

Using Of Tongue Pedicle Flaps in the Repair of Palatal Fistulas in Children (About 4 Cases)

Ismail Benomar^{*,1,2}; Rihab Saqi^{1,2} Nawfal Fejjal^{1,2}

* Corresponding author

1: Plastic surgery unity, Department surgery C, Children's hospital of Rabat, Morocco

2: Faculty of medicine and pharmacy of Rabat, University Mohammed V Rabat, Morocco

Abstract:

Despite a well thought-out and applied primary treatment, the after-effects of cleft palates are virtually inevitable. Some are the result of the evolution of the genetically programmed malformation and many are the consequence of insufficient primary treatment. The tongue flap has proven to be a reliable and easily obtainable local flap. In cleft palate surgery, the excellent vascularization and the large amount of tissue that the tongue flaps provide have made the flaps particularly suitable for the repair of large fistulas in palates healed by previous surgery.

We report 4 cases in our unity. All our patients had a previous cleft palate surgery complicated by a fistula secondary to a tissue necrosis. In one case, the tongue flap has been taken from the lower part of the tongue, and in 3 cases the flap has been taken from the upper part of the tongue. The tongue flap was tolerated in all our patients with a good result in short and medium term. The function of the tongue was intact in all our patient. No recurrence of fistula was reported. The simplicity and advantages of this technic makes this technic an ideal solution for this disease.

Key words: Cleft surgery, fistula, palate, tongue flap

Date of Submission: 05-01-2023

Date of Acceptance: 19-01-2023

I. Introduction:

The most frequent post-cleft surgery consequence is a palatal fistula, which can appear anywhere along the length of the healed palate. The surgeon faces difficulties, especially when dealing with poor-quality tissues near the fistula.

There are various techniques suggested to treat this issue, however employing the tongue flaps is straightforward and guarantees positive outcomes. We present four cases of extensive palatal fistula closure with an anteriorly based tongue flap.

II. Case Report:

Case 1:

One year after having his bilateral cleft lip and palate repaired, a 2-year-old kid came with a massive palatal fistula measuring 4.5 cm by 2 cm. Following primary closure surgery, the fistula developed as a result of hard palate necrosis. A tongue flap was suggested due to the inadequate local tissue. With nasotracheal intubation, the patient was put under general anesthesia. Along the edges of the fistula and in the vomer, an incision was made. The nasal lining was then restored by approximating the marginal flaps and vomer flaps with 5-0 vicryl sutures after the mucosa of the palatal margins and vomer flaps was mobilized. In the tongue, a flap with an anterior base was created. To guarantee a strong blood supply, the flap was 3 mm thick and deeper at its base. After determining that the flap was viable, the donor hole was immediately closed, and the flap was attached to the palate with 4-0 vicryl. The use of a nasogastric tube for feeding is uncertain. The pedicle was separated after three weeks, and the pedicle remnant was placed back on the tongue. The complete healing was obtained after 2 weeks without any residual fistula.



Figure 1 A 2-year-old boy presented with a large palatal fistula measuring 4, 5 cm × 2 cm one year after bilateral cleft lip and palate's repair

Case 2:

A 2-year-old child with a previous history of bilateral cleft lip and palate surgery (Figure 2) . The fistula was secondary to palatal necrosis. The quality of the tissue was not sufficient for closure, so a tongue flap has been adopted.

The procedure was performed under general anesthesia with nasotracheal intubation. The first step consisted of closure of the nasal floor by a turn over flap. The second step consisted of an anterior based tongue flap; the donor site was on the upper surface of the tongue. The donor part of the tongue was closed with 4.0

absorbable suture and the flap was fixed to the palate; a feeding syringe was maintained for 3 weeks. The flap was weaned after 3 weeks.

