# Late-onset spontaneous Descemet's membrane detachment post penetrating keratoplasty in a patient with congenital glaucoma

Rawan S. Al-Shabeeb, Nada H. Almadhi, Omar Kirat

Access this article online

Quick Response Code:

Website: www.saudijophthalmol.org

DOI: 10.4103/1319-4534.310417

## Abstract:

A 27-year-old female presented with a sudden decrease of vision in the left eye (OS). Ocular history included advanced congenital glaucoma and previous (15 years) bilateral penetrating keratoplasty and cyclophotocoagulation (9 months) in the left eye. The patient had microcystic corneal edema and Descemet's membrane (DM) detachment; imaging confirmed the detachment with no detectable breaks. DM re-attachment was attempted with an intracameral air bubble tamponade. The edema improved 10 days postoperatively and the graft became clear. Late-onset DM detachment following keratoplasty can occur in patients with congenital glaucoma with no history of recent trauma or eye rubbing. The exact mechanism is unknown, but transscleral cyclophotocoagulation may have a causative role. Timely treatment with air injection results in successful anatomic outcomes.

**Keywords:**

Descemet's Membrane Detachment,penetrating keratoplasty,congenital glaucoma

## Introduction

Descemet's membrane detachment (DMD) is a potential complication of intraocular surgery such as phacoemulsification and glaucoma filtering procedures.[1,2] DMD has also been reported following minimally invasive procedures such as peripheral iridotomy and holmium laser sclerostomy.[3,4] However, in the absence of trauma, DMD years after penetrating keratoplasty (PKP) is rare.[5,6] We report the presentation and management of late-onset spontaneous DMD post-PKP and cyclophotocoagulation in a patient with congenital glaucoma.

## Case Report

A 27-year-old female presented to the emergency room with a chief complaint of a sudden decrease of vision and mild pain in the left eye for 1 week. There was no history of recent trauma or eye rubbing. Ophthalmic history included congenital glaucoma and a surgical history of bilateral PKP 15 years prior to presentation for corneal opacity secondary to congenital glaucoma. The procedure was not done in the same institute, therefore the graft size is unknown. The patient had undergone phacoemulsification and multiple glaucoma procedures including a recent history of transscleral diode cyclophotocoagulation to the left eye 9 months prior to presentation for uncontrolled intraocular pressure (IOP).

Upon examination, the uncorrected visual acuity was 20/400 in the right eye (OD) and 1/200 OS and IOP was 18 mmHg OD and 21 mmHg OS (applanation tonometry). Slit-lamp examination of the right eye indicated a clear sutureless graft and a patent Ahmed valve placed inferotemporal and distal to the endothelium.

Left eye examination indicated a microcytic edematous graft with a partial DMD; a deep and quiet anterior chamber; and no evidence of neovascularization, inflammation, or keratic

Department of Ophthalmology, Anterior Segment Division, King Khalid Eye Specialist Hospital, Riyadh, Saudi Arabia

**Address for correspondence:**
Dr. Rawan S. Al-Shabeeb, Department of Ophthalmology, Anterior Segment Division, King Khalid Eye Specialist Hospital, P.O. Box 7191, Al Oruba Road, Riyadh 11462, Saudi Arabia.
E-mail: alshabeeb.rawan@gmail.com
rshabeeb@kkesh.med.sa

**Submitted:** 04-Jun-2020
**Revised:** 06-Aug-2020
**Accepted:**08-Aug-2020
**Published:** 27-Feb-2021

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow_reprints@wolterskluwer.com

**How to cite this article:** Al-Shabeeb RS, Almadhi NH, Kirat O. Late-onset spontaneous Descemet's membrane detachment post penetrating keratoplasty in a patient with congenital glaucoma. Saudi J Ophthalmol 2020;34:218-9.

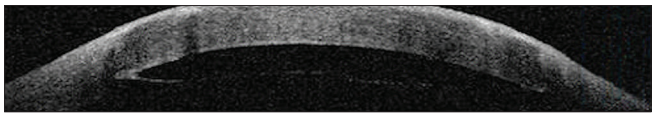

**Figure 1:** Anterior segment optical coherence tomography of a Descemet's membrane detachment

precipitates. Bilaterally, the patient had mid-dilated poorly reactive pupils, pseudophakia, clear vitreous media, and pale advanced optic disc cupping. The patient was diagnosed with DMD due to the increased corneal thickness and a hyper-reflective retrocorneal detached membrane and no detectable tears. Anterior segment optical coherence tomography (OCT) confirmed the diagnosis [Figure 1].

