Four-unit immediate restoration in the maxillary aesthetic area

Dr Massimo Frosecchi, Italy

The present case report details the oral rehabilitation of a 62-year-old female patient presenting with chronic apical pathologies affecting the maxillary anterior teeth, which were deemed hopeless and indicated for extraction. Given her concerns regarding aesthetics and function, the patient sought a fixed, predictable treatment option capable of replicating her natural dentition. She further emphasised the importance of avoiding an edentulous phase and requested an immediate restoration to maintain her facial appearance and overall quality of life.

Introduction

Restoring the aesthetic zone in an older patient can present unique challenges. While the expectations for a natural and aesthetically pleasing result often remain high, considerations such as reduced bone volume and soft-tissue health require careful management. In this case, the presence of a thin buccal plate and chronic apical lesions added complexity, requiring advanced techniques for predictable outcomes.

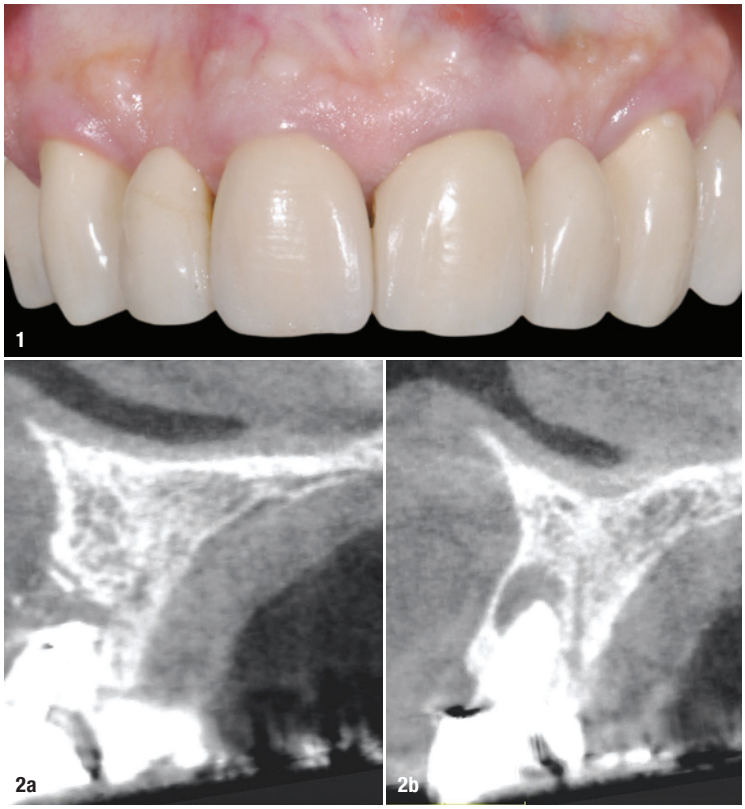


Fig. 1: Intra-oral view: Fixed dental bridges on teeth #13–11 and #21–23.
Figs. 2a+b: Radiographic analysis: Presence of chronic apical lesions and a thin buccal plate.

The treatment plan comprised immediate implant placement in conjunction with guided bone regeneration (GBR) to simultaneously address functional and aesthetic requirements. Straumann® BLX implants were selected for their capacity to achieve high primary stability, even in sites with limited bone availability. The implant's macrodesign is particularly advantageous for immediate placement and loading protocols, providing secure anchorage and predictable outcomes. This approach reduces overall treatment duration, preserves peri-implant soft-tissue architecture, and enables the patient to maintain both function and appearance throughout the rehabilitative process.

Guided bone regeneration was essential for ridge preservation and stability. Xenograft material was used to fill the extraction sockets of the central incisors. To address soft-tissue deficiencies and enhance contouring, Mucoderm®, a collagen-based soft-tissue substitute, was applied to the buccal aspect of the lateral incisor regions. This combination improved tissue quality, contributing to an aesthetic outcome and ensuring a natural transition between the prosthesis and tissues.

