Myopia-aphakia

I. Prevalence of retinal detachment

S. W. HYAMS, M. BIALIK, AND E. NEUMANN

From the Department of Ophthalmology, Rothschild Hospital, and Aba Khoushy Medical School, Haifa, Israel

The incidence of retinal detachment after intracapsular extraction of senile cataract is reported in this paper in a consecutive series of 136 eyes with high myopia, with particular reference to the age of the patient and the interval between lens extraction and the appearance of retinal detachment.

We could find only two similar studies in the literature (Morax and Aron, 1961; Dienstbier, 1962); and two other studies which may have been influenced by the performance of prophylactic treatment in some of the cases (Barraquer, 1958; Triester, 1972).

Material and methods

From January 1966 to December 1972, 136 intracapsular cataract extractions were performed in our department on eyes with axial myopia of -6.0 dioptres or more. The refraction was calculated according to the formula: Phakic correction = (aphakic correction $- 11$) $\times 2$, (Borish, 1970). There were 39 men and 61 women. In every case the operation was performed under local anaesthesia using a limbus-based flap, 5-7 preplaced sutures and α -chymotrypsin; the patient was allowed out of bed the day after the operation. Vitreous loss occurred in six eyes. In no case was any treatment designed to prevent retinal detachment performed before cataract extraction. Photocoagulation of asymptomatic retinal breaks discovered after cataract extraction was performed on two eyes which had suffered vitreous loss.

The incidence of retinal detachment was assessed by examining the hospital records of all cases of retinal detachment seen until June 1974. In addition, the national register of cases of retinal detachment (Michaelson and Stein, 1972) was examined to make sure that no case had developed retinal detachment without our knowledge, or had been treated preventively in another department, but there was no such case. The follow-up therefore extended over a period of $1\frac{1}{2}$ -9 $\frac{1}{2}$ years and was complete. One case in which retinal detachment was probably present before cataract extraction was not included.

Results

Retinal detachment occurred in nine of the 136 eyes (6.7 per cent).

Table I shows, according to age, the number of eyes with cataract and the number of eyes which developed retinal detachment. More than half the eyes with cataract, but only two of the nine eyes with retinal detachment, were of patients over the age of 60 years: these two eyes were of patients aged 61 and 62 years.

Data concerning the nine eyes which developed retinal detachment are shown in Table II. There were five men and four women. Bilateral detachment occurred in two patients. Vitreous loss had occurred in two eyes. Retinal breaks without detachment were found in three of the four remaining eyes in which vitreous had been lost, (see page 483). Apart from a small hyphaema in one eye, the postoperative course was uneventful in all cases. In Case 3 there was direct trauma to the eye, from a plastic ball, immediately before the occurrence of the detachment. The interval between cataract extraction and the occurrence of retinal detachment was 1 week to 3 months in five cases, 1 year in two cases, and more than 1 year in two cases.

Discussion

In the present study, retinal detachment occurred after intracapsular cataract extraction in nine out

Table I Number of eyes with cataract and number of eyes which developed retinal detachment, according to age

Age at time of lens extraction (years)	No. of eyes	
	With cataract	With detachment
40-50	17	1
51-60	44	6
61-70	36	2*
> 70	39	-
	136	9 (6.7 per cent)

*Age 62 and 63 years

Address for reprints: Dr S. W. Hyams, Department of Ophthalmology, Central Emek Hospital, Afula, Israel

Table II *Clinical details of nine myopic eyes with retinal detachment*

Patient no.	Age at time of cataract extraction (years)	Sex	Refraction (phakic)	Vitreous loss	Hole causing detachment	Interval between cataract extraction and detachment
1	53	M	-17	+	Round large upper temporal	2 wks
** { 2	61	F	-19	-	No holes	1 yr
3	60	F	-17	+	Macular hole	4½ yrs*
4	58	F	-16	-	Round large upper temporal	1 wk
5	47	F	-12	-	Round + horseshoe large upper temporal	4 wks
6	62	M	-9	-	Horseshoe large upper temporal	1 yr
7	54	M	-8	-	Horseshoe large upper temporal	1½ yrs
** { 8	55	M	-6	-	Round small lower temporal	6 wks
9	58	M	-6	-	No holes	2 mths

