

Aesthetic and Functional Full Mouth Rehabilitation with Implant Supported Prosthesis: A Case Report

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Abstract

Treatment of the edentulous patient with fixed reconstructions using multiple implants in both dental arches has many benefits compared to a conventional removable denture, including increased patient satisfaction, improved speech, aesthetics, function and self esteem. With a continuing increase in the use of implants, a significant percentage of edentulous population is benefitting from the advantages of fixed implant restorations. The choice of a suitable prosthesis for a specific case is determined to a great extent by the underlying residual bone volume as well as the teeth being replaced. The aim of the present case report is to describe the oral rehabilitation of a patient with fixed implant supported prosthesis.

Keywords: Full-arch prosthesis, Fixed implant reconstruction, immediate implant placement

Introduction

Loss of teeth is accompanied by lot of adverse aesthetic and biomechanical sequelae. Dentists consequently became profoundly aware of time-dependent relationship between form and functional changes in the masticatory system. Such knowledge helped nurture the development of new materials and knowledge about the relationships between esthetics, occlusion, and patient personalities¹. Successful osseointegration enables the dentist and edentulous patient to consider one of two alternatives to the traditional complete dentures, such as implant supported fixed or overdenture prosthesis. Implant supported fixed prosthesis is an ideal cure for maladaptive patients. Decision to treat an edentulous arch with an

implant supported fixed prosthesis is influenced by Number of implant abutments, Location of implants, Quality of the host sites, Quantity of the host bone sites or the amount of residual ridge reduction and amount of circum oral activity or generosity of patients smile line².

Implant supported fixed prosthesis slows down resorption of alveolar ridges and rehabilitates approximately full function of the natural teeth, hence achieving relatively higher satisfaction on patient's behalf, compared to the conventional removable dentures. By providing more stable occlusal conditions, implant supported fixed partial denture can be a good alternative, when the patient shows lack of neuromuscular control for removable denture. The aim of this case report was to show the functionally and aesthetically satisfying full mouth rehabilitation with implant supported prosthesis.

Case Report

A female patient of age 56 years had reported to our department, with a chief complaint of missing tooth in both maxillary and mandibular arches. Proper case history was recorded for the patient including medical history which was non-contributory, with relevant laboratory tests, dental and oral examination. Diagnostic impressions and casts were prepared. Thorough examination was done and patient was motivated for implant prosthesis. Bone mapping was done to evaluate the width of bone, by using OPG and CBCT scan, length of available bone was calculated and appropriate sized implants are selected [Figure1]. Surgical template was prepared for both maxilla and mandible, and the position of implants was decided prior to the surgery.

Treatment Planning

1. Single stage implant placement : extraction of tooth with poor prognosis followed by immediate placement of implant .

2. Two stage implant placement with existing posterior edentulous areas. Quadrant arch technique,one quadrant is treated at a time. This technique has the advantage that the vertical dimension can be maintained and lengthy appointments are avoided.



Fig. 1:Pre-operative OPG

Surgical Phase

Single stage surgery

Patient consent was taken prior to the surgical procedures. In the mandibular anteriors, to minimize the number of surgeries and the length of healing time, decision was made to extract her natural teeth with poor prognosis and immediate placement of dental implant. A traumatic extraction of teeth preservation of cortical wall and clinical examination of extraction socket for any debris, plaque infected tissue were checked followed by placement of implants. (Fig 2)



Fig. 2: Shows the extraction of mandibular anteriors and the immediate placement of implants

Two -stage Surgery

An crestal incision was placed on left maxillary edentulous ridge and a mucoperiosteal flap was raised to expose the bone. Surgical template was used for making a pilot drill and parallelism was checked with an IOPA (size 3.5 mm x14mm and 3.5mm x11mm at the premolar and the molar sites respectively). A cover screw was inserted into each fixture hole and the flap was then closed and sutured, same procedure was carried out for maxillary right side for the placement of implant in canine, first, second premolar and molar considering their diameter and length decided preoperatively. The implant to tooth distance and the inter-implant distance as well as the hard tissue support of the mucosa also evaluated with IOPA taken in between placement.

Postoperative care has been administered with antibiotics, analgesics, and mouthwash. Maintenance of oral hygiene and ice pack if needed was suggested. After 4 months, patient was recalled and postoperative OPG was made and checked for proper osseointegration. After confirming osseointegration, flap was elevated and covering screws are removed and per mucosal extension was placed and waited for 2 week for healing to take place.

