The following two papers were read at the 53rd Annual meeting of the Società Oftalmologica Italiana held on the 26th-29th September, 1971.

THE ELECTROCAUTERY SCLEROCORNEAL PUNCTURE IN THE TREATMENT OF THE GLAUCOMAS
A Ten Year Survey

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Summary

This is a survey covering a ten year period of cases of glaucoma operated upon by means of the sclerocorneal electrocautery puncture. The technique of the operation is a very simple one. It does not involve any complication. The results were very satisfactory.

It seems that von Graefe was the first to notice a filtering scar in cases of glaucoma operated upon by a basal iridectomy. Subsequently, de Wecker, convinced that a filtering scar was the solution for the reduction of tension in chronic glaucoma, suggested a combination of sclerotomy and iridectomy. However, it was left to Lagrange in 1905 to place on a firm basis a filtering operation for glaucoma, by devising his operation of sclerotomy and iridectomy. In 1909 Eliott simplified the technique by introducing the use of trephine. Preziosi (1924, 1929, 1950, 1957) carried simplification a step further by using the electrocautery to obtain a filtering cicatrix communicating the angle of the anterior chamber with the subtenoconjunctival space.

The main advantages of the use of electrocautery are the simplicity of the technique and the absence of any complications. The three main complications, viz. delayed formation of the anterior chamber, hyphaema and injury to intraocular structures are conspicuous by their absence.

Here is a brief description of the operation.

The conjunctiva and Tenon's capsule are incised at the same time, about 8mm from the limbus. A teno-conjunctival flap is dissected in a funnel-shaped fashion down to the sclerocorneal border, which is defined by a few strokes of Tooke's knife. One must be certain that the operation is going to be performed on the surgical limbus. The tip of the red hot electrocautery measuring 0.5mm by 0.25mm is gently applied to the sclerocorneal junction until aqueous starts to flow out of the burnt-in hole. Dissection around the aperture is kept to a minimum in order to avoid cicatricial changes which may possibly block the fistula.

On no account is the tip of the electrocautery ever to be allowed to enter the anterior chamber. Iridectomy is performed by the electrocautery only when the iris prolapses into the hole. This usually happens if an attempt is made to reduce the constriction and rigidity of the iris by stopping pilocarpine and diamox some days before the operation. In subacute cases of glaucoma, the iris, because of the fairly high intraocular tension presents itself at the bottom of the aperture and iridectomy is performed. Decompression of the anterior chamber happens very slowly. This explains the absence of

hyphaema and of any damage to the optic nerve in cases with residual field of vision. In many cases the anterior chamber is not completely lost during the operation. In the majority of cases when the tenonconjunctival flap is accurately stitched in place by a lock stitch, the anterior chamber is almost completely restored and there is already a small draining bleb.

Control of postoperative inflammatory reactions and avoidance of posterior synechiae is obtained by means of subconjunctival injection of corticosteroids such as Depo-Medrone and the instillation of homatropine.

The fistula is kept open by the cicatricial retraction of the cauterized wall of the aperture ,and by the continuous flow of aqueous out of the eye. The end result after three weeks is usually a whitish round bleb varying in size from 3 to 4mm.

A comparison with Scheie's (Scheie 1958, 1959, 1962, 1965) operation — peripheral iridectomy with scleral cautery — first described in 1958, will not be out of place.

In this operation filtration depends also upon the retraction of the cauterized wall of a sclerocorneal incision. However, it is obvious that the trauma is more extensive, as numerous applications of the cautery have to be carried out an a corneoscleral incision about 6mm long.

Failure of prolapse of the iris into the wound is not uncommon and the introduction of other instruments into the anterior chamber is often necessary to perform an iridectomy. Hyphaema is not at all rare.

"The most frequently encountered and wearisone complication was delayed formation of the anterior chamber" (Scheie: 1962), so much so that the injection of air is often required.

This complication seems to be more common in cases of chronic open angle glaucoma.

It is probably true that the late reformation of the anterior chamber is an important factor in the appearance of lens opacities following glaucoma surgery. The obvious cause is excessive filtration through a too large incision and numerous cautery applications. The latter through excessive heat, may possibly cause damage to intraocular structures, such as the lens.

One hundred and fifteen eyes with chronic open angle glaucoma were operaten upon in our clinic during the period 1960-1970. 102 cases were males and 13 females. The incidence of chronic glaucoma was much higher in men than in women. There were four cases of Juvenile Glaucoma, one of them suffering from Naevus Flammeus.

All these cases presented extensive field losses and deep cupping. Surgery was resorted to because of continuous field loss in spite of medical treatment.

Tension was brought under control and except in the very old there was no further field loss. There were some cases where subjective improvement of vision was claimed. Treatment with miotics was continued in juvenile cases.

In some cases visible filtration gradually disappeared. However, there was no accompanying elevation of tension. Lens changes were observed, some years after surgery, in cases aged between 65 and 70 years. Four cases of infection of the draining bleb were recorded. They were soon brought under control by antibiotics and corticosteroids without any damage to the eyes.

During the same period, fifty three eyes — in eleven males and fortytwo females — suffering from acute and subacute glaucoma were operated upon because of failure to respond to medical treatment. There were four times as many females as males. Relief of tension was immediate.

It is important to place the fistula on the surgical angle of the anterior chamber. This is not always a simple matter because of the congested state of the eye. In two cases, failure to do this was followed by blockage of the fistula by a process of the ciliary body. In another case tension started to rise again in the two operated eyes because of gradual blockage by connective tissue of the fistulae. It was necessary to operate again, this time on quiet eyes. Filtration has been good for the past two years.

CHRONIC GLAUCOMA

Males

No.	Name	Age	Pre op. T.	Post op. T.	Date
1.	X.J.	55R.	35	20	1960
2.	X.J.	55L.	38	18	,,
3.	B.M.	38	40	20	,,
4.	B.M.	38	42	22	,,
5.	C.A.	59	40	18	,,
6.	C.A.	59	42	15	,,
7.	D.M.	50	40	20	,,
8.	D.M.	50	35	15	,,
9.	G.M.	70	38	12	,,
10.	M.M.	63	40	15	,,
11.	B.J.	70	37	12	1961
12.	B.P.	68	39	23	1962
13.	B.A.	47	33	17	,,
14.	B.S.	79	35	21	,,
15.	C.S.	70R.	35	20	1963
16.	C.S.	70L.	33	17	,,
17.	V.	51	33	19	,,
18.	B.	48	38	20	1964
19.	B.	48	37	18	,,
20.	B.J.	69	35	21	1965
21.	B.V.	73	36	20	,,
22.	C.N.	74	39	21	,,
23.	D.P.	70	32	17	,,
24.	G.T.	44	39	23	,,
25.	B.S.	62	38	21	,,
26.	F.A.	60	32	17	,,
27.	S.F.	71	33	10	1965
28.	A.E.	62	40	18	1966
29.	A.S.	72	32	15	,,
30.	A.D.	77	35	10	,,
31.	B.S.	59	33	15	,,
32.	C.P.	74	35	20	,,
33.	C.C.	75	39	22	,,
34.	C.J.	55	40	21	,,
35.	D.J.	51	45	20	,,
36.	D.F.	69	28	14	,,
37.	F.J.	60	31	12	,,
38.	F.M.	45	32	12	,,
39.	F.M.	45	30	12	,,
40.	C.P.	76	37	42	,,
41.	C.	68	35	20	,,
42.	Z.J.	69	36	20	,,
43.	C.J.	80	38	15	,,
44.	A.C.	66	35	12	1967
45.	C.P.	76	40	19	,,
46.	B.J.	70	33	20	,,
47.	B.J.	77	35	23	,,
48.	C.E.	32	40	22	,,
49.	C.J.	59	35	20	,,
50.	G.S.	78	30	15	,,
51.	M.J.	67	30	18	,,
52.	S.M.	73	35	12	,,
53.	S.M.	73	33	14	,,
54.	V.A.	71	35	21	,,
55.	V.A.	71	34	10	,,
56.	M.G.	73	35	21	,,
57.	M.G.	73	35	20	,,
58.	B.J.	55	38	22	,,
59.	Z.J.	70	35	15	,,
60.	B.A.	32	34	10	,,
61.	B.G.	77	38	10	,,
62.	A.N.	77	35	15	1968
63.	B.C.	65	30	15	,,
64.	C.T.	78	30	19	,,
65.	C.C.	81	30	45	,,
66.	F.J.	63	37	19	,,
67.	G.E.	43	40	20	,,
68.	G.E.	17	40	30	,,
69.	M.E.	68	35	22	,,
70.	P.J.	21	40	22	,,
71.	S.J.	75	30	22	,,
72.	Z.T.	63	33	13	,,
73.	A.J.	50	35	21	,,
74.	A.J.	50	36	20	,,
75.	A.S.	72	40	23	,,
76.	C.T.	7	40	25	,,
77.	C.J.	79	40	22	1969
78.	M.J.	79	35	21	,,
79.	M.	43	40	19	,,
80.	M.	43	40	19	,,
81.	S.F.	71	33	20	1969
82.	E.P.	74	30	12	,,
83.	G.M.	76	30	12	,,
84.	D.	79	31	12	,,
85.	G.G.	55	51	24	,,
86.	F.	65	33	15	,,
87.	M.	63	35	12	,,
88.	G.	69	40	15	,,
89.	G.	75	40	19	,,
90.	F.N.	73	30	15	1970
91.	V.J.	79	28	10	,,
92.	C.A.	66	35	20	,,
93.	D.C.	67	30	12	,,
94.	A.V.	69	35	10	,,
95.	D.S.	56	40	21	,,
96.	P.M.	63	32	21	,,
97.	A.M.	67	35	22	,,
98.	V.F.	74	31	19	,,
99.	G.J.	78	36	20	,,
100.	C.J.	54	40	20	,,
101.	M.L.	27	39	22	,,
102.	Z.L.	70	39	15	,,

Females

No.	Name	Age	Pre op. T.	Post op. T.	Date
103.	S.C.	76	40	12	1964
104.	F.	68	35	12	1966
105.	F.S.	50	40	12	1967
106.	P.G.	58	35	20	,,
107.	A.L.	52	35	13	,,
108.	B.P.	36	38	20	1968
109.	C.J.	63	30	10	,,
110.	F.C.	60	35	20	1969
111.	F.Z.	58	38	15	,,
112.	M.F.	77	33	21	,,
113.	T.S.	17	45	30	,,
114.	A.G.	73	35	12	1970
115.	M.M.	67	41	18	,,

ACUTE GLAUCOMA

Males

1.	G.	42	53	20	1963
2.	M.	65	62	21	1964
3.	P.C.	66	50	20	1966
4.	C.C.	76	54	17	1967
5.	F.A.	69	42	17	,,
6.	C.M.	65	45	12	,,
7.	P.V.	67	53	15	1970
8.	B.E.	56	46	17	,,
9.	P.	58	60	15	,,
10.	C.	50	40	20	,,
11.	A.	66	60	20	,,

Females

12.	T.M.	69	50	21	1962
13.	D.P.	74	46	17	,,
14.	D.G.	64	48	20	,,
15.	E.J.	64	50	30	,,
16.	A.J.	62	60	24	1963
17.	V.M.	64	64	20	,,
18.	G.C.	53	50	20	1967
19.	B.G.	57	45	17	,,
20.	S.M.	41	50	20	,,
21.	G.F.	56	40	21	,,
22.	G.R.	62	35	20	,,
23.	Z.A.	54	49	25	,,
24.	Z.A.	54	50	30	,,
25.	D.	48	38	15	,,
26.	M.M.	73	45	23	,,
27.	B.P.	67	40	22	1968
28.	M.M.	73	45	17	,,
29.	M.M.	73	50	20	,,
30.	M.R.	65	50	17	,,
31.	S.J.	53	50	35	,,
32.	S.J.	56	38	16	,,
33.	Z.A.	55	35	19	,,
34.	B.	36	50	23	,,

No.	Name	Age	Pre op. T.	Post op. T.	Date
35.	F.	62	50	35	,,
36.	F.L.	79	60	30	1969
37.	F.M.	69	50	20	,,
38.	F.M.	69	55	24	,,
39.	B.	45	50	20	,,
40.	B.	45	55	17	,,
41.	C.G.	56	45	20	1970
42.	D.M.	64	65	23	,,
43.	D.M.	64	60	18	,,
44.	M.M.	73	50	21	,,
45.	A.J.	73	45	20	,,
46.	S.J.	58	42	18	,,
47.	S.J.	58	40	15	,,
48.	M.M.	56	45	22	,,
49.	G.	70	55	21	,,
50.	B.M.	56	50	18	,,
51.	Z.A.	57	35	20	,,
52.	C.G.	70	45	21	,,
53.	F.E.	47	53	16	,,

DIABETIC HAEMORRHAGIC GLAUCOMA

Males

F.J.	59	1966
S.	52	,,
B.J.	50	1968
C.J.	75	,,
B.M.	70	1969
C.S.	66	,,
C.A.	59	,,

Female

P.	57	1969

APHAKIA

Males

H.	65	60	30	1969
C.	70	40	25	1968

Female

D.J.	49	40	22	1968

HAEMORRHAGIC GLAUCOMA ASSOCIATED WITH THROMBOSIS CENTRAL RT. VEIN

C.	68	1969
M.	28	,,

HYDROPHTHALMIA

Four cases.

The use of corticosteroids by instillation, by mouth or by subconjunctival injection has been found very useful in the control of the inflammatory reactions associated with congestive glaucoma.

Four cases — three male and one female — of rise of tension in aphakic patients were operated upon. A good result was obtained in two cases. One case was operated upon three times. In the other one it was necessary to control tension by miotics. The cause of the failure was thought to be the presence of vitreous in the anterior chamber. Four children aged about 1 year were operated upon for Hydrophthalmia. One case was a failure. A good result was obtained in the other three cases.

In the severe rise of tension accompanying diabetic Haemorrhagic Glaucoma, cyclodiathermy was associated with electrocautery punctures to control the severe pain and avoid excision of the eye. Eight patients, seven males and one female, were treated in this manner.

In the same way two cases of absolute glaucoma were operated following thrombosis on the central retinal vein.

A considerable number of cases operated upon for chronic open angle glaucoma and acute glaucoma ,were suffering from diabetes mellitus. In no case was any sign ever found of proliferative retinopathy. This seems to be in consonance with Becker's (1970) suggestion that elevated intraocular pressure might protect the diabetic patient from the changes associated with Proliferative Retinopathy.

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