Iridocycloretraction in closed-angle glaucoma

P. D. BLACK

From Addenbrooke's Hospital, Hills Road, Cambridge

SUMMARY A small series of patients who underwent iridocycloretraction between 1969 and 1976 is analysed. All patients had previously undergone peripheral iridectomy for primary angle-closure glaucoma, and all had 360° of peripheral anterior synechiae, as seen with the gonioscope. It was found that iridocycloretraction was successful in an unacceptably low percentage of cases, and its success was related to whether subconjunctival drainage was established. There was no clinical evidence to support the theory that its main mode of action was to permit access of aqueous to the trabecular meshwork. Therefore it has no practical advantages over other procedures which establish subconjunctival filtration.

In 1969 Krasnov¹ described the technique of iridocycloretraction and defined the prime indication for its use as cases of organic closed-angle glaucoma, that is, those cases in which the angle is closed with peripheral anterior synechiae. Subsequent reports of its use are sporadic and concerned mainly with aphakic glaucoma, as an adjunct to cyclodialysis^{2,3} and in secondary closed-angle glaucoma.^{4,5} There is one large series reporting the results of iridocycloretraction in closed-angle glaucoma, that of Krasnov himself.⁶ In this series he described a success rate of 80% at first operation, rising to 90% after a second procedure. Moreover he postulated that it acted by allowing access of aqueous to the trabecular meshwork by opening the angle between the scleral pillars that were inserted into the anterior chamber. Although he considered the possibility of conventional drainage, he thought that this was not the case in the majority of his successful patients.

A small number of patients who underwent iridocycloretraction for closed-angle glaucoma, without pupil block, in Addenbrooke's Hospital have been assessed.

Materials and methods

Control of glaucoma is defined as maintenance of the central visual field of the patient as measured with the 2 mm and 5 mm white targets on the Bjerrum screen at 2 metres, and no increase in optic disc cupping. While the intraocular pressure is used as an indicator of control, it is not relied on to

Table 1 *Complications of iridocycloretraction (12 cases)*

Hyphaema	6
Uveitis	2
Malignant glaucoma	1

indicate lack of control except when it remains at an unacceptably high level.

Twelve eyes underwent iridocycloretraction in 11 patients. All were Caucasians, aged between 42 and 72 years, with an average age of 62 years. The patients had presented with either acute closed-angle glaucoma (4 cases), intermittent closed-angle glaucoma (2 cases), or chronic closed-angle glaucoma (6 cases), and all had peripheral iridectomy as their primary procedure. All patients underwent iridocycloretraction as described by Krasnov⁶ with the insertion of 2 scleral pillars, except for 1 patient who had 3 scleral pillars inserted. During 1979 the patients were reassessed, and, as well as routine follow-up of central visual fields, intraocular pressure, and optic disc cupping, the following pertinent observations were made: (a) complications of the procedure, early and late; (b) control of the glaucoma; (c) postoperative gonioscopic appearance; (d) presence or absence of a drainage bleb. The duration of follow-up was between 9 years and 3 years, with an average of 3 years 11 months.

The complications of iridocycloretraction are set out in Table 1. It is not surprising that hyphaema occurred in 50% of cases. It is a well-recognised complication of cyclodialysis, which forms part of the procedure, and its occurrence has been commented on before.⁴ In none of these cases was the

Correspondence to Mr P. D. Black, FRCS, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ.

hyphaema of sufficient severity to cause alarm, and it resolved spontaneously in all cases. Uveitis occurred in 2 cases and was severe enough to warrant subconjunctival steroids in 1 case. An exudative reaction around the scleral pillars as described by Aviner² was not seen. Malignant glaucoma occurred in 1 patient and developed within a few days of the procedure. This patient also had a drainage bleb in this eye following iridocycloretraction. He had, interestingly, developed malignant glaucoma in the fellow eye after a peripheral iridectomy, prior to his iridocycloretraction and had required a lens extraction in that eye to control the malignant glaucoma. To control his glaucoma he requires continuous cycloplegia in the eye that has undergone iridocycloretraction.

Iridocycloretraction was not particularly successful in the control of the glaucoma, as Table 2 shows.

Only 33% were controlled without any further medication. A further 33% required the addition of eye drops (one of whom requires continuous cycloplegics), and a further 33% required another surgical procedure within 12 months of the iridocycloretraction. Of these last 4 patients 2 have had trabeculectomies and 1 a cyclodialysis, with success, and 1 has declined further surgery. It is of interest to try to establish why those patients who required no further treatment had successful operations. In this respect the gonioscopic appearance (Table 3) and the presence or absence of a drainage bleb (Table 4) are important.

As can be seen from Table 3, in only 2 cases was the angle maintained open between the pillars, and in 1 of these cases the operation was considered to have failed. This is in marked contrast to the results of Krasnov,⁶ who opened the angle, between scleral pillars, in 128 out of 141 cases. Small clefts were seen around the scleral pedicles in 3 out of the 4 successful cases and in 1 of the failures. The angle

Table 2 *Control of glaucoma after iridocycloretraction*

Completely controlled	4
Required further medications	4
Required further surgery	4
Total	12

Table 3 *Gonioscopic appearance after iridocycloretraction (12 cases)*

	Successful	Requiring drops	Failures
Angle open between pillars	1		1
Clefts around pillars	3	2	
Angle closed		2	3

Table 4 *Presence of a drainage bleb after iridocycloretraction (12 cases)*

	Successful	Requiring drops	Failures
Bleb present	4	1	
Bleb absent		3	4

was closed between the pillars in 3 out of the 4 cases that failed. As can be seen from Table 4, the presence of a drainage bleb was clearly related to the success of the operation. The 1 patient who developed a bleb and then required further medication was the patient with malignant glaucoma, who has now been maintained on cycloplegic drugs for over 4 years.

Discussion

The management of patients with closed-angle glaucoma often presents difficult clinical problems. Peripheral iridectomy has been widely regarded as the treatment of choice, at least initially, but in a significant number it fails to control the glaucoma,⁷ and they require a further surgical procedure. There has been a reluctance to embark on conventional drainage surgery in these patients because of the fear of malignant glaucoma and the subsequent problems in management. Trabeculectomy, though regarded as a very controlled procedure so far as permitting fall of intraocular pressure is concerned, is nevertheless now regarded as a conventional drainage operation, and malignant glaucoma has been known to follow trabeculectomy (Cairns, personal communication).

In his description of iridocycloretraction Krasnov⁶ maintained that it worked by opening the angle between the pillars and permitted a more physiological egress of aqueous. In support of this theory he quoted experimental work on rabbits by Lakomkin⁸ and a report on 1 eye obtained post mortem 3 months after the performance of an iridocycloretraction.⁹ He considered that, while alternative routes of aqueous egress may be formed, either into the suprachoroidal space or into the subconjunctival space, in the majority of his cases normal rates of aqueous flow would be restored, that is, via the trabecular meshwork. If this were the case it would have an obvious attraction in cases of closed-angle glaucoma, in that the iris-lens diaphragm would be less likely to move forward and the risk of malignant glaucoma would be minimised.

A small number of patients have been examined who have undergone iridocycloretraction for chronic closed-angle glaucoma, without pupil block. Whatever the theoretical attractions of iridocyclo-

retraction, the operation in our hands works by establishing subconjunctival drainage, and the success of an operation requires the formation of a filtering bleb. There is no clinical evidence in our series that iridocycloretraction restores normal pathways of aqueous flow from the eye. In our view iridocycloretraction has no advantages over trabeculectomy, which has a considerably higher rate of success.

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