A prosthetic-driven implant planning workflow further enhanced the outcome of the treatment. The immediate placement of a screw-retained 4-unit temporary bridge allowed the patient to maintain functionality and aesthetics during the osseointegration period. The final restoration, made from zirconium oxide and lithium disilicate, offered a natural-looking result that met the patient's aesthetic and functional expectations.

This report highlights the importance of combining the Straumann® BLX implant with GBR techniques and soft-tissue substitutes in the management of the aesthetic zone. By addressing both biological and aesthetic challenges, this approach ensures long-term success, deliv-

ering functional and visual harmony while enhancing patient satisfaction.

Initial situation

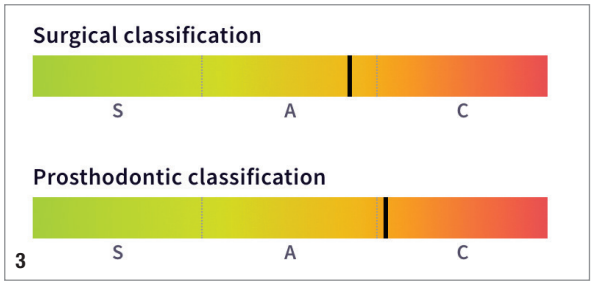
A 62-year-old systemically healthy female presented with chronic apical pathologies affecting the maxillary anterior teeth, which were deemed non-restorable and indicated for extraction. The patient expressed concern regarding the aesthetic implications of the treatment and its potential impact on her quality of life. She sought a predictable, fixed solution that would closely replicate her natural dentition and emphasised the importance of avoiding an edentulous period during the course of therapy. Accordingly, she requested an immediate restorative approach.

Clinical examination revealed a medium smile line and the presence of fixed partial dentures spanning teeth #13–11 and #21–23. Radiographic evaluation confirmed chronic apical lesions associated with the affected teeth and demonstrated a thin buccal cortical plate (Figs. 1–2b).

Based on the SAC classification, the patient's surgical case was categorised as advanced, while the prosthodontic status was classified as complex (Fig. 3).

Treatment planning

After evaluating the clinical and radiographic findings, a prosthetic-driven implant planning workflow was applied following a comprehensive discussion with the patient (Fig. 4).



This approach also allowed for a detailed explanation of the treatment steps, ensuring the patient had a clear understanding and that her expectations were aligned with the proposed plan. The treatment plan was as follows:

1. Cutting the present bridge between canines and lateral incisors.
2. Extraction of hopeless central incisors.
3. Implant insertion in the lateral incisor position.
4. Ridge preservation in the region of the central incisors.
5. Soft-tissue grafting in buccal aspects of the lateral incisor regions.
6. Delivery of screw-retained 4-unit temporary bridge.
7. Monitoring during osseointegration period.
8. Finalisation with zirconium oxide and lithium disilicate 4-unit screw-retained bridge.

Surgical procedure

Following administration of local anaesthesia with 2% lidocaine containing 1:100,000 epinephrine, the existing bridge was sectioned between the canines and lateral incisors. The hopeless maxillary central incisors were

