UDC: 616.314-089.843-06
Professional paper

IMPLANT FAILURES IN THE ESTHETIC ZONE- CASE PRESENTATION

Kenan FERATI, Arbëresha BEXHETI FERATI, Sabetim ÇERKEZI, Jeta BEXHETI-REXHEPI, Armend REXHEPI, Amar FERATI
University of Tetova – Faculty of Medical Sciences – Dentistry Study Program

Abstract

The esthetic zone presents particular challenges in implantology due to its high esthetic demands and visibility during speech and smiling. This paper presents a clinical case of a 26-year-old female patient with an unsatisfactory esthetic outcome following the placement of a dental implant in the right lateral incisor region of the maxilla, despite successful osseointegration. Through a personalized surgical approach and a minimally invasive protocol, the implant was explanted, the alveolus preserved, tissues augmented, and reimplantation performed in an ideal position, resulting in excellent functional and esthetic outcomes.

The development of implantology has revolutionized the treatment of tooth loss—especially in the esthetic zone, encompassing the anterior maxillary teeth (incisors, canines, and premolars). These teeth are visible during speech and smiling, so their replacement necessitates not only function, but also optimal esthetics.

Implant placement in this region demands a meticulous approach, due to anatomical and esthetic challenges. These include the thin nature of the vestibular bone plate, the critical position of the implant in relation to the lip line and interdental papillae, and the patient-specific morphology of soft tissues—all factors that directly affect esthetic success.

Implant mistakes—such as improper implant placement, inadequate bone volume assessment, incorrect implant selection, or poorly timed placement—can lead to significant functional and esthetic consequences. These include gingival recession, loss of interdental papillae, exposure of the implant body, and disharmonious smile lines. Failures are not limited to implant loss; rather, they often reflect failure to achieve esthetically acceptable outcomes—issues that are much harder to correct than failures in non-esthetic zones.

Furthermore, corrective reconstructive interventions—such as soft and hard tissue augmentation, reimplantation, or advanced prosthetic techniques—require time, cost, and may fail to fully restore the esthetic result. This makes careful planning and precise execution—both surgically and prosthetically—absolutely essential.

Implant mistakes—especially those involving improper reconstruction of hard and soft tissues before or during implant placement—are critical to the achievement of natural, long-term outcomes. Techniques in this context include using autologous soft tissue grafts, resorbable membranes, particulate or block bone grafts (autologous/autoplastic), and socket preservation techniques. These play a key role in ensuring stable gingival contours and harmonious integration of restorations with adjacent dental structures.

In this manuscript, we will examine the most common esthetic-zone implant mistakes, their underlying causes, and the protocols for their correction—anchored by a concrete clinical case illustrating esthetic failure and subsequent surgical-prosthetic resolution.

Most Common Esthetic-Zone Implant Mistakes

Implants in the esthetic zone represent one of the greatest challenges in modern implantology. Optimal results require perfect alignment among implant position, soft tissue volume, gingival esthetics, and prosthetic components. Mistakes in this zone not only impair function but are often difficult to correct esthetically.

The most frequent errors encountered in clinical practice are: Improper 3D implant positioning This includes mesio-distal, bucco-lingual, and apico-coronal errors. Buccally misplaced implants often induce vestibular bone resorption and gingival recession, exposing the implant. Conversely, palatally placed implants compromise emergence profiles and limit esthetic restoration. Apical or superficial positioning affects papilla height and gingival harmony.

Poor soft-tissue management

Soft tissues are critical in the esthetic zone. Lack of thick, keratinized gingiva—or improper flap handling during surgery—can result in recession, papilla loss, and asymmetrical gingival contours. These issues diminish esthetic perception and compromise visual integration.
Extraction in the esthetic zone without socket preservation leads to rapid vestibular bone resorption. This volumetric loss complicates later implant placement and esthetic results. Failure to anticipate this is a common error that necessitates more complex subsequent augmentation procedures.

Inappropriate timing of implant placement

Choosing between immediate, early, or delayed implant placement should depend on local anatomy and tissue condition. Immediate placement in damaged sockets—without adequate augmentation—can cause irreversible esthetic failure. Delayed placement beyond necessary waiting can also cause bone loss requiring complex correction.

