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Orbital Exenteration with Ethmoidectomy, Suprastructural Maxillectomy and Reconstruction with Free Transverses Rectus Abdominus Myocutaneous (TRAM) Flap for Re-recurrent Basal Cell Carcinoma of Eyelid: Case Report.

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ABSTRACT:

Basal Cell Carcinoma (BCC) frequently involves sun exposed sites of the face such as the nose, eyelids and peri-orbital tissue. An adequate surgical excision is still the gold standard for treatment. Deep infiltration and involvement of the orbit by periocular BCC is rare but may be clinically silent and thus should be looked for on imaging especially in recurrent and high grade variants. Despite the fact that orbital exenteration is one of the most socially distressing facial operations, it may still be necessary. The repair of a radically exenterated orbit is a difficult problem for surgeons to resolve. We present the case of a locally advanced re-recurrent periocular BCC treated with a suprastructural maxillectomy combined with an orbital exenteration and ethmoidectomy; reconstruction with a free Transversus Rectus Abdominus Myocutaneous flap and adjuvant post-operative radiotherapy.

Key Words: Basal cell carcinoma, Orbital exenteration, Suprastructural maxillectomy, Transverses rectus abdominus myocutaneous (TRAM) free flap

1. CASE REPORT:

A 71 year old gentleman presented to the hospital in Feb 2008 with a recurrent basal cell carcinoma involving the medial canthus of the right eye. The patient presented in Feb 2005 with a lesion in the medial end of the right lower eyelid which was diagnosed as basal cell carcinoma. He underwent excision with local rotational flaps reconstruction but the disease again recurred in June 2006 and was re-excised. Margins in both instances were found to be involved on histopathology. He again re-recurred in July 2007, recurrence was documented by biopsy and referred to our hospital for palliative radiotherapy as a last resort.



Figure 1. Clinical presentation with a completely ptotic & scarred eyelid. Incision marked

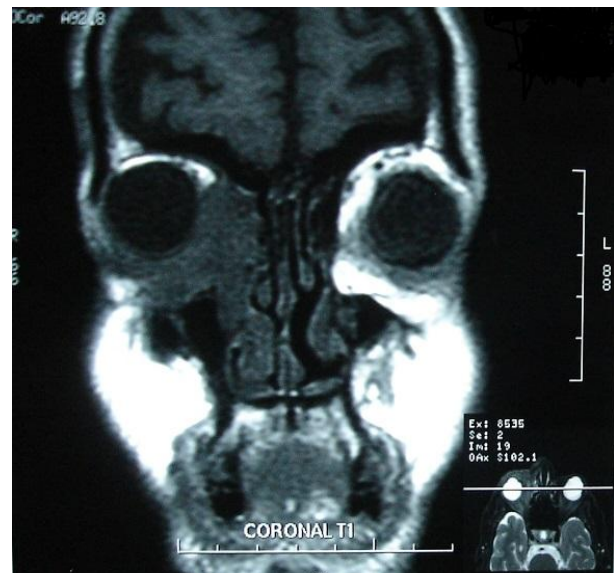


Figure 2. M.R.I. coronal image showing orbital involvement and infiltration

Presently on clinical evaluation he was found to have a completely ptotic reconstructed right upper eyelid and scarring from previous excisions and skin grafts over the region of the right eye, forehead, ala and nasolabial fold (Fig. 1). The right orbit could not be visualized as it was completely covered under the lids. Recurrent disease was noted at the medial canthus and along the medial half of both eyelids which was confirmed on biopsy. Vision could not be assessed in the right eye due to complete ptosis. M.R.I. documented an irregularly marginated lesion involving the right medial canthus, premaxillary region and both upper & lower eyelids (Fig. 2). The disease was found to be involving the extraocular fat and the most anterior aspect of the medial and inferior recti muscles. Right eyeball was displaced superolaterally. The lesion was eroding the medial wall of the right orbit and extending into the ethmoid aircells and part of the roof of the maxillary sinus along its anterior

aspect. Right optic nerve appeared normal. No intracranial extension was seen.

The case was discussed in our multidisciplinary tumor board and the general consensus was that surgery followed by post-operative radiotherapy (PORT) would offer the best chance for cure as the disease was locally advanced but resectable and since the vision in the right eye could not be restored in any case. Thus the patient was counseled for the same and a radical resection was performed. Excision involved right sided orbital exenteration including removal of both eyelids and adjacent overlying skin which had significant scarring and fibrosis from previous surgeries. The postero-medial extension of disease indicated ethmoidectomy, the completeness of which was confirmed with frozen section sampling of the posterior most margins of excision. Inferiorly the floor of the orbit was excised along with a suprastructural maxillectomy to achieve negative margins (Fig. 3). This included the roof of the maxillary antrum and anterior and medial wall of the maxilla upto the infra orbital nerve offering generous margins for excision of the disease involving the floor of the orbit.



