

Reimplantation Of Early Failed Dental Implant – Case Report

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Abstracts: Background: Implant dentistry provides a more functional and attractive alternative to removable prosthesis. Despite the high success rate shown by longitudinal studies, failures do occur, even in patients who present appropriate clinical conditions. In most of the clinical situations implant replacement is the only alternative treatment in patients with failed implants. Here is a case report which describes the possible etiology, diagnosis and management of early failed dental implants. Surgical management includes the reimplantation of failed implants after debridement of osteotomy site and decontamination of implant surface. Early diagnosis of implant failure, proper clinical evaluation and long term follow up are of paramount importance for such reimplantation of failed dental implants. [Kadadasu R NJIRM 2015; 6(4):115-118]

Key Words: Reimplantation, Debridement, Decontamination, Dental implants.

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Introduction: Bone-anchored endosseous implants are being used increasingly in craniofacial, dental, and orthopaedic surgery. Following placement, such implants form an intimate union with the surrounding bone; this process is known as osseointegration.¹

Although many literatures regarding dental implant reported to have long term success rate, they are not spared from complication & failure. The overall mean survival rate at 2 to 16year follow-up was 94.4%,² whereas others have reported a global failure rate of 1.9% to 3.6%.^{3,4} The overall first-year failure rate for dental implants may reach 3%-8%, with an additional annual loss of function of 1% after the first year, as the result of various complications.⁵

Primary predictors of implant failure are poor bone quality, chronic periodontitis, systemic diseases, smoking, advanced age, implant location, parafunctional habits, loss of implant integration and inappropriate prosthesis.^{3,4}

Implant failure timing is used for classification. Early (primary) failure occurs before or at abutment connection. It is suggested to occur because of failure to establish osseointegration, due to interference with the healing process. Late (secondary) failure occurs after occlusal loading. It is suggested to occur because of failure to maintain the established osseointegration, due to a process involving its breakdown.⁶ Majority of the patients with failed implants, reimplantation is often the

only alternative treatment that allows a fixed prosthetic reconstruction. Accordingly, reimplantation accounts for an ever-growing portion of clinical practice.⁷

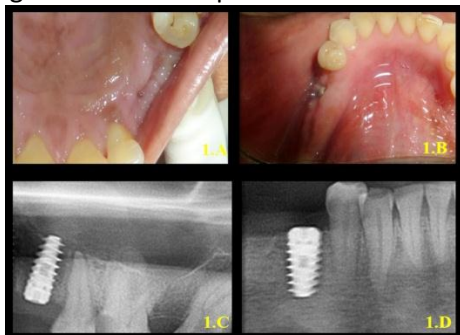
Despite the fact that reimplantation is a more common issue in today's treatment plans, there is very little information in the literature regarding success of reimplantation after implant failure. Few studies reported an outcome of reimplantation in previously failed sites, which concluded that redone dental implants have a lower survival rate compared with earlier report for implants in pristine sites.⁵ However, the replaced implants were greater in size both in terms of length and diameter than the first placed implant.⁸

This is a case report of reimplantation of early failed dental implants in two sites with a little change in the direction of the respective implants without preparation of an additional osteotomy site.

Case Report: A 35 year old systemically healthy female patient reported to department of Periodontics, Kamineni institute of dental sciences, Nalgonda, with the complaint of pain in the upper left back tooth region and lower right back tooth region since 1 month. Past dental history revealed Adin dental implants of 4.2×11.5mm and 5×11.5mm dimensions were placed in the region of 24 and 45 respectively. On clinical examination a soft, shiny, edematous mucosa with pus discharge and mobility of implants were noticed irt 24 and 45

(Fig 1A and B). Radiographic examination revealed radiolucency around the implants showing the failure of osseointegration (Fig 1C and D).

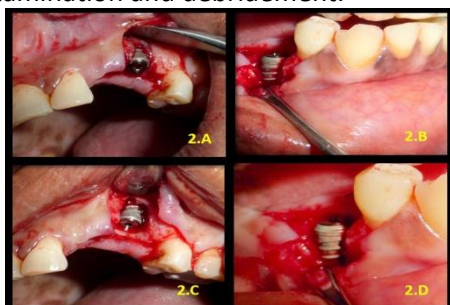
Figure 1. Clinical and Radiographic pictures showing failed dental implants.



It was diagnosed as early dental implant failure and planned for reimplantation of fibroosseointegrated implants.

