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CASE REPORT

Burget Flap for Reconstruction of the Upper Lip—a Case Series

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Abstract
Aesthetically satisfying reconstruction of upper lip defects is a major challenge. The aim of this article is to present a case series for closure of superficial lip defects of > 50% of the lateral subunit, using a Burget nasolabial flap. We performed a retrospective case series study on eight patients with upper lip defects between 2013 and 2017, using a Burget nasolabial flap for closure of the wound. Patient demographics, early complication, and final results were described. The Burget nasolabial flap is a suitable option for reconstructing major superficial upper lateral lip defects with a defect/upper lateral lip ration of > 50%. This method respects the normal contours of the upper lip subunits, using skin comparable to the skin of the upper lip, with little risk of complications. Future research needs to investigate the effect on satisfaction of the patient with the results.

Keywords Nasolabial flap · Burget flap · Upper lip defect · Mohs surgery · Lip defect

Introduction

Aesthetically satisfying reconstruction of upper lip defects is a major challenge. In this article, we want to give the best option for restoration of defects > 50% of the lateral upper lip.

The upper lip is divided in smaller subunits, described by Burget and Menick [1]: the lateral subunit is bordered by philtrum column, nostril sill, alar base, and nasolabial crease; the medial subunit is one-half of the philtrum.

The aim of this study is to provide a suitable option for patients with major superficial lateral upper lip defects reconstructed using a Burget nasolabial flap.

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Methods

We performed a case series analysis on eight patients with upper lip defects affecting more than half of a lateral subunit between 2013 and 2017. The defect was originated after excision of a skin carcinoma with Mohs' micrographic surgery.

Surgical Technique

We performed a flap design and flap harvest similar as described by Burget. First, all subunits of the upper lip were marked. Local anesthetic was administered (lidocaine 2% with 1:100.000 adrenaline) in accordance with Lalondes' hole in one technique [2] to minimize the discomfort. The defect was superficially extended to the full size of the affected subunit. A foil template was made of the contralateral subunit and placed mirrored next to the excised subunit (Fig. 1a, b). This skin was meant for the transposed flap with its base in the nasolabial fold. The blood supply of the flap was based on branches of the facial artery, superior labial artery, or the angular artery [3, 4]. The orbicularis oris muscle remained below the dissection level. The transposed flap was sutured without tension. Donor sites were closed primarily after conservative undermining (Fig. 2a, b; Fig. 3a, b; Fig. 4).

Excision of the carcinomas and reconstruction of these defects by one plastic surgeon all took place on the same day.

