CASE REPORT
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Reconstruction of the large columella defect with Schmid-Meyer flap

Rekonstrukcija velikog defekta kolumele *Schmid-Meyer*-ovim režnjem

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Abstract

Introduction. The reconstruction of columella defects is still regarded as a challenging procedure due to the very specific anatomy of the columella and limited local and regional flap options. Furthermore, the texture and color of columella tissue pose difficulties in choosing the right method of reconstruction. **Case report.** The report presents a patient who underwent reconstruction of a complex columella defect using a Schmid-Meyer flap. Schmid-Meyer flap represents a tubular flap with an internal supraciliary pedicle which allows the transposition of the temporal skin with the addition of ear cartilage on the tip of the nose or the *ala nasi*. The integration of the flap was complete. During the five-year follow-up period, the cosmetic and functional results were satisfying. **Conclusion.** Schmid-Meyer flap may be one of the best options for the reconstruction of complex defects of the columella.

Key words:
nasal septum; nose deformities, acquired; nose neoplasms; reconstructive surgical procedures; rhinoplasty.

Apstrakt

Uvod. Zbog vrlo specifične anatomije kolumele i ograničenog izbora lokalnih i regionalnih režnjeva, rekonstrukcija defekta kolumele i dalje predstavlja izazov. Isto tako, tekstura i boja tkiva kolumele predstavljaju poteškoće u odabiru prave rekonstruktivne metode. **Prikaz bolesnika.** U radu je predstavljen bolesnik kod koga je urađena rekonstrukcija složenog defekta kolumele pomoću *Schmid-Meyer*-ovog režnja. To je tubularni režanj sa vaskularnom peteljkom zasnovanom na supracilijarnim krvnim sudovima, koji dopušta transpoziciju kože temporalne regije sa graftom aurikularne hrskavice, na sam vrh nosa. Vitalnost prikazanog režnja je očuvana u potpunosti. Tokom jednogodišnjeg perioda praćenja, estetski i funkcionalni rezultati bili su zadovoljavajući. **Zaključak**. *Schmid-Meyer*-ov režanj može biti jedna od najboljih opcija za rekonstrukciju složenog defekta kolumele.

Ključne reči:
nos, septum; nos, stečene deformacije; nos, neoplazme; hirurgija, rekonstruktivna, procedure; rinoplastika.

Introduction

Up-to-date, various causes have been linked to columella defects, including congenital absence, trauma, and tumors. Reconstruction of these defects is a challenging procedure because of limited options for local and regional flaps and the main anatomic characteristics of this site. Several skin grafts, local and free flaps, have already been described in the literature, but none is recommended as the treatment of choice, which will ensure an excellent texture and color matching to the tissue [1].

Among many surgical techniques described to repair full-thickness defects of the inferior part of the nose, the Schmid-Meyer flap is one of the recommended [2, 3]. This flap is a tubular flap with an internal supraciliary pedicle which allows the transposition of the temporal skin and the addition of ear cartilage on the tip of the nose or the *ala nasi*. This little acclaimed technique is based on the old principle of autonomization of a cutaneous flap and uses a tailor-made composite cartilaginous graft placed in the flap. This meticulous reconstruction requires four stages which can be accomplished under local anesthesia [2, 3].

The main goal of this report was to present a successful reconstruction of a short and small columella using a Schmid-Meyer flap.

Case report

A 53-year-old male patient was admitted to our clinic with a tumor mass located in the columella region. On ini

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tial physical examination, the observed tumor involved the entire region of the columella, obstructing both external nares, and leading to the closure of the physiologic nasal pathway, without pain or bleeding. The excisional biopsy was performed, and a histopathologic examination of the obtained specimen showed squamocellular carcinoma, grade I. Total excision of the tumor was done with free surgical margins (Figure 1), and the arising defect was reconstructed with a Schmid-Meyer flap prefabricated with ear cartilage. The patient was followed up regularly for five years after the surgery and had no subjective complaints and no signs of recurrence of the disease.

Surgical technique

In the first stage, only the prefabrication was achieved. The piece of cartilage, 2.5 cm in length, was harvested from the right auricula and inserted into the pocket between the skin and frontal muscle at the distal site of the flap (right lateral superciliary region).

After one month, the patient underwent the second stage of the operation. After the right trochlear artery was identified with Doppler ultrasound, the lower limit of the flap was drawn close to the eyebrow margin (till its lateral border), and the upper limit of the flap was determined by a pinch test to allow for primary closure of the donor site. A partially tubular flap was made, including a cartilage graft with pedicled attachments on its proximal and distal points. The donor site has been primarily sutured (Figure 2).

