Case Report

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

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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

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.\textsuperscript{1} Most DMDs resolve spontaneously, with larger detachments requiring surgical intervention only accounting for 0.5% of all cases.\textsuperscript{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

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detachment, it was elected to continue conservative manage-
ment. 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 visco-
canalostomy, reports of DMD secondary to viscoelastic
injection have increased in prevalence in the literature. Thus
the first goal in trying to prevent this iatrogenic complica-
tion is to recognize potential risk factors for DMD forma-
tion. 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 trauma-
tic instrumentation by using sharp blades and ensuring
instruments are completely inserted into the anterior cham-
ber, avoiding poor wound construction and being aware of
the risk of high flow irrigation. 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 detach-
ments are often managed with surgical intervention. The
rationale for early intervention is to address the patient’s
decreased vision and prevent stromal scarring. Intervention may include injection of air or an expansile gas (eg, SF₆ or C₃F₈) into the anterior chamber to create a tam-
ponade 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. 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 reattach-
ment 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 man-
agement as the resolution of the peripheral detachment sug-
uggested that the central detachment may also resolve without
further intervention. There was also an increased risk of visu-
ally 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. Complete resolu-
tion of the DMD was observed in our case. Our result pro-
vides 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

1. Shalchi Z, O’Bcrrt DP, Ilari L. Bilateral descemet membrane
detachment following cataract surgery. JAMA Ophthalmol
2013;131(4):533–5, PubMed PMID: 23579606.
2. 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.
3. 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.
4. 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.
5. Liesegang TJ. Viscoelastic substances in ophthalmology. Surv
Ophthalmol 1990;34(4):268–93, PubMed PMID: 2111587.