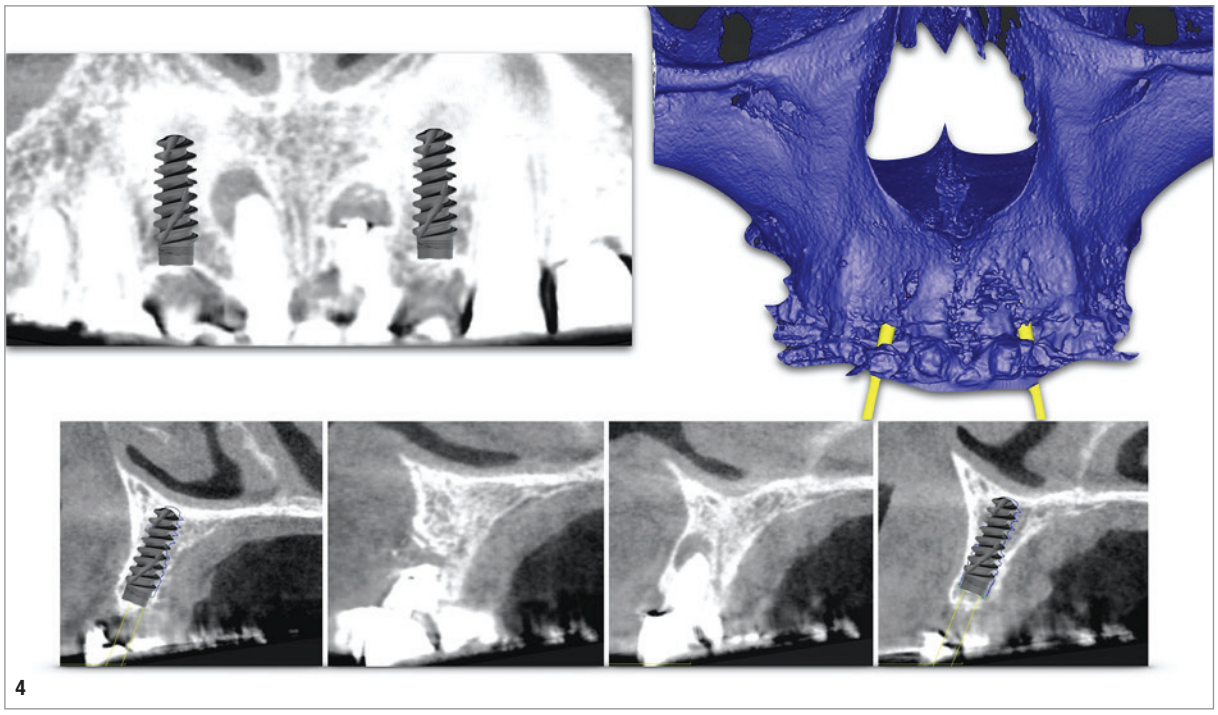
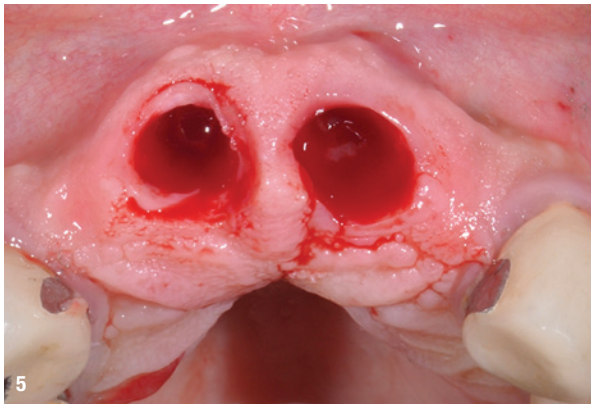