The patient underwent an intracameral air bubble injection with a 30G needle under sterile technique. Postoperatively, the patient was advised to remain supine for 24 h. On the 1st postoperative day, Descemet's membrane (DM) was attached with 60% air bubble. The IOP was 25 mmHg (Tonopen; Reichert Technologies, Buffalo, NY, USA). The patient was prescribed anti-glaucoma medications. The graft became completely clear 10 days after the surgery and the reattached DM was verified with anterior segment OCT [Figure 2]. At 6 weeks postoperatively, the uncorrected visual acuity was 20/400 OS.

## Discussion

Delayed-onset DMD has been reported following PKP for corneal ectasias such as keratoconus and pellucid marginal degeneration.[6,7] Other reports described it as acute hydrops with detectable breaks in DM using anterior segment OCT.[8] The mechanism of DMD following PKP for keratoconus is unclear. Some authors proposed the presence of a retro-corneal membrane along the graft–host interface that can cause mechanical detachment of DM. Another proposed mechanism includes progressive thinning in the peripheral host tissue leading to DMD.[5]

However, in the current case, PKP was indicated due to corneal opacity secondary to congenital glaucoma. Therefore, the hypothesis of recurrence of primary condition is unlikely. Trans-scleral diode laser cyclophotocoagulation is commonly used for the management of patients with recalcitrant glaucoma and is efficacious for controlling IOP after keratoplasty.[9] Corneal opacification and corneal edema have been reported after transscleral cyclophotocoagulation in patients with corneal graft, but DMD has not been reported as a complication of the procedure.[9,10] Yana *et al*. reported DMD following yttrium aluminum garnet peripheral iridotomy.[4] They proposed that the shock waves propagated during photodisruption may deliver excessive energy toward the corneal endothelium, leading to development of linear cracks in the DM and resulting in late-onset detachment.[4] In the current case, the patient underwent transscleral cyclophotocoagulation 9 months prior to the development of DMD. We propose that the thermal effect of laser may play a role in inducing DMD after PKP. DMD following keratoplasty can be managed by intracameral injection gas tamponade.[6] However, some cases require further intervention such as endothelial keratoplasty or regraft.[5,6] Our patient was treated successfully with air injection and the cornea was clear within 10 days following the procedure. However, the vision improved minimally due to advanced glaucomatous optic nerve damage and amblyopia.

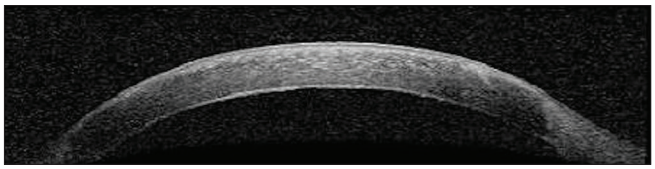

**Figure 2:** Anterior segment optical coherence tomography showing an attached Descemet's membrane following intracameral air injection

To the best of our knowledge, late-onset DMD following keratoplasty in a patient with congenital glaucoma with no history of trauma or eye rubbing has not been reported in the literature. The exact mechanism is unknown, but transscleral cyclophotocoagulation may have a causative role. Recognition and prompt treatment are essential for graft clarity and survival.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

## References

1. Kansal S, Sugar J. Consecutive Descemet's membrane detachment after successive phacoemulsification. Cornea 2001;20:670-1.
2. Wigginton SA, Jung Schaffer DA, Lee DA. Postoperative Descemet's membrane detachment with maintenance of corneal clarity after trabeculectomy. J Glaucoma 2000;9:200-2.
3. Bergsma DR Jr., McCaa CS. Extensive detachment of Descemet membrane after holmium laser sclerostomy. Ophthalmology 1996;103:678-80.
4. Yana F, Wuying Z, Wei L. Late-onset Descemet membrane detachments and corneal decompensation after laser peripheral iridotomy. Medicine (Baltimore) 2018;97:10.
5. Matthew G, Shih C, Savoie B, Udell I. Spontaneous Descemet membrane detachment 20 years after penetrating keratoplasty for keratoconus. Cornea 2016;35:1023-5.
6. Kit V, Kriman J, Vasquez-Perez A, Muthusamy K, Thaung C, Tuft S. Descemet membrane detachment after penetrating keratoplasty for keratoconus. Cornea 2020;39:1315-20.
7. Singhal D, Sahay P, Goel S, Asif MI, Maharana PK, Sharma N. Descemet membrane detachment. Surv Ophthalmol 2020;65:279-93.
8. Ezra DG, Mehta JS, Allan BD. Late corneal hydrops after penetrating keratoplasty for keratoconus. Cornea 2007;26:639-40.
9. Shah P, Lee GA, Kirwan JK, Bunce C, Bloom PA, Ficker LA, *et al.* Cyclodiode photocoagulation for refractory glaucoma after penetrating keratoplasty. Ophthalmology 2001;108:1986-91.
10. Ishida K. Update on results and complications of cyclophotocoagulation. Curr Opin Ophthalmol 2013;24:102-10.