

GLAUCOMA SURGERY IN THE BANTU

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Filtration operations for glaucoma in the Bantu race are generally considered to be less successful than in the White race, and surgery tends to be delayed in favour of medical treatment. No acceptable explanation for this observation has been offered, but 3 factors are considered to be important:—

(a) Bantu patients present for treatment much later than the average White glaucoma patient.

(b) The tendency for Bantu patients to develop keloid which may predispose to fibrosis of the bleb or fistula, although keloid formation after 50 years of age is rare. Friedenwald,¹ in discussing reasons for the failure of glaucoma operations, remarked that postoperative histological studies showed more episcleral scarring in Negroes than in White patients. This observation has not been confirmed.

(c) Excessive pigment present in the iris. Iliff,² whose figures are rather optimistic, states that sclerectomy in the Negro patient is totally unsuccessful, trephine is approximately 23% successful and iridencleisis approximately 50% successful. In a series of 70 eyes in Negro patients with glaucoma he found that 54.2% were controlled by filtering operation. Cohen *et al.*³ report success in 8 out of 10 Negro patients, using iridencleisis combined with 2,100 rep. of beta radiation at the time of operation. Their follow-up was less than 18 months in all but 2 cases. They did not observe postoperative cataract from beta radiation in any of their cases.

The Department of Ophthalmology at the University of the Witwatersrand has beds at the Johannesburg and Baragwanath Hospitals and runs an organized glaucoma

clinic at each hospital. It is therefore well equipped to do a racial assessment of glaucoma surgery.

This paper reports a retrospective study (1954-1964) on the results of filtration operations done on South African Bantu patients for chronic primary glaucoma. Iridencleisis or a Scheie procedure has been done as the operation of choice, without delaying surgery, when indicated, in favour of medical treatment.

The South African Bantu are ethnically similar to American Negroes and show a marked tendency to keloid formation.

MATERIAL

The teaching hospitals attached to the University of the Witwatersrand admit and treat approximately 3 times as many Bantu patients as White patients, making comparable figures for White and Bantu patients readily available. Surgical results have been analysed from two hospitals:

(i) The St. John's Eye Hospital, Johannesburg, a 100-bed eye hospital for Coloured patients, staffed by ophthalmologists and trainees appointed by the Order of St. John and by Baragwanath Hospital. It is an undergraduate and postgraduate teaching hospital within the Department of Ophthalmology of the University of the Witwatersrand. Bantu patients in this series were all treated in this hospital.

(ii) The Johannesburg Hospital, an undergraduate and postgraduate teaching hospital attached to the University of the Witwatersrand, where the White patients in this series were treated. There are 44 ophthalmic beds.

The series is confined to cases of primary chronic glaucoma, either open angle or closed angle.

The study includes 47 Bantu patients (64 eyes). In 9 eyes, in which multiple operations were required, the result of the last operation is recorded. The disease was

advanced in all these cases; as a rule visual field in one eye was grossly constricted with moderate visual field loss in the other eye. Glaucomatous cupping of the optic disc was present in all.

The 48 White patients (75 eyes) in the series are selected to match clinically the Bantu patients as closely as possible, but fall into an older age distribution (Table I), mainly owing to the presence of cases of juvenile glaucoma in the Bantu series. These patients have glaucomatous cupping of the optic discs and are cases of chronic open-angle or closed-angle glaucoma. The study is restricted to those surgical procedures which attempt to create a functioning fistula between the subconjunctival space and the anterior chamber. In all cases the indication for surgery is a failure of medical treatment resulting in progressive loss of field or vision and/or an elevated intra-ocular pressure. Operations are performed by different members of the staff of the two hospitals, including trainees. There are 2 cases of closed-angle glaucoma in the Bantu series but 24 cases in the White series (Table II), reflecting the different incidence of this disease in the two races.

METHODS

The following surgical procedures are used, adopting the classical techniques without modifications.

