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Case Report

# Management of Early Failed Implant – A Case Report

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## Abstract

Success cannot be guaranteed, what one can guarantee is to care, to do one's best, and to be there to help in the rare instance if something goes wrong. Dental implants are most commonly used for the replacement of missing teeth. Lack of osseointegration and peri-implantitis are considered as major contributory factors of implant failure. This case report presents a procedure and treatment option for immediate implant placement into previously early failed dental implant osteotomy.

**Key words:** Dental implants, Novabone putty, Teeth

## INTRODUCTION

The single-tooth implant procedure is a predictable procedure with good survival rates.[1] Biologic, esthetic, and technical complications can occur in a certain percentage of patients. We should have a better understanding of the role of the factors that may indicate or cause implant failures such as immunological, inflammatory, microbial, systemic, anatomic, occlusal, procedural, and genetic factors. Clinicians may select appropriate cases or interventions that may enhance treatment outcomes for complete or partially edentulous patients.[2] The scientific literature on differential diagnosis and treatment of biologic complications and failing implants is limited, lacks systematic scientific validation, and is based mainly on empirical considerations from *in vitro* findings of case reports carried out on a trial and error basis.[3] Early implant failures occur before functional loading.[4] Lack of osseointegration is one of the worst complications since it inevitably results in loss of the implant diagnosed at Phase II surgery or when the implant is loaded. Epithelial downgrowth was occasionally observed histopathologically for asymptomatic submerged implants.

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The etiologies that might implicate early implant failure are weak bone to implant interface, the healing ability of the host bone site, and infection.[5] After a failed implant is removed, the patient is left with a difficult decision regarding replacement options. Most of the time, the patient will choose to replace the failed dental implant with the placement of another implant.[6] Replacement of a failed implant presents a challenge to achieve osseointegration and may result in a decline in the survival rates.[7] The survival rate of implant replacement after early failure was accounted for 94.6%. After an adequate soft and hard tissue healing period, early implant failure was not an obstacle for implant replacement at the same site.[8] Replacement of implant at the same site with a wider diameter of the implant increases the risk of buccal bone dehiscence.[9] Bioactive materials can be used to stimulate a biological response from the body. They also elicit a positive bone response by creating bonding along with implant-bone interface.[10,11] To improve osseointegration, removal of fibrous soft tissue by thorough debridement of osteotomy, promote fresh blood to increase the angiogenesis, and use of bioactive material should be considered at failed implant osteotomy.

## CASE REPORT

A 24-year-old systemically healthy female patient reported to our private dental practice with the complaint of missing teeth in the lower right posterior region for 3 years. A comprehensive clinical examination revealed

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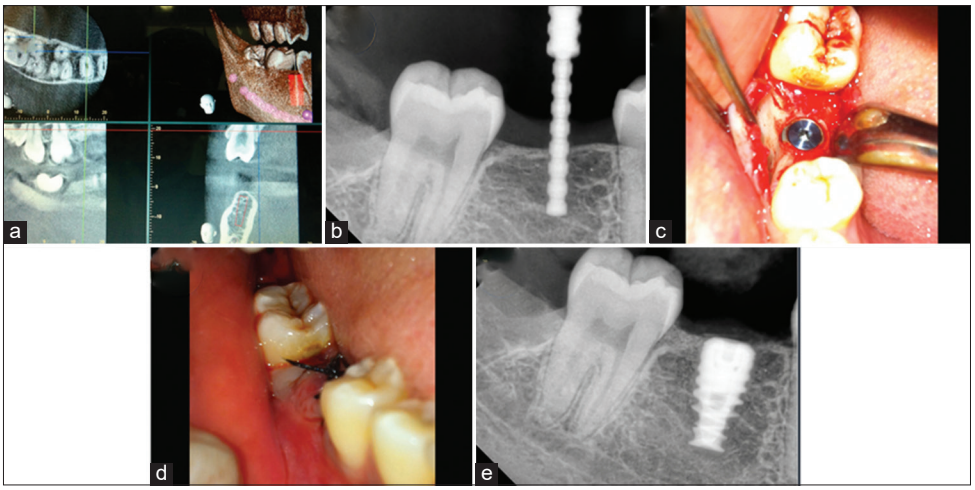

