

Results of trabeculectomy for pseudo-exfoliative glaucoma

A study of 52 cases

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In Scandinavia, pseudo-exfoliative glaucoma accounts for approximately one half of cases of open-angle glaucoma (Aasved, 1971) and displays a number of characteristic features that distinguish it from simple glaucoma. The intraocular pressure (IOP) is usually higher and the prognosis poorer. These eyes also display characteristic changes in the anterior ocular segment, including deposition of pigment, flakes, and amorphous material.

The medical therapy of pseudo-exfoliative glaucoma is often insufficient and we have therefore chosen to study a microsurgical approach. This paper presents the results of trabeculectomy in 52 eyes.

Method

The surgical technique followed that described by Watson (1969). An operating microscope (Zeiss Op-Mi 7) was used in all cases. Peroral intake of 100–150 ml. 50 per cent glycerine 30 min. before surgery was used for reduction of the IOP.

Conventional retrobulbar anaesthesia and akinesia was administered. A large, full conjunctival flap was fashioned with an incision parallel to the corneo-scleral limbus. In the 12 o'clock position a half-thickness limbus-based scleral flap measuring 4 × 6 mm. was prepared. The lamellar dissection in the anterior direction passed the limbus and entered the corneal tissue. All bleeding vessels were cauterized. The incision into the anterior chamber was placed immediately in front of Schwalbe's line in clear corneal tissue. As a rule the basal iris prolapsed and was perforated with release of aqueous whereafter spontaneous reposition of the iris took place.

A radial cut backwards from the right end of the corneal incision divided the trabecular band, Schlemm's canal, and the scleral spur. The next cut was made in the sclera parallel to and just behind the scleral spur. The uveal meshwork was separated from the trabecular band with open scissors and the trabeculectomy block was then released by a second radial cut at the left end of the corneal incision.

A broad basal iridectomy was carried out corresponding to the trabeculectomy and the scleral trapdoor was sutured with virgin silk, using two stitches. The conjunctiva was closed with a running 6-0 silk suture. 1 per cent atropine eye-drops and 1 per cent chloramphenicol ointment were instilled before padding. The patient was allowed up after dressing on the first post-operative day and discharged on the sixth day.

Atropine drops were continued for 5 weeks but no routine steroid therapy was given.

Criteria for surgery

Progress of defects of the visual field irrespective of IOP, or an IOP exceeding 25 mm.Hg by applana-tion tonometry in the sitting position, in spite of the maximum tolerable medical treatment.

Patients

The present series consists of 52 consecutively operated eyes with pseudo-exfoliative glaucoma, which have been followed postoperatively for 6 months to 2 years. The mean age was 70 years for both males and females. Table I shows the sex distribution and eyes treated.

Table I *Operations performed, by sex*

| Sex | | Male | Female | Total cases |
|-------------------|------|------|--------|--------------|
| Eyes operated | One | 10 | 20 | 30 |
| | Both | 4 | 7 | 11 |
| Total no. of eyes | | 18 | 34 | 41 (52 eyes) |

Results

The post-operative results concerning the visual acuity, the visual fields, and the IOP are given in Tables II and III and the Figure. No sudden impairment of visual acuity or further loss of visual field has occurred as a direct consequence of the surgical procedure. This favourable outcome of trabeculectomy was found even in eyes with very poor fields, in contrast to current expectations.

Table II *Postoperative changes in visual acuity, by duration of observation*

| Duration of observation (yrs) | $\frac{1}{2}$ | 1 | $1\frac{1}{2}$ | 2 | No. of eyes |
|-------------------------------|---------------|---|----------------|---|-------------|
| Change in visual acuity | +0.3 | 1 | | 1 | 2 |
| | +0.2 | 2 | | | 2 |
| | +0.1 | | 2 | 1 | 3 |
| | 0 | 9 | 8 | | 3 |
| | -0.1 | 5 | 4 | | 10 |
| | -0.2 | 2 | 5 | | 7 |
| | -0.3 | 1 | | 1 | 2 |
| | > -0.3 | 2 | | 3 | 5 |

Table III *Postoperative changes in the visual field, by duration of observation*

| Duration of observation (yrs) | $\frac{1}{2}$ | 1 | $1\frac{1}{2}$ | 2 | No. of eyes |
|-------------------------------|---------------|----|----------------|---|-------------|
| Visual field | Better | 1 | | | 1 |
| | Same | 15 | 19 | 6 | 2 |
| | Worse | 6 | | 1 | 2 |
| | | | | | 9* |

*Condition due to cataract (5) and progressive atrophy of the optic nerve (4)

The pressure-reducing effect was very satisfactory for the whole group, with a mean reduction of 16 mm.Hg. Nevertheless, there was an unsatisfactory postoperative decrease in IOP in ten eyes. Eight of these have subsequently been successfully treated with a second trabeculectomy (3 eyes), medical treatment (4 eyes), or a combination of both (1 eye). Two eyes maintained a postoperative IOP > 25 mm.Hg; one was blind and was given up and the other fluctuates between 22 and 29 mm.Hg on medical therapy.

