

UC Davis

Dermatology Online Journal

Title

Usefulness of a “puzzle” flap; more than an advancement flap for surgical reconstruction of nasal ala defects: Review of 10 cases.

Permalink

<https://escholarship.org/uc/item/3gj9p50z>

Journal

Dermatology Online Journal, 21(11)

Authors

Padilla Espana, Laura
Fernandez-Canedo, Ines
de Troya Martin, Magdalena

Publication Date

2015

DOI

10.5070/D32111029284

Copyright Information

Copyright 2015 by the author(s). This work is made available under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives License, available at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Peer reviewed

Surgical pearl

Usefulness of a “puzzle” flap; more than an advancement flap for surgical reconstruction of nasal ala defects: Review of 10 cases.

Laura Padilla España, Inés Fernández-Canedo, Magdalena de Troya Martín

Dermatology Online Journal 21 (11): 3

Dermatology Department, Costa del Sol Hospital, Marbella, Málaga, Spain

Correspondence:

Laura Padilla España
Hospital Costal del Sol. Dermatology Department
Costa del Sol Hospital, Ctra.Ncnal 340, km 187, 29603, Marbella.Autovía a-7, km 187, 29603
Marbella, Spain.
Telephone number: 0034 951976669.Telephone number: +34 680243115.
Fax: 0034 951976668.Fax: +34 951976668.
Email address: laupadesp@gmail.com

Abstract

Reconstructive surgery in nasal pyramid can be a challenge for surgeons. Moreover this anatomic area is one the most common sites for non-melanoma skin cancer.

The “puzzle” flap was described to repair surgical defects located just on the nasal ala affecting melolabial sulcus. We have seen this flap can be also very useful to repair defects located on nasal sidewall and cheek without dysfunctional effects and with a good cosmetic result.

Keywords: Flap, cheek, sidewall, nasal ala, reconstruction

Introduction

The nose is one of the most common sites for non-melanoma skin cancer. Reconstructive surgery in this area represents a challenge for the surgeon, given its unique topography and multiple anatomic subunits. Though the best cutaneous equivalent of this anatomic location is the frontal skin because of its colour and texture, for small defects of the distal third we normally use the skin adjacent to the nose or from the cheek, in order to reduce the reconstructive complexity.

Goldberg et al [1] recently described a local flap for small defects on the nasal ala affecting the nasal sulcus, as an alternative to the classical subcutaneous pedicle island and transposition flaps. We propose this flap to repair surgical defects located on nasal sidewall and cheek as well.

Methods

Reconstruction using a jigsaw puzzle flap was performed in ten patients. Six patients had defects on ala nasal affecting the nasal sulcus. In these cases, the design is traced following a vertical crescent with its concavity towards the cheek, and which includes the perilesional skin to be used to insert into the surgical defect, like a jigsaw puzzle, placing the dog-ears along the melolabial fold and melonasal junction. A key point with this flap to avoid raising the cheek skin consists of placing a single suture of the cheek skin to the maxillary periosteum in the piriform fossa in order to avoid loss of the melolabial fold. In one of the patients who had had prior nasal dorsal-sidewall surgery, the presence of fibrosis necessitated a modification of the design, giving the advancement flap a rotation movement, transforming the initial design of a vertical concave crescent into a

convex crescent, tracing the upper pole along the same side of the nasal sidewall to the defect (Figure 1). Two patients had defects on nasal sidewall affecting nasal ala and the other two had defects on their cheek affecting nasolabial fold, in all of them we performed the “jigsaw puzzle” flap to repair their defects.



Figure 1. A) Initial design of the jigsaw puzzle flap. B) Modification of the original design, resulting from combining the advancement and rotation movements.

