

Case Report

Spontaneously resolving descemet's membrane detachment caused by an ophthalmic viscosurgical device during cataract surgery



Chameen Samarawickrama^{a,b,*}; Jacqueline Beltz^b; Elsie Chan^b

Abstract

We present a case of a central Descemet's membrane detachment (DMD) induced by an Ophthalmic Viscosurgical Device during phacoemulsification surgery that resolved spontaneously, leaving a best spectacle corrected visual acuity of 20/20. The detachment was monitored with serial anterior segment optical coherence tomography images. Most cases of central DMD reported in the literature have been managed surgically to facilitate rapid visual recovery and minimize the risk of scarring. Our case adds to the literature in providing an alternative management strategy where surgical intervention may not be possible.

Keywords: Descemet's membrane, Descemet's membrane detachment, Ophthalmic Viscosurgical Device (OVD), Phacoemulsification, Cataract complication

© 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of Saudi Ophthalmological Society, King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).
<http://dx.doi.org/10.1016/j.sjopt.2015.07.003>

Introduction

Descemet's membrane detachments (DMDs) are a recognized complication of intraocular surgery. Small detachments are reported to occur as frequently as 43% after cataract surgery.¹ Most DMDs resolve spontaneously, with larger detachments requiring surgical intervention only accounting for 0.5% of all cases.²

We report a case of a DMD caused by an ophthalmic viscosurgical device (OVD) during phacoemulsification surgery, monitored with serial anterior segment ocular coherence tomography (AS-OCT), which resolved spontaneously.

Case report

An 83-year-old female with central guttata underwent phacoemulsification surgery for her right eye. Healon

(Abbott Medical Optics, Abbott Park, IL) was injected through the temporal paracentesis after cortex removal but prior to the insertion of the intraocular lens (IOL), with the inadvertent creation of a DMD extending from the side port toward the central cornea. While the DMD was observed intra-operatively, the operation proceeded with insertion of the IOL and removal of the viscoelastic without air bubble injection at the end of the case. Post-operatively, the DMD was managed conservatively.

The patient was referred for a corneal opinion 2 weeks post-operatively with a persisting DMD. At presentation, best spectacle corrected visual acuity (BSCVA) was 6/36 in the affected eye. A central DMD was observed (Fig. 1a) with vacuolation of the OVD within the DMD; however, the peripheral detachment from the side port extending centrally had resolved. Given the reattachment of the peripheral

Received 10 December 2014; received in revised form 30 May 2015; accepted 28 July 2015; available online 3 August 2015.

^a Save Sight Institute, Sydney University, Australia

^b Royal Victorian Eye and Ear Hospital, Australia

* Corresponding author at: Royal Victorian Eye and Ear Hospital, 32 Gisbourne St, East Melbourne, 3002 VIC, Australia.
e-mail address: chameensams@gmail.com (C. Samarawickrama).

