Pupillary Block Glaucoma in Phakic Perfluoropropane Gas-filled Eye

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Gases are widely used in vitreoretinal surgery. It is a valuable tool to treat difficult retinal detachments and severe cases of proliferative vitreous retinopathy.\textsuperscript{1} Gas-mediated pupillary block and iridocorneal apposition are known complications in aphakic eyes that underwent vitreoretinal surgery.\textsuperscript{2-4} We report a case of a phakic patient with an acute pupillary block glaucoma related to the migration of perfluoropropane (C\textsubscript{3}F\textsubscript{8}) into the anterior chamber. We are unaware of previous reports on this complication, and a MEDLINE search found no literature on this topic.

**Case Report**

A 46-year-old man underwent a pars plana vitrectomy with 15\% C\textsubscript{3}F\textsubscript{8} injection to his right eye for a macula on