Single layer closure of palatal fistula using anteriorly based dorsal tongue flap

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Received: 31 May 2009 / Accepted: 17 June 2009
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Abstract Palatal fistulas are the common complications seen after cleft palate repair. Small fistula may be asymptomatic, the large ones produce various symptoms including regurgitation of fluids into nasal cavity and interference with normal speech. Although small fistulas can be successfully treated with local flaps such as palatal or buccal mucosal flaps, large fistulas pose difficulty. Because of rich blood supply, tongue is a suitable and convenient source of large flap. The anterior based dorsal tongue flap is a safe and effective method for closure of relatively large recurrent palatal fistula with out any functional impairment of donor site. This article describes one such case treated by single layer closure using anteriorly based tongue flap with excellent outcome.

Keywords Palatal fistula · Cleft palate · Local flaps · Rich blood supply of tongue · Anteriorly based dorsal tongue flap

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Introduction

A palatal fistula is an abnormal communication between oral cavity and nose that occurs after surgical repair of a cleft palate. These fistulas more frequently occur in the hard palate. The problems caused by palatal fistulas depend on their size and patient's ability to accommodate the smaller ones. A fistula is often a nuisance that permits liquids and occasionally solid food to go through into the nose. As well nasal secretions enter mouth causing bad taste and breathe resulting in poor oral hygiene [1].

The repair of a recurrent palatal fistula is much more difficult than it seems, and most fistulas present a problem in which an extensive operation is needed to resolve a small defect. Most of these can be closed by using local flaps from the roof of the mouth without having to resort to distant flaps. When additional tissue is needed a flap may be developed from the tongue. Depending on the site of fistula, it may be posteriorly or anteriorly based [1,2]. The tongue flap is indicated for closure of a large persistent palatal fistula, in heavily scarred palates and in cases with previous attempts have been unsuccessful [3]. The tongue flap offers the advantages of an abundance of tissue for

palatal reconstruction, an excellent blood supply and ease of rotation. This report describes a case of single layer closure of palatal fistula by anteriorly based tongue flap.

Case report

A 20-year-old female patient reported to OMFS Department with the complaint of nasal regurgitation of food while eating, altered speech and aesthetically compromised smile because of poor looking removable partial denture. Detailed history revealed about six surgeries for the correction of cleft lip and palate. A systematic local examination revealed the presence of a large hole type [3] of oronasal fistula which was roughly triangular in shape and each side measuring about 3cms crossing alveolus between left central and lateral incisors (Fig. 1). Lateral incisor was peg shaped and was palatally placed. Radiographical examination confirmed the bony defect.

Decision was made for the single layer closure of the defect using anteriorly based tongue flap. Routine blood investigations were unremarkable. Under general anaesthesia deformed lateral incisor was

extracted because correction of its shape and alignment would have taken longer time for which patient was not ready. The palatal fistula was closed using anteriorly based dorsal tongue flap (Figs. 2 and 3). Stabilization was done by intermaxillary fixation using eyelets for 3 weeks to prevent excessive mouth opening and hence damage to pedicle flap. The pedicle was divided after 3 wks under local anesthesia (Fig. 4). Satisfactory healing of the site was observed (Fig. 5). One month follow up revealed no nasal regurgitation and improved speech. Patient received removable partial denture for missing lateral incisor and aesthetic improvement was observed with proper lip support. Follow up after eight months showed normal functioning without difficulties (Fig. 6).

Discussion

Repairing oronasal and oroantral defects is one of the more challenging and difficult problems in the field of maxillofacial surgery. Although small fistulae of the hard palate can often be repaired by local tissue, large palatal fistulae require the transfer of non-palatal flaps.

Fig. 1 Preoperative oronasal fistula

Fig. 2 Anteriorly based tongue flap raised

Fig. 3 Fistula closure using anteriorly based tongue flap

Fig. 4 Pedicle division

Fig. 5 Satisfactory healing after pedicle division

Fig. 6 Closed fistula at 8th month postoperative visit

The tongue with its rich blood supply is a suitable and convenient source of such tissue. Various authors have described the advantages and disadvantages of dorsal tongue flap for the repair of palatal fistula [4–7]. Tongue flap closure for end-stage palatal defects is associated with a relative lack of complications and a high success rate in children and adults [4–7]. Govikar and Thatte have reported a case of single layer closure with tongue flap successfully in a similar case [8]. Even many authors have suggested single layer closure where ever feasible [9]. However, the importance of patient selection cannot be overemphasized while deciding between the surgical options of direct flap closure, anteriorly based dorsal tongue flap, or pedicled transantral temporalis muscle flap [1,2,7]. While using the anteriorly based tongue flap, the base should lie beneath the posterior border of the defect when the tongue is in its neutral position. The length of the flap should be sufficient to span the defect and allow for freedom of tongue movement. The width of the flap should be equal to the width of the defect plus about 20%. The flap should be thick enough to include several millimeters of muscle to protect the submucosal vascular plexus [2, 3,5–7,10,11]. The surgeon must not hesitate to raise a large flap (5–6 cm long, 1 cm thick) to ensure its vascular viability and allow considerable tongue movement without undue tension on the pedicle [4,7]. In addition, aggressive palatal shelf exposure around the defect allows both a watertight oral-side closure and an increased surface

area for in growth of new blood vessels before flap division.

Although one hesitates to alter the tongue's anatomy for fear of changing speech or deglutition, these problems have not been noted [4,7]. Limitation of speech is encouraged to avoid undue tension on the pedicle [7].

Single layer closure of fistula by the pedicled tongue flap can therefore indicated for repair of recurrent palatal fistula that cannot be successfully treated by other local or distant flaps because of the size and/or position of the defect.

Conclusion

There are several flap techniques to close the recurrent/residual palatal fistulas [8]. But one should consider the size and position of the defect while deciding the flap design. Single layer closure of fistula by anteriorly based dorsal tongue flap can be used in instances where palatal or buccal mucosal grafts cannot be reasonably expected to succeed.

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