



**ORIGINAL RESEARCH PAPER**

**Dental Science**

**CASE REPORT: VESTIBULOPLASTY , CLEARK'S TECHNIQUE.**

**KEY WORDS:** Clark's technique; shallow vestibule; vestibuloplasty

**Dr. Akashdeep Sarkar\***

Post Graduate Trainee, Department of Periodontics & Implantology, Haldia Institute Of Dental Sciences & Research. \*Corresponding Author

**Prof.(Dr.) Savan S. R.**

Professor, Department of Periodontics & Implantology, Haldia Institute Of Dental Sciences & Research.

**Dr.Swet Nisha**

Assitant Lecturer, Department of Periodontics & Implantology, Haldia Institute Of Dental Sciences & Research.

**ABSTRACT**

Vestibuloplasty is a periodontal plastic procedure to enhance depth of vestibule and it helps to achieve a good periodontal health. Various surgical procedures are illustrated in literature to achieve increase in depth of vestibule. The present case report demonstrates Clarks' technique to increase in depth of vestibule in lower anterior teeth region.

**INTRODUCTION**

Vestibular depth is an important landmark for periodontal health maintenance. It is determined as the distance from crest of the lip or coronal aspect of attached gingiva mucobuccal fold depth.<sup>1</sup> It is essential to understand the importance of vestibular depth. Adequate depth of vestibule helps in prevention of food accumulation, it helps in oral hygiene maintainance. Shallow vestibule can cause frenum pull , gingival recession. Vestibuloplasty is the procedure to restore adequate vestibular depth.<sup>2,3</sup>

A publication by Pichler and Trauner in 1930 delineated many of the principles of this procedure (need for dissection close to the periosteum, hip skin donor site, allowing donor site to crust) that hold true to the present day.<sup>4</sup>The lowering of the genioglossus muscles, the mylohyoid muscles from the cuspid region posteriorly, and of the mental foramen added more versatility to the vestibuloplasty. Schuchardt reported on the skin grafting of the labiobuccal surface of the mandible in 1952.<sup>5</sup> In 1959 the technique of submucous vestibuloplasty in the maxilla was described by Obwegeser to extend fixed tissue on the alveolar ridge. This procedure was found to be particularly useful in patients who showed alveolar resorption with resulting encroachment of the muscle attachments on the crest of the ridge.<sup>5</sup>

In 1963 Obwegeser presented total floor of the mouth lowering by sectioning the mylohyoid as far forward as possible and sectioning parts of the genioglossus, which greatly enhanced the popularity of the vestibuloplasty.<sup>6</sup> Although the evolution of implants has made the vestibuloplasty procedure uncommon for increasing denture surface area, other pertinent indications remain for the technique, and it should continue to be part of the training of oral and maxillofacial surgeons.

The typical atrophic mandibular ridge has a small line of attached mucosa at the crest of the ridge, whereas all of the remaining mucosa of the denture-bearing area can be elevated by the movement of the lips, cheeks, and tongue displacing a denture .Vestibuloplasty procedures result in a non-displaceable tissue over the entire denture base. The graft's firm attachment to the periosteum ridge allows for denture stability even in cases where no significant ridge height can be created by the procedures.

The main current indications for vestibuloplasty can be divided into four categories for the present discussion:

1. Ridge extension and lowering or otherwise altering the

prosthesis displacing submucous attachments to allow for better denture fit is the original indication for vestibuloplasty procedures in their many manifestations in the maxilla and mandible.

2. Procedures that attempt to reconstruct edentulous bone loss by various means frequently require vestibuloplasty procedures to complement and complete the osseous reconstruction. The compromised soft tissue drape resulting after such osseous augmentations can be markedly improved with soft tissue vestibuloplasties.

3. Inadequate or inappropriate soft tissue drape in cases where resection with or without grafting has been previously performed and prosthetic restoration demands improvement of the soft tissue drape.

4. Occasionally implants are placed so that they emerge in nonattached mucosa, and there are those who feel that the success of restorations based on these implants can be markedly improved with the creation of an attached mucosa/implant interface.

The general health of the patient must be considered as a limiting factor in vestibuloplasty, as these procedures frequently require a 2- to 3-hour or so general anesthetic for completion. Patients who have been irradiated in the head and neck require extra precaution in all surgical procedures in the field of treatment. In mandibular vestibuloplasties, temporary or permanent mental nerve paresthesias are common, and the patient must understand this possibility prior to surgery and be able to tolerate these deficits.