Results

The mean age of the ten patients (four women) was 66 years. They all had a small (9-12 mm) primary basal cell carcinoma, with six undergoing conventional surgery and the other four Mohs micrographic surgery. The surgical defect in six patients was on the nasal ala, with greater or lesser involvement of the melolabial fold and two patients with defects on their nasal sidewall affecting nasal sulcus. In three patients the lesion was more cranial than in the cases in the original article with alar fold involvement and with a tent-pole effect (Figure 2), and in the others the lesion was more caudal.



Figure 2. Site of the surgical defect in a more cranial position of the nasal ala with later tent-pole effect.

No post-surgical complications (necrosis, superinfection) were noted, nor was there any case of ventilatory obstruction or nasal ala retraction. Cosmetically, three patients experienced loss of the nasolabial fold to a greater or lesser extent, despite the deep anchor stitch in the piriform fossa; in two of these the surgical defect was located in the most cephalic part of the nasal ala.

On the other hand, we performed another modified version of “jigsaw puzzle” to repair mid-size defects located on cheek affecting melolabial fold in two patients. In these cases, the design was traced keeping the melolabial fold but losing it up to the site of the original defect (figure 3).



Figure 3. Surgical defect located on melolabial fold repaired by “puzzle flap” with an optimal cosmetic result.

We got a good cosmetic and functional result in all of our patients but the best one was achieved in a woman who had already undergone surgery of the dorsal sidewall with a previous slight retraction of her left nasal ala that didn't increase after the “modified puzzle flap”. In this case the modification in the design of the flap minimized the tent-pole effect) (Figure 4).



Discussion

The jigsaw puzzle advancement flap described by Goldberg [1] arose as an alternative to the traditional subcutaneous island pedicle [2-3] and transposition [4-5] flaps for reconstruction of nasal ala defects. The main complication of the island flap is its “trapdoor” effect, such that the nasal ala becomes exaggeratedly thick, whilst the transposition flap risks raising the ala if the design is too short. A key point in the jigsaw puzzle advancement flap is the anchoring of the cheek skin to the maxillary periosteum in the piriform fossa to avoid the tent-pole effect due to the elevation of the cheek skin and the blunting of the alar crease. However, in cranial parts of the nasal ala that affect the sidewall this anchoring stitch is insufficient and it is necessary to combine the advancement and rotation movements to avoid this tent-pole effect.

Otherwise, we have seen this flap can be also useful to repair small-size defects located on nasal sidewall and cheek affecting malar sulcus.

Conclusion

Although the jigsaw puzzle flap was originally described as a local flap to cover defects of the nasal ala affecting the melolabial fold, we have verified that it can also be used for more cranial ala defects that affect the alar fold, the sidewall and cheek with optimal aesthetic and functional results. We have also modified the original design, combining the advancement and rotation movements to improve the cosmetic results and minimize the tent-pole effect in nasal ala affecting sidewall.

References

1. Goldberg LH, Kimyai-Asadi A, Silapunt S. "Jigsaw puzzle" advancement flap for repair of a surgical defect involving the lateral nasal ala. *Dermatol Surg.* 2005;31:569-71. [PMID: 15962743]
2. Ohsumi N, Ishikawa T, Shibata Y. Reconstruction of nasal tip defects by dorsonasal V-Y advancement island flap. *Ann Plast Surg.* 1998 Jan;40(1):18-22. [PMID:9464690]
3. Cvancara JL, Wentzell JM. Shark island pedicle flap for repair of combined nasal ala-perialar defects. *Dermatol Surg.* 2006 May;32(5):726-9. [PMID: 16706770]
4. Zeikus PS, Maloney ME, Jellinek NJ. Advancement flap for the reconstruction of nasal ala and lateral nasal tip defects. *J Am Acad Dermatol.* 2006 Dec;55(6):1032-5. [PMID: 17110218]
5. Goldberg LH, Alam M. Horizontal advancement flap for symmetric reconstruction of small to medium-sized cutaneous defects of the lateral nasal supratip. *J Am Acad Dermatol.* 2003 Oct;49(4):685-9. [PMID: 14512917]