



## Case report

# Reconstruction of columella and nasal vestibuli by bilateral nasolabial flaps – A case report

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## ABSTRACT

**Introduction and importance:** The nose is a common location for non-melanoma skin cancers. Resection of such cancers can result in large, multilayer defects that are challenging to reconstruct. The surgical approach is determined by multiple factors and the main goal is to obtain a satisfactory functional and aesthetic result. We present a case of reconstruction of the nasal vestibuli and columella by two transnasal nasolabial flaps.

**Presentation of case:** A 66-year-old male underwent resection of a large squamous cell carcinoma in the right nasal vestibulum that extended through the columella into the left vestibulum. The resection resulted in a multilayer defect including the floor and roof of the right vestibulum, the entire columella, part of the septum cartilage and floor of the left vestibulum. The defect was reconstructed in two stages by bilateral nasolabial flaps, that were brought into the nasal cavity through incisions on the side of the nose and were used to line the vestibuli and sutured to each other medially to form the neocolumella. No complications or surgical site infections were observed.

**Clinical discussion:** Transnasal nasolabial flaps can be used for larger columellar defects. The length of the flaps in our case provided enough tissue to reconstruct the columella as well as the entire vestibular linings.

**Conclusion:** We describe a successful reconstruction of the nasal vestibuli and columella with two transnasal nasolabial flaps, which provided an acceptable aesthetic and functional result.

## 1. Introduction

The nose is a part of the respiratory system, as well as an important aesthetic feature of the face. Due to its prominent location, and thereby exposure to sunlight, the nose is also a common location for non-melanoma skin cancers. Fortunately, skin cancers on the nose are often diagnosed early when the lesions are relatively small and do not require comprehensive reconstructions. Fast growing tumours and diagnostic delay can lead to large resections resulting in multilayer defects, that may extend beyond nasal subunits. Ensuring negative margins prior to reconstruction of such extensive defects may require delaying reconstruction until complete disease clearance is confirmed by histological examinations.

The columella is a trilaminar structure comprising of skin and alar cartilage and plays an important role in determining the shape of the nasal base [1]. It supports the tip of the nose and defines its projection. It also contributes to the shape and symmetry of the nostrils and plays a functional role in nostril patency. It is often described as one of the most difficult subunits to reconstruct, due to its unique contour and the lack of

adjacent tissue.

We present a case of a resection of a large squamous cell carcinoma emanating from the floor of the right nostril, resulting in a defect including the entire columella, the lining of the right nasal vestibulum and part of the lining of left nasal vestibulum. The patient was operated by the senior author, who chose to reconstruct the columella by two nasolabial flaps brought into the vestibulum through the sides of the nose inspired by a technique described by Georges Da Silva in 1964 [2]. This method would provide us with enough tissue to not only reconstruct the columella but also the vestibular linings. This work has been reported in line with the SCARE criteria [3].

## 2. Presentation of case

A 66-year-old healthy male presented with a fast-growing tumour in his right nostril. The lesion had been biopsied a year before referral, which had shown a benign trichofolliculoma. Sudden and rapid growth raised a suspicion of malignancy and the patient was referred to our department for an excisional biopsy. Clinical examination revealed a 20

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Fig. 1. 1a. The tumour at clinical presentation. 1b. The defect after primary tumour resection.



Fig. 2. 2a. Design of the left sided nasolabial flap. 2b. Placement of the left sided nasolabial flap.



Fig. 3. The right sided flap designed, elevated and transposed transnasally.

mm ulcerated tumour in the floor of the right nostril extending posteriorly into the nasal vestibulum and medially onto the columella (Fig. 1a). No enlarged regional lymph nodes were found upon clinical examination.

The excisional biopsy confirmed clinical suspicion and revealed a highly differentiated squamous cell carcinoma. A complete tumour resection with per-operative frozen section biopsies was then performed. The tumour extended through the columella into the left vestibulum. The resection resulted in a defect involving the entire columella, the

entire lining of the right vestibulum and the floor and roof of the left vestibulum (Fig. 1b). Reconstruction was delayed 14 days until final pathology reports were obtained. In the meantime, the wound was managed with wet dressings changed every 3–4 days at our outpatient clinic.

