

## Eyelid Reconstruction Using Nasal Septal Chondromucosal Graft in Eyelid Sebaceous Gland Carcinoma Revisited

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### Abstract

Sebaceous gland carcinoma (SGC) of the eyelids is a rare malignancy. Most cases require excision followed by eyelid reconstruction. Reconstruction of the eyelids after tumor removal remains one of the most challenging tasks. We report a case who developed tumor from the Meibomian glands of the upper eyelid. Excision of the tumor was done and reconstruction was done using a chondromucosal septal graft. The graft was procured and sutured in the place of excised tarsal plate on the upper eyelid. Anterior lamella of the eyelid was intact. We did not encounter flap necrosis, dehiscence, infection, ectropion, recurrence or irregular eyelid margins. Various techniques of eyelid reconstruction, their advantages and disadvantages have been reviewed.

**Keywords:** Eyelid; Sebaceous Gland Carcinoma; Meibomian Glands; Chondromucosal Septal Graft

### Introduction

Sebaceous gland carcinoma (SGC) is an uncommon malignancy (1.5 - 5% of eyelid malignancies). The prevalence is as high as Basal cell carcinoma (BCC) in Asian population being 30 - 60% of all eyelid malignancies [1,2]. It is known to "masquerade" the more commonly encountered benign conditions [3]. Due to delay in seeking medical help and misdiagnosis, cases may present at an advanced stage. It is the most malignant eyelid tumor, hence maintaining a high clinical suspicion is must. Early diagnosis and treatment is the responsibility of the treating ophthalmologist.

Surgical intervention with wide local excision is the curative treatment. But at the same time it is important to restore cosmetic

and functional aspect of the eyelid by reconstructive procedures. We present a case of sebaceous cell carcinoma of the upper eyelid, treated with resection and posterior lamellar reconstruction using a nasal septal muco-perichondrial graft. There are very few cases reported that used the septal muco-perichondrial graft in upper eyelid reconstruction. Our case report re-emphasizes utility of this valuable option in surgical reconstruction of upper lid defects.

### Case Report

A 65-year-old male, presented to the out patient department with complaints of gradually increasing swelling on the left upper eyelid for 5 years. His best corrected visual acuity was 6/9 OU. Intraocular pressures were 19 and 18 mm Hg in OD and OS

respectively. Anterior segment examination did not reveal any abnormality in either of eyes. On inspection, the diagnosis was made as suspected sebaceous gland carcinoma but the smaller lesion appeared to be sebaceous retention cyst as it was nodular and well circumscribed. The wide excision surgery and upper lid posterior lamellar reconstruction was planned.

### Surgical steps

Surgical procedure was performed under general anaesthesia. The left eyelid and periocular area was cleaned and draped aseptically. Complete wide excision of the nodular mass along with margin of 4.00 mm normal tissue was excised (Figure 1a-1c). Following excision of the mass, the tissue defect included 2 cm horizontal, 8 mm vertical tarso-conjunctival tissue loss (Figure 1d). The defect was reconstructed using nasal septal unilateral free mucoperichondrial graft. The non-supportive quadrangular shaped cartilage was harvested from the nasal septum (Figure 2a). Incision was made through mucosa and cartilage and sub-perichondrial freeing was done. The septal cartilage replaced the excised tarsal plate and mucosa replaced the palpebral conjunctiva. The graft was sutured using absorbable suture material and interrupted inverted technique method was used (Figure 2c-2e). The outer (anterior) lamella was intact in our case.

**Figure 1:** a) Incision along the palpebral conjunctiva of the upperlid. b) Eyelid tumour excision with 4 mm margin including posterior lamella. c) Tumor is removed preserving anterior lamella. d) 2x1 cm posterior lamellar defect (Includes tarsal plate and Palpebral conjunctiva).

**Figure 2:** a) Nasal mucoperichondrial graft harvest. b) 2x1 cm graft harvest. c-e) Graft inset to the defect using inverted 6/0 vicryl, so that suture will not irritate the cornea. f) Final result.

The excision biopsy specimen was sent for histopathology examination and findings were consistent with well differentiated sebaceous gland carcinoma.

### Discussion

SGC is an uncommon malignancy and more frequent in females than males and affects older age group, usually > 60 years of life with mean age of presentation around 70-72 years [4,5]. The studies from Asian countries report a higher prevalence of SGC as compared to the statistics from the western world [6]. In Asian Indians, the incidence of SGC is twice more than BCC and 3 times that of squamous cell carcinoma (SCC) [7]. In India, SGC is the most common malignancy involving the eyelids [8]. The most common site is upper eyelid followed by lower lid and caruncle. Meibomian glands are the most common site of origin anterior to the grey line and occasionally from glands of Zeiss, Moll and caruncle [9]. It is a "masquerade" and can mimic a variety of conditions like chalazion (Nodular SGC) and local blepharoconjunctivitis (Intraepithelial SGC) [3,10]. Recurrent chalazia in older individuals should be viewed with suspicion and subjected to histopathology.

