TPM Vol. 32, No. S5, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

IMPLANT RETAINED OVERDENTURE USING LOCATOR ATTACHMENTS IN A COMPLETELY EDENTULOUS PATIENT: A CASE REPORT

VANDANA RAI
MDS, SENIOR LECTURER, DEPARTMENT OF PROSTHODONTICS AND CROWN AND BRIDGE, SREE BALAJI DENTAL COLLEGE AND HOSPITAL, CHENNAI.

MOHAMMAD ALEEMUDDIN
MDS, LECTURER, DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS, YENEPOYA (DEEMED TO BE UNIVERSITY), YENEPOYA DENTAL COLLEGE, MANGALORE, KARNATAKA.

BHAVYA BONDWAL
POST GRADUATE RESIDENT, DEPARTMENT OF PROSTHODONTICS, CROWN AND BRIDGE, SREE BALAJI DENTAL COLLEGE AND HOSPITAL, BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH, CHENNAI.

PAVITHRA V.R
MDS, SENIOR LECTURER, DEPARTMENT OF PROSTHODONTICS AND CROWN AND BRIDGE, SREE BALAJI DENTAL COLLEGE AND HOSPITAL, CHENNAI.

SHANTANA LAKSHMI C.B
MDS READER DEPARTMENT OF PROSTHODONTICS,CROWN AND BRIDGE
SRI RAJIV GANDHI COLLEGE OF DENTAL SCIENCES AND HOSPITAL BANGALORE

MOHAMMED DHANISH M R
SAVEETHA MEDICAL COLLEGE, SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

ABSTRACT
For prosthodontists, treating fully edentulous patients is a significant challenge. Many elderly patients struggle with conventional complete denture treatment, often finding that a complete mandibular denture is too loose or ill-fitting. These issues are common among patients who use conventional dentures and can often be resolved with practical solutions. For the treatment of an edentulous mandible, an implant overdenture (IOD) supported by two implants is currently the minimal standard of care. The patient in this case study is receiving rehabilitation using two mandibular implants with attachments for locators to support an overdenture as well as a traditional complete denture in the maxilla.

KEYWORDS: Implant, overdenture, locator attachment, abutment.

INTRODUCTION

A completely edentulous patient faces numerous systemic challenges, including dyspepsia, poor nutritional status, and oral dysfunction. Although conventional complete dentures are the standard treatment for edentulism, their effectiveness is often limited due to issues such as denture instability, reduced efficiency of masticatory, as well as ongoing resorption of bone, specially in the mandible.[1] In contrast, implant-supported overdentures offer a superior alternative. These overdentures are anchored to implants, as opposed to traditional dentures that rest solely on the residual ridge. Compared with full dentures, mandibular implant-supported overdentures offer better masticatory function, increased patient satisfaction, and an improved life quality associated with oral health, especially if positioned in the interforaminal area.[2,3,4] For patients with resorbed alveolar bone, traditional prostheses often fail to stay in place, leading to reduced usage. For these individuals, especially those with severely resorbed ridges and unstable mandibular dentures, implant-supported overdentures present a cost-effective and minimally invasive alternative. These prostheses can be secured to implants using various attachments, including unsplinted systems like

ball anchors, locators, double crowns, and magnets, as well as splinted systems such as bars. The attachment of Locator which was presented by Zest Anchors in the year 2000, is a widely utilized nonsplinted system. For overdentures retained by implants, the dual retention system and self-aligning (both inner and outer) designs simplify replacements and repairs, making them quick and easy.[5] Furthermore, in comparison to other attachment systems like balls, bars, and magnets, the Locator attachment offers minimal occlusal space as well as a lower risk of denture base fracture, making it appropriate for cases with reduced vertical height.[6] The Locator system includes three color-coded inserts with varying values of retention: Extra-light retention (6.67 N) is provided by the blue insert, light retention (13.3 N) is provided by the pink insert, and medium retention (22.2 N) is provided by transparent insert.[7] In this case study, a fully edentulous mandibular arch is treated with an implant-supported overdenture with Locator attachments, while the maxillary arch is treated with a traditional complete denture.

CASE REPORT

The patient, 60-year-old male reported to our department for prosthetic rehabilitation since his chief complaint was that his lower denture was unstable, which was causing masticatory disturbance.

CLINICAL FEATURES: On examination (Figure 1), the maxilla and mandible were found to be completely edentulous. The maxillary ridge exhibits good height and is well-formed while the mandibular ridge has undergone resorption. In addition, there was a decrease in vertical face height. The patient was presented with treatment options of mandibular implant supported over-denture, implant supported fixed prosthesis and new conventional complete dentures for the maxillary arch. Considering the patients inability to afford a fixed implant-supported prosthesis, it was decided to rehabilitate the patient with the over-denture alternative, which was stabilized by two dental implants with locator attachments for the mandibular arch and conventional complete denture for the maxillary arch.

