

Maxillary Single Implant Retained Overdenture: A Less Invasive and More Effective Alternate Treatment Option for Maxillary arch rehabilitation a Case Report

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ABSTRACT:

Mandibular implant overdentures have proven and predictable advantages over standard mandibular dentures transmitted by mucosa and are now part of mainstream dentistry. A variety of different problems are posed by Maxillary implant overdentures. The present case reports a patient with prosthodontics rehabilitation consisting of maxillary implant supported overdenture. A 64-year-old male patient reported missing upper jaw teeth to be replaced. Clinical and radiographic examination showed an partially edentulous upper jaw with substantial bone loss and height and width deficit. It was intended to have a two stage implant placement for single retained implant over denture. Proposed positioning and location of the implant was considered and Implant Surgery was Done. Overdenture was fabricated and loading was done after 3 months along with cu-sil modification for retained maxillary molar.

Keywords: Implant, overdenture, prosthetic rehabilitation, substantial bone loss, cu-cil.

INTRODUCTION

Although most implant-based therapy has traditionally concentrated on fixed prosthetic tooth replacement, in terms of enhanced function, emotional wellbeing, physical health, and esthetics, the multitude of advantages to the edentulous population from implant overdentures is overwhelming.^{1,2} While there still remains a lack of consistency in terms of procedures, prosthetic design, and attachment systems, these factors have been proven less important to successful outcomes than once assumed. Implant-supported overdentures in complex restorative circumstances where facial support is required are the restoration of preference.³ They are relatively easy to create, can restore both dental and alveolar tissues, are economical and can satisfy the esthetic requirements of complex restorative situations.⁴ A patient with prosthodontic rehabilitation consisting of maxillary anterior single retained implant assisted overdenture along with cu-sil modification to accommodate a solitary retained molar is present here.

CASE REPORT

A 70 year old male patient reported to the Department of Prosthodontics, Dasmesh Dental College Faridkot for replacement of missing teeth in upper and lower jaws. His medical history

revealed no relevant medical conditions/diseases. His past dental history indicates that he had undergone fixed partial denture treatment in relation to missing teeth 31,32, 41, 42, four years ago in a private clinic. On intraoral examination, in maxillary arch, 15 as root stump and 17 tooth were present, and in mandibular arch presence of 33,34,35 and 43,44,45, also fixed partial prosthesis w.r.t 31,32, and 41 and 42. Clinical and radiographic evaluation revealed partially edentulous maxillary and mandibular arches. (Fig 1). Orthopantomograph also revealed pneumatization of maxillary sinus on both the sides (Fig 1).

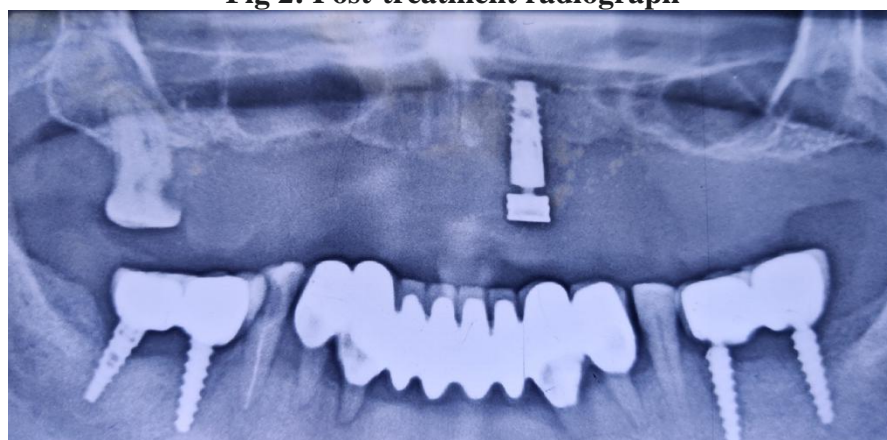
Fig 1: Preoperative radiograph:



Different treatment options were discussed and shared with patient. The patient did not want Conventional Complete Denture. The treatment plan hence decided was single implant in mid maxillary region due to pneumatization of maxillary sinus. For mandibular region, dental implants with respect to 46, 47 and 36, 37 were planned. (Fig 2)

Surgical Implant Placement: A two stage implant placement protocol was planned. Proposed implant positions and placement was considered. In stage one surgery one (NORIS MEDICAL DENTAL IMPLANT SOLUTIONS) implant was placed based on the bone thickness and anatomical considerations in 21 region. Size of implant was 4.2x11.5mm in anterior region. Root stump was removed. Stage two (three months after the initial implant placement) consisted of exposing the implant after the removal of the cover screw followed by the placement of gingival formers to allow formation of soft tissue cuff.

