

# The closure of postpalatoplasty fistula with local turn-down flap

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Website:  
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DOI:  
10.4103/2231-0746.175776

Quick Response Code:



J. Erdenetsogt, G. N. Ayanga, D. Tserendulam, R. Bayasgalan

Department of Maxillofacial Surgery, National Center for Maternal and Child Health of Mongolia, Huvisgalchdiin, Bayangol, Ulaanbaatar, Mongolia

Address for correspondence:

Dr. Ayanga Nataasuren, Department of Maxillofacial Surgery, National Center for Maternal and Child Health of Mongolia, Huvisgalchdiin Street, Bayangol, Ulaanbaatar, Mongolia.  
E-mail: ayangagn@gmail.com

## ABSTRACT

**Introduction:** The three common complications after cleft palate repair are velopharyngeal incompetence, delayed maxillary growth, and fistula formation. Fistula formation rates are reported 0–76% in the literature. Wider palatal defects are more challenging to avoid excess tension, and recent reports suggest defects >15 mm have a significantly higher risk of fistula formation. By localization, the fistulas are divided into seven groups with Pittsburgh fistula classification system (PFCS). The timing of treatment of fistula can vary considerably, and a recurrence rate after surgical correction ranges 10–37%. **Materials and Methods:** Three patients with fistula in the hard palate (PFCS-4) in size 7–12 mm, between 2010 and 2012, who underwent fistula repair with local turn-down flap. In two cases, surgery was the first fistula repair and was the second repair in one case. The incisions in the frontal and bilateral edges were made around the fistula, in the distal side of fistula incision was made 3–5 mm longer than fistula size in the oral mucosa, and separate oral and nasal mucosa was rendered by organizing flap. This flap was turn-down and closed nasal side of fistula. The oral side of fistula was closed with the two-flap procedure by Bardach technique. **Results:** The postoperative wound was covered initially in all cases. **Conclusion:** We believe this two layer method for correction big palatal fistula is simpler than tongue, and buccal flap and patients need only intervention in this case. In addition, this method involves more effective usage of mucosal tissues bilaterally for closure on the oral side of the defect.

**Keywords:** Big fistula, closure, turn-down flap

## INTRODUCTION

Oronasal fistula (ONF) formation is a recalcitrant complication following palatoplasty, resulting in nasal emission during speech and deglutition, and have varied widely 0–76% in the literature.<sup>[1–8]</sup> Multiple factors influence fistula rates, including surgeons experience, type of repair, cleft size, and timing of repair.<sup>[9–11]</sup> Cohen *et al.* divided fistulas by size into small (1–2 mm), medium (3–5 mm), and large (>5 mm) in their study.<sup>[2]</sup> Moreover, Smith subdivided fistulas by localization into seven groups (Pittsburg fistula classification system [PFCS]). A small fistula may be asymptomatic and has a frequency to spontaneously close with growth, but patients commonly complain of regurgitation of liquids into the nasal cavity, and food may become impacted with resultant malodor.<sup>[12]</sup> When

symptomatic, fistulas will require the second surgery for their repair.<sup>[10]</sup>

Palatal fistulas are a problem for patients and surgeons due to the presence of scarred tissues, the absence of local virgin

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**Cite this article as:** Erdenetsogt J, Ayanga GN, Tserendulam D, Bayasgalan R. The closure of postpalatoplasty fistula with local turn-down flap. *Ann Maxillofac Surg* 2015;5:271-3.

tissues, and high rates of recurrence.<sup>[13]</sup> Moreover, the reported recurrence rate after surgical correction of fistula ranges 10–37%.<sup>[2,5,13,14]</sup>

The authors of this paper describe a surgical technique for the correction of postpalatoplasty fistulas by local turn-down flap using neighboring mucosal tissues.