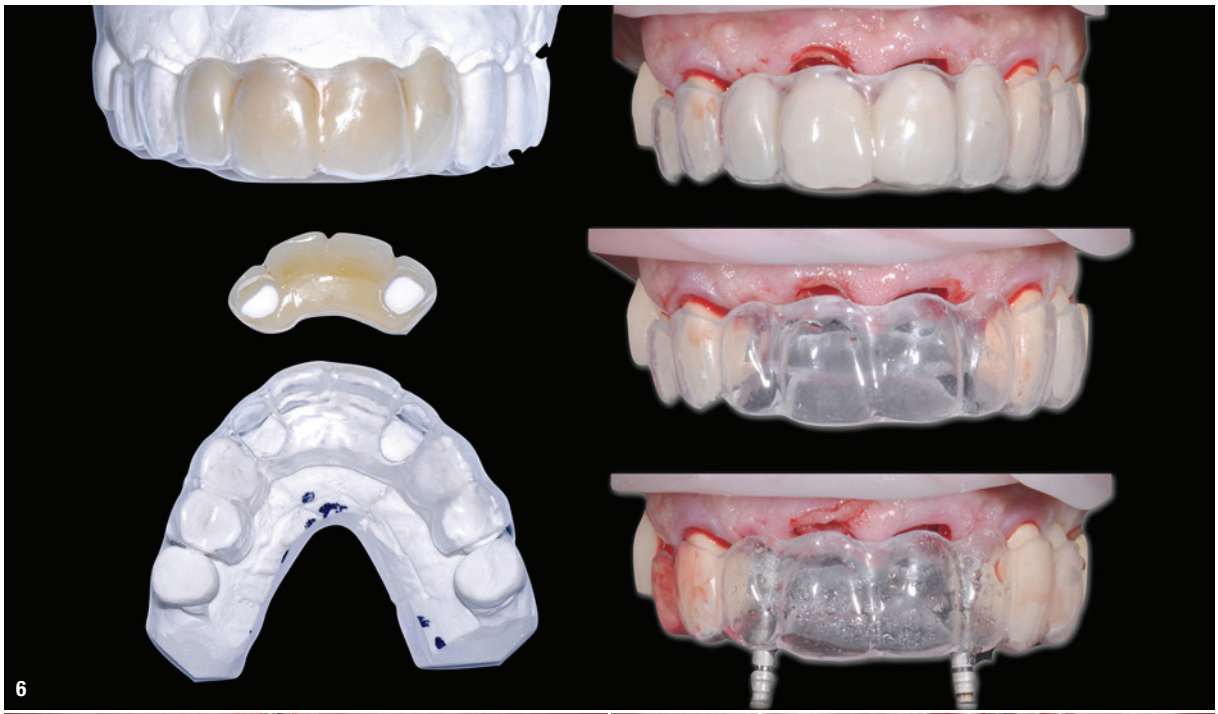
Fig. 3: SAC classification. – **Fig. 4:** A prosthetic-driven implant planning workflow.

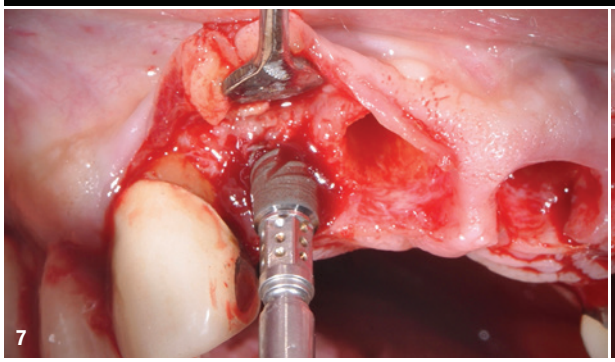


then carefully extracted using periotomes to preserve the alveolar bone. The teeth were luxated and removed atraumatically, avoiding excessive socket enlargement. The extraction sites were thoroughly debrided with curettes to ensure complete removal of granulation tissue and debris (Fig. 5). A mucoperiosteal flap was elevated via a crestal incision, and a surgical stent was employed to facilitate prosthetically guided implant placement (Fig. 6).

Implant osteotomies were prepared using the Straumann® BLX Surgical Cassette, with attention to local bone density. Preparation commenced with a 2.2 mm pilot drill following the manufacturer's protocol, using clockwise rotation and copious irrigation with chilled sterile saline. Subsequently, Straumann® BLX implants (Ø 3.75 mm, Roxolid® SLActive®) were placed at sites #12 and #22 using a handpiece (Figs. 7+8), achieving optimal primary stability.

