VITREOUS DETACHMENT IN APHAKIC EYES*

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VITREOUS detachment is a constant accompaniment and thus a cardinal symptom of retinal detachment, the importance of which is being increasingly stressed by modern authors. It has been indicted as one of the causes of retinal detachment, its action being enhanced by vitreo-retinal adhesions, congenital or acquired.

It is less known that all aphakic eyes show some degree of vitreous detachment, a fact first mentioned by Heinz (1944) in a report to the Ophthalmological Society of Vienna (Hruby, 1950).

Cataract extraction with the aid of alpha-chymotrypsin has since become a common practice, and we wished also to investigate whether the use of this enzyme affects the incidence of vitreous detachment in aphakic eyes. To ascertain whether the vitreous detachment bore any relationship to the aphakia, we compared phakic eyes in persons of the same age group as our patients.

Method

Only eyes without operative or post-operative complications were included in this study. Other criteria included the presence of a round pupil, the performance of a single peripheral iridectomy, and intracapsular cataract extraction. The eyes were examined with the ophthalmoscope, the slit lamp, the Hruby lens, and the Goldmann three-mirror lens. The interval between the operation and the examination ranged from 3 months to 3 years. In fifty cases the operation had been performed with alpha-chymotrypsin and in fifty without. Cases in which the anterior hyaloid membrane was ruptured were excluded.

Operative Technique

Routine pre-operative preparation of the patient included sedatives the day before the operation.

On the morning of the operation the patient was given Largactil intramuscularly followed by pethidine 50–100 mg. intravenously, and Letidrone on the operating table.

Anaesthesia was obtained with 4 per cent. cocaine, followed by retrobulbar Novocain with hyalonuridase.

Immobilization was obtained by a fornix-based conjunctival flap and rectus suture. After the insertion of a single pre-placed 6/0 silk suture, the eye was incised with a keratome or razor blade, the incision being enlarged with scissors. Another pre-placed suture was then inserted at the nasal side of the incision, and a single peripheral iridectomy was performed. The lens was extracted with the aid of a blunt forceps or erisophake. Five or more additional corneo-scleral sutures were inserted, and the incision was covered with a Kuhnt conjunctival flap using 6/0 silk sutures.

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After rest in bed for 24 to 48 hours post-operatively, the patient was allowed up, and 7 days after the operation, the patient was discharged to continue treatment as an out-patient.

Results

The results were uniform, in that all eyes examined showed posterior vitreous detachment, regardless of whether alpha-chymotrypsin was used, or whether the anterior hyaloid membrane was bulging into the anterior chamber. The vitreous detachment assumed sixteen different forms (Figure), some of which were most impressive. We saw, for example, flagella-form excrescences floating in the subvitreal space.

The appearance of more than one posterior hyaloid membrane was probably due to an optical illusion, a single membrane falling into several vertical folds. In some instances, the membrane appeared as a funnel-shaped structure. In other cases we saw opacities on the surface of the posterior hyaloid membrane or in the subvitreal space. All the other forms observed are well documented in the literature.

Regarding phakic eyes (which have been examined from the beginning of the century by various methods), we found an incidence similar to that given by Goldmann (1961), *i.e.* that vitreous detachment occurs in 50 to 70 per cent. of persons aged 50 to 70 years with healthy eyes.

Discussion

Theoretically, the conditions for the development of vitreous detachment after cataract extraction are ideal. With the lens extraction the intra-ocular space becomes relatively larger and the hyaloid membrane moves further forward (through displacement either of the membrane itself or of the vitreous body as a whole, or perhaps through swelling of the vitreous), thus creating a negative pressure in the posterior vitreous space.

It is impossible exactly to determine the time of the displacement: indeed, posterior vitreous detachment may have been present before the operation, since many phakic eyes in the same age group show the condition in some degree. On the other hand, the operation may act as a trigger-mechanism, or the detachment may develop after the operation. Regarding the latter proposition, it is noteworthy that many patients begin to complain of seeing "flies" in front of the operated eye 2 to 3 weeks after the operation, and we suspect that the vitreous detachment starts then in many cases.

There is a strong temptation to relate the comparatively high incidence of retinal detachment in aphakic eyes (2 to 3 per cent.) to the vitreous detachment; it is probably correct to regard the cataract extraction as a step in the natural history of the development of retinal detachment in aphakic eyes.

Summary

100 aphakic eyes were examined, and all showed some form of posterior vitreous detachment. Since phakic eyes in the same age group show an incidence of only 50 to 70 per cent. of the same condition, and since the incidence of retinal detachment is much higher in aphakic eyes, one may suspect that some connexion exists between

FIGURE.—Various types of vitreous detachment found in a hundred aphakic eyes.

the higher incidence of retinal detachment in aphakic eyes and the invariable presence of vitreous detachment. The use of alpha-chymotrypsin does not seem to affect the existence or the form of vitreous detachment.

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