Insufficient communication between surgical and prosthetic teams

Esthetic outcomes depend on tight coordination between the surgeon, prosthodontist, and lab technician. Miscommunication regarding implant position, emergence profile, or abutment design often results in restorations that fail to meet patient esthetic expectations.
Such errors often stem from inadequate planning, lack of esthetic analysis, and neglect of contemporary treatment protocols. The clinical case presented in the following section illustrates some of these mistakes and will serve as a basis for discussing corrective methods and observed outcomes.

Clinical Case Description

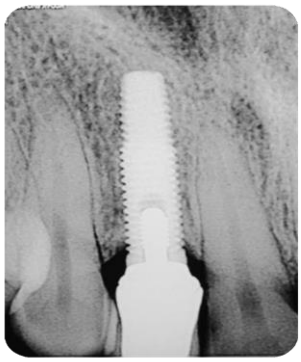
Presentation

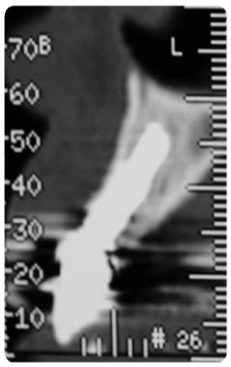
A healthy 26-year-old female presented with esthetic concerns in her upper anterior region. She was dissatisfied with an existing implant-supported restoration on the right maxillary lateral incisor (tooth 12). The implant had been placed about 1 year earlier following a traumatic extraction. There was no history of infection, sensitivity, or pain, and her medical history was unremarkable.

Clinical evaluation revealed:

Gingival disharmony: The gingival margin at tooth 12 was positioned more apically compared to adjacent central incisor and canine, creating visible asymmetry, exacerbated by a high smile line.
Disproportionate crown: The existing prosthetic crown was long and narrow versus the left lateral incisor, with unnatural morphology.
Occlusal disharmony: Crown architecture was incongruent with the mandibular antagonists, disrupting visual and functional harmony.
Arch disharmony: The restoration did not integrate into the maxillary arch form, breaking the incisal line and smile symmetry, impacting the patient’s confidence.

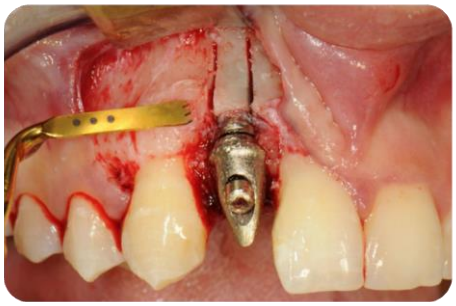
Radiographically, the implant was well integrated with no signs of periapical radiolucency or bone loss. Nonetheless, esthetically it failed to meet modern smile zone standards, classifying it as an esthetic failure requiring surgical and prosthetic correction.

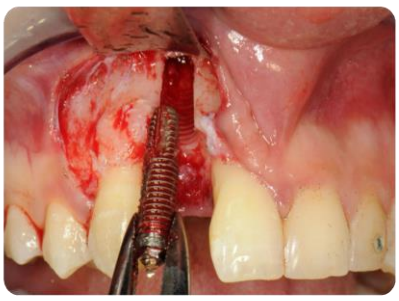




Therapeutic Plan and Surgical Treatment

Given the implant's function but poor esthetics, a staged reconstructive surgical plan was adopted:
Implant removal and bone defect management an atraumatic explantation was performed using piezo-surgery to preserve surrounding tissues. A combined horizontal (3 mm) and vertical (10 mm) vestibular defect was identified post-explantation.





