

Modified Spear flap for the reconstruction of a full-thickness defect of the nasal ala

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Abstract

Various options are available for the reconstruction of full-thickness defects of the nasal ala with different advantages and disadvantages, but none are fully satisfactory. We present the case of a 57-year-old man with a recurrent basal cell carcinoma of the right nasal ala and nearby cheek and upper lip. Tumour clearance was achieved after two stages of 'fresh/frozen' Tübingen technique, resulting in a 2.0×2.0 cm full-thickness defect of the lateral right ala. The wound involved the alar rim, groove and adjacent cheek and upper lip. Reconstruction was successfully achieved with a nasolabial turnover flap (modified Spear flap) in a single stage. The surgical procedure and subsequent outcomes are illustrated. Our experience shows the effectiveness of the nasolabial turnover flap for a single-stage repair of full-thickness defects of the nasal area and adjacent tissue.

Introduction

The management of full-thickness defects of the nasal ala is challenging, because of the complex structure and the relevant functional and aesthetic relevance of that nasal subunit. Repair requires recreating the internal nasal lining, reinforcing the wall to maintain an adequate nostril patency, and rebuilding the external alar profile.¹

Although a variety of choices are available for the reconstruction of full-thickness defects of the nasal ala, including helical rim grafts, forehead flaps, nasolabial flaps and free flaps, an ideal technique is not yet available. Auricular composite chondrocutaneous grafts are elegant solutions for small alar losses.^{2,3} The graft size should be limited to 1 cm or less, because of the high risk of failure for the vascular damage.³ Moreover, this option is not indicated for defects involving the cheek or upper lip. Interpolation flaps, such as cheek flaps, median and paramedian forehead flaps provide excellent functional and aesthetic reconstructions of complex nose defects, including alar losses.⁴⁻⁶ Furthermore, these

procedures have a significant complexity and surgical risk and require multiple surgical stages. In addition, the forehead flaps leave visible scars on the frontal region.

Nasolabial flaps are very common options for the reconstruction of small to middle-size defects of the alar and lower nasal sidewall.⁷ They can be used as random or axial pattern flaps and provide sufficient tissue from the adjacent cheek region with ideal colour and texture matching. Nasolabial flaps are available in various modalities, such as transposition, interpolation, subcutaneously pedicled island, facial artery perforator based, and free flaps with different advantages and drawbacks.^{1,7}

We present the case of a patient with a full-thickness defect of the nasal ala and adjacent cheek and upper lip, following micrographic excision of a recurrent basal cell carcinoma, which was effectively repaired with a single-stage nasolabial turnover flap.

Case report

A 57-year-old man presented with a recurrent basal cell carcinoma of the right nasal ala and the adjacent cheek and upper lip. Four years earlier, he had undergone surgical excision of a basal cell carcinoma in the same site and reconstruction with a cheek advancement flap at another hospital. For about three months the patient had noticed a slight and transient bleeding from the right nostril. A biopsy had confirmed the presence of recurrent BCC. Physical examination showed an ulcerated area on the lateral inner lining of the right vestibule. On palpation the alar and adjacent perinasal skin appeared infiltrated, with moderate distortion of the alar profile. In addition, residual scars from the previous surgery were evident on the right cheek (Figure 1A).

The patient underwent microscopically controlled surgery with fresh/frozen Tübingen technique. Two stages of excision were required to achieve tumour clearance. The residual full-thickness defect measured approximately 2.0×2.0 cm and involved the right ala in its lateral half and the nearby perinasal tissue. Reconstruction was carried out with the use of a single-stage, Spear-type, nasolabial turnover flap. A medially based nasolabial flap with a subcutaneous pedicle was designed along the melo-labial sulcus with a width at the base slightly exceeding that of the defect (Figure 1B). The flap was planned long enough to restore both the inner and outer alar lining through a double overturning. After incision, the flap

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was elevated in the subcutaneous plane and gently deepithelialized for 1 cm in its proximal portion immediately adjacent to the defect. Then it was turned over like a book page to repair the perinasal and alar wound. The proximal portion was sutured to the bottom of perinasal loss and to the edge of the alar defect to recreate the internal lining of the nostril (Figure 1C). Afterwards, the distal part of the flap was folded again on itself and sutured on the external margin of wound, to form the outer coverage. Finally, the exceeding flap portion was trimmed. The donor site was closed with a direct suture, hidden along the nasolabial groove (Figure 1D). The whole surgical procedure was performed under local anaesthesia with

sedation of the patient. No relevant complications, such as total or partial flap necrosis, wound dehiscence or infection were observed post-operatively. Six months later, the outcome was very satisfactory on both functional and aesthetic point of view (Figure 1E). Follow-up is still ongoing.

Discussion

Spear flap is an effective and elegant procedure for the reconstruction of full-thickness lateral defects of the nasal ala.⁸ It uses cheek skin as donor tissue to recreate both the internal nasal lining and the external alar coverage, without any addition of cartilage graft as support.^{4,5} The flap must be wider than the defect to be repaired to better recreate the alar convexity.⁵ The excellent vascular supply of the medial cheek significantly reduces the risk of ischemia due to the double overturning the flap undergoes.⁵⁻⁷ Spear flap is a very satisfactory reconstructive option for recreating in a single surgical stage the structural integrity of the nasal ala without cartilage graft and maintaining the relevant aesthetic value of this nasal subunit.⁸⁻¹⁰ Some disadvantages, including excessive flap bulkiness with asymmetry of the nasal alae, lateral displacement of the nasal ala, and disappearance of lateral alar groove can take place with this technique.⁸⁻¹³ Although they are usually of little concern, a second surgical procedure may be necessary in some cases to refine the flap and improve the cosmetic outcomes.¹⁰ Again, the transfer of beard hairs from the cheek to the ala can occur in male patients, requiring laser epilation.¹² Finally, the internal nostril lining by skin and not by mucosa may need daily lubricant applications.¹³

