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Anterior Pedicle Based Tongue Flap for Closure of Large Palatal Fistula.

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Abstract

Oro-nasal fistulae are amongst the most common sequels after surgical repair procedures of cleft palate. Despite repair of cleft palate, fistula occurrence is common due to error in surgical technique or poor tissue quality. A case of 5-year-old female with large palatal fistula is reported who had history of cleft palate surgery and palatal fistula was closed with an anterior pedicle-based tongue flap. Tongue flap remains the flap of choice for managing anterior palatal fistulae, leaving apart its only drawback of twostaged procedure and transient patient discomfort. Anteriorly based tongue flap is a safe and dependable procedure and gives consistently good results in closure of anterior palatal fistulae.

Keywords: Oro-nasal Fistula, Palatal Fistula, Tongue Flap.

Introduction

Primary treatment of cleft palate should result in an intact palate with separation of the oral and nasal cavities in addition to good speech. Any failure of achieving complete structural integrity of palate is labelled as an oronasal (palatal) fistula with persistent passage between oral and nasal cavity. The term, palatal fistula, is normally used for residual non repaired cleft palate or result of breakdown of repaired palate. [1] The incidence of palatal fistula ranges from 4% to 35%. [2]

Most often, the palatal fistula is located at the junction of the hard and soft palate closure or between the

premaxilla and secondary palate. [3] They have been classified according to their size as small (5 mm).[4]

The symptoms depend on the size, position, and general velo-pharyngeal competence. The most common sympt oms requiring surgical correction include un controlled regurgitation of fluid and food into the nasal cavity leading to poor oral hygiene with foul smell and hyper nasality of speech due to nasal escape of air. [1]

Breakdown of primary palatal repair is one of the major causes of palatal fistula, which is related to tension at the site of closure, necrosis, and injury to greater palatine vessels during elevation of the flaps. Hematoma or mechanical trauma before elevation of flaps can also lead to palatal fistula.[3] Surgical repair of palatal fistula is technically challenging, most often due to the paucity of local tissue for closure or excessive scarring in the same area as a result of the previous repair. Various treatment options available are local tissue flaps, regional flaps, namely, buccal mucosal flaps, pharyngeal flaps, tongue flaps, micro vascular free tissue transfer (radial forearm flap), and prosthetic rehabilitation. [5-8] Attempts aimed at achieving closure of palatal fistula with local tissue alone often result in repeated failure. This is so because thick, immobile, and scarred muco periosteum of previously repaired palate leads to closure under tension resulting in flap necrosis and wound dehiscence subsequently. [3]

Tongue flaps were introduced for intraoral recon struct ion by Lexar in 1909. [9] Tongue flaps are used in cleft palate surgery because of their excellent vascularity, and the large amount of tissue that they provide has made tongue flaps particularly appropriate for the repair of large fistulas in palates scarred by previous surgery. The use of tongue flaps because of the central position in the floor of the mouth, mobility and the diversity of positioning the flaps make it a method of choice for closure of anterior palatal fistulae than any other tissues.

Case presentation

Here we present the case of a 5-year-old female with isolated cleft of hard and soft palate. On intra oral examination large anterior palatal fistula was seen. The patient's Parents complained of nasal regurgitation and difficulty in eating and history of cleft palate surgery where sutures opened and fistula was seen on palate on post-operative 2nd day; it was therefore decided to close the anterior palatal fistula with an anterior pedicle-based tongue flap. (Fig 1 & 2)

Fig 1: Front Profile

Fig 2: Palatal fistula

Stage I Surgery

- Patient was treated under General anaesthesia with all aseptic and covid 19 pre cautions.

- Incision was marked 3-4 mm away all round the circumference of fistula margin, nasal side closure of palatal defect was performed using turnover flap with multiple interrupted sutures. (Fig 3 & 4)
- The marking was made on tongue and incision was placed, the tongue flap was elevated along the underlying musculature and inserted over the defect and was sutured with multiple mattress sutures. (Fig 5 & 6)
- The recipient bed within the tongue was closed primarily. (Fig 7)
- Loose IMF was given with ivy loops. (Fig 8)

Fig 3: Marking Around the Fistula.

