



Periosteoplasty Flap for Vertical Ridge Augmentation in Soft and Hard Tissue Complexities within the Esthetic Zone: A 1-Year Case Report

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INTRODUCTION

Achieving an ideal esthetic outcome in vertical ridge augmentation becomes particularly challenging when dealing with adjacent periodontally compromised teeth. The presence of these compromised structures often complicates flap adaptation and tissue stability. Today, experts emphasize the crucial role of supracrestal flap management in overcoming the challenges of primary closure. Proper flap design not only enhances wound healing but also contributes to soft tissue thickness augmentation, ultimately improving long-term esthetic and functional outcomes.

OBJECTIVE

This report aims to present an optimized treatment approach for managing esthetic complications in dental implant cases involving both peri-implant papilla loss and periodontal attachment loss on adjacent teeth. The proposed solution focuses on achieving a harmonious soft tissue architecture to enhance both functional and esthetic outcomes.

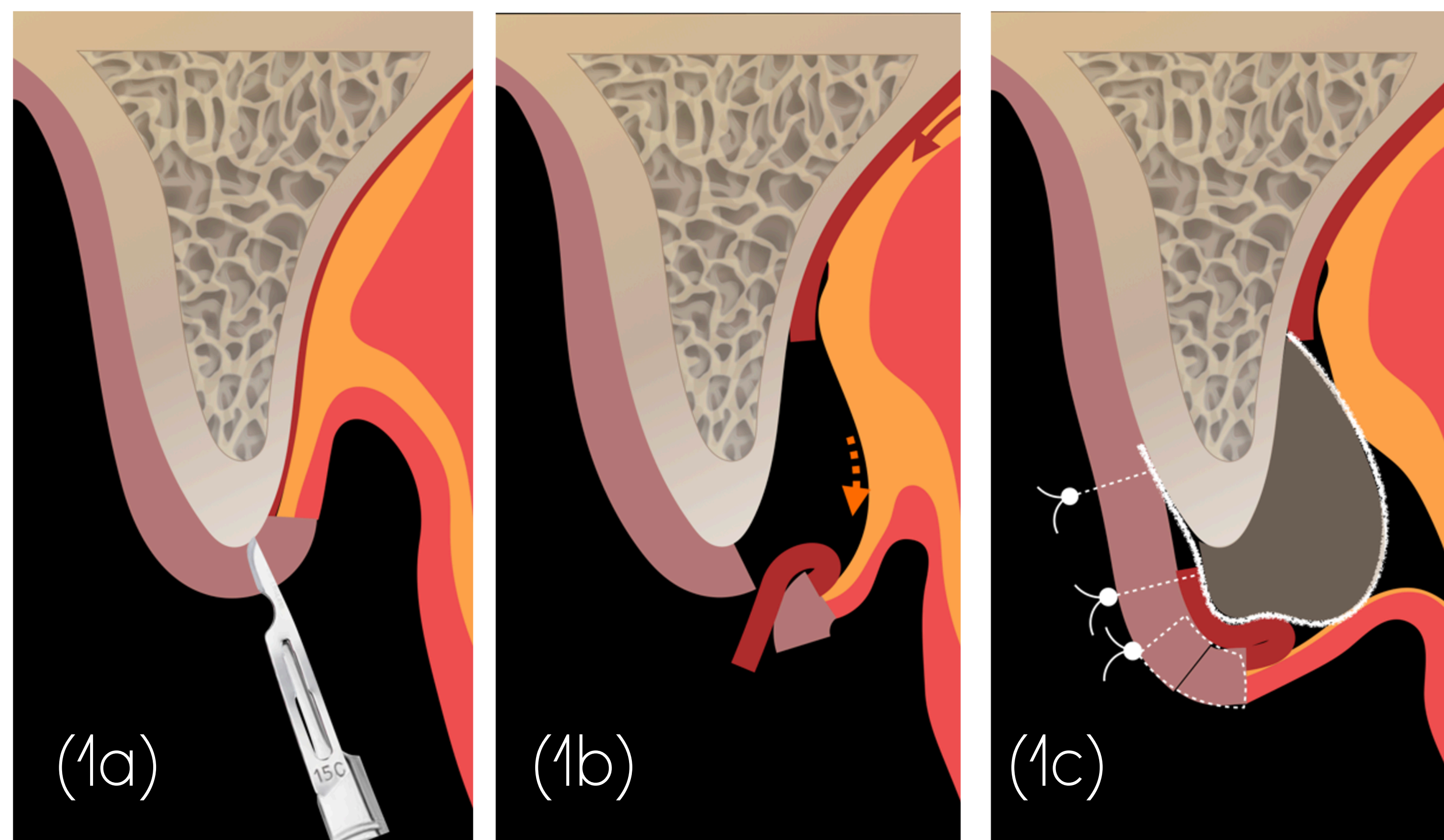
CASE PRESENTATION

A 40-year-old female patient presented with a periodontally hopeless maxillary central incisor (#8) in the esthetic zone, requiring replacement with a dental implant. The patient exhibited a high smile line, further emphasizing the need for an optimal esthetic outcome. Based on Urban et al.'s classification, the defect was categorized as Type II, indicating a combined deficiency in both hard and soft tissue, necessitating a carefully planned augmentation approach.

