

Closure of Huge Palatal Fistula in an Adult Patient with Isolated Cleft Palate: A Technical Note

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Summary: Closure of huge palatal fistula surrounded by fully erupted permanent dentition in the adult patients with cleft is a challenge. Posteriorly based buccinator myomucosal flap is a neurovascular pedicled flap, with inherent nature of thin thickness, saliva secretion, and axial pattern blood supply. Vicinity of donor site to the palate and low donor-site morbidity are the other advantages. It is an ideal choice in such situation. In this article, the details of surgical technique and the effectiveness of this method are presented. (*Plast Reconstr Surg Glob Open* 2015;3:e306; doi: 10.1097/GOX.0000000000000279; Published online 18 February 2015.)

Small palatal fistula in patients with cleft often results from wound dehiscence of the mucoperiosteal flaps that are used for palatal closure.¹ Huge palatal fistula in the palate after cleft palate surgery is due to near-total avascular necrosis of the elevated flaps.² Closure of this fistula cannot be obtained by conventional methods via hinged flaps for nasal floor reconstruction and local palatal flaps for oral side closure.

In such situation, there is a need for regional flaps, such as tongue flap, temporal flap, temporo-parietal flap, facial artery musculomucosal flap, and submental flap.³⁻⁷ Free flaps such as radial forearm flap are also indicated for large palatal closure.⁸

Posteriorly based buccinator myomucosal flap is a good choice in such situation. With a case, details of

surgical technique and effectiveness of this method are presented.

PATIENT AND SURGICAL TECHNIQUE

Patient

The patient was a 22-year-old woman with a large fistula in the palate, extended posteriorly from primary palate to soft palate, 3 cm width × 5 cm length. The width of the fistula was more than half the width of the palate (Fig. 1). The upper and lower dental arches were complete and third molars were also had been erupted. Occlusal relationship was normal with class I canine/molar relationship and no palatal stricture.

She was born with palatal cleft without cleft lip and alveole. In the early childhood, she underwent surgical repair of the palatal fistula with unfortunate results. Her chief complaints were difficulty in eating and hypernasal speech.

Bilateral posteriorly based buccinator myomucosal flaps were used to close the fistula.

Surgical Technique

The procedure was performed under general anesthesia with nasotracheal intubation. The maxillary erupted wisdom teeth were removed. In the region between the right pterygomandibular raphe

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Fig. 1. Huge palatal fistula.

and posterior margin of the fistula, a turnover flap composed of mucosa and underlying connective tissue was elevated and turned backward. The same procedure was done in the left side. Great care was paid to not including the soft palate muscles in these flaps.

These 2 flaps in the right and left were sutured together in the midline. This maneuver provides nasal-side closure in posterior half of the fistula.

In anterior half of the fistula, small semicircular mucoperiosteal flap with the width equal to 3mm was reflected around the fistular anterior margin.

From left cheek region, a long posteriorly based buccinator myomucosal flap was designed and used for oral side coverage of the fistula. This flap was sutured to the small elevated mucoperiosteal flap that is described above. Another short length posteriorly based buccinator myomucosal flap was reflected and was used to cover the raw surface of the soft palate. This flap has no role in oral side coverage of the palatal fistula but acts as a supplementary flap to avoid secondary healing of denuded soft palate (Fig. 2).

Donor site was reconstructed with bilateral buccal fat pad mobilization.

DISCUSSION

Closure of huge oronasal fistula (ONF) in the cleft patients is a challenge for reconstructive surgeons.⁹ Tongue flap application for closure of very wide palatal fistula has width limitation.¹⁰ Dorsal tongue flaps that have been recommended for large palatal perforation closure can be anteriorly or posteriorly based, although the anteriorly based is more recommended.^{11,12}

The width of dorsal flaps that is recommended for large palatal fistula closure should be 20% larger

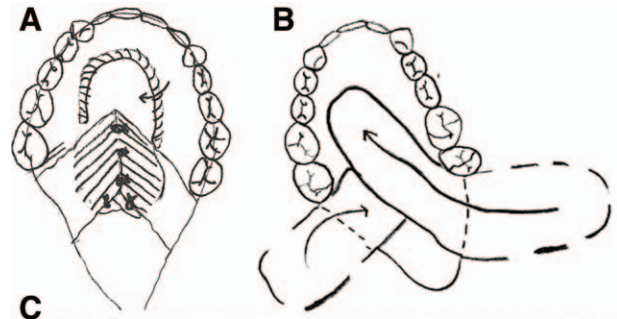


Fig. 2. A, Schematic picture shows 3 turnover flaps. Inversion of soft palate mucosa between the pterygomandibular raphe and posterior margin of the fistula creates nasal-side closure in posterior half of the fistula. Small-width mucoperiosteal flap is elevated in anterior region to help suturing. B, Long and short posteriorly based buccinator myomucosal flaps. In the left, the flap length is long and is used for oral side coverage. In the right, the flap length is shorter and is used for coverage of the raw surface in soft palate. C, End result of palatal fistula closure at 1-month follow-up.

than the width of ONF while the remaining tongue could be approximated primarily.¹³

Temporal and temporoparietal fascial flaps need the incision in the scalp, and the fear of the injury to the frontal branch of the facial nerve and alopecia of the incision line are the other concerns. In the case of temporal flap, there is need for the reconstruction of the donor site or mobilization of the posterior part. Both of the flaps (temporal and temporoparietal) need transmaxillary transfer for palatal reconstruction in the case of fully erupted teeth and complete maxillary dentition in class I occlusal relationship.^{14,15}

Facial artery musculomucosal flap is a good option for palatal fistula closure. Superiorly based pedicle flap can cover the fistula with maximum 2.5 cm width, but it needs edentulous space in posterior quadrant to pass the flap pedicle and need the second surgery for pedicle division.¹⁶

Submental flap needs extraoral submental skin incision, and there is risk of injury to the marginal

mandibular branch of facial nerve. Reverse flow variant is suitable for palatal reconstruction.¹⁷ Free radial forearm flaps are very reliable but need special training and have donor-site morbidity.¹⁸

Posteriorly based buccinator myomucosal flap has the advantage of replacing the lost tissue with the same type of tissue: “ideal reconstruction.”¹⁹

Vicinity of donor site to the palatal region, avoiding extraoral skin incision, and minimal donor-site morbidity are the other advantages.²⁰ Its blood supply comes from buccal artery (a branch of maxillary artery), and it is a neurovascular axial pattern flap, so the return of sensibility in the flap is anticipated.²¹ It is a thin flap, so the patient can be extubated at the end of operation. Saliva secretion by this flap is another benefit. This flap has indications in cleft palate surgery during the primary palatoplasty in wide palatal clefts for lengthening the soft palate and decreasing the chance of velopharyngeal insufficiency. It has also been reported for closure of the fistula in the junction of the soft and hard palate.^{22–24}

CONCLUSION

Posteriorly based buccinator myomucosal flap should be considered as an option for closure of the huge ONF in adult patients with cleft palate.

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