Reconstruction of the columella and the tip of the nose with an island-shaped forehead flap

Rekonstrukcija kolumele i vrha nosa ostrvastim čeonim režnjem

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Abstract

Background. Posttraumatic and postoperative defects of columella and the tip of the nose are difficult to reconstruct. There are several operative methods described in the literature, and many of them are step-by-step procedures with long duration. The aim of this study was to present one-step procedure for reconstruction of the columella and the tip of the nose with island-shaped arterial forehead flap. Case report. A 45-year old man was submitted to surgical excision of basocellular skin cancer. After the excision, a defect of the columella and tip of the nose the remained, 3 × 2.5 cm in dimensions, with exposed alar cartilages. During the same operation, the defect was covered with an island-shaped arterial forehead flap. Postoperative one-year course was uneventful, without signs of tumor recurrence after one year, and further surgical corrections were unnecessary. Conclusion. Considering the results of our operative technique, we believe that middle island-shaped forehead flap is suitable for reconstruction of the columella and the tip of the nose, due to the following reasons: safe vascularization of flap, similarity of the transferred tissue with the excised one, the procedure is completed in one step, simple surgical technique and uncomplicated healing of a flap-harvesting site.

Key words: skin neoplasms; reconstructive surgical procedures; nose neoplasms; treatment outcome.

Introduction

Reconstruction of the nose is one of the oldest operations of its kind, but it is still a challenge to surgeons because of the complex anatomy of the nose and its functional and aesthetic importance 1–6. A number of studies on this issue have shown that the tip of the nose, especially columella are the most complex structures for reconstruction, because of their specific localization 7–15.

Isolated defects of the skin at the tip of the nose are usually covered by local skin flaps. Collumella defects may be partial or total, also associated with defects of adjacent structures 10–16. The literature describes numerous reconstructive methods. According to existing records, the first reconstruction of the columella was done by Diefenbach in 1833 when he applied a skin flap from the upper lip. This method was later modified several times 9. Then Joseph published the results of reconstruction of the columella by chon-
drocutaneous transplant, and as giving region he used the na-
sal wing. Others were applying composite graft from auricle or
mastoid region. Other reconstructive methods were also
described: nasolabial flaps, flaps of the lower lip, frontal
lobes, dermal or fascial flaps from the dorsum of the
nose, skin flaps from the nasal wings or from the nasal vesti-
bule and the nasal septum, cheek flaps, or tubule or island-
shaped flaps from the neck regions, periauricle flaps, scalp
flaps, a skin tubule from the upper arm or back of the hand
and microvascular muscle flaps from the ear.

One of the known methods of multiple procedures meth-
ods of the columnella and the tip of the nose reconstruction is
the pedicled interpolar frontal lobe flap. Island-shaped arterial
frontal lobe of supratrochlear blood vessels was used for re-
construction of larger nose defects or partial defects in the up-
per and middle part of the nose. Because
there are different methods for reconstruction of the columnella
and the tip of the nose, we thought it reasonable to demon-
strate experience in using the frontal island-shaped flap in re-
solving defect of the columnella and the tip of the nose.

Case report
A patient, aged 45, was hospitalized because of skin tu-
mor on the columnella and the tip of the nose. The tumor by its
morphological features resembled basal cell carcinoma (Figure
1). Radical excision was done after which there was a skin de-
fect of the following dimensions - 3 × 2.5 cm, as well as ex-
posed cartilage. In further surgical procedure reconstruction of
the central island-shaped frontal lobe was performed. It was
flapped with supratrochlear blood vessels on the left side. Sec-
ondary lobe defect was closed by direct suture. The operation
was performed under general endotracheal anesthesia and
lasted about 60 min. During postoperative period the flap
was vital, and there was a shorter venous congestion of the flap and mild swelling of the nose that lasted for several days
(Figure 2). Histopathological results confirmed that it was a
basal cell carcinoma, which was radically excised at the pe-
riphery and depth. The patient was discharged from the hos-
pital seven days after the operation, when the stitches were
removed also. During the control examinations the last of
which was performed one year after the surgery, there were no
signs of recurrence, the results of the operation were satisfac-
tory and with no need for additional corrections (Figures 3, 4).

Fig. 1 – Basal cell carcinoma of the columnella and the tip of the nose

Fig. 2 – Island-shaped arterial forehead flap for
reconstruction of the columnella and the tip of the nose, 24
hours after the procedure

Fig. 3 – The result of reconstruction one month after the
surgical procedure

Fig. 4 – The result of reconstruction one year after the
surgical procedure

Discussion

If we consider the number and type of the presented methods for columella reconstruction so far, the conclusion is that none of them is ideal.

Concerning the fact that skin is thicker in the lower half of the nose, free skin grafts are rarely used in that region because the aesthetic result is worse, and besides, that cannot be applied when cartilage is exposed without perichondrium. Isolated and fewer defects at the top of the nose can usually be covered with local skin flaps.

In columella defect, the use of local flap is limited because of its specific localization and morphology. Composite graft from the nasal alae, ear or mastoid region may be applied for partial columella defects and is commonly used with children with congenital retrusion of the tip of the nose. Plast Reconstr Surg 1974; 53(2): 133–9.


Millard DR Jr. Reconstrueh and aesthetic terms very complex regions, and therefore there are a number of proposed surgical methods. Most of the reported techniques are multiple steps or long-term surgical procedures. Bearing in mind the result of operational methods which are applied, we believe that the central island-shaped frontal lobe is suitable for reconstruction of the columella and/or the tip of the nose and that it meets all the requirements of optimal reconstruction. There is a safe flap vascularization, transfer of the tissue that is similar to the tissue from the defect region, simplicity and one-step procedure method and minimal morbidity in donor region.

Conclusion

Reconstruction of the nose must enable optimal functional, aesthetic and economic results. The columella and the tip of the nose are in reconstructive terms very complex regions, and therefore there are a number of proposed surgical methods. Most of the reported techniques are multiple steps or long-term surgical procedures. Bearing in mind the result of operational methods which are applied, we believe that the central island-shaped frontal lobe is suitable for reconstruction of the columella and/or the tip of the nose and that it meets all the requirements of optimal reconstruction. There is a safe flap vascularization, transfer of the tissue that is similar to the tissue from the defect region, simplicity and one-step procedure method and minimal morbidity in donor region.

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