

Combo-support for a partial flangeless overlay denture in compromised circumstances - A case report

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Abstract

Overdenture is a favoured treatment modality for elderly patients with few remaining teeth which preclude the inevitability of “floating plastic” in edentulous mouths. Roots maintained under the denture base preserve the alveolar ridge, provide sensory feedback, retention and improve the stability of the dentures. The preservation of teeth to support an attachment-retained overdenture is an appropriate and stable alternative to extractions and complete dentures. Furthermore, the use of copings and precision attachments on the remaining teeth enhances the retention of the denture. This case report discusses a simple and cost effective alternative treatment for enhancing retention and esthetics by fabricating a flangeless tooth supported overdenture retained with different abutments such as non coping abutments and coping abutments with attachments.

Keywords: Over denture, Abutments, Partial flange, Esthetics.

Introduction

The overdentures are now a feasible alternative method to most treatment plan outlines in the construction of a prosthesis for patients with few remaining teeth because of increasing stress on preventive prosthodontics by keeping patient away from consequences of edentulous state.⁷

Over centuries practitioners have successfully employed the use of removable complete denture that overlies retained teeth, tooth roots, or dental implants for overdenture treatment.⁴ An overdenture is supported by both soft tissue and a few remaining natural teeth. The remaining natural teeth are altered and prepared to permit the denture to fit over them.⁷ The preservation of supporting teeth for overdenture abutments provides an efficient prosthetic treatment as it preserves proprioceptive impulses supplied by periodontal membrane of teeth by this myofacial nervous complex is retained. Along with proprioceptive response it also preserves alveolar bone, enhances support and retention.⁴ However, tooth preservation requires proper diagnosis and planning for acceptable long-term performance, while the remaining roots are used to maintain sufficient alveolar bone height and periodontal support for proprioception.⁵

Apart from many advantages of overdenture, cases for overdenture with excessive bony prominence along with undercuts and abutments at different positions leads to limited path of insertion and decreasing the esthetics of patient. So fabricating an overdenture with modified flange will help to overcome this problem.⁴

Based on method of abutment preparation along with contemporary clinical terminology tooth supported over denture classified into non-coping, coping and attachments.²

Abutment attachments may connect either single tooth or splinted teeth to the prosthesis. After the

analysis of the occlusal vertical dimension and each tooth's vertical bone height attachment selection is determined. Various designs of overdenture attachments are available, including bar and clip, bar and stud attachments, ball and O-ring and magnet attachments. The selection of the most appropriate attachment design depends on the number, distance, and location of the remaining natural teeth. Of all these attachment systems, the ball attachment system is considered as resilient mechanical attachment and appropriate.⁵

The purpose of this clinical report is to describe the clinical management of edentulous patient with few remaining teeth and bony prominent premaxillae by giving overdenture with ball attachments and partial covered flange to increase retention and esthetics.

Case Report

A 50 years old female patient with good general health has reported to the Department of prosthodontics, crown and bridge, Mamata Dental College and Hospital with a chief complaint of missing teeth in mandibular and maxillary arches, and has difficulty in chewing requesting for replacement of missing teeth. Her medical history was not contributory. Patient has been edentulous since 7 years and on extraoral examination patient has ovoid face with normal muscle tone without any TMJ problems. On intra oral examination patient has completely edentulous mandibular arch with partially edentulous maxillary arch (Kennedy's class I modification 2), and also labially inclined pre maxilla with severe undercut. In maxillary arch both right and left central incisors and canines were retained. (Fig. 1A and 1B).

A comprehensive examination was done for proper diagnosis and treatment planning which includes radiographs and diagnostic mounting.