The third stage, three weeks after the second stage, included the deinsertion of the flap (of its distal attachment) and suture to the lower side of the columella defect (columella base) (Figure 3). In the fourth stage, the final reconstruction was made. The flap was left for two weeks and then divided. After satisfactory perfusion of the flap was observed, the proximal attachment was divided and sutured to the upper side of the columella defect. The unused pedicle was sacrificed. The donor site was corrected (Figure 4).

Discussion

The columella links the nasal tip to the nasal base and separates the nares. It is composed of a pair of fine-textured cartilages and thin overlying skin. The columella, together with a pair of cartilages and caudal septum, provides necessary support and projection to the nasal tip [1]. The main problems in the reconstruction of columella are the following: its localization, narrow horizontal dimension, unique contour, its tenuous vascularity, and limited availability of adjacent tissue [4]. In line with the above stated, the use of different reconstructive techniques is limited and does not allow ideal reconstruction of columella defects [5]. Each technique has its own advantages and disadvantages, as described by the authors, and some require multiple operations. These techniques vary in complexity and include a wide range of operative procedures such as composite grafts [6], frontotemporal flap [2, 3], nasolabial flaps [7], naso-cheek flaps [8], buccal mucosal flap [9], free flap [4], forehead flap [10], and prefabricated flaps [11].

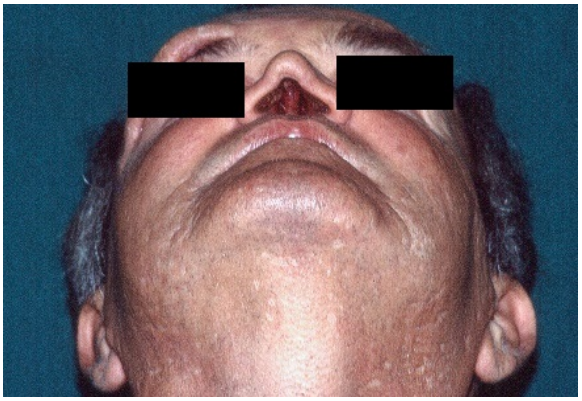


Fig. 1 – Post-excisional columella defect.

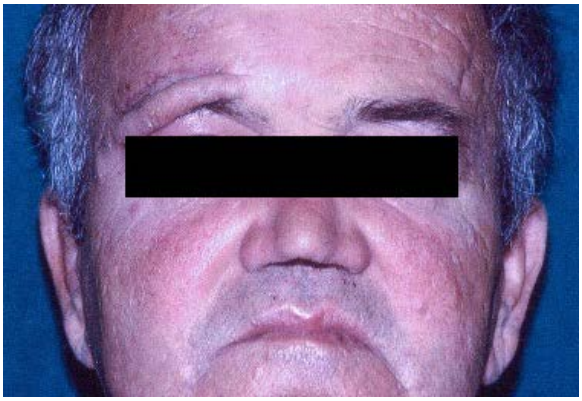


Fig. 2 – Partially tubular flap.

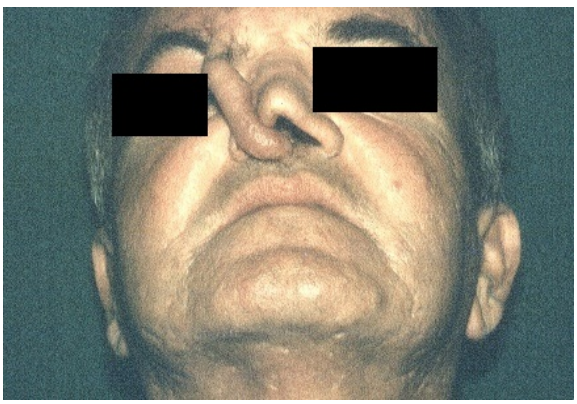


Fig. 3 – Columella defect coverage with Schmid-Meyer flap.

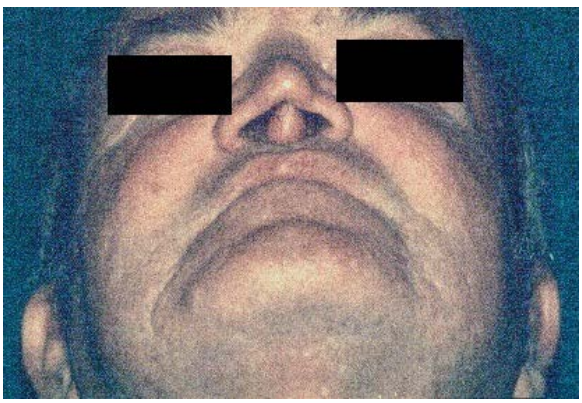


Fig. 4 – One year after the surgery.

