

---

## **Preventive Prosthodontics: Use of Conventional over Denture to Preserve the Residual Hard and Soft Tissues-A Case report**

---

**Eswaran M.A<sup>\*1</sup>, Maheswari H<sup>2</sup> and Prabhu R<sup>3</sup>**

<sup>1</sup>Senior Lecturer, Department of Prosthodontics, Thai Moogambigai Dental College & Hospital, Mugappair, Chennai, India.

<sup>2</sup>Specialty in Oral Medicine & Radiology, Private Practice, Anna Nagar West extn, Chennai, India.

<sup>3</sup>Reader, Department of Prosthodontics, Thai Moogambigai Dental College & Hospital, Mugappair, Chennai, India.

### **\*Correspondence Info:**

Dr. Eswaran M.A

Senior Lecturer,

Department of Prosthodontics,

Thai Moogambigai Dental College & Hospital, Chennai-600037.

E-mail: [sivadental@gmail.com](mailto:sivadental@gmail.com)

### **Abstract**

Fabrication of complete denture is a treatment challenge for many clinicians in case of some remains natural teeth present. To improve the quality of the denture and comfort to the patient, alternative treatment methods should be executed. Overdenture treatment option is the simplest method for patient satisfaction. This case report deals with use of remaining natural tooth to aid in retention, stability and support of tooth supported overdentures. The treatment longevity depends on patient's oral hygiene maintenance and periodic recalls.

**Keywords:** Overdenture, Tooth Supported, Proprioception, Overlay Denture

### **1. Introduction**

Complete denture fabrication is a challenge in case of remaining teeth present. Patient satisfaction is the ultimate goal of a dental treatment. To improve the quality of the complete denture prosthesis and comfort to the patient, preservation of the remaining structures is utmost importance. An efficient mastication, good esthetics, comfortable speech and comfort in function are the factors in patient satisfaction. The ultimate goal for every patient should be maintainable health for the total masticatory system. That means maintainable health of all the structures of the masticatory system.

Muller DeVan (1952) stated that "the preservation of that which remains is of utmost importance and not the meticulous replacement of that which has been lost". Prolonged edentulism leads to excessive alveolar bone resorption and enlarged tongue dimensions making the mandibular complete denture difficult to wear compared to maxillary complete denture. Conventional over denture treatment is the ultimate choice for the patient with good oral hygiene, to preserve the alveolar bone as well as supporting hard and soft tissues.

This case report describing fabrication and advantages of conventional over denture supported by remaining natural teeth to preserve the periodontium as well as alveolar bone.

#### **1.1 Definition 0**

A removable partial denture or complete denture that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; also called overlay denture, overlay prosthesis, hybrid dentures, superimposed prosthesis. (GPT 8)

#### **1.2 Indications [2][3]**

Patients with good maintainable oral hygiene  
Patients with poor prognosis for complete dentures  
Unilateral overdenture with bone loss is excessive on one side of the arch  
Cleft palate cases  
Congenital anomalies like amelogenesis imperfect, microdontia.

#### **1.3 Contra Indications [2][3]**

Lack of patient acceptance  
Lack of proper oral hygiene and periodontal tissue maintenance  
When other treatment modalities promise superior results

Cost considerations

Poor prognosis abutment tooth such as root fracture

Periodontal weaken tooth

#### 1.4 Advantages:[2][4][5]

Preservation of alveolar bone

Preservation of proprioception

Increased retention, support and stability

Psychological advantages

Cost effective

Better denture function

#### 1.5 Disadvantages:[2][4][5]

Carious susceptibility-high incidence of caries and periodontal disease around overdenture abutment

Endodontic and periodontic failures

Encroachment of interocclusal distance

Failure in patient compliance

Time consuming and expensive

Difficult to repair

## 2. Case Report

### 2.1 Case background

A 52 year healthy female patient came to the department of Prosthodontics & crown & bridge, Thai Moogambigai dental college & hospital with partially edentulous maxillary and completely edentulous mandibular arch. There was no significant medical and dental history. Extra oral and intra oral examination was done. On examination intra orally 13, 14, 15 teeth were present. Patient advised for tooth supported over denture with right canine and premolars as abutments to improve the proprioception and to reduce the alveolar bone resorption. (Fig 1) Treatment plan was discussed with patient and informed consent was taken.

**Figure 1: Intra oral view of maxillary arch**



Always preferred to retain maxillary canine for over denture abutment, because of central strategic position, single long root and many nerve receptors. Abutments should be good periodontal condition, surrounded by sufficient alveolar bone at least 6mm, exhibit minimal mobility.

