

# Complete reconstruction of the nasal ala with a Spear's flap, following Mohs micrographic surgery in the treatment of basal cell carcinoma

*Reconstrução completa de asa nasal com retalho de Spear após cirurgia micrográfica de Mohs no tratamento de carcinoma basocelular*

## ABSTRACT

Basal cell carcinoma is a locally invasive malignant tumor, most frequently affecting Caucasian people. The nasal ala is a frequent site for this neoplasia. The treatment of choice is surgical, and Mohs micrographic surgery is one of the indicated techniques for presenting great accuracy in the histological control of margins and high cure rates with low recurrence rates. In this location, not only is a cure needed, but also the maintenance of facial aesthetics. The authors describe five cases of complete amputation of the nasal ala after Mohs micrographic surgery, with reconstruction using the Spear's flap.

**Keywords:** carcinoma, basal cell; Mohs surgery; surgical flaps.

## RESUMO

O carcinoma basocelular é tumor maligno localmente invasivo, com maior incidência em caucasianos. A asa nasal é localização frequente dessa neoplasia. O tratamento de eleição é cirúrgico, sendo a cirurgia micrográfica de Mohs uma das técnicas indicadas, por apresentar grande acurácia no controle histológico das margens e alto índice de cura com baixas taxas de recidiva. Nessa localização se faz necessária não apenas a cura, mas também a tentativa da manutenção da estética facial. Descrevem-se cinco casos de amputação completa da asa nasal após cirurgia micrográfica de Mohs, seguida de reconstrução com retalho de Spear.

**Palavras-chave:** carcinoma basocelular; cirurgia de Mohs; retalhos cirúrgicos.

## INTRODUCTION

The nasal ala is a complex structure that is part of the nasal vestibule. It has respiratory function: it filters, moistens, and warms the air—allowing it to reach the lungs in addition to assisting in the phonation process.<sup>1</sup> This process is possible thanks to the anatomical structure of the nasal ala, which is composed of dense connective tissue and part of the alar cartilage, which provides support to it and prevents it from collapsing during inspiration (valve movement). The integrity of the nasal ala is crucial for maintaining the contour and aesthetics of the face and nose, the latter constituting one of the most prominent and central structures.

Basal cell carcinoma (BCC) is the most common malignant tumor in the world<sup>2</sup> and has as its main risk factor expo-

## New Techniques

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sure to the sun.<sup>3,4</sup> Most cases occur in photo-exposed body sites<sup>5</sup> and its frequency in the face ranges from 27.5-91.1%.<sup>5</sup> Its most common form of occurrence is the nodular-ulcerative type,<sup>5</sup> which presents clinically as an erythematous-pearly papule or nodule with telangiectasias, possibly with a central ulceration.<sup>2</sup> Its occurrence increases in the elderly.<sup>3,4</sup> About 25.0% of BCCs occur on the nose.<sup>6</sup> The nasal ala is exposed to ultraviolet radiation daily, resulting in a high prevalence at that site.

Several therapeutic modalities are described in the literature for the treatment of BCC. Among them, Mohs micrographic surgery (MMS) stands out for allowing a rigorous histological control of surgical margins, with a high cure rate and low recurrence rates.<sup>7</sup>

In most cases the tumors are small or superficial and do not compromise the full thickness of the nasal ala. When tumors are large, infiltrating, or recurring, the compromise can be complete, including the nasal mucosa (Figure 1) and may lead to partial or total amputation of this structure, having a great psychological impact on the patient. Its surgical reconstruction poses a challenge to the surgeon, who should prioritize the oncologic cure, preserving the functionality and aesthetic aspect whenever possible.

## METHODS

The present article describes a series of five cases, each involving complete amputation of the nasal ala after treatment of BCC with MMS, and which were reconstructed using the reverse Spear's nasolabial flap, also known as the "somersault" flap. The authors' objective is to describe the technique in detail, demonstrating the surgical applicability of this type of reconstruction, its advantages, difficulties, and results.