A comprehensive medical and dental history was documented. Study models of the maxillary along with mandibular arches were created, as well as an OPG along with a CBCT scan was performed to evaluate bone quality for implant selection and placement.

Figure. 1 Preoperative view of Maxillary arch

TREATMENT PROCEDURES

1. FIRST STAGE SURGERY: Following standard procedures, two implants were inserted into the mandibular arch. (Figure.2)

Figure 2. Radiographic Features with implants in mandibular arch

2. SECOND STAGE SURGERY: Patient was recalled for evaluation after three months to assess the healing of the implant sites. The implants had satisfactory osseointegration and had implant site healed completely. Stage two surgery was performed for the implants and healing abutments were placed. (Figure 3)

Figure 3. Implants with healing abutments

3. PROSTHETIC PHASE Alginate impression material was used to make the primary impression, from which a primary cast was produced. On the primary cast, a special tray was constructed. Following border moulding, the master cast was retrieved and a secondary impression was produced (Figure 4). Jaw relation records were made using wax occlusal rim. Facebow was captured using the Hanau wide-view articulator and then transferred. (Figure 5,6) Semi-anatomic teeth were used and tried. (Figure 7) The denture was processed with the locator housing in the denture base. The insertion, finishing polishing, and curing of the denture were completed. The patient was called back for follow-up on a regular basis. The patient was content with his upper and lower denture.(Figure 8)

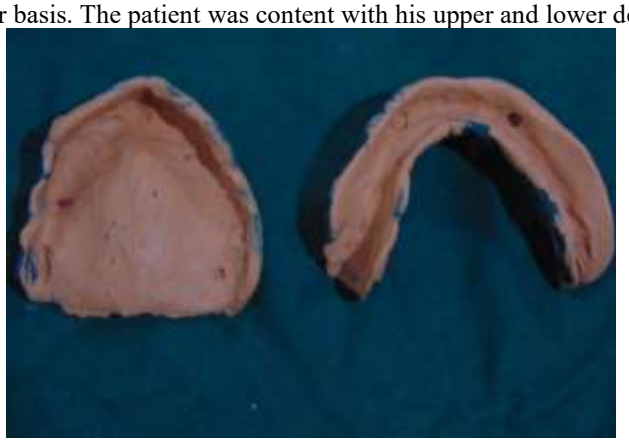

Figure 4 Border moulding

Figure 5 Facebow Transfer

Figure 6 Articulation on Hanau

Figure 7 Try in

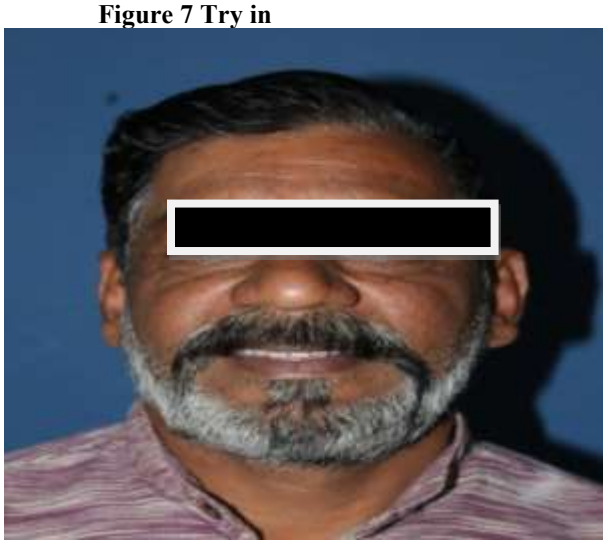

Figure 8 Final Prosthesis insertion

INCORPORATION OF LOCATOR ATTACHMENTS IN THE EXISTING DENTURE AS DIRECT CHAIRSIDE PROCEDURE

When processing dentures in the lab, locator attachments can be added indirectly or directly at the chairside. A direct chairside approach was chosen in this instance, and the procedure is explained below.

- Locator abutments were selected with the intention of keeping the shortest abutment possible to maximize exposure of the retentive element, taking into account the implant's depth along with the mucosa's thickness. After that, healing abutments were taken out.
- The locator abutment tool was used to manually tighten the locator abutments after they had been screwed straight into the implants.
- In order to stop acrylic resin from getting into unwanted places, spacer rings were placed over the heads of each abutment.
- Each abutment had a locator processing cap attached to it.
- The denture base was prepared by creating relief areas, and these voids were filled with cold cure resin.
- The denture was positioned correctly, and until the acrylic resin was completely polymerized, occlusal contact was maintained.
- The prosthesis was taken off after polymerization, and the white spacer rings were thrown away.
- Using the insert seating tool, the desired Locator insert was inserted into the metal housing. By choosing from a variety of readily interchangeable plastic retentive inserts, the retention level can be changed.
- Any extra acrylic resin was removed by adjusting the denture's fit surface.

