



Contents lists available at ScienceDirect

## Journal of Cranio-Maxillo-Facial Surgery

journal homepage: [www.jcmfs.com](http://www.jcmfs.com)

## Crescentic flap for the reconstruction of the nose after skin cancer resection



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### ARTICLE INFO

#### Article history:

Paper received 22 October 2015

Accepted 9 February 2016

Available online 16 February 2016

#### Keywords:

Non-melanoma skin cancer

Oncologic surgery

Crescentic flap

Reconstructive surgery

### ABSTRACT

**Purpose:** Non-melanoma skin cancers are the most frequent skin tumours; in 25.5% of cases, they are reported to affect the nasal area. For an excellent surgical outcome, first of all the radical excision of the lesion is important, with appropriate margins of healthy skin in order to avoid recurrences. Moreover is important to achieve a good aesthetical result, avoiding distortion of the aesthetic units and preserving their functions.

**Material and methods:** We have applied the modified crescentic flap, described by Smadja in 2007, to 24 nasal skin defects left by oncologic surgery. It consists of the crescent-shaped resection of Burow's triangle all around the alar groove that allows the advancement of the flap to the tip of the nose, hiding the scar in the alar groove.

**Results:** The outcome and the long-term follow-up were completely satisfactory both for patients and for surgeons.

**Conclusion:** For skin defects localized in the midline or paramedian line of the dorsum of the nose, the crescentic flap seems to be a good solution to obtain the better aesthetic result with respect to both anatomy and function of the nasal area, sparing the patient a second intervention or an overly invasive procedure.

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## 1. Introduction

Skin cancers are traditionally divided into two groups: melanoma and non-melanoma skin cancers (NMSCs). The latter are the most frequent skin tumours among the adult and elderly population; their incidence grows proportionally with age, and prolonged sun exposure is one of the highly proved risk factors for their onset. Basal cell carcinoma (BCC) is the most common tumour within the NMSC group, accounting for 77% of cases, followed by squamous cell carcinoma (SCC) at 20%. Tumours such as melanoma, Merkel cell carcinoma, cutaneous lymphoma, Kaposi's sarcoma, and other sarcomas are less frequent (3%). Major risk factors related to the onset of BCCs are UV cumulative exposure (in particular sun burns, but also tanning treatments), advanced age, white skin, and, above

all, Fitzpatrick's skin types I and II. Likewise, SCCs are more frequent in individuals of white ethnicity with a history of exposure to UV rays and the human papillomavirus (HPV) infection (in particular types 16, 18, and 31) (Fleming et al., 1995; Salgarelli et al., 2010; Kallini et al., 2015).

NMSCs typically grow on areas exposed to the sun, in particular on photodamaged skin chronically subjected to ultraviolet radiation damage. Therefore, the most common site of onset is the face skin (86.6%) and, more specifically, the nasal area in 25.5% of cases (Silverstone and Gordon, 1996; Salgarelli et al., 2010).

When treating a tumour, first of all we have to achieve its complete and radical excision, with appropriate margins of healthy skin in order to avoid recurrences and to obtain a tumour-free patient status. The scientific literature highlights several studies showing the surgical parameters necessary for the excision of primary NMSCs. Tumours less than 2 cm in diameter require 4 mm of healthy skin margins to obtain a 95% cure rate. If we are facing a high-risk tumour, SCC in particular, showing evidence of

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subcutaneous invasion or recurrence or measuring more than 2 cm in diameter, it is better to keep 6-mm margins in order to obtain a 95% cure rate (Wolf and Zitelli, 1987; Brodland and Zitelli, 1992; Huang and Boyce, 2004).

After the excision of the tumour, oncologic surgery is accompanied by the reconstructive phase, which is extremely important to preserving the physiologic functions of each anatomic unit; moreover, the integrity of complex facial functions and expressivity should not be separated from the search for a good cosmetic result. In particular, the nasal area has some fundamental features that the surgeon has to know: first of all, the presence of adjacent convex and concave surfaces; second, the limited laxity of the nasal skin; and finally, the sebaceous composition of distal nasal skin. Last but not least, the function of the nose must always be preserved (Brodland and Zitelli, 1992). Zitelli's bilobed flap, adapted from Esser's design of the first bilobed flap, is one of the most useful flaps for nasal reconstruction (Salgarelli et al., 2010).

The surgical technique described in this paper, applied to the reconstruction of nasal skin defects left by oncologic surgery, was reported by Smadja in 2007, who presented a refinement of the works of Snow et al., Yoo and Miller, and Wheatley et al. Refinement by Smadja consists of the crescent shape resection of Burow's triangle all around the alar groove, which allows the advancement of the flap to the tip of the nose, hiding the scar in the alar groove. We have applied that technique to defects of the midline and paramedian line of the dorsum of the nose near the tip (Snow et al., 1990; Wheatley et al., 1997; Smadja, 2002; Yoo and Miller, 2003; Smadja, 2007).