A number of techniques are described for the total

reconstruction of the nasal ala, most of them including the use of cartilage grafts to allow tissue support and prevent the "valve" movement during inspiration. The flap described by Spear et al. in 1987<sup>8</sup>—and more recently published in detail by Cook,<sup>8</sup> allows the complete reconstruction of the nasal ala, maintaining its structural integrity without cartilage grafts and providing contour to the structure with satisfactory cosmetic results in a single surgical event. The decision to use the "somersault" flap is made based on the examination of the donor area in the nasogenian fold and cheek. This area should have enough skin for preparing the flap and for the primary closure, with minimal actinic damage. It should be thoroughly evaluated before surgery, for when it is "folded" it will end up occupying a location that is difficult to assess. Therefore, before choosing this technique, the potential for development of cutaneous neoplasms in the nasal vestibule should be considered.

The Spear's flap is prepared based on the detachment of the cutaneous flap from the nasogenian fold ipsilateral to the amputated nasal ala. A subcutaneous pedicle is left in order to take advantage of the vascularity of that region (described by Hebert<sup>9</sup>), which is supplied by the angular artery (Figure 2). The proximal third of the flap is lifted in the alar base and the proximal skin is used to reconstitute the interior area of the nasal ala, with its edges sutured to the remaining tissues of the nose. The distal 2/3 of the flap is folded over itself, reconstituting the free border and the external part of the nasal ala. Intra-dermal suture is carried out between the two parts of the flap, and the external part is adjusted so as to cover the entire surgical defect. The border of the flap is adjusted and sutured and the primary closure of the donor area is carried out. Nasal packing is recommended for 15 days in order to provide support for the shape of the nasal ala and prevent the retraction of the flap.<sup>8,9</sup>



FIGURE 1: Nasal ala's full-thickness defect



FIGURE 2: Angular artery and a part of the flap already folded over itself



**FIGURE 3:** Lesions that extend beyond the nasal ala

All cases selected by the authors involve tumors of the nasal ala that were operated on at a MMS specialist center from July 2010 to April 2012.

## RESULTS

During this period, 15 patients who presented with perforation of the mucosa and a transfixing of the entire thickness of the nasal ala underwent surgery. Of these, 10 presented loss of

the distal part (free border), corresponding to a complete amputation; 5 underwent surgical reconstruction with Spear's flap and were therefore selected for the present study.

Two patients had lesions that extended beyond the nasal ala (Figure 3), and therefore underwent other complementary methods for closing the surgical wound. In three cases, the authors recommended subsequent procedures for the refinement of the flap in order to achieve a better cosmetic result (Table 1). One of the patients had beard hairs transferred with the flap and was referred for laser epilation post-operatively.

In cases requiring a second surgical event, the authors aimed at correcting the asymmetry of the nasal alae, caused by the greater thickness of the flap. In one patient, this thickening was corrected with direct corticosteroid infiltration into the flap.

All patients had their nasal ala function preserved, and none showed the "valve" phenomenon during inspiration (Figure 4).

## DISCUSSION

BCC is a common tumor in the nasal ala. MMS is the method of choice for the treatment of invasive or recurrent tumors in this region. Amputation of the nasal ala may be required for the complete excision of the tumor, resulting in a difficult to correct surgical defect.

The Spear's flap allows the complete reconstruction of the nasal ala, maintaining its structural integrity and providing contour to the nasal ala with satisfactory cosmetic results. Although this reconstruction was originally described as a single surgical event, in some cases a second procedure is indicated for refining the flap and improving the aesthetic outcome.

**TABLE 1:** Description of cases

Diagnosis	Size	Final surgical defect	Reconstruction type	Complication	Procedure for refining the flap in order to improve the cosmetic outcome
1 Recurrent BCC	1.2x1cm	2.4x2cm	Spear's flap + skin graft	Necrosis of the Flap's distal part (smoker)	No
2 Primary sclerodermiform BCC	1.3x1cm	1.8x1,5cm	Spear's flap	No	No
3 Infiltrative BCC	2.3x1,5cm	3x2.2cm	Spear's flap	No	Corticoid injection
4 Recurrent infiltrative BCC	1.1x1cm	2.2x2cm	Spear's flap	No	Refinement surgery and laser hair removal





**FIGURE 4:** (A to E): A sclerodermiform BCC series, and the results before, during, and after

Given the complexity of the surgical defects, the cosmetic outcome was already deemed satisfactory in the studied patients by the first surgical event—even in the cases that underwent a second procedure for refinement.

#### CONCLUSION

The complete reconstruction of the nasal ala is a challenge, and the Spear's flap is a good option for ensuring structural integrity to the tissue and for preventing the “valve” movement without need for a cartilage graft, and in addition it confers satisfactory cosmetic results after a single surgical event. ●

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