As patient was not willing for any preprosthetic mouth preparation, extraction followed by osseous recountouring of ridge was not performed leaving persistence of bony prominence compromising the esthetics which can be over come by planning partial flangeless denture. Several treatment options were offered to the patient, and it was planned to construct a complete mandibular denture and maxillary overdenture without and with copings along with ball attachments. The ability to accommodate abutment copings was assessed, and ball attachments were selected for maxillary right and left canines and maxillary central incisors were endodontically treated reduced in vertical height to the level of the gingiva, and covered with amalgam plug. (Fig. 3)

Endodontic treatment was performed and abutment teeth were prepared to create adequate space for the overlying denture. The teeth were reduced to 3 to 4 mm above the gingiva, and the teeth were rounded to a dome-shaped contour. (Fig. 2) The preservation of the teeth to be used as retentive attachments to support an overdenture is a short term, effective procedure when implant therapy was not performed. The bone height

and periodontal support of the remaining roots determined which attachments could be used. The patient's remaining roots provided good reasonable bone height and periodontal support so ball attachments were used.

After tooth preparation impression was made and customised coping with ball attachments fabricated were cemented in relation to respective teeth (Fig. 3). Subsequently followed by secondary impression made with poly vinyl siloxane material. As the patient presented with anatomical variation such as labially prominent alveolar ridge with undercut, labial flange of maxillary denture was reduced in such a way to result in esthetically acceptable prosthesis. Maxillomandibular relation was recorded followed by satisfactory try-in, the waxed up denture was processed in conventional manner.

Definitive prosthesis was modified to receive resilient caps and inserted. (Fig. 4) The patient was instructed to comply with an oral hygiene program that included the use of fluoridated toothpaste and a 6-month recall schedule.

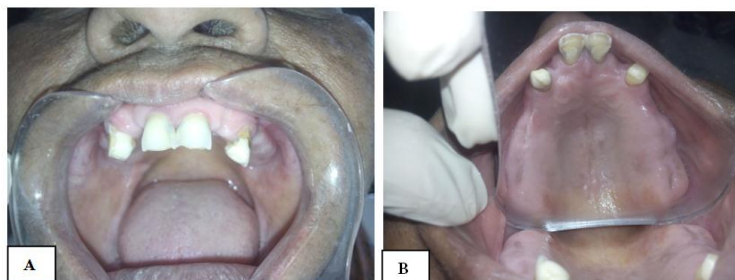


Fig. 1A and B: Partially edentulous maxillary arch (retained 11,21,13,23)



Fig. 2: Prepared abutment teeth



Fig. 4: maxillary denture with nylon caps



Fig. 3: Abutment teeth cemented with coping and amalgam plug



Fig. 5: Partial flangeless overdenture with improved esthetics

Discussion

In the present case patient reported with a labially prominent premaxilla with severe bony undercuts which precludes normal complete coverage flange. Undercuts are difficult to manage by proper contouring the denture base for optimum function. This leads into an overcontoured flange does not interact well with facial musculature, improper lip fullness that disturbs its natural drape and resulting to poor esthetics to patient.⁴

In order to avoid this problem partially covered flange is given instead of fully covered flange in order to eliminate bony undercut and over contouring of face. In partially covered denture, labial flange is usually finished with the border extended about 1mm beyond the maximum bulbosity of the ridge.¹ In this patient anterior flange portion from maxillary left canine to right canines portion was removed to avoid over contouring and to improve esthetics. (Fig. 5)

When the periodontal response or alveolar bone levels or crown-to-root ratios were not adequate to support a prosthesis. An overdenture helps utilization of the advances in periodontal and endodontic therapy in conjunction with a greatly reduced crown-to-root ratio to give a viable alternative to treatment.⁴ The crown length of abutment teeth is reduced to produce a dome shaped to root face which reduces the mechanical advantage of potentially damaging horizontal forces. This also helps to increase the life of abutment teeth.¹

In this case, both right and left central incisors teeth were endodontically treated and reduced to gingival level and amalgam plug restoration is given in order to create enough space for overdenture. On contrary right and left maxillary canines are prepared to receive copings with attachments to improve retention.⁴ The snap fit of the denture in mouth makes the patient more comfortable during functional movements.

The psychological advantage resulting from the dental anchorage, which allows the patient to be more confident in social life. After insertion patient was recalled to assess the abutments as well as denture.

Conclusion

Overdenture helps in improving retention, stability and proprioception. The incorporation of attachments in overdentures into everyday dental practice will open up another dimension in dental treatment planning and patient satisfaction. Partial flangeless overdenture helps to improve esthetics by avoiding over contouring of face.

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