Reconstruction of Cheek Defects Secondary to Mohs Microsurgery or Wide Local Excision

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KEYWORDS

• Cheek • Skin cancer • Mohs reconstruction • Local flap • Facial reconstruction • Melanoma • Basal cell carcinoma • Squamous cell carcinoma

KEY POINTS

- Cheek tissue is heterogeneous, with differences in skin thickness, mobility, and contour that influence reconstruction approach as a function of individual patient characteristics, and anatomic zone.
- Appreciation of functional and aesthetic regions relative to anatomic location (medial, lateral, periorbital) will improve surgical planning and outcomes.
- Respecting mobile structures (eyelids, lips, and nose), aesthetic landmarks (melolabial fold, orbital rim, malar eminence, hairlines), and vascular supply to the reconstruction are all of paramount importance.
- A diverse array of adjacent tissue transfer maneuvers is available, allowing for artistry in achieving aesthetic facial reconstruction.

INTRODUCTION

When considering the optimal reconstructive options for a particular cheek defect, familiarity with the basic anatomy of the face is critical, including both surface anatomy and contour arising from the underlying bony structures and soft tissues. The general borders of the cheek include the temple, infraorbital rim and lower eyelid, preauricular sulcus (including borders with the tragus/helix/lobule), mandible, lateral nasal wall, nasal ala, and melolabial fold (upper lip).[1–3] It is also important to consider the physical properties of the skin and underlying tissues to be rearranged, as improper planning may lead to unsightly distortion of facial anatomy.[2,3] This consideration is especially important for the facial creases of the cheek and the regions of the cheek adjacent to the lower eyelid, nasal ala, and lips.[3] As with any facial defect, anatomic subunits and relaxed skin tension lines (RSTLs) play a key role in the selection and orientation of local flap repair for cheek defects. Based on anatomic and structural properties, the cheek may be divided into aesthetic subunits.

Disclosure Statement: The authors have nothing to disclose.
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Facial Plast Surg Clin N Am 25 (2017) 443–461
http://dx.doi.org/10.1016/j.fsc.2017.03.013

Over the years, different investigators have offered various patterns by which the aesthetic units of the cheek may be defined. For instance, Weerda[4] has described division of the cheek into 6 anatomic units, including the upper, medial, and lateral divisions of the medial and lateral cheeks, whereas Bradley and Murakami have partitioned the cheek into medial, lateral (mandibular), zygomatic, and buccal divisions.[3,5] Menick[2] posits that aesthetic cheek units vary from individual to individual and are dynamic based on age, hairline, hairstyle, facial hair, and facial expression. Given the diversity of the cheek subunit, the primary reconstructive goals of cheek defects include restoration of skin color and texture, which are more conspicuous than variations in contour and subunit outline.[2]

We have divided the cheek into the following regions with functional and aesthetic significance: medial cheek, perilabial (buccal) cheek, lateral cheek, and zygomatic cheek. Menick[2] advocates that the subunit principle should be followed whenever possible in reconstruction of aesthetic regions of the face, although slight variations from "normal" are much more forgiving in cheek reconstruction when compared with the nose, lips, and eyelids. Moreover, subtle asymmetries in color, texture, and surface topography are generally less obvious in the cheek because direct visual comparison of one cheek to its paired contralateral unit is limited in most views aside from the direct anterior view.[2] However, if possible, the surgeon should use the contralateral normal subunit as a template to recreate symmetry and the optimal cosmetic outcome.[6] The benefit of en bloc reconstruction of entire aesthetic subunits and/or use of strategic scar placement at aesthetic borders is that resultant raised or depressed scars tend to be more subtle within the natural contours, shadows, and accents of the native facial structure that define subunit borders.[7]

If placement along subunit borders is impossible, defects should be closed with incisions parallel to RSTLs, inherently minimizing skin tension closure, because RSTLs are determined by the elasticity of the underlying tissue and resultant tension on the skin.[3,8] Although skin of the medial and buccal cheek is thicker and mobile, skin of the superolateral cheek is relatively affixed to fascia lying beneath. This fixation owes to various retaining ligaments anchoring the skin of the cheek to underlying bone.[1] Overlying skin is very tightly fixed to the zygoma due to particularly robust retaining ligaments called the McGregor patch.[1,3] The labiomandibular crease is another point of dense ligamentous attachment that is formed from attachments from the mandibular retaining ligament to the overlying skin.[1,3] The topography of the cheek is determined from the aforementioned retaining ligaments and fibrous attachments to the superficial musculoaponeurotic system (SMAS), as well as the underlying facial skeleton, malar fat pad, and the muscles of facial expression.[1,3] In general, larger reconstructions often yield better outcomes due to more robust subdermal pedicle and via en bloc subunit repair. Likewise, deliberate standing cutaneous deformity excision commonly yields optimal results.

The vascular supply to the cheek skin is derived primarily from branches of the external carotid artery and is of critical importance when considering flap design to optimize potential flap viability. The primary arterial supply to the cheek skin is the facial artery and its angular branch.[1,3] Additional arterial contributions to the cheek include the infraorbital branch of internal maxillary artery and the transverse facial branch of superficial temporal artery. There are frequently anastomotic connections between these arteries as well.[3] Branches of these named arteries ultimately supply the dermal and subdermal plexuses that perfuse the cheek skin. The venous drainage of the cheek largely mirrors its arterial supply, including facial vein, superficial temporal vein, and retromandibular vein with drainage into the internal and external jugular venous systems.[3]

If the reconstructive surgeon is also responsible for locoregional control, such as in management of certain cutaneous malignancies, familiarity with lymphatic drainage of the cheek is important for situations in which sentinel lymph node biopsy, neck dissection, or adjuvant therapy is considered. First-echelon lymphatic drainage from the cheek includes submandibular, preauricular, and submental lymph nodes.[3,9] Furthermore, second-echelon lymphatic drainage from the cheek consists of superficial jugular lymph nodes.[3,9]

Until margin status can be determined, avoidance of wound bed/margin distortion is strongly recommended. For lesions with high risk of local recurrence (eg, melanoma, Merkel cell carcinoma, dermatofibrosarcoma protuberans) or in need of immunohistochemistry to confirm the diagnosis, a 2-blade square technique for confirming margins can be used to avoid an open wound while awaiting margin status. Sophisticated tissue rearrangements should be reserved until confirmation of clear margins, particularly in melanomas managed with sentinel lymph node biopsy whose accuracy may be altered via disruption of dermal lymphatics and tissue rearrangement.[2] The wound may be dressed with a bolster or closed via techniques that do not distort the wound margin, including primary closure, healing by secondary intention, or