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Case Report

Double Buccal Flap Closure for Velopharyngeal Insufficiency in Adult Patient: A Case Report

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Abstract

Introduction: Velopharyngeal insufficiency (VPI) causes hypernasal speech due to incomplete velopharyngeal closure. Standard procedures include reconstructing with posterior pharyngeal flap, sphincter pharyngoplasty, and Furlow's Z palatoplasty. The complications with these procedures are high, which include scarring, hyponasal speech, and obstructive sleep apnea. Bilateral buccal myomucosal flap for palatal lengthening is a good alternative with less complication.

Case report: A 28 year old male patient presented with hypernasality and nasal air escape. Speech evaluation and nasopharyngoscopy confirmed VPI. Palatal lengthening with bilateral buccal myomucosal flaps was performed. The procedure involved releasing the velum from the hard palate, posterior repositioning, and reconstruction of the palatal gap using buccal flaps from the retromolar trigone.

Outcomes: Healing was uneventful. Speech improved significantly, with reduced hypernasality and better intraoral pressure. No complications or fistula occurred.

Conclusion: This case demonstrates that bilateral opposed buccal flap palatal lengthening is safe, preserves velar musculature, and provides favorable functional outcomes.

Key words: Buccal Myomucosal flap, Cleft, Posterior pharyngeal flap, Velopharyngeal insufficiency

INTRODUCTION

The velopharynx (VP) is a popular term used to describe the soft palate. It is made up of several muscles and structures that work together to create velopharyngeal closure (VPC), and it is connected anteriorly to the hard palate through the palatal aponeurosis. These muscles include the musculus uvulae, superior constrictor, palatopharyngeus, palatoglossus, and the paired levator veli palatini and tensor veli palatini muscles. When the lateral and posterior pharyngeal walls contract simultaneously, they move medially and anteriorly by roughly 10 mm, respectively, and the VP is raised and retracted posterosuperiorly. Closure takes place at the Velopharyngeal valve (VPV) isthmus level, which differs from person to person. VPC is produced within the isthmus by sphincteric contraction followed by the apposition of all nasopharyngeal structures; this is usually found along the inferior portion of the adenoid bed. VPC prevents nasal regurgitation of fluids or solids that are typically transferred to the oropharynx and is necessary during attempted phonation, deglutition, and sucking.[1]

Clinical manifestations of velopharyngeal dysfunction (VPD) include nasal air emission, decreased intraoral pressure for consonants, facial grimacing, hypernasality, decreased speech volume, and/or hyperfunctional phonatory alterations. VPD is caused by a defect in this mechanism. VPI, velopharyngeal incompetency, and velopharyngeal mislearning are the causes of VPD. It may arise as a result of trauma, congenital abnormalities,

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or surgical procedures. Velopharyngeal disproportion and cleft palate are the most frequent congenital causes of VPI. VPI can also be brought on by surgical operations such as adenotonsillectomy, tumour removal, and palatoplasty.[1,2] A speech-language pathologist's (SLP) perceptual speech analysis is used to evaluate VPI. Multiview speech videofluoroscopy, video nasopharyngeal endoscopy, or both can be used to get an instrumental diagnosis. By optimizing the use of these last two modalities, treatment can be customized individually, and speech outcomes can be improved significantly.[3]

There are two types of therapy options for VPI: Nonsurgical and surgical. Prosthetic equipment and speech therapy are examples of nonsurgical interventions. All patients with VPI may benefit from speech therapy, but it is the only treatment for velopharyngeal mislearning and helps individuals with VPI learn how to use their new anatomy after surgery. The primary goal of surgical therapy for VPI is to address the anatomical deficiency. According to studies, over 30% of patients who have had cleft palate surgery also need to have their VPI surgically corrected. Narrowing the nasopharynx and restoring VPV competency without resulting in hyponasality or upper airway obstruction is the aim of surgical intervention. One of the most traditional and often utilized procedures is the posterior pharyngeal flap. A posterior pharyngeal flap is elevated and sutured to the posterior soft palate in this procedure. Additional procedures include sphincter pharyngoplasty, palatal lengthening by double opposing buccinator myomucosal flap or Furlow double opposing Z-plasty, repositioning of the levator muscle, and augmentation of the posterior pharyngeal wall or soft palate with autologous tissues such as cartilage or fat. All of these surgical methods, however, have a number of documented post-operative side effects, including scarring, snoring, obstructive sleep apnea, and hyponasal speech.[4]