Donor and operative site pain can be significant, and those who feel they would do poorly with such a degree of postoperative pain should be excluded from these surgeries. Donor site color and texture will be altered, and this may dissuade some from the vestibuloplasty procedure for cosmetic considerations. Mandibular ridges of less than 15 mm of body height are less likely to result in adequate vestibular depth after vestibuloplasty. However, a broader immobile graft area after such procedures may improve denture-wearing ability even in the face of decreased mandibular bone height.

**There are 3 types of vestibuloplasty-**  
**1.MUCOSAL ADVANCEMENT (SUBMUCOUS)V'PLASTY-**  
 The mucous membrane of the vestibule is undermined and advanced to line both sides of the extended vestibule.

**2. SECONDARY EPITHELIZATION VESTIBULOPLASTY-**

The mucosa of the vestibule is used to line one side of the extended vestibule, and the other side heals by growing a new epithelial surface.

- A. Kazanjian's technique
- B. Lipswitch technique
- C. Clarks technique

**3. GRAFTING VESTIBULOPLASTY-** Skin, mucous membrane and dermis can be used as a free graft to line one or both sides of the extended vestibule.

This case report describes Clark's technique<sup>6</sup> (secondary epithelization vestibuloplasty) of vestibuloplasty for managing shallow vestibule.

**CASE REPORT:**

A 23 years old female presented to department of Periodontology at Haldia Institute of Dental Sciences and research, Haldia, West Bengal, reporting difficulty in brushing teeth on the front lower teeth region since 1 year. On examination, bleeding on probing was noted in relation to 31,32,41,42 and a shallow vestibule in mandibular anterior region with muscle attachment near gingival margin (Figure 1). clinical probing depth was 2-3 mm. inadequate vestibular depth was diagnosed and vestibuloplasty with clark 's technique was planned .After completion of phase 1 therapy patient was scheduled for vestibuloplasty.

**Surgical procedure:**

1:80,000 lignocaine local anesthesia was given. Using 15 no. blade a horizontal incision was given at mucogingival junction extending from lower right lateral incisor to lower left lateral incisors. Supraperiosteal incision was performed to achieve adequate vestibular depth (Figure 2). All the muscle fibres were detached .Hemostasis was achieved .Single interrupted non resorbable sutures were placed at the depth of the vestibule sutures (Figure 3). The surgical area was packed with periodontal dressing (Coe-pack) (Figure 4) to promote healing.

**RESULTS :** At 7 days follow up after suture removal , healing was uneventful and adequate depth of 6mm vestibule was present (Figure 5) . Further at 3 months follow up vestibular depth of 5 mm was observed which was sufficient to maintain proper oral hygiene (Figure 6).



**Figure 1: inadequate depth of buccal vestibule in mandibular anterior region.**



**Figure 2: Horizontal incision placed at mucogingival junction followed by supraperiosteal dissection.**



**Figure 3: flap sutured to the depth of vestibule.**



**Figure 4: Coe-pack placed .**



**Figure 5: After two weeks of vestibuloplasty.**



**Figure 6: After three months of vestibuloplasty.**

**Post operative instructions**

The patient was instructed not to brush the operated area for 7 days. Chlorhexidine mouthwash was prescribed to rinse twice daily for two weeks. Analgesic paracetamol 500 mg was prescribed twice daily.

**Follow up visit**

Patient was instructed to follow up after 7 days for suture and periodontal pack removal.

**DISCUSSION:**

Vestibular deepening procedures are known as Vestibuloplasty. Freidman (1957) classified vestibuloplasty under "mucogingival surgery" which corrects relationship between the gingiva and oral mucosa.<sup>7</sup>

Vestibuloplasty is a minor surgical procedure which helps to increase depth of vestibule. Etiological factors related to shallow vestibule results from alveolar ridge atrophy, high muscle pull, excisional wound causing scarring.<sup>8</sup> These leads to inability to maintain oral hygiene, difficulty in placing prosthesis, increased food accumulation, gingival recession,<sup>3,5</sup> Though, it is minor surgical procedure but if neglected can results it loss of teeth. Mucosal advancement, secondary epithelization, grafting vestibuloplasty is type of vestibularplasty.<sup>5</sup> Kazanjian's technique and Clark's technique are methods to increase vestibular depth.

