



International Journal of Current Research Vol. 8, Issue, 11, pp.42288-42291, November, 2016

## RESEARCH ARTICLE

### OVERDENTURE MADE EASY AND SIMPLE-A CASE REPORT

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### ARTICLE INFO

#### Article History:

Received 12<sup>th</sup> August, 2016 Received in revised form 20<sup>th</sup> September, 2016 Accepted 17<sup>th</sup> October, 2016 Published online 30<sup>th</sup> November, 2016

# Kev words:

Overdenture, Stud attachment, Essential dental systems.

### **ABSTRACT**

Masticatory function, aesthetics is affected due to tooth loss. Loss of dentition leads to constant remodelling and bone loss is inevitable. The main aim of tooth supported overdenture is to preserve the alveolar bone and maintenance of proprioception. Improved retention, stability, decrease in alveolar bone resorption can be achieved by tooth supported overdenture.

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Citation: Dr. Subashani and Dr. Sunil Dhaded, 2016. "A Geographical Appraisal of Health Care Facilities in Lakshadweep Islands", *International Journal of Current Research*, 8, (11), 42288-42291.

#### INTRODUCTION

An overdenture can be described as any removable dental prosthesis that can rest on one or more remaining natural teeth, the roots of natural teeth or dental implants. By preserving roots it provides psychological benefit to the patient, improving retention, stability and preservation of residual ridge. Renner at all showed that a 50% of roots used as an overdenture abutment remained immobile and became less mobile that was initially mobile (Renner *et al.*, 1984; Kenney and Richards, 1998; Guttal *et al.*, 2011). The mobility of abutment teeth can be decreased after reduction in crown root ratio because of decrease in the length of lever arm delivering the torque to mobile teeth. The important goals of overdenture are to maintain teeth as a part of residual ridge preserve the alveolar bone and increases the patient manipulative skills in handling the denture.

#### Advantages

Preservation of alveolar bone
Preservation of proprioceptive response
Support
Retention
Periodontal maintenance
Patient acceptance
Convertibility

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Harmony of arch form.

## Disadvantages

Caries susceptibility
Bony undercuts
Over contour
Under contour
Encroachment of interocclusal distance and aesthetics.

### Stud attachments

# Attachments are divided into 2 groups

Extra radicular: male element projects from root surface of the preparation or implant; Intraradicular: In which male elements form part of the denture base and engages a specially produced depression within root contour. The various types of stud attachments are dallabona, gerber, ceka, rotherman, Introfix and microfix. Stud devices are simplest of all attachments.it provides additional retention, stability and support. Considerable retention and stability is provided by prefabricated attachments which are versatile.

# A CASE REPORT

A 60 year female patient reported to the department with the chief complains of loosening of teeth and difficulty in chewing. On Clinical examination revealed partial edentulous condition of maxillary and mandibular arches. As remaining

teeth were periodontally compromised, RPD would not restore function and aesthetics (Figure-1).

The different treatment options available to the patient were

- Extraction of remaining teeth followed by conventional complete denture
- Extraction followed by implant supported denture.
- Tooth supported overdenture

The treatment planned for this patient was extraction of teeth with unfavorable prognosis retaining canine and premolar in maxilla and canine in mandible (Figure-2) followed by construction of overdenture as the patient was interested to retain the firm tooth present. After the endodontic treatment the abutment teeth were reduced up to few millimeters above the gingival level and the preparation was rounded to dome shaped contours. The post system is ball and socket attachment. The post space preparation was done using access post kit of Essential dental systems (Figure-3). It consists of primary reamer, counter sinkdrill (Figure-4), access post and nylon cap. The post space was determined using periapical radiograph. 3-5mm gutta-percha was retained. The post space was prepared using primary reamer for maxillary canine and premolar. Secondary tier preparation and flange was created using countersink drill (Figure-5). The fit was determined by trial insertion of access post. Cementation was done after the fit and length of the post was verified (Figure-7). The mandibular canine coping was made after tooth preparation (Figure-6& 8). Primary impression was made and custom tray was fabricated (Figure-9).



