



Resorbed Mandibular Ridge Rehabilitation with Two Implant-Supported Overdenture: A Case Report

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ABSTRACT

The advent of osseointegration has revolutionized prosthodontic treatment planning in general. Several studies have documented the successful application of osseointegrated implant procedures in older patients also. Insertion of implants for support, retention, and stability of an overdenture contributes a more favorable environment for the restoration. Documented benefits of this treatment include improved quality of life for the patient in terms of improved function, emotional stability, physical health, esthetics and long-term preservation of the remaining alveolar and basal bone. This is also an ideal treatment modality to begin a learning curve in implant dentistry.

KEYWORDS

Implant supported overdenture, o rings, ball attachments

Introduction

Treatment of the edentulous mandible using a conventional complete denture is a common clinical undertaking, yet many a times it can be a difficult and challenging intervention. Adaptation to wearing complete dentures is a complex process and must be considered from both somatic and psychologic standpoints. Problems with adaptation to complete dentures are observed with a higher incidence for mandibular dentures than for maxillary dentures. Many treatment modalities like denture base extension, ridge grafting, alveoplasty, have been tested in past to solve the problem of denture retention and stability, with most having limited success.^{1,2}

Implant rehabilitation of the edentulous mandible represents a significant improvement over the conventional complete denture therapy. Documented benefits of this treatment include improved quality of life for the patient in terms of improved function, emotional stability, physical health, esthetics and long-term preservation of the remaining alveolar and basal bone.

Case report

A 42-year-old, female patient reported to the department of prosthodontics with the complaint of ill fitting mandibular denture. The mandibular ridge was found to be resorbed, though the maxillary ridge was favorable for conventional denture construction.

Clinical procedure

Maxillary and mandibular diagnostic casts were made, a panoramic radiograph was taken to assess the bone for selection of implants. The treatment options included fabrication of implant supported fixed prosthesis or implant-retained overdentures for mandibular edentulous ridge. The patient opted for implant retained overdentures but not for an implant-supported fixed prosthesis due to economical constraints.

The definitive treatment plan included placement of two independent endosseous implants in the anterior region of mandible type1 (OD -1) prosthesis with implants in B and D positions. With the help of surgical stent the implant sites were marked in patient mouth. Two screw-type implants measuring 13 mm in length and 4.2 mm diameter (Uniti), were placed at the proposed implant sites (B and D). Accurate and parallel placement of implants was verified with paralleling pins (fig 1). The healing screws were secured over the implants after evaluation of primary implant stability and the mucoperiosteal

flap was meticulously sutured. The postoperative healing was uneventful.

The mandibular denture was fabricated in the meanwhile and relieved from the area where the implants were placed so that it could be seated passively over the implants. Denture was lined by a soft reliner (Coe-Soft Reliner, Dentsply) in the area of implant so that patient can use prosthesis immediately after surgery. After 3 months of healing period, the healing screws were exposed and ball attachments were placed. Neck of O-ring attachment (undercut area) was blocked by placing rubber disk or separator. The O ring and metal encapsulators for the implant abutment were housed directly into the fitting surface of the denture with the help of autopolymerizing resin (Dentsply Repair Material) (fig. 2a and 2b). Denture was removed from the patient's mouth just before final set, excess acrylic material removed and replaced back to final set. After finishing and polishing of denture containing the metal encapsulators, occlusal equilibration was done intraorally.

Discussion

The patient in this clinical report was previously restored with conventional complete denture and revealed her dissatisfaction with the conventional prosthesis.

Evaluation of the residual ridge, patient's economic status and preference will provide information about the ideal number and position of implants, as well as abutment and attachment selection. A successful long-term use of two osseointegrated implants in treating edentulous subjects has been documented. Van Steenbergheet, was among the pioneer to propose placement of only two implants in the edentulous mandible.³

In a study done by Li Chen, the patients in the comparative masticatory efficiency test restored with implant-supported overdentures and tooth-supported overdentures showed greater efficiency than those restored with conventional complete dentures.⁴ Also the anterior mandible bone under an implant overdenture may resorbed as little as 0.5 mm over a 5-year period, and long-term resorption may remain at 0.1 mm annually.^{5,6}

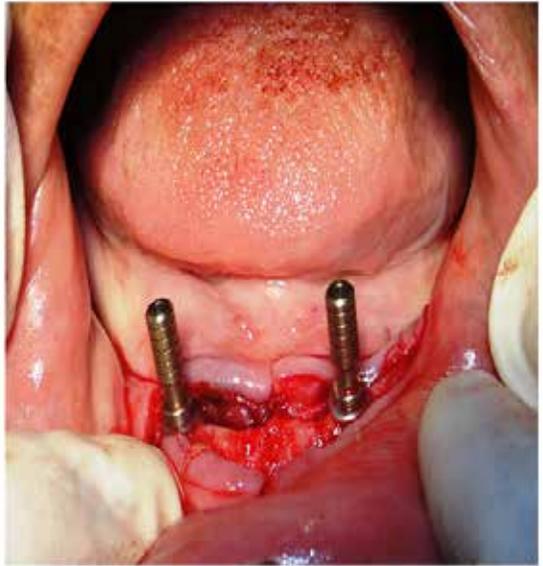
One of the most critical steps in overdenture fabrication is incorporation of attachment matrices, it can be done intraorally or by laboratory processing. Bulent and Volkan described a two stage impression technique that records the alveolar mucosa in a functional state and implant components accurately,

however it is time consuming and more technique sensitive as compared with direct technique described in this article provided the implants are placed accurately parallel to each other.⁷

When proper recall and maintenance are provided for implant patients, favorable results are seen. It has been observed that a high level of compliance is found among patients with implants, particularly among elderly patients.⁸

Conclusion

The multitude of benefits to the edentulous population from implant overdentures is overwhelming in improved function, emotional stability, physical health, and esthetics.



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