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Case Report

Full Mouth Rehabilitation using Implant and Prosthesis in Partially Edentulous Arches

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Abstract

Teeth are imperative elements in the orofacial region which are pivotal for many critical physiological functions of an individual. Loss of teeth may be inevitable due to several reasons like dental caries, periodontitis, infections, facial trauma and pathologies of the jaw. It may even result due to physiologic reasons like ageing. Inorder to restore certain key physiologic functions like mastication, phonetics, and esthetics replacement of teeth is mandatory. Many treatment options are available in the current world but implants are still considered as a first go option. Here we present a clinical report of a patient who underwent full mouth reconstruction with implant-supported fixed prostheses in partially edentulous arches.

Keywords: Endosseous implants, edentulous arches, physiologic function.

INTRODUCTION

Teeth are very essential for the function and esthetics of human beings. It has a bearing on the social well being of an individual. It is a great challenge to a modern dentist to restore the patient's normal contour, function, comfort, aesthetics, speech, and health following the loss of his / her teeth. Implant dentistry has the ability to achieve this ideal goal regardless of the atrophy, disease, or injury of the stomatognathic system [1]. Due to the continuous research, advanced diagnostic tools, innumerable implant designs, materials and techniques; predictable success is now feasible for the rehabilitation of many challenging clinical scenarios [1].

Here we report a clinical situation of a patient suffering from partially edentulous upper and lower arches who underwent rehabilitation with dental implants in order to restore the oral function and facial esthetics.

Case Report

A female patient in her sixth decade of life had reported to our unit, with a chief complaint of missing tooth in both her upper and lower jaws. She wanted to have fixed prosthesis as she was not happy with conventional denture. A thorough case history was recorded for the patient along with a proper medical evaluation which was noncontributory, with relevant laboratory tests, dental and oral examination. Thorough examination was done and patient was motivated for implant prosthesis. Bone mapping was done to evaluate the width of bone, by using orthopantamograph (OPG) as shown in Fig-1 length of available bone was calculated and appropriate sized implants are selected. Diagnostic impressions and casts were prepared. A two-stage surgical protocol was planned and patient consents were obtained. Surgical template was prepared for both maxilla and mandible, and the position of implants was decided prior to the surgery by placing a drill on the implant.

Phase -1: Surgical Phase

Patient was given basic antibiotic and analgesic one hour prior to surgery. Local infiltration of 2% lignocaine with 1:80,000 adrenaline was infiltrated close to the surgical site. Under strict aseptic conditions, a crestal incision was given along the edentulous area all over the maxilla and a mucoperiosteal flap was elevated. The template was placed on the crest of the ridge with bur pilot drill is carried out. Paralleling tools are placed and checked for angulations of the implant.

Sequential drills were used and implants were placed in the osteotomy site and wrenched into the site until all threads are buried. Cover screws were placed and suturing was done. Postoperative care was administered with antibiotics, analgesics, and mouthwash. Maintenance of oral hygiene and ice pack if needed was suggested. Similar procedure was performed in the edentulous areas of the lower jaw and suturing was carried out. Following 3 months post surgery, patient was recalled and postoperative OPG was done and evaluated for proper osseointegration. Following confirmation of osseointegration, flap was elevated and covering screws are removed and per mucosal extension was placed and left for a week for healing to take place as shown in Fig-2.

Phase – 2: Prosthetic phase

Following proper 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 as shown in Fig-3. 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 as shown in Fig-4. Postoperative oral hygiene instructions were given to the patient and proper follow-up was done.

