Spontaneous attachment of detached Descemet membrane following deep anterior lamellar keratoplasty

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A 70-year-old man presented with bilateral corneal spheroidal degeneration with corneal opacities. Visual acuity was hand motions close to face and denying perception of light in right and left eye, respectively. As the opacity was well circumscribed within anterior to mid stroma, a deep anterior lamellar keratoplasty (DALK) in right eye was performed. Postoperative slit-lamp examination revealed a hazy corneal graft. Anterior segment optical coherence tomography scan revealed increased corneal graft thickness and a hyperreflective membranous structure lying deep in anterior chamber away from donor graft [Fig. 1a]. The ASOCT was suggestive of a hyperreflective membrane away from the graft by a hyporeflective dark area suggesting a space between the graft and host Descemet's membrane (DM), peripheral attachment of this membrane could be traced up to the posterior lips of host cornea. At 1 week follow-up, instead of one membrane, two membranes could be appreciated on the slit lamp. ASOCT revealed increased corneal graft thickness and two hyperreflective membranous structures lying deep in anterior chamber away from donor graft. These membranes were separated by a hyporeflective dark area suggesting two spaces: one between the donor corneal stromal graft and the pre-Descemet's or Dua's layer and the other between the Dua's layer and the DM [Fig. 1b]. This clinical situation simulated a "Pseudo Anterior Chamber". In our case, there was a detachment of the pre-Descemet's and the Descemet's layer due to the formation of both type 1 and type 2 bubble intra-operatively, while attempting Anwar's big bubble technique. The level of dissection was achieved at type 1 bubble and type 2 bubble went un-recognized. The subsequent separation between the donor lamella and the host would have occurred because of the unnoticed microperforation within the pre-Descemets layer through which the air might have leaked and created the aforementioned separation. However, it was very interesting to see that there was an eventual spontaneous attachment between the layers after resorption of air bubble and the graft became clear at further follow-up [Fig. 1c]. This case suggests that post DALK iatrogenic DM detachment may be observed till disappearance of air bubble between detached Descemet's and donor graft.

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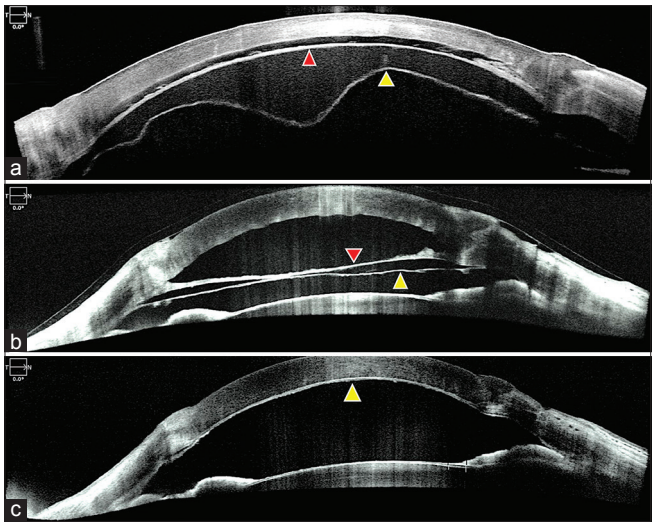

Figure 1: Anterior segment optical coherence tomography (ASOCT) scan: (a) Postoperative day 1 depicting an undulating hyperreflective membranous structure lying in anterior chamber suggestive of detached DM (yellow arrowhead), while pre-Descemet's layer (red arrowhead) lying in vicinity of donor stromal graft. (b) depicting separation of host's pre-Descemet's layer (red arrowhead) from donor stromal graft and DM (yellow arrowhead) giving an appearance of triple anterior chamber. (c) After spontaneous reattachment of the detached membranes (yellow arrowhead)

DM detachment is one of the common and challenging complications while dissecting the host lamellae. As by the consensus of most of the DALK surgeons, DALK can still be successfully completed with almost all microperforations.[1] A few microperforations might go unnoticed and present as double anterior chamber in the post-operative period. It can be seen on the slit-lamp examination as a distinct space between the donor stroma and host DM and can be very well picked-up on ASOCT. A very small, peripheral, double chamber may resolve spontaneously after 1-2 weeks. There have been case reports documenting DM detachment without rolled margins reattaching spontaneously after 5 months of surgery.[2] While, Venkatraman *et al*. reported a case with spontaneous resolution with complete recovery of vision after total DM detachment following DALK.[3] In our case, there was a detachment of the pre-Descemet's and the Descemet's layer due to the possible type 1 and type 2 bubble creation while separating the host lamella using Anwar's big bubble technique. However, it was very interesting to see that there was an eventual spontaneous attachment between the layers after resorption of air bubble and the graft became clear at further follow-up. Thus, one can wait and closely observe for the spontaneous reattachment of an iatrogenic DM detachment till the resorption of the air bubble before undertaking any intraocular intervention. To our knowledge, this is the first report which describes pictorial representation of detached Dua's and Descemet's membranes from each other as well as from donor stromal graft after DALK.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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