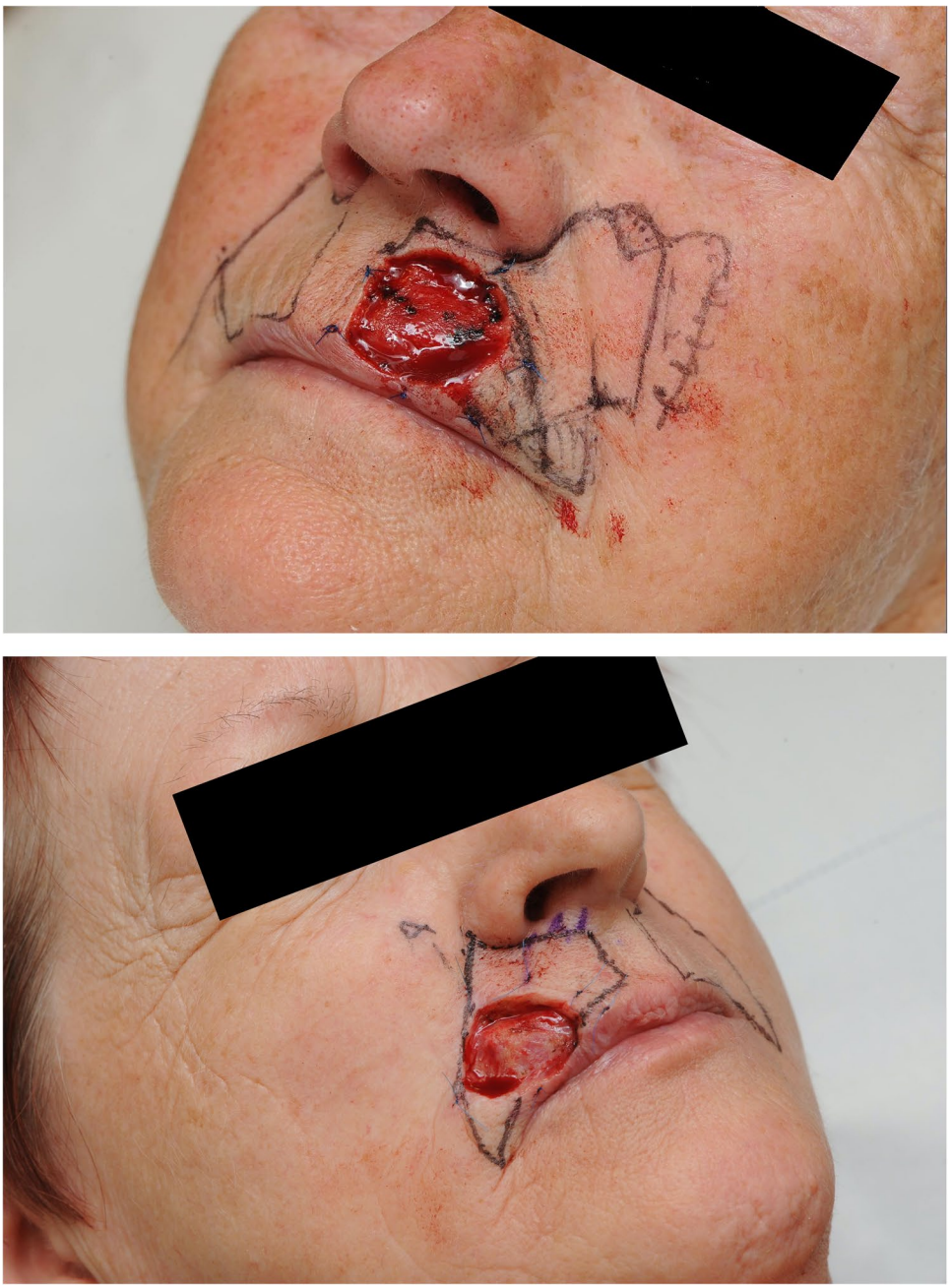

Fig. 1 **a**, **b** Defect after excision

Results

In the period between 2013 and 2017, eight patients (six women, two men) ranging from 55 to 89 years old (mean age 70 years) underwent a reconstruction with a nasolabial flap.

None of the patients were active smokers. Two patients were diagnosed with diabetes mellitus. Two patients had previously undergone surgery on the upper lip. Both patients had a recurrence of the skin cancer they earlier had. None of these interventions were deemed to have affected the structure that was necessary for the nasolabial rotation flap. All patients had a Fitzpatrick skin type II. The mean defect size was 20 × 16 mm (range: 12 × 12 to 30 × 22 mm). Tumor histology showed basal cell carcinoma for seven patients, both the infiltrative and/or nodular type, and squamous cell carcinoma for one patient.

One patient had an early complication: an infection that caused a wound dehiscence. We prescribed antibiotics that cured the infection. The wound dehiscence resulted in a slightly wider scar. None of the patients had necrosis of the distal part of the flap or donor site morbidity. Symptoms as numbness of the scar area and tension of the scar were

