'Switch Flap' for Full Thickness Upper Eyelid Reconstruction

Sebaceous gland carcinoma is an aggressive, uncommon, cutaneous malignancy. This tumour can arise anywhere in the body; approximately 75% of these tumours arise in the periocular region. The diagnosis and management of these malignancies often tend to get delayed because they are frequently mistaken for more common benign entities. Surgery has been and remains the primary treatment modality for sebaceous gland carcinomas. The resultant surgical defects following tumour excision generally tend to be full thickness and reconstructions of such defects pose significant challenges. These defects are conventionally reconstructed by the traditional bridging (eyelid sharing) procedures, that is, the Cutler-Beard flap and its modifications. The 'Switch flap' is an alternative eyelid sharing procedure; however, it is not very widely practiced. We recently used this procedure to reconstruct a large full-thickness upper eyelid defect with a satisfactory cosmetic and functional outcome.

KEYWORDS: Eyelid reconstruction, eyelid tumours, switch flap

INTRODUCTION

Reconstruction of the upper eyelid, especially the large full thickness defects, is one of the greatest challenges the head and neck surgeon faces. We recently operated on a patient with sebaceous carcinoma of the upper eyelid and reconstructed the resulting defect using a 'Switch flap' and describe our experience here.

CASE REPORT

A 48-year-old gentleman was being conservatively managed in an Ophthalmology Center for a presumed chalazion on his right upper eyelid for six months. In view of the persistence of the swelling he was evaluated further by a biopsy and was referred to us with a possible diagnosis of a carcinoma. The histopathology slides reviewed by us were suggestive of severe dysplastic to malignant squamous epithelium.

On clinical examination, we found a well-circumscribed globular swelling, 2 x 2 cm, in the middle of the right upper eyelid [Figure 1]. The overlying skin contained dilated vessels, but was mobile over the swelling. On eversion of the lid an ulcerated lesion corresponding to the external dimensions of the swelling was appreciated. There was no other structural abnormality in the right eye. The visual acuity and ocular movements were normal in both eyes. There was no significant pre-auricular or cervical adenopathy. The initial medical history, family history, and physical examination of the other organ systems did not reveal anything suggestive of a possible associated internal malignancy.

He was taken up for surgery and a wide excision of the right upper eyelid lesion was done, and tumour free margins were confirmed on frozen section. The resultant full thickness defect was more than one-half of the upper eyelid [Figure 2a]. A decision was hence made to reconstruct the upper eyelid defect with a switch flap from the lower eyelid [Figure 2b]. The flap was divided after two weeks and the lower eyelid was closed by direct closure with cantholysis. A formal evaluation for a possible association with the Muir-Torre syndrome was done following the final histopathological diagnosis of sebaceous carcinoma. The tests included an ultrasound of the abdomen and pelvis, urine cytology, a motion examination for occult blood, and a complete colonoscopy, all of which were normal. The patient has continued to be on regular follow-up for the past one year, with a satisfactory cosmetic and functional outcome [Figure 3a-b].

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Figure 1: Clinical photograph at presentation

Figure 2b: Clinical photograph following switch flap reconstruction

DISCUSSION

Sebaceous gland carcinoma is an aggressive, uncommon, cutaneous malignancy. This tumour can arise anywhere in the body; approximately 75% of these tumours arise in the periocular region[1] They are more commonly found on the upper eyelids, especially of middle-aged patients. The diagnosis and management of these malignancies often tends to get delayed because it is frequently mistaken for more common benign entities.[2] It is generally recommended that conjunctivitis or chalazion that is not getting better after three months of conservative management should be viewed with suspicion and biopsied.

Surgery has been and remains the primary treatment modality for sebaceous gland carcinomas, which typically involves excision of the visible tumour plus 5 – 6 mm of healthy-appearing tissue in all directions.[3] The use of the fresh tissue Mohs technique has been successful in a number of case series.[3]

The resultant surgical defect following tumour excision generally leaves a full thickness defect. The aim of reconstruction of any upper eyelid defect is to supply a

Figure 2a: Resultant full thickness defect following tumour excision

Figure 3a-b: Clinical photographs a year following surgery

stable movable lid ensuring adequate corneal protection and at the same time providing a good aesthetic quality to the donor site. Local advancement of both the anterior and posterior lamella can be done for smaller defects; however, the same is not functionally and cosmetically acceptable in full thickness defects involving more than half of the upper eyelid.

The reconstructive options in such defects include the bridging (eyelid sharing) procedures and the use of complex non-bridging flaps involving free anterior and posterior lamellar grafts, along with orbicularis mobilisation.[4] The ipsilateral lower eyelid is the preferred donor site option.

The classical eyelid sharing procedure is the Cutler-Beard bridge flap, which can cover large defects in the upper lid, without disturbing the donor lower lid margin. The principle is to bring the full thickness lower eyelid

harvested tissue, based on an inferior pedicle, across the cornea to fill the upper eyelid defect. The flap is divided four to eight weeks after surgery at the level of the upper eyelid margin. The disadvantage of this flap is the absence of tarsus, often resulting in lack of stability of the upper lid, and a persistent lower lid instability, due to disruption of the lower eyelid retractors, moreover, there is also no lid margin or eyelashes in the reconstructed flap.[5] Several modifications to the classical Cutler Beard flap have been described to address the above limitations.[5]

The switch flap, another lid sharing flap, was originally described for correction of upper eyelid defects by Mustarde and later by Collin and Tyers. It is a transposition flap similar to the Abbe flap traditionally described for lip reconstruction. In this technique a full thickness flap based on a medial or lateral pedicle is transposed from the lower eyelid to the upper eyelid or vice versa.[6] The flap needs to be at least 4 mm wide in order to include the marginal arcade, as it is usually one-half to two-third of the upper eyelid defect. The flap is secured to the upper eyelid by a bilamellar direct closure leaving the pedicle connected initially, only to be divided at a staged procedure, after two to four weeks. The disadvantage of the switch flap, as it is for any eyelid sharing procedure, is the potential for corneal irritation due to the transposed flap and the need to endure temporary occlusion of the visual axis.

The uninvolved eyelid is usually sufficient to be shared between the two eyelids. The donor site is reconstructed by direct closure with or without cantholysis or a sliding flap. In cases where the lid defect at the donor site is large, it may be allowed to heal by second intention.

As the tarsus is included in the flap, the reconstructed eyelid has more stability than the Cutler-Beard flap, in addition to having an intact lid margin with eyelashes. The functional and cosmetic outcomes of this flap are satisfactory,[6] as is also seen in our patient.

In conclusion, the switch flap is an alternative and useful procedure for the reconstruction of complex, full thickness upper eyelid defects.

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