



## SURGICAL PREPARATION FOR PROSTHETICS OF THE ORAL CAVITY. VESTIBULOPLASTY

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### ABSTRACT

*Surgical preparation is a critical component of prosthetic interventions in the oral cavity, with vestibuloplasty emerging as a key procedure to optimize outcomes. Vestibuloplasty aims to create or deepen the vestibule, enhancing the fit, stability, and retention of prosthetic appliances such as dentures or implants. This article explores the significance of surgical preparation, focusing on vestibuloplasty techniques, indications, and postoperative care. Understanding these aspects is essential for dental professionals to achieve successful prosthetic rehabilitation and improve patient outcomes.*

### Introduction.

The field of prosthetic dentistry has undergone remarkable advancements, enabling the restoration of oral function and aesthetics for individuals with missing teeth or oral defects. However, the success of prosthetic interventions in the oral cavity often depends significantly on the adequacy of surgical preparation. One essential aspect of this preparation is vestibuloplasty, a surgical procedure aimed at creating or deepening the vestibule—a crucial space between the lips, cheeks, and gums. In this article, we delve into the significance of surgical preparation, particularly vestibuloplasty, for prosthetic interventions in the oral cavity.

The first step in carrying out any treatment is based on the principle of patient evaluation. This is not only to have an idea of what type of treatment will be necessary for a particular type of patient, but more importantly, can the goals of treatment be achieved with or without mouth preparation. Patients' expectations must be determined at this stage, which should then be evaluated to determine that whether they are realistic or unrealistic.

Unrealistic promises by the clinician not only result in treatment failure, but also damage the clinician's reputation. However, it is important for a clinician to exhaust all available options in order to meet patients' expectations. Pre prosthetic surgery is one option which a clinician should be well versed in since most of the surgeries are meant to improve denture acceptance. Since the advent of Osseo integrated implants as a therapeutic option for patients with mandibular atrophy, the need for such surgeries has



decreased.<sup>1</sup> Mandibular residual ridge atrophy in completely edentulous patients has been a potential hazard for fulfilling treatment objectives of a complete denture prosthesis. Traditionally, such clinical situations have been successfully managed by vestibuloplasty procedure, with the main purpose being to correct the insufficient functional vestibular depth and limited keratinized . Even with the use of implant supported complete dentures, vestibuloplasty may be required in certain cases to improve functional outcome of the prosthesis. There is ample evidence that implant supported overdentures have met a high success rate of about 95 percent,<sup>3</sup> by providing better stability and quality of life. There are many patients, however, who still due to economic non viability prefer conventional complete dentures.

Common vestibuloplasty principles include submucosal, secondary epithelial and soft tissue grafting vestibuloplasty.<sup>5</sup> Based on the principle of secondary epithelialization there are four common surgical techniques: Kazanjian, Clarks apically positioned flap, lip switch technique (multiple modifications) and Edlan- Mejchar technique.

### **Vestibuloplasty.**

A common condition involves alveolar bone resorption with shallow vestibular depth, resulting in a patient's inability to wear a denture with the desired comfort and function. Although traditionally this has been treated surgically using a scalpel, the CO2 laser is ideal in this situation for a bloodless suprapariosteal vestibuloplasty, with excellent results. Neckel<sup>14</sup> treated 40 patients requiring vestibuloplasty with either traditional scalpel surgery or a laser. Results showed equivocal gain in vestibular height between the two groups, but with less postoperative pain and discomfort in the laser group.

Beer and Beer<sup>15</sup> performed CO2 laser maxillary vestibuloplasty in 10 patients whose vestibular height ranged from 3 to 7 mm. A laser incision was performed from the second molar region of one side all the way to the second molar region of the contralateral side. After laser treatment, the patients' old prostheses were adjusted with denture material to support the new vestibular heights. At the conclusion of the study, all the vestibules were increased a minimum of 3 to 8 mm. Many of the patients showed increases of 10 to 12 mm with no relapse. No complications were seen at follow-up 6 to 10 months postoperatively.

**Laser Technique.** After administration of local anesthetic, the anterior vestibule is tensed by pulling the lower or upper lip outward. The laser is then used to create a suprapariosteal dissection. The tension maintained on the lip allows effortless establishment of an adequate plane of dissection. The tissue margin is then maintained in place with sutures or a stent. If desired, an autogenous or allogeneic soft tissue graft can be used to cover the denuded area. Immobilization of the graft is key to its survival, which can be accomplished with suturing or placement of a stent.

In patients not undergoing soft tissue grafting, postoperative discomfort is minimized and may be further reduced by initial, continuous wear of a soft-relined denture or a tissue-conditioned denture, although this is not mandatory. In patients with significant resorption of the mandible, the genioglossus and mylohyoid muscle attachments often preclude adequate extension of the lingual flange of the denture.<sup>18</sup> In this case a floor-of-mouth lowering procedure can be performed to increase lingual vestibular height. This can be done with a laser as previously described, again using suprapariosteal dissection and either sutures or a



stent to fix the lowered tissue in place. At least half the musculature attached to the genial tubercles should remain to ensure adequate function of the tongue and oropharyngeal muscles.