### 2.2 Procedures

- 1) Diagnostic impression made with irreversible hydro colloid.
- 2) Intentional root canal treatment is necessary to allow for sufficient reduction and contouring in 13, 14, 15
- 3) Abutments were reduced to 2mm above the gingival margin and give dome shape with chamfer as finish line. (Fig.2) Dome shaped configuration reduces stress and provides maximum support. Sharp edges should be round, undercuts eliminated.
- 4) Treatment should be accompanied with fluoride gel application and oral hygiene instructions.
- 5) Final impression made using rubber base impression material with light body wash impression for better marginal record.
- 6) Cast poured with type IV dental stone, cast are sewed to separate dies, wax pattern made with dome shaped, invested, burned out and short metal coping was recovered.
- 7) Cast metal copings with a dome shaped surface and a chamfer finish line at the gingival margin. Coping were cemented using type I GIC luting cement. (Fig .3)
- 8) Conventional complete denture fabrication technique was used to construct the overdenture. Primary impression was made, special tray fabrication, final impression with elastomeric material, (Fig.4) jaw relation record, wax try-in procedure (Fig.5) should carried out. Denture was fabricated using conventional method and insertion done. (Fig.6) (Fig.7)
- 9) Care should be taken on the tissue surface of the fabricated denture, the areas near the gingival margins to be trimmed in order to avoid tissue impingement.
- 10) Post insertion instructions given to patient, in future tissue surface of the denture lined with soft resilient liner for better adaptation.

**Figure 2: Abutment preparation**



**Figure 3: Cemented metal copings****Figure 6: Maxillary overdenture****Figure 4a: Final maxillary impression****Figure 7: Completed prosthesis****Figure 4b: Final mandibular impression****Figure 5: Wax try-in**

### 3. Discussion

Various literature studies showed that the elderly people affect with their loss of tooth due to periodontal condition and dental caries. Patient with poor oral hygiene treated with complete conventional removable prosthesis. The preservation of remaining teeth at the same time preserves the residual alveolar bone around remaining roots is utmost important (Preiskel, 1996). The basic overdenture concept requires preservation of residual hard and soft tissues. The overdenture patients had a chewing efficiency which was one-third higher than that of conventional complete denture wearers. [6] Tallgren concluded that anterior mandible height resorbed four times faster than maxillary ridge with conventional dentures. [7] It was concluded in a 5-year study that retention of mandibular canines for overdentures led to preservation of alveolar bone. [8] The use of immediate denture fabrication for temporary rehabilitation prior to definitive overdentures can provide comfort to the patient during the treatment. The root supported overdenture is a better alternative for a treatment option to conventional dentures since the proprioception is maintained and improves stability and retention. [9]

One of the most important requirements to the success of overdentures is the patient's awareness of their need to improve oral hygiene of the remaining roots used for support and/or retention. The patient must be instructed to correct techniques of oral hygiene to improve considerably the longevity of the oral rehabilitation as long as possible [10][11]. After the overdenture treatment planned, care should be taken by the patient to maintain plaque free oral health. Also dentist should check for pocket formation around the abutments, failure leads to caries formation around the cervical region of abutment tooth. [11] Regular follow up visits important for the longevity of the treatment. The patient was satisfied with his dentures in terms of function and aesthetics due to preservation of hard and soft tissues as well as proprioception. Finally overdenture treatment provides excellent long-term success and survival, including patient satisfaction, improved oral functions and oral health related quality of life.

#### 4. Conclusion

The over denture described are a deviation from the normal dental treatment methods. These are definitively advantageous to the patient and therefore should be undertaken whenever the clinical situations provide an opportunity. The patient was satisfied with these kind of over dentures to improved oral functions and oral health related quality of life. Concluded that success of tooth supported over denture depends on proper case selection, ideal abutment selection, good periodontal support and endodontic factors. Dentist also plays an important role for proper case selection and periodic reviews.

#### References

- [1] Glossary of prosthodontic terms. *Journal of Prosthetic Dentistry*, 2001; Volume 94, Issue 1, Pages 10- 92.
- [2] Winkler S. Essentials of complete denture prosthodontics, second edition, 2000, 384-402.
- [3] Rahn A, Heartwell C. Textbook of Complete Dentures, 5<sup>th</sup> Ed. WB Saunders Co., Philadelphia, 1993.
- [4] Deepak N, Karthikeyan R, Textbook of prosthodontics, first edition 2007, 259-262.
- [5] Kalpana C, Prasad K V. Seeing the unseen: Preventive prosthodontics: use of overlay removable dental prosthetics. *Annals and Essences of Dentistry* 2010;2:44-49.
- [6] Rissin L, House JE, Manly R, Kapur K. Clinical comparison of masticatory performance and electromyographic activity of patients with complete dentures, overdentures, and natural teeth. *The Journal of prosthetic dentistry* 1978; 39:508-11.
- [7] Tallgren A. The continuing reduction of the residual alveolar ridges in complete denture wearers: a mixed-longitudinal study covering 25 years. *The Journal of prosthetic dentistry* 1972; 27:120.
- [8] Crum RJ, Rooney Jr GE. Alveolar bone loss in Overdentures: a 5-year study. *The Journal of prosthetic dentistry* 1978; 40:610-3.
- [9] Batista V E de Souza et al. Root supported overdentures associated with temporary immediate prostheses-A case report. *OHDM*. Vol 13:No.2:June 2014
- [10] Brkovic-Popovic S, Stanisic-Sinobad D, Postic SD, Djukanovic D. Radiographic changes in alveolar bone height on overdenture abutments: a longitudinal study. *Gerodontology*. 2008; 25: 118-223.
- [11] Shrivastava R, Awinashe V, Srivastava R. Simple Overdenture Technique, Lasting Results-A Case Report. *NJDSR* 2012; 1: 37-41.