Surgical resection is the gold standard for treatment of SGC [2,11]. For minimizing the recurrence, it is important to excise the tumor with a 4 mm safe margin with adequate depth [2,12,13]. Intraoperative confirmation of complete excision by frozen section is the gold standard [2]. Conjunctival map biopsy is performed

for intra-epithelial variant [2]. If frozen section is not available or inconclusive, confirmation of margins by histopathology of fixed section is performed followed by reconstruction of defect [10]. Neoadjuvant chemotherapy is utilized for tumor reduction size of large tumors [14]. Adjuvant therapy like cryotherapy for local intraepithelial invasion and topical mitomycin-C/plaque brachytherapy for diffuse and multifocal involvement may be performed [2,8,10]. Sentinel lymph node biopsy (SLN) biopsy is indicated in large ( $\geq 10$  width) SGCs [15].

Appropriate and proper reconstruction of the upper eyelid is important as it is functionally and cosmetically one of the most important anatomical areas. The rich blood supply to upper and lower eyelids from anastomosing network of vessels from internal and external carotid artery system helps in high graft/flap survival rate [16].

Outer layer (anterior lamella) consists of orbicularis oculi muscle, skin and inner layer (posterior lamella) consists of tarsus and palpebral conjunctiva. While a smaller defect ( $< 1/4^{\text{th}}$  length of eyelid) can be closed directly or by primary closure in cases of horizontal defects. Reconstruction of defects with  $< 33\%$  involvement, the repair can be seen by direct primary closure. The moderate ( $33 - 50\%$ ) and severe defects ( $> 50\%$ ) are complicated and often require good surgical skills for challenging procedures to reconstruct the eyelid [17]. If the anterior lamella of the upper or lower eyelid is compromised, it is reconstructed by procedures like Hughes flap (pedicle tarsoconjunctival flap from upper lid) [18], lower eyelid advancement/switch for upper eyelid reconstruction [19,20], cheek rotation flap procedure for large lower eyelid defects [21,22].

In our case anterior lamella was not involved and it needed posterior lamella reconstruction. The structural support (posterior lamella) is paramount in eyelid mobility and anatomy. If tarsus is significantly deficient as is in our case, it requires reconstruction graft procedure.

Various options for substituting the deficient tarsus are nasochondromucosal grafts [23,24], palatal grafts [25] and auricular grafts [26]. If the tarsus is sufficient for eyelid stability, oral mucosa [27] or Alloderm (Life Cell, Branchburg, NJ) [28] can be used as conjunctival substitute. Hard palate is mostly used for lower lid reconstruction but poses increased risk of corneal irritation

[25]. There are various advantages of ear cartilage as the harvest is technically easier with minimal morbidity [26]. The graft is spherical and anatomically fits well on the bulbar curvature. Also, even though the graft does not include mucosa, it is smooth enough not to cause corneal abrasion and it gets epithelised from surrounding mucosa [29,30].

Nasal septal chondro-mucosal graft has been a preferred option due to its thin, pliable nature and no requirement of any long term eye occlusion [31]. Even for full thickness upper eyelid defects, it is a one-step procedure which is anatomically complete and cosmetically well tolerated and accepted [32]. The other advantage is that probably the mucous production from nasal mucosa may help in production of tear film [33].

Despite various advantages of this technique, there are few limitations and risks which should be discussed here. Harvest of the graft can lead to nasal valve distortion due to excessive harvest or scarring after procedure. This can be avoided by leaving a strip (2 - 3 mm) of upper lateral cartilage at its junction with lower lateral cartilage [31]. Other donor site complications which may be encountered are nasal septal perforation and post-operative nasal bleeding [21]. Corneal abrasion is a risk due to possible mucous metaplasia or post-operative dressing and should be regularly followed up. Follow up every 3 months for one year, followed by 6 monthly for 3 years, and then once a year is important to keep a check on tumor recurrence [10].

## Conclusion

SGC has a higher rate of metastasis, mortality and the diagnosis is often delayed due to the masquerading nature. So it is most important for ophthalmologists and referring surgeons to have high index of suspicion. The purpose of this case report was to highlight the importance of early diagnosis and to discuss nasal septal chondro-mucosal graft as an option for upper eyelid reconstruction.

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