Vertical Cicatricial Tarsal Kink of Donor Site after Free Tarsal Graft

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Abstract: An 81-year-old woman underwent a free tarsal graft procedure to repair a right lower eyelid defect following a Mohs' resection of a basal cell carcinoma. Three weeks postoperatively, a horizontal contracture of the superior donor tarsus resulted in a vertical cicatricial tarsal kink of the upper eyelid, ultimately requiring a full thickness wedge resection to correct. Vertical cicatricial tarsal kink is a relatively rare and poorly characterized donor site complication of free tarsal grafts and tarsoconjunctival flaps.

Keywords: Tarsus, kink, tarsoconjunctival flap, tarsal graft, tarsal kink.

Free tarsal grafts and pedicled tarsoconjunctival (Hughes) flaps can be used to treat a myriad of lower eyelid conditions, including defects resulting from malignancies, trauma, and burns, as well as for spacer grafts in cases of eyelid retraction. Donor site complications have been reported for both procedures and include eyelid retraction, eyelash ptosis, eyelid notching, eyelid contour abnormalities, and granuloma formation [1-5]. Of interest is the phenomenon of vertical cicatricial tarsal kinking of the donor site which has been noted to occur after both procedures [1-5]. The present case report details such a complication after a free tarsal graft was used to repair a post malignancy lower eyelid defect.

CASE REPORT

An 81-year-old woman presented for repair of a 20mm x 4mm medial right lower eyelid defect following a Mohs' procedure for excision of a basal cell carcinoma (Figure **1**). A 13mm x 4mm free tarsal graft was harvested from the ipsilateral upper eyelid superolateral tarsal border and sutured into the defect of the lower eyelid. Five millimeters of inferior donor tarsus remained. A skin-muscle flap was then advanced over the graft. The upper eyelid defect was not closed and minimal thermal cautery was used for hemostasis. Three weeks later, the patient presented with irritation of the right eye and examination revealed a vertical cicatricial tarsal kink of the upper eyelid. A therapeutic contact lens was placed. The patient was instructed to massage the right upper eyelid three times daily and to apply tobramycin-dexamethasone (Tobradex, Alcon Laboratories, Fort Worth, TX) ointment to the upper eyelid and tobramycin-dexamethasone drops in the eye three times daily. Two weeks later, there was no improvement. Under local anesthesia, the eyelid was everted and the adhesions between the remaining medial tarsus and lateral conjunctival tissue were lysed. A segment of central scar tissue was excised. One week later, the eyelid was in a normal position; the tobramycin-dexamethasone drops and ointment were decreased to twice daily. Three weeks postoperatively, the vertical

Figure 1: Right lower eyelid defect in 81-year-old woman following a Mohs' procedure.

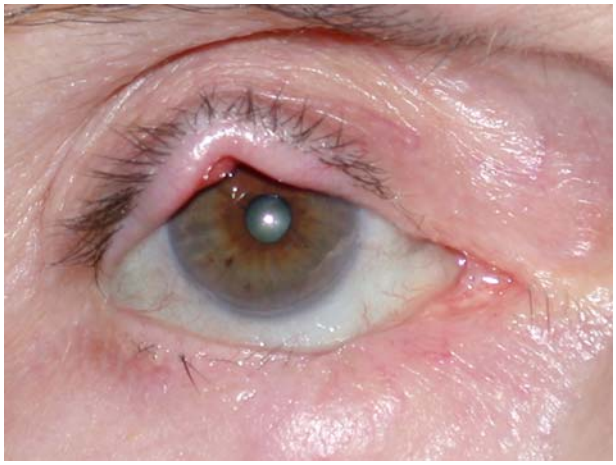

Figure 2: Right upper eyelid vertical cicatricial tarsal kink of donor site following free tarsal graft (external view).

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cicatricial tarsal kink recurred (Figures **2**, **3**). The patient then underwent a full thickness 5mm rectangular wedge resection of the affected central eyelid with subcutaneous pretarsal injection of triamcinolone acetonide 20mg (Figure **4**). Six months postoperatively, there was no recurrent vertical cicatricial tarsal kink but there was 2mm relative blepharoptosis and thinning of the eyelid skin (Figure **5**). The patient has declined further intervention and remains stable two years later.

Figure 3: Right upper eyelid vertical cicatricial tarsal kink of donor site following free tarsal graft (eyelid everted, internal view).

