

Timely Pneumatic Tamponade in a Descemet Membrane Detachment for Quality Outcome Post Cataract Surgery

Dr. Aneesha Vyas, Dr. Kuntal Shah, Dr. Zeel Patel, Dr. Avani Soni

Abstract: Descemet membrane detachment is very commonly encountered, yet an under-reported complication during cataract surgery. We would like to present a case of descemet membrane detachment in a sixty five year old female, faced intra-operatively during cataract surgery. Post operatively there was non-resolving corneal edema, a descemet membrane detachment and no significant improvement in visual acuity. After failure of conservative management, we decided to intervene by injecting air in the anterior chamber. Dramatic response was noted the next day with a clearer cornea as well as improvement in visual acuity. Patient was satisfied.

Keywords: Descemet membrane detachment, corneal oedema, pneumo-tamponade

Key Message

Descemet membrane detachment is a very common yet salvageable complication faced during cataract surgery. The ability to know a procedure is one step but hands on approach to identify first and then deal with the complication is a learning process. In our case a simple, inexpensive procedure of air injection proved to be effective in otherwise what would have caused significant visual morbidity.

Introduction: Descemet membrane detachment (DMD) is a rare but visually debilitating complication commonly faced during cataract surgery. Statistically, the average incidence is 2.6% for manual small incision cataract surgery and 0.5% in phacoemulsification.^[1] Small dmd's are asymptomatic and self-resolving. If left untreated, non-planar dmd's or those involving pupillary axis can contribute to being a visual morbidity. Various gases injections like air and gases like sulphur hexafluoride (SF₆) and perflouropropane (C₃F₈) have been proven to be successful where topical management was not therapeutic enough. Visual improvement and patient satisfaction can be expected with a timely intervention.

Case report: A sixty five year old female presented to our outpatient department with diminution of vision. Further evaluation revealed mature cataract in her right eye and a psuedophakic left eye. Best corrected visual acuity (bcva) of 20/250 in the right eye and 20/60 in the left eye. Patient had no other ocular and systemic co-morbidities.

We planned a routine manual small incision cataract surgery (msics) considering the above parameters. A superior approach was considered for ease of surgery. During irrigation and aspiration a small linear DMD was noted in the supero nasal quadrant and the surgery was completed with minimal manipulation over the affected region. Air was injected as a final measure to give a tamponading effect.

The following day visual acuity was 20/120. Slit lamp examination revealed supero-nasal quadrant of cornea with a linear DMD extending to three clock hours and marked edema. (Figure 1). The air bubble was present in

the superior region. Rest details were hazily appreciated. An anterior segment optical coherence tomography (As-Oct) determined the extent and type of DMD, no descemet membrane or endothelial loss was noted. (Figure 2). We continued with conservative management of topically 1% prednisolone acetate hourly and moxifloxacin 0.5% four times daily with head end elevation.

Findings remained consistent. We decided to intervene with a repeat air injection. Through the pre-existing temporal side port using a cannula, we irrigated the anterior chamber and initially injected a large air bubble, then withdrew some air to make it smaller. Patient was asked to maintain a supine position.

The next day showed dramatic visual improvement to 20/40 and slit lamp examination revealed a clearer and compact cornea. We repeated an As-Oct to confirm the descemet membrane apposition. We continued the routine postoperative regime. (Figure 3).

On one month follow up, patient was examined and no recurrence was observed. Patient was satisfied. (Figure 4).

Discussion: DMD is defined as a separation of the descemet membrane from the posterior stroma leading to fluid accumulation in what is known as the predescemet space. It accounts for a 2.5 % and 0.6% incidence in msics and phacoemulsification surgery respectively.^[1]

It was first classified as planar and nonplanar (1 mm separation from posterior stroma) in 1977. A newer classification simulating that of retinal detachment described four types of dmd as rhegmatogenous, tractional, bullous and complex. As-oct classification also describes dmd as simple, symmetrical and complete.^[6] Abnormality in the fibrillary stromal attachment to descemet membrane or a weak adhesion due to tgf-beta dysfunction is also a proposed mechanism.^[2]

The management of depends on various factors like onset, location, extent, the degree of antero-posterior separation from the posterior stroma, the period of nil intervention and the presence of an pre-existing endothelial disease. Due to the unknown course of the disease, exact timing and nature of surgical intervention has not yet been fully

determined. There is no gold standard of treatment for DMD.

In rare cases, the use of topical corticosteroids and hyperosmotics aid in resolution of corneal oedema and apposition of DMD without further surgical intervention. Although there have been reports of spontaneous resolution of DMD, the failure rate has been high, and the mean time to resolution is also prolonged. The anatomic and functional outcome were defined as re attachment of the descemet membrane and improvement in visual acuity respectively.^[7] Various modalities of intervention like 100% air, non-expansile sulphur hexafluoride (15–20% SF6), and perfluoropropane (12–14% C3F8) or as a final resort keratoplasty are present.^{[3],[4]} Medical treatment alone may not be sufficient, especially in cases of a non-planar DMD which are a challenge.^[9]

Despite the various modalities, corneal endothelial count and pachymetry play a role in determining the use of air or gas. Air being biologically inert, non-toxic to endothelium and has a lesser affinity to cause pupillary block is thus superior and hence preferred. It is not the extent but the type (planarity) of DMD which affects the prognosis for attachment.^[5] The time interval between cataract surgery and descemetopexy (interim period) carries prognostic significance and late intervention is associated with poor results. Early recognition of DM detachment and early descemetopexy has reasonably successful anatomical and functional outcomes.^[8]

In our scenario, the early detection, the affordability of the patient and the fear of follow up loss helped decide the management algorithm. A timely pneumo-tamponade was advocated after considering the above parameters to avoid any long term visual morbidity. Optimum results were obtained. Patient was satisfied.

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