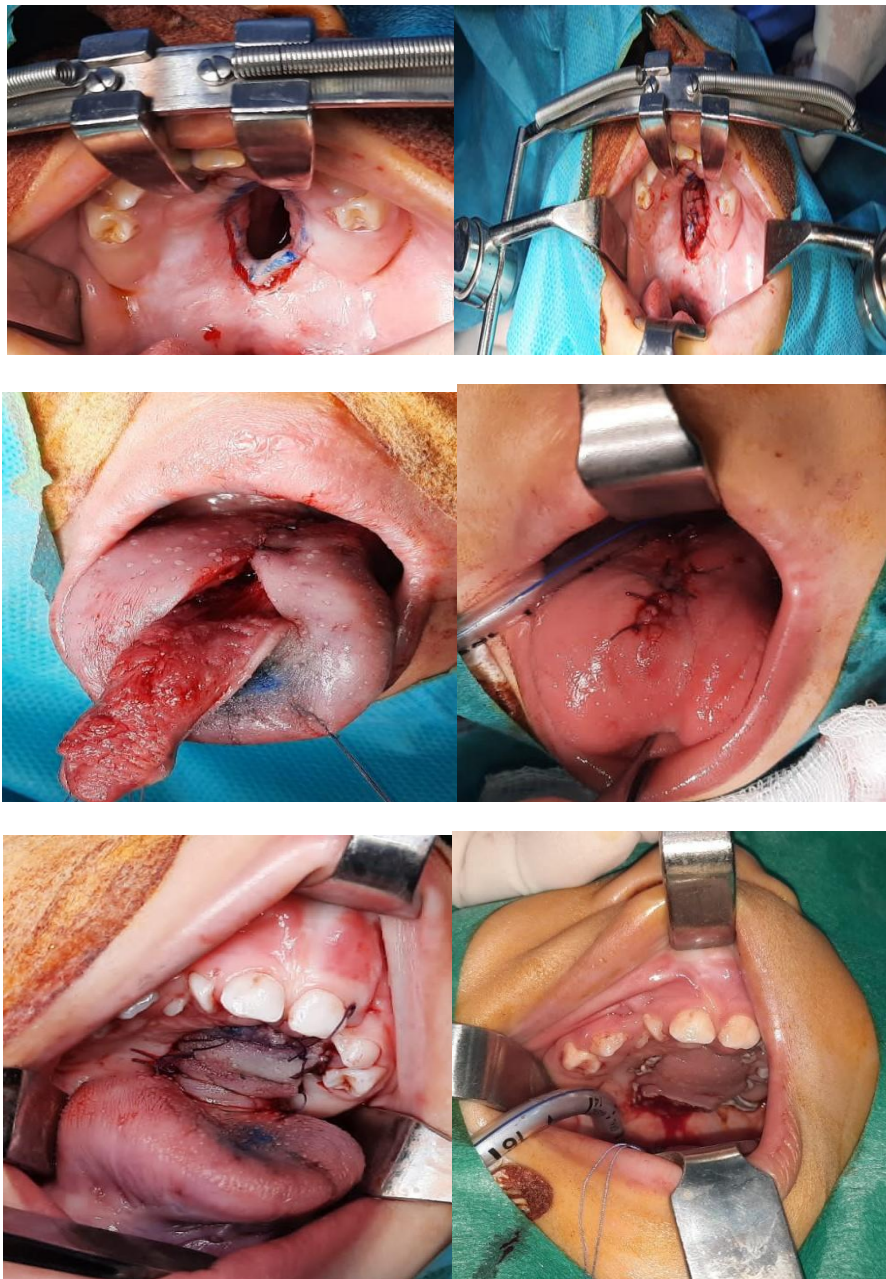


Figure 2:A 2-year-old child with a previous history of bilateral cleft lip and palate surgery

Case 3:

A 12-year-old girl with a previous cleft palate operated at the age of 5 (Figure 3). She presented a fistula involving the hemi-palate operated in a first stage with closure of the fistula by bringing the banks together (Turn over flap). The patient presented a post-operative bleeding, an emergency hemostasis procedure has been performed and a tongue flap was programmed afterwards. The procedure was performed under general anesthesia with nasotracheal intubation.

The first step consisted of closing the nasal floor by incision around the fistula and bringing together the palatal mucosa and the mucosa covering the vomer bone. The second step consisted in the realization of a tongue flap with an anterior base taken from the lower surface of the tongue. After checking the viability of the flap, the donor site was closed and the flap was attached to the palate overlying the fistula. Weaning of the flap was performed after 3 weeks.



Figure 3:A 12-year-old girl with a previous cleft palate operated at the age of 5

Case 4:

5 years old boy with previous bilateral cleft palate who underwent a first surgery in 2019 for the closure of the cleft, this procedure was complicated by a fistula(Figure 4). in 2019 a flap of the buccinator was used for closure of the fistula which was complicated by a necrosis. in 2021 a flap of the tongue was suggested for the correction of the defect. The same technic was used for this patient with a flap taken from the upper side of the tongue.



Figure 4 : 5 years old boy with previous bilateral cleft palate who underwent a first surgery in 2019 for the closure of the cleft, this procedure was complicated by a fistula

III. DISCUSSION

The first study on the use of tongue flaps for palatal defect closure was published by Guerrero and colleagues [1]. It is a fascinating substitute for the obturator prosthesis, which is not long-term well tolerated [2]. At the expense of obvious scars, locoregional flaps were utilized to close the fistulas [2]. The intraoral flaps ensure both aesthetically pleasing and practical outcomes [3]. The use of tongue flaps serves two purposes: to correct the deficiency and to improve oral cavity performance [2].