Figure 4: Gross surgical specimen: full thickness rectangular wedge resection of vertical cicatricial tarsal kink.

DISCUSSION

Donor site vertical cicatricial tarsal kinking is an unusual and poorly understood complication of both free tarsal grafts and tarsoconjunctival flaps. It typically becomes manifest weeks after harvesting a free tarsal graft, or very shortly after second stage

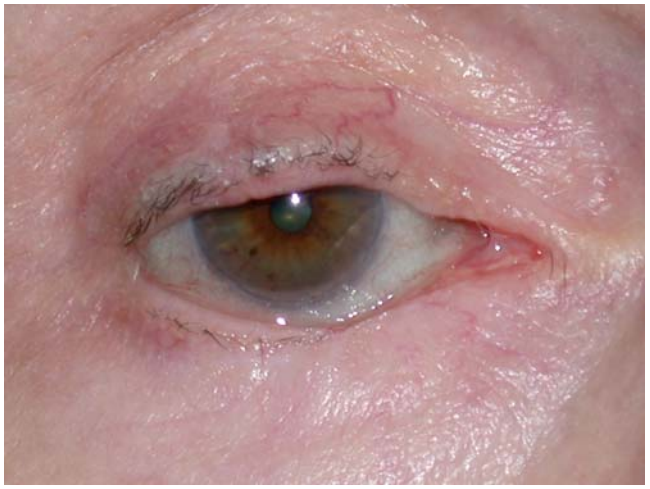

Figure 5: Right upper eyelid 6 months after full thickness rectangular wedge resection of vertical cicatricial tarsal kink; mild blepharoptosis and thinning of eyelid skin are present.

tarsoconjunctival flap division [1-5]. The delayed appearance most likely represents the period of time required for the cicatrizing process to occur. Grossly, there is a horizontal contracture with fibrosis and apposition of the superior cut tarsal edge(s). Clinically, there is a full thickness vertical fold of the remaining tarsus with anterior tenting of the central upper eyelid from the lid margin to the original superior tarsal border. Custer [1] specifically described and reported this complication in 3 of 45 (6.7%) patients immediately following tarsoconjunctival flap division, while Hawes and Jamell [2] reported a similar deformity of the donor upper eyelid in 3 of 44 patients (6.6%) 6-8 weeks following a free tarsal graft procedure. Leibovitch *et al*. [3] also described central contour peaking (consistent with vertical cicatricial tarsal kinking) in 2 of 91 (2.2%) donor eyelids following free tarsal grafts, and Stephenson and Brown [4] described one case of tarsal contracture and one case of an elevated tarsal scar (again consistent with vertical cicatricial tarsal kinking) in 2 of 121 (1.7%) donor eyelids following free tarsal grafts.

Previous authors have theorized that vertical cicatricial tarsal kinking may be a result of obtaining large intratarsal grafts [4] or grafts which leave only 3mm of intact tarsus at the donor eyelid margin [2]. However, in the present case, the free tarsal graft was obtained from the superolateral tarsal border and 5mm of donor tarsus remained, yet the phenomenon still occurred. Custer [1] theorized that older patients with preexisting eyelid laxity and tarsal thinning, along with conditions that stimulate scarring, such as excessive cauterization or surgical manipulation during creation of the flap, may be the contributing factors. Since this

complication seems to occur after both free tarsal grafts and tarsoconjunctival flaps, the cicatrizing process is likely unrelated to Mueller's muscle and conjunctival manipulation. However, we are not aware of any reports of this complication occurring after Fasanella-Servat procedures, in which the superior tarsal border is sutured to the superiorly resected conjunctival-Mueller tissue. This may suggest a free superior tarsal edge is prone to horizontal cicatrization in certain instances.

In some cases, simple division of the fibrous band may correct vertical cicatricial tarsal kink [1, 3] while other authors have successfully treated it with steroid injections [2]. In recalcitrant or recurrent cases, full thickness rectangular wedge resection with or without concomitant steroid injection may be required.

In summary, horizontal contracture of the superior tarsus following free tarsal grafts or tarsoconjunctival flaps has been noted previously but variably described. Increased awareness of vertical cicatricial tarsal kink may lead to a better understanding and improved prevention and treatment of this condition.

FINANCIAL SUPPORT AND CONFLICTS OF INTEREST

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PRÉCIS

Vertical cicatricial tarsal kink of the donor site is an unusual complication of free tarsal grafts and tarsoconjunctival flaps which may require further surgery to correct.

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