Spontaneous reformation of upper eyelid

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SUMMARY Twenty-six patients with lesions of upper eyelids were treated with simple surgical excision under local anaesthesia as day cases. Three other patients with eyelid injuries had full-thickness margin-inclusive lacerations of upper eyelids. In all these 29 patients the upper eyelid wounds were allowed to heal solely by spontaneous repair. The cautious study began with small extramarginal skin excisions and progressed gradually via moderate sized juxtamarginal excisions of skin and orbicularis lamella to full-thickness margin-inclusive excisions. The wounds healed satisfactorily in all the 29 patients without ocular or palpebral complications. The functional results were normal. Cosmetic results were excellent in 27 patients and acceptable in 2, one of whom subsequently underwent a secondary oculoplastic repair. This study demonstrates that, for upper eyelids, full-thickness margin-inclusive excisions of up to 10 mm in horizontal extent and 5–6 mm in height, and moderate sized 13×10 mm juxtamarginal excisions of the skin and orbicularis lamella, yield near normal results with solely spontaneous repair. Immediate surgical reconstruction of such wounds is assumed to be mandatory by current tenets of oculoplastic surgery.

For the *lower* eyelids, it has been established that full thickness margin inclusive (FTMI) excisions of up to 12 mm in horizontal and 5–6 mm in vertical extent yield near normal results even if allowed to heal solely by spontaneous repair.¹ The response of the upper eyelid wounds to spontaneous repair was unknown. It was therefore decided to undertake a study for such an assessment. Because of the complications of corneal and conjunctival exposure from a coloboma resulting from a surgical malrepair of an upper eyelid, a very cautious approach was designed for this study. Initially, small *extramarginal* superficial lesions of the skin of the upper eyelid were allowed to heal by spontaneous repair after a 'skin-only' horizontal excision of 6×4 mm. This gave satisfactory, uncomplicated results in all four patients. Therefore in the next two patients larger and deeper extramarginal excisions including the skin and orbicularis were so treated. After uneventful, satisfactory results in both these patients the study was extended to small shallow FTMI excisions of 6×3 mm. It was then decided to evaluate the results of solely spontaneous repair of upper eyelids after: (1) larger excisions of the skin and orbicularis lamellae at the lid margin, (2) larger FTMI excisions of 8 mm or more in horizontal and 4–5 mm in vertical

extent, and (3) FTMI lacerations of injured eyelids. The results obtained in 29 patients are presented here.

Patients and methods

Twenty-nine patients with lesions of upper eyelids treated between 1979 and 1986 were included in this study. The youngest patient was 12 and the oldest 97, with an average age of 67 years. Eight patients were aged 50 years or less. The maximum follow-up period was 7½ years, and the minimum 6 months, the average observation being 42 months. In six patients the follow-up was under 12 months, and 19 patients have been observed for over three years. As the incidence of rodent ulcers and other malignancies of the upper eyelids is much lower than that for the lower eyelid, patients requesting or needing excisions of not only suspected malignant lesions but also clinically benign unsightly nodules (other than meibomian cysts and styas) that would have conventionally been treated by excision and primary surgical repair are included in this unselected study. Four patients with trichiasis, three of whom had recalcitrant trichiasis despite previous electrolysis, were managed by FTMI excision of the strip bearing aberrant eyelashes. Three patients with FTMI lacerations of injured upper eyelids were also managed with spontaneous repair.

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Fig. 1 (A) Cutaneous horn of upper eyelid. Excision carried out under local anaesthesia as a day case. Immediate postoperative picture of a 13 mm×10 mm excision of orbicularis and skin lamella is unavailable. Wound allowed to heal by spontaneous repair. (B) Appearance 48 hours postoperatively shows rapid diminution of the height of the wound. (C) Appearance at 4 weeks, and (D) final appearance of normal cosmesis. Traditionally, full-thickness skin graft would have been mandatory here.

In the previously reported study of spontaneous repair of lower eyelids all the 11 patients were offered a choice between undergoing primary treatment by spontaneous repair or by primary reconstructive surgery.¹ Because of the impressive cosmetic and functional results of solely spontaneous repair obtained in the lower eyelids all 29 patients in this study were told that they were going to be treated solely by spontaneous repair of their upper eyelids.