Grafting vestibuloplasty mucosal grafts are placed on one or both sides of the extended vestibule. Mucous membrane of the vestibule is undermined and advanced both sides in mucosal advancement technique. In grafting vestibuloplasty, dermal or mucosal grafts can be used to line one or both sides of the extended vestibule.<sup>9</sup> Adequate width of mucosa need to be present for advancement. Tension test helps in assessing adequate width of mucosa. In case of inadequacy techniques like secondary epithelization can be performed. In the present case secondary epithelization was performed and optimal result was obtained.

Kazanjian's advised labial flap pedicled covering the denuded alveolar bone.<sup>10</sup> Drawback of this technique is lip scarring which can lead to reduce lip flexibility. Clark recommended a flap which was pedicled off the lip and raw area was left on the alveolar side rather than labial side.

Relapse of the vestibular depth gained and scarring of vestibule are major drawbacks of Clark's technique.

In the present case report Clark's technique was performed to increase the vestibular depth and satisfactory results were obtained .At 3 months patient was able to maintain oral hygiene properly and food accumulation in that area was not observed . Kalakonda et al. compared patient perception regarding diode laser and scapel technique and concluded that laser promotes healing and better patient acceptance, in present study only scapel technique was used and satisfactory healing was observed .However, the results cannot be compared as this is a single case report.Nataranjan et al. managed a shallow vestibule with reduced width of attached gingiva by vestibuloplasty which aided in retention and stability of prosthesis. . Shrestha et al. presented a case report on vestibuloplasty with Clark's technique and found similar results to our study.

### CONCLUSION

Clark's technique for vestibuloplasty can be performed to increase the depth of vestibule. Post operative healing and maintenance of oral hygiene was satisfactory in this case report.

### Conflicts Of Interest

The authors declare they have no potential conflict of interests regarding this article.

### REFERENCES

1. Ward V. A technique of measurement of the depth of the vestibular fornix in the mandibular anterior region. *J Periodontol.* 1976;47(9):525-30.
2. Halperin-Sternfeld M, Zigdon-Giladi H, Machtei EE. The association between shallow vestibular depth and peri-implant parameters: a retrospective 6 years longitudinal study. *J Clin Periodontol.* 2016;43(3):305-10.
3. Ochsenein C. Newer concepts of mucogingival surgery. *J Periodontol.* 1960;31(3):175-85.
4. Atlas of Oral and Maxillofacial Surgery .Deepak Kademani, Paul Tiwana • 2015
5. Kumar JV, Chakravarthi PS, Sridhar M, Devi KNN, Kattimani VS, Lingamaneni KP. Anterior ridge extension using modified Kazanjian technique in mandible-a clinical study. *J Clin Diagn Res.* 2016;10(2):ZC21-4.
6. Miloro M, Ghali GE, Larsen PE, Waite PD, editors. Peterson's principles of oral and maxillofacial surgery. 3rd ed. Shelton (CT): People's Medical Publishing House; 2012.
7. Friedman N. Mucogingival surgery. *Tex Dent J.* 1957;75:358-62.
8. Takei H, Azzi R, Han T. Periodontal plastic and esthetic surgery. In: Carranza FA, editor. *Clinical Periodontology.* 10th ed. St. Louis: Elsevier; 2009. p. 1005-30.
9. Ephros H, Klein R, Sallustio A. Preprosthetic surgery. *Oral Maxillofac Clin N Am* 2015;27(3):459-72.
10. Chari H, Shaik KV. Preprosthetic surgery: Review of literature. *Int J Sci Study.* 2016;3(4):9- 16.
11. Kalakonda B, Farista S, Koppolu P, Baroudi K, Uppada U, Mishra A, Savarimath A, Lingam AS. Evaluation of Patient Perceptions After Vestibuloplasty Procedure: A Comparison of Diode Laser and Scalpel Techniques. *J Clin Diagn Res.* 2016;10(5):ZC96-ZC100.
12. Natarajan S, Banu F, Kumar M, et al. Management of Shallow Vestibule with Reduced Attached Gingiva in Fixed Prosthetic Intervention. *Cureus* 2019, 11(6):e4975.
13. Shrestha B, Pradhan S. Clark's Technique of Vestibuloplasty -A Case Report Case Report Journal of Nepalese Society of Periodontology and Oral Implantology 2021, 4(2):93-5.