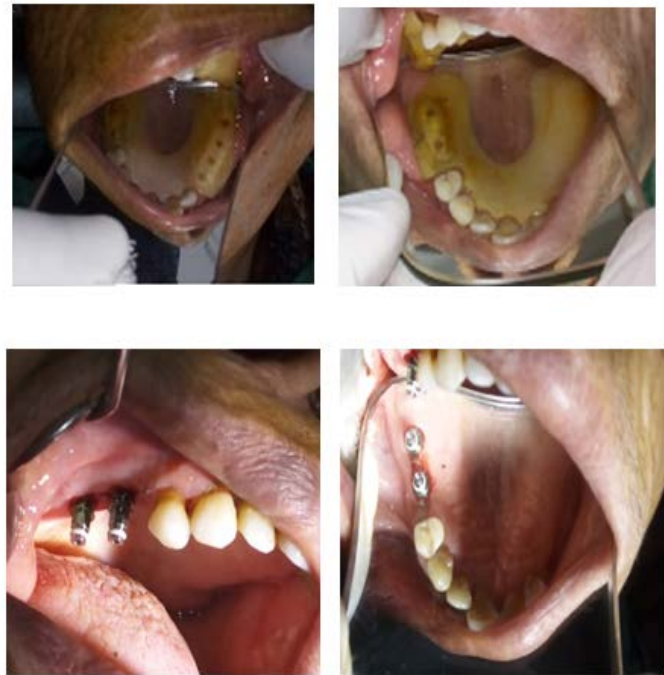


Fig 3: Surgical template to guide the initial drill along the long axis and Placement of implants in right maxillary posteriors.



Fig.4: Surgical template to guide the initial drill along the long axis and Placement of implants in left maxillary posteriors

Prosthetic Phase

After healing, per mucosal extensions were removed and impression analogues were placed. Open tray impression was made with elastomeric impression material and impression analogues are loosened. Implant analogue was

threaded to the impression analogue in the impression tray and cast was poured. Abutment was placed on the cast and mounting was done. A single unit implant porcelain crown was then fabricated with 25, 26, 33, 34, 35,36.

Metal trial was carried out, later ceramic build up was done and final prosthesis was fabricated and checked in oral cavity and final cementation was done. Postoperative oral hygiene instructions were given to the patient and proper follow-up was done.



Fig.5: Impression was made using vinyl polysiloxane impression for final prosthesis.



Fig. 6: Maxillary and Mandibular final prosthesis – postoperative



Fig. 7: Mandibular anterior



Fig. 8: Post operative- OPG

Discussion

Treatment of partial and total edentulism with dental implants has evolved into a predictable procedure for majority of patients and is expected to play a significant role in oral rehabilitation. Surgical placement of dental implants is a well-documented treatment for edentulism³. Successful implant treatment involves osseointegration of implants that are placed in ideal positions for fabrication of a dental prosthesis⁴. Periodic clinical assessment of the implant fixture, prosthesis, and surrounding tissue is critical for clinical success. In the present case, patient was called for every 3, 6, and 12 months professional removal of supragingival and subgingival deposits on a regular basis was done¹.

Traditionally, four to five implants in the mandible and five to six implants in the maxilla with distal cantilevers has been a popular approach among the implant clinicians. From the biomechanical point of view, this classical protocol may not appropriately address the complex requirements of edentulism.

The literature recommends a minimum of four implants for a fixed restoration but more implants should always be placed for biomechanical advantages and to avoid cantilevers. An increase in the antero-posterior spread and more number of supporting implants increase the predictability of a successful outcome⁵.

Although immediate loading is being more admired by patients and restorative dentists alike, literature cautions at several places that chances of failure are heightened in cases of immediate replacements. Therefore, a two stage surgical technique was followed in this case. Cement retained implant restorations are gaining reputation as they are simple, esthetic and economical. But such restorations are difficult to retrieve and any residual cement in the soft tissues surrounding the implant may lead to peri-implant diseases⁶. A screw retained prostheses design was selected to allow easy retrievability and maintenance.

Conclusion

Availability of a fixed treatment option is a remarkable advance in prosthodontics. It is one of the dentistry's most gratifying treatment modalities, but it demands considerable skill and judgement and a high degree of patient commitment and understanding. A combined prosthesis is one which is supported by implants and natural teeth in the same arch. The distribution of forces in implant and natural tooth varies. Therefore the prosthesis should be designed not to concentrate stress at any points. By proper designing and execution of the prosthesis the problems associated with stress distribution can be overcome.

Clinical Significance

The practice of extraction and replacement with implants has increased tremendously among the clinicians nowadays. As a result many teeth gets extracted and replaced with implants even in doubtful indications. Isolated teeth which are periodontally sound can be retained and incorporated in implant supported prosthesis without any complications.

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