

## MANDIBULAR VESTIBULOPLASTY: SURGICAL TECHNIQUES AND OUTCOMES

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### ABSTRACT

Vestibuloplasty is a crucial surgical procedure aimed at deepening the vestibule to improve prosthetic retention, enhance oral hygiene access, and optimize mucosal attachment. This article comprehensively reviews scalpel-based vestibuloplasty techniques, highlighting clinical applications, healing patterns, and long-term outcomes. Through an in-depth analysis of historical and contemporary literature, we present the procedural steps, post-operative care guidelines, and comparative clinical efficacy of various scalpel-assisted techniques. A case report illustrating the application of vestibuloplasty in a periodontal setting is included. The findings suggest that scalpel-based vestibuloplasty remains a reliable and effective method for pre-prosthetic and periodontal interventions, providing predictable long-term stability.

**KEYWORDS:** Vestibuloplasty, Pre-prosthetic surgery, Scalpel technique, Periodontal surgery, Mucosal attachment, Denture stability, Soft tissue manipulation

### INTRODUCTION

Vestibuloplasty is a fundamental surgical procedure in periodontics and oral surgery, designed to enhance the soft tissue environment for prosthetic rehabilitation and periodontal stability.<sup>[1]</sup> This procedure primarily focuses on deepening the oral vestibule to improve the retention and stability of removable prostheses while also enhancing mucogingival conditions.<sup>[2]</sup> Various surgical techniques, including laser-assisted, electrosurgical, and scalpel-based vestibuloplasty, have been employed in clinical practice.<sup>[3]</sup> However, the scalpel-based technique remains a widely accepted and effective approach due to its simplicity, cost-effectiveness, and predictable healing outcomes.<sup>[4]</sup>

Historically, vestibuloplasty techniques have evolved from simple soft tissue manipulations to sophisticated procedures incorporating regenerative approaches.<sup>[5]</sup> Traditional scalpel-based vestibuloplasty techniques

involve incisions at the mucogingival junction, followed by muscle repositioning and suturing to achieve increased vestibular depth.<sup>[6]</sup> Despite the introduction of newer modalities, the conventional scalpel approach remains relevant due to its ability to provide adequate mucosal adaptation and maintain long-term prosthetic function.<sup>[7]</sup> This article presents an in-depth analysis of scalpel-based vestibuloplasty, supported by a case report demonstrating its clinical application.

### CASE REPORT

A 56-year-old male patient presented with a complaint of inadequate vestibular depth, leading to poor retention of his mandibular denture. The patient had a history of multiple denture adjustments and discomfort due to mucosal irritation. Clinical examination revealed a shallow vestibule with limited keratinized tissue, necessitating a vestibuloplasty procedure to enhance prosthesis stability.

Radiographic assessment confirmed adequate alveolar bone height for prosthetic rehabilitation. After discussing the treatment plan, the patient provided informed consent

for scalpel-based vestibuloplasty using the Kazanjian technique.<sup>[5]</sup>

#### Surgical procedure



Surgical incision



Healing vestibule



The procedure was performed under local anesthesia (2% lignocaine with epinephrine 1:100,000) to ensure hemostasis and patient comfort.<sup>[6]</sup> A horizontal incision was placed along the mucogingival junction extending from the canine to the molar region bilaterally.<sup>[7]</sup> The periosteum was carefully dissected and elevated to create adequate vestibular depth. Muscle attachment was released to prevent relapse, and the wound margins were stabilized using a periosteal suturing technique.<sup>[8]</sup>

Post-operative hemostasis was achieved using local pressure and minimal electrocautery application to control minor bleeding points. A periodontal dressing was applied to protect the surgical site and facilitate undisturbed healing.<sup>[9]</sup> The patient was advised to adhere to a strict post-operative protocol to optimize tissue regeneration and prevent complications.

#### Post-Surgical Care

Post-operative care plays a crucial role in the success of vestibuloplasty procedures. The patient was prescribed a 7-day course of amoxicillin (500 mg TID) and analgesics (ibuprofen 400 mg TID) to manage pain and prevent infection.<sup>[10]</sup> Chlorhexidine mouth rinses (0.12%) were recommended twice daily to maintain oral hygiene and minimize bacterial colonization. The patient was instructed to avoid mechanical trauma to the surgical site and adhere to a soft diet for two weeks.<sup>[7]</sup>

Follow-up visits were scheduled at one, four, and eight weeks post-surgery. At the one-week follow-up, mild edema and minimal discomfort were observed, which resolved by the four-week visit. At eight weeks, the vestibular depth had significantly improved, and the patient reported enhanced denture retention and comfort.<sup>[2]</sup>

#### DISCUSSION

Scalpel-based vestibuloplasty remains a cornerstone in pre-prosthetic and periodontal surgery, offering predictable clinical outcomes when performed with meticulous technique and post-operative management.<sup>[1]</sup> The primary advantage of scalpel vestibuloplasty over laser-assisted procedures is the cost-effectiveness and precise control over soft tissue manipulation.<sup>[3]</sup> While laser vestibuloplasty has been associated with reduced intraoperative bleeding, studies suggest that scalpel-based techniques provide superior long-term mucosal adaptation and stability.<sup>[4]</sup>

Healing patterns in non-grafting vestibuloplasty procedures indicate that tissue remodeling is influenced by epithelial migration and fibroblast proliferation.<sup>[7]</sup> Proper post-surgical care, including suture stabilization and controlled tissue movement, is crucial for maintaining vestibular depth and preventing relapse.<sup>[10]</sup>

Comparative studies have demonstrated that the long-term success of vestibuloplasty is largely dependent on patient compliance and maintenance of optimal oral hygiene.<sup>[2]</sup> Additionally, the integration of vestibuloplasty into comprehensive periodontal treatment plans enhances overall gingival health and prosthetic function.<sup>[1]</sup>

#### CONCLUSION

Scalpel-based vestibuloplasty remains a reliable and effective technique for improving prosthetic retention and mucosal stability in pre-prosthetic and periodontal applications. When performed with precision and supported by adequate post-operative care, this technique offers long-term clinical success. Future research should focus on comparing different vestibuloplasty techniques to optimize surgical protocols and enhance patient outcomes.

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