These 29 patients can be classified in the following four groups: Group 1, extramarginal excisions; four patients had excision of the anterior lamella (skin±orbicularis) for skin nodules. The largest excision was 10×6 mm. Group 2, juxtamarginal excisions; seven patients had excision of the anterior lamella extending to the margin of the eyelid. As in group 1, the

excision was confined to the skin±orbicularis muscle. The largest excision in the group was 13 mm in horizontal and 10 mm in vertical extent (Fig. 1). Group 3, full-thickness margin-inclusive (FTMI) excisions; these were carried out in 15 patients, four of whom had shallow FTMI excisions of 6×3 mm vertically for trichiasis. Of the remaining 11 patients five had FTMI excision of the upper eyelid at the inner canthus, three had excision of the central one-third of the upper lid with the largest excision being 10×6 mm vertically, and three excisions were in the intercanthal region of the lateral half of the upper eyelid (Figs. 2, 3). Group 4, traumatised upper eyelids with FTMI lacerations; there were three patients in this group. One of them had FTMI loss of eyelid tissue at inner canthus. The remaining two had full-thickness wounds of the upper eyelid involving the lid margin but without any tissue loss (Fig. 4).

SURGICAL TECHNIQUE AND MANAGEMENT

Apart from cauterisation of oozing vessels and ligation of spurting vessels with a single suture, the excision was the sole primary procedure in 26 patients. The remaining three patients had traumatic FTMI lacerations. They did not need surgical excision, but their slightly different management is

Fig. 2 (A) Preoperative appearance of rodent ulcer at lid margin. (B) Immediate postoperative appearance of 10×6 mm FTM1 excision. (C) Healthy wound and unaffected cornea three weeks post-operatively. (D) Final result at 4 months.

explained in the legend for Fig. 4. The surgical excisions in 26 patients were carried out under local anaesthesia with lignocaine 2% and bupivacaine 0.5% with adrenaline (Marcain). The area to be excised was marked out before injecting the local anaesthetic. To achieve symmetry of clinical clearance and possibly also of the healing process, the FTM1 excision was made rectangular. Whereas such symmetrical rectangular excision that included the tarsal plate was easily achieved for the lower eyelid, it was much more difficult for the upper eyelid, largely because of the 'scirrhous' consistency of its tarsal plate. The suboptimal cosmetic result of a small slanting shallow notch (Fig. 3) in one case has very probably resulted from an asymmetrical excision.

A Bard-Parker No. 15 blade was used to achieve perpendicular edges for the rectangular FTM1 excisions. Small oozing vessels were cauterised and larger spurting vessels were ligated with 6-0 polyglycolic acid (Dexon) suture. Usually only one suture

was necessary. To avoid corneal irritation by the suture, its ends were kept at least 2 cm long and were turned up on to the skin of the upper eyelid, where they were tethered with a separate suture of 6-0 Dexon passed through the depth of skin. Both sutures were usually removed on the seventh or ninth day. Because of greasy skin produced by the ointment neither Sellotape nor Micropore was reliable in holding down the ligating suture. The surgical excision including the ligation was usually completed within 10 minutes. Antibiotic eye ointment was instilled and a Cartella shield with an improvised hole was the sole 'dressing' for one week. The patients were allowed home within an hour of the excision. They were given cotrimoxazole (Septrin), 2 tablets twice daily for five days, and chloramphenicol eye ointment twice daily for two weeks and thereafter at night only if necessary for one more week. Patients were called for first dressing at 48 hours and then every week for four weeks, after which the follow-up period was lengthened progressively to attain six-monthly observation.

As the size of the excision was not recorded at the time of surgery, the magnitude of excision is taken as the dimensions reported in the 'Macroscopic appearance' part of the histology reports. The smallest

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Fig. 3 (A) Preoperative appearance of proposed FTMI excision for a pigmented juxtamarginal lesion. (B) Immediate postoperative appearance shows ligating and tethering suture. (C) Appearance at 48 hours. (D) Final appearance showing a residual, small, shallow, slanting notch. Symptom-free period of three years observation.

anterior lamellar excision was 6×4 mm and the largest was 13×10 mm. The range of FTMI excisions was 6×3 mm to 10×6 mm.

