

Microsurgical reconstruction of basal cell carcinoma defect of the face: a multidisciplinary approach

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This article describes a 73-year-old white man with a history of dizziness secondary to profound anemia who presented with a large basal cell carcinoma of the left front temple region. A multidisciplinary approach to the extirpation and reconstruction of this defect is presented with a review of histopathologic features and outcomes of basal cell carcinoma excision.

(Key words: basal cell carcinoma, computed tomography, facial reconstruction, skin cancer)

Basal cell carcinoma (BCC) of the skin is the most common form of skin cancer in humans. Early recognition and ablation of these neoplasms is a common procedure for many clinicians. Recurrence or neglect of these slow-growing tumors can lead to significant tissue destruction or deformity, or both. In rare circumstances, pathologic self-neglect can lead to massive growth of these tumors, which represents a challenge in the extirpation and reconstruction of these defects.

Report of case

A 73-year-old white man presented to his family physician with chief complaints of dizziness and imbalance. He also had a

chronic ulcerating lesion of the left region of the forehead that he stated originated from a nonhealing ulcer caused by a golf ball injury to the left frontal temporal region several years before (*Figure 1*). On initial evaluation, he was found to have a hemoglobin level of 5 g/dL, and he was admitted for further workup. Past medical and surgical history were unremarkable. His medications included sleeping pills as needed, a daily vitamin, and aspirin.

The patient was hospitalized and underwent evaluation of his anemia by the internal medicine team. The workup included upper and lower endoscopy, computed tomographic scan of the head and abdomen, and biopsy of the forehead mass. The patient underwent transfusion to a hemoglobin level of 9 g/dL. The workup revealed basal cell carcinoma of the frontotemporal region, a benign gastric polyp, a large hiatal hernia, multiple simple liver cysts, and congenital arachnoid cysts of the left frontotemporal region of the brain, with questionable invasion of the dura mater and extraocular muscles by the basal cell carcinoma (*Figure 2*). The anemia was thought to be secondary to chronic blood loss from the tumor on his face.

The patient was released from the hospital, and a multidisciplinary approach was coordinated. The patient returned for the planned tumor resection when his hemoglobin level was stable. The tumor was also treated with Dakin's solution (1/8 strength) in a wet-to-dry dressing change format to decrease bacterial contamination on the surface of the tumor. The patient underwent extirpation of the tumor by the otolaryngologist and plastic surgery team, enucleation of the eye by an ophthalmologist, and resection of the involved dura mater and frontal lobe by a neurosurgeon. Reconstruction was performed by the plastic surgery team with a free fascia lata graft to the dura mater, titanium mesh encased with methylmethacrylate, and a free rectus abdominis musculocutaneous flap. The microanastomoses were performed end-to-end between the donor (deep inferior epigastric artery and veins) and the recipient (facial artery and vein) vessels using 9-0 interrupted nylon sutures under microscope magnification. The entire procedure was performed in less than 8 hours. The patient tolerated the procedure well and had an unremarkable recovery (*Figure 3*). He was scheduled to follow up with a radiation oncologist for further recommendations and consultation.

Discussion

Basal cell carcinoma represents the single most common malignancy seen today, and its incidence continues to rise. It has been estimated that more than 1 million cases of BCC have been treated in the United States.¹ Sun exposure appears to be the most common and logical explanation for the worldwide epidemic-like increase in reported cases. Depletion of the atmosphere's ozone layer, with its ultraviolet-ray-filtration benefits, seems to be a contributing factor.² Studies have shown that sun exposure early in life (before age 20) damages the ability of the skin to repair DNA changes and has a cumulative effect over the life of the individual.^{1,3} The carcinogenic process begun by early exposure to the sun manifests itself later in life. The incidence of skin cancer appears to peak

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▲ **Figure 1.** A 73-year-old man with chronic ulcerating lesion that he stated originated from a nonhealing ulcer caused by a golf ball injury to the left frontal temporal region several years before.

around 70 years of age, but there has been an increase in the number of reported cases in patients younger than 50 years.³ People with chronic sun exposure, outdoor hobbies, and light complexion are at highest risk. The head and neck regions, particularly the nose and cheek regions, account for the most common locations of primary BCC. In one study, 86% of primary lesions were reported in the head and neck regions, and 94.5% of recurrent lesions occurred in the head and neck.⁴

The commonly accepted histologic subtypes include nodular, micronodular, superficial, infiltrative, and morpheaform based on clinical and histologic appearance.³ Increased incidence of recurrence has been found in tumors of the nose and ear, tumors larger than 2 cm, morpheaform histologic subtype, and incompletely excised tumors. Incompletely excised tumors have about a 30% chance of recurrence if there is active palisades of tumor within one high-power field from the margin of resection. Recurrence in “completely excised” tumors is approximately 1.2%.⁴⁻⁷ Metastatic BCCs have been reported to be rare, with rates of 0.1% to 0.0037%.^{8,9} The most common sites of metastasis (in descending order) are the lymph nodes, lung, and bone. The diagnosis of metastatic BCC



◀ **Figure 2.** Computed tomographic view of congenital arachnoid cyst and large basal cell carcinoma invading inner and outer table of skull.

Figure 3. Same patient as in Figure 1, 6 weeks after extirpation and reconstruction of the defect. ▼

should fulfill the following criteria as established by Lattes and Keisler in 1951¹⁰:

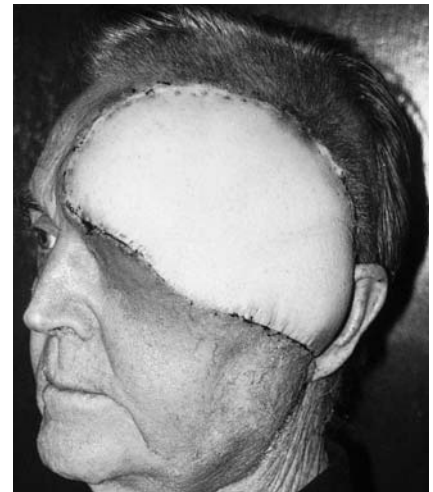
- Primary lesion must be on the skin and not the mucosa.
- Metastatic lesion must be found at a distant site and not as a result of direct extension of the primary tumor.
- The histologic features of both BCCs should be similar.

Conclusion

Reconstruction after excision of BCCs in the head and neck region is frequently accomplished by primary closure, skin graft, or local flaps. The advent of microsurgical free tissue transfer has allowed for more elegant, yet risky, reconstructions. A multidisciplinary approach and meticulous preoperative planning and perioperative care are paramount to the success of the complex reconstructive procedures.

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