

British Journal of Ophthalmology, 1988, **72**, 820–822

Surgery of aphakic retinal detachment

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SUMMARY In a prospective study 84 patients with aphakic retinal detachment were treated either by local scleral buckling alone or combined with an encirclement. The rate of surgical reattachment of the retina was found to be similar with either technique over a minimum follow-up period of one year. Simplicity and a low incidence of serious complications of the local procedure merit its application as the initial method of repairing aphakic detachments.

About 20% of all retinal detachments occur in aphakic eyes.¹ Vitreous complications associated with the removal of cataract as well as other factors like myopia and lattice degeneration predispose the aphakic eye to an early retinal detachment.² Preservation of the integrity of the posterior segment by performing extracapsular cataract surgery is being popularised in order to reduce the incidence of aphakic retinal detachment.²

The surgery of aphakic retinal detachment (ARD) is considered to be relatively difficult because of its rapid progression to total separation and an increased tendency to develop proliferative vitreoretinopathy quickly.³ Moreover, small oral or postoral retinal holes are said to be common and can be easily missed.⁴ It is therefore often argued that the surgery of aphakic retinal detachment should preferably include an encirclement procedure. However, an encircling element carries certain specific disadvantages, and its absolute necessity has never been clearly established.⁵

The significance of cerclage was therefore studied in a series of aphakic retinal detachments, and the results are reported here.

Materials and methods

All consecutive aphakic retinal detachments occurring in patients above 40 years of age were thoroughly examined for surgical repair, and cases for the present study were carefully selected in conformity with the following criteria: (1) good pupillary dilatation and clear optical media; (2) separated retina fairly mobile, with absent or minimal periretinal

fibrosis; (3) if multiple, all retinal breaks localised to one quadrant of the fundus only; (4) no contraindication to the patient's receiving repeated general anaesthetics; (5) no previous retinal detachment surgery to the affected eye.

Cases with similar retinal detachments as regards the type of retinal break and extent of retinal separation were allocated alternately to group A and group B. Forty eyes in group A received only localised buckling with Silastic sponges or silicon tyres as explants. Forty-four eyes in group B, however, were also given an encirclement with a 2.5 mm wide silicon rubber band in addition to local buckling. The unequal numbers in the two groups resulted from the fact that two cases which were allocated to group A inadvertently had the group B procedure performed on them. The error was detected only at the final analysis. Therefore they had to be counted as group B. Retinal breaks were treated by cryosurgery under visual control. Drainage of subretinal fluid was avoided if possible. If it was found necessary, intravitreal air was injected to achieve near normal intraocular pressure at the end of surgery. Whenever air was injected, positioning of the patient was continued for 48 hours postoperatively. All patients were operated upon under a general anaesthetic. Most of the cases could be discharged by the fifth postoperative day. The patients were periodically reviewed for at least one year. Success was defined as reattachment of the retina for six months following the last procedure.

Results

A total of 84 cases operated upon were followed up for one to three years, average 15.5 months. Forty

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Table 1 Extent of retinal separation at the time of surgery in each group

	Group A	Group B
One quadrant	3 (7.5%)	3 (6.8%)
Two quadrants	7 (17.5%)	7 (15.9%)
Three quadrants	14 (35%)	16 (36.4%)
Four quadrants	16 (40%)	18 (41%)
Total	40	44

Table 2 Characteristics of retinal breaks in each group

	Group A	Group B
<i>Traction tears</i>		
Single	20 (50%)	23 (52.2%)
Multiple	2 (5%)	3 (6.8%)
<i>Round holes</i>		
Single	6 (15%)	5 (11.4%)
Multiple	12 (30%)	13 (29.6%)
Total	40	44

eyes in group A and 44 eyes in group B were available for analysis after a minimum follow-up of one year.

The peak incidence of ARD was seen in the 50–60 year age group. Two-thirds of the patients in each group were male. 75% of patients in this study presented within one month of experiencing the first symptom of ARD. About 25% of them were seen within two weeks.

TYPES OF APHAKIA

Eighty two patients in this series had undergone intracapsular cataract extraction and one of them had received an angle supported anterior chamber intraocular lens. In two cases an extracapsular cataract extraction had been performed. In one of them a posterior chamber intraocular lens had been implanted six months previously but vitreous had come forward through a break in the posterior capsule.

EXTENT OF RETINAL DETACHMENT

Most patients with ARD (75%) had three or all four quadrants of the fundus involved by the time these were discovered (Table 1). The extent of the detachment did not correlate well with its duration in this analysis ($p > 0.05$). ARD localised to one quadrant alone was rather rare.

