Stable Upper Eyelid after 2 Successive Tarsoconjunctival Flaps

Catherine Y. Liu, MD, PhD*†
Allen M. Putterman, MD*†

Summary: A 70-year-old male with history of multiple cutaneous squamous cell carcinoma throughout the body presented with a left lower lid margin squamous cell carcinoma. The lesion was excised via Mohs surgery elsewhere, and the defect was reconstructed with a tarsoconjunctival flap (Hughes flap). The lesion recurred, and the patient had a second Mohs surgery for excision. For reconstruction, a second tarsoconjunctival flap spanning the entire horizontal distance of the upper lid was done. The remaining 2–3 mm of upper tarsus provided good support of the upper lid. Careful planning may allow for successive tarsoconjunctival flaps if needed in the future. (Plast Reconstr Surg Glob Open 2018;6:e1724; doi: 10.1097/GOX.0000000000001724; Published online 14 May 2018.)

From the *Department of Ophthalmology, University of Illinois at Chicago, Chicago, Ill.; and †Illinois Eye and Ear Infirmary, University of Illinois at Chicago, Chicago Ill.

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In 1937, Hughes1 described a tarsoconjunctival flap procedure to repair a posterior lamellar defect in the lower lid. To maintain stability of the upper lid, a repeat procedure is often avoided. We present a case of 2 consecutive upper lid tarsoconjunctival flap procedures spanning the entire horizontal width of the tarsus, where the remaining 2–3 mm of tarsus maintained upper lid stability.

CASE REPORT

A 70-year-old male with a history of multiple basal cell carcinoma and squamous cell carcinoma (SCC) of the body presented after a left lower eyelid biopsy done elsewhere was positive for SCC. Baseline eyelid measurements are shown in Table 1. There was a 10 mm horizontal (H) × 5 mm vertical (V) left lower lid ulcerative mass with madarosis and telangiectasia. The eye examination was otherwise normal. We recommended Mohs excision of the left lower lid SCC.

The patient returned post-Mohs with a left lower lid defect measuring 18 mm (H) × 13 mm (V) spanning the medial and central part of the eyelid (Fig. 1). A tarsoconjunctival (Hughes) flap was transposed from the left upper lid along with reconstruction of the anterior lamella with a postauricular skin graft. The left tarsoconjunctival flap was released 1 month later. Postoperative week 6 follow-up showed a well-healed left lower lid.

Subsequent follow-up at postoperative month 5 showed recurrence of a left lower lid margin-involving SCC measuring 20 mm (H) × 12 mm (V). He underwent a repeat Mohs excision resulting in a 28 mm (H) × 12 mm (V) defect (Fig. 2). The lower lid was reconstructed with a second tarsoconjunctival flap, leaving behind 2–3 mm of tarsus in the upper lid. Skin graft was harvested from the other ear. The tarsoconjunctival flap was released 5 weeks later with conjunctivoplasty revision of the margin and subsequently of the left lateral canthus.

At postoperative month 8 after the second tarsoconjunctival flap procedure, the patient’s upper and lower lids remained stable with good apposition to the globe and similar lid measurements compared with that preoperatively (Fig. 3; Table 1). Upper lid eversion showed a tarsal plate of 2–3 mm on the left and 10–11 mm on the right centrally.

SURGICAL TECHNIQUE

Tarsoconjunctival Flap

The upper lid was everted over a Desmarres retractor, and the tarsus was incised horizontally with a #15 blade 7 mm superior to the upper lid margin (Fig. 4). Medial and lateral incisions, made 14 mm apart, were extended 4 mm superiorly. The tarsus/conjunctiva complex was dissected from the underlying levator aponeurosis and mueller’s muscle. The flap was sutured to the lower lid defect using 4-0 silk sutures medially and laterally and 6-0 vicryl sutures inferiorly. Vertically, the graft measured 4 mm centrally.

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1. Hughes J. Reconstruction of the tarsal plate. Trans Am Acad Ophthalmol Otolaryngol 1937;43:1030–1033.
The same procedure was done for the second tarsoconjunctival flap except that the horizontal incision was made 2–3 mm superior to the upper lid margin. Horizontally, the graft extended the entire length of the tarsal plate. Vertically, the graft measured 4 mm centrally.