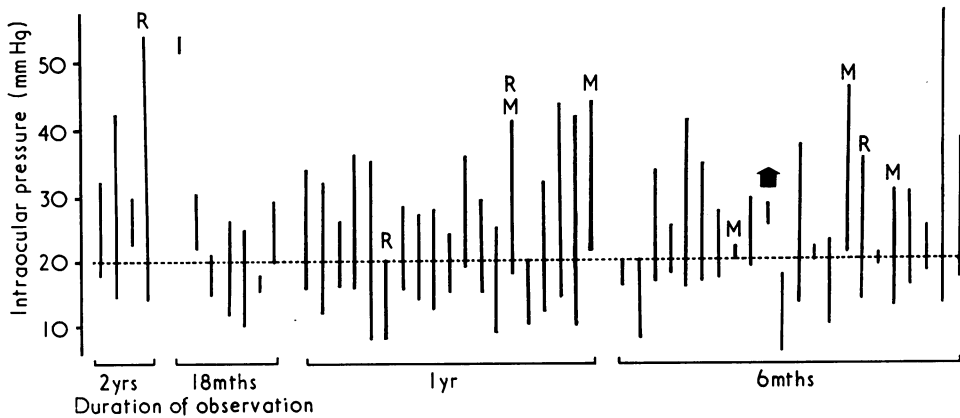


FIGURE Postoperative reduction in IOP. Each bar designates one eye.

R = Re-operation

M = Medical treatment after surgery

↑ = Postoperative increase in IOP

COMPLICATIONS

No serious complication was encountered in the present series, but some minor complications were observed. Choroidal detachment of a few days' duration was common, but subsided spontaneously in every case. Postoperative intraocular irritation was infrequent. Only three eyes needed treatment with topical steroids for 3 weeks after surgery. Minor operative or postoperative haemorrhage was noted, but never became a problem. No case presented a flat chamber. A possible late complication was the slow progression of a pre-existing cataract in seven eyes.

Discussion

Trabeculectomy has proved itself a safe and simple filtering procedure (Cairns, 1968; Watson, 1969; Ridgeway, Rubinstein, and Smith, 1972; Thyer and Wilson, 1972). It is evident from the present series that its pressure-reducing effect in pseudo-exfoliative glaucoma is striking, and as far as can be judged by the period of observation the effect is lasting. No surgical method is 100 per cent. successful, but in the ten eyes in which the postoperative IOP was not reduced to a desired level, a second trabeculectomy or medical treatment did attain that level in eight eyes. The absence of any serious complication compares very favourably with other filtering surgical procedures. The rapid re-establishment of the depth of the anterior chamber and the very discrete and flattened filtering bleb have proved particularly advantageous. Failure to attain mydriasis after surgery is often seen after the preoperative use of cholinesterase inhibitors, and we therefore recommend trabeculectomy instead of prescribing these drugs, which seldom do better than pilocarpine.

The original technique of Cairns (1968) did not include the scleral spur in the excised tissue block. In some of his histology specimens, however, no trabecular tissue was found. This may be due to failure to sever the two extremities of the trabecular band from the Schwalbe's line and the scleral spur respectively. The modification by Watson (1969) which

we have used should be more satisfactory in this respect, since both Schwalbe's line and the scleral spur are excised with the corneo-scleral trabecular band suspended between them.

This technique is simple and efficient, and even the less experienced surgeons manage to make their first trabeculectomy a perfect operation.

In our hands trabeculectomy has become an indispensable surgical procedure for pseudo-exfoliative glaucoma and is our first choice in such cases which do poorly on medical treatment with pilocarpine and epinephrine, and also for those cases in which a rapid loss of the visual field is anticipated.

Conclusion

Pseudo-exfoliative glaucoma responds favourably to trabeculectomy, and a lasting control of the IOP is usually attained. In cases in which the postoperative reduction of the intraocular pressure is unsatisfactory, medical treatment has a better effect than when it was given preoperatively. Trabeculectomy is recommended early in the course of cases of pseudo-exfoliative glaucoma when therapy with pilocarpine and epinephrine instillations prove ineffective.

Summary

In the present series of 52 eyes with uncontrolled pseudo-exfoliative glaucoma, 42 were controlled with one trabeculectomy. A second trabeculectomy, postoperative medical treatment, or a combination of both, succeeded in controlling a further eight eyes. No serious early or late complications were noticed.

References

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