STRIPPING OF DESCEMET'S MEMBRANE IN CATARACT EXTRACTION*

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THIS PAPER DESCRIBES three eyes in which Descemet's membrane was inadvertently stripped from the cornea during cataract extraction. In all eyes the mishap passed unnoticed at the time of surgery and was recognized only days or weeks later when a corneal opacity was noted that simulated the appearance of epithelial downgrowth.

Stripping of Descemet's membrane to a lesser degree is not rare. Strips of Descemet's membrane, which appear as curly tags of transparent tissue, can often be seen along the inner aspect of corneal incisions or perforations of any type. More extensive separation of Descemet's membrane frequently occurs with cyclodialysis. The author has seen several patients with permanent localized corneal edema and small epithelial blebs overlying areas where Descemet's membrane had been stripped by a cyclodialysis spatula during cyclodialysis. The edema can progress to painful bullous keratopathy with discomfort and loss of vision. Separation of Descemet's membrane from the cornea occurs rarely following rupture of Descemet's membrane with contusion of the eyeball. It may be seen associated with ruptures of Descemet's membrane in infantile glaucoma. Descemet's membrane may separate from the cornea at the rupture sites to form a shelf in the anterior chamber, and occasionally it may separate completely from the cornea between two parallel ruptures forming a ribbon-like bridge or reduplication across the anterior chamber. Reduplication of Descemet's membrane has been seen during keratoplasty for scarring due to severe chemical burns of the cornea. It is possible that corneal edema and changes in corneal metabolism allow retraction of Descemet's membrane from the corneal stroma.

Extensive stripping of Descemet's membrane with cataract extraction has been mentioned in the literature only twice. Weve[1] reported

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two eyes. Wright[2] discussed the complication but reported no eyes himself, only referring to the paper of Weve. Since becoming interested in the subject, I have learned that several other ophthalmic surgeons have encountered the condition. It may be much more common than is realized because it closely resembles epithelial downgrowth and could be mistaken for it.

CASE REPORTS

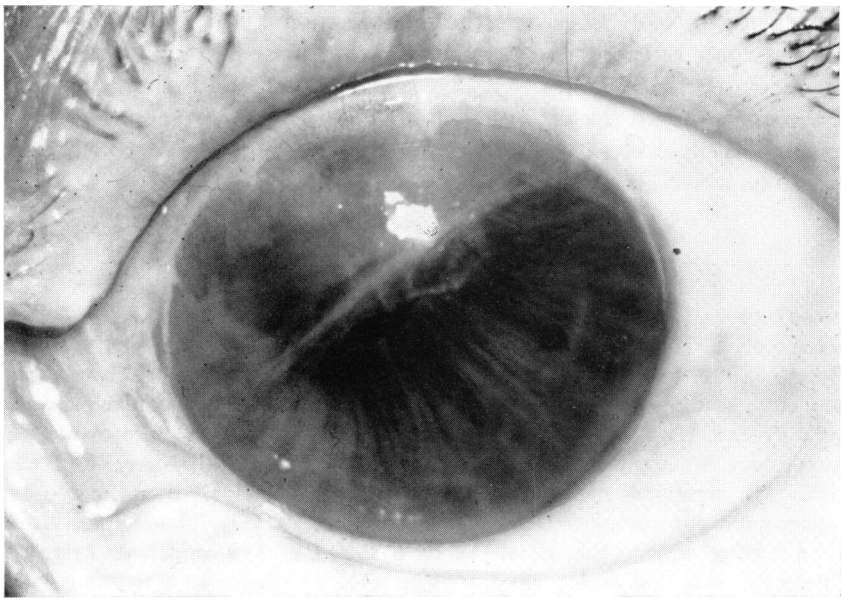
CASE ONE

Mrs. J.P., a 71-year-old patient with bilateral cataracts, was first seen on July 7, 1961. Her vision was 6/15 in each eye and she was having great difficulty reading. Her eyes otherwise were healthy. The intraocular pressure was 17 mm. Hg (Schiotz) in each eye. An intracapsular cataract extraction was done, apparently uneventfully, on her left eye on January 4, 1962. Using a keratome incision, peripheral iridectomy was done and four interrupted sutures placed. One-tenth cc. of 1:10,000 alpha-chymotrypsin was injected behind the iris at the six o'clock meridian, and later irrigated from the anterior and posterior chambers. The lens was delivered by tumbling using the Arruga cross-action forceps. The iris replaced itself with the help of pilocarpine. An iris repositor was not used. The sutures were tied, the conjunctival flap closed, and the eye covered. Considerable striate keratitis was present at the first dressing and a horizontal line of opacity was noted, which extended diagonally across the cornea from the limbus at 1:30 o'clock to the opposite side at 8:00 o'clock.

