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USE OF TITANIUM IMPLANTS FOR REPLACEMENT OF MISSING TOOTH: A CASE REPORT WITH 3 YEARS OF FOLLOW UP

Dental Science

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ABSTRACT

Patients with loss of tooth often have functional and esthetic problems. There are different treatment options available for replacing missing incisors. One of the very economical options is removable partial denture, but patients are often not satisfied with this due to the bulk of the prosthesis, and they generally do not consider a removable prosthesis to be an acceptable long-term solution to tooth loss. The most common treatment option is the fixed partial denture, but it is not very conservative as natural remaining teeth as abutment have to be prepared to support the prosthesis. Considering all this, implants are considered as a first treatment option to replace missing teeth due to the considerable advantages over the other available options. The ultimate goal of implant treatment is to restore natural esthetics, function, long term health, and patient comfort.

KEYWORDS

Implants, Esthetics, Comfort

INTRODUCTION

Today, numerous types of prostheses are available to replace missing teeth. The treatment modalities as of date ranges from removable or fixed partial denture to implants supported prosthesis, each one presented with its own pros and cons. Developments in the field of implantology and adhesive dentistry have increased the options available for the partially edentulous patient but have also made treatment planning more complex. Due to the high success rates of dental implants, their prevalence in the rehabilitation of partially dentate and edentulous patients is growing year by year. The implants prevent bone loss by acting like natural teeth in that they provide stress to the bone, which helps stimulate blood flow. Philip et al stated that the mandibular overdenture retained by implants appears to maintain bone in anterior mandible and appeared to improve retention, stability and chewing ability.[1] This article presents a case of missing maxillary anterior teeth being replaced by a cement retained implant prosthesis. The aim of this case study is to illustrate the use of narrow diameter implants in the aesthetic zone using Alpha-Bio Tec's implant

CASE REPORT

A male patient aged 30 years, reported to Department of Prosthodontics, for the replacement of his missing tooth [Figure 1]. The patient had missing left maxillary central incisor and gave a history of tooth loss 1 year back due to trauma. Clinical examination was done followed by radiographic evaluation. On intraoral examination, it was revealed that there was missing left maxillary central incisor. Radiograph showed favourable amount of bone present and absence of any underlying pathology.

Treatment Procedure

Maxillary and mandibular arch diagnostic impressions were made and diagnostic casts were obtained. A thorough medical history was taken along with complete haemogram to rule out any presence of systemic disease. The treatment options available for replacement of missing central incisor were removable partial denture, fixed partial denture, and implant-supported fixed prosthesis. The treatment options available were explained to the patient in detail. The patient had given his consent for replacement of missing tooth with implant-supported fixed prosthesis.

Based on the clinical evaluation of the patient and results of Cone Beam Computerised Tomography, the treatment plan was to restore maxillary central Incisor with implant of dimension 3.75 x 12 mm (Alpha-Bio Tec., Israel) with conventional 2 phase treatment protocol.

A preoperative antibiotic and analgesic therapy on the evening before the surgery and 3 days after surgery was given. The patient was prepared for the first staged surgery, and it was planned to place implant under local anesthesia with left infraorbital nerve block. The nerve block was given followed by incision to reflect the mucoperiosteal flap. The initial osteotomy was started with a pilot drill using a maxillary surgical stent for the correct implant position and gradually the site was enlarged in width and up to a depth of 12 mm. Once the implant site was prepared, an implant fixture of dimension 3.75mm × 12 mm (Alpha-Bio Tec., Israel) was placed [Figure 2]. An intraoral periapical radiograph (IOPA) was taken to confirm the final position of the implant place. Implant cover screw was placed over the implant fixture, and flap was sutured back with 4.0 non resorbable silk sutures. Postoperative instructions were given. The patient was called for recall check after every 2 weeks.

After 6 months the patient was recalled for second staged surgery for the prosthetic phase. An IOPA was taken to confirm the osseointegration of the implant placed. An incision was given over the implant fixture to slightly expose it and a gingival former was placed over the fixture to achieve healthy gingival biotype to enhance the emergence profile of the restoration [Figure 3]. After 2 weeks the gingival former was removed and a nice collar of gingiva surrounding the implant was observed. The transfer coping was screwed to the implant fixture, and a closed tray impression was made with elastomeric impression material. The transfer coping was unscrewed from the implant fixture and positioned back into the impression along with implant analog and the impression was poured in dental stone to obtain a master cast. Once the master cast was retrieved, a porcelain fused to metal (PFM) crown was fabricated over the abutment on the cast. Finally, the abutment was placed back [Figure 4] and screwed to the implant fixture in patient's mouth and a metal try was done [Figure 5]. The PFM crown was then fabricated and cemented on the abutment [Figure 6] and patient's occlusion was checked, and the prosthesis was evaluated for esthetics and phonetics [Figure 7].

DISCUSSION

Replacement of missing tooth with fixed dental prosthesis although is a viable treatment alternative in different situations, but still dental implant restoration has definite advantages over them. The survival rates for the single-tooth replacement with implants is higher.[2] Replacement of missing tooth with titanium dental implants[3] had provided a suitable treatment option for the patient. When conventional two-stage implant loading protocol was followed, implant stabilization during early stages of bone healing can be ensured.[4] When proper surgical protocols, along with the optimum implementation of restorative protocols and maintenance is followed, with periodic recall check, the survival rate of dental implant increased. This case report also followed delayed loading protocol, and periodic recall check up to enhance the survival rate and esthetic of the patient. Immediate loading of oral implants is the commonly followed treatment protocol in implant dentistry today that increases the comfort of the patient, but the peri-implant bone response is poor in comparison to conventional loading protocol.[5] The loss of a tooth is followed by a major alveolar bone resorption, so to preserve the bone volume placement of implant is a valid option.[6]

Many current implant systems have abutments onto which superstructures can be cemented.[7] In cemented implant prosthesis, the metal ceramic fixed partial denture is luted onto a transmucosal abutment, which is connected to the implant. Cement-retained prostheses have become, in many cases, the restoration of choice for the treatment of implant patients.[8] These restorations permit the development of desired occlusal interdigitation, improved esthetics and correct loading characteristics. The abutment preparation design and cementation technique mimics conventional fixed prosthodontic procedures for natural teeth. Moreover, the cement space that exist between the crown and abutment can help compensate for minor discrepancies in the fit of the prosthesis.[9]

FIGURES

FIGURE1: Pre-operative Photo

FIGURE 2: Implant fixture inserted

FIGURE 3: Gingival Former Placed

FIGURE 4: Abutment Inserted Into Implant Fixture

FIGURE 5: Metal Try in

FIGURE 6: Cementation of PFM Crow

FIGURE 7: Post-operative Photo

CONCLUSION

Case selection is crucial to success when considering any form of tooth replacement. Whichever treatment modality is finally selected, it should suit the needs of the patient, be carefully planned and skillfully executed. The replacement of missing tooth in anterior region can only be justified when the anticipated positive effects are greater than the drawbacks of the procedure. It is the responsibility of the clinician to explain the advantages of dental implants over other treatment options available so that patient can choose the restoration which is best for them.

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