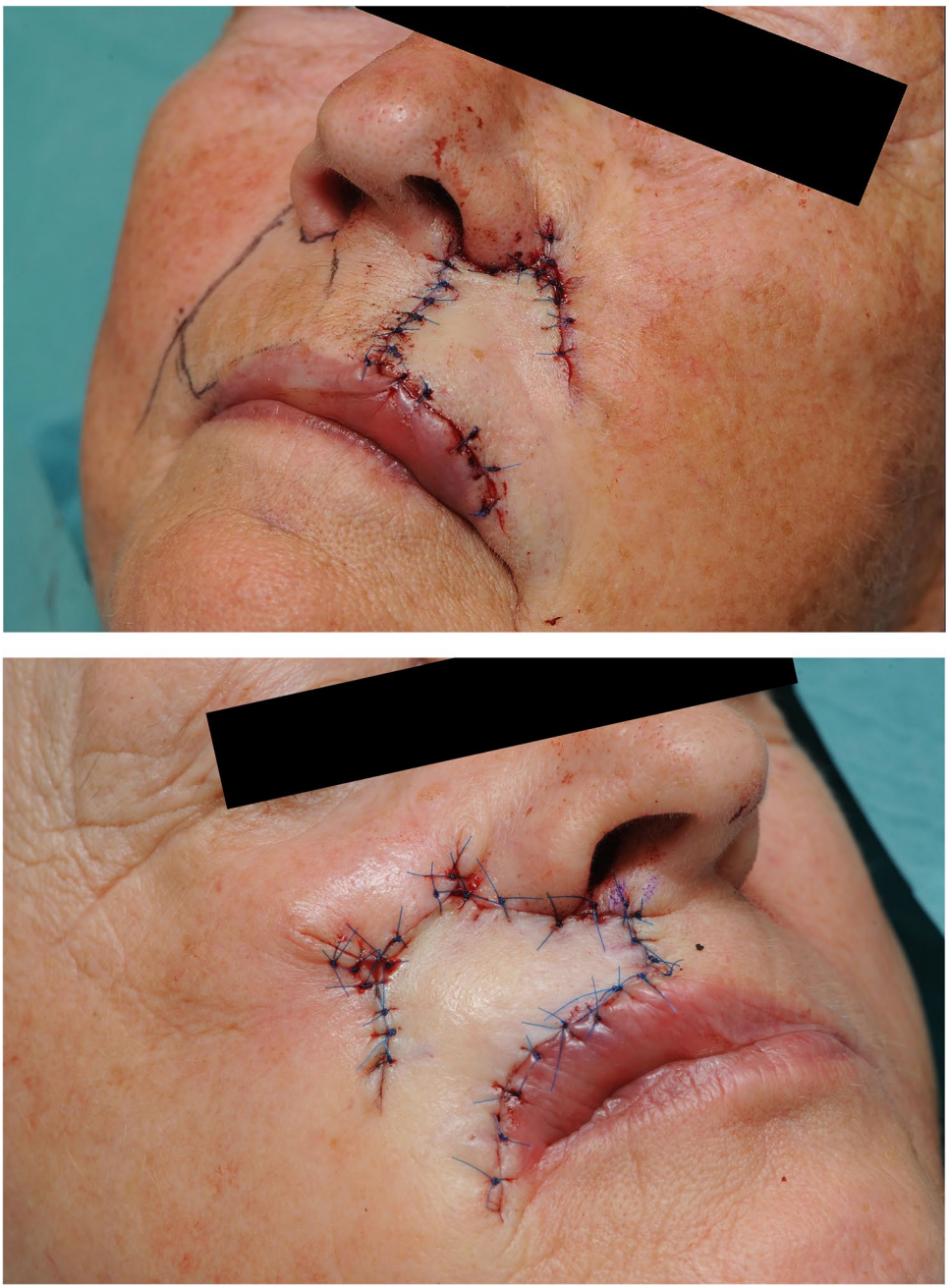

Fig. 2 **a**, **b** Reconstruction of the defect with a Burget flap

regarded as normal postoperative course. One patient experienced discomfort due to a swollen flap, mainly caused by edema. As a result, she had difficulty pronouncing certain letters. Skin therapy alleviated her symptoms.

