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SURGICAL TREATMENT OF ACUTE CONGESTIVE GLAUCOMA*

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DIFFERENT operations have been advocated by various surgeons for the treatment of acute congestive glaucoma. The results of modified iridencleisis, filtering peripheral iridectomy, and peripheral iridectomy have been reported by Mackie and Rubinstein (1954), Malbrán and Malbrán (1959), Blaxter and Chatterjee (1960), and Graham and Stevens (1960), but these authors do not mention the association of intumescent and hypermature cataract. In about half the cases in the series reported below the glaucoma was associated with either intumescent or hypermature cataract, mostly the latter.

Material

The series consisted of 62 eyes in 55 patients, two-thirds of whom were males. Their ages ranged from 31 to 90 years (Table I).

TABLE I

AGE DISTRIBUTION OF 55 PATIENTS

Age (yrs)	31–40	41–50	51–60	61–70	71–80	81–90
Percentage of Patients	7·2	32·7	30·9	22·0	3·6	3·6

Method

A detailed history of the presenting attack and prodromal symptoms showed that the patients attended after periods ranging from a few hours to 2 months, but most of them within one week.

All were put on miotics and Diamox at once; those who responded were treated surgically at the opportune time, and the rest were operated upon as soon as it was thought that they were not likely to benefit from further medical therapy. The 62 operations are summarized in Table II (opposite).

Broad-based iridectomy was done in 47 eyes, including those of patients who came to hospital at the first attack and soon after the onset, and those of patients with mature and hypermature cataract in which cataract extraction was to be done shortly afterwards.

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TABLE II

SURGERY AND GONIOSCOPIC FINDINGS

Operation	No. of Eyes	Gonioscopy Performed		Anterior Chamber Angle				Subluxation of Lens
		Pre-op.	Post-op.	Pre-op.		Post-op.		
				Open	Not done	Open	Closed	
Broad-based Iridectomy	47	4	33*	4	29	18	15	11
Peripheral Iridectomy	6	6	6†	6	0	4	2 partially	0
Modified Iridencleisis	9	0	9	0	9	0	9	3
Total Eyes	62	10	48	10	38	22	26	14

* Iridectomy basal in 32. † Iridectomy basal in 5.

Peripheral iridectomy was done in six cases in which the symptoms were controlled by medical therapy, there was no cataract, and the angle was patent.

In nine cases of acute congestive glaucoma superimposed on chronic glaucoma, a modified iridencleisis was done.

All these operations were done *ab externo*.

Gonioscopy

Pre-operative.—During an acute attack the patient is in agony and the cornea hazy, so that gonioscopy is practically impossible. In ten cases gonioscopy was done after controlling the tension. The angle, though slit-like, was then patent in all ten of them.

In four of these broad-based iridectomy was performed, and the angle remained open post-operatively in three, but one developed corneo-iridic synechiae all round the circumference.

The other six were treated by peripheral iridectomy and the angle remained open post-operatively in four but became partially closed in two.

Post-operative.—48 eyes were examined. The state of the anterior chamber angle is shown in Table II.

Anterior subluxation of the upper border of the lens was a fairly common gonioscopic finding in eyes in which the tension had been uncontrolled with miotics and Diamox and in which an operation was performed while the intra-ocular pressure was still very high. It occurred only in cases secondary to mature and hypermature cataract (Table II).

Post-operative Water-Drinking Test.—Of 33 water-drinking tests, only five

were positive, and the tension rose to above 30 mm. Hg in only two of them (Table III).

Results of Surgical Operations.—The control of tension and its retention within normal limits (15–25 mm.) was used as the criterion of success (Table III).

TABLE III
POST-OPERATIVE WATER-DRINKING TEST AND CONTROL OF PRESSURE

Operation	No. of Eyes	Water-drinking Test			Intra-ocular Pressure			
		No. of Eyes	Result		Controlled			Not Controlled
			Positive	Negative	Without Miotics	With Miotics	Total	
Broad-based Iridectomy	47	22	3	19	39	6	45	2
Peripheral Iridectomy	6	6	0	6	6	0	6	0
Modified Iridencleisis	9	5	2	3	6	3	9	0
Total Eyes	62	33	5	28	51	9	60	2

Duration of Follow-up.—The minimum period of post-operative follow-up was 6 months, but thirty eyes were followed for 12 to 18 months and eight for 18 to 24 months.

Discussion

Mackie and Rubinstein (1954) reported 90 per cent. success with modified iridencleisis in 76 cases of acute congestive glaucoma. They argued that this operation had all the advantages of broad-based iridectomy and iridencleisis and that a second operation to control the tension was rarely necessary.

Graham and Stevens (1960) found a filtration operation more satisfactory than iridectomy in cases of acute congestive glaucoma which were not controlled with miotics and Diamox.

Blaxter and Chatterjee (1960) reported the successful control of tension in four cases of medically-controlled acute congestive glaucoma with peripheral iridectomy. Post-operatively the dark-room test was negative in all four; they held that peripheral iridectomy was as good as broad-based iridectomy in cases of acute congestive glaucoma which were controlled medically, but that in congested eyes with raised tension, post-operative iritis was likely to block the small gap of peripheral iridectomy whereas the large gap of broad-based iridectomy was less likely to close up.

The results in the present series of 62 eyes in 55 patients are shown in

Tables II and III. Cases in which the glaucoma was secondary to hypermature cataract did not respond well to therapy with miotics and Diamox and the operation had to be done while the intra-ocular pressure was still very high. Subluxation of the upper border of the lens occurred only in cases of this kind, possibly because of the weakness of the zonular fibres. In view of this the administration of intravenous urea is now being considered as a pre-operative procedure.

Although the angle of the anterior chamber was closed post-operatively in nearly half the cases treated with broad-based iridectomy and subluxation of the upper border of lens was detected in eleven of the 33 eyes in this group in which post-operative gonioscopy was done, the intra-ocular pressure was controlled post-operatively in 39 cases without miotics and 6 other cases with miotics. The post-operative water-drinking test was done in 22 of these cases and was negative in nineteen of them.

Of the nine cases treated with modified iridencleisis, the tension was controlled without miotics in six and with miotics in the other three, in spite of extensive goniosynechiae in all of them. The water-drinking test was positive in three of these cases and negative in six.

All the six cases treated with peripheral iridectomy were well controlled without miotics and the water-drinking test was negative in all of them.

Broad-based iridectomy was done in all cases in which the acute congestive glaucoma was secondary to cataract and the attack was of a short duration, because this procedure facilitates the extraction of the cataract at a later date. If iridencleisis is done, temporal limbal section for cataract extraction would be obligatory; this is not as safe as section in the upper half of the limbal circumference and moreover the tense included iris pillar presents a practical difficulty in delivering the lens during operation. If peripheral iridectomy has been done, the pupil may have to be dilated with mydriatics for lens extraction and, though the tension is normally controlled, the instillation of mydriatics may cause a rise in intra-ocular pressure making the lens extraction rather risky.

Although the cases treated with peripheral iridectomy are few, my results show that it has a definite place in the treatment of acute congestive glaucoma of short duration and not secondary to cataract. In such cases pre-operative gonioscopy to establish patency of the anterior chamber angle is necessary.

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