In the present case, we performed palatal lengthening with bilateral opposed buccal flaps is designed to correct VPI by allowing the velum to move posterior and improving the closure of the VPV sphincter. The gap was filled and closed with bilateral mucosal buccal advancement flaps. This approach avoids surgical alteration of the velar muscles, decreasing potential scarring and leading to excellent speech outcomes.

CASE REPORT

A 28-year-old male reported to the Department of Oral and Maxillofacial Surgery, SMBT Institute of Dental Sciences and Research, Dhamangaon, Nashik, with the chief complaint of abnormal speech. Patient gave a history of surgery for cleft palate repair. The patient was referred to the SLP for the hypernasality of voice. On thorough physical examination and nasopharyngoscopy, diagnosis of VPI was made and surgical correction was planned.

The patient was placed in standard palatoplasty position for complete visibility and access to the operative site [Figure 1]. To obtain the best vasoconstriction, a solution of lidocaine and epinephrine was injected into the palate and buccal mucosa bilaterally, 10 min prior to the treatment commencing. With its convexity facing the hard palate, the incision was positioned transversely on the soft palate, curved, and about 2–3 mm from the hard palate's posterior border. It reached the retromolar region laterally [Figure 2]. The cleft muscles were then freed from the posterior border of the hard palate following a rough dissection performed with the use of scissors. Laterally, it extended up to the retromolar area. A blunt dissection was carried out, and the cleft muscles were released from the posterior border of the hard palate. The dissection was extended

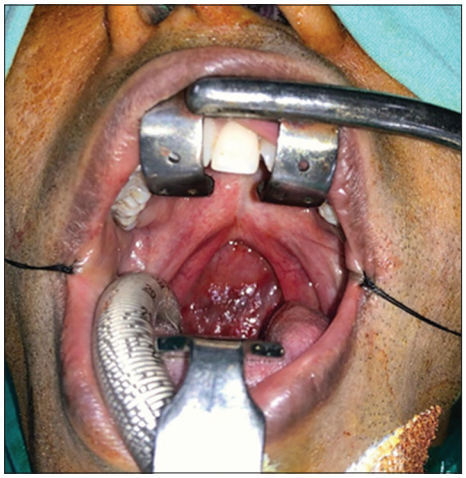

Figure 1: Short palate and non-anatomic location of velum in relation with pharynx

