

A Case Report

Bar Versus Stud Attachment Retained Mandibular Over-denture For Rehabilitation of Resorbed Ridges

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Abstract

The most common problem associated with the management of edentulous patients is the severely resorbed residual alveolar ridge of the lower jaw which results in the fabrication of unsatisfactory dentures with poor retention and stability, reduced oral function and may further precipitate psychosocial problems. Implant supported overdentures are seen to be a treatment modality of choice to overcome limitations of traditional denture therapy as they are seen to improve the retention, stability, aesthetics as well as overall patient comfort. Commonly used attachments used to retain implant supported overdenture are stud, bar, magnetic and telescopic attachment.⁽¹⁾

Keywords: Implant supported Overdenture, Resorbed mandibular ridge, Locator attachment, Bar overdenture

Introduction

Prosthetic management of edentulous patients with conventional complete denture offer less retention, stability and comfort to the patient, particularly in mandibular arch. Use of attachment retained implant supported overdenture increases the retention, stability, support, masticatory efficiency, proprioception and decreases the rate of ridge resorption which makes it an acceptable treatment option in resorbed mandibular arch.⁽¹⁾ Implant supported overdentures employ the use of different retention systems that are broadly categorized as splinted or unsplinted. The splinted attachment systems are the bar attachments while the unsplinted systems comprise spherical/ball types, magnets, telescopic crowns or stud type attachments. The unsplinted systems are indicated in clinical situations with diminished inter-arch distances and are further advantageous in terms of hygiene, ease of fabrication and initial treatment cost whereas bars present the lowest rate of prosthetic complications.⁽⁴⁾ The use of two implant overdenture is not the gold standard for implant therapy, it

is the minimum standard that should be appropriate for many people, taking performance, satisfaction of the patient, cost and clinical time into consideration.^(2,3)

Case Report1:

A 76-year female patient had reported to the Department of Prosthodontics with the chief complaint of loose upper and lower denture. Clinical examination revealed extremely resorbed lower ridge with implants in #33 and #43 region placed 5 years back and rehabilitated with ball abutment retained mandibular overdenture and conventional maxillary complete denture. Attachments inserts had dislodged in lower overdenture and both dentures had compromised retention and repeat of both dentures was planned. Jaw relation revealed reduced vertical distance of 10 mm available for lower overdenture which ruled out the use of ball attachment.

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So, a low profile locator attachment (locator Rt-x Osstem) was selected for retention. (Fig.1) After processing of both upper and lower dentures, following procedure was adopted to pick up housing for locator attachment.

- 1) White coloured block out spacer was inserted above the locator attachment. (Fig.2)
- 2) Then black processing cap was fitted into the metal cap and placed above the blockout spacer.(Fig.3)
- 3) The implant positions were marked on the intaglio surface of the denture and a small space was created and selfcure acrylic (DPI) was filled into that space

and the denture was placed on the mandibular arch. (Fig.4)

- 4) The metal cap along with black processing cap was picked up in the denture after the self-cure acrylic sets. (Fig.5)
- 5) Black processing cap was then removed and retentive attachment cap with low retention of 6N (Blue) was fitted and placed inside the metal cap.⁽⁶⁾ (Fig.6 & 7) Finally, the maxillary and mandibular denture were checked for occlusal errors and patient comfort. (Fig.8)



Fig.1 Intraoral picture with locator attachment in place.

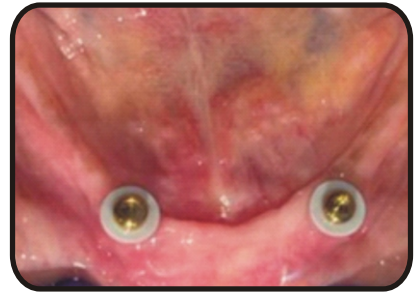
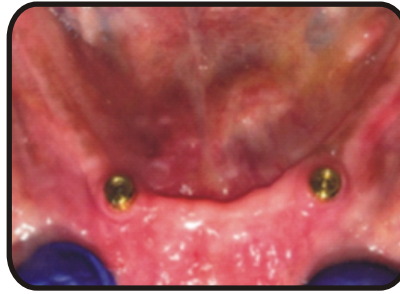


