



CASE REPORT

ANTERIOR MAXILLARY REHABILITATION WITH BASAL IMPLANTS AND IMMEDIATE LOADING - A CASE SERIES

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ABSTRACT

Background: Osseointegration, first proposed by Dr. Brånemark, revolutionized dental implantology. However, traditional implants often present challenges in cases of severe bone atrophy, sinus enlargement, or systemic conditions such as uncontrolled diabetes. Basal or cortical implants, with their unique design enabling anchorage in the basal cortical bone, eliminate the need for bone augmentation and allow immediate functional loading.

Objectives: To present a case series demonstrating the clinical application and outcomes of basal implant placement with immediate loading in patients with compromised bone conditions.

Results: Two female patients aged 24 and 25 years underwent basal implant placement with immediate loading. The procedures, including socket preparation, implant placement, impression taking, and crown fabrication, were completed with minimal invasiveness and rapid recovery. Multi-cortical engagement principles were applied, achieving stable anchorage and functional restoration without bone grafting. Both cases demonstrated successful outcomes with immediate function and patient satisfaction.

Conclusion: Basal implantology, based on multi-cortical engagement and immediate loading, provides a time-efficient, cost-effective, and reliable solution for dental rehabilitation in patients with inadequate bone volume for conventional implants. This approach offers predictable results even in anatomically or medically compromised cases.

Key word: osseointegration, basal implantology, basal implant placemen, immediate loading

INTRODUCTION

The success of implant therapy has increased and expanded globally ever since Dr. Brandemark discovered the "osseointegration" of implants into alveolar bone¹. Atrophied ridges, caudal extension of the maxillary sinus, protracted healing of 4-6 months, a few medical disorders like uncontrolled diabetes, and the fact that smokers are not recommended for this Branemark technique are only a few of the limits.

When it comes to immediate loading, a basal implant is preferable to a conventional implant, which takes a lengthy time to osseointegrate. When replacing one or more teeth right after extraction, basal implants can also produce aesthetically pleasing profiles.²

Case 1

Patient Information:

A 24-year-old healthy female presented with missing upper front left teeth. Retained deciduous teeth were extracted, and congenital absence of #22 and #23 was confirmed. She had no significant medical history of habits Clinical Findings:

The maxillary anterior ridge had reduced bone volume (CBCT: Type 2 bone). All mandibular teeth were present.

Diagnostic Assessment:

OPG and CBCT (Carestream, Kodak, India) revealed deficient bone in the #22 and #23 regions. (Figure 1)

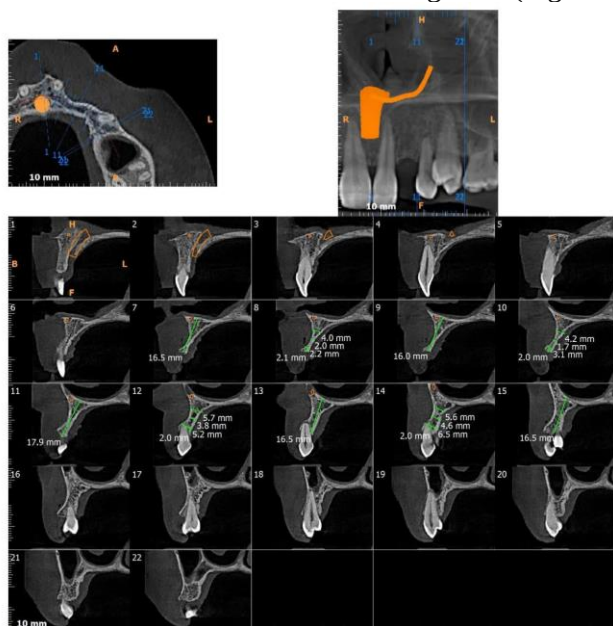


Figure 1. CBCT showing bone dimensions

No signs of pathology or systemic contraindications. in #22#23 tooth region

Therapeutic Intervention:

Pre-operative prophylaxis with amoxicillin (1g before surgery, 500 mg TID for 3 days). Local anesthesia with lignocaine (2% with adrenaline). Metal-sleeved surgical guide was used (Figure 2).



Figure 2. Surgical template with metal sleeves

Two tapered cortical implants (Bioline I, Bioline Dental GmbH & Co.KG, Berlin, Germany) (3.5 × 29 mm) placed at 20° to the occlusal plane (Figure 3). Graft was placed (Figure 4). Prosthesis delivered the same day.(Figure 5)

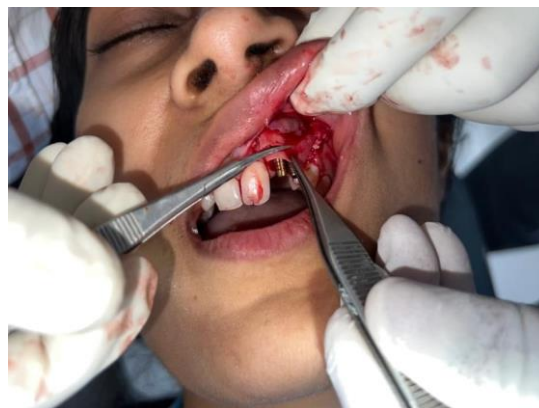


Figure 3. Placement of graft



Figure 4. Basal implant in 22,23 region



Figure 5. Cementation of crowns with basal implant in 22,23 region

Follow-Up and Outcomes

Post-op radiographs confirmed correct positioning.(Figure 6) No signs of infection or implant failure were noted. Patient was satisfied functionally and aesthetically.



