Immediate Conversion of Hawley Retainer to Anterior Bite Plane following Implant Placement, Soft Tissue Augmentation, and Provisionalization in the Esthetic Zone: A Clinical Case Report

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Background

Achieving primary stability is paramount for successful implant therapy, especially in the anterior region where immediate provisionalization is utilized to optimize aesthetics. However, challenges may arise, such as those encountered in this case due to a tenting screw, which can impede achieving optimal torque. In response to this challenge, we propose an innovative approach: converting an existing Hawley retainer into a bite plane. We hypothesize that this modification will enhance anterior stability, reduce muscle activity, and provide protection for the implant. Additionally, soft tissue augmentation and provisional contour management techniques are employed to further enhance both esthetics and function.

Case Report

A 31-year-old female patient presented with a non-restorable left maxillary central incisor (#9) and underwent comprehensive treatment, including ridge preservation, implant placement, soft tissue augmentation, and immediate provisionalization. During extraction, a 14 mm tenting screw, xenograft bone, collagen membrane, and a connective tissue graft were utilized. Immediate esthetics were achieved with an Essix retainer, subsequently replaced by a Hawley retainer. At a six-year follow-up, buccal soft tissue deficiency was observed and corrected using a modified roll technique following the placement of a 3.6 x 11 mm implant. This procedure augmented marginal gingival thickness, enhancing esthetics while minimizing donor site morbidity. Immediate provisionalization was performed, and the Hawley retainer was converted into a bite plane to enhance implant protection. Gradual soft tissue conditioning through provisional contour adjustments was conducted to ensure an optimal emergence profile.

Figure 1a
Frontal view of tooth #9 on the day of surgical extraction

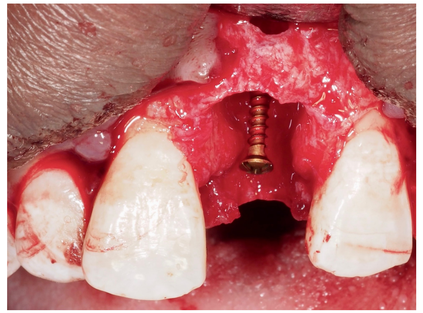

Figure 1b
Fenestration noted at the apex, with the insertion of a 14 mm tenting screw

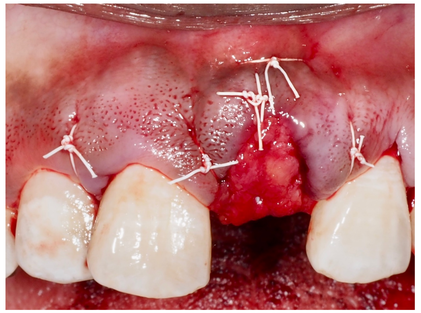

Figure 1c
Harvesting and securing of a connective tissue graft above the extraction socket filled with xenograft bone and a collagen membrane

Figure 2a
Initial periapical radiograph of tooth #9

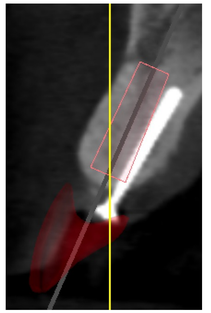

Figure 2b
Six-year post-extraction CBCT image of site #9

Figure 3a
Six-year post-extraction frontal view

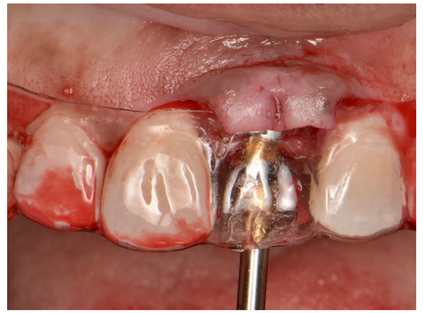

Figure 3b
Use of a surgical stent during the implant procedure

Figure 3c
Frontal view after #9 implant placement and immediate provisionalization

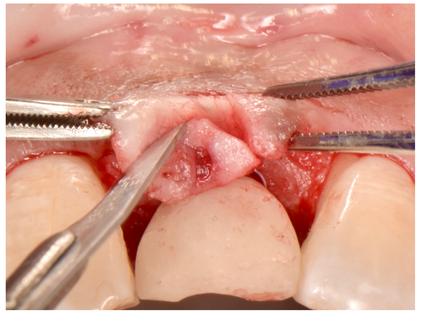

Figure 3d
Application of the modified roll technique to increase buccal soft tissue thickness

References

Penn Dental Medicine
University of Pennsylvania

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Figure 3e
Wound closure with simple interrupted sutures

Figure 3f
Hawley retainer delivered after the completion of orthodontic treatment prior to the surgical operation

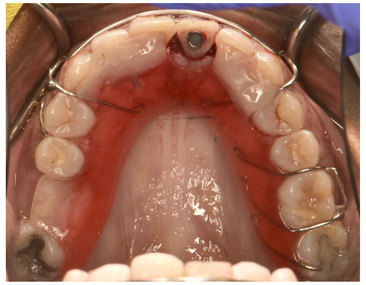

Figure 3g
Converting a Hawley retainer into a bite plane to safeguard the provisional

Figure 4a
Frontal view of #9 two weeks post-operatively

Figure 4b
Frontal view of #9 four months post-operatively

Figure 5a
Frontal view of #9 during the impression procedure

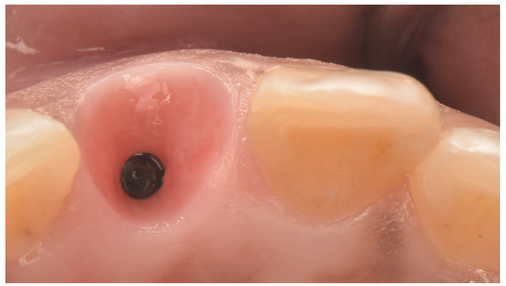

Figure 5b
Incisal view of #9 during the impression procedure

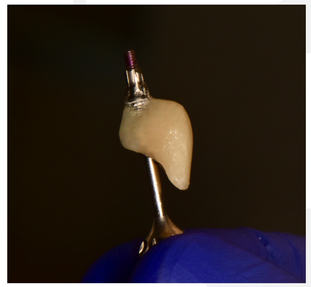

Figure 5c
Lateral view of the provisional crown showing the critical and subcritical zones

Results

Given the suboptimal implant torque of 15 Ncm, the Hawley retainer was converted into a bite plane to safeguard the provisional. PMMA was applied to the palatal aspect of anterior teeth to ensure bite opening and eliminate occlusal interferences. Subsequent follow-up appointments revealed uneventful healing, with the implant well-protected by the modified Hawley bite plane against occlusal forces and muscle activity. The desired emergence profile was achieved through effective soft tissue conditioning.

Conclusions

This case report demonstrates the feasibility of immediate provisionalization for upper anterior implants, even in cases of suboptimal torque. The approach provides functional protection with a bite plane and enhances aesthetics through soft tissue augmentation. Precise contour adjustments ensure optimal peri-implant soft tissue architecture. The conversion of a retainer into a bite plane provides immediate functional and aesthetic advantages upon implant placement, while acknowledging the limitation of necessitating an existing retainer.

References