*Trauma to eye

**Bilateral cases

of 136 eyes with myopia of -6.0 dioptres or more (6.7 per cent). Other authors have reported an incidence of 6.2 to 8.1 per cent (Morax and Aron, 1961; Dienstbier, 1962; Triester, 1972), see Table III. Barraquer (1958) found that retinal detachment occurred in 1.3 per cent of eyes with all degrees of myopia after lens extraction, but prophylactic surgery in the form of lamellar scleral resection was performed in one-third of the eyes in this series. There was also some selection of cases in Triester's series, which was the 'control group' used for comparison with 164 eyes treated by prophylactic diathermy before cataract extraction: indications for treatment were the presence of areas of retinal degeneration and a history of retinal detachment in the other eye.

The overall incidence of retinal detachment after cataract extraction of 0.4 to 3.5 per cent reported by various authors (reviewed by Scheie, Morse, and Aminlari, 1973) is misleading since 30 to 64 per cent of aphakic detachments occur in myopic eyes (Shapland, 1934; Schepens, 1951; Melbran

and Dodds, 1964; Witmer, 1969; Ashrafzadeh, Schepens, Elzeneiny, Moura, Morse, and Kraushar, 1973) and if such eyes are excluded, the incidence of detachment is much lower. In our department the incidence of detachment after cataract extraction in emmetropic eyes during the period of the present study was 0.28 per cent (unpublished data).

Seven of the nine cases of retinal detachment in the present series occurred within 1 year of cataract extraction, five of them within 3 months. Five of the six detachments in myopic-aphakic eyes reported by Morax and Aron (1961) occurred within 3 months of cataract extraction and half of the myopic-aphakic detachments reported by Triester (1972) and by Witmer (1969) occurred within 1 year of cataract extraction. In other series in which the cases were not classified according to refraction, 38.4 to 46.5 per cent of aphakic detachments occurred in the first year after cataract extraction (Ashrafzadeh and others, 1973).

The average age of patients undergoing cataract

Table III *Incidence of retinal detachment in myopia-aphakia reported by various authors*

Author	Year	No. of eyes	No. of detachments	Per cent	Degree of myopia	Preventive treatment
Barraquer	1958	156	2	1.3	All	Yes*
Morax and Aron	1961	92	6	6.5	High	No
Dienstbier	1962	96	6	6.2	High	No
Triester	1972	210	17	8.1	High	Yes*
Present series		136	9	6.7	High	No

*See text

extraction in the present series was 63.2 years, and the average age of patients with aphakic detachments was 56.3 years: all the detachments were in patients who were under the age of 63 years. Pasino and Santori (1967) also found that the average age of patients operated on for senile cataract followed by retinal detachment was significantly lower than that of other patients with senile cataract.

The tendency for aphakic retinal detachment in eyes with high myopia to occur only a short time after cataract extraction, and to occur in relatively young patients, may be connected with the fact that posterior vitreous detachment (PVD) is less likely to be present at the time of lens extraction in young patients. In such cases PVD probably occurs soon after lens extraction (see page 483) and is probably a more sudden and dangerous process in aphakia because of the greater mobility of the vitreous in the absence of the lens.

It appears that myopic eyes which undergo cataract surgery before PVD has occurred, bear a special risk of developing retinal detachment, and it would seem reasonable to try to postpone cataract extraction in myopic eyes until vision in the better eye has dropped below a useful level.

Summary

Retinal detachment after cataract extraction occurred in nine out of 136 eyes with myopia of 6 or more dioptres (6.7 per cent), during a follow-up period of $1\frac{1}{2}$ – $9\frac{1}{2}$ years. Five of the nine detachments occurred within 3 months of cataract extraction. All patients with retinal detachment were under the age of 63 years.

Relatively young patients with high myopia bear a special risk of developing retinal detachment after lens extraction. The possible reason for this is discussed.

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