Examination with a slit-lamp revealed Descemet's membrane to have been stripped from the cornea over the entire area above this line. The upper edge had fallen away from the cornea downward and backward so that it was in contact with the iris temporally near the lower pupillary border. Considerable postoperative reaction occurred, and her convalescence was slow. Atropine and local steroids were used for ten weeks postoperatively before the eye became white and irritation ceased. Her cornea became edematous over the area of separation of Descemet's membrane where it was at least one-third thicker than the lower half (Figure 1). Numerous fine epithelial blebs were also seen over this area. Subsequently, the edges of Descemet's membrane became adherent to the iris temporally and including the upper and lower pupillary border. Corneal edema has slowly increased during the past two years with bleb formation. Pain and probable loss of the eye can be predicted.

CASE TWO

Mrs. H.S., a 55-year-old white woman was seen in consultation on November 6, 1961. Her vision was 6/60 in the right eye, and counting fingers in the left. She had had an intracapsular cataract extraction on the



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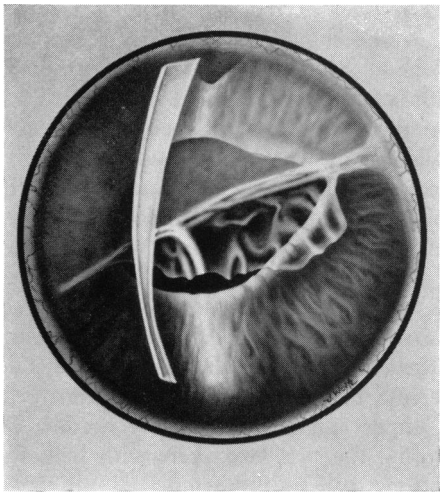

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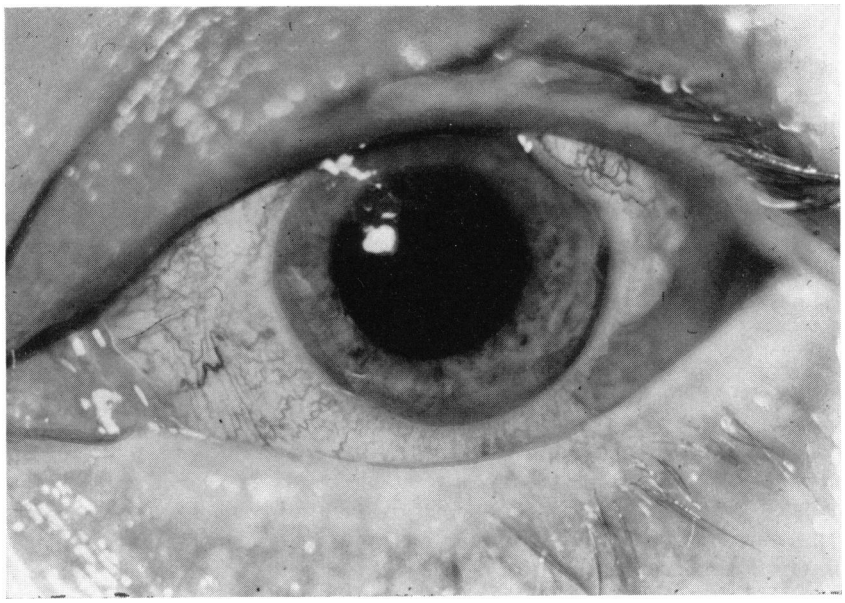
FIGURE 1

A, Photograph (patient 1) eight months postoperatively showing stripped edge of Descemet's membrane in anterior chamber and attached to iris temporally. Hazy edematous portion of cornea sharply outlined at site of attachment of Descemet's membrane. B, Drawing of above through slit-lamp microscope.



