

IMPLANT PLACEMENT AND REHABILITATION – A CASE SERIES

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KEYWORDS

Dental implants, Implant placement, Osseointegration, Prosthetic rehabilitation, Bone quality, Immediate implant placement, Implant failure, Retreatment, Soft tissue management.

ABSTRACT

Dental implantology is a well-established treatment for replacing missing teeth, offering long-term success when carefully planned and executed. The success of implant therapy is influenced by factors such as bone quality, surgical technique, and prosthetic design. Despite advances in implant materials and placement methods, challenges persist in cases involving failed implants or immediate post-extraction placement. This case series presents three clinical scenarios: implant placement in a healed site, retreatment of failed implant-supported prostheses, and immediate implant placement following trauma. Each case emphasizes the importance of individualized treatment strategies to optimize implant stability, function, and long-term success. Clinical and radiographic follow-ups demonstrate successful osseointegration, minimal complications, and patient satisfaction. The findings highlight the necessity of comprehensive treatment planning, precise surgical execution, and regular follow-ups to enhance implant survival rates and minimize prosthetic failures.

Introduction

Dental implantology is a reliable treatment for replacing missing teeth, providing long-term success when planned and executed properly.¹ The success of implants depends on factors such as bone quality, surgical technique, and prosthetic design. Advances in implant materials and placement techniques have improved outcomes, but challenges remain in cases that require retreatment of failed implants or immediate placement after tooth loss.² Each case requires careful planning to ensure proper healing, stability, and function.

The outcome of implant treatment is influenced by factors such as bone support, implant positioning, and bite forces.³ Issues like bone loss, prosthetic failure, and the need for additional procedures can affect long-term success. Addressing these challenges requires a systematic approach to treatment planning and execution.⁴ This case series presents different clinical situations to highlight significant considerations in implant placement, focusing the need for individualized treatment strategies to achieve successful outcomes.

Case Presentation 1

A 24-year-old female patient presented with a complaint of a missing lower right posterior tooth, which had been extracted four years prior due to severe decay. The patient sought a permanent replacement option, and after a thorough clinical and radiographic evaluation, a dental implant-supported prosthesis was planned (Figure 1). The treatment approach involved the placement of an endosseous dental implant at the site of the missing tooth, followed by prosthetic rehabilitation after a healing period. The implant placement procedure was carried out under local anesthesia, utilizing an Osstem TS 4.5/10 mm implant with a torque of 45 Ncm to achieve primary stability. Post-operative radiographic assessment confirmed appropriate positioning and integration of the implant (Figure 2).

Following a healing phase of three months, a ceramometal crown with a screw-retained restoration (SCR) was placed to restore function and aesthetics (Figure 3). The patient was scheduled for a recall visit to monitor implant stability and peri-implant tissue health. At the

14-month follow-up, clinical and radiographic assessments confirmed successful osseointegration with no signs of peri-implant bone loss, mobility, or prosthetic complications. The patient reported satisfactory function and aesthetics, demonstrating the long-term stability and effectiveness of implant placement in a healed site.