Results

HEALING PERIOD

This depended on the site and size of the excision. Small anterior lamellar excisions confined only to the skin healed within two weeks and regained normal appearance over the next two weeks. Deeper excisions involving the skin and orbicularis took slightly longer, with the largest deep juxtamarginal excision of 13×10 mm taking nearly four weeks to heal completely and regaining normal appearance over the next eight weeks. Among the FTMI excisions those at the inner canthus healed the quickest—the largest excision of 8×5 mm healed within three to four weeks. FTMI excisions of

intercanthal areas of the upper eyelid took longer to fill the gap. The largest FTMI excision of 10×6 mm vertically in the central region (Fig. 2) healed in about eight weeks with continued cosmetic improvement over the ensuing 12 weeks. Even larger FTMI excisions of the intercanthal regions of the lower eyelid healed much more rapidly by comparison.¹

FUNCTIONAL AND COSMETIC RESULTS

In all the 29 patients the functional results after solely spontaneous repair were excellent and fulfilled the requisite criteria for an optimal surgical repair as laid down by Mustardé²—a supple, mobile, resilient upper lid with a stable margin conforming to the contours of the globe. The mobility of the upper eyelid was normal in all 29 patients. None experienced feeling of tautness of the upper lid either when the lid was mobile or static. All had adequate eye closure. Of the four cases of trichiasis treated by FTMI excision one with recalcitrant trichiasis had recurrence of trichiasis in the 'newly formed' lid margin. During the process of spontaneous repair, and subsequently, none of the 29 patients developed or experienced exposure conjunctivitis or keratitis. No patient had sepsis, delayed or non-healing of the wound, epiphora, distortion of eyelid, symble-

4A

4B

4C

4D

pharon, or ocular or palpebral discomfort. Similarly, no patient had ptosis or retraction of the eyelid.

Cosmetic results were excellent in 27 patients and acceptable in two: one patient with an asymmetrical FTMI excision developed a small, shallow, slanting notch of the lid margin (Fig. 3), without ocular or palpebral symptoms during the three years of observation. The second patient was a young girl who had sustained severe facial injuries in a motorcar accident. She had FTMI loss of about a quarter of the upper eyelid at inner canthus. Spontaneous repair of the upper eyelid had yielded very acceptable cosmesis, but she subsequently underwent further faciomaxillary, rhinoplastic, and oculoplasticsurgery.

SUBJECTIVE RESPONSES OF THE PATIENTS

Twenty-eight of the 29 patients were treated as day cases, the young girl with facial injuries was the only one who was admitted to the hospital. They were happy to have been treated as day cases. The 26 patients who underwent surgical excision were particularly pleased with the short surgical procedure of excision and subsequent symptom-free convalescence. They were also happy with the ultimate cosmetic and functional results. The patients with eyelid lacerations were also pleased at not having to undergo immediate surgical repair.

Fig. 4 (A) FTMI laceration with a glancing blow from a shovel. The resulting wound was T-shaped, with the horizontal limb lacerating the skin and orbicularis lamella. To control bleeding at the apex of the skin wound, a single suture of 6=0 Dexon was inserted, the apex of the skin wound being sutured to cover the bleeding vessel. This was the sole surgery implemented. (B) The vertical limb of the wound had cut the entire height of the tarsal plate and extended 4 mm above it. (C) Appearance at 2 weeks. (D) Final result at 8 weeks.

HISTOLOGY

This was studied in 21 patients, as four had trichiasis, three had FTMI lacerations, and one had nearly 50 small sebaceous cysts on the upper eyelid. The entire horizontal extent of the eyelid and 5 mm in height was studied with these cysts. Instead of attempting to remove each cyst individually, we removed the entire skin lamella with a very satisfactory result. Of the 21 lesions submitted for histological examination, seven were reported as rodent ulcers, two were benign pigmented naevi, two benign acanthosis with hyperkeratosis, one benign pigmented papillary seborrhoeic keratosis, one cutaneous horn—a polypoid exophytic tumour ('classical solar keratosis that has undergone acute inflammation and abscess formation'), one squamous papilloma, one benign surface

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necrosis with mucinous degeneration of superficial dermis, and the remaining six anterior lamellar excisions showed benign solar keratosis.

Discussion

The sine qua non for successful surgical management of palpebral cancers is adequate excision. So far the traditional teaching of oculoplastic surgery has led us to believe that immediate surgical repair after such excisions is obligatory. This is exemplified by the exhortation of Fox and Beard³ that a lesion in the centre of the eyelid with healthy lid margin on each side cannot be left to chance, and that (surgical) 'Repair is mandatory, and unless undertaken will end up in notching, cicatricial entropion, or ectropion or loss of the eyelid.' However, the previous study on the lower eyelid¹ has shown the potential of near normal functional and cosmetic results of solely spontaneous repair after FTMI excisions—even of the *central* region—of nearly half the horizontal extent and 5–6 mm in vertical extent of the lower eyelid. There have been no reports of spontaneous repair of the upper eyelids till now.

