Combination of advancement and rotation flap for large defect closure of basal cell carcinoma on the cheek, lip and nose

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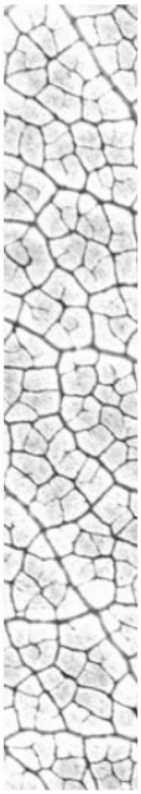

Combination of advancement and rotation flap for large defect closure of basal cell carcinoma on the cheek, lip and nose

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Abstract

Basal Cell Carcinoma (BCC) is type of skin cancer, which is associated with UV radiation exposure. Modalities for treatment BCC such as Mohs surgery or delayed Mohs surgery remains the gold standard of current treatment. The choice of therapy is based on the type of histology, lesions, cost, size and location, the patient's age, and the patient's medical condition. We report a case of basal cell carcinoma located on the cheek and nose. The case of basal cell carcinoma located on the cheek and nose, and a closure procedure was carried out using a combination of forward and rotational movements, then evaluated during 6-month intervals and obtained good results.

Keywords: advancement flap, basal cell carcinoma, rotation flap

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INTRODUCTION

Basal cell carcinoma (BCC) is the most frequent NMSC in Caucasian population and represents about 80% all skin cancers. Incidence of BCC continues to rise, increasing by up to 10% over the last decades. White individuals of old (65-79 years)-to very old age (>80 years) represent the demographic sub-group with the highest increase in BCC incidence rates. Both genetic and environmental factors may predispose patients to development of BCC. Known risk-factors include male sex, old age, ionizing radiation, immunosuppression, fair skin phototype (Fitzpatrick I or II), chronic arsenic ingestion and family history. Association with intermittent exposure to UV-radiation clearly explain the high incidence rates of BCCs in light-skinned individuals living in countries at low latitudes (Garcovich, et al. 2017).

A variety of different therapeutic modalities for the treatment of basal-cell carcinoma, such as curettage, electrodesication, cryotherapy, electron beam irradiation, superficial X-ray therapy, photodynamic therapy, topical chemotherapy, local immunotherapy and surgical excision, is established. The major disadvantages of non-surgical methods include the possibility of late relapses, high recurrence rate in large tumors, adverse reactions of ionized radiation, prolonged healing, and non-aesthetic scar formation.[2]

The aim of the combination action of the flap in the basal cell carcinoma is to get rid of the tumor and maintain optimal function and cosmetics. The choice of therapy is based on the type of histology, lesions, cost, size and location, the patient's age, and the patient's medical condition (Dourmishev, Rusinova, & Botev, 2013). Despite new and emerging medical drugs providing pharmacological opportunities for treatment of advanced tumors, Mohs surgery or delayed Mohs surgery remains the gold standard of current treatment (Wollina, 2015).

Repairing the defect after surgery was done after the primary tumor was removed. Primary closure is the most common repair method used action, but to ensure that results are more cosmetically and functionally acceptable, a local skin flap or skin graft is required. Flap techniques are generally classified based on the primary shift in the form of advancement flaps, rotation flaps, transposition flaps and interpolation flaps. The selection and planning of the flap is carried out with due regard to lesion boundaries, flexibility, relaxed skin tension lines (RSTL), cosmetic units and functional aspects (Alcalay, Alkalay, 2008).

In this report, we describe a successful large facial basal cell carcinoma closure using a combination at advancement and rotation flap, evaluated during a 6-month interval and the final results after this large closure did not cause deformity.

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A B

Fig. 2. Tumor appear in the nasolabial fold area before (A) and after (B) excision

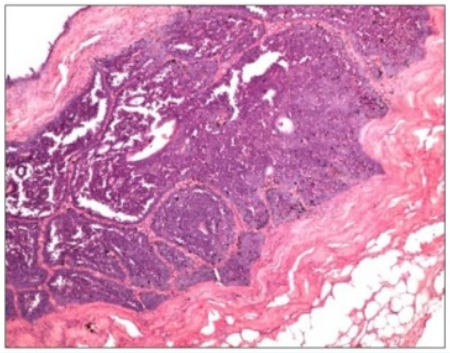

Fig. 2. Histopathological examination. Tumor cells appear to be infiltrating basaloid BCC nests in the dermis

CASE REPORT

A 65-year-old woman came to Wahidin Sudiro Husodo's hospital in the clinic with a main complaint of an early bleeding lump on her right cheek since five years before admission. Two years earlier, she had consulted with the same complaint but refused to be operated. On physical examination, a black, pearl-like lump with a diameter of 3.5 cm is was present on the right cheek (**Fig. 1A**). Laboratory blood tests were within the normal range. Tumor excision was performed with a margin of 5 mm (**Fig. 1B**). The closure of the defect was performed after the histopathologic examination results showed all the edges and bottom of the tumor are free from tumor cells (**Fig. 2**).

Anatomical Consideration

Aging is a process that cannot be avoided. This is a dynamic process involving bone structure and soft tissue (Penna, et al. 2009) The most noticeable changes in facial morphology in the lower third of the face that affect the lips, chin, cheeks and lower neck. This is related to several mechanisms such as volume loss, fat atrophy, and loss of elasticity (Richard, et al. 2009).

