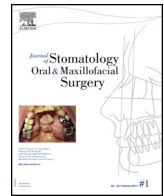




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Original Article

Hübner's tarsomarginal grafts in eyelid reconstruction: 94 cases

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ABSTRACT

Background: Preserving the integrity of the eyelid margin in eyelid reconstruction remains a challenge for plastic surgeons. In 1976, Hübner described a technique to repair full-thickness eyelid defects using a tarsomarginal graft covered with a local flap. This simple technique addresses both functional and aesthetic requirements of eyelid reconstruction by using tissue from the contralateral eyelid. The aim of this study was to determine the appropriate role of this uncommon technique in eyelid reconstruction. **Method:** In total, 94 tarsomarginal grafts were performed on 70 patients. Eight surgeons participated in this study. Data were retrospectively collected from patients' charts and all information regarding surgical indications, histology, defect size and topography, operative time, immediate result, and potential complications were recorded. **Results:** Only one of the patients suffered total necrosis. Partial wound dehiscence occurred in one case and partial necrosis occurred in 6 cases. No major sequelae were observed in the donor eyelids. In 100% of cases, eyelid margin integrity was otherwise preserved. Four patients required revision surgery for insufficient malignancy resection and 13 patients for long-term eyelid ectropion or scar retraction. **Conclusion:** This simple and reliable technique ensured the closure of full-thickness eyelid defects covering up to 3/4 of the eyelid length. The procedure should be more widely used as it guarantees high-quality eyelid reconstruction.

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1. Introduction

Preserving margin integrity and meeting functional and aesthetic requirements of eyelid reconstruction remains a challenge for plastic surgeons.

Several techniques are available for repairing full-thickness eyelid defects, including one- and two-step procedures, grafts, and flaps, either with or without an occlusive period. In addition, most of the available techniques make it possible to reconstruct either the upper or lower eyelid.

In 1976, Hübner first described a technique for full-thickness defects, which he called the "tarsomarginal graft" [1–3] and which was modified by Putterman in 1978 [4]. Tarsomarginal grafts can be used in both upper and lower eyelids, and for medial, central, or lateral defects. It consists in harvesting a tarsomarginal composite graft (tarsus and conjunctiva) from the contralateral homologous eyelid. The donor site is closed primarily. The graft length is dependent on the laxity of the donor eyelid. Currently, a quarter (as

is commonly the case for "Mustardé's technique") and sometimes even a third of the eyelid can be harvested using primary closure. The composite graft should be covered with a local or locoregional flap to ensure blood supply to the muscle and subdermal plexus. The blood supply to the flap is likely to allow not only one, but two or even three simultaneous composite grafts.

Surprisingly, tarsomarginal grafts are not promoted in most textbooks relating to reconstructive and plastic surgery, and instead remain an alternative to eyelid reconstruction. The aim of this study is to present the widest series of Hübner's grafts, using 94 examples, to define the optimal surgical indications and outcomes for this simple technique.

2. Patients and methods

A retrospective study was conducted on all eyelid reconstructions performed between 2000 and 2015. Eight surgeons participated in this study.

Data were collected from medical records in the form of photographic files. Demographic data (sex, age, comorbidities) were recorded. Surgical indications, defect size and topography,

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and operative time were all retrospectively recorded based on surgical and pathological reports. Frozen section procedures were not used for pathological analysis, only for definitive analysis. We also recorded the number of composite grafts, their length, the topography of the donor site, and the flap coverage. In addition, we described the postoperative period, including healing time, short and long-term functional and cosmetic outcomes, potential complications, and the need for secondary procedures.

3. Surgical technique

The key points of the surgical technique are described in Figs. 1–6b.

Fig. 1 shows a lateral left lower eyelid basal-cell carcinoma (BCC), measuring 5 mm in length and 7 mm in height, invading the lid margin. The cornea was protected with a contact lens. Excision of the malignant tumour in accordance with oncologic safety margins of 5 mm was performed under local anaesthesia; redundant lateral canthal tissue was resected. Haemostasis was achieved using bipolar electrosurgery. The excised material was oriented and sent to the histological laboratory. Results revealed a 15-mm eyelid defect corresponding to the medial half of the lower eyelid. Approximation, even combined with lateral canthotomy, was not sufficient for closure.

