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CASE REPORT

Restoring Function, Stability, and Esthetics Following Loss of Teeth in the Aesthetic Zone: A case report

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ABSTRACT

Restoring the esthetic zone is high stakes endeavor due to its profound implications for function, speech, esthetics, and professional activity, a career musician relying on upper anterior teeth for clarinet, oboe, or English horn performance. This case is unique in combining occupational stress with advanced periodontal disease.

This case report describes the successful management of severe periodontal disease and subsequent tooth loss in the upper anterior region of a 60-year-old professional oboe and English horn musician. The patient's occupation placed significant stress on his upper front teeth, contributing to their deterioration despite meticulous oral hygiene. The treatment plan prioritized restoring function, essential for the patient's musical career, followed by stability and then esthetics. The comprehensive approach involved atraumatic extraction of the compromised teeth, guided ridge augmentation, precise implant placement using surgical guides, and final restoration with a splinted porcelain-fused-to-metal (PFM) bridge. Eighteen months post-treatment, the patient demonstrated excellent functional outcomes, improved speech clarity, and satisfaction with the esthetic result. This case highlights the importance of interdisciplinary collaboration, meticulous treatment planning, and advanced techniques in complex dental rehabilitation, ultimately enhancing the patient's quality of life and professional capabilities.

Keywords: Implant dentistry, Periodontal disease, Esthetic zone, Prosthetic rehabilitation, Musical instrument performance, Guided surgery, Ridge augmentation.

Introduction

Loss of teeth in the esthetic zone poses a significant challenge, impacting function, esthetics, and potentially speech.[1] Restoring this area requires a comprehensive and individualized treatment approach, particularly for patients with unique occupational demands. This case report details the management of a 60-year-old professional musician whose career as an oboe and English horn player significantly influenced the deterioration of his upper anterior teeth. The treatment plan prioritized restoring function, crucial for his musical performance, followed by stability and esthetics.

Case Presentation

A 60-year-old Caucasian male was referred for evaluation and treatment of severe periodontal disease affecting teeth #7, 8, 9, and 10. He had been a professional oboe and English horn player since age 20, performing as a soloist with orchestras. He reported significant pressure on his upper front teeth due to the embouchure required for playing these instruments. Despite excellent oral hygiene, the teeth had progressively deteriorated and migrated. Clinical examination revealed significant bone loss, mobility, and gingival inflammation. A hopeless prognosis was determined for teeth #7, 8, 9, and 10. The patient also reported some difficulty with certain sounds when speaking.

Treatment Plan

The treatment plan, developed in consultation with the patient, emphasized restoring function as the primary goal, followed by stability and then esthetics. The patient's low lip line minimized esthetic concerns. The plan included:

1. Atraumatic Extraction and Guided Ridge Augmentation: Teeth #7, 8, 9, and 10 were atraumatically extracted to preserve the alveolar ridge. Simultaneous ridge augmentation was performed using a combination of FDBA and collagen membrane to optimize the implant placement site and support soft tissue contours. [2,3] The use of a surgical guide during ridge augmentation ensured proper bone formation for future implant placement.
2. Temporization: An Essix splint was fabricated and delivered immediately post-extraction to provide temporary support, esthetics, and function during healing.
3. CBCT Evaluation: Four months post-extraction, a cone-beam computed tomography (CBCT) scan was obtained to assess bone volume and quality for implant placement and plan for guided surgery. [4]
4. Guided Implant Placement: Four dental implants were placed using a custom-fabricated surgical guide based on the CBCT data. This guided approach ensured optimal implant positioning, angulation, and depth, maximizing osseointegration and supporting the planned prosthetic restoration. [5]
5. Implant Uncovering and Healing Abutments: Six months post-implant placement, the implants were uncovered, and healing abutments were placed to promote soft tissue healing and contouring. [6]
6. Prosthetic Restoration: Final impressions were taken, and a splinted PFM bridge was fabricated and cemented to the implant abutments. [7] The splinted design was chosen to provide additional support, distribute forces generated during musical performance, and improve speech clarity by restoring proper tooth position and contour.

