Overdenture locator attachments for atrophic mandible

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Abstract

Implant-supported overdentures provide a good opportunity for dentists to improve oral health and quality-of-life of patients. Atrophic mandible poses a significant challenge to successful oral rehabilitation with dental implants. In this article, the fabrication of lower overdenture by two narrow platform implants is described with dual retentive, resilient, self-locating locator attachment system. The locator attachment system has the lowest profile in comparison with the ball and bar attachments and is versatile up to 40° of divergence between two implants. By using locators as attachments, we can meet functional, economic and social expectation of patients with ease and satisfaction.

Keywords: Implants, locators attachments, overdentures

Introduction

A common condition in geriatrics patients is the occurrence of edentulism. According to the United Nations Population Division (UN 2011), the share of India's population aged 60 and older is projected to climb from 8% in 2010 to 19% in 2050. One therapeutic approach directed at improving oral function in elderly is use of implant supported overdentures.

According to McGill and York consensus statements it is accepted that the two implant overdenture is not the gold standard of implant therapy, it is the minimum standard that should be sufficient for most people, taking in account performance, patient satisfaction, cost and clinical time.[1] The use of two interforaminal implants with an overdenture can provide long-term neuromuscular benefits for edentulous patients.[2]

Case Report

A 68-year-old female patient reported with major complaint of loose lower complete denture prosthesis. The patient had been wearing a denture for the past 15 years and had a complaint of loose mandibular dentures for the last 5 years. On intraoral examination, the mandibular ridge was found to be severely resorbed. A thorough medical and dental history of the patient was recorded. As per procedure, physician's consent was taken besides doing routine blood investigation and tests.

Maxillary and mandibular study models were made. Orthopantomograph [Figure 1] and Dentascan was undertaken to assess the bone for selection of implants. Since the old denture of the patient was not appropriate for implant supported prosthesis, a new prosthesis was fabricated for the patient in accordance with the physiologic and functional aspects. Dentascan and lower denture were used to fabricate surgical stent. The Noble Active narrow platform implants; size 3.5 mm × 10 mm and 3.5 mm × 13 mm [Figure 2] were placed by surgically raising flap in canine to canine region. The knife edge ridge in the anterior region was flattened and basal bone improved. Standard post-operative surgical protocol was maintained and patient was asked not to use lower denture for 3 weeks. After 3 weeks, lower denture was locally relined with soft liner Mollosil Detax Germany.

After 6 months of the integration period, a definitive prosthodontic therapy was started by exposing the cover screws of implants. 5 mm flared Noble active healing abutments were placed to establish per mucosal seal. After 2 weeks, healing abutments were removed and depth measurements from the implant platforms to the most coronal aspect of the surrounding gingival levels were taken with the help of World Health Organization periodontal probe. Locator Implant Abutment height was computed by measuring the total soft-tissue depth and subtracting 0.5 mm for the platform shifting area of noble active implant.

In the above case, on one side 3 mm and other side 4 mm (Zest Anchors) locator abutment was placed [Figure 3] with

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the help of a special gold plated Abutment Driver. The abutments were tightened to 25-30 N with a torque wrench. The plastic resilient male caps with the metal housing can be processed into the denture by indirect laboratory technique or can be directly picked chair side. This allows denture to be snapped into the locator abutments. The chairside pick-up procedure is same as ball attachments. White blockout spacer or rings [Figure 4] and black processing male are provided by the manufacturer for ease in procedure. In the above procedure, chair side pick-up procedure with auto polymerizing resin was performed and blue male inserts were given to patient for initial few months [Figure 5].

The retention can be increased gradually by changing to higher retentive caps, according to individual patient's usage and needs. These plastic resilient caps can be easily changed chairside during a recall appointment with Locator core tool. The angulation between implants can be measured with angle measurement guide which helps in the selection of specific male resilient cap.

Discussion

This procedure allows fabrication of lower overdenture with Locator Attachments, which have the highest retention and stability followed by ball and then finally magnets as recommended by Sadig.[3]

The study by Cordaro *et al*. concluded that the clinicians found better hygienic conditions and soft-tissue health in locator group.[4]

Vere *et al*. recommended usage of locator system because the problems associated with these prostheses are usually simple to resolve chairside.[5]

According to Cakarer *et al*. it was found that the locator system showed superior clinical results than the ball and the bar attachments.[6] This was further supported by a clinical study conducted by El-Sheikh *et al*. They came to a conclusion that the use of two narrow bone level implants with locator attachments appears predictable and can adequately support an overdenture in cases of mandibular atrophy.[7]

Although ridge augmentation can help to restore ridge volume, grafting procedures can significantly increase patient morbidity, costs and treatment time.[8-10] So this clinical treatment avoids extensive surgical procedure.

Patient must maintain standard protocol of overdenture hygiene and follow-up visits. Posterior bone loss can be an issue, which requires relining procedure of the lower denture. Male cap might require changing in case of loss of retention, which can be carried out by simple chair side procedure.

Figure 1: Orthopantomograph showing severe mandibular atrophy

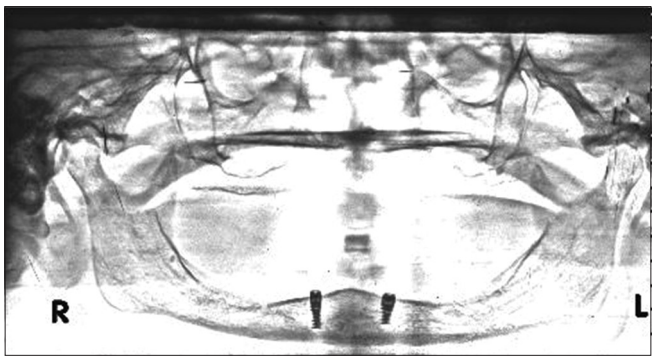

Figure 2: Orthopantomograph showing osseointegrated implants placed in the selected sites

Figure 3: Locator abutments

Figure 4: Locator abutments with White blockout ring/spacer

Figure 5: Tissue surface of the mandibular denture with retentive locator inserts

Conclusion

This article has described a simple, cost-effective, non-invasive and more retentive locator attachment overdenture treatment plan for an atrophic mandible. This treatment prevents the further resorption of residual alveolar ridge, requires less clinical time. Above all, it delivers greater patient satisfaction by giving a comfortable and stable prosthesis that provides better function.

This particular attachment system is relatively new as compared to the bar and ball and magnetic attachments. Further long-term prospective studies will certainly be required to confirm the encouraging results from this clinical case.

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