



Case report

Facial Artery Musculomucosal (FAMM) flap for nasal lining in reconstruction of large full thickness lateral nasal defects



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HIGHLIGHTS

- Full thickness nasal defects needs to nasal lining as well as outer skin coverage.
- FAMM flap is a useful flap in this topic for large defect.
- Length of FAMM flap is sufficient to reach the nasal cavity.
- Less mention in the literature as nasal lining.
- Minor donor site morbidity and appropriate paddle size are the other feature.

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ABSTRACT

Obviously, restoring the nasal lining is a great challenge in the reconstruction of nasal defects. Full thickness nasal defects usually require special flaps for reconstructing the nasal lining. Intranasal mucosal flaps, hinge over flaps, perinasal second flaps, folded or second forehead flaps and finally free flaps are examples that can be used for this purpose. Moreover, the case presented in this article expresses a new role for the superiorly based Facial Artery Musculomucosal (FAMM) flap in this topic. Furthermore, mucosal island variant of this flap is presented to reduce the tension on this flap while restoring the nasal lining in large full thickness nasal defect.

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1. Introduction

Forehead flap is considered to be the standard method for the reconstruction of large nasal defects [1]. However, for the sake of complete reconstruction, the nasal lining needs to be restored [2]. Full thickness nasal defects usually need special flaps for nasal lining. In most cases, intranasal mucosal flaps, hinge over flaps, perinasal flaps, folded or second forehead flaps and finally free flaps are examples that can be used for this purpose [3]. Moreover, an intranasal mucosal flap, particularly the anteriorly pedicled flap from the septum, is usually considered the best choice for nasal lining reconstruction in large defects [4].

In this article, we present a new role for the superiorly based

Facial Artery Musculomucosal (FAMM) Flap. In addition, mucosal Island variant of this flap, pedicled on vascular submucosa, is introduced for restoring the nasal lining.

2. Surgical technique and case presentation

A 17 years old male was brought to the emergency, following a motor vehicle accident, with severely injured face. In the emergency operation room the near completely avulsed right ala was sutured back as for the other facial lacerations. As expected, the right ala undergoes necrosis (Fig. 1). Two weeks later, the patient was elected for a second operation under general anesthesia. Submental intubation was chosen for the passage of armored orotracheal tube because of a concomitant maxillary fracture.

Following wound debridement, a trapezoidal defect involving completely the right ala and caudal lateral nasal sidewall having 2.5 cm diameter was observed. Moreover, the patient had a large septal perforation, and the inferior turbinate was previously sutured at the first operation (Fig. 2).

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Fig. 1. a, Facial lacerations, maxillary fracture and crush injury of the nose. b, Necrosis of the sutured left caudal nasal sidewall and ala.



Fig. 2. Large full thickness alar defect. The nasal septum is perforated and inferior turbinate is severely lacerated.

As a matter of fact, superiorly based buccinator myomucosal pedicled flap from the ipsilateral buccal region was utilized. The facial artery after being identified was included in the flap thickness. After that, the flap was delivered into the nose through an incision in the floor of the nose.

Before being sutured in place, the flap was recognized to be under tension. Aiming to reduce the tension, design of this flap was changed from mucosal pedicled flap to mucosal Island variant; pedicled on submucosal tissues (Fig. 3).

This myomucosal island flap was sutured to the margins of remaining nasal mucosa so that restoring the nasal lining. Furthermore, a Paramedian interpolated forehead flap was used for the reconstruction of the skin defect.

3. Discussion

Restoring the nasal lining has a paramount role in the reconstruction of large full thickness nasal defects. Providing thin well vascularized lining flap is still the most elusive achievement in corrective nasal surgery and is critical to the final result. If the

surgeon choose the secondary epithelialization instead of flap for providing inner nasal lining, significant contracture and unacceptable esthetic is the result [5–7]. Table 1, shows different pedicled flaps for restoring major nasal lining defects [8–11].

In the case presented in this article, due to a persistent large septal perforation and a lacerated inferior turbinate, neither a pedicled flap from the nasal septum nor from the inferior turbinate could be utilized. Moreover, hinged over flaps for such case were considerably small in size.

As far as nasolabial flap or a second forehead flap is concerned for nasal lining reconstruction, an additional facial skin incision is needed; which is usually not desirable by patient. Furthermore, and folded forehead flap was not applicable in this case because of the short forehead of the patient. Taking in consideration that the distance between the pedicle bases (superior medial orbit) to the hair line should be greater than that to the nasal defect; the folded forehead flap certainly was not the flap of choice in this case.

The FAMM flap is composed of the buccinator muscle and the buccal mucosa vascularized by the facial artery. It can be superiorly based or inferiorly pedicled according to the defect site. In addition, this flap could be applied in the reconstruction of oral cavity, skull base defects and nasal septum [12]. As a result, the buccinator based myomucosal flap with its large paddle size was considered to be a good option in this case with unavailable intranasal mucosal flaps and large full thickness near half nose destruction. FAMM flap has been reported in the literature for nasal reconstruction mainly for management of large septal perforations and sporadically as nasal limning for alar reconstruction [13].

Even though the inner nose lined with oral mucosa is not as the same as that lined with nasal mucosa, however it is still considered better than skin. Baring in mind that this flap produces saliva [14]; dryness, crust formation and bad odor are not the considered as limitations for using this flap. Lack of goblet cells in the oral mucosa is a negative point compared with intranasal mucosal flaps [15].