A final insertion torque of ≥ 35 Ncm was achieved, confirming adequate primary stability. Following implant placement, the central incisor sockets were visualised prior to grafting (Fig. 9). A temporary screw-retained bridge was positioned before the grafting procedure to





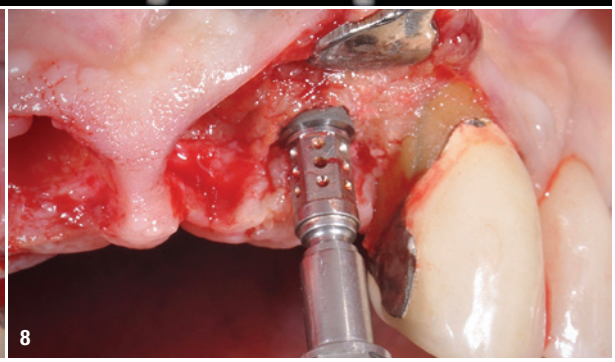
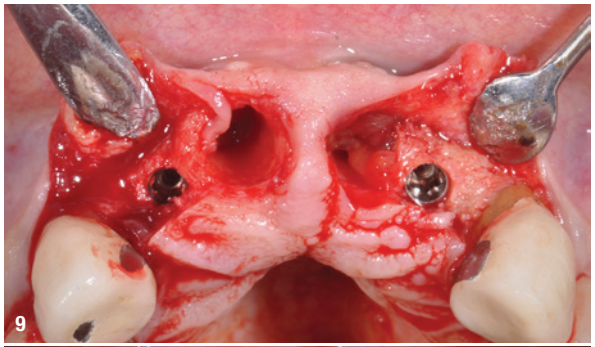
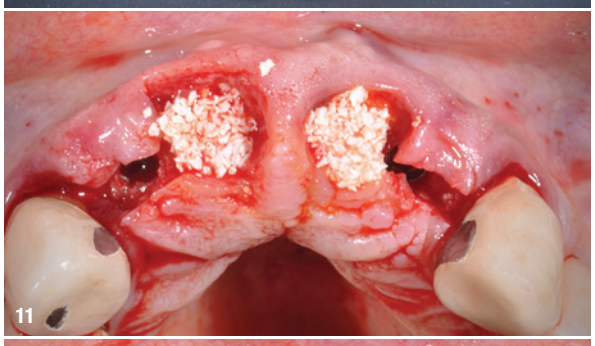


Fig. 5: After bridge sectioning, hopeless central incisors were extracted. – **Fig. 6:** A mucoperiosteal flap was raised, and a stent guided implant placement. **Figs. 7+8:** Straumann® BLX Roxolid® SLActive® implants (Ø 3.75 mm) were placed at sites #12 and #22.









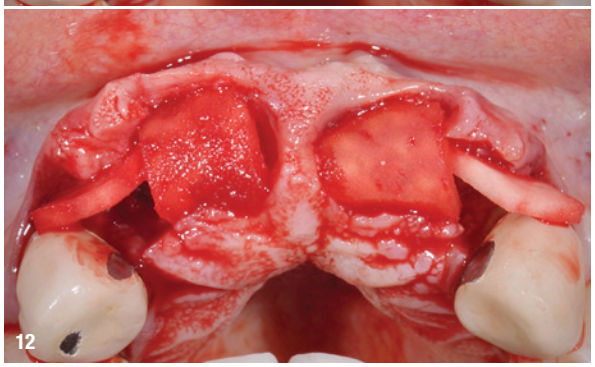


Fig. 9: A final insertion torque of ≥ 35 Ncm was achieved to ensure primary stability and the central incisor sockets were prepared for grafting. – **Figs. 10a+b:** Temporary bridge with screw-retained abutments. – **Figs. 11+12:** Xenograft and Mucoderm® were used to optimise hard and soft tissue for aesthetics.