Various modifications of the original Spear flap have been later reported for better functional and aesthetic results, especially in particular cases. A 'tunneled' turnover flap was performed to preserve a pre-existing alar groove if it was not lost during tumour removal.^{9,12} Again, an elliptical or fusiform shaped flap with a proximal superiorly tapered apex has been shown to facilitate the donor site closure under minimal tension, avoiding a possible elevation of the ipsilateral upper lip, as may happen with the standard flap.¹² Although the Spear flap usually does not require cartilage supporting, a 'valve' phenomenon during inspiration may occasionally occur in some patients during surgery or even later.¹³ This complication requires correction with the insertion of a cartilage batten between the internal and external alar lining.¹³ It has been

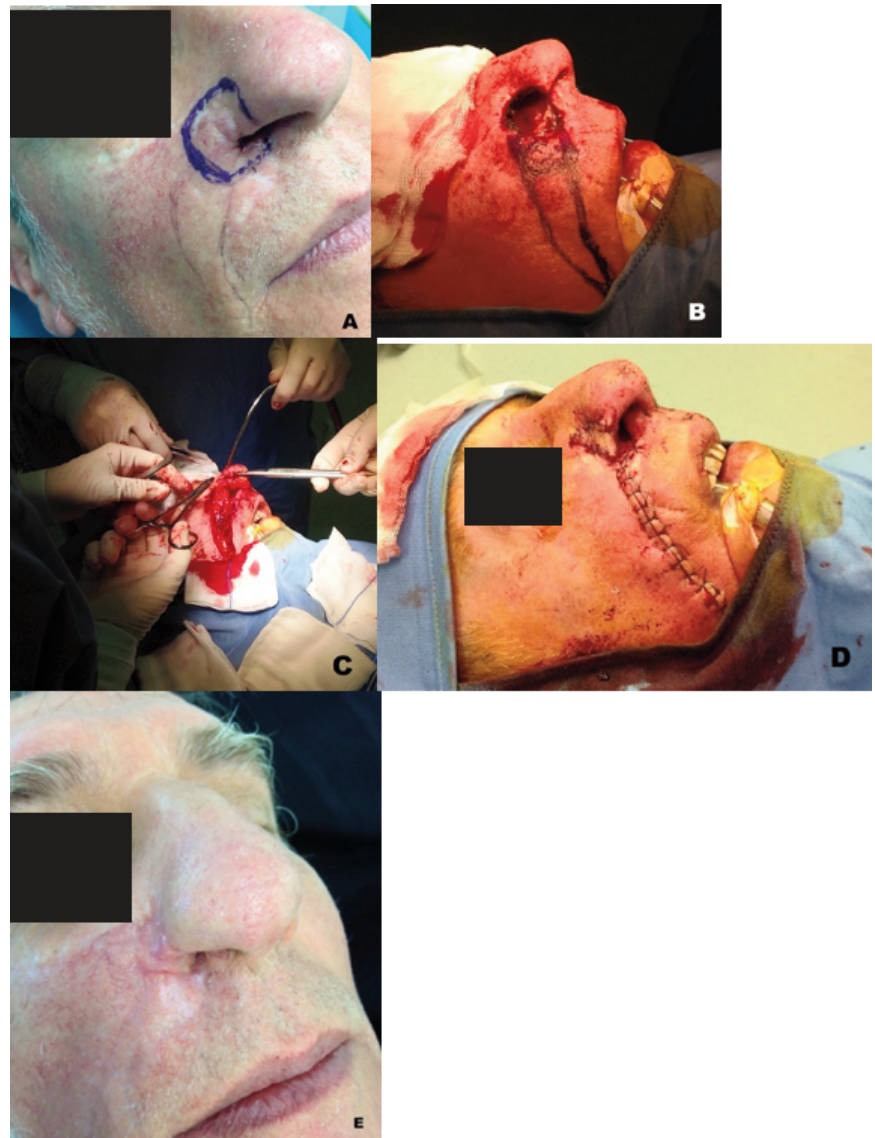


Figure 1. A) Clinical aspect of recurrent basal cell carcinoma involving the right nasal ala and adjacent cheek and upper lip before micrographic surgery. B) Alar and perialar defect after the tumour excision and nasolabial turnover flap design. The proximal segment of the flap is marked with ink before deepithelialization. C) Flap overturning and suture of the proximal segment to the alar defect to recreate the internal nasal lining. D) Final suture. The right nostril patency is well conserved. E) Post-operative view after six months.

reported with the use of the standard Spear flap and never with the 'tunneled' variant.¹⁰ Our patient had a deep post-surgical defect with complete loss of the lateral nasal ala, involving the alar rim, crease, groove and the adjacent cheek and upper lip. We choose a single-stage reconstruction with the use of a modified Spear flap. We removed the epithelial coat of the proximal segment of the flap immediately adjacent to the defect before a double overturning and suture. This change had already been carried out by Shim HC et al. for the reconstruction of a full-thickness alar defect, extended to the neighbouring cheek tissue.¹³ However, a

cartilage graft was added in that case, as the patient had shown a partial nostril collapse during inspiration.¹³

Conclusions

Our case highlights the role of the nasolabial turnover flap in the repair of complex defects of the nasal ala subunit. The technique provides single-stage reconstructions of full-thickness defects, involving the alar rim, crease, lateral groove and neighbouring perinasal tissue with very satisfactory functional and aesthetic

outcomes. Finally, we emphasize the role of microscopically controlled surgery (Mohs micrographic surgery and variants) for the treatment of a recurrent basal cell carcinoma at a critical site as in our case, before using a relevant repair technique like the Spear flap.

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