Detachment of Descemet’s Membrane Following Stromal Hydration in Phacoemulsification Surgery

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ABSTRACT
Descemet’s membrane detachment is mostly seen as a complication at the time of corneal incision. Stromal hydration for wound closure towards the end of phacoemulsification procedure is an unusual stage of surgery for this complication to occur. We report successful apposition of detached Descemet’s membrane by using intracameral sulphur hexafluoride (SF6) gas in such a case.

Key words: Descemet’s membrane detachment. Phacoemulsification. Stromal hydration.

INTRODUCTION
Potentially reversible corneal edema due to detachment of Descemet’s membrane may occur during cataract surgery or phacoemulsification.1 Small detachments may resolve spontaneously but larger ones need early recognition and treatment to attain successful apposition. Treatment options include intracameral air or gas injection, trans-corneal suturing and resorting to corneal transplant in unresponsive cases. Detachment of Descemet’s membrane occurring at the end of phacoemulsification surgery, however, is a rare occurrence.

CASE REPORT
A 61 years old female reported with complaints of gradually decreasing vision in the right eye over the last 10 months. She had a history of phacoemulsification surgery with intraocular lens (IOL) implant in the left eye two years ago. On examination, she had 6/18 vision in the right eye with nuclear sclerosis. Her corrected vision in the left pseudophakic eye was 6/6. Intraocular pressure (IOP) was within normal limits and no other significant ocular abnormality was seen. She underwent phacoemulsification with foldable IOL surgery for her cataract in the right eye. Towards the end of a thus far uneventful surgery, stromal hydration of the wound led to detachment of Descemet’s membrane, which bulged into the anterior chamber and reflex of a fluid interface was recognizable per-operatively. Attempts at removing the fluid remained unsuccessful and were abandoned in hope of achieving spontaneous corneal clearing.

Postoperatively, there was corneal oedema with hand movement vision. Detached Descemet’s membrane could be seen on slit-lamp examination. The patient was given topical steroids, antibiotics, dilating drops as well as pressure lowering agents. One week later, cornea was clearer superiorly with oedema persisting centrally and Descemet’s membrane still detached. IOP was within normal limits and vision was counting fingers at one meter. Two weeks after surgery, she was given less than 0.1 ml of 40% SF6 gas injection intracameral to one side of the bulging Descemet’s membrane, to get a small bubble in the anterior chamber. The next morning, remarkable improvement was seen with a clear cornea leaving only a tell-tale curvilinear mark (Figure 1) showing the site of reattachment. Vision improved to 6/12 after the bubble had completely resolved within 3 days. Six weeks later, the patient had 6/9 unaided vision, which did not improve further with refractive correction. At three months follow-up, she had 6/6 corrected vision with a corneal thickness of 0.432 mm centrally. The fellow eye had 0.461 mm central corneal thickness in which there was uncomplicated similar surgery two years ago. Endothelial cell density (CD) in the eye with successful reattachment of Descemet’s membrane was 1796 cells/cubic mm (Figure 2), whereas in the fellow eye (phaco time not known), it was 1337 cells/cubic mm (Figure 3).

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Figure 1: Line showing site of reattachment of Descemet’s membrane.

Figure 2: Endothelial cell density adequate 6 weeks after successful apposition of Descemet’s membrane.
DISCUSSION

The predisposing risk factors for Descemet's membrane detachment include glaucoma or recent episode of corneal edema. The event reported here occurred after a short surgical clock time. Stromal hydration was directed towards the sides of paracentesis as done during extensive experience of the surgeon in phacoemulsification procedure. The patient's left eye had a history of uneventful recovery of vision after similar surgical technique. Pre-operative endothelial CD was not recorded in either eye but better endothelial CD in right eye than in fellow eye (that had undergone similar surgical procedure) signified satisfactory outcome.

After two weeks of observing the patient on topical treatment, intervention by descemetopexy was resorted too. The procedure was performed in the operating room although this can be done at the slit-lamp biomicroscope under topical anaesthesia. Varied concentrations of SF6 gas have been used successfully ranging from 20% to 100%. Alternatively, isoexpansile perfluoropropane (C3F8) can be used for repair of Descemet's membrane detachment. Early treatment with 20% SF6 achieves successful anatomical and visual outcome in wide Descemet's membrane detachments. Complications of the treatment with SF6 and C3F8 have been reported such as IOL haze ultimately needing replacement of the lens implant. In the reported case, complications such as raised intraocular pressure or corneal opacity were absent. Surgeons should be aware of the timing of this complication and should do a careful stromal hydration to avoid marring of visual outcome by last moment hazards.

REFERENCES


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