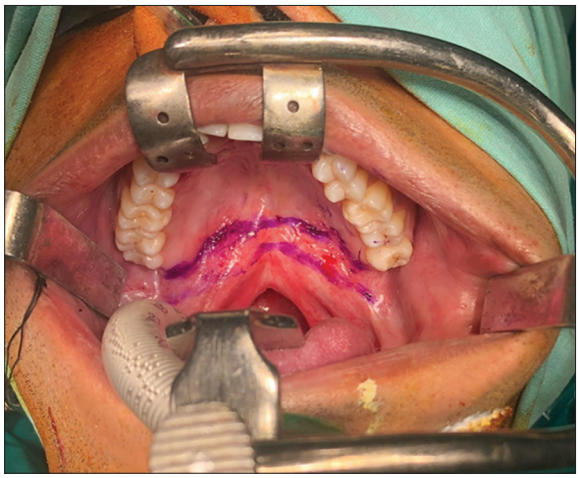

Figure 2: Incision markings

inferiorly, and an intentional opening was made in the nasal layer. The entire soft palate was shifted posteriorly in the direction of the posterior pharyngeal wall, encompassing the nasal layer, oral mucosa, and muscle complex. This created a defect between the hard and soft palate [Figure 3]. To harvest the buccal flap, an incision was made across the buccal mucosa with its base placed at the retromolar trigone and apex facing toward the commissure. The flap was elevated in an anterior-to-posterior direction up to the pterygomandibular raphe [Figure 4]. The flap was lifted in the loose areolar plane between the buccinator muscle and the buccopharyngeal fascia after remaining mucosal for the first few millimeters to protect the facial artery. To close the nasal side of the defect, the flap from the right side was turned over and placed between the hard and soft palate, its epithelialized surface pointing toward the nasopharynx. The flap was sutured to the nasal layer of the defect, and from the opposite side was elevated in a similar manner, rotated, and advanced to close the oral side of the defect, with its mucosal surface facing orally. To avoid dead space and a few tacking sutures were positioned between the two flaps before suturing at the borders. Bilateral donor sites at the buccal mucosa were sutured with 3-0 vicryl [Figure 5]. The flap was divided at 4 weeks or more after surgery. The patient was followed up for up to 1½ years from the surgery [Figure 6]. Immediately after a week of the surgery, the patient was referred to SLP for speech therapy, which continued up to 9 months. No post-operative complications were reported, and the patient showed a significant change in his speech.

DISCUSSION

The size of the gap and the sphincter's closure pattern influence the surgical technique used in VPI surgery; however, the surgeon's preference ultimately determines which technique will yield the greatest outcomes. Patients

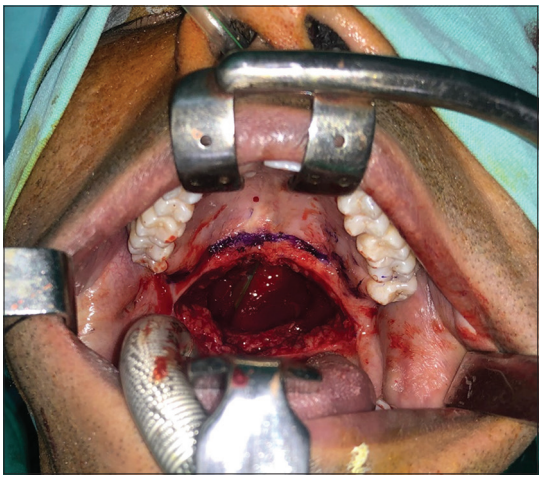

Figure 3: Posterior mobilization of soft palate from hard palate creating a defect and freeing of abnormal attachments and nasal floor

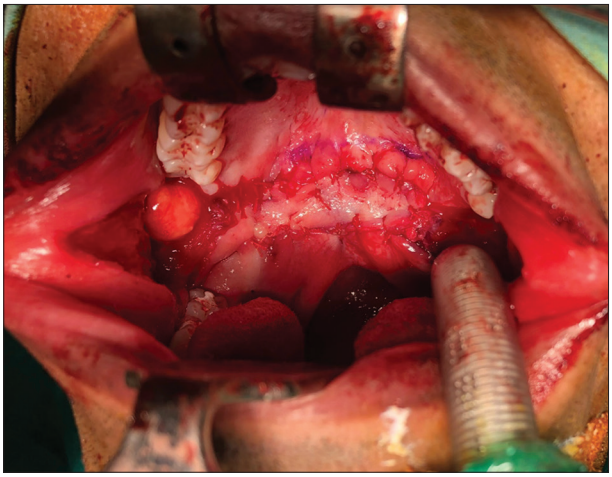

Figure 5: Buccal flaps harvested and placed. One flap reconstructs the nasal mucosa and the other is opposed to reconstruct the oral mucosa. Note the soft palate in a more posterior, anatomical position