RETINAL BREAKS

65% of eyes in group A and 63.7% of eyes in group B had only one retinal break. Most of these (50%) were traction tears with small triangular or typical horse-shoe configuration. Single, round atrophic retinal holes were not common in this series (Table 2) In contrast, multiple round holes were more commonly

Table 3 Results of surgery in the two groups

	Group A	Group B
Success	36 (90%)	40 (91%)
Failure	4 (10%)	4 (9%)

Table 4 Comparison of visual recovery following surgery in each group

Visual acuity	Group A		Group B	
	Preop	Postop	Preop	Postop
6/6–6/12	2 (5%)	14 (35%)	3 (6.8%)	10 (22.7%)
6/18–6/36	7 (17.5%)	15 (37.5%)	6 (13.6%)	16 (36.3%)
6/60 or less	31 (77.5%)	11 (27.5%)	35 (79.6%)	18 (41%)

Table 5 Comparison of surgical complications

Complication	Group A	Group B
Glaucoma	–	3 (6.8%)
Anterior segment ischaemia	–	1 (2.2%)
Macular pucker	2 (5%)	4 (9%)
Choroidal detachment	1 (2.5%)	7 (15.9%)
Choroidal haemorrhage	4 (10%)	2 (4.5%)
Massive proliferative vitreoretinopathy	3 (7.5%)	5 (11.3%)

encountered, accounting for 30% of ARD in group A and 29.6% of ARD in group B (Table 2). Lattice retinal degeneration, which was more frequently associated with round retinal breaks, was present in about 30% of eyes in each group.

RESULTS OF SURGERY

The anatomical results of surgery in both groups of ARD were almost similar (Table 3). After a minimum follow-up of one year, the retina remained flat in 90% of eyes in group A and in 91% of eyes in group B following the first operation.

Visual recovery was a little better in group A (Table 4). However, the difference was not significant statistically ($p > 0.05$).

A relatively greater frequency of certain complications in group B was interesting (Table 5) Three cases of postsurgical glaucoma in group B required timolol drops 0.5% twice daily for adequate control. Macular complications resulted in reduced visual outcome.

Discussion

The surgical outcome of retinal detachment in an aphakic eye is generally considered to be worse than in a phakic eye^{3,6} Difficulty in locating the small peripheral retinal holes in the presence of a poorly dilating pupil and hazy optical media is thought to be responsible for more operative failures.⁷ Pre-existing

proliferative vitreoretinopathy, or its development postoperatively, is another factor contributing to poor results of surgery for ARD⁷

Aphakic retinal detachments have been treated mostly by local scleral buckling combined with an encirclement in the hope that missed retinal holes would remain peripheral to the new ora serrata and that the subsequent development of fresh retinal breaks would not produce retinal detachment posterior to the circumferential ridge.⁸ The early use of constricting encircling elements had two main objectives: the indentation of the sclera, creating a permanent buckle, and compensation for lost intraocular volume after drainage of subretinal fluid.⁵ It has also been argued that an encirclement would have a permanent effect on the release of vitreous traction.⁸ However, scleral buckling and the relief of ordinary dynamic vitreous traction need not to be permanent.⁹

In this study the majority of detachments were caused by a single retinal break which could be easily closed by local scleral buckling. 50% of the single retinal breaks were traction tears, which are said to be uncommon in ARD.¹⁰ Multiple holes, widely separated in the detached retina, were rarely encountered. Similar observations have been previously reported² and do not support the common concept of so-called typical aphakic detachment¹ characterised by multiple holes. The success rate of reattachment with local buckling was as good as with the encirclement procedure in this study, which suggests that most ARD can be safely treated by local scleral buckling alone. A slightly better visual outcome and a low incidence of serious complications associated with local buckling, as seen in the present series, merit the application of this procedure as the initial method of repairing an aphakic retinal detachment. In this study cases of ARD with marked proliferative vitreoretinopathy and without any detectable retinal break were not included, as such eyes are usually treated by an encirclement procedure and constitute not more than 20% of all ARD cases seen in this department. Encirclement does not

seem to prevent the development of proliferative vitreoretinopathy.⁵

Encirclement is a perpetuation of a tradition in retinal detachment surgery, and there has been a tendency to perform this procedure in 'difficult' cases, including aphakic detachments. Higher incidence of glaucoma, anterior segment ischaemia, and choroidal detachment in cases treated by an encirclement is well known¹⁰ and is supported by this study. Constrictive cerclage causes undesirable radial folds, postoperative pain, induced myopia, and predisposes to late intrusion of the element.⁵

This prospective study has shown that local scleral buckling alone can be very effective in the management of the great majority of cases of aphakic retinal detachment provided a painstaking preoperative examination is carried out to locate the retinal breaks and assess the subtle vitreoretinal pathology.

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Accepted for publication 3 September 1987.



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Br J Ophthalmol 1988 72: 820-822
doi: 10.1136/bjo.72.11.820

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