdenture.

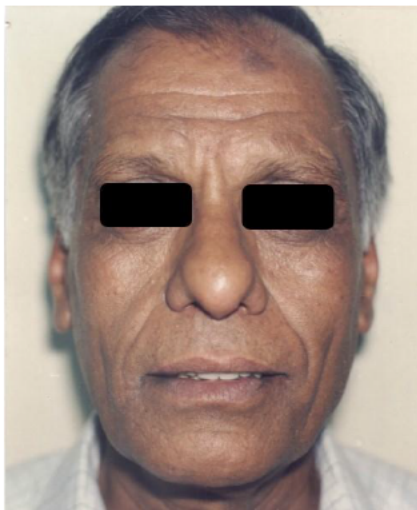


Figure 4: Extra oral photograph of the patient with prosthesis.

#### Discussion

In the literature it has been reported that elderly people generally have poor dentition. The common reasons for this are periodontal diseases, caries, and attrition. Sometimes due to unavailability of other treatment options, the rehabilitation of the patient can only be done by complete dentures. Complete denture and tissue supported removable denture patients face problems like unstable dentures, inability to chew, pain, soreness and residual ridge resorption. Hug et al in 2006 told that if some teeth are strategically retained under overdenture, it can improve the final treatment results.<sup>5</sup>

Lam in 1972 studied the effect of root implants on rate of residual ridge resorption and found that resorption of the alveolar ridges was drastically reduced with natural and artificial root implants.<sup>6</sup>

Nagasawa et al in 1979 found that periodontal ligament significantly increases efficiency of muscular activity during chewing in overdenture patients; and, efficiency and the skill of cyclic jaw movements was also influenced due to periodontal perception.<sup>7</sup>

One of the important factors required for overdenture is inter occlusal gap; sufficient Inter arch distance is required in cases of overdentures to accommodate denture bases and artificial teeth over natural teeth.<sup>8</sup> Sometimes to get required inter arch space intentional endodontic treatment of some teeth may be required.<sup>9</sup>

By the above discussion it can be concluded that if we have enough inter occlusal gap we should go for overdenture rather extracting the teeth to preserve the bone and to get

the enhanced masticatory efficiency. In the present case, the patient had enough inter occlusal gap and he was ready for endodontic treatment also, so an overdenture for maxillary arch was planned to get the benefits of an overdenture.

#### Conclusion

Tooth supported overdentures can be considered good replacement of the conventional complete dentures as the retention, stability, support, chewing efficiency and control of the mandibular movements due to proprioception is enhanced with overdentures. In overdentures the forces exerted on the bone are converted from compressive to tensile forces with the help of periodontal ligaments. This reduces the rate of bone resorption making the bone capable of serving for few more years.

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#### Corresponding Author

Dr. Nadeem Yunus  
Associate Professor  
Department of Prosthodontics, Crown & Bridge  
Faculty of Dentistry, Jamia Millia Islamia, New Delhi  
Email: - nadeemyunus2@yahoo.com