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Sclerotomy for pars plana vitrectomy

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SUMMARY A sclerotomy technique for vitreous surgery via the pars plana is described.

Closed vitrectomy has largely supplanted the 'open sky' method, particularly because it results in minimal interference with the integrity of the globe. Ideally the pars plana sclerotomy should be sufficiently watertight to allow the intraocular pressure to be maintained during surgery without impeding free movement of the vitrectomy instrument within the eye. We describe a sclerotomy technique for use with the Machemer VISC, Douvas Rotoextractor, and Peyman Vitrophage which achieves these objectives.

Method

A limbus-parallel incision 4 mm in length is made through half the thickness of the sclera 4·0 to 5·0 mm behind the limbus, and the central 2·5 mm deepened to expose the ciliary body (Fig. 1*a*). To obtain a circular opening into the vitreous cavity a knuckle of uveal tissue is prolapsed and abscised with de Wecker's scissors, and the anterior hyaloid or vitreous base is then incised in such a way that the opening into the gel is larger than the opening through the coats of the eye (Machemer, 1972; Peyman and Sanders, 1975).

Enlargement of the wound by stretching or splitting of the sclera during surgery is prevented by placing two 6–0 Dexon (polyglycollic acid) sutures across the sclerotomy at the margins of the full-thickness opening (Fig. 1*a*). The suture nearer to the surgeon is tied at this time because it is difficult for the assistant to do this once the instrument is in the eye. The vitreous cutter is then passed through the opening and the second suture tied in a bow (Fig. 1*b*).

At the end of the operation the infusion is turned off and no attempt made to close the wound round the instrument as it is withdrawn. The second suture is made fast and a third is placed across the middle of the opening (Fig. 1*c* and *d*). If necessary, the eye

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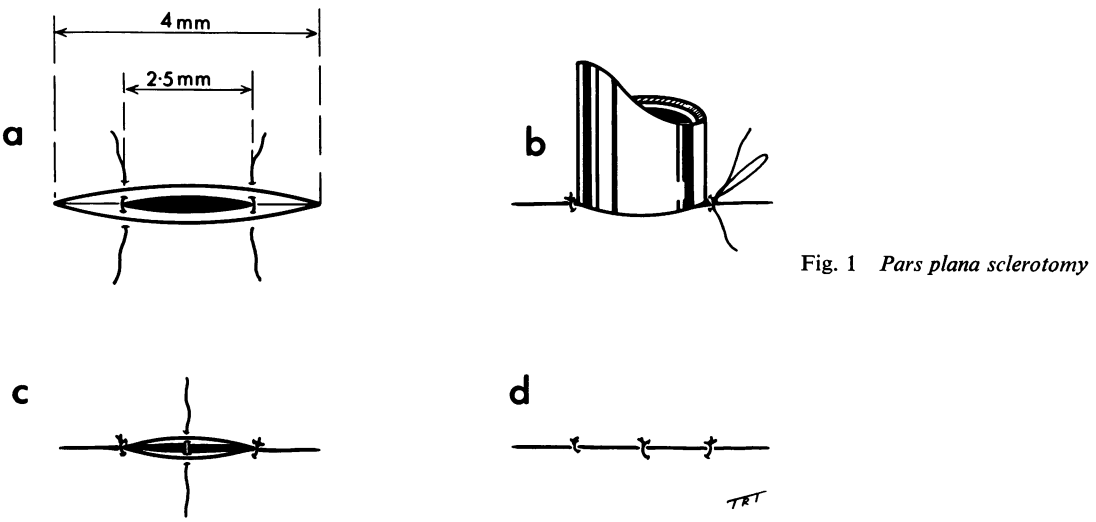

Fig. 1 *Pars plana sclerotomy*

can be reflated with infusion fluid injected through the closed incision.

Discussion

Several types of sclerotomy have been devised for closed vitrectomy. Stab incisions, using a knife whose width is exactly half the circumference of the vitreous cutter (Machemer, 1972) are associated with a high incidence of entry-site dialysis, probably due to inadequate incision of deep tissues (Machemer and Norton, 1972; Mandelcorn *et al.*, 1976).

Furthermore, limbus-parallel incisions, unguarded by sutures, stretch under the stress of prolonged surgery, allowing fluid to leak out of the eye around the instrument.

These problems do not arise with the Ocutome system of small openings for narrow instruments each performing a single function (O'Malley and Heintz, 1972). Similarly, when wider instruments are introduced, especially those whose diameter is increased by a fibreoptic sleeve, the problems appear to be minimised by using a trocar and cannula (Kloti, 1974). In our experience, however, this device restricts manoeuvrability and requires an excessively large opening in the globe.

A wide incision, controlled by a mattress suture, allows the surgeon adequate exposure to incise the deep tissues, and Peyman and Sanders (1975) report that in this way the risk of retinal dialysis is reduced to a minimum. However, control of the wound by a mattress suture is difficult to maintain throughout a long operation, and the heavy suture material required has to be replaced by a fine, absorbable suture at the end of surgery. The sclerotomy technique described above enables us to make an adequate opening in the deep structures while allowing effective control of the wound throughout surgery. Furthermore, closure is simple, requiring only a single additional suture.

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Notes