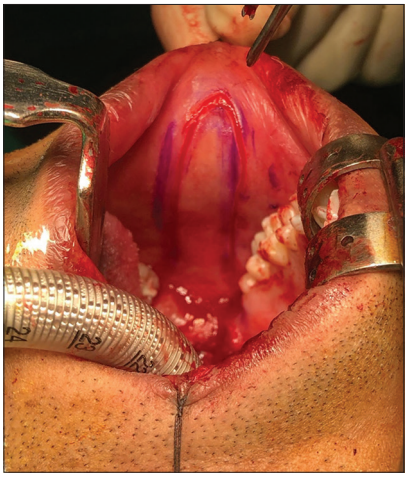

Figure 4: Marking of buccal myomucosal flaps

Figure 6: 3 months follow up

with minor anomalies may benefit most from augmentation of the soft palate and/or posterior pharyngeal wall; however, there is a lack of information on the long-term results of this procedure. The posterior pharyngeal flap is among the most traditional and widely utilized procedures. A posterior pharyngeal flap is elevated and sutured to the posterior soft palate in this procedure. This reduces hypernasal speech by dividing the sphincter into two smaller lateral ports that should be closed by the movements of the lateral pharyngeal walls. While sphincter pharyngoplasty is effective for coronal closure patterns, this operation has been the preferred method for sagittal or circular patterns of sphincter closure. During sphincter pharyngoplasty, thick, vertically orientated flaps from the posterior tonsillar pillars are elevated and then transposed medially at right angles to a horizontal position against the posterior pharyngeal wall. Both of these methods, however, have serious complications, such as obstructive sleep apnea, snoring, hyponasal speaking, oral breathing, and potentially fatal postoperative hemorrhage. When compared to sphincter pharyngoplasty and posterior pharyngeal flap, the Furlow double opposing Z-plasty provides better results.[5]

Our method was initially described by Hill *et al*. This random-pattern flap has feeding vessels from the buccal artery and is composed of the buccal mucosa, submucosa, and buccinator muscle. It has very minimal donor site morbidity, is highly vascular, flexible, and ideal for rebuilding soft-tissue abnormalities of the oral cavity. It is very easy to raise. This flap can be used to constrict the velopharyngeal gate in a more physiological and anatomical manner by lengthening the palate.[6] In our case, there was no complication recorded except for difficulty in mastication for up to 1 month post-surgery. A study conducted by Chauhan *et al*. also reported it as one of the post-operative sequelae in their case series, while others being marginal necrosis of flap, tubing of flap, dimple formation at the cheek, and fistula formation at the palatal region.[4]

CONCLUSION

Palatal lengthening with bilateral myomucosal buccal flaps is a safe and effective method for VPI correction, with the advantages of minimal scarring and improved functional outcomes.

REFERENCES

1. Ruda JM, Krakovitz P, Rose AS. A review of the evaluation and management of velopharyngeal insufficiency in children. Otolaryngol Clin North Am 2012;45:653-69.
2. Goote PC, Adams NS, Mann RJ. Palatal lengthening with double-opposing buccal flaps for velopharyngeal insufficiency. Eplasty 2017;17:ic21.
3. Marsh JL. The evaluation and management of velopharyngeal dysfunction. Clin Plast Surg 2004;31:261-9.
4. Chauhan JS, Sharma S, Jain D, Junval J. Palatal lengthening by double opposing buccal flaps for surgical correction of velopharyngeal insufficiency in cleft patients. J Craniomaxillofac Surg 2020;48:977-84.
5. Shprintzen RJ, Marrinan E. Velopharyngeal insufficiency: Diagnosis and management. Curr Opin Otolaryngol Head Neck Surg 2009;17:302-7.
6. Hill C, Hayden C, Riaz M, Leonard AG. Buccinator sandwich pushback: A new technique for treatment of secondary velopharyngeal incompetence. Cleft Palate Craniofac J 2004;41:230-7.

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