Two superiorly based nasolabial flaps were designed and elevated. The right sided flap was designed longer than the left side to correspond with the size of the defects on each side. They were pulled into the nasal vestibuli through incisions at the lateral aspect of the nasal sidewall on



Fig. 4. Immediate postoperative result with both flaps in place.

both sides (Figs. 2b–3). The proximal part of the flaps was used to reconstruct the vestibular floors on both sides, then sutured to each other in the midline to reconstruct the columella. The remaining (distal) part of the flaps were then used to further line remaining parts of the vestibuli. On the right side the flap lined the entire vestibulum and on the left side the flap lined the floor and roof of the vestibulum. Donor sites were closed primarily (Fig. 4). Three weeks after reconstruction the pedicles were divided and the slit on both sides closed. Both flaps survived and there were no postoperative complications or surgical site infections.

At clinical follow up three months postoperatively the patient was happy with the functional and cosmetic outcome of the reconstruction (Fig. 5). Nostril patency and air passage was reasonable. The nose had lost some of its length due to shortening of the columella and the floor of the right vestibulum appeared somewhat bulky. Possible surgical procedures that could enhance the appearance of the flaps, such as placement of a columellar strut and debulking were discussed, but the patient was not interested in further procedures.

### 3. Discussion

Columellar reconstruction is challenging and the main goal is to maintain function as well as a satisfactory aesthetic outcome. The reconstructed columella should be narrow to provide optimal passage of air and should have a suitable height to provide adequate support and projection to the tip [4]. Various surgical techniques have been described in columellar reconstruction including full thickness skin grafts, composite grafts, local and regional flaps, as well as free flaps [5]. The surgical approach is determined by the extent and depth of the defect, local anatomy and quality of surrounding tissue. Skin- and composite grafts are commonly used in smaller defects (10–15 mm). In larger and composite defects, forehead flaps, nasolabial flaps and nasofacial sulcus flaps have been recommended [6,7]. In such cases, reconstruction of the cartilaginous framework is often required to provide the tip with sufficient support. Nasolabial flaps have been frequently used for larger columellar defects. It is a well vascularized flap with a good colour and texture match and subtle donor site scarring [5]. In our case the defect was composed of not only the columella, but the lining of the nasal vestibulum on both sides. We opted for two nasolabial flaps transposed transnasally to get maximum length, as described by Da Silva [2]. The length of the flaps was used to restore the vestibular linings. We found this superior to using a forehead flap, which could not solve the lining defect in the vestibuli and has a much more conspicuous donor site. The method provided a satisfactory functional and aesthetic result. In our case we did not reconstruct the cartilage framework in the first stage. The flaps seemed to provide adequate bulk to support the tip. At three months follow-up the nose was slightly shortened due to lack of cartilaginous support. Placement of a columellar strut was discussed with the patient at follow-up. Debulking of the flaps, particularly the floor of the right nasal vestibulum could further enhance appearance. The patient, however, was content with the appearance and function of the nose and did not desire further adjustments or surgeries.

### 4. Conclusion

We present a case of a successful reconstruction of the nasal vestibuli and columella with two transnasal nasolabial flaps. An acceptable functional and aesthetic outcome was obtained. A cartilage strut could be added later in similar cases to lengthen the columella and provide the tip with additional support.



Fig. 5. Clinical appearance 3 months after reconstruction.

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**Ethical approval**

This case report is exempt from ethical approval in our institution.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Guarantor**

Jørgen Hesselfeldt.

**Registration of research studies**

N/a.

**CRediT authorship contribution statement**

Christina Krogerus: Concept and design, data collection and

interpretation, writing the paper.

Mia Demant: Concept and design, data collection and interpretation, review and editing.

Thomas Lindskow: Surgery, data collection, review and editing.

Jørgen Hesselfeldt: Surgery, data collection, review and editing.

**Declaration of competing interest**

The authors have no conflicts of interest to declare.

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