A vertical fibrotic band in the buccal mucosa appeared after surgery as a donor site complication. However, there was no limitation in mouth opening or other oral functions. Moreover, minor stenosis of the reconstructed nostril was noticed after reconstruction. This stenosis was managed under local anesthesia with surgical excision and acrylic stent inserted for two weeks.

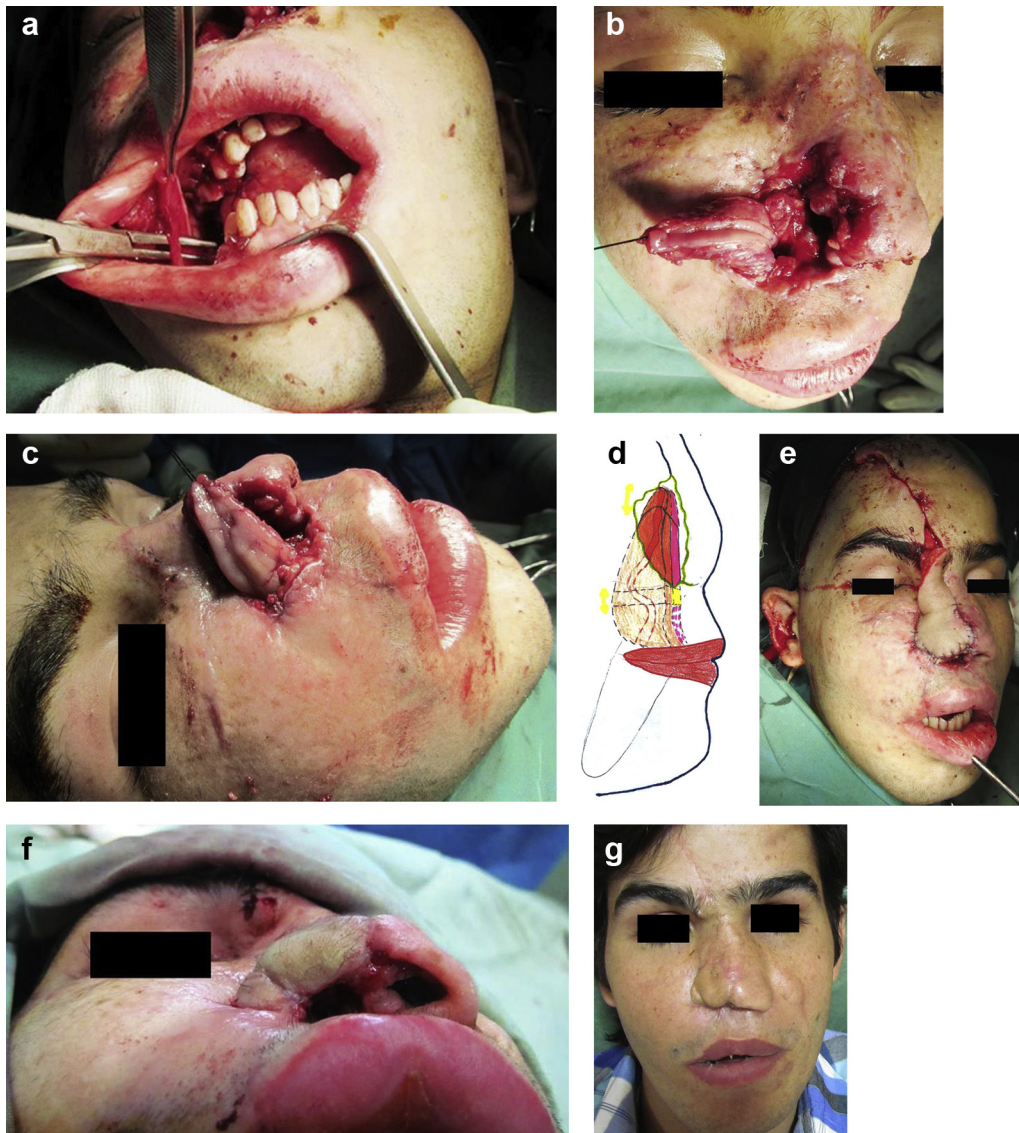


Fig. 3. a, Facial artery is included in flap design. b, Superiorly based FAMM flap. c, Island variant reduced the tension on flap. d, Schematic picture. e, Forehead flap is used for external covering and FAMM flap with Island design for inner lining. f, Photograph taken six weeks after inset of lining and forehead flaps, during the third stage of surgery for dividing forehead flap pedicle. g, Photograph taken six month after reconstruction.

Table 1
Pedicled flaps for restoring major nasal lining defects.

Flap	Indication	Advantage	Disadvantage	Reference
Nasolabial flap	Midvault lining	Constant vascularity and ease of surgery	Facial scar	[8]
Folded forehead flap	Lateral nasal defect	One pedicled flap for both internal and external lining	Limitation in patients with thick or short forehead	[9]
Second forehead flap	Coverage of cranial bone graft from inside	Good skin quality with reliable perfusion	Increased Defect of frontal skin	[10]
Intranasal lining flap	Full thickness alar defect	Thin mucous member	Limited available mucosa	[11]

4. Conclusion

Mucosal island variant of FAMM flap can be considered, in special cases, as a good choice for the reconstruction of the nasal lining. Moreover, island variant of the FAMM flap reduces the tension applied on the flap with no restrictions regarding entrapment of the epithelium in the subcutaneous tunnel.

Conflict of interest

None declared.

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