Following the healing of the extraction socket, the proposed treatment approach began with vertical bone augmentation. Primary closure was achieved using a periosteoplasty flap (Figures 1a-c), where the Class I native periosteal layer (Figure 2a) was carefully detached and inverted toward the crest.

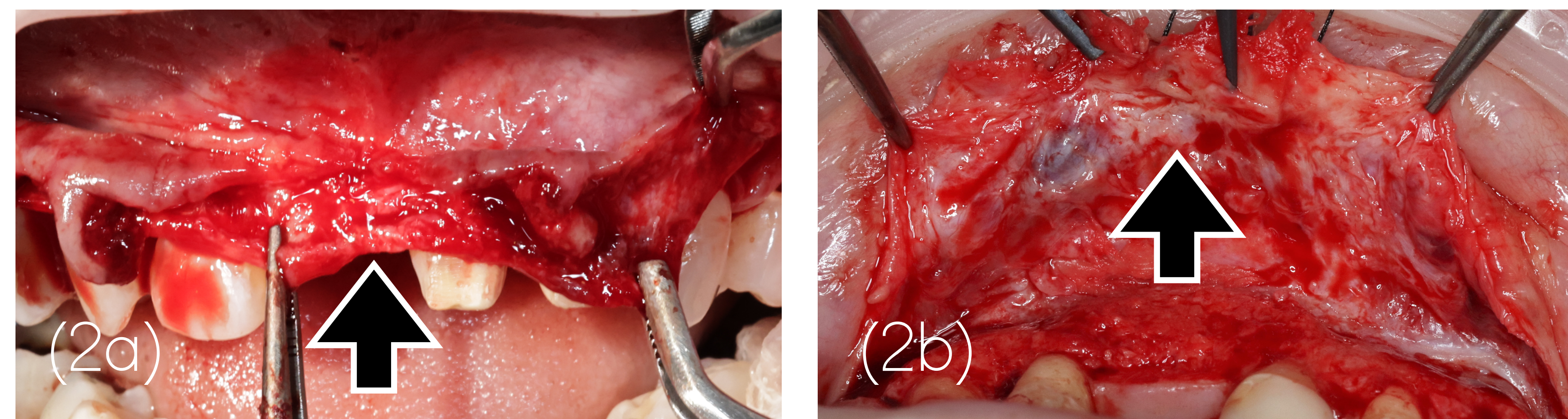
This inner periosteal flap effectively covered the GBR site, enhancing healing by maintaining intimate contact with the palatal flap, ensuring stability, and optimizing soft tissue integration.

After six months of uneventful healing, the implant was placed using a prosthetically guided approach, followed by mini-sausage technique to further enhance vertical bone augmentation. The periosteoplasty flap was specifically designed to address Class II scarred periosteum (Figure 2b) and was subsequently followed by soft tissue augmentation, leading to the placement of final restorations (Figures 3a-b).



DISCUSSION

Vertical ridge augmentation in the esthetic zone is challenging, especially with adjacent periodontal compromise. The periosteoplasty flap played a key role in achieving primary closure and soft tissue stability by preserving vascular integrity. The detachment and inversion technique enhanced GBR site coverage, minimizing dehiscence risk and promoting predictable healing. Additionally, the mini-sausage technique optimized vertical bone gain, enabling prosthetically driven implant placement with improved soft tissue architecture.



SUMMARY

In this case, the periosteoplasty flap proved to be an effective solution for maintaining primary closure. However, the success of this approach relied heavily on the precision of the detachment technique.