Surgery of pterygium

Modified McGavic's technique

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Pterygium must be removed if its inward growth threatens to impair vision; removal is also sometimes necessary for mechanical or cosmetic reasons. The recurrence rate may be as high as 30 to 50 per cent. (Duke-Elder, 1965) and, since such recurrences present a major surgical problem, it is important to succeed at the first attempt.

I have been using the technique of McGavic (1949) with minor modifications for the past 7 years and there have been hardly any recurrences although pterygium is so prevalent in this part of the world. McGavic originally advocated his technique for recurrent cases, but I prefer to use it at the first operation, as the method is quite safe, there is minimal postoperative discomfort, and healing is complete after only 2 weeks. In cases of recurrence the same technique may be supplemented with beta irradiation in the immediate postoperative period.

Technique

After appropriate anaesthesia, the pterygium is seized with plain forceps about 4 mm. from the limbus and horizontal incisions are made in the bulbar conjunctiva with spring scissors, cutting down to the sclera along the upper and lower borders of the pterygium away from the limbus for 12 mm. towards the canthus. Between these two incisions the pterygium is carefully dissected off the sclera with the help of blunt-pointed scissors. The apex of the pterygium is then held at its tip by toothed forceps (or by passing a stay suture through it) and is shaved completely off the cornea with a sharp cataract knife or Tooke's knife, taking care that no pterygium tissue and blood vessels are left behind. The pterygium is now held vertically taut and fine dissection is carried out to excise the whole of the subconjunctival tissue as far as the canthus. This tissue underlying the whole extent of the pterygium should come off in one triangular piece (Fig. 1). The apex of the pterygium and about 3 mm. of its body are then excised so that an area of sclera about 5 mm. wide becomes bare. The reflected conjunctiva is stroked back into position and the edges of the horizontal incisions are secured by two interrupted stitches of 000 black silk. The free edges of the conjunctival flap are then anchored firmly to the sclera with interrupted conjunctivo-scleral sutures of 000 000 black silk at intervals of 1 mm. (Fig. 2). Care is taken to include only the superficial layers of the sclera in the stitches.

Atropine and antibiotic drops are instilled and a pad and bandage are applied. Dressings are done daily. The conjunctivo-conjunctival sutures are removed on the fifth and the conjunctivo-scleral stitches on the tenth postoperative day.

FIG. 1 *The pterygium is held vertically taut and a fine dissection is carried out to separate the underlying subconjunctival tissues which should come off in one triangular piece*

FIG. 2 *Bare area of sclera and position of conjunctivo-conjunctival and conjunctivo-scleral stitches*

Comment

At different times pterygia have been incised, removed, split, transplanted, cauterized, grafted, inverted, galvanized, heated, dissected, rotated, coagulated, repositioned, and irradiated (Trevor-Roper, 1962), but most of these methods have evoked only passing interest. The "transplantation" method is surgically not very sound. It may be hoped that after the operation, if the head continues to grow, it will merely lose itself in the orbital tissues, but in practice the recurrence rate is about 20 to 30 per cent. (Stallard, 1958), and subsequent dissection in recurrent cases is difficult. Moreover, the procedure may at times lead to the unsightly appearance of a thick lump at the site of the transplantation. It is therefore surprising that this procedure is still being widely practised.

The recurrence rate after a simple excision is much higher, but it is often used in combination with postoperative α or beta irradiation (Hilgartner, Wilson, and Wilson, 1948; King, 1950; Gibson, 1951; Mead and Robertson, 1957; Lentino, Zaret, Rossignol, and Rubinfeld, 1959; Pinkerton, 1962; Cameron, 1965). This method is dangerous as even beta irradiation correctly used may damage the ciliary body and the lens. I reserve irradiation for recurrent cases and never recommend it as part of a primary procedure.

The operation described by McGavie (1949) is certainly much safer and gives very good results, but I make the horizontal incisions much longer than hitherto practised, as this greatly facilitates the subsequent dissection of the subconjunctival tissue underlying the pterygium.

As the primary focus of activity lies in the connective tissue (Kamel, 1946; D'Ombrian, 1948), total extirpation of this tissue is bound to be effective, but this step may be omitted if the pterygium is stationary and very thin and avascular, provided the paralimbal area of sclera is kept bare and the free margins of the conjunctiva are stitched to the sclera. The paralimbal scleral area is left bare to give the raw corneal surface time to heal before the conjunctiva grows up to the limbus again. If the conjunctiva is drawn right up to the limbus after any type of pterygium operation there is a danger that the free edge of the conjunctiva may adhere to the raw corneal surface with consequent early recurrence. In my experience the additional step of stitching the free margins of the bulbar conjunctiva to the superficial layers of the sclera help to prevent recurrence; these conjunctivo-scleral stitches should be placed at intervals of 1 mm. to achieve the best effect.

Summary

The extreme diversity of surgical methods for the treatment of pterygium suggests that all are to some degree unsatisfactory. McGavic's method has proved to be very effective, and the following suggestions are made:

- (1) The method should be used routinely as a primary procedure;
- (2) Horizontal incisions in the bulbar conjunctiva should be made much longer to facilitate dissection of the subconjunctival tissue underlying the whole extent of the pterygium.
- (3) Stitches to anchor the free edges of the bulbar conjunctiva to the superficial layers of the sclera should be placed at intervals of 1 mm.

References

- CAMERON, M. E. (1965) "Pterygium throughout the World", p. 70. Thomas, Springfield, Ill.
- D'OMBRAIN, A. (1948) *Brit. J. Ophthalm.*, **32**, 65
- DUKE-ELDER, S. (1965) "System of Ophthalmology", vol. 8, pt. 1, p. 581. Kimpton, London
- GIBSON, J. B. G. (1951) *Med. J. Aust.*, **2**, 664 (cited by Duke-Elder, 1965)
- HILGARTNER, H. L., WILSON, R. T., and WILSON, J. D. (1948) *Amer. J. Ophthalm.*, **31**, 667
- KAMEL, S. (1946) *Brit. J. Ophthalm.*, **30**, 549
- KING, J. H. (1950) *Arch. Ophthalm. (Chicago)*, **44**, 854
- LENTINO, W., ZARET, M. M., ROSSIGNOL, B., and RUBENFELD, S. (1959) *Amer. J. Roentgenol.*, **81**, 93
- MCGAVIC, J. S. (1949) *Arch. Ophthalm. (Chicago)*, **42**, 726
- MEAD, K. W., and ROBERTSON, D. F. (1957) *Trans Coll. Radiol. Aust.*, **1**, 83 (cited by Duke-Elder, 1965)
- PINKERTON, O. D. (1962) *Trans. pacif. Cst oto.-ophthal. Soc.*, **43**, 121
- STALLARD, H. B. (1958) "Eye Surgery", 3rd ed., p. 387. Wright, Bristol
- TREVOR-ROPER, P. D. (1962) "Ophthalmology", 2nd ed., p. 438. Lloyd-Luke, London