Acute Corneal Hydrops following Post-keratoplasty Suture Removal in Pellucid Marginal Degeneration

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Purpose: To report acute corneal hydrops following suture removal after penetrating keratoplasty (PK) in a case of pellucid marginal degeneration (PMD).

Case report: A young female underwent PK for corneal scarring in her left eye due to PMD; 8 months later the last sutures were removed. A few days following suture removal, the patient developed acute hydrops in the inferior aspect of the host-graft interface mostly in the recipient portion in the presence of a positive Seidel test. Review of the patient’s records revealed suture tract leakage in the early postoperative period at the same location which had been significantly thin. The patient received conservative therapy leading to complete resolution of the condition.

Conclusion: Through and through suture bites in a mismatched host-graft interface can predispose the patient to acute hydrops in PMD when the sutures are removed during routine postoperative care.

Keywords: Pellucid Marginal Degeneration (PMD); Hydrops; Suture Removal; Penetrating Keratoplasty

INTRODUCTION

Pellucid marginal degeneration (PMD) is a bilateral asymmetric ectatic disease of the cornea characterized by a narrow (1-2mm) band of inferior thinning parallel to the limbus. PMD has been considered a peripheral variant of keratoconus by several authors,1,2 and has also been reported as a complication of laser in situ keratomileusis (induced PMD).3

Hydrops is a rare complication of severe advanced cases of PMD; after which the cornea develops a stromal scar. Thirty-nine percent of PMD patients have stromal scarring superior to the area of thinning without prior hydrops.4

Herein, we report a case of PMD who presented with a corneal scar and underwent penetrating keratoplasty (PK). After the last session of suture removal, the patient developed acute hydrops which resolved with conservative management.

CASE REPORT

A 31-year-old female patient presented with blurred vision in both eyes which was more severe in her left eye. The problem had started 3 years prior to presentation. The condition had been slowly progressive 6 months prior to her first visit. The patient did not use glasses or any optical aids.

Family and past history were unremarkable. Best corrected visual acuity (BCVA) was 2/10 and counting fingers at 2 meters with -18.0–5.0 × 70 and -19.0 in her right and left eyes respectively.

Slit lamp biomicroscopy showed inferior corneal thinning bilaterally about 2 mm above the limbus with a stromal scar involving the
central cornea, extending to the inferior area of thinning in her left eye. The remainder of the ocular examination was unremarkable bilaterally. Corneal topography, showed a crab-claw pattern in the right eye and a very irregular pattern in the left one (Fig. 1).

PK was performed in the left eye and a 7.50 mm sized recipient bed received a 7.75 mm donor with small inferior graft decentration. On the first postoperative day, the patient was found to have a positive Seidel test and mildly shallow anterior chamber (AC); the microleakage was from a suture tract located at the 6 o’clock position of the host-graft junction. There was no apparent wound gap but a small host-graft mismatch was present. The patient was followed while receiving steroid and antibiotic drops; a few days later the leakage ceased and the AC was fully formed.

The rest of her postoperative course was uneventful up to 8 months when her last sutures including the one at 6 o’clock were removed. Several days later, the patient developed acute hydrops at the inferior host-graft area mostly involving the recipient cornea (Fig. 2). Seidel test was positive but the AC was formed. Antibiotic drops were started and the eye was patched; 2 days later the leakage stopped and edema in the inferior recipient cornea decreased. One week later there was no leakage and the hydrops disappeared with final uncorrected BCVA of 2/10 (Fig. 3).

DISCUSSION

Acute hydrops in PMD has been reported to occur in about 6% of cases. It is frequently attributed to Descemet’s membrane rupture above the area of thinning. Acute hydrops can also occur due to Descemet’s membrane detachment both in PMD and keratoconus. Hydrops can also be associated with perforation, a more serious presentation. Development of other serious events in association with hydrops, such as microbial keratitis and glaucoma have also been described.

Our patient developed hydrops and leakage a few days after removal of the last suture at the 6 o’clock position of the host-graft interface.
8 months after PK. Leakage at the same site had previously occurred the day after surgery which resolved uneventfully with conservative measures.

Leakage and hydrops which occurred after suture removal at a previous site of leakage was most probably due to through and through suturing; this indicates that other mechanisms besides Descemet’s rupture or detachment may cause acute corneal hydrops. We assumed it to be due to through and through suturing and Descemet’s membrane breakage at that site. Although acute hydrops developed after suture removal, another possibility is that these two events were merely coincidental.

We started antibiotic drops, applied an eye patch and frequently followed the patient. The patient recovered a few days later with cessation of leakage and resolution of hydrops.

Forooghian et al10 managed a case of PMD with hydrops and simultaneous perforation conservatively and Ramamurthy et al16 managed a similar case without perforation by minimal surgical intervention, but Gharebaghi et al9 were obliged to do a major surgical procedure for their case of perforation.

We assume there are several different mechanisms for influx of aqueous humor into the corneal stroma in ectatic corneal degenerations such as PMD and KCN. In our patient early postoperative leakage at the site of through and through suturing and leakage after suture removal showed that Descemet’s breakage at the site of full-thickness suture passage, which probably reopened after suture removal, was the cause of acute corneal hydrops.

Conflicts of Interest
None.

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