**Postauricular Skin Graft**

Detailed methods as previously described.2 In short, the lower lid defect was sized and imprinted on a sterile card. This was used to demarcate the postauricular skin.2 An incision was made in the skin using a #15 blade, and the graft was excised and trimmed using Westcott scissors. Multiple full thickness stab incisions were made in the skin graft with a #11 blade, and the graft was transferred and sutured to the lower lid defect using interrupted 6-0 silk sutures. A compression bandage was applied. The postauricular wound was closed using 4-0 silk vertical mattress sutures.

Stage 2 takedown of the tarsoconjunctival flap repair was performed 4 weeks after the first procedure and 5 weeks after the second procedure. A traction suture of 4-0 silk was placed through the left upper lid to expose the tarsoconjunctival flap. The flap was severed at the lower lid margin. The traction suture was removed at the end of the case.

This study is adherent to the tenets of the Declaration of Helsinki and is Health Insurance Portability and Accountability Act compliant. Consent was obtained for use of photograph.

**DISCUSSION**

We describe a case where 2 consecutive tarsoconjunctival flaps spanning the entire horizontal width of the upper eyelid were used to repair a lower lid defect from recurrent SCC. The upper lid remained stable with the remaining 2–3 mm of tarsus.

| Eyelid Measurement                  | Initial Examination (mm) | Postoperative Month 8 (mm) |
|-------------------------------------|--------------------------|----------------------------|
| Palpebral fissure                   |                          |                            |
| OD                                  | 10                       | 10                         |
| OS                                  | 10                       | 11                         |
| Margin reflex distance 1            |                          |                            |
| OD                                  | 3                        | 4                          |
| OS                                  | 3                        | 5                          |
| Levator function                    |                          |                            |
| OD                                  | 15                       | 15                         |
| OS                                  | 14                       | 15                         |
| Horizontal palpebral fissure        |                          |                            |
| OD                                  | 30                       | 27                         |
| OS                                  | 29                       | 27                         |
| Lagophthalmos                       |                          |                            |
| OD                                  | None                     | None                       |
| OS                                  | None                     | None                       |
| Margin fold distance                |                          |                            |
| OD                                  | 2                        | 3.5                        |
| OS                                  | 0                        | 1                          |
| Margin crease distance              |                          |                            |
| OD                                  | 10                       | 11                         |
| OS                                  | 10                       | 10                         |
| Tarsal plate height                 |                          |                            |
| OD                                  | 11                       | 11                         |
| OS                                  | 11                       | 2–3                        |

**Table 1. Preoperative Eyelid Measurements and Postoperative Eyelid Measurements after Second Tarsoconjunctival Flap Procedure**

OD = right eye; OS = left eye.

*Fig. 1.* Prereconstruction photograph of left lower lid after Mohs surgery.

*Fig. 2.* Postoperative month 5 after first tarsoconjunctival flap with recurrence of left lower lid mass. Shown is the left lower eyelid after repeat Mohs surgery.

*Fig. 3.* Postoperative month 8 of left eyelid after second tarsoconjunctival flap procedure.
First description of the tarsocconjunctival flap by Hughes included transposing the upper lid posterior lamella starting from the margin, with later modified incision just above the margin. Cies and Bartlett further modified the procedure, making an incision more superior to the margin as they believed it kept the upper lid more stable. At least 4 mm of tarsus was described to be important for stability.

There is evidence, however, that some patients require less tarsus for stability. Cies and Bartlett made incisions starting 2 mm above the margin for their tarsocconjunctival flap. Mustarde described a “split level” ptosis procedure in which the entire upper lid tarsus and conjunctiva was resected except for the inferior 3 mm, and skin and orbicularis was resected at a higher level. No significant eyelid instability was reported when 3 mm of tarsus remained. Chang and O’Donnell described 2 cases of successive tarsocconjunctival flaps spanning 8 mm in width. This was equivalent to a wedge resection of the upper lid. Our report differs in that the entire horizontal upper lid tarsus was used for reconstruction except for the remaining 2–3 mm at the margin and thus evaluates the stability of this remaining amount.

Anatomical studies show that the upper tarsus vertical height ranges from 9 to 11 mm. Our patient had 11 mm of tarsus, and thus we were able to utilize the additional remaining tarsus. As the lower lid tarsus height is approximately 4 mm, a high upper lid tarsus incision with preservation of remaining tarsus may allow patients to undergo 2 successive tarsocconjunctival flaps if needed in the future. Of note, individual tarsus rigidity may vary and may affect resultant upper lid stability. Though our study is limited by case report, one can consider a secondary tarsocconjunctival flap from the ipsilateral upper lid especially if the patient has a large tarsal plate.

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