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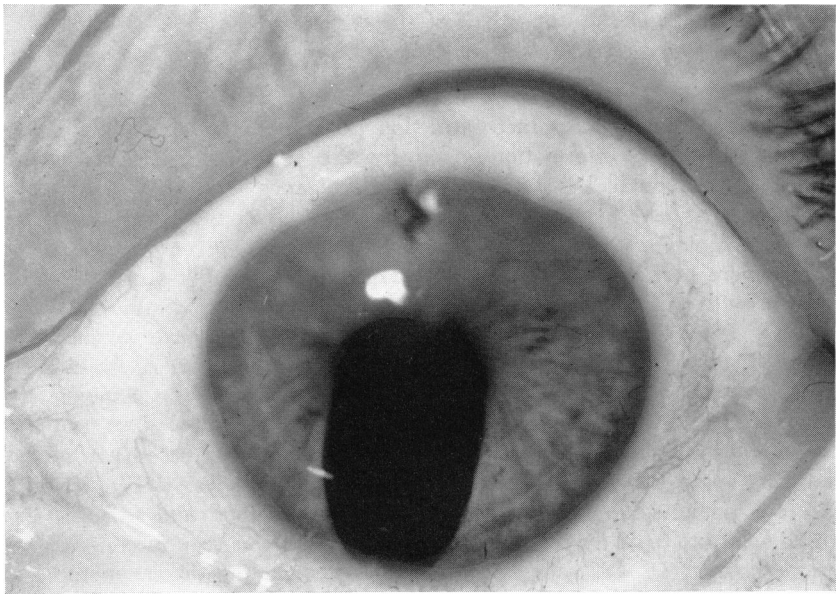

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FIGURE 2

A, Photograph (patient 2) taken two weeks postoperatively showing edema upper half of cornea. B, Photograph taken two years postoperatively showing increasing corneal edema and optical iridectomy.

right eye two weeks previously. Alpha-chymotrypsin had been used. The referring physician had noticed haze over the upper part of her cornea on the twelfth postoperative day and had suspected epithelial downgrowth. On examination of her eyes, the right eye was healthy except for an incipient senile cataract. The upper half of the cornea was hazy and terminated near the center of the cornea on a horizontal, slightly curved line, which crossed the limbus at 3:30 o'clock and 9:00 o'clock, and extended downward nearly to the lower pupillary border (Figure 2). With the slit-lamp microscope the hazy area of the cornea was found to be edematous and thickened. Bedewing of the epithelium was present. The inner aspect of the cornea showed what appeared to be separation of Descemet's membrane, which terminated at the horizontal line running across the cornea. Descemet's membrane was in contact here and there throughout the area that had been stripped, and had not fallen backward into the anterior chamber. The appearance somewhat resembled large, but very flat, epithelial bullas. It was impossible to tell whether the areas of contact with the cornea represented re-attachment, or simply incomplete detachment. She has been observed from time to time since. An optical iridectomy at 6:00 o'clock was done on September 21, 1962 (Figure 2). Her vision could then be improved to 6/20. It has diminished since because of a very slow increase in the edema and haze of the upper half of the cornea.

CASE THREE

Mrs. E.L., a 77-year-old white lady was seen in consultation on July 16, 1963. She had had a cataract extraction performed on her right eye on August 21, 1962. Information given by the referring physician stated that the operation had been done under local anesthesia. A Graefe knife limbal section had been done with a fornix-based conjunctival flap. The wound was closed with 6–0 mild chromic sutures. Three peripheral iridectomies were performed. The lens was delivered by tumbling using a Kalt forceps with traction and counterpressure at the lower limbus. As the lens was delivered, the capsule ruptured and tore. The entire capsule was removed, using a capsule forceps, before tying the sutures. Alpha-chymotrysin was not employed. Marked striate keratitis was seen immediately postoperatively. This cleared somewhat during the next few days, but the cornea remained hazy. A horizontal line of opacity was noted across the pupillary space. Her visual acuity on October 30, 1962 was 6/15 (20/50). Her eye remained irritable. The corneal haze increased and reduced the visual acuity to 6/60 by February, 1963. When she was seen in consultation by me on July 16, 1963, her visual acuity was counting fingers in the left eye, and 6/15 in the right, which was healthy except for an incipient nuclear cataract. The cornea of the left eye was diffusely hazy, more so over the upper half (Figure 3). A horizontal line could be seen with the naked eye running across the cornea from 2:30 o'clock to 9:00 o'clock, which simulated an epithelial downgrowth. A slit-lamp examination revealed

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