

The use of facial artery musculomucosal (FAMM) readvancement flap in closure of recurrent oronasal fistula

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SUMMARY

High failure rate for recurrent palatal fistulas closure pose a great challenge to plastic surgeons. Tongue and facial artery musculomucosal (FAMM) flaps are the more commonly used flaps for closure of these recurrent fistulas. We report a case of a formerly inset FAMM flap to effectively close a previously repaired oronasal fistula.

INTRODUCTION

Recurrent oronasal fistulas are known complications of cleft palate surgery. Incidence of 11% to 34% has been reported after primary palatoplasty.¹ The problem is compounded with 33% to 50% recurrence rate after revision fistula surgery.¹ The main goal of reconstruction is to preserve or improve residual structures functions by restoring internal oral lining and replacing the mucosa with tissues of similar features.² Lack of palatal surrounding soft tissue and scarring from previous surgeries render closure of palatal fistula a challenge.² The provision of new, unscarred and well-vascularised regional flap is instrumental in treating these fistulae.² The facial artery musculomucosal (FAMM) flap provides similar tissue and is a reliable and versatile option for recurrent wide palatal fistula closure.² This case report among few others illustrates the successful salvage of FAMM flap for closure of recurrent oronasal fistulas.

CASE REPORT

A 10-year-old boy presented with bilateral cleft lip and palate to our Reconstructive Sciences Unit, HUSM, during infancy. The lip repair was performed at five months old while Bardach's two-flap palatoplasty with vomerine flap and intravelar veloplasty performed at the age of one year old. He then defaulted his follow-up until the age of nine years old.

His primary complaint at presentation was the occurrence of a residual anterior palatal fistula causing intermittent nasal fluid regurgitation and hypernasal speech. FAMM flap (superiorly based, 3 x 1.5cm) was done to cover the anterior palatal fistula defect of about 1 x 1.5cm. One-month post repair, the patient developed a recurrent anterior fistula. Intraoral examination revealed a repaired cleft palate, which was short but had good palatal motion. A Pittsburgh type IV fistula was evident anterior to the FAMM flap and measured 2mm in diameter (Figure 1a).

The patient underwent closure of the palatal fistula with readvancement of the right FAMM flap after two years. Turnover flaps were raised and re-sutured to close the nasal lining. Re-elevation of FAMM flap started with an incision around the flap inset and then advanced proximally toward the pedicle of the flap (Figure 1b). The path of the facial artery was identified using a Doppler sonographic probe. The flap was then advanced to the site of the defect to close the oral aspect of the palatal fistula without any tension to ensure flap viability (Figure 1c).

The patient had an uneventful postoperative course. At the nine-month follow-up examination, the palate had healed completely, with no recurrence of the fistula or further nasal regurgitation of fluid and his speech has slightly improved (Figure 2).

DISCUSSION

Recurrent oronasal fistulas are not uncommon post-palatal fistula repair. The occurrence of secondary fistulas along the site of the palate closure represents a surgical repair failure and it may occur at any point along the line of the repaired palate with the highest incidence in the hard palate.³

Nasal regurgitation and hypernasal speech is the commonest complaints of patients with palatal fistulas.⁴ Therefore their closure will prevent food and liquids entering the nasal cavity, thus reducing chronic rhinitis and malodour, in addition to decreasing nasal emission thus improving speech results.³ Different surgical techniques have been suggested for fistula closure depending on its size and location. Local turnover flap is usually used for small palatal fistula whereas as re-do palatoplasty is a good option for mid-palatal fistula with adequate surrounding soft tissues.² Buccal or labial mucosal flap, tongue flap, FAMM flap and free tissue transfer have been described for larger fistulas repair.² However, more recently FAMM flap is most commonly used for palatal defects closure especially wide, scarred and recurrent fistulas due to its reliable and predictable results.²

In our patient, a right superiorly based FAMM flap (3 x 1.5cm) was used for closure of the post-palatoplasty fistula (1 x 1.5cm) and later resulted in a 2mm Pittsburgh type IV anterior palatal fistula. Fortunately, the prior FAMM flap tissue redundancy has allowed for its re-advancement to close the recurrent fistula.

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Fig. 1: a: recurrent anterior palatal fistula, post right superiorly-based Famm flap, b: Incision made along the dotted red line, re- elevating the Famm flap towards the base of pedicle & re-advanced to close the fistula, c: Tension free closure to ensure flap viability.



Fig. 2: Complete closure of anterior palatal fistula following readvancement of previous Famm flap.

A similar approach was undertaken by Shetty et al., when one of the patients had a suture line dehiscence after an inferiorly based Famm flap closure, whereby the flap was successively advanced and re-sutured, following which the fistula healing was uneventful.²

In contrast to the flap dehiscence repair by simple flap advancement as has been described by Shetty et al., our case involved the previous Famm flap being raised down to its pedicle to re-advance the whole flap for coverage of the recurrent oronasal fistula.

In absence of surrounding tissue redundancy from a previously inset Famm flap, waltzing the flap can be done provided the fistula be allowed to mature for at least six months.⁴ The contralateral Famm flap can also be used to provide oral coverage. Other options include tongue flap, buccal mucosal flap, buccal fat pad and microvascular free-tissue transfer. However, the difference in texture, colour and consistency of tongue flap makes it not as ideal for palatal repair in addition to its need for second stage flap division surgery after 3 weeks.² Buccal mucosal flap on the other hand provides limited tissue for large fistula coverage and its random blood supply pattern renders it unreliable. It is also not suitable for anterior fistulas.² The buccal fat pad is useful for mid and posterior palatal fistulae repair, however it is less versatile in comparison to the Famm flap.² Despite microvascular free-tissue transfer such as radial forearm flap success in achieving closure of large palatal defects resistant to other methods, the usage of free flaps demands proficiency in microsurgery, has longer operating time and causes prolonged hospitalisation. It also resulted in donor site morbidity and unsatisfactory results aesthetically.² In this case, the feasibility of re-advancing Famm flap expands its versatility and allow for the surgical salvage of the recurrent palatal fistula with minimal donor site morbidity.

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