Figure 1. OPG



Figure 2. Partial edentulous condition



Figure 3 & 4. Essential dental systems-access post kit



Figure 5. Tooth preparation and post space preparation done



Figure 6. Tooth preparation done



Figure 7. Cementation of stud attachment



Figure 8. Cementation of coping



Figure 9. Primary impression

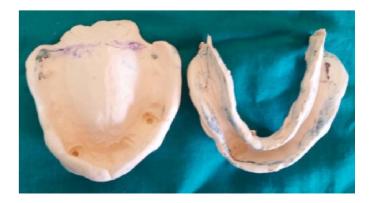


Figure 10. Secondary impression

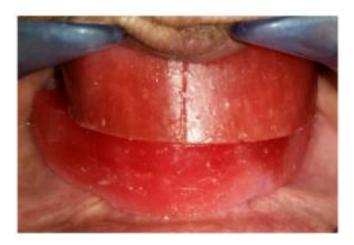


Figure 11. Jaw relation



Figure 12. Try -in



Figure 13. Insertion of prosthesis



Figure 14. Nylon cap in position



Figure 15. Final prosthesis

Border moulding was done and secondary impression was made using zinc oxide eugenol (Figure-10). Jaw relation was recorded followed by teeth arrangement (Figure-11). Try-in was done and the prosthesis was processed (Figure-12&13). Rubber band was placed over the contour of ball post and female caps placed in position (Figure-14). The nylon caps were transferred to the tissue side of the maxillary denture by using auto polymerizing resin (Figure-15). The rubber band was removed and excess flash was trimmed.

#### **DISCUSSION**

The quality of life of the complete edentulous patient is affected because of the disturbances in the integrity of the masticatory system with adverse functional, esthetics and psychological sequelae. Support, bone preservation and occlusal vertical dimension can be maintained by the preservation of teeth in both arches of overdenture. The loss of all natural teeth can cause psychological scarring to few patients. So, by retaining at least the root structure and coronal portion of the natural teeth in such patients causes emotional upliftment. 1:2 crown/root ratio and at least 5mm of bone is essential for ball attachment. The occlusal forces are transmitted as tensile load to the underlying bone by periodontal fibers when the teeth are devitalized and used as secondary abutments (Rahn et al., 2015). The teeth does not require parallelism when stud attachment is placed in different roots and allow for the rotation of denture. This type of attachment occupies a small vertical space. The access post kit consists of primary reamer, countersink drill, access post and nylon cap (Sunil and Neha, 2011; Cohen et al., 1995). Patented split shank design delivers maximum retention with minimal

Flange and second tier preparation provides greater stability of the post and dissipate forces of occlusion that otherwise fracture the post or root. The access posts are ball and socket attachment which allows rotation of denture attachment. Thick walled hallow tube design which provides strength of solid shank post (Cohen *et al.*, 1993; Rovatti *et al.*, 1994). 3-5ponds of retention is provided by the standard nylon caps available with this access post kit. The nylon caps are economical and can be replaced when required.

#### Conclusion

Overdenture rehabilitation with root supported overdenture is an effective treatment modality. Reduction in the shrinkage of surrounding bone, pressure on alveolar ridge is prevented by overdenture. The primary goals of an overdenture can be achieved by access post retained denture and the passive post also provides necessary strength, retention and stability a restoration requires. This attachment is patient friendly and easy to clean. The results are excellent if proper oral hygiene is maintained and appropriate case selection is done.

# Acknowledgements

I would like to thank my HOD Dr.Sunil Dhaded who helped be to complete this case from beginning till end with lots of patience and also for getting this attachment. Without my sir this case would not be completed. Thanks to Almighty and parents for giving me opportunity to be a student under his guidance and he is my inspiration.

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