## MATERIALS AND METHODS

Three patients with fistula in the hard palate (PFCS-4), of size in 7–12 mm, referred to the authors' center between 2010 and 2012, underwent fistula repair surgery with local turn-down flap. In two cases (case 1, 2), surgery was the first fistula repair and was the second repair in one case (case 3). Two of them were boys and one female, age ranged 6–27 years [Table 1].

The surgeries were performed under general anesthesia. After injection of lidocaine with epinephrine in the area of defect, incisions on the oral mucosa of the frontal and bilateral edges of this defect were made around the fistula, in the distal side of fistula incision was made 3–5 mm longer than

fistula size [Figure 1]. This flap was turned-down and used to close the nasal side of fistula [Figure 2]. The oral side of fistula was closed with the two-flap procedure by Bardach technique [Figure 3].

The incision was made around the fistula, and mucosal flap must be of sufficient size to close nasal layer.

## RESULTS

The postoperative follow-up was made between 7 and 14<sup>th</sup> days after surgery [Figure 4].

## DISCUSSION

The management of palatal fistula represents a challenge in maxillofacial surgery.<sup>[12]</sup> The timing of treatment of this defect can vary considerably. When the fistula is small, the closure can be delayed for several years. Small fistula tends to close spontaneously with growth or, at least, become nonfunctional.<sup>[15]</sup> If the size of this defect is medium or large, we have a tendency to close this defect as earlier as possible because of food regurgitation to the nasal cavity and nasal twang to speech.

There are several methods for correction of postpalatoplasty fistulas. If the size of this defect is small, it may be asymptomatic and has a tendency to close spontaneously. An alveolar fistula is closed at the same time along with



**Figure 1:** Incision designed by red line



**Figure 3:** The closure of oral side by two-flap procedure



**Figure 2:** The closure of nasal side of fistula with turn-down mucosal flap



**Figure 4:** Before and after operation

**Table 1: Data on demographic information of the patients and size and localization of fistulas and type of repair**

Case	Age and sex	DS	Location of defect	Size of defect (mm)	Procedure
1	6-year-old, male	RCLP, ONF	Hard palate	7	Local turn-down flap for nasal side and Bardach two-flap technique for close oral side
2	27-year-old, female	LCLP, CLND, ONF	Hard palate	12	Local turn-down flap for nasal side and Bardach two-flap technique for close oral side
3	12-year-old, male	BCLP, CLND, ONF	Hard palate	8	Local turn-down flap for nasal side and Bardach two-flap technique for close oral side

RCLP: Right cleft lip and palate, ONF: Oronasal fistula, LCLP: Left cleft lip and palate, CLND: Cleft lip and nasal deformity, BCLP: Bilateral cleft lip and palate, DS: Diagnosis

alveolar defect with bone grafting.<sup>[2,15]</sup> A double-layer closure, consisting of a simple turn-over flap from the side of the palate with the least tissue and a large rotation flap from the opposite side to provide the oral closure is adequate for a small fistula.<sup>[2,15]</sup> When the defect is longitudinal, we can use a modification of the von Langenbeck procedure with two flaps. If fistula size is bigger than 5 mm, local flap methods are impossible to use, so buccal and tongue flap should be considered.<sup>[11,15]</sup> A large fistula and short palate might require repair using pharyngeal flap.

A recurrence rate after surgical correction of ONF ranges 10–37%.<sup>[2,5,13,14]</sup> In the research of Cohen *et al.*, a recurrence rate of fistula after their surgical correction was 37% (12 of 33 cases).<sup>[2]</sup> In addition, this complication was 33% in Muzaffar's paper,<sup>[5]</sup> 10% by Denny.<sup>[13]</sup> However, Landheer *et al.* reported only 9% of recurrence of fistula in their paper.<sup>[14]</sup>

## CONCLUSION

We believe that our two-layer method for correction of large palatal fistula is simpler than tongue and buccal flap and patients need only intervention in this case. In addition, it more effectively uses bilateral mucosal tissues for effective surgical closure of defect.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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