In the literature, a few classification systems have been discussed. The Pittsburgh classification [4] is based only on number allocation to fistulae at seven zones in the midline, making it appear to be simple to apply to localize the fistula. However, there are numerous limits to these classifications, and in our series, the four fistulas were type 4. Based on the location, size, and velopharyngeal competence, Fayaz et al. suggest a Pakistani comprehensive fistula classification [5]. Our series included one lateral left anterior fistula and three subtotal fistulas. As a result of this classification, Fayaz suggested an algorithm for managing palatal fistulas [5].

The flaps can be taken from the dorsal, ventral or lateral side, with anterior or posterior base. The majority of authors prefer anterior-based flaps because they are more tolerated by the patients and allow better mobilization of the tongue, thus avoiding flap detachment [6]. In our series, the flap was taken from the dorsal region in 3 cases and from the ventral region in one case. For management of the large anterior palatal fistula, M.M. AL Qattan propose to use the tongue tip, but compared with standard tongue flaps, this technique has two main disadvantages, the loss of the tongue tip which may cause articulation deficit; and the flaps are bulky. [7]

Flap failure can occur in 4-20% of cases [8], no failure has been reported in our series.

There are many options for management of the fistulae including buccal myomucosal flap, facial artery myomucosal flap (FAMM flap), tongue flap, buccal pad of fat pad, nasolabial flap or free flap [9]

M.Souhail et al compared the clinical outcome of FAMM flap and tongue flap for closure of large anterior palatal fistulas and found that both provide sufficient tissues for closure of anterior fistulas and the complications are comparable, however they found that for the patient with an anterior fistula with open alveolar cleft, FAMM flap should be considered a first option [9]

IV. CONCLUSION:

The management of complications in cleft palate surgery seems to be a real challenge for the surgeon. Several solutions have been proposed. Tongue pedicle flaps remain an optimal choice, with good functional and aesthetic results.

References

- [1]. José Guerero Santos, J.T Altamarino. The use of lingual flaps in repair of fistulas of hard palate. *Plastic and Reconstructive Surgery* 1966. 38 (2)
- [2]. S. Adam, F. Salles, L. Guyot and al. Le lambeau de langue dans la reconstruction des pertes de substances du palais. *Revue de Stomatologie et de Chirurgie Maxillo-faciale*. 2011. 112 :22-26
- [3]. A R Bozola 1, J A Gasques, C E Carriquiry and al. The buccinator musculomucosal flap: anatomic study and clinical application. *1989 Plast Reconstr Surg*. 1989. 184 (2) :250 - 257.
- [4]. Smith DM, Vecchione L, Jiang S, and al. The Pittsburgh Fistula Classification System: a standardized scheme for the description of palatal fistulas. *Cleft Palate Craniofac J*. 2007. 44:590-594
- [5]. G.Q. Fayaz, N.A. Ahmad, I. Ishaq and al. Pakistan Comprehensive Fistula Classification: A Novel Scheme and Algorithm for Management of Palatal Fistula/Dehiscence. *Plastic and Reconstructive Surgery*. 2019. 143 (1) : 140e – 151e
- [6]. Ali R. Elyassi, Eric R. Helling, James J. Closman. Closure of difficult palatal fistulas using a “parachuting and anchoring” technique with the tongue flap. *Oral and Maxillofacial Surgery*. 2011. 112 (6)
- [7]. Al Qattan MM. A Modified Technique of Using the Tongue Tip for Closure of Large Anterior Palatal Fistula. *Ann Plast Surg* 2001, 47: 458-460
- [8]. F. N. D. Kocaaslan, F. B. Tuncer, S. Sendur and al. The tongue flap for large palatal fistulas, a success or a failure? Our 15-year experience. *Journal of Plastic Surgery and Hand Surgery* 2020
- [9]. M. Sohail, M.M. Bashir, F.A. Khan. Comparison of Clinical Outcome of Facial Artery Myomucosal Flap and Tongue Flap for Closure of Large Anterior Palatal Fistulas. *The Journal of Craniofacial Surgery*. 2016. 27 (6),

Ismail Benomar, et. al. “Using Of Tongue Pedicle Flaps in the Repair of Palatal Fistulas in Children (About 4 Cases).” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 22(1), 2023, pp. 61-66.