Hard tissue augmentation was performed concurrently using:

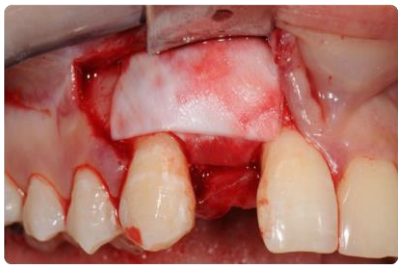
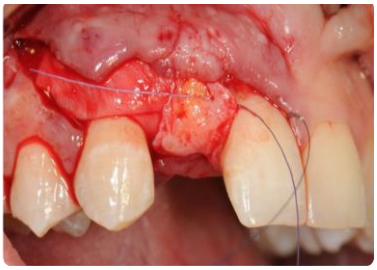
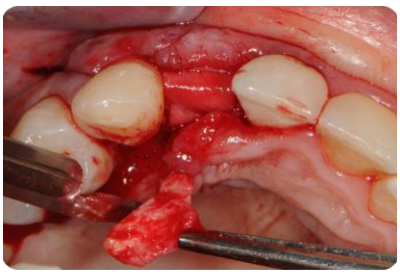
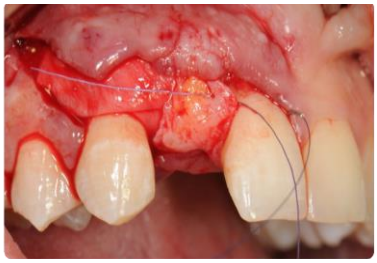
- Biocompatible particulate bone substitute
- Autogenous growth factors: PRF-A and injectable PRF
- Application of PRF membrane and Aloderm® acellular dermal matrix

Objective: stimulate osteogenesis, guide regeneration, and reestablish natural contour

Soft-tissue augmentation

A palatal graft was harvested and tunneled into the vestibular defect using a minimal incision technique to preserve vascular supply. This enhanced gingival thickness and contour, preparing the site for future restoration.



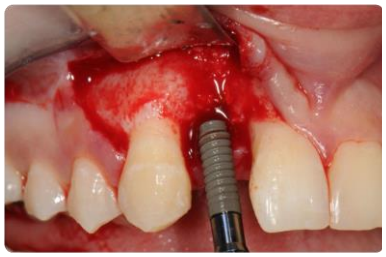
Postoperative management

The surgical site was meticulously closed, with strict postoperative care. Implant placement was planned for 4–6 months post-surgery, contingent on tissue maturation. Healing progressed uneventfully.After 5 months, radiographic and clinical assessment confirmed stability of regenerated bone and soft tissues.

Implant placement surgery

A precision-designed mucoperiosteal flap was elevated. CBCT confirmed adequate bone volume. A new implant was placed in optimal 3D position—respecting gingival margins, interdental papillae, and biomechanical axes—using standardized osteotomy protocols.

Concurrent soft-tissue graft, an additional palatal mucogingival graft was tunneled to optimize vestibular gingival thickness, contour, and long-term esthetic stability.



Wound closure and aftercare

- The surgical site was closed with fine 5/0 sutures for primary intention healing. Postoperative care included:
- Controlled oral hygiene with 0.12% chlorhexidine
- Antibiotics and analgesics as appropriate
- Weekly follow-up until complete soft-tissue healing

Healing was successful, with harmonious tissue volume, color, and contour.

Prosthetic Phase – Final Restoration

- After an additional 5-month osseointegration period:
- Healing abutment phase
- A suitable healing abutment was placed to shape peri-implant tissues.
- The gingiva appeared healthy, thick, and inflammation-free.

Final impression and restoration

A precise PVS transfer impression was taken. A custom zirconia abutment and monolithic zirconia crown were fabricated for optimal light transmission, strength, and esthetic integration. Morphology and shade matched the contralateral lateral incisor.

Esthetic and functional evaluation

The outcome featured:

- Complete integration into the maxillary arch
- Pink and white esthetic scores (PES/WES) harmony
- Undetectable restoration during speech or smiling
- Optimal occlusal and functional performance

The patient reported full satisfaction, increased confidence, and improved quality of life.

Discussion

Treating implants in the esthetic zone represents a complex challenge in modern implant dentistry. This case distinctly illustrates the importance of:

Precise 3D planning and analysis of peri-implant tissues

- Collaborative multidisciplinary execution
- Use of advanced techniques (e.g., GBR with PRF/Aloderm, tunneling grafts, piezo-surgery)
- Commitment to esthetic outcome, not just osseointegration
- Contemporary literature (e.g., Buser et al., 2004) affirms that insufficient vestibular bone leads to recession and esthetic failure.