Discussion

In any reconstruction, both satisfying functional and aesthetic results are very important. Skin malignancies often develop in later decades of life, causing many patients in our department to be older and present with comorbidities. The reconstruction of the upper lip using this nasolabial flap was possible in a single-stage surgery on the same day as excision of the defect in an outpatient operating room under local anesthesia. This makes the procedure especially attractive for the older group of patients.

The triangle lateral to the defect that is now discarded can potentially be transferred based on a subcutaneous pedicle to the ala-facial groove, requiring a narrower Burget flap for the remaining defect. Care should be taken to keep a certain height of the Burget flap to prevent the lip from lifting up.

A disadvantage of the nasolabial flap in male patients may be the disturbance of normal hair growth. For patients

Fig. 3 **a**, **b** Eight and 6 months postoperative respectively

who are attached to wearing a mustache, it is a possible to apply a hair-bearing flap or follicular unit hair transplant method. Hair-bearing flaps are for example occipital free flaps or superficial temporal artery-based Bucket handle or free flaps. However, these flaps are sometimes thick and stiff, which makes it important to consider whether priority

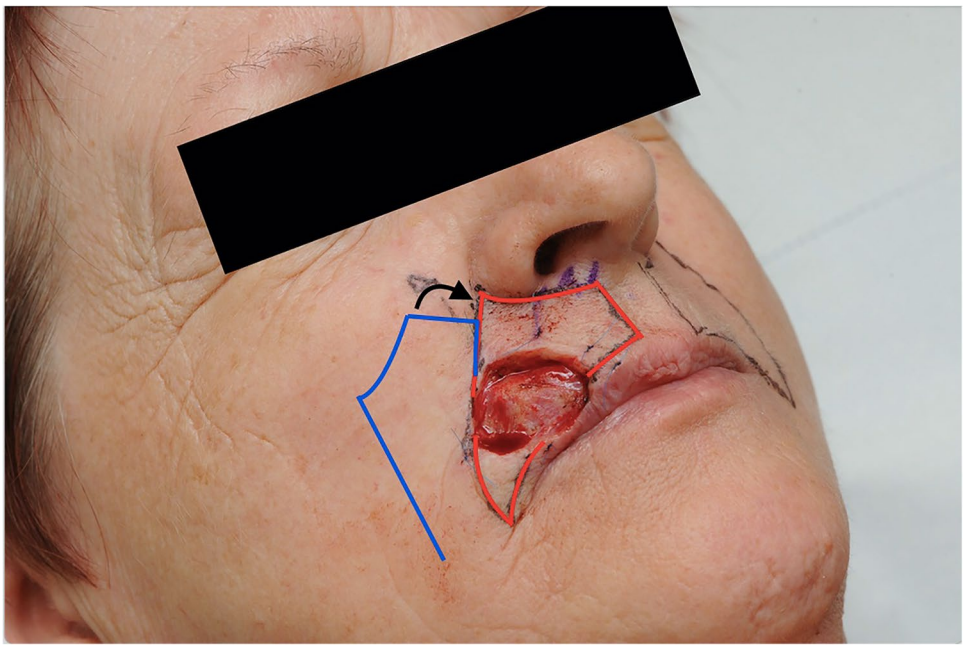

Fig. 4 Planning of the reconstruction: red area removed, blue area transposed

is given to hair growth on the upper lip [5]. Satisfaction scores of the patient about the reconstruction should be further investigated.

Conclusion

Overall, this nasolabial flap is a good option for covering a large, superficial defect of the upper lip. This method respects the normal contours of the upper lip subunits with little risk of complications. Detail about patient satisfaction is lacking. Future research needs to investigate the effect on satisfaction of the patient with the results. The FACE-Q Skin Cancer can be the missing link between the reconstruction outcome opinion of the plastic surgeon and the Health-Related Quality of Life (HR-QoL) of the patient.

Declarations

Consent to Participate The patients provided written consent for use of her images.

Conflict of Interest The authors declare no competing interests.

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