The Schmid-Meyer frontotemporal flap is a tubular flap with an internal supraciliary pedicle that allows the transposition of the temporal skin with the addition of a tailor-made composite cartilaginous graft placed in the temporal region [12]. This graft is progressively detached, which allows repair of the lower third of the nose. Since its first description by Schmid in 1952 [2] and later modification by Meyer and Oppliger [3], the Schmid-Meyer flap has proved to be versatile for use in nasal reconstruction [13, 14]. In some specific indications, the Schmid-Meyer flap allows excellent reconstruction of the *ala*, the nasal tip, or the columella [14]. However, according to our knowledge, there have been only a few reports of this technique in columella reconstruction [14].

In this report, we showed that this procedure is very convenient for composite tissue defects such as columella. In our experience, the Schmid-Meyer flap procedure allows a nasal reconstruction of high quality due to its good color match, few forehead scarring sequelae, and minimal donor deformity. Cartilage in the flap of our patient ensured adequate support to the columella, and clinically obvious resorption was not observed after 5 years. However, this procedure has two main disadvantages. First, this flap is a little bulky for a columella, but if spontaneous atrophy does not occur, this could be solved by debulking procedures, as shown in our case. The second disadvantage was the fact that the procedure had four stages.

Conclusion

This report adds to previously published work on different techniques for columella reconstruction. That is noteworthy for several reasons. Firstly, our results indicate that the Schmid-Meyer flap can be regarded as an alternative among the surgical options for the reconstruction of columella defects because it achieves good and stable aesthetic results with a high-quality nasal reconstruction. Secondly, our report can allow comparisons between different reconstructive techniques used for columella defects. Finally, and more generally, it will help us understand this problem better and allow greater awareness of different possibilities in columella reconstruction.

REFERENCES

1. *Tan O, Kiroglu AF, Atik B, Yuca K.* Reconstruction of the columella using the prefabricated reverse flow submental flap: A case report. Head Neck 2006; 28(7): 653–7.
2. *Schmid E.* Uber neu Wege in der plastichen Chirurgie der nase. Bruns' Beitr Klin Chir 1952; 184: 385. (German)
3. *Meyer R, Oppliger GC.* Partial Plastic Substitution Of The Nose. Helv Chir Acta 1964; 31: 304–15. (German)
4. *Benito-Ruiz J, Raigosa M, Yoon TS.* Columella reconstruction using a free flap from the first web space of the foot. Ann Plast Surg 2012; 69(3): 279–82.
5. *Abbas JR, Sudbury D, Jeyarajah C, Anari S.* Nasal columella reconstruction: A review of the current techniques. 5th International Conference and Expo on Cosmetology, Trichology & Aesthetic Practices April 25-27, 2016 Dubai, UAE. J Clin Exp Dermatol Res 2016; 7(3 Suppl): http://dx.doi.org/10.4172/2155-9554.C1.026
6. *Teltzrow T, Arens A, Schwipper V.* One-stage reconstruction of nasal defects: evaluation of the use of modified auricular composite grafts. Facial Plast Surg 2011; 27(3): 243–8.
7. *Ozkus I, Cek DI, Ozkus K.* The use of bifid nasolabial flaps in the reconstruction of the nose and columella. Ann Plast Surg 1992; 29:461–3.
8. *Jayarajan R.* Total Columella Reconstruction Using Nasocheek Flap and Septal Cartilage Graft. Plast Reconstr Surg Glob Open 2015; 3(11): e559.
9. *Agrawal KS, Shrotriya R, Pabari M.* An Innovative Technique for Columellar Reconstruction using 'Flip-Over' Buccal Mucosa Flap. J Clin Diagn Res 2016; 10(7): PD05–6.
10. *Baker SR, Swanson NA.* Oblique forehead flap for total reconstruction of the nasal tip and columella. Arch Otolaryngol 1985; 111(7): 425–9.
11. *Güçer T.* Retroauricular prefabricated chondrofasciocutaneous flap for reconstruction of the columella. Plast Reconstr Surg 2002; 109(3): 1090–3.
12. *Tzur R, Berezovsky AR, Krieger Y, Shoham Y, Silberstein E.* Columellar reconstruction: a refinement of technique. Arch Craniofac Surg 2018; 19(2): 148–51.
13. *Jourdain A, Darsonval V, Laccourreye L, Huguier V.* Indications for the Schmid-Meyer frontal-temporal flap for nasal reconstruction. Four clinical cases. Ann Chir Plast Esthet 2000; 45(1): 24–30. (French)
14. *Arnaud D, Potier B, Jeufroy C, Darsonval V, Rousseau P.* Schmid-Meyer fronto-temporal flap for nasal reconstruction. Rev Stomatol Chir Maxillofac 2012; 113(6): 423–32. (French)

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