**Figure 1: Initial implant placement procedure. (a) Pre-operativecone-beam computed tomography,(b) osteotomy angulation verification, (c) implant placement followed by cover screw placement, (d) suturing,(e) immediate post-operativeintraoral periapical**

that adequate space is available to replace teeth. Adjacent teeth were free from caries, vital and have suitable crown volume and height. The general periodontal condition was healthy. Multiple treatment options with their advantages and disadvantages were discussed with patient, however, the patient agreed for dental implant for missing teeth. The patient was advised cone-beam computed tomography (CBCT) as radiographic investigation [Figure 1a]. The CBCT showed the possibility of implant placement in the edentulous mandibular right first molar region. On CBCT, ridge was measured and the length and diameter of the implant to be placed were decided. An endosseous implant of 4.25 mm × 11.5 mm diameter (SPI Implant, Alpha-BioTech) was planned. After the administration of adequate local anesthesia, midcrestal incision was given in the region of 46 and full-thickness mucoperiosteal flap was reflected. The osteotomy was carried to the desired depth. The angulation was checked once again with the paralleling pin [Figure 1b], both clinically and radiographically. Any discrepancy found can be corrected subsequently. The osteotomy was then diametrically enlarged to the desired diameter. Constant external irrigation with normal saline was used during drilling. After complete osteotomy, the implant was then screwed in and tightened using the manual torque ratchet provided in the surgical kit. It is made sure that optimal torque is obtained while placing in the implant, which is ascertained by the "slip of the Ratchet," adjusted at 45Ncm, to ensure optimal primary stability of the implant. A cover screw was placed on top of the implant [Figure 1c]. The flap was closed with the help of interrupted 3.0 silk sutures [Figure 1d]. Immediate post operative IOPA was taken [Figure 1e]. Post-operative antibiotic (amoxicillin 500 mg, 3 times daily for 5 days) and analgesic (diclofenac and paracetamol combination) for 3 days were prescribed. Post-operative instructions were given. Follow-up taken on the 3rd day to check the healing

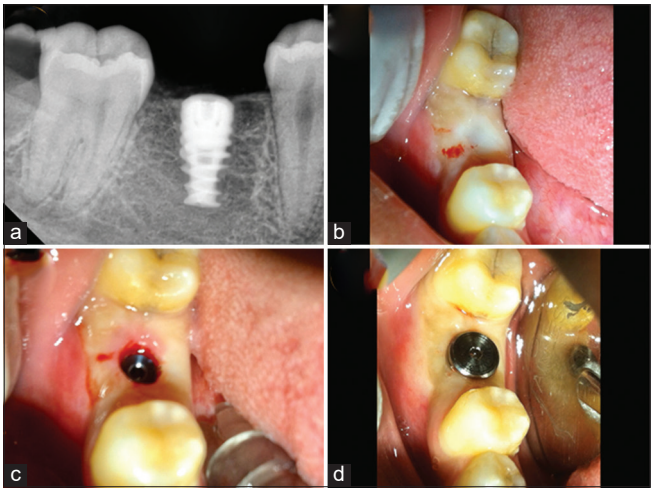

**Figure 2: Second-stage surgery (a)intraoral periapical after 3 months of healing, (b) after local anesthesia, (c) implant exposure using tissue punch, (d) healing screw placement**

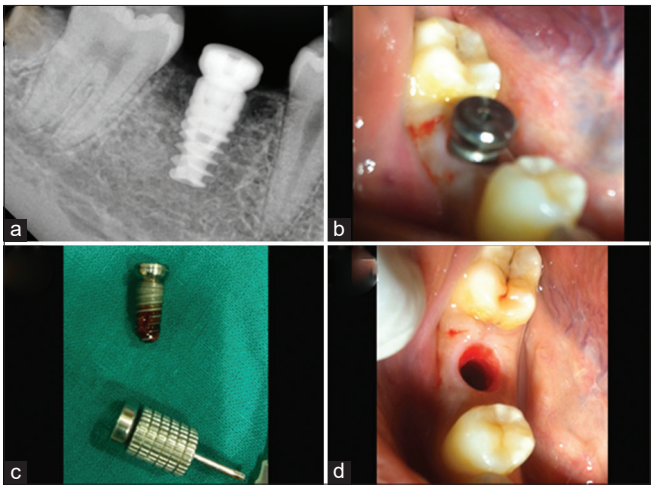

**Figure 3: (a) IOPA to ascertain proper fit of Healing Screw, (b) implant came out with coverscrew, (c) implant retrieved using hex driver, (d) osteotomy after implant removal**

of site and suture removal was done on the 7th day after the procedure.

The patient was recalled at 3 months. An intraoral periapical (IOPA), radiograph [Figure 2a] was taken to evaluate the implant. After local anesthesia [Figure 2b], implant was uncovered using soft-tissue punch [Figure 2c] and the healing screw was placed [Figure 2d], proper fit of which was ascertained by taking IOPA [Figure 3a].

The patient was recalled after 15 days. During the appointment, while unscrewing healing screw with hand hex driver implant got unscrewed [Figure 3b]. The patient was then appointed for replacement with a new implant on the next day. A samesized implant in wider osteotomy was planned. After the local anesthesia, unscrewed implant was removed with the healing screw attached to the implant [Figure 3c and d].

