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## Short communication

# Management of corneal *hydrops* using air and micro-punctures<sup>☆</sup>



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## ABSTRACT

**Case report:** A 22-year-old woman with an acute *hydrops* and Descemet membrane detachment was managed by intracameral air injection combined with multiple corneal stromal venting incisions for the drainage of intrastromal fluid. No intraoperative complications were encountered, and the intrastromal fluid was resolved over 2 weeks.

**Discussion:** Acute corneal *hydrops* is a significant complication of keratoconus. If not treated, resolution usually occurs over a period of 2–4 months. The persistent edema can cause complications, such as corneal neovascularisation, infection and corneal perforation.

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## Manejo del *hydrops* corneal mediante aire y micropunciones

## RESUMEN

**Caso clínico:** Mujer de 22 años con *hydrops* corneal agudo y rotura de la membrana de Descemet. Se trató mediante una inyección de aire intracamerular combinada con múltiples incisiones intraestromales para conseguir el drenaje del líquido intraestromal. No hubo complicaciones intraoperatorias y el líquido intraestromal desapareció a las 2 semanas.

**Discusión:** El *hydrops* corneal agudo es una importante complicación del queratocono. Sin tratamiento, se puede resolver en un período de 2 a 4 meses. El edema persistente puede causar complicaciones tales como neovascularización corneal, infección y perforación.

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### Palabras clave:

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## Introduction

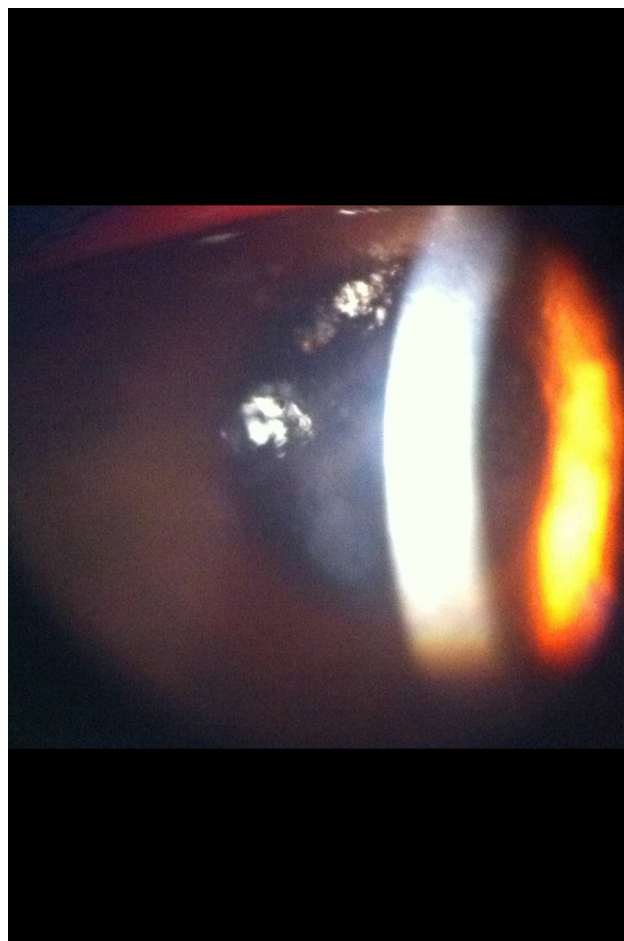
Acute corneal hydrops is a keratocone complication in advanced stage which appears as a consequence of Descemet membrane ruptures which facilitate the entry of aqueous humor into the corneal stroma.<sup>1</sup> On most occasions it is a self-limiting process which completes in 2-4 months<sup>2</sup> but persistent corneal edema is not free of complications such as corneal neovascularization, infection and even perforation.<sup>3</sup>

Typical treatment for hydrops is based on hypertonic eyedrops and corticoids, the former to facilitate process resolution and the latter to diminish inflammation during that process. In addition, surgical techniques have been described consisting in the injection of air or gas, with encouraging results.<sup>4</sup>

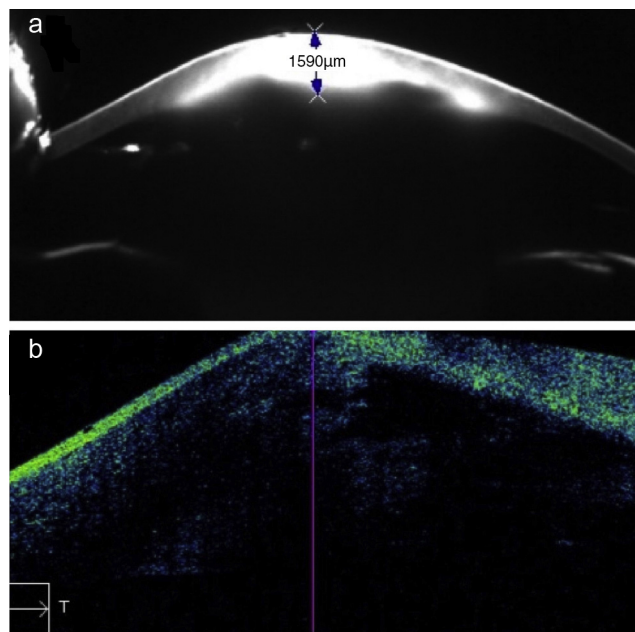
## Case report

Female, 22, diagnosed with keratocone stage IV according to the Amsler-Krumeich classification in RE and stage I in LE, on waiting list for RE keratoplasty, who visited our practice with a corneal hydrops episode in RE after minimum energy traumatism. Corrected VA is of bulks in RE and 0.9 in LE. Slit-lamp examination revealed corneal edema which prevented viewing other anterior element segments (Fig. 1). IOP, measured with pachymetric adjustment, was of 13 mmHg in RE and 10 mmHg in LE. The Scheimpflug-Pentacam® rotation camera (Oculus Inc., Lynnwood, WA, USA) and OCT in anterior segment Cirrus® mode (Carl Zeiss Meditec, Dublin, CA, USA), revealed cornea edema of approximately 1600 microns at the thickest point, Descemet membrane rupture and multiple intra-corneal pseudocysts (Fig. 2).

Due to the severity of the condition and poor medical treatment efficacy, it was decided to intervene surgically to achieve rapid resolution and avoid potential complications. Presurgery, 2% topical pilocarpine was prescribed to produce miosis and protect the lens. Paracentesis was performed with 15° blade and the anterior chamber partially emptied of aqueous humor in order to avoid possible uncontrolled intra-surgery ocular pressure increases. Subsequently, air was introduced with a 27G cannula to completely fill the anterior chamber. Thereafter, several incisions at an angle of 45° were carried out through the corneal surface with a 23G blade in the area of the cysts. To do this, the 3-D anterior segment OCT was used as guide, which located perfectly the areas in which most liquid is retained (Fig. 3). Said incisions must reach the space occupied by the intrastromal liquid so that, when minimum evacuation occurs, the blade must be withdrawn in order to avoid perforating the cornea. After making said incisions, the external expression thereof was carried out with a cannula for a period of approximately 10 min. Finally, air was partially extracted leaving a bubble of approximately 8 mm and the paracentesis hydrated. Antibiotic eyedrops, corticoids and cyclopegics were prescribed in the immediate post-surgery.



**Fig. 1** – initial condition of the cornea at hydrops debut, with large corneal edema associated to older peripheral leukoma.



**Fig. 2** – images of the cornea at hydrops onset taken with Scheimpflug camera (a) and anterior segment OCT (b).

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