Figure 6. Post-operative OPG showing basal implant in 22,23 region

CASE 2

Patient Information:

A 24-year-old healthy female reported with a mobile upper front right tooth. Tooth #13 showed Grade 3 mobility.

Clinical Findings:

Bone height: 6.0 mm, Bone width: 4.0 mm. (Figure 7) All mandibular teeth were present.



Figure 7. CBCT showing bone dimensions in #13 tooth region

Diagnostic Assessment:

OPG and CBCT (Carestream, Kodak, India) confirmed localized bone loss in the #13 region. No systemic issues noted.

Therapeutic Intervention:

Prophylaxis with amoxicillin (as in Case 1). Local anesthesia with lignocaine 2% and adrenaline. Guided (Figure 8) placement of a single basal implant (3.5 × 29 mm) (Bioline I, Bioline Dental GmbH & Co.KG, Berlin, Germany) at site #13. Figure 9. Graft was placed. (Figure 10) Immediate fixed prosthesis delivered. (Figure 11)



Figure 8. Surgical template



Figure 9. Placement of graft



Figure 10. Basal implant in #13 region



Figure 11. Cementation of crowns with basal implant in #13 region

Follow-Up and Outcomes:

Implant was stable. OPG showed successful osseointegration. (Figure 12) The patient reported no discomfort post-op and was satisfied with the esthetics.



Figure 12. Post-operative OPG showing basal implant in #13 region

Patient Perspective

Both patients expressed satisfaction with the rapid results and minimal postoperative issues. They appreciated the single-visit restoration process, particularly the absence of grafting procedures.

Informed Consent

Written informed consent was obtained from both patients for treatment and for inclusion in this case series report.

DISCUSSION

In 1972, Dr. Jean-Marc Julliet created and utilised a single-piece implant known as the basal implant. Dr. Gerard Scortecchi, a French dentist, created an enhanced basal implant system with corresponding cutting instruments in the middle of the 1980s.³ Since the prosthesis cannot replicate the ideal dentulous architecture, replacing a missing tooth or teeth is the most difficult dental procedure performed today. Implants are the most biocompatible and appropriate prosthetic device to address this issue and achieve the preceding paradigm. The quality (thickness) and quantity of bone, as well as the macro and micro architecture of the implant, all affect its success.⁴ The bone-implant contact reflect the barrier provided by the bone during insertion, and it can also reveal the type of bone it goes through. The lingual cortex, mandibular symphysis, etc. in the mandible, and the anterior nasal spine, nasal floor, pterygoid regions, etc. in the maxilla are examples of atrophied bone sites where basal bone implants are typically positioned and require stable cortex for engagement.⁵ The basal implants in the maxillary and mandibular jaws support single or multiple unit restorations. These implants may be used in portions of bone that have healed from extraction sites, freshly removed sockets, and bone regions with reduced height and width.⁶

Using cortical Implants over endo-osseous implants save time and money because the prosthesis is fixed 72 hours after implant surgery. Along with avoiding the necessity for a second surgery to expose the implant and fix the abutment over it, there is no longer any requirement for provisionals or interim dentures. Because they are minimally invasive, they also have a low rate of post-operative oedema, and the operation sites heal quickly and frequently without any problems.⁷

Cortical implants avoids sinus lifts, nerve transpositioning, and bone augmentation or grafting, making it effective even in the most bone-unfavorable circumstances.^{8,9}

In the current case series, two young female patients with poor bone volume have had successfully rehabilitated with basal implants with rapid loading.

Anatomical restrictions and decreased alveolar bone volume in both cases made it difficult to employ traditional endosseous implants without additional surgical techniques like bone grafting or sinus augmentation. Furthermore, there was little postoperative discomfort, quick healing, and no complications because the surgery was atraumatic. However, the expected loss of unstimulated alveolar bone over time is a crucial clinical issue.

The alveolar ridge may resorb as a result of occlusal loads being transferred directly to the basal bone components instead of the crestal bone. This could result in soft tissue shrinkage and possible spaces between the gingiva and prosthesis.

Overall, these cases have been reported to support the usefulness of basal implants as a practical and effective implant dentistry method, especially for patients who have anatomical problems or who require rapid function.

CONCLUSION

Patients with limited bone volume can replace their teeth quickly, with little discomfort, and without the need for bone grafting thanks to basal implants, which provide a safe and effective alternative. Basal implants exhibit reliable results even in intricate situations.

DECLARATIONS

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Competing Interests:

The authors have no competing interests to declare.

Ethical Approval:

The study was approved by the appropriate ethics committee and conducted according to relevant guidelines and regulations.

Informed Consent:

Not applicable.

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