

A Simplified Technique For Attachment Incorporation With An Implant Overdenture

Abstract

Implant supported overdenture retained by attachments are now an established treatment method. Among the available retention systems, ball attachment has been considered a reliable option. Often Clinician face problem of differently inclined abutments and undercut areas located under the head of implant. This article describes the simple method of fixing nylon caps to the denture base and blocking the undercuts.

Key Words

Overdenture, Mini-implants, Blocked Undercuts.

Introduction:

Implant retained over dentures are becoming very popular now-a-days^[1]. Four implants, when placed anterior to mental foramen give a good support to the over denture and provide an economic solution for rehabilitation in severely atrophied mandibular ridges.

Among available retention system ball attachment has been to be reliable. The ball attachment consists of a spherical matrix that is usually screwed into implant assembly. The matrix fits over matrix and provides retention by means of nylon caps. The connection between matrix and denture can be achieved by indirect or direct method. The indirect technique consists of recording denture's soft tissue support as well as positioning the implant in relation so that connection of matrix and relining procedure can be completed in the laboratory. This method has the potential advantages of reduced acrylic resin. However recordings and transferring of implant position with analogs may produce some misfit. Moreover, patient is without the prosthesis during this time. The direct technique for locating ball attachment intraorally is simple, economic, and quick and allows the patient to retain the prosthesis. Few connection procedures have been proposed in the literature. Securing the matrices during direct procedure is important.

Often, the Clinicians face problem of differently inclined abutments and undercut areas located under the head of implants, where the self cure acrylic can

flow while fixing the nylon caps which can lead to problem of removing the denture. Various methods like placing cut portion of surgical gloves^[2], rubber dam^[3] and utility wax^[4] have been suggested for blocking out the undercuts, but clinically they are not very effective. This article describes the simple method of fixing the nylon caps to the denture base and blocking the undercuts.

Procedure

1. Place a orthodontic separator (Liberal Traders Pvt. Ltd, New Delhi, India) around the neck of implant. (Fig 1 & 2)
2. Place the nylon cap on the attachment and position it according to path of removal, if the clinician still notices the space to be blocked, place the true-stretch elastics below the separators with tweezers. (Fig 1 & 2)
3. Place the denture over the ball attachment and disclose the interferences between intaglio surface of denture and attachment system with indelible pencil marker.
4. Carefully relieve the undesirable contacts and provide the space for nylon caps.
5. Fill the holes with self- polymerizing acrylic resin and place the denture with firm finger pressure and ask the patient to occlude until the polymerization is complete. Care should be taken to check the vertical dimension and centric occlusion.
6. Remove the excess acrylic resin from the intaglio and outer surface of denture.(Fig 3)
7. Next remove the excess acrylic resin

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Fig.1 - Undercut Below The Head Of Implants (Shown By Arrow)



Fig.2 - Photograph Showing Blue Colored Orthodontic Separators And True-stretch Elastics Placed In The Undercut Areas While Pink Colored Nylon Caps Placed Over The Implant Head.

around the nylon caps to prevent impingement on gingival peri-implant soft tissue.

8. Remove the elastics as well as separators from the implants.



Fig.3 - Intaglio Surface Of The Denture After The Incorporation Of Nylon Caps.

9. Polish the denture and insert.
10. Guide the patient to occlude in centric relation.
11. Ask the patient to insert and remove the prosthesis on his own.
12. Provide the patient with necessary instructions on insertion, removal and maintenance of the prosthesis.

Discussion

Edentulous patient seek treatment for functional and esthetic requirement. The advent of osseointegration has vastly improved outcome related to treating edentulous patients because it has provided for the management of edentulism to extend beyond that previously attainable by complete denture.^[2] The successful use of endosseous implants in the treatment of mandibular edentulism is well documented for both fixed and removable prosthodontic reconstruction^{[3],[4]}. However prosthetic options have been expanded over time with principles same as from removable prosthodontics and introduction of implant supported and implant retained overdenture design. Implant retained is a cost effective alternative to the implant supported options because it uses a minimal number of implants and relatively straight fabrication protocol.^[5]

Successful implant therapy requires detailed planning and precise execution to ensure a successful and predictable outcome. The path of placement for a mandibular implant overdenture may be more forgiving biomechanically and esthetically than the fixed implant prosthesis; however, accurate placement of the attachment into the overdenture is critical for patient comfort, function and tissue preservation.

Malrelation to the denture to the implant can exert excessive forces on the implant, trauma to the mucosa and underlying bone,

premature wear of the attachments and loss of implant integration.

Various procedures are available for relating the keyway component of the attachment in the overdenture to the key component of the attachment of the abutment. Attachments can be incorporated as an indirect procedure during the laboratory processing of the denture or as a direct clinical procedure in the mouth. Direct clinical placement of the attachment requires minimal chair time, can be accomplished relatively easily, does not require additional laboratory procedures or component parts, and can be provided at the time of the insertion of the prosthesis. However, it is critical that the denture be properly positioned in the mouth and stabilized while the keyway component of the attachment is being connected to the denture base. Bonding the attachment to the denture base in the mouth is achieved with autopolymerizing acrylic resin. Denture base movement is especially likely to occur in the atrophic class IV edentulous ridge. When multiple attachments are connected to the denture base at the same time, incorrect positioning of the keyway attachment component and/or risk of locking the acrylic resin around the implant may occur.

Fixing of nylon caps with self cure polymerizing acrylic can lead to flow of the acrylic below the undercut leading to problems in removing the denture from the implants^[6].

Use of rubber dam as well as cut portion of surgical gloves has been suggested in the literature^{[6],[7]} but we found the presented method to be more effective as rubber dam and cut portions of gloves are not stiff to hold the nylon caps during the polymerization. Same case lies with utility wax^[8] as it gets displaced during the pick-up procedure. Use of orthodontic separators and elastics is more reliable and comfortable as separators are stiff and do not get displaced during the pick-up procedure. While elastics can block the minor undercuts which the separators may not be able to block.

Conclusion

The case report discusses an easy and economical solution for block out the undercut below the neck of overdenture implants. The method is an easy procedure which can be used chair side by the Prosthodontist.

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