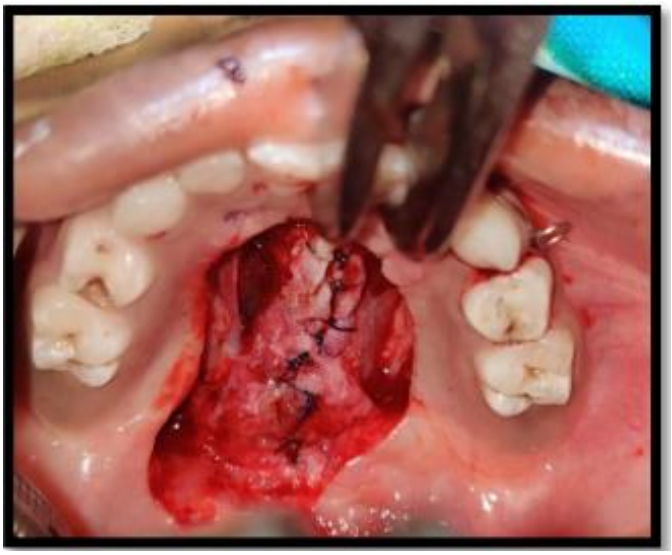

Fig 4: Closure of nasal layer

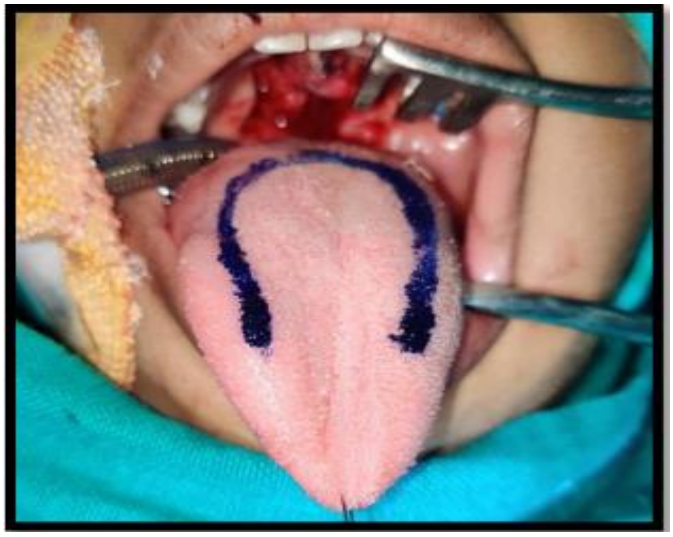

Fig 5: Marking Over Tongue

Fig 6: Flap raised with 2-3mm of muscle thickness for adequate vascularization

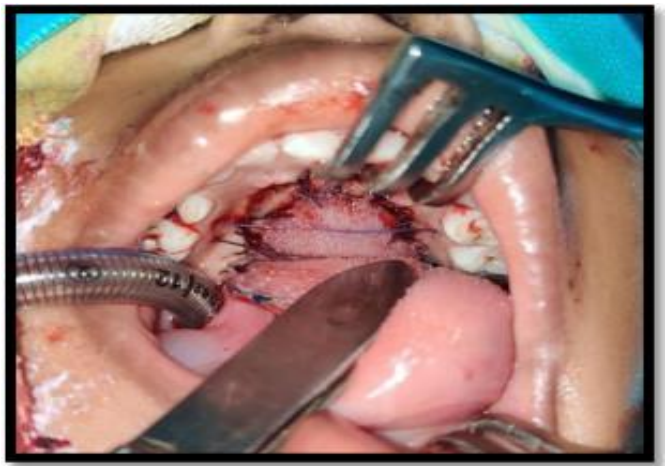

Fig 7: Flap rotated upwards and sutured to raw edges of defect anteriorly and laterally.

Fig 8: Loose IMF for 21 days.

Stage II Surgery

- Patient was treated under General anaesthesia with all aseptic and covid 19 precautions.
- IMF was released and Depediclisation of the flap was done with electrocautery and the flap was separated from tongue. (Fig 9)
- The separated flap was than sutured over the palate with 3-0 Vicryl and tongue was primarily closed with 3-0 Vicryl. (Fig 10)

Fig 9: Depediclisation of the flap.

Fig 10: Flap Separated and sutured over palate.

Fig 11: Pre-Op Photograph.

Fig 12: 1 Year Follow Up (Post Second Surgery)

Discussion

Tongue flap has been a work horse for difficult palatal fistulae with shortage of tissue, the rich vascular supply from the lingual artery and its four branches and the extensive anastomotic network with the contralateral side contributes to the versatility of the tongue flap.

Good amount of tissue available from the tongue can be used for effectively closing even large palatal fistulae. Success rate of the tongue flap has been reported varying from 85% to 95.5%.

Success depends upon proper flap elevation, tension free nasal layer closure, and edge to edge approximation of the flap with palatal tissues and not too tight closure of the donor area near the base of the flap. While raising the flap one should not take more than 5-7 mm. thickness of the muscle in order to avoid a bulky flap which may cause difficulty in swallowing and may also cause articulation problems later.

Conclusion

The tongue flap has proved to be a reliable and easily obtainable local flap. In cleft palate surgery, the excellent vascularity and the large amount of tissue that tongue flaps provide have rendered the flaps particularly appropriate for the repair of large fistulas in palates scarred by previous surgery.

It is evident that that the tongue flap is a useful and versatile option for closure of moderate to large palatal fistulas. The tongue flap was not only useful in closure of fistula but also there was marked improvement in the speech over long-term follow up.

Flap pliability, fistula closure, vascularization, along with the technical ease of its procurement, quality and quantity of tissue available, and minimal functional and aesthetic squeal make the flap suitable for closure of palatal fistulas.

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