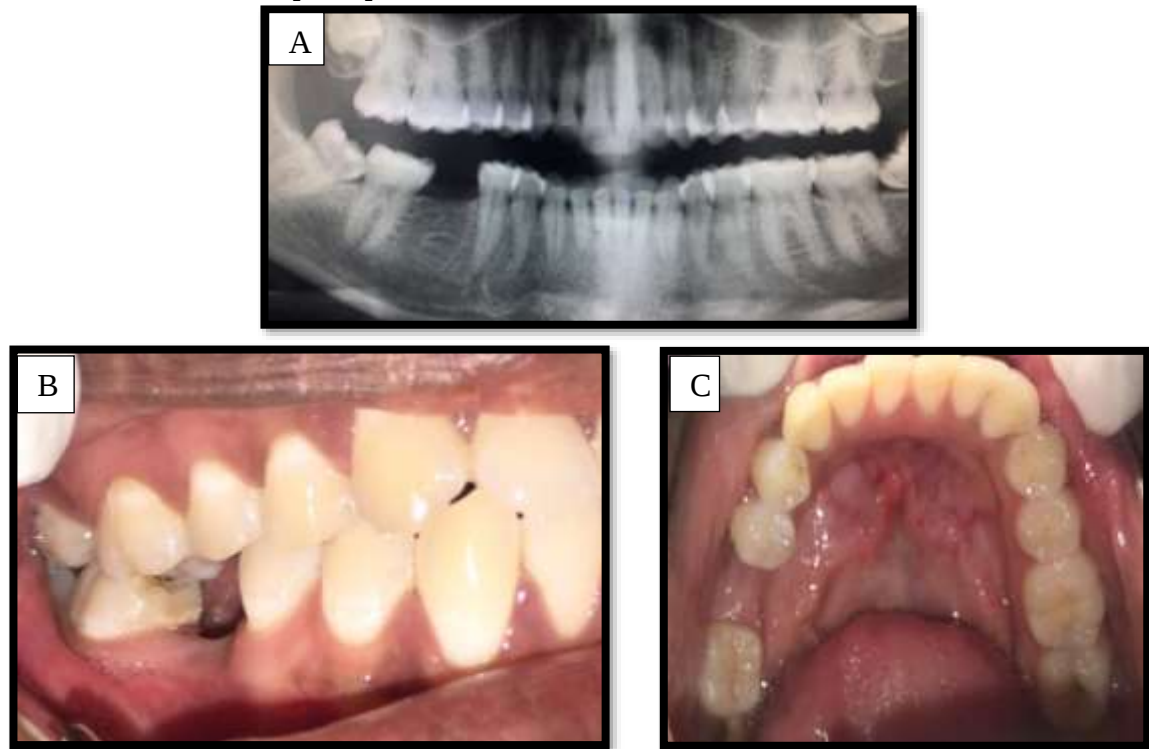


Figure 1: Pre-operative Images (A) Orthopantomogram (OPG) Assessment. (B,C) Intraoral Examination

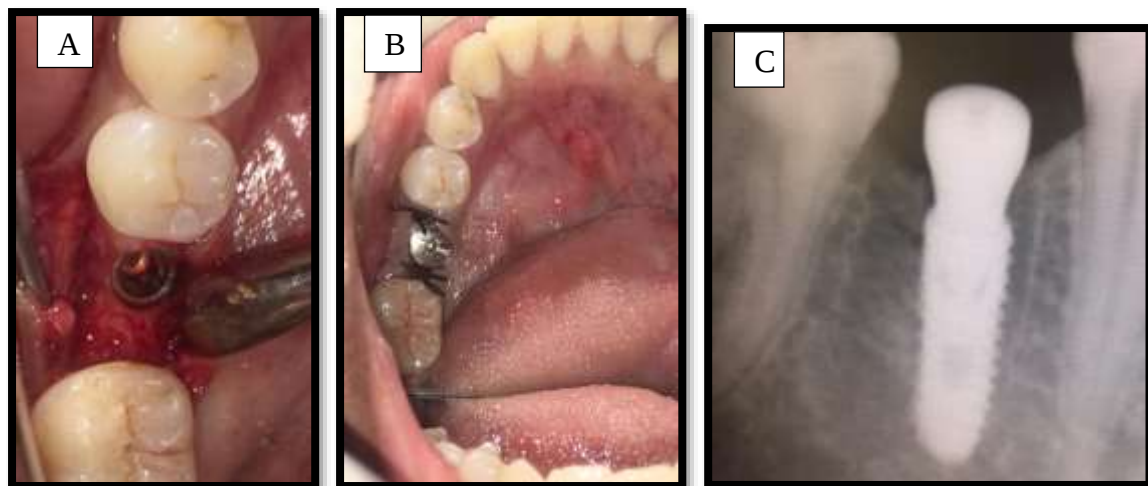


Figure 2: Post-operative Images (A,B) Clinical, (C) Radiographic



Figure 3: Postoperative Clinical Image of Implant-Supported Prosthetic Restoration
Case Presentation 2

