



Implant Supported Mandibular Overdenture – A Case Report

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Abstract: The totally edentulous mandibular arch is the most commonly encountered clinical scenario in a dental office, and implant-supported overdentures have proven to be the most predictable procedure over time. It's a perfect treatment modality to start a learning curve in implant dentistry because of the greater flexibility of implant position and the enhancement of retention, support, and stability of the overdenture. The following case describes the successful rehabilitation of a resorbed edentulous mandibular ridge using an overdenture supported and retained by two implants placed in the interforaminal region with ball abutments opposing the conventional maxillary complete denture, resulting in significantly improved denture retention and masticatory efficiency when compared to the conventional complete denture prosthesis. Thus, implant supported overdenture turns out to be much simpler, affordable and minimally invasive procedure to treat majority of the patients.

Index Terms - Implant, Overdentures, Edentulous, Ball abutments, Retention.

I. INTRODUCTION

Implant-supported overdentures have shown to be a lifesaver for patients with total edentulism, as they eliminate the problems associated with removable complete dentures, such as inadequate stability and mastication. Because of its adaptability and attractiveness, it appeals to a wide range of potential patients.¹ The results of complete denture prosthesis have improved with the introduction of dental implants, because the problem of retention and stability that a traditional complete denture has is substantially overcome by

implants and their attachment to the complete denture. However, three factors may be crucial for implant-supported prosthesis. For starters, implant supported prostheses are an expensive therapy, except in institutes where they are provided free of charge to patients. Second, the medical condition of the patient, which should accept the implant because it is a foreign body to which regular body cells must adapt rather than react. Third, the multidisciplinary team's ability to plan the prosthesis design through analysis and collaboration. ^{2,3}

Although the number of required implants is dependent on the biomechanics of the current oral condition, a completely resorbed residual alveolar ridge can be successfully repaired with at least two implant-supported prostheses. ⁴

Two ball retained attachments are employed in the mandibular arch in this case study, with each implant holding onto a metal attachment (male) that fits passively with another attachment (female) on the intaglio surface of the denture, resulting in maximum prosthetic stability for the patients. Thus, the complete prosthodontic team was able to produce a highly functional and aesthetically promising implant retained overdenture by mentally picturing the patient first, then in wax, and ultimately in acrylic dentures to match the expectations of the patients.

CASE REPORT

A 48-year-old female is having normal gait and stature reported to the Department of Oro-Maxillofacial Prosthodontics, Crown and Bridge, and Oral Implantology with the chief complaint of inability to chew food with the ill-fitting mandibular removable partial denture for three months. The patient had been using the denture [maxillary – removable complete denture] for the last one year and never felt comfortable chewing with a mandibular removable partial denture. There was no significant medical history.

The patient was given many treatment choices, the first of which was an implant-supported mandibular complete denture. The decision to install two or more implants was made based on the biomechanical studies and the patient's financial situation. In contrast to a single complete maxillary denture, the patient agreed to a two-implant-supported mandibular overdenture. Routine clinical and laboratory procedures for a new conventional complete denture were initiated until the fabrication of a conventional full denture with a bilateral balanced occlusal scheme was completed. The mandibular denture was duplicated using a duplicate flask filled with clear acrylic autopolymerising acrylic resin (DPI) at the stage of conventional complete denture insertion.

On the day of surgery, the surgical guide was isolated from the incisal edge to the base to isolate two previously decided implant site locations. Under local anaesthetic, a surgical incision was made followed by tissue reflection (Fig A). Two implant fixtures (Paltop (SNAP) implants) were inserted into the bone and their alignment was checked with implant guide pins (Fig B). After flap approximation, surgical cover screws were placed, and primary closure was completed with suture placement. The sutures were removed following a fifteen-day period of post-operative care and instructions. The denture surface was corrected and relined with a heat cure soft liner (GC Reline Soft TM), and the patient was discharged with instructions to visit for follow-up until the osseointegration period was completed. The implant fixtures were exposed in the second stage of surgery, and the fit of the corresponding abutment was verified before healing collars were placed.



FIG (A)



FIG (B)



FIG (C)



FIG(D)



FIG(E)



FIG(F)



FIG(G)



FIG(H)

Figure 1: (A) incision and flap reflection (B) Guide pin verification (C)) implant fixtures in place (D) OPG shows implant fixture with ball attachments (E) wax try-in (F) denture with O ring housing (G) final insertion (H) post operative insertion

The ball and socket over denture abutment of 2 mm diameter was then seated with radiographic verification in the next stage (Fig D). Under the denture, two O rings were used to secure the attachments to the implant fixtures (Fig F). The full denture was relieved to allow for the attachment, and then vents were created on the lingual side to remove excess resin. After that, a faster pattern resin was poured into the gap, and the denture was fixed during the acrylic polymerization process. Excess resin was removed from the denture's tissue surface, and minor occlusal inconsistencies were corrected and was extremely satisfied with the outcome of the implant supported overdenture (Fig G&H).

Discussion

The mandibular anterior region was chosen for implant placement because it contains enough bone in the interforaminal region in terms of height and width. Two implants were chosen since research suggests that there isn't much of a difference between using two implants versus four implants for overdentures with bars.

5

Implant placement in varying numbers has been shown to provide predictable prosthodontic outcomes.⁶ The two-implant mandibular overdenture is minimally invasive, simple to use, and cheap to patients with limited financial resources.^{3,8,9} The manufacturing technique for an overdenture like this, especially when utilised with a ball and socket attachment, is simple, and mistakes can be quickly adjusted without having to repeat the procedure. Even with traditional complete denture treatment in the mandible, the implant supported overdenture has been demonstrated to have a greater clinical success rate.⁹

Conclusion

Implants are rejected by the majority of patients in developing countries due to the high expense of such prostheses. A two-implant supported overdenture is a suitable prosthetic choice for a completely edentulous patient who has experienced mandibular resorption as a result of wearing complete dentures for a long time.

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