The most frequent site of skin tumor predilection is in the face area (Prendergast, 2013).Mohs surgery or mohs surgery is considered the gold standard of treatment four skin tumor, however, in the case of large facial defects, the more complicated flap combination measures offer opportunities for repairing the defect either by transposition, advancement, rotation or a combination of these (Raklyar, Zloty, 2012).

In this case, combination advancement flap on the cheek and lip with rotation flap on the nose are recommended for closuring defect. For advancement flap on the cheek and lip an incision was made along the previously marked line in the superior-lateral portion of the defect toward the temple, then along the front edge of the ear. In the inferior-lateral section, the incision was extended the mandibular region (**Fig. 3C**). After extensive undermining of the skin the flap was directed to close the defect on the cheeks and upper lip (**Fig. 3D** and **3E**). Furthermore, defects in the Malar area are closed using rotation flap (**Fig. 3F**). The defect on the nose was closed using rotation flap. An incision to the superior defect section carried out by the side of the nose to allow for rotation flap. The inferior edge of the rotation flap is then sewn to the side of the medial flap forward so that the stitch line will be between the cosmetic units.

After completing the defect, which is wound care done every 2 days, and observing no signs of secondary infection (**Fig. 4G**) recovery of this case is good and no defects were found in the nose and lips of the patient (**Fig. 4H** and **I**).

Following treatment of a BCC, all patients are at some degree of risk of both local recurrence (treatment failure) and the development of further primary BCC at other sites (new lesions). The risk of local recurrence is an individual risk, based upon the tumor characteristics and the treatment used. However, for primary BCC treated appropriately by experienced practitioners, the recurrence rate should be low. This is not true for recurrent BCC, where recurrence rates are universally higher than for primary BCC. Patients who have had recurrent (especially multiply recurrent) lesions treated are particularly worthy of follow-up in view of their

Fig. 3. Mohs surgery methods to remove the tumor: (A, B, C) Advancement flap and (F). rotation flap

Fig. 4. Wound healing process after the surgery carried out (A) 2 weeks after excision, (B) 1 months after excision and (C) 1 years after excision

relatively high risk of further recurrence. The timings of follow-up visits should take into account the generally slow growth rate of BCC. Evidence suggests that recurrent disease may take up to 5 years to present clinically, and that up to 18% of recurrent BCC may present even later.

DISCUSSION

Cheek advancement flap is myocutaneous flap pedicled on facial artery. The subdermal plexus is supplied by feeder vessel from the branches of facial artery facial artery, four main branches of facial artery are inferior labial artery, the superior labial artery ala and lateral nasal artery and terminates as angular artery (Ducic, & Burye, 2000) There are three main blood vessels that supply the fascia, skin and subcutaneous tissue. The skin or subdermal vessels are the main blood supplier to the skin. Which is located between the deep reticular dermis and subcutaneous fat, is responsible for skin bleeding.Venous drainage from the flap occurs through the subcutaneous vein of the supplying artery (Taylor, et al. 2011). Microcirculation of the flap allows the connection between the arterial and venous systems. Arteriol from the terminal vessels of the cutaneous system goes directly to the subcutaneous layer and then branches to the terminal arteriole which supplies the subdermal plexus. The lymphatic system plays a role in microcirculation if an interruption occurs, edema will occur at the location of the flap (Taylor, et al. 2011).

Reconstruction of facial defects after tumor removal warrants a high standard of functional and aesthetic repair (Dourmishev, Rusinova, & Botev, 2013). Surgical repair relies on detailed knowledge and understanding of facial anatomy. In many cases, defect closure following facial tumor surgery is possible through the use of linear sutures. In case of larger facial defects, the potential of more complex flaps offers additional opportunities for defect repair by transposition, rotation,

advancement, or a combination of those. Flap viability is dependent on vascular supply. (Wollina, 2015).

Cheek advancement flap is highly versatile because blood vessels in subdermal layer travel in axial direction, so the length/width ratio can reach near that of the true axial pattern flap. It is not necessary to include facial artery in the flap design for flap survival but facial artery preservation at the same side with nasolabial flap will increase the flap reliability (Greenstein, et al. 2009). Axial pattern nasolabial flaps are thick flaps, more reliable and have a good pedicle length. They can be orthograde or reverse flow based on facial and angular artery respectively. Nasolabial flap can be used in different thickness. It can be thinned at the level of dermis and epidermis when a thin pliable flap is required or can be used as a full thickness flap for through and through defects (Ducic, & Burye, 2000)

Advancement flaps are often used to disguise scars due to incision and optimize cosmetic function. The most common locations include the upper and lower lip, side folds of the nose, the bottom of the eye and cartilage on the helix (Kruter, & Rohrer, 2015). The advancement flap technique is done by making incisions that are parallel to each other and along the tangent line covering the defect. After the incision is made, the tissue part between the incision is removed from the structure at the bottom, leaving a piece of tissue that might cause a defect (Krishnan, et al. 2005)

A rotational flap is a semicircular flap to cover triangular defects. the border defect becomes the edge of an outline flap which is described as a circular arc (Momeni, Souza, 2019). This technique is used if a defect closure fails to provide inadequate cosmetic results. Rotation flap can be used in various location such as lesions on the cheeks, chin, eyebrows, lips and scalp. In addition, this technique is useful to reduce tension around the free margin to prevent distortion (Goldman, 2005)

CONCLUSION

The combination of advancement flap and rotation flap gives exquisite cosmetic results. The weakness of advancement flap that cannot cover a large defect can be mitigated by combining with a rotation flap. The combination of both optimizes wound closure completely.

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