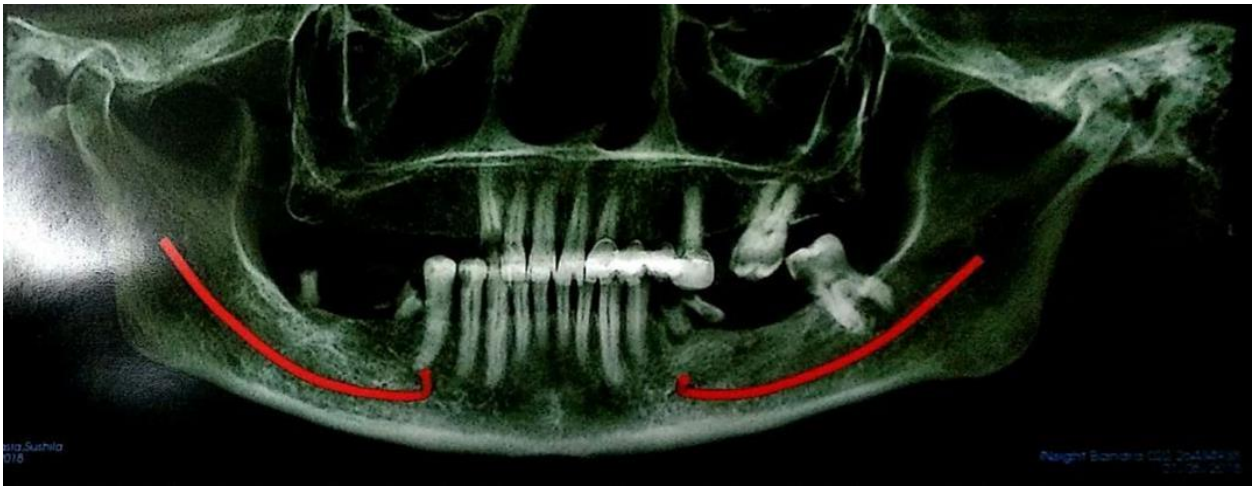

Fig-1: OPG

Fig-2: Impalnts in Oral Cavity Post Healing

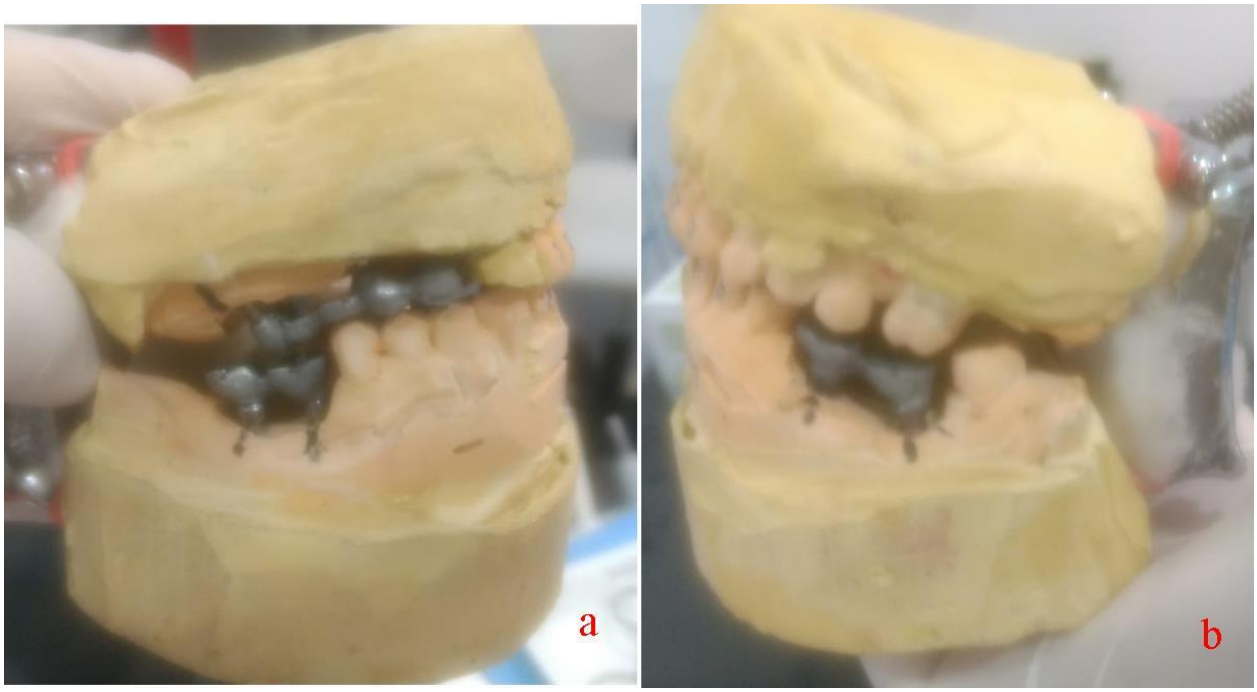

Fig-3: Abutment was placed on the cast and mounting was done

Fig-4: Final Prosthesis

DISCUSSION

Rehabilitation of partially or totally edentulous dental arches with dental implants has evolved into a foreseeable procedure for majority of clinical scenarios. Surgical placement of dental implants is a well-documented treatment for edentulism [1]. The success rates involved in these procedures are generally high with relatively modest postoperative complications.[1] Successful implant treatment involves osseointegration of implants that are placed in ideal positions for fabrication of a dental prosthesis [3]. However, periodic

clinical assessment of the implant fixture, prosthesis, and surrounding tissue is critical for clinical success [1].

Immediate placement of an implant at the time of tooth extraction is widely accepted in the literature but early placement of an implant in a few-week-old healing socket is not well documented [4, 5]. The three-week waiting period after full mouth extractions may contribute both locally at the extraction sites as well as systemically in the bone marrow and peripheral stem cells. Systemically, it was shown that broken limbs can increase circulating (peripheral) stem cells perhaps due to an activation of increased osteoblastic progenitor cells in bone marrow [6].

Early placement of implants within eight weeks after extractions seems to provide as high of a success rate as immediate placement and delayed placement (usually 2-3 months or more after extractions) of implants [7]. However, in terms of patient satisfactory, the early placement is significantly better than other techniques [8]. Several advantages occur when we separate the extraction visit and implant placement visit, including a reduction of surgical complexity, a minimization of operating time, and maximizing the fitting of the surgical stent. A three-week period of socket healing is also much shorter than 2-3 months [8].

Primary stability of implants plays a key role in determining the success of implants. Primary stability of implants can be obtained by choosing appropriate implant width and length and utilizing remaining cortical bone [9, 10]. Restoring the oral function and esthetics in patients suffering from chronic periodontitis is challenge and requires major bone grafting or artificial gingival tissue [8]. However, horizontal bone augmentation procedures are often difficult and offer an unpredictable result [11]. In patients with chronic periodontitis with multiple endo-periodontal lesions, the remaining infection often prevents simultaneous tooth extractions and bone grafting or immediate placement of implants [12].