Clinical Progress

The patient progressed through the treatment plan uneventfully. The post-operative healing was satisfactory. The CBCT scan confirmed sufficient bone volume. Guided implant surgery facilitated precise implant placement. At the six-month follow-up, the implants were osseointegrated, and the soft tissues were healthy. The final PFM bridge provided excellent function, stability, and an acceptable esthetic outcome. The patient also noted improvement in his speech clarity.

Eighteen-Month Follow-Up

Eighteen months of post-treatment, the patient reported complete satisfaction. He had successfully resumed playing both the oboe and English horn and had even begun playing the trumpet again. Clinical examination revealed healthy peri-implant tissues, and radiographs confirmed stable bone levels. His ability to return to his profession and enjoy multiple instruments highlighted the treatment's success. The patient also confirmed the continued improvement in his speech.

Discussion

This case is unique for several reasons that merit publication. First, it illustrates the successful rehabilitation of the anterior maxilla in a patient with highly specific occupational demands—a professional oboe and English horn musician whose career depended on the functional restoration of his maxillary anterior dentition. [8] Unlike most patients, his oral rehabilitation was not only a matter of esthetics and mastication, but also of speech articulation, breath control, and embouchure mechanics, all of which rely on the anterior dentition for proper air flow, lip seal, and phonetic clarity. [9] Very few case reports have documented treatment tailored to the needs of musicians, making this report both clinically relevant and distinctive.

Second, the case underscores the importance of interdisciplinary collaboration. The periodontist managed the atraumatic extraction and ridge augmentation, the restorative dentist performed coordinated prosthetic planning and restoration. Input from a restorative dentist and dental technician was also vital in designing an esthetic yet functionally durable splinted PFM bridge capable of withstanding unique occupational stresses. Collaboration was facilitated through shared digital data (CBCT scans, digital planning software, and surgical guides), which allowed each discipline to contribute to a unified treatment sequence. This highlights not just the role of individual procedures, but the necessity of coordinated planning between surgical and prosthetic teams for complex cases in the esthetic zone. [10]

Third, this case demonstrates the impact of advanced surgical and prosthetic technologies. Atraumatic extraction preserved alveolar structures, ridge augmentation with FDBA and collagen membrane provided a favorable foundation, and CBCT-guided implant surgery allowed precise implant positioning within a prosthetically driven framework. The splinted PFM restoration offered additional stability, ensuring force distribution during wind instrument performance. The use of a provisional phase (Essix splint) allowed immediate restoration of function and esthetics during healing, reducing occupational disruption. [11]

The patient's eighteen-month follow-up is another strength. Stable peri-implant bone levels, healthy soft tissues, and functional restoration confirmed the predictability of the interdisciplinary approach. Importantly, the patient not only resumed playing the oboe and English horn but also expanded to playing the trumpet—demonstrating an improvement in functional resilience beyond baseline. His improved speech clarity further reflects the impact of anterior implant rehabilitation on phonetics, a consideration sometimes overlooked in implant dentistry but highly relevant in this case.

This case report exemplifies a comprehensive and patient-centered approach: valuing functional restoration (critical for the musician), ensuring stability and biological support through GBR, and culminating in esthetic rehabilitation with a durable restoration. The literature supports such staged and meticulously planned protocols, especially in the anterior maxilla where esthetics and function are inextricably linked.

The interdisciplinary approach, meticulous treatment planning, and advanced techniques, like guided implant surgery and ridge augmentation, were crucial. The emphasis on restoring function, coupled with the splinted PFM bridge, contributed to the long-term success. The patient's satisfaction and return to his musical pursuits underscore the importance of considering individual needs and occupational demands. The improvement in speech also highlights the impact of anterior tooth replacement on phonetics.

Conclusion

This case report highlights the importance of a comprehensive and patient-centered approach. The successful outcome underscores the value of interdisciplinary collaboration and modern techniques in achieving predictable results. This case exemplifies the significant impact dental treatment can have on a patient's quality of life, particularly for individuals whose livelihoods depend on oral function.

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