Figure 3. Surgical defect post orbital exenteration, ethmoidectomy & suprastructural Maxillectomy



Figure 4. Reconstruction of the defect using a free Transversus Rectus Abdominous Myocutaneous flap.

The large defect thus created had irregular bony margins and a rather large skin defect. Most of the adjacent skin was scarred from previous excisions and local reconstruction. Thus local rotation of tissues was not possible to cover the defect. Due to requirement of post-operative adjuvant radiotherapy a good skin cover of the defect was indicated. After due assessment, reconstruction of the large defect was performed using a free Transversus Rectus Abdominus Myocutaneous (TRAM) flap with a microvascular anastomosis of the pedicle to the superficial temporal vessels (Fig. 4). This provided adequate bulk to fill the hollow bony defect and enough skin to cover the surface defect. Though dura was not opened and no cerebro-spinal fluid (CSF) leak was documented intra-operatively, it was felt that the bulk of muscle in the TRAM flap would serve as a protective measure to plug any CSF leak if it developed post-operatively due to extensive ethmoidectomy. Post-operative recovery was uneventful. Histopathology confirmed with negative margins. In view of the aggressive and recurrent nature of the disease post-operative radiotherapy (PORT) 50 Gy/ 25 # / 5 weeks was given on the linear accelerator. Patient tolerated the entire treatment well and is currently disease free and asymptomatic on follow up. The bulk of the flap has almost halved due to muscular atrophy and probably in part due to radiotherapy and has thereby better adapted to the contours of the face.

2. DISCUSSION:

Basal cell carcinoma is the most frequent type of skin cancer due to cumulative exposure to ultraviolet radiation. Predominantly basal cell carcinoma occurs on sun exposed sites; head and neck being the areas of highest incidence. Adequate excision, with functional reconstruction is of importance. Cosmetic results where basal cell carcinoma involves nose, eyelids and periorbitary tissue are often unfavorable. These tumors frequently recur especially when previously incompletely excised. The medial canthus and lower eyelid is most frequently involved [1]. A study of 819 patients with periocular basal cell carcinoma showed a relapse index of 2% (7/346). The principal relapse factors being previous relapse and infiltrating disease. Principal anatomic sites of relapse were medial edge (n=5) and inferior eyelid (n=2) [2]. The goal of treatment is complete excision of the tumor with preservation of surrounding structures in a way aesthetically acceptable. Several treatment options - surgical and non-surgical are available. Non-surgical options are less favored as first line management in view of the relative chemotherapy and radiotherapy resistant nature of the disease. Orbital invasion by periocular BCC is an uncommon event that may be associated with significant ocular morbidity and rarely, death. Clinicians need to be alert for signs suggestive of orbital involvement include a mass with bone fixation, limitation of ocular motility, and globe displacement [3] and consider appropriate imaging. Orbital exenteration is known to be used

for treatment of locally aggressive, non-metastatic BCC when it is found to infiltrate ocular tissues. Surgical treatment with exenteration or excision, with or without radiotherapy, results in a low recurrence and mortality rate [4].

The deeper infiltration may extend beyond the boundaries of the orbit to involve adjacent structures as was noted in this case. Medially and superiorly deep penetration through the walls of the orbit leads to invasion into the ethmoid and frontal air cells which may serve as a pathway for intracranial extension. This often is a cause for inoperability or may rarely justify a radical craniofacial excision. Inferiorly infiltration into the premaxillary soft tissue is possible; rarely with infiltration into the maxillary antrum through the bony roof of the maxilla as was noted in this instance. This indicated including an uncommon procedure of suprastructural maxillectomy (removal of the superoposterior portion of the maxillary sinus; above the Ohngren's line - the suprastructure) to be combined with the orbital exenteration to achieve negative margins and perform a R₀ resection. In review of literature we found only a single case report wherein a suprastructural maxillectomy had been combined with an orbital exenteration for management of basal cell carcinoma [5] and none in which a free transverses rectus abdominus myocutaneous (TRAM) flap had been used for reconstruction for such a defect [6,7]. Frequently local rotation flaps, split thickness skin grafting (SSG) or free radial forearm flaps have been used as re-constructive measures. In this case as explained due to scarring

of the adjacent tissue, local rotation flaps could not be used. Compulsory PORT ruled out the use of SSG. The TRAM flap served the purpose of generous vascularized skin cover and bulk of muscle to plug any potential post-op CSF leak.

3. CONCLUSION:

We present this case as a rare instance of an opportunity at curative treatment of a locally advanced re-recurrent basal cell carcinoma with suprastructural maxillectomy combined with an orbital exenteration and ethmoidectomy; reconstruction with a free transverses rectus abdominus myocutaneous (TRAM) flap and adjuvant post-operative radiotherapy and recommend an aggressive approach for management of such cases.

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