It was decided to enlarge the osteotomy by one size larger drill [Figure 4a] previously last used drill to ensure complete cleaning of osteotomy wall till apex and to promote angiogenesis of site. The enlarged osteotomy was filled with bioactive synthetic calcium phosphate putty (NovaBone, Florida, USA)[Figure 4b]. The bone graft material is adapted to walls of the enlarged osteotomy. A new implant of the same diameter (4.25 mm × 11.5 mm) was placed inside the well of bone graft created [Figure 4c]. The final placement of the implant was carried out using hand ratchet. Healing screw was placed on the top of the implant. Antibiotics and analgesics were advised postoperatively.

The patient was recalled after 3 months. No pain or sign of infection and absence of clinical mobility detected during the clinical examination after 3 months. On radiographic evaluation using IOPA, no sign of peri-implant pathology was seen [Figure 5a and b]. The impression of the implant was taken using an open tray technique [Figure 5c], which was then verified using verification jig[Figure 5d]. A cement and screw-retained PFM crown was received from the laboratory. IOPA was taken to check the proper fit of the abutment [Figure 5e]. Crown was then cemented extraorally and fixed onto the implant by utilizing an access hole in the crown, which was filled with composite resin and cured [Figure 5f].

Long-term follow-up of 4 years showed no clinical sign of inflammation and radiographic examination showed a close contact of bone to implant and absence of bone loss[Figure 6a and b].

**Figure 4: (a) Wider drill to enlarge osteotomy, (b) placement of NovaBone putty, (c) placement of implant into well of NovaBone putty**

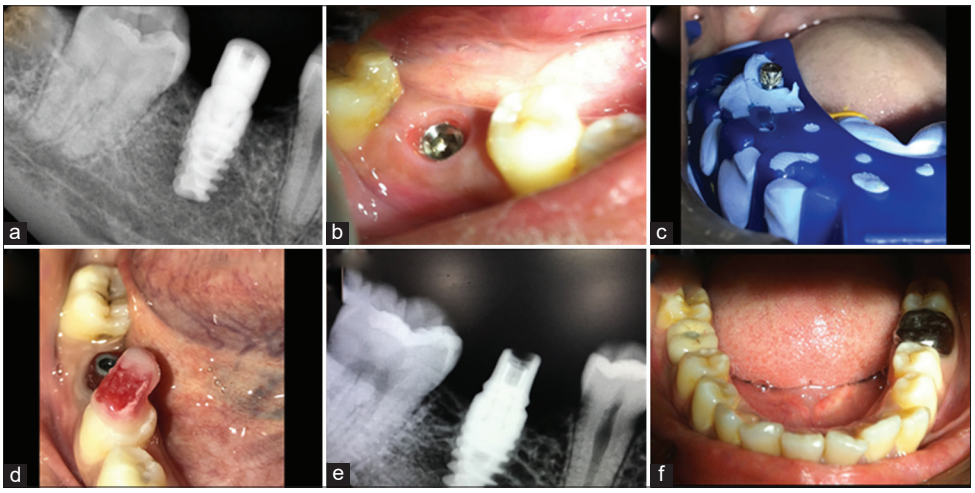


**Figure 5: Threemonths post-reimplantation (a) intraoral periapical (IOPA), (b) soft-tissue healing, (c) open tray impression, (d) verification jig, (e) IOPA to check sitting of abutment, (f) placement ofcement and screw-retained final crown**

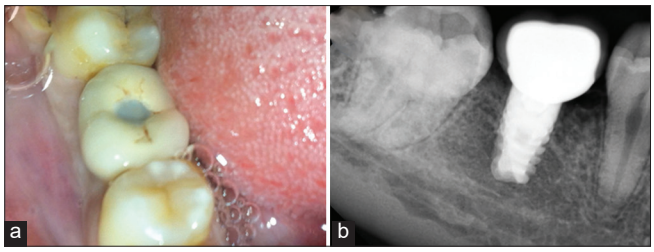


**Figure 6:Fouryears post-operative of reimplantation (a) intraoral image, (b) intraoral periapical**

## DISCUSSION

An implant that has failed to integrate can suffer fibrous downgrowth, which acts as a barrier to the osseointegration of the replacement implant. It is important to thoroughly debride the implant socket to meticulously remove all soft tissue, promote angiogenesis, and enhance bone-to-implant contact before reimplantation. Proper instrumentation was necessary to perform thorough curettage on the osseous walls of the old osteotomy and to reach the apex, which was achieved by preparing larger osteotomy using a wider drill. Well of bioactive calcium phosphate putty (NovaBone, USA) helped to build faster and stronger bone by accelerating the regeneration of bone (osteostimulation).

## CONCLUSION

Same sized implant into a well of bioactive calcium phosphate putty created in wider osteotomy can be a viable option to treat early failed implant. It remains a potion for the management of such failures and further studies involving a significant number of cases are suggested.

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