A 58-year-old male patient presented with a chief complaint of a mobile upper implant-supported bridge, which had been placed one week prior at another dental facility. Clinical and radiographic assessments revealed inadequate bone support around three of the previously placed implants, compromising the stability of the prosthesis (Figure 4). Given the extent of the failure, a comprehensive retreatment plan was devised. The treatment approach involved the removal of the existing upper bridge and the placement of six new implants to ensure optimal distribution of occlusal forces and long-term prosthetic stability. Pre-operative radiographs confirmed significant bone loss around three implants, necessitating a revised implant plan. The new implant selection included Nobel Biocare Replace NP implants at sites 13 and 23, RP at site 15, and WP implants at sites 16, 25, and 26 (Figure 5).

Following implant placement, a staged approach was adopted, with a second-stage uncover procedure and open tray transfer impressions to ensure accurate prosthetic fit. A metal trial was conducted before final crown fixation, confirming proper occlusion and stability. Postoperative evaluation demonstrated successful implant integration, with immediate stability of the prosthesis (Figure 6). At the three-year follow-up, clinical and radiographic assessments revealed well-integrated implants, no signs of mobility, and a stable occlusal relationship. The patient reported satisfaction with both function and aesthetics, highlighting the effectiveness of the revised implant plan in addressing the initial prosthetic failure.



Figure 4: Preoperative Orthopantomogram (OPG) Showing Failed Implants in the Anterior Maxilla



Figure 5: Post-Operative Clinical View of Implant Healing Abutments in the Maxilla

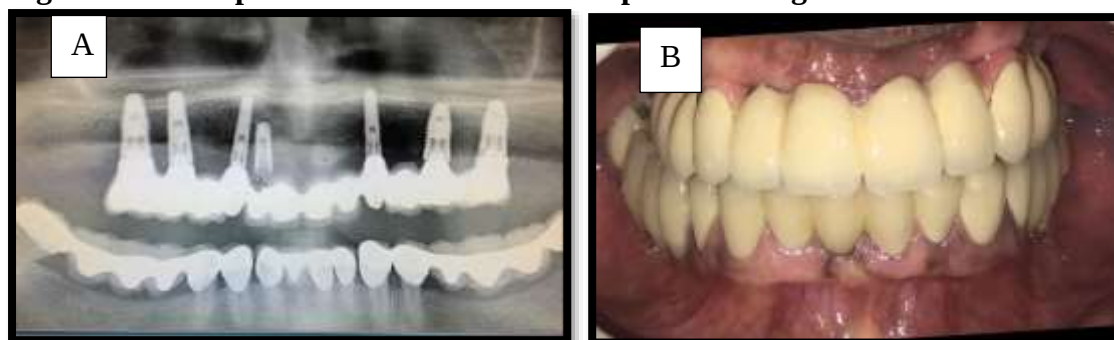


Figure 6: Postoperative OPG (A) and Clinical Image (B) Showing Full-Arch Implant-Supported Prosthetic Rehabilitation

Case Presentation 3

A 22-year-old male patient presented with a history of traumatic injury resulting in the loss of central incisors (#11, #21) and grade II mobility of the adjacent lateral incisors (#12, #22). The patient sought a fixed prosthetic solution to restore both function and esthetics. Clinical and radiographic evaluations confirmed the presence of a non-healed extraction socket at sites #11 and #21, along with compromised periodontal support for the adjacent lateral incisors (Figure 7). The treatment plan involved immediate implant placement at sites #11 and #21, coupled with provisional prosthetic restoration to maintain the emergence profile. Additionally, root canal therapy (RCT) was performed for teeth #12 and #22 to enhance their long-term prognosis. The surgical protocol included the placement of Osstem 4.0/11.5 mm implants at the designated sites, achieving primary stability at 40 Ncm. Xenograft material was used for bone augmentation to facilitate optimal osseointegration (Figure 8).