An incision was made in the right lower eyelid, 2 mm under the lash line, and was laterally extended a few millimetres to the lateral canthus, as is done in the case of a lower blepharoplasty. The skin and the orbicularis oculi muscle were raised to ensure a view of the tarsus. The maximum graft length that could be harvested was determined by assessing eyelid laxity by stretching the lower eyelid using two Gillies hooks. A pentagonal full-thickness graft was then atraumatically harvested using a No. 15 surgical scalpel blade. The graft was systematically taken from the lateral part of the eyelid to minimise sequelae. It was then immersed in a heparin saline solution. The tarsomarginal graft was harvested to obtain a pentagonal form to ensure better approximation and suture at the

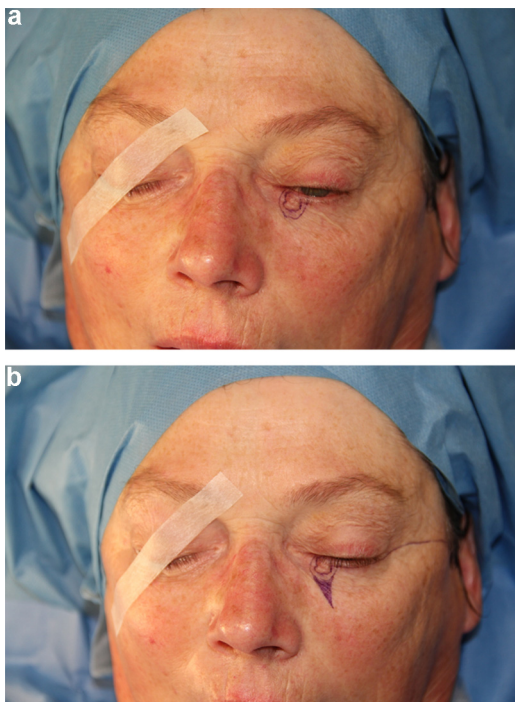


Fig. 1. Left lateral lower eyelid basal-cell carcinoma (BCC). a: safety margins of 5 mm; b: drawing of the local lower eyelid myocutaneous rotation flap.

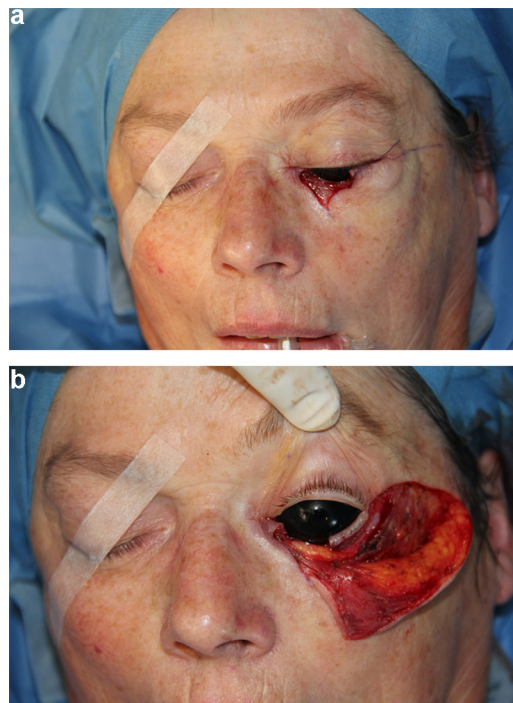


Fig. 2. a: eyelid defect corresponding to the medial half of the lower eyelid, approximation even with lateral canthotomy will not be sufficient for closure; b: local lower eyelid myocutaneous rotation flap is used to cover the graft.

donor site. The pentagon's base corresponds to the lid margin and eyelashes, its vertical sides correspond to the superior tarsus, and its oblique sides correspond to the conjunctiva.

Donor eyelid closure was then performed and, if necessary, a blepharoplasty procedure was performed at the same time. We recommended suspension of the donor eyelid for one or two days after surgery to prevent notches.

The defect was then repaired in layers, first by approximating the tarsal edges of the graft and defect at the grey line with two stitches using with a silk suture, which was handed for either one or two days (Mersilk* 6-0, ETHICON®), Johnson and Johnson Intl). The lateral graft edges were then secured to the remnants of the native tarsus and conjunctiva with 6-0 absorbable sutures using a round needle (Vicryl* 6-0, ETHICON®), Johnson and Johnson Intl). In our sample, a local lower eyelid myocutaneous rotation flap was used to cover the graft and was closed with 6-0 silk sutures, which were removed after 6 days.

A daily eye wash was performed and vitamin A ointment and artificial tears were administered until the stitches were removed.

An example of basal-cell carcinoma is described in Fig. 7a to e.

4. Results

Thirty-eight participants were male and 32 were female. The average age at the time of surgery was 70 and ranged from 12 to 87.

The procedures involved harvesting 94 tarsomarginal grafts. There were 37 upper eyelid reconstructions, 57 lower eyelid reconstructions, and 24 procedures performed on both the upper and the lower eyelid.

Basal-cell carcinoma (BCC) was the main cause of full-thickness eyelid defects. Other causes include melanomas in situ, traumas, squamous cell carcinomas, secondary procedures, melanomas, and multiple resections.

In each case, reconstruction was performed at the same time as malignant tumour excision.

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