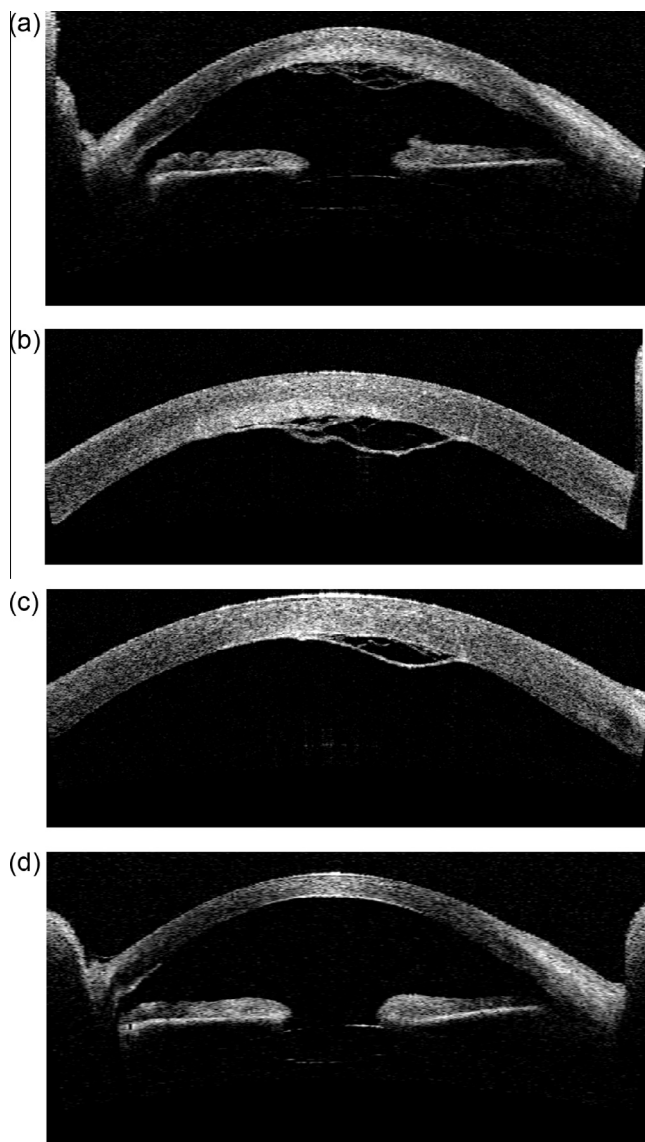


Figure 1. Anterior segment optical coherence tomography of the Descemet's membrane detachment at (a) presentation to the cornea unit 2 weeks postcataract surgery; (b) 3 weeks postsurgery, note the decreased vacuolation of the central detachment; (c) 5 weeks postsurgery as the detachment is beginning to reattach to the stroma; and (d) complete resolution of the detachment.

detachment, it was elected to continue conservative management. Serial AS-OCT (Visante OCT, Carl Zeiss Meditec Inc., Jena, Germany) images were used to monitor the resolution of the detachment. Over the following 6 weeks, AS-OCT demonstrated decreased vacuolation (Fig. 1b), followed by partial (Fig. 1c) then complete reattachment of Descemet's membrane (Fig. 1d). Her final BSCVA was 6/6 (+1.50/−1.50 × 140) with mild stromal scarring centrally.

Discussion

Central DMD only accounts for a small proportion of detachments that occur during intraocular surgery. More recently, with the popularization of techniques such as viscocanalostomy, reports of DMD secondary to viscoelastic

injection have increased in prevalence in the literature.³ Thus the first goal in trying to prevent this iatrogenic complication is to recognize potential risk factors for DMD formation. Preoperatively, ocular risk factors that should be identified included Fuchs' endothelial dystrophy and a shallow anterior chamber. Good surgical technique is critical in preventing DMD formation and includes minimizing traumatic instrumentation by using sharp blades and ensuring instruments are completely inserted into the anterior chamber, avoiding poor wound construction and being aware of the risk of high flow irrigation.^{1,3}

If a DMD forms, it is important for clinicians to be aware of treatment options in managing this complication. Peripheral DMDs are often treated conservatively, while central detachments are often managed with surgical intervention. The rationale for early intervention is to address the patient's decreased vision and prevent stromal scarring.⁴ Intervention may include injection of air or an expansile gas (eg. SF₆ or C₃F₈) into the anterior chamber to create a tamponade effect, incisions in Descemet's membrane or anterior venting incisions followed by injection of an expansile gas to allow drainage, or direct suturing of the detached DMD to the stroma.⁴ These techniques have resulted in variable results, ranging from resolution of the DMD with no adverse effect on the patients' final visual acuity to failure of reattachment and/or subsequent endothelial cell failure necessitating corneal transplantation.

We present a case of a central DMD caused by viscoelastic that resolved spontaneously with minimal scarring, resulting in a BSCVA of 6/6. We elected to continue conservative management as the resolution of the peripheral detachment suggested that the central detachment may also resolve without further intervention. There was also an increased risk of visually significant scarring following surgical intervention due to its central location. Furthermore, Healon consists of sodium hyaluronate 1%, a naturally occurring polysaccharide present in nearly all connective tissue matrices that has been shown to be removable from the eye biologically.⁵ Complete resolution of the DMD was observed in our case. Our result provides evidence for the option of conservative management in similar clinical situations.

Conflict of Interest

No conflict of interest or funding source for any authors.

References

- Shalchi Z, O'Brart DP, Ilari L. Bilateral descemet membrane detachment following cataract surgery. *JAMA Ophthalmol* 2013;131(4):533–5, PubMed PMID: 23579606.
- Khng CY, Voon LW, Yeo KT. Causes and management of Descemet's membrane detachment associated with cataract surgery—not always a benign problem. *Ann Acad Med Singapore* 2001;30(5):532–5, PubMed PMID: 11603141.
- Kim CY, Seong GJ, Koh HJ, Kim EK, Hong YJ. Descemet's membrane detachment associated with inadvertent viscoelastic injection in viscocanalostomy. *Yonsei Med J* 2002;43(2):279–81. April, PubMed PMID: 11603141.
- Claes K, Stalmans I, Zeyen T. Stripping of Descemet's membrane while refilling the anterior chamber. *Bull Soc Belge Ophtalmol* 2008;308:53–5, PubMed PMID: 18700455.
- Liesegang TJ. Viscoelastic substances in ophthalmology. *Surv Ophthalmol* 1990;34(4):268–93, PubMed PMID: 2111587.