Figure 9 Lower Denture with space for metal housing

Figure 10 AlphaLocUnibase connected to implant

Figure 11 Alphaloc unicover attachment

Figure 2 Locator attachment

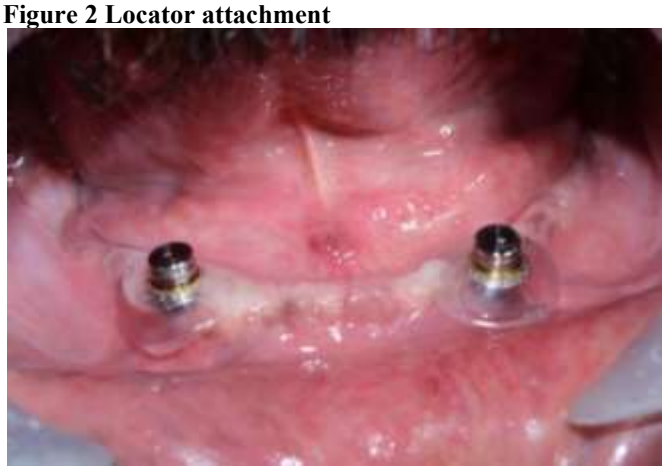

Figure 12 Block out spacer were used to prevent acrylic resin from being locked into the undercut areas

Figure 13 Encasement of the metal housing in the lower denture

DISCUSSION

Better chewing function and mandibular denture stability and retention are provided by implant-supported overdentures. As the denture is not movable, patients also express higher levels of aesthetic satisfaction.[8] Implants stop additional bone loss, and there are very few major side effects and an at least 95%[8] long-term achievement rate for implants which was positioned in the lower jaw.[9] When choosing an attachment method for implant-retained overdentures, several considerations need to be considered. Which include the quantity as well as positioning of implants, the arch's shape, patient expectations, the amount of interarch space that is available, the necessary level of retention, and financial limitations [9]. In this case study, the patient decided to proceed with implant-supported overdentures with Locator attachments since they were unhappy with keeping their current denture in place. This method was chosen due to its affordability and ease of use. Oral function significantly improved after the implantation of a maxillary full denture as well as a mandibular implant-supported overdenture. This case report highlights the direct chairside technique used to place locator attachments onto implants, which minimizes chairside time. Assembling the caps onto the denture base requires careful denture alignment and stabilization.

Advantages of the Locator system include:

- Modification of current removable prosthesis.
- Repairing a prosthesis is easy.
- Adjustable retention.

Disadvantages include:

- Limited divergence of implants.
- Continued reliance on mucosal support.
- Regular maintenance is needed for matrix component replacement and repair.

REFERENCES

1. Geckili O., Bilhan H., Mumcu E., Davan C., Yabul A., Tuncer N.: Comparison of patient satisfaction, quality of life, and bite force between elderly edentulous patients wearing mandibular two implant-supported overdentures and conventional complete dentures after 4 years. Spec Care Dentist 2012; 32: pp. 136-141.
2. Melas F., Marcenes W., Wright P.S.: Oral health impact on daily performance in patients with implant-stabilized overdentures and patients with conventional complete dentures. Int J Oral Maxillofac Implants 2001; 16: pp. 700-712.
3. Assad A.S., Hassan S.A., Shawky Y.M., Badawy M.M.: Clinical and radiographic evaluation of implant-retained mandibular overdentures with immediate loading. Implant Dent 2007; 16: pp. 212-223.
4. Elsyad M.A.: Patient satisfaction and prosthetic aspects with mini-implants retained mandibular overdentures. A 5-year prospective study. Clin Oral Implants Res 2016; 27: pp. 926-933.
5. Evtimovska E., Masri R., Driscoll C.F., Romberg E.: The change in retentive values of LOCATOR attachments and hader clips over time. J Prosthodont 2009; 18: pp. 479-483.
6. Elsyad M.A., Errabti H.M., Mustafa A.Z.: Mandibular denture base deformation with LOCATOR and ball attachments of implant-retained overdentures. J Prosthodont 2016; 25: pp. 656-664.

7. Jabbour Z., Fromentin O., Lassauzay C., Abi Nader S., Correa J.A., Feine J., et. al.: Effect of implant angulation on attachment retention in mandibular two-implant overdentures: a clinical study. Clin Implant Dent Relat Res 2014; 16: pp. 565-571.
8. Doundoulakis J.H., Eckert S.E., Lindquist C.C., Jeffcoat M.K., Doundoulakis J.H., Eckert S.E., et. al.: The implant-supported overdenture as an alternative to the complete mandibular denture. Journal of the American Dental Association 2003; 134: pp. 1455-1458.
9. Trakas T., Michalakis K., Kang K., Hirayama H.: Attachment systems for implant retained overdentures: a literature review. Implant Dent 2006; 15: pp. 24-34.
10. Misch CE. Contemporary Implant Dentistry; 1999.
11. Cranin A. Atlas of Oral Implantology. St Louis, Missouri, Mosby; 1999.