In this case, combining bone substitutes with growth factors and soft tissue grafts resolved both structural and esthetic deficiencies.

Moreover, shaping the emergence profile using provisional components and custom abutments is vital—supporting papilla formation and seamless gingival integration, consistent with PES/WES criteria.

Clinical Lessons Learned

Adequate osseointegration alone is not enough in the esthetic zone—esthetic planning must be prioritized. Atraumatic implant removal and secondary reconstruction can yield superior outcomes versus compromising. Personalized protocols, patience, and appropriate timing are essential for successful esthetic implant rehabilitation.

Conclusion

The management of esthetic complications in the anterior maxillary region presents a significant challenge in implantology practice, where the success of treatment is not solely defined by implant osseointegration, but also by the harmonious integration of the surrounding hard and soft tissues. The presented case demonstrates the importance of an integrated, carefully planned, and staged approach, involving:

- Atraumatic explantation of the failed implant using piezo-surgical technology, preserving the integrity of surrounding structures;
- Simultaneous bone defect augmentation with alloplastic material combined with PRF, facilitating successful bone regeneration;
- Reimplantation of the dental implant in a correct three-dimensional position, guided by both prosthetic and esthetic criteria;

Soft tissue augmentation using an autogenous mucogingival graft through the tunneling technique, aimed at improving gingival thickness and achieving a natural soft tissue profile.

The combination of advanced surgical techniques, autologous biomaterials such as PRF, and adherence to modern biological and esthetic principles, constitutes the key to long-term functional and esthetic success in high-demand esthetic zones. This case underlines the value of timely intervention and multidisciplinary planning in managing implant failures, turning a complex clinical scenario into a predictable and stable esthetic outcome

References

[1] **Buser D, Martin W, Belser UC.** Optimizing esthetics for implant restorations in the anterior maxilla: anatomic and surgical considerations. *Int J Oral Maxillofac Implants*. 2004;19 Suppl:43-61.

[2] **Aghaloo TL, Moy PK.** Which hard tissue augmentation techniques are the most successful in furnishing bony support for implant placement? *Int J Oral Maxillofac Implants*. 2007;22 Suppl:49-70.

[3] **Jung RE, Zembic A, Pjetursson BE, Zwahlen M, Thoma DS.** Systematic review of the survival rate and incidence of biologic, technical, and esthetic complications of single crowns on implants reported in longitudinal studies with a mean follow-up of 5 years. *Clin Oral Implants Res*. 2012;23 Suppl 6:2-21.

[4] **Nevins M, Nevins ML, Camelo M, Schupbach P, Kim DM.** Use of platelet-rich fibrin in combination with bone grafts for ridge preservation: a clinical and histologic study. *Int J Periodontics Restorative Dent*. 2013;33(3):299-305.

[5] **Zuhr O, Rebele S, Hurzeler MB.** Thickening of the gingival biotype with a collagen matrix: a volumetric analysis. *J Clin Periodontol*. 2013;40(9):821-8.

[6] **Esposito M, Grusovin MG, Coulthard P, Worthington HV.** The effectiveness of various bone augmentation procedures for dental implants: a Cochrane systematic review of randomized controlled clinical trials. *Int J Oral Maxillofac Implants*. 2006;21(5):696-710.

[7] **Botticelli D, Berglundh T, Lindhe J.** Hard-tissue alterations following immediate implant placement in extraction sites. *J Clin Periodontol*. 2004;31(10):820-8.

[8] **Hürzeler MB, Zuhr O, Schupbach P, Rebele SF, Emmanouilidis N, Fickl S.** The Edentulous Ridge Augmentation with a Soft Tissue Substitutes: A Clinical and Histologic Evaluation. *Clin Oral Implants Res*. 2015;26(8):984-9.

[9] **Carnio J, Zaniquelli O.** Tunnel technique for grafting keratinized tissue around implants: a clinical report. *Int J Periodontics Restorative Dent*. 2014;34(5):639-45.

[10] **Misch CE.** Contemporary Implant Dentistry. 3rd Edition. Elsevier Mosby; 2008.