INTRODUCTION

Descemet’s membrane detachment (DMD) or tears may occur as a complication of intraocular procedures; causes of this condition include cataract surgery, viscocanalostomy, trabeculectomy, iridectomy, penetrating keratoplasty and cyclodialysis. DMD may manifest with loss of vision due to corneal edema and the presence of Descemet’s membrane (DM) folds. The incidence of DMD has been reported from 2% to 6% and from 0% to 5% during extracapsular and phacoemulsification cataract surgery, respectively. However, owing to improved instrumentation and techniques, this complication occurs less frequently. Spontaneous resolution of partial DM detachment has been described. Surgical interventions to re-attach large DM detachments using methods such as injecting substances or suturing have been proposed.

Herein, we report a patient who developed severe tears, detachment and partial loss of DM during phacoemulsification surgery. The massive corneal edema completely resolved 5 weeks after two sessions of air bubble injection.

CASE REPORT

A 64-year-old woman underwent phacoemulsification surgery in her right eye. Surgery was uneventful until the irrigation/aspiration stage during which engagement of the central area of the detached DM in the aspiration port was suddenly noted. Intraocular movement of the aspiration port had created three pieces of large DM tears and aspiration of the central piece had led to loss DM in the central area. A posterior chamber intraocular lens was implanted and the procedure was terminated. Postoperatively, the patient was referred to our cornea service for management of corneal edema.

One day after phacoemulsification, in July 2012, visual acuity was counting fingers at one meter and
slit lamp examination revealed diffuse corneal stromal edema with deep corneal folds. Extensive corneal edema obscured the view of DM and anterior chamber. Due to scattering in the edematous cornea, a clear view of DM was not obtained by Scheimpflug imaging. Only in a few images, an indistinct view of DMD was noticeable. Pachymetry revealed a central corneal thickness of 1344 mm [Figure 1]. Topical dexamethasone eye drops (Maxidex, Alcon, Fort Worth, TX, USA) were administered every 1 h for a total of 4 days. After 2 days of treatment, the corneal edema decreased [Figure 2] and after 4 days, DM was visible and multiple tears with and without DMD were seen. Scheimpflug images showed partial reattachment of DM in some parts of the cornea [Figure 3].

On the following day, air was instilled into the anterior chamber of the same eye through a corneolimbal paracentesis track. Air injection was repeated the day after, due to insufficient attachment. Visual acuity and central corneal thickness gradually improved to 20/32 and 642 mm, respectively, over the course of 5 weeks. Despite partial loss of DM, corneal edema largely disappeared 5 weeks after air bubble injection [Figure 4].

**DISCUSSION**

Descemet’s membrane detachment was first described by Samuels in 1928.[5] Surgical trauma is the predisposing factor in DMD and this complication has been reported after iridectomy, extracapsular cataract extraction, phacoemulsification, viscoanalostomy, trabeculectomy, iridectomy, penetrating keratoplasty and cyclophacoid.[1-6] Inadvertent insertion of instruments between the corneal stroma and Descemet’s membrane, improper incisions (excessively anterior or shelved incisions), too tight or too long corneal tunnels, use of dull knives, engagement of Descemet’s membrane during intraocular lens implantation or misuse of the irrigation/aspiration devices are among predisposing factors for DMD.[1-6,11]

In the present case, DM tears occurred during the irrigation/aspiration stage. The surgeon reported

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**Figure 1.** (a) Scheimpflug image of the eye 1 day after cataract surgery complicated by Descemet’s membrane (DM) detachment. Note the corneal thickening and hyper-reflectivity with an indistinct view of DM in the anterior chamber (arrowhead). (b) Pachymetric map: Massive thickening of the whole cornea with minimal thickness of 1342 mm.

**Figure 2.** (a) Slit lamp photograph of the same eye as in Figure 1, 2 days after cataract surgery. Note the corneal wrinkling and Descemet’s membrane tear (arrowhead). (b) Pachymetric map: Corneal thickening with a minimal value of 950 mm.

**Figure 3.** Appearance of the same eye 4 days after cataract surgery. Slit lamp photographs: (a) Partial reattachment of Descemet’s membrane (DM, red arrow), (b) DM Detachment (arrowhead), and loss of DM (asterisk). Scheimpflug image (c) of the same eye, note the detached DM flaps (arrow) and partial reattachment (red arrow).

**Figure 4.** Appearance of the same eye 5 weeks after air bubble injection: (a) Slit lamp photograph reveals a clear cornea except for some haziness in the corneal apex. (b) Scheimpflug image shows a fully attached Descemet’s membrane; (c) pachymetric map: The thinnest point is 544 mm and mild thickening (642 mm) is present in the corneal apex.
In summary, in the case reported herein, complex DM tears were successfully reattached using air bubble tamponade which was done after frequent corticosteroid application and waiting for a few days. This approach was helpful in considerably reducing corneal edema and visualization of DM details before applying the air bubble treatment despite partial loss of central DM. Insertion of the aspiration port through the main incision may have been the trigger of DMD. Scheimpflug imaging is beneficial for diagnosis and monitoring of DM tears and detachments.

REFERENCES