Fig 2: Post-treatment radiograph



Prosthodontic Procedures: Autopolymerizing acrylic resin was used to prepare a custom tray. Closed tray impression technique was used. Light Body impression material was used to make the final impressions(fig 3). Record bases and occlusal rims were fabricated on the master casts. Vertical and horizontal jaw relations were recorded. After teeth arrangement trial denture was checked for esthetic appearance, phonetics and occlusion. Denture was fabricated with single space for the attachments to be received and hole to engage molar tooth in form of cu-sil and single retained implant overdenture . A closed mouth procedure was employed to incorporate the ball attachment directly into the denture base (fig 4). Post insertion instructions were given with the patient during the placement visit and patient was recalled after 1 week for a follow up. At the 1 week the patient expressed his satisfaction with the new denture in terms of its stability and retention. Further recalls at two months and six months showed no complications and the patient reported to be satisfied with the prosthetic rehabilitation.

Fig 3: Final impression

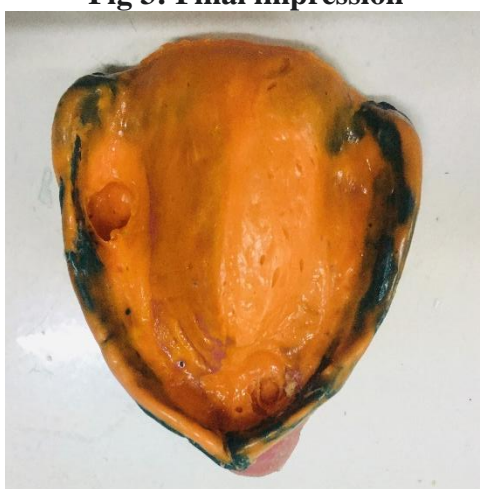


Fig 4: Metal housing on implant abutment



Fig 5(a), 5(b), 5(c): Different views of final maxillary overdenture



5(a)



5(b)



5(c)

Fig 6(a): Denture insertion



Discussion:

Edentulism is a chronic condition for which the palliative therapy is a set of removable complete dentures. Given the global increase in the life expectancy, and the increase in the elderly population, the seekers for this treatment among the elderly edentulous population will be increased.⁵ Though it is an economical option for the elderly, the conventional denture has certain shortcomings. The patient still has difficulty in chewing the hard foods, there is accelerated bone resorption and the clinical morbidity with the denture continues.⁶

The sequela of tooth loss and edentulous arches is residual ridge resorption both in the horizontal and vertical direction. This ongoing loss of hard and soft tissue is most noticeable in the loss of or facial support: facial esthetics, phonetics, and collapse of vertical dimension. This leads to an aging appearance due to the lack of lip support and decreased facial height. Concurrent with these changes in facial structures are impaired oral function, pain, insufficient retention, and instability of conventional dentures, as well as nutritional and psychological changes.[2] The standard treatment for the edentulous patient has been the provision of conventional complete denture. However, complete denture wearers frequently report problems with oral function, typically caused by retention and stability problems of the prosthesis. An alternative to the conventional denture would be implant supported fixed bridges, hybrid prosthetic dentures and removable overdenture prosthesis. Oral function significantly improves after implant overdenture treatment.[4] Masticatory function is perceived as being considerably impaired by patients with a severely resorbed maxilla and conventional dentures as assessed with the Chewing Ability. The implant supported over dentures helps in preservation of alveolar bone

Rehabilitation of the completely edentulous maxilla using implants to either retain or support restorations is a predictable long-term treatment modality.⁷ There are several long-term studies, which prove beyond doubt, that implant retained prosthesis improved the quality of life of an elderly individual. In the mandible an overdenture on two implants in the symphysis, connected or not by a bar, is the standard of care for patients who have been edentulous for some time. Excellent survival rates (> 99 %) are reported in the maxilla with ≥ 4 implants supplied with a bar anchorage for an overdenture or to carry a fixed prosthesis. Evidence of biomechanical success and psychosocial satisfaction has led to an emerging consensus that a minimum three implant overdenture should be recommended treatment in the management of an edentulous maxilla but considering economical status of patient, surgery timing, minimum trauma & healthy tissue, single retained implant overdenture was planned.

Though McGill and York consensus statement have come out strongly in favor of the two-implant supported overdenture (TISOD).^{9,10} but the results we received in our clinical case is

encouraging to motivate further research and trial regarding the use of single implant retained overdentures.

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