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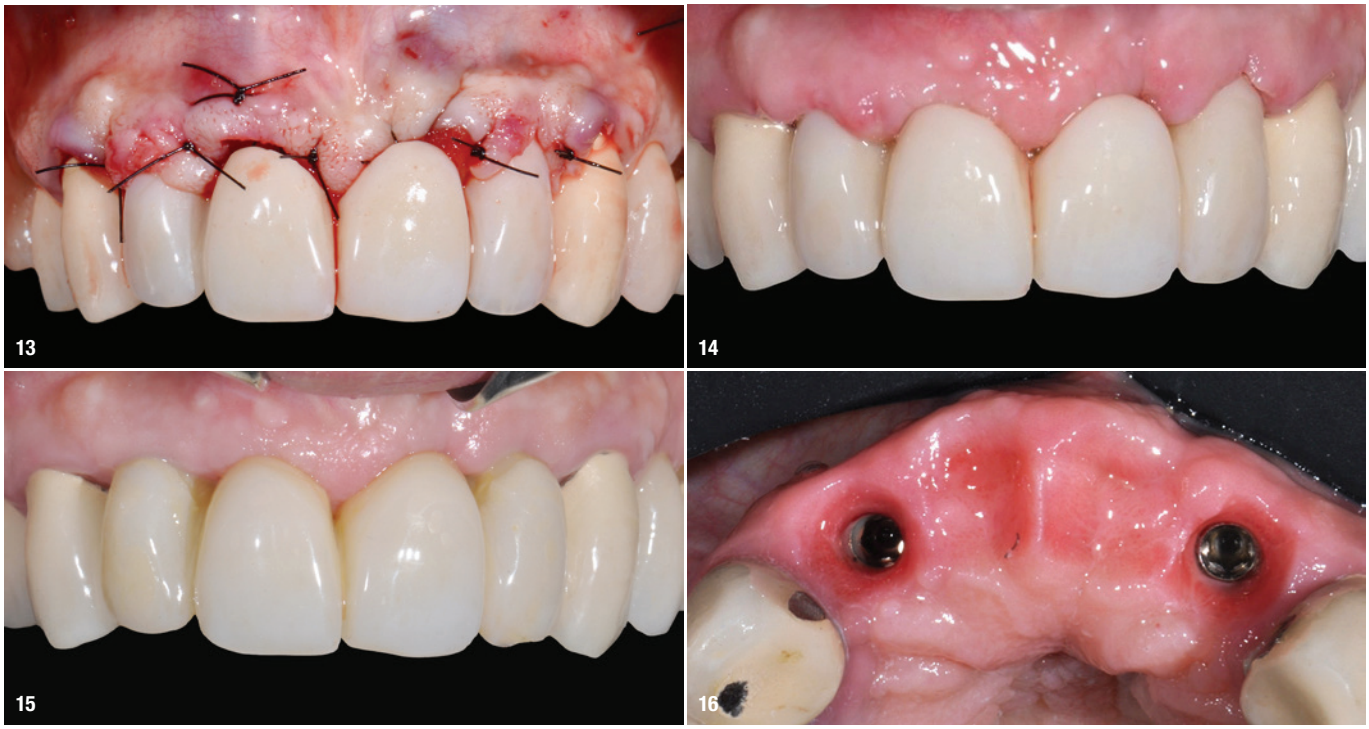


Fig. 13: Sutures placed and immediate loading done with a temporary 4-unit screw-retained bridge. – **Fig. 14:** Seven-day follow-up: sutures removed; healing uneventful. – **Figs. 15+16:** At 75 days post-surgery, soft-tissue conditioning at sites #11 and #21 ensured proper contour for final restoration.

support soft-tissue contours and immediate aesthetics (Figs. 10a+b).

Bone grafting was performed to facilitate soft-tissue management and promote optimal wound healing at the extraction sites. A xenograft was placed in the central incisor sockets, and Mucoderm® was applied to the buccal aspect of the lateral incisor region as a barrier membrane, ensuring sufficient hard and soft-tissue volume for optimal aesthetic outcomes (Figs. 11+12). The flap was then closed with sutures, and a temporary screw-retained four-unit bridge was delivered. Occlusion, aesthetics, and function were carefully evaluated, and comprehensive postoperative instructions were provided to the patient (Fig. 13).