The current concepts and principles of surgical repair of the upper eyelid are lucidly explained by Mustardé,^{4,5} Roper-Hall,⁶ and Hatt.⁷ By conventional criteria none of the 29 patients reported in this study would have been treated by spontaneous repair. All of them would have required to undergo surgical repair or reconstruction by such surgical procedures as direct suturing of skin, local skin flaps, split-thickness or full-thickness skin graft. Mustardé,⁸ discussing moderate to extensive superficial tissue loss of eyelids, states that 'Where the defect is too large to be closed by direct approximation of the edges, despite rotation of nearby skin—or perhaps because this is not practicable, a full-thickness skin graft, comprising both dermis and epidermis will be required to replace the lost tissue.' Therefore the result after sole spontaneous repair is particularly impressive in Fig. 1, where an excision of 13×10 mm of the skin and orbicularis lamella was carried out. It is almost certain that the firmness of the underlying tarsal plate counteracted distortional forces during spontaneous repair. A similar excision of the lower eyelid, especially at the medial or lateral ends would almost certainly have produced cicatricial ectropion with spontaneous repair. For reconstruction of FTMI defects of the upper eyelid Mustardé's^{4,5} principles based on multiples of a quarter are almost universally accepted and are as follows.

Direct multilayer suturing (three layers) is advocated for FTMI loss of up to a quarter of the upper eyelid. About five of the 15 patients in group 3 and all the three patients with traumatic FTMI lacerations in

group 4 would have conventionally been treated by direct multilayer suturing. It is quite likely that in at least two patients in this study such direct suturing might have produced mechanical ptosis by levator tethering, about which Mustardé⁹ in his Fig. 8-3 has given warning. Similarly, McCord and Wesley¹⁰ also emphasize the importance of a correct method of a pentagonal FTMI excision, if notching or buckling of the eyelid by direct suturing is to be avoided. It is gratifying to report that none of these complications occurred with spontaneous repair, except in one patient (Fig. 3), in whom a shallow slanting notch has resulted, probably from a defective asymmetrical excision.

For FTMI defects of between a quarter and a half of the upper lid a lateral cantholysis is usually necessary to allow direct closure. About six patients in group 3 would have been so managed by convention. It is therefore obvious that in all the 29 patients spontaneous repair has obviated the need for primary surgical repair, and has yielded a mobile upper eyelid that conforms to the contours of the globe and has a permanently stable lid margin. None of the patients in this study had an FTMI defect larger than two-fifths of the horizontal extent of the upper lid. Therefore defects larger than these should have surgical reconstruction, at least until a future study of spontaneous repair of such larger defects can prove that acceptable results can be attained.

In dealing with the upper eyelid, most clinicians fear exposure keratopathy. It should be appreciated that, unless there are qualitative or quantitative abnormalities of the tear film, or abnormal neurotrophic influences, simple inability of eye closure, even in the absence of Bell's phenomenon, does not result in exposure keratopathy. This is substantiated by detailed and prolonged observation of cases of simple Bell's palsy or traumatic facial nerve palsy. Roper-Hall¹¹ advocating the management of severe blepharospasm by facial nerve avulsion, affirms that 'Despite this operation, corneal exposure during sleep has not been recorded to date.' Further reassurance of the absence of exposure keratopathy despite incomplete eye closure for several years is furnished by the normal corneal appearance and absence of evidence of past or present ocular irritation in the clinical pictures of congenital coloboma of upper eyelids.^{12,13} Roper-Hall,¹⁴ discussing congenital coloboma of eyelids states that 'it is astounding that the apparently unprotected cornea can appear normal for several years.' However, he also states that on careful biomicroscopy corneal changes may be observed.

As stated above, the response of these 29 patients to management with spontaneous repair has been very favourable. They have expressed relief,

approval, and satisfaction with the near normal results obtained, enjoyed a trouble-free healing period, and appreciated the simplicity of the treatment. The present study shows that satisfactory results are obtainable by solely spontaneous repair of moderate sized juxtamarginal, extramarginal, and full-thickness margin-inclusive excision of upper eyelids. These results are as good as those obtained by spontaneous repair of FTMI excision of nearly half the lower eyelid as reported by this author previously.

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