Provisional acrylic crowns were fabricated and placed on titanium transfer abutments to support soft tissue healing and esthetics contouring. After an appropriate healing period, the definitive prosthesis was delivered, with abutment tightening performed at 30 Ncm to ensure long-term retention (Figure 9). At the three-year follow-up, clinical and radiographic assessments confirmed stable implant integration, with no signs of mobility, peri-implant disease, or prosthetic complications (Figure 10). The patient reported high satisfaction with the esthetics and functional outcomes, demonstrating the success of immediate implant placement following traumatic tooth loss.



Figure 7: Preoperative (A) Radiographic, (B) Clinical Image



Figure 8: Intraoperative Clinical Image Showing Implant Placement in the Anterior Maxilla

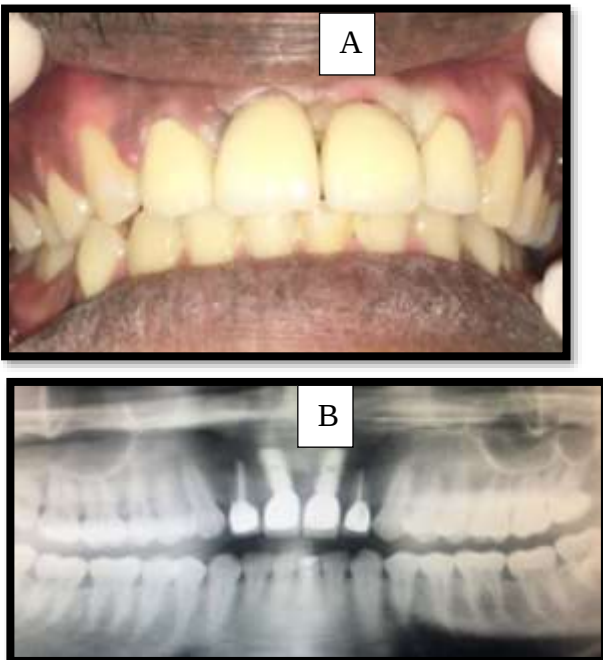


Figure 9: Post-operative (A) Clinical Image, (B) Radiographic



Figure 10: Clinical (A) and Radiological (B) images after 3 years follow-up

Discussion

Dental implant therapy has evolved into a predictable and reliable treatment modality for tooth replacement. The long-term success of implants is influenced by factors such as site preparation, implant stability, bone quality, and prosthetic rehabilitation.³ The cases presented in this series highlight different clinical situations requiring tailored treatment approaches, including implant placement in a healed site, retreatment of a failed implant-supported prosthesis, and immediate implant placement following trauma.

Implant placement in a healed site is generally associated with high success rates due to adequate bone remodeling and osseointegration before implant placement. The current case demonstrated stable functional and esthetics outcomes with no peri-implant complications. These findings are consistent with the study by Wipawin et al. (2024), which reported a 96% survival rate over 3–5 years in implants placed in posterior teeth with conventional loading.⁵ The absence of significant bone loss in the present case aligns with their findings that marginal bone loss was minimal, and the majority of complications were prosthetic rather than biological. Bilichodmath et al. (2020) reported minimal crestal bone loss in immediate-loaded implants over a five-year follow-up, reinforcing the importance of precise implant placement and controlled occlusal forces.⁶