Three-dimensional imaging techniques may add an extra dimension to routinely available preoperative radiographs [13].They provide more detailed information regarding bone volume, bone quality or anatomical restrictions [14]. Data can be processed in commercially available implant simulation software and provide a preoperative view of anatomical structures in the jaw bone related to a scanning template representing the future restoration. This facilitates virtually to plan the ideal implant position taking both anatomical and restorative information into consideration [15].

The provision of dental implant based prosthodontic rehabilitation significantly improves the quality of life even for patients following oral cancer treatment [16]. Surgical management of oral cancer may lead to significant disability, including facial deformity, the loss of hard and soft tissue, impaired speech, swallowing, and mastication [17]. Patients with extensive primary tumours often undergo chemotherapy and radiotherapy postoperatively, which may cause further morbidity that can adversely affect their quality of life. Rehabilitation with a removable prosthesis can be difficult or impossible, due to distorted post-surgical anatomy, low salivary flow, and emotional resilience of the patient post-surgery [17]. Implants provide stability, and support for a prosthesis, which limits pressure on soft tissues that may be compromised following surgery and radiotherapy [16].

In clinical situations requiring partial resection of maxillary jaw for a malignant tumor, dental implant placement is often difficult because of inadequate amount of bone tissue for anchorage of the implants. As an alternative procedure, the use of zygomatic implants is effective for prosthetic rehabilitation [18].

CONCLUSION

Oral rehabilitation for partial or fully edentulous dental arches using dental implants is a remarkable advance in prosthodontics. It is one of the dentistry's most gratifying treatment modalities, but it demands considerable planning and expertise in addition to a high degree of patient commitment and understanding. Our patient was fully satisfied with the treatment outcome.

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