### **Dental Rehabilitation and Function**

Dental rehabilitation and prosthetic reconstruction are paramount in restoring form and function after tumor ablation. Strides have been made in recent years in this arena, especially thanks to the use of osseointegrated implants and microvascular surgery. Every patient with an oral cavity carcinoma should undergo comprehensive evaluation by a dentist or prosthodontist experienced in managing oral cancer patients. It is essential to have a discussion with the patient before surgical treatment about the risks and benefits of each treatment alternative. This also provides an understanding of the patient's desires and expectations.

Treatment options for patients undergoing a marginal mandibulectomy are several. These are influenced by several factors: the number of teeth present, the amount of bone lost, the patient's radiation history, the status of the remaining dentition, cost, and manual dexterity of the patient. Major classes of prosthetic reconstruction include tooth-borne fixed prosthetics, implant-supported fixed prosthetics, removable prosthetics, or a combination. For patients with a relatively small defect and sound teeth anterior and posterior to the surgical defect, a tooth-borne fixed prosthesis could be considered. The prosthesis should be fabricated to provide soft tissue clearance for hygiene and clinical surveillance.

### **Understanding Vestibuloplasty**

Vestibuloplasty is a surgical procedure commonly performed in conjunction with prosthetic treatments in the oral cavity. The primary objective of vestibuloplasty is to create an adequate depth and width of the vestibule, the space between the oral mucosa and the lips and cheeks. This surgical intervention is crucial for ensuring proper fit, stability, and retention of prosthetic appliances, such as dentures or implants.

### **Indications for Vestibuloplasty**

Several factors may necessitate vestibuloplasty as part of the surgical preparation for prosthetics in the oral cavity:

**Insufficient Vestibular Depth:** In cases where the natural vestibular depth is inadequate due to factors such as oral trauma, congenital defects, or previous surgical interventions, vestibuloplasty can help create the necessary space for accommodating prosthetic appliances.

**Altered Oral Anatomy:** Certain conditions, such as severe periodontal disease or oral cancer resection, can result in significant changes to the oral anatomy, including reduced vestibular depth. Vestibuloplasty becomes essential in restoring the optimal oral environment for prosthetic rehabilitation.

**Enhanced Prosthetic Stability:** By deepening and widening the vestibule, vestibuloplasty improves the stability and retention of prosthetic devices, thereby enhancing their functionality and the patient's overall oral health and quality of life.

### **Surgical Techniques in Vestibuloplasty**

Several surgical techniques are employed in vestibuloplasty, depending on the specific requirements of the patient and the desired outcome. Some common techniques include:



**Mucosal Advancement:** This technique involves the surgical advancement of the oral mucosa to increase the depth of the vestibule. It may be accompanied by tissue grafting procedures to ensure adequate tissue support and minimize the risk of relapse.

**Frenectomy:** In cases where a restrictive frenulum limits the mobility of the lips or cheeks, a frenectomy may be performed as part of vestibuloplasty to improve the range of motion and enhance prosthetic fit and comfort.

**Soft Tissue Grafting:** Soft tissue grafts, obtained from the patient's own palate or other donor sites, may be utilized to augment the soft tissue volume and improve the stability of the vestibule, especially in cases of severe tissue deficiency.

**Bone Augmentation:** In situations where inadequate bone volume compromises prosthetic support, bone augmentation procedures such as ridge augmentation or sinus lift may be performed concurrently with vestibuloplasty to optimize the implant placement and prosthetic outcomes.

### **Postoperative Care and Rehabilitation**

Following vestibuloplasty, diligent postoperative care and rehabilitation are essential to promote optimal healing and long-term success. Patients are typically advised to adhere to strict oral hygiene practices, avoid trauma to the surgical site, and attend regular follow-up appointments to monitor healing progress and address any complications promptly. Prosthetic rehabilitation, including the fabrication and fitting of dentures or implants, is often initiated after the surgical site has adequately healed to ensure proper function and aesthetics.

### **Conclusion.**

Surgical preparation, particularly vestibuloplasty, plays a pivotal role in facilitating the successful integration of prosthetic interventions in the oral cavity. By addressing deficiencies in vestibular depth and soft tissue support, vestibuloplasty enhances the stability, retention, and functionality of prosthetic appliances, thereby improving the quality of life for patients with missing teeth or oral defects. Through a comprehensive understanding of surgical techniques and diligent postoperative care, dental professionals can achieve optimal outcomes in prosthetic rehabilitation, restoring oral health and function for their patients.

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