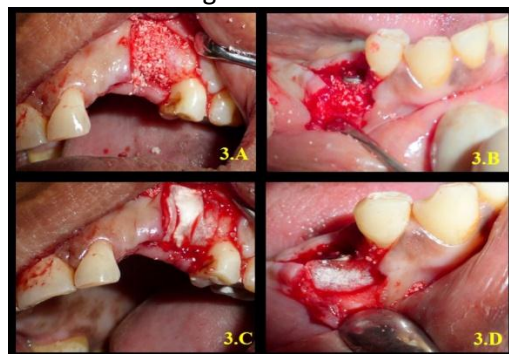
After acquisition of adequate local anaesthesia, midcrestal incision was given in the region of 24 and 45 and one releasing incision medially for better accessibility of the site. At both the sites, mucoperiosteal flap was reflected and found that the granulation tissue was replacing the lost buccal cortical plate and the implant threads were exposed (Fig 2A and B). Implants were retrieved using hand wrench in reverse direction and debridement of osteotomy sites was done followed by chlorhexidine irrigation. The fibrous material which was present on failed implants was removed using plastic curette. Chlorhexidine irrigation and air polishing were used for surface decontamination of implants. The same dental implants were reimplanted in the same osteotomy sites without additional preparation but with slight deviation in the angulation of placing the implants in both the sites (Fig 2C and D).

Figure 2. Granulation tissue surrounding implants and implants placed with angulation after decontamination and debridement.



An attempt for regeneration of lost buccal plate and jumping distance space closure was made using bone graft (Fig 3A and B) and resorbable collagen membrane (Fig 3C and D).

Figure 3. Bone graft and resorbable membrane for augmentation.



Adequate primary stability was attained and appropriate soft tissue closure was achieved by suturing (Fig 4A and B).

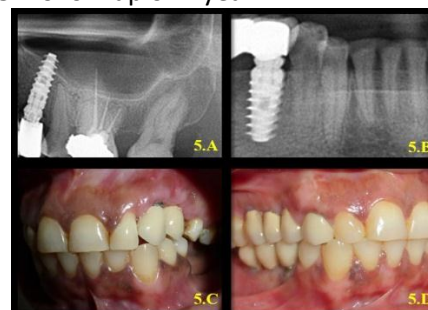
Figure 4. Soft tissue closure.



Broad spectrum antibiotics and analgesics were advised post operatively. Healing was satisfactory at the time of suture removal and patient was recalled at regular intervals.

Follow up of 15 weeks showed no clinical sign of inflammation and radiographic examination showed a close contact of bone to implant at both the sites (Fig 5A and B). 15° Angulated abutments were used for prosthesis because of change in the angulation of the implant placement. Patient was followed for 1 year and no significant findings were found (Fig 5C and D).

Figure 5. Follow up of 1 year.



Discussion: Dental implants have become an important therapeutic modality in the last decade, mainly after the works developed by Branemark.⁹ After the installation of endosseous implants, there are three possible responses that may occur in host tissues: (a) acute or chronic inflammatory process, causing early implant failure; (b) the formation of connective tissue surrounding implant, leading to osseointegration failure and (c) living and functional bone tissue formation around the implants, resulting in osseointegration. Early failure results from a disturbance in the initial steps of the osseointegration mechanisms. The majority of failures (88.2%) occurred in the preload phase.¹⁰ Implant failure in the present case has occurred in the preload phase which indicates that the acute inflammatory process might be responsible for failure of osseointegration. This acute inflammatory process could be due to contamination, inadequate surgical technique, oral microflora and host immune responses.⁹

Early versus late implant failures were characterized by female gender, younger age, better health, early implant removal and minor bone loss. The failure rate in the maxillary posterior area was significantly higher when compared to anterior zone.¹¹ In the present case early implant failure in the posterior regions of a female patient in both the jaws were noted. In contrast, Sverzut et al (2008)¹² found that men have a 1.255 times greater risk of early dental implant failure than women.

Definite implant failure is defined as cases with pain or mobility during use, bone loss of more than 50% of the implant length, continuous development of exudate, or the implant and/or prosthesis falling off in the oral cavity.⁸ Replacement after removal can be applied in cases with definite implant failure, but other therapeutic methods should be attempted in cases without definite failure. The present case was not a definite implant failure, so reimplantation of fibroosseointegrated same dimension implants were placed instead of new implants.

In contrast to the present case, Adell et al (1981)¹³ suggested that a new implant should be placed at the same site 9-12 months after the removal of a failed implant. Covani et al (2006)¹⁴ suggested

immediate replacement of implants with a larger diameter without waiting for a 1-year healing period and Kim et al (2010)⁸ suggested that failure rates were not significantly different between cases in which the implant was replaced immediately after removing the initial implant or replaced after a delay. However, in all the above mentioned studies replaced implants were greater in both length and diameter than the first implant placed in contrast to the present case.

Conclusion: Although reimplantation of dental implants with larger length and diameter showed good success rate, this case report suggests that same failed implant can be replaced immediately by slight change in the angulation of an implant to attain initial primary stability. This is possible only when the dental implant failures are noticed in early stages. However long term follow up and clinical evaluation is needed for further success of such reimplantations.

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