Fig.2 Placement of blockout spacer

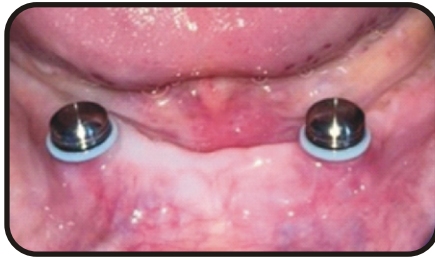


Fig.3 Metal housing with black processing inserts



Fig.4 Denture was modified followed by application of self cure acrylic resin

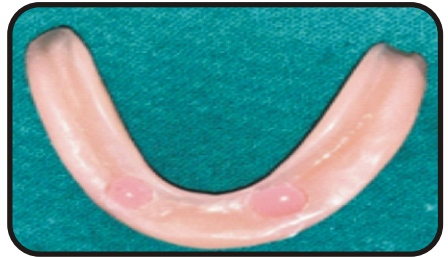


Fig.5 Black processing caps picked in denture

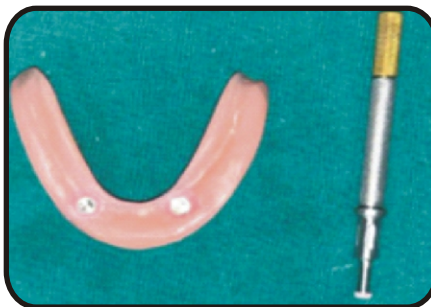


Fig.6 Processing cap was removed



Fig.7 Placement of blue retentive cap



Fig.8 Insertion of the denture was done.

Case Report 2:

A 70-year male patient had reported to the Department of Prosthodontics with the chief complaint of loose upper and lower denture and having difficulty in mastication. On clinical examination, patient was having a bar retained mandibular overdenture with implants in #33 and #43 region placed 6 years ago with conventional complete denture in maxillary arch (Fig.9) Dentures had compromised retention and the lower denture was fractured. So, the patient was advised a new bar retained mandibular overdenture and conventional maxillary complete denture. The following procedure was adopted for the fabrication of overdenture:

1) Impression of the maxillary arch was made with irreversible hydrocolloid (Zhermack Tropicalgin) and mandibular arch was made with putty-light body. (Coltene President)

- 2) The bar portion was poured in pattern resin(GC) followed by Type IV die stone (Kalabhai Kalrock) over it and master cast was obtained.(Fig. 10)
- 3) After that maxillary and mandibular complete dentures were processed. Space below the bar was blocked out by carding wax and metal clip with nylon insert (Ceka attachment, Preci Line) were placed over bar. (Fig.11)
- 4) Then, the denture was trimmed and space was created from the bar portion followed by application of self-cure acrylic resin.(Fig. 12) After that the clips were picked up after seating and removal of the denture intraorally.(Fig. 13)
- 5) Maxillary and mandibular denture were checked for occlusal errors and patient comfort. (Fig.14)



Fig.9 Intraoral picture with bar attachment in place.

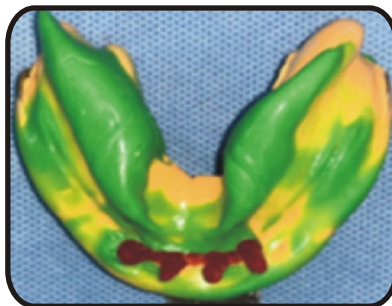


Fig.10 Portion of the bar was poured with pattern resin

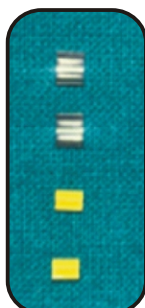


Fig.11 Space was blocked out by carding wax and housing with nylon clip were placed over bar



Fig. 12 Denture modification and self-cure acrylic application



Fig.13 Picked-up clips in denture



Fig.14 Final Insertion of the prosthesis

Discussion

Compared with complete denture, implant-supported overdenture improves the stability of the prosthesis. Increased number of implants may guarantee more retention. However, there is a problem of increased cost and anatomical limitations in severely resorbed residual ridges, especially in the mandible. Several studies have demonstrated that the two-implants-supported overdenture therapy can be considered as a very reliable treatment for patients with an edentulous mandible.⁽²⁾

The choice between a bar and locator attachment for a mandibular overdenture in the rehabilitation of resorbed ridges involves careful consideration of various factors. Both attachment systems have their advantages and considerations that should be taken into account during the treatment planning process.

A bar-supported overdenture involves the use of a metal bar that is attached to implants. The overdenture then clips onto the bar. It provides stability and support to the denture, reducing lateral forces and improving overall retention. They are suitable for cases where there is a significant resorption of the ridge and more support is needed. Locator attachments on the other hand consist of male and female components with a resilient, flexible, and self-aligning design. It provides good retention and stability, allowing for some degree of movement and rotation. It is a low profile attachment requiring less vertical space compared to a bar attachment which require 14 mm of average vertical space, making it suitable for cases with limited inter-arch space.⁽⁵⁾ Hence, in first case report, locator was used instead of ball attachment.

Various factors like number of implants, interridge distance, type of prosthesis, amount of retention, patient expectation and cost factor have to be considered while selecting attachment for a successful prosthesis.⁽¹⁾

Conclusion

These clinical reports describe step by step procedure for fabricating implant supported overdenture utilising both low profile attachment such as locator and high profile attachment such as bar.

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