Retreatment of failed implants presents clinical challenges, particularly in cases with poor initial bone support. The present case required the removal of a failed implant-supported bridge and the placement of six new implants to restore function. The necessity of retreatment underscores the importance of careful planning and appropriate bone quality assessment before initial implant placement. The findings in this case are supported by Aseri et al. (2022), who reported that implants in compromised sites, such as those with autoimmune conditions, require additional augmentation procedures to achieve stability.⁷ The reported slight bone loss in the upper premolar region in their study emphasizes the role of meticulous soft tissue management to minimize complications. A study by Kahn et al. (2021) highlighted the importance of patient-related factors such as age, gender, and implant location in recovery and healing, which

could be crucial in retreatment scenarios where initial failures occur due to biomechanical or biological factors.⁸

Immediate implant placement following trauma provides esthetics and functional benefits but requires careful consideration of implant stability and soft tissue healing. The present case demonstrated successful osseointegration and prosthetic rehabilitation with no complications at the three-year follow-up. This is consistent with the findings of Lee et al. (2021), who reported on a long-term observation of implants in a growing patient.⁹ Their study highlighted the need for careful monitoring of occlusal discrepancies over time, particularly in younger patients. The importance of maintaining emergence profile and soft tissue stability is also emphasized by Wipawin et al. (2024), who observed a high survival rate in immediate implant placement cases but noted a higher incidence of prosthetic complications such as proximal contact loss and screw loosening.⁵ These findings highlight the need for regular follow-ups and patient compliance to ensure long-term implant stability.

The present case series aligns with existing literature in demonstrating the predictability of dental implants in various clinical scenarios. The success of implant therapy depends on case selection, surgical technique, and prosthetic considerations. While conventional implant placement in a healed site provides optimal long-term outcomes, immediate placement and retreatment cases require additional considerations such as grafting, soft tissue management, and occlusal control. The findings reinforce the need for individualized treatment planning to optimize implant success and minimize complications.

Conclusion

Implant therapy provides predictable, long-term success when executed with proper planning and technique. This case series demonstrates that whether it is a healed site, implant retreatment, or immediate placement, individualized treatment strategies are essential for achieving optimal clinical outcomes.

References

1. Johansson G, Palmqvist S, Svenson BJ. Effects of early placement of a single tooth implant. A case report. *Clinical Oral Implants Research*. 1994 Mar;5(1):48-51.
2. Chee WW, Mordohai N. Tooth-to-implant connection: a systematic review of the literature and a case report utilizing a new connection design. *Clinical implant dentistry and related research*. 2010 Jun;12(2):122-33.
3. Brugnolo E, Mazzoco C, Cordioli G, Majzoub Z. Clinical and radiographic findings following placement of single-tooth implants in young patients--case reports. *International Journal of Periodontics & Restorative Dentistry*. 1996 Oct 1;16(5).
4. Kohal RJ, Klaus G. A zirconia implant-crown system: a case report. *International Journal of Periodontics & Restorative Dentistry*. 2004 Apr 1;24(2).
5. Wipawin R, Amornsettachai P, Panyayong W, Rokaya D, Thiradilok S, Pujarern P, Suphangul S. Clinical outcomes of 3–5 years follow-up of immediate implant placement in posterior teeth: a prospective study. *BMC Oral Health*. 2024 Mar 8;24(1):312.
6. Bilichodmath S, Cecil A, Bilichodmath R. A Five-year Follow-up of Immediate Loaded Implant: A Case Report. *Journal of Health Sciences & Research*. 2020 Sep 28;11(1):21-3.
7. Aseri A. A case report of dental implants and site augmentation in a patient with erosive lichen planus. *Case Reports in Dentistry*. 2022;2022(1):9508580.
8. Krekmanov L, Kahn M, Rangert B, Lindström H. Tilting of posterior mandibular and maxillary implants for improved prosthesis support. *International Journal of Oral & Maxillofacial Implants*. 2000 May 1;15(3).
9. Lee H, Jo M, Noh G. Biomechanical effects of dental implant diameter, connection type, and bone density on microgap formation and fatigue failure: A finite element analysis. *Computer Methods and Programs in Biomedicine*. 2021 Mar 1;200:105863.