Prosthetic procedure

At the seven-day postoperative follow-up, sutures were removed, and wound healing was progressing uneventfully (Fig. 14). At 75 days post-surgery, crestal bone and soft-tissue changes were evaluated, demonstrating favourable healing and adaptation of the surrounding tissues. Soft-tissue conditioning was performed at pontic sites #11 and #21 to achieve optimal contour and tissue health in preparation for the definitive prosthetic restoration (Figs. 15+16).

A definitive impression was subsequently taken and sent for the fabrication of a screw-retained bridge composed of zirconium oxide and lithium disilicate, selected for their

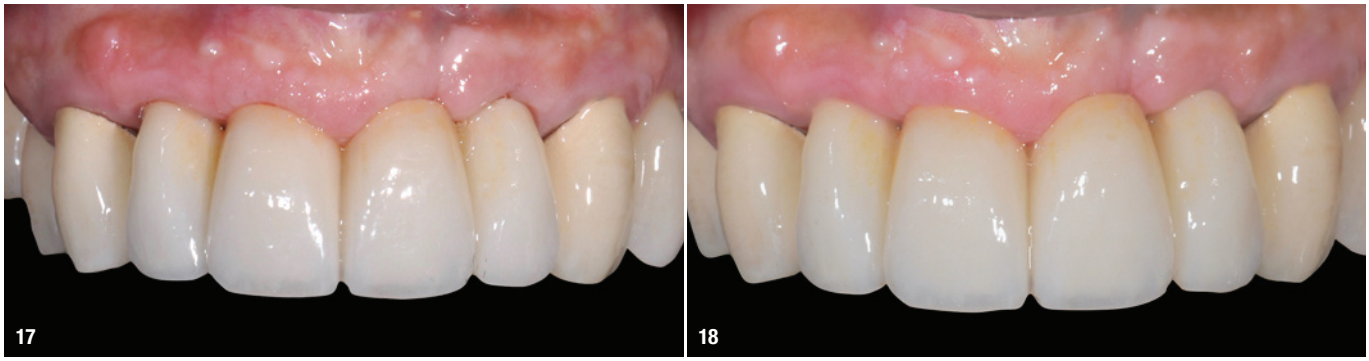
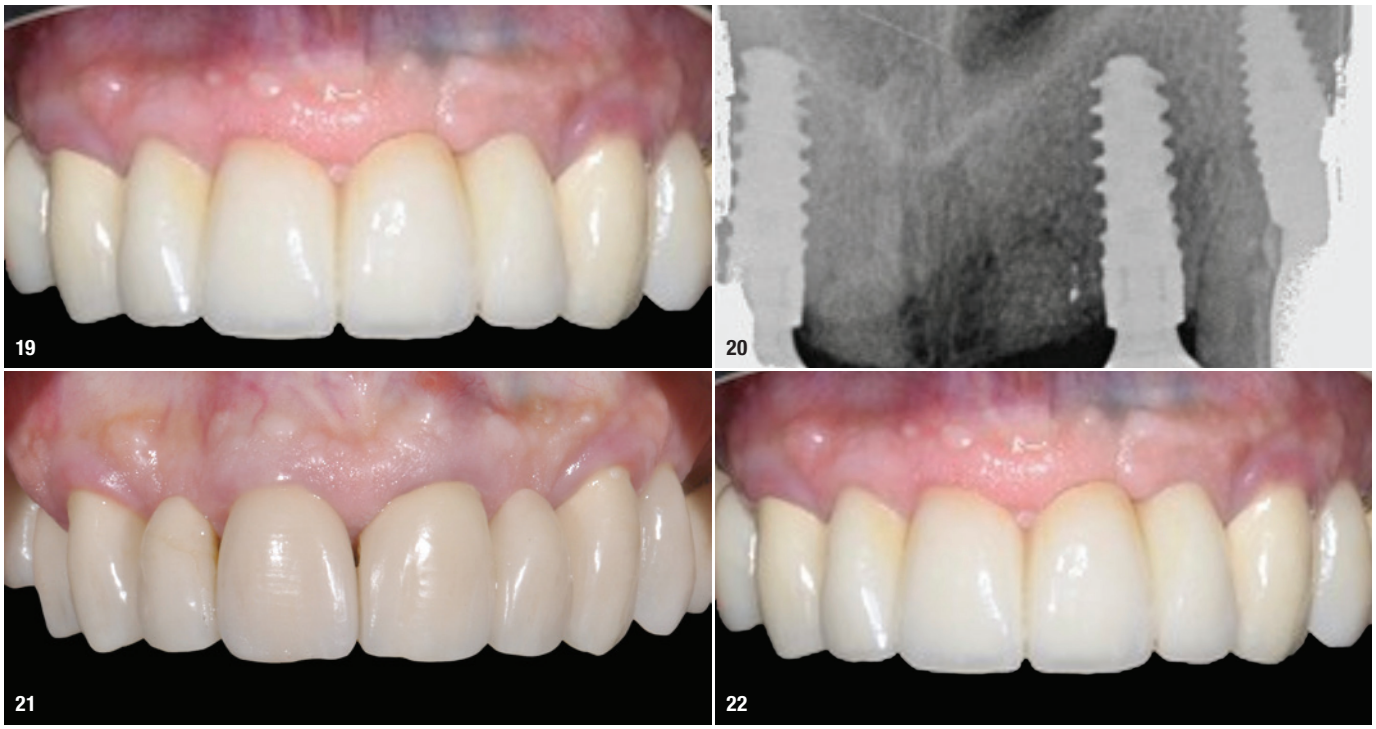