## 2. Material and methods

The above-mentioned technique of crescentic flap has been applied to 24 cases of nose reconstruction after surgical excision of nodular basal cell carcinomas more than 1 cm in diameter arising

on the dorsum of the nose, on the midline and paramedian line, near the tip (Figs. 1A and 2A). The patients came to the attention of our Departments from January 2012 to December 2014; they were 15 men and 9 women, with a mean age of 75 years (standard deviation  $\pm$  4.7 years).

The diagnosis was made by clinical visit along with dermoscopic and reflectance confocal microscopy (RCM) examinations. RCM confirmed the diagnostic criteria already described in the literature (Longo et al., 2014).

After obtaining the patient consent and performing preliminary examinations before the surgery, the surgeon drew the surgical lines on the skin surface. The drawing began at the inferior part of the defect situated near the ala, continued in an arc shape to meet the alar groove, and then extended inferiorly in the alar–labial groove at its junction with the upper lip. The surgical intervention was performed with local anaesthesia with sedation, and the excision for the histopathological examination was made keeping 5 mm of macroscopically healthy skin surrounding the lesion. In all cases, the histological examination confirmed the radical excision of nodular basal cell carcinoma, with deep and lateral margins free of neoplasia.

After having completely excised the tumour, a round-shaped defect was present. Then the incision followed the drawing, starting from the bottom of the middle part of the defect along the alar groove onto the cheek and then turning around the alar lobule and finally ending at the alar labial groove. The flap was then positioned, creating a superior dog-ear that required excision. A second dog-ear around the nasal lobule, as a skin Burow's triangle, was excised in the shape of a crescent to optimise the mobility of the cheek towards the skin defect (Fig. 1B,C). The size of the tissue loss and the laxity of the skin determined the width of the excised crescent. The stitches were made with 5-0 Ethilon to close the cheek and the alar crease. If the tumour was 1.5 cm or less in the larger diameter, the unilateral technique was preferred (right or left) (Fig. 1); if the lesion was 1.5 cm or more in the larger diameter,

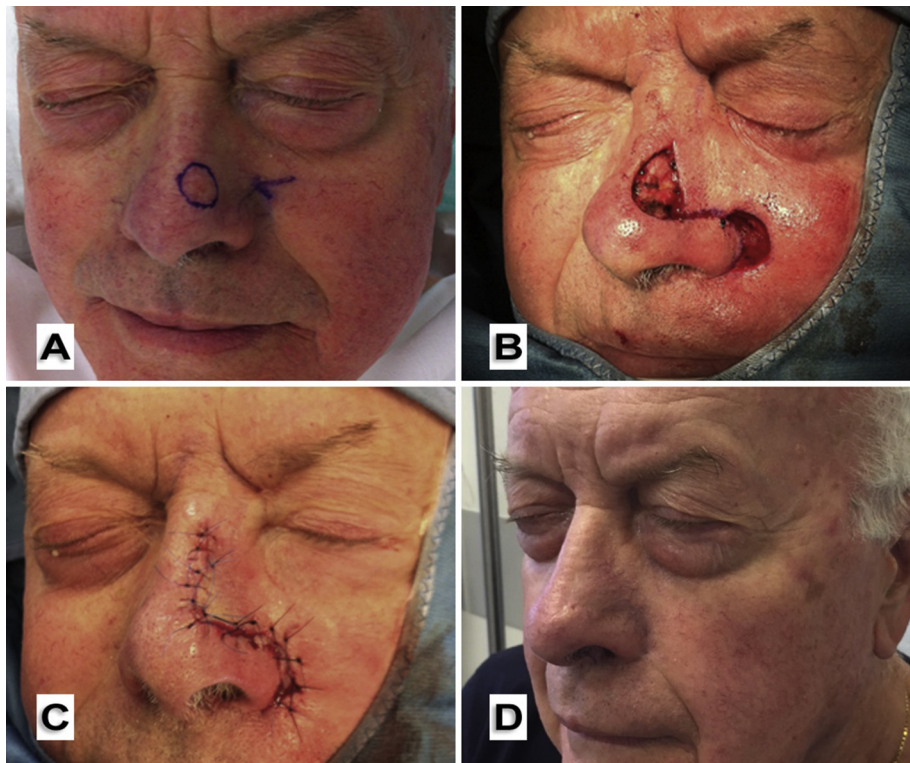


Fig. 1. Unilateral left crescentic flap. (A) Before surgery. (B, C) During surgical reconstruction. (D) After 6 months' follow-up.

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