The Use of a Combined Local Flap for Reconstructing a Complex Nasal Defect

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Received: 11 August 2017 / Accepted: 22 January 2018 / Published online: 1 February 2018
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Abstract

The main goals of reconstruction of nasal defects are to restore the topographic subunit outline, thereby maintaining the aesthetic three-dimensional facial contours and more importantly ensuring a patent airway. Wide excision of tumours of the external nose can at times result in complex defects causing significant facial disfigurement and this poses a significant reconstructive challenge. Nasal reconstruction with only micro-vascular free flaps can at times produce poor aesthetic outcomes as distant skin often appears as a mismatched patch within the surrounding normal facial skin. We describe a novel technique for external nose reconstruction using a combination two well described local flaps, superiorly based nasolabial flap alongside a paramedian forehead flap.

Keywords Superiorly based nasolabial flap · Paramedian forehead flap · Nasal reconstruction

Introduction

The nose is the central aesthetic unit of the face with fixed outlines and topographic subunits which is constituted by the tip, dorsum, paired sidewalls, ala and the soft triangles. Surgery is the mainstay of management for most cutaneous malignancies of the external nose; the type of resection depends on the tumour location, size and extension. Wide excision of tumours of the external nose can at times result in complex defects causing significant facial disfigurement and this poses a significant reconstructive challenge [1–3]. We recently managed a complex nasal tumour involving the nasal tip and anterior nasal septum and describe our unique technique of reconstructing it with good cosmetic outcomes. The literature is very sparse regarding the use of combined local flaps in nasal reconstruction.

Case Report with Technical Details

A 52-year-old lady presented to our outpatient department for a slowly growing painless, proliferative growth involving the tip of her nose for 9 months (Fig. 1a, b). Clinical evaluation revealed a large freely mobile ulcerative lesion measuring approximately 6×2 cm involving the skin of the nasal tip, the adjoining ala and the nasal septum. A biopsy of the lesion showed invasive squamous cell carcinoma. The patient was taken up for surgery which entailed a wide excision of the tumour. The alar cartilages were clinically uninvolved and could be left intact; a tumour free margin of at least 5 mm was confirmed by means of an intraoperative frozen section. Considering the large and complex nature of the recipient site, a decision was taken to reconstruct the defect using a combined local flap, i.e. a superiorly based nasolabial flap alongside a paramedian forehead flap (Fig. 2a, b). The patient made an uneventful recovery; the final histopathology confirmed the presence of a $5.8 \times 2.2 \times 0.8$ cm well-differentiated squamous cell carcinoma resected with clear margins. The option of post-operative radiotherapy was discussed in the multi-speciality board, but as the patient's tumour had no perineural invasion or other high-risk features, adjuvant radiotherapy was not considered. The patient is currently disease free and

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Fig. 1 a, b Clinical photograph at presentation

is on regular follow up for over 2 years (39 months) post her surgery and with a good cosmetic outcome (Fig. 3).

The main goals of reconstruction of nasal defects are to restore the topographic subunit outline, thereby maintaining the aesthetic three-dimensional facial contours and more importantly ensuring a patent airway. The reconstruction options range from simple closure to the use of free tissue grafts (fat, acellular dermis, fascia, cartilage) to the use of vascularized regional flaps or free flaps [1, 2]. Nasal reconstruction with only micro-vascular free flaps can at times produce poor aesthetic outcomes as distant skin often appears as a mismatched patch within the surrounding normal facial skin [2].

Point of Technique We used two commonly used local flaps, the paramedian forehead flap and a superiorly based nasolabial flap for reconstructing the defect of the nasal tip and anterior nasal septum in our patient with good cosmetic outcomes.

Paramedian Forehead Flap The forehead flap and its modification are considered as the workhorse flap in nasal reconstruction [1–4]. The paramedian forehead flap, in our patient, was raised based on the supratrochlear pedicle in the subcutaneous plane, superficial to the frontal muscle and subsequently rotated and sutured to the recipient defect. The pedicle division was carefully performed as a second stage after

3 weeks; meticulous attention was given to restore the brow symmetry.

Superiorly Based Nasolabial Flap The nasolabial flap is another versatile flap, which has been traditionally used for reconstruction of various intraoral defects, the nose and the lower eyelids [5]. The flap is richly perfused by the angular branch of the facial artery, the infra-orbital artery and the transverse facial artery. The superiorly based nasolabial flap was used to reconstruct the skin overlying the anterior nasal septum in our patient. The flap was designed such that the central axis remained at an angle of 45 degrees to the axis of the dorsum of the nose; the shape of the flap was contoured to the recipient defect. The pedicle division was carefully performed as a second stage after 3 weeks, alongside the division of the paramedian forehead flap; meticulous attention was given to restore the symmetry of the nasal septum and airway patency.

The other reconstructive options for such a complex nasal defect as seen in our patient are the use of bilateral nasolabial flaps or a single large forehead flap. Bilateral nasolabial flaps have the added advantage of producing less asymmetry in the face, while slight nasolabial asymmetry is often seen in patients receiving unilateral nasolabial flaps. A trapdoor deformity is a potential complication of the nasolabial flap when it is used for facial skin reconstruction. This can be prevented/minimised by undermining the recipient site of the flap to an

Fig. 2 a Intraoperative clinical photograph after tumour excision. b Intraoperative clinical photograph after reconstruction of the defect using a combined local flap, i.e. a superiorly based nasolabial flap alongside a paramedian forehead flap

Fig. 3 Post-operative clinical photograph an year following surgery

area that is equal to or greater than the recipient site. Further, a limitation of using a single large forehead flap is that its length can be restricted in patients with a low frontal hairline. An alternative is to curve the flap transversely across the hairline; however this portion of the flap is random and stands a potential risk for necrosis.

In conclusion, because of its good vascularity, adaptability, colour match and outlining without hair; both the flaps (paramedian forehead and nasolabial) are considered ideal for nasal reconstructions. A potential disadvantage of both these flaps is that it requires a two-stage procedure, although the second stage can invariably be performed under local anaesthesia. However, in circumstances wherein the defect is large and complex, wherein there is a concern of about the reach of one of the above local flaps, both the flaps can together be used in conjunction to ensure a successful outcome

both cosmetically as well as functionally as was achieved in our patient.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Issues All procedures performed in this case report were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Appropriate informed consents have been obtained

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