Fig. 17: The definitive prosthesis was delivered, demonstrating optimal fit, function, aesthetics, and patient comfort. – **Fig. 18:** 12-month intra-oral view showed stable soft-tissue integration and aesthetics.



Figs. 19+20: Five-year follow-up showed healthy soft tissues, stable implants, and no peri-implantitis or bone loss. – **Figs. 21+22:** Pre-treatment and five years post-treatment.

combination of strength, biocompatibility, and aesthetic qualities. Upon delivery, the prosthesis exhibited precise fit, functional stability, and a natural aesthetic appearance, ensuring patient comfort (Fig. 17).

Twelve months following prosthesis delivery, intra-oral evaluation revealed stable soft-tissue integration and aesthetic results (Fig. 18). At the five-year follow-up, soft tissues remained healthy, and radiographic assessment confirmed long-term implant stability with no evidence of peri-implantitis or marginal bone loss (Figs. 19+20).

Treatment outcomes

The treatment achieved successful functional and aesthetic outcomes. The patient reported high satisfaction, highlighting the impact of immediate restoration on her quality of life: “I was amazed that I could transition from failing dentition to a new anterior bridge in just one hour. I never imagined this would be possible: my appearance, speech, and masticatory function were never compromised at any stage of treatment. Even after five years, I have not experienced a single day without being able to smile and live my normal life.”

Conclusion

Immediate restoration must always be considered a challenging procedure. Implant planning, surgical procedure and prosthetic procedure must be extremely accurate. Optimal primary stability, absence of occlusal lateral forces and good patient compliance can be considered prerequisites for this kind of procedure.

about the author



Dr Massimo Frosecchi graduated in Dentistry from the University of Florence, Italy and is currently an Assistant Professor in Implantology at the University of Genoa. He is an active member of the Italian Academy of Osseointegration, the Italian Academy of Microscopic Dentistry, and the International Piezosurgery Academy. An ITI Fellow, Dr Frosecchi is also a recognised international speaker.

contact

Dr Massimo Frosecchi
+39 055 483706
info@dentalmedicine.it
www.dentalmedicine.it

Dr Massimo Frosecchi