- (i) Iridencleisis, in most cases including one iris pillar.
- (ii) Preziosi operation.
- (iii) Scheie modification of the Preziosi operation.
- (iv) Scheie technique with inclusion of base of iris in the wound.
- (v) Flap sclerectomy with peripheral iridectomy.

These procedures are used at random, depending on the individual surgeon's choice. They are mostly done under local anaesthesia. Patients are hospitalized for approximately 5 days postoperatively and then allowed to attend the outpatient department. Ocular massage is instituted postoperatively as soon as the anterior chamber has reformed.

All patients have been followed-up for at least 1 year and a maximum of 5 years.

RESULTS

The results are recorded as:

(a) *Cured*. An intra-ocular pressure after operation of less than 17.5 mm.Hg Schiötz (5/5.5) taken on at least 4 occasions during different times of the day. The post-operative visual field and vision must closely approximate the pre-operative visual field and vision.

(b) *Controlled*. An intra-ocular pressure maintained at less than 17.5 mm.Hg Schiötz (5/5.5) after operation with the aid of miotics. Tensions taken at least 4 times at different times of the day. Postoperative vision and visual fields remain at the pre-operative level.

(c) *Failed*. The intra-ocular pressure cannot be maintained below 17.5 mm.Hg Schiötz (5/5.5) or there is significant loss of vision or visual field postoperatively.

Bantu Eyes		White Eyes	
Cured 44	}	Cured 51	}
Controlled 4		Controlled 6	
Failed 16		Failed 18	
Total: 64 eyes		Total: 75 eyes	

The results are presented in the following Tables:

TABLE I. AGE GROUPING OF PATIENTS

Age (years)	No. of Bantu patients (47)	No. of White patients (48)
0-10	0	0
11-20	5	0
21-30	4	0
31-40	5	0
41-50	10	0
51-60	7	11
61-70	5	19
71-80	8	18
80+	1	0
Unknown	2	0
Average age	53 years	68 years

TABLE II. CLASSIFICATION OF GLAUCOMAS

Glaucomas	No. of Bantu eyes	Average age of Bantu	No. of White eyes	Average age of Whites
Juvenile glaucoma simplex	7	20	0	—
Chronic closed angle	2	48	24	69
Open angle	55	56	51	67
Total	64	53	75	68

TABLE III. RESULTS OF SURGERY

Result	No. of Bantu eyes	% of Bantu eyes treated	No. of White eyes	% of White eyes treated
Cured	44	} 75%	51	} 76%
Controlled	4		6	
Failed	16		18	
Total	64	100%	75	100%

TABLE IV. FOLLOW-UP PERIOD RELATED TO FAILED OPERATION

Years	No. of Bantu eyes	Failed Bantu eyes	No. of White eyes	Failed White eyes
1	55	16	30	6
2	6	0	18	6
3	2	0	12	3
4	0	0	6	3
5	1	0	9	0
Total:	64 (100%)	16 (25%)	75 (100%)	18 (24%)

Average: 1.2yrs.

DISCUSSION

The purpose of this report is to emphasize that the Bantu do well with filtration operations for chronic primary glaucoma and that the results do not differ significantly from results in White patients. This is, however, a retrospective study and in order to confirm these figures a prospective study is being made.

An analysis of these figures shows a cure rate in the Bantu of 69% while a further 6% are controlled when miotics are added postoperatively; if one combines these figures then 75% of all cases are kept under control for follow-up periods ranging from 1 to 5 years postopera-

TABLE V. RESULT RELATED TO SURGICAL TECHNIQUE

Operation	No. of Bantu eyes				No. of White eyes			
	Treated	Cured	Controlled	Failed	Treated	Cured	Controlled	Failed
Iridencleisis	12 (100%)	6 (50%)	1 (8%)	5 (42%)	30 (100%)	18 (60%)	3 (10%)	9 (30%)
Preziosi	4 (100%)	3 (75%)	0	1 (25%)	12 (100%)	9 (75%)	0	3 (25%)
Scheie	20 (100%)	14 (70%)	1 (5%)	5 (25%)	27 (100%)	18 (66.6%)	3 (11.2%)	6 (22.2%)
Scheie & iridencleisis	25 (100%)	19 (76%)	2 (8%)	4 (16%)	0	0	0	0
Sclerectomy	3 (100%)	2 (66.6%)	0	1 (33.3%)	6 (100%)	6 (100%)	0	0
Total	64 (100%)	44 (69%)	4 (6%)	16 (25%)	75 (100%)	51 (68%)	6 (8%)	18 (24%)

TABLE VI. RESULTS OF SURGERY RELATED TO TYPE OF GLAUCOMA

Type of Glaucoma	No. of Bantu eyes				No. of White eyes			
	Treated	Cured	Controlled	Failed	Treated	Cured	Controlled	Failed
Juvenile glaucoma simplex	7	6 (86%)	1 (14%)	0	0	0	0	0
Chronic closed-angle glaucoma	2	2 (100%)	0	0	24 (100%)	9 (37.5%)	6 (25%)	9 (37.5%)
Open-angle glaucoma	55	36 (66%)	3 (4%)	16 (30%)	51 (100%)	42 (83%)	0	9 (17%)
Total	64 (100%)	44 (69%)	4 (6%)	16 (25%)	75 (100%)	51 (68%)	6 (8%)	18 (24%)

tively. This compares favourably with the figure for White patients and there is no significant statistical difference (Table III). The number of White patients cured in this series (68%) compares favourably with the figures obtained by Randolph and Robertson,⁴ who presented the operation results (trephine and iridencleisis) in 117 eyes with congestive and non-congestive glaucoma from the Wilmer Institute. Approximately 60% of their patients were cured. The rather high incidence of cure in this series (68%) can be accounted for by the higher incidence of successes obtained with the Scheie operation. The 25% of failed cases in Bantu patients are all in the open-angle glaucoma group probably because this is the only group in which a statistically significant number of eyes are re-operation results (trephine and iridencleisis) in 117 eyes presented (Table VI). These failures all occur within the first year (Table IV) and all except one case within 3 months postoperatively (Iliff in 1944 makes a similar observation), which contrasts markedly with the failure in White patients, which are spread over 4 years postoperatively.

The relationship of results to surgical technique are of significance (Table V). A casual glance at this table reflects the much higher incidence of success in the Bantu with operations combining cautery with the scleral incision (Preziosi, Scheie and Scheie with iridencleisis) than in those where cautery is not used (iridencleisis and sclerectomy). Comparing cured and controlled cases one finds that where cautery is not used, 8 cases are controlled from a total of 15 (53.3%) and where cautery is used 39 cases are controlled from a total of 49 (79.6%). This is a

statistically significant difference at the level $p = > 0.20 < 0.50$ ($\chi^2 = 3.16$, $n = 1$).

The incidence of cure with iridencleisis alone (50% cure) in the series is the same as Iliff's series.²

It seems that the more optimistic prognosis for filtration operations in Bantu patients reflected in this paper is related to the addition of scleral cautery to the operative technique. Thus the Scheie operation should be considered the filtration operation of choice in Bantu patients. Using this operation, the long-term results in Bantu patients with glaucoma does not differ significantly from those in White patients, comparing patients whose disease is equally advanced in both groups.

CONCLUSIONS

1. Primary glaucoma in 64 Bantu eyes was treated by filtration operation and 75% of these eyes were controlled for periods of 1-5 years postoperatively.

2. Filtration operations which included cautery to the scleral wound (Preziosi, Scheie, Scheie with iridencleisis) were superior to those that did not include cautery (iridencleisis, sclerectomy with peripheral iridectomy).

3. When operative failure occurred in Bantu patients it was noted within the first 3 months, while in White patients it was spread over 4 years postoperatively.

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