Modified Rhomboid Flap for Reconstruction of Defect of Cheek after Excision of Basal Cell Carcinoma

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ABSTRACT

The cheek is a very important part of the human face because it is the largest part and is essential in terms of both esthetics and functionality. Basal cell carcinomas (BCCs) are most common skin malignancy found in Caucasians and rarely in Asians. Treatment can range from topical medications, curettage, Mohs micrography, cryosurgery, laser surgery and excision. Defect left after excision can be cosmetically disfiguring. Options for reconstruction after excision of the lesion are skin graft and local flaps. We present a case of BCC of the cheek which was reconstructed with modified rhomboid flap.

Keywords: Cheek defect, Reconstruction, Rhomboid flap.

INTRODUCTION

The cheek is a very important part of the human face because it is the largest part and is essential in terms of both esthetics and functionality. Cheek defects after excisions, basal cell carcinoma (BCC) can range from small to medium size which can be reconstructed by using a full thickness skin grafts or defects local flaps. Disadvantages with skin graft are second donor site required for skin graft and mismatch in color. Local flaps have the advantage of same-site donor tissue and good color match of skin from adjacent site of the lesion. However, donor-site morbidity and further scarring in an already cosmetically sensitive area may occur after most types of flap repair.1

CHEEK ANATOMY

The cheeks constitute a substantial portion of the face and contain several important structures. A complete knowledge of cheek anatomy is necessary before performing specific flap design, which allows safe and successful operative reconstruction procedure.

The facial artery is the main artery of face and originates from the external carotid artery and supplies predominantly the cheek region. A course of facial artery in face is tortuous, and it crosses the mandible at the facial notch then courses under the muscles of facial expression. Facial artery is oriented axially, giving rise to perforating vessels that supplies the subdermal plexus. An axial type of flap is based on a named vessel, such as the supraor-bital or superficial temporal arteries.2 Random based local flaps get supply from the area of subdermal plexus. An important fibrous network, called the superficial musculoaponeurotic system (SMAS), interlinks the muscles of facial expression. The SMAS lies under the subcutaneous fat, and its extension is continuous superiorly with the superficial temporal fascia (temporoparietal fascia) and inferiorly with the platysma.

Dissection of a cheek flap usually is performed in a layer of subcutaneous plane to preserve facial nerve and the subdermal vascularplexus. In some cases of larger defects, elevation below SMAS plane may be required for adequate vascularity of the flap.

CASE REPORT

A 65-year-old man presented for evaluation of a progressively enlarging plaque on the left lateral cheek. Physical examination revealed a sclerotic, yellow, depressed plaque of the upper left cheek measuring 1.8 × 1.3 cm (Fig. 1). Punch biopsy confirmed it to be a BCC. The lesion was excised with 6 mm margin. Primary closure of excised lesion would have led to ectropion of left lower eyelid (Fig. 2). Modified rhomboid flap was then designed adjacent to the defect. The flap was elevated in a subcutaneous plane and rotated into the defect. Skin closure was done with 5–0 ethilon (Fig. 3). Histopathology revealed nodular cystic variant of BCC. Three month after the surgery, healing was satisfactory with minimal linear scar (Fig. 4).

DISCUSSION

Face represents complete personality of a human being. Therefore, adequate cosmetic correction of facial defects arising due to various injuries and lesions is very important.
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"Reconstruction ladder" exists in current surgical practice for management of such defects on face with healing by secondary intention and granulation formation at one end of spectrum and reconstruction by microvascular surgery at the other end of spectrum. Local flaps in the reconstruction of defects falls in-between this spectrum with intention of achieving best cosmetic results comparable to microvascular surgery and also feasibility of the technique at secondary referral center where, many a time, expertise for microvascular surgery is not available.3

Cheek Esthetic Unit

The anatomic location of a lesion should be evaluated within the area of facial esthetic units. Specific landmarks that are used for assessment of the cheek define the borders of these esthetic units. Medially this is bordered by the nasofacial groove, melolabial crease, and labiomental sulcus; laterally by the preauricular crease; superiorly by the infraorbital rim and superior border of the zygomatic arch; and inferiorly by the inferior mandibular border. It is also subdivided into four subunits named as the medial, zygomatic, buccal, and lateral.2

In the face malignant tumor are BCC, squamous cell carcinoma (SCC), and melanoma.4 Basal cell carcinomas are the most common forms of skin cancer. They most commonly occur on sun-exposed area of the body as slow growing tumor. Face is the most common location for these lesion. It is well known that recurrence rates are higher for larger and previously recurrent tumors as well as for more aggressive histologic subtypes.5

In the past 20 years, reconstructive techniques have greatly advanced the approach to cheek reconstruction; however, several factors continue to play an important role in reconstructive outcome.4 Various reconstructive options are available for closure of cheek defect, include primary closure, healing by secondary intention, skin grafting, local flaps, regional flap, and distant flap.

In elderly patients with lax skin, a large defect can be closed primarily using relaxed skin tension lines (RSTL) with minimal wound closure tension. In our case, defect was present just beneath lateral to the lower eyelid region, and primary closure would result into ectropion of lower eyelid.

Secondary intention is the safest option if the malignancy is removed with questionable margins, which
requires prolonged daily wound care and frequent observation. This technique is not suitable as the healing wound distorts the surrounding structures. Skin grafting is also a commonly used method for reconstruction. A disadvantage of skin grafting is suboptimal color and texture matching between the grafts and surrounding tissue.

A local flap consists of a tongue-like protrusion of tissue which is made up of skin and a variable amount of the underlying subcutaneous tissue. Classification of flap is based on their vascular supply, composition, method of transfer, and design. In the face rectangular advancement flap by Burrow’s triangle, bilobed flap, rhomboid flap, and forehead rotation flap are most commonly used in current practice.

The rhomboid flap is a type of a complex transposition flap with a strict geometrical design introduced by Limberg in 1946. For a rhomboid design, the lesion is excised as rhomboid with internal angles of 60° and 120°. It also depends on location of the defect, the skin thickness of the donor site, and the orientation of the RSTL. In our case, as the defect was circular, modified rhomboid flap/rhombic flap was used in our case. In modified rhomboid flap, around a circular defect, two sides are drawn with apex forming 60°. The length of first side is two-thirds the length of the diameter of the defect. The second side is equal in length to the first side. In our study, we used this modified rhomboid flap on cheek where creases are not prominent, skin is thinner, and resulting scar tends to blend better with adjacent skin.

**CONCLUSION**

Reconstruction of facial defects by local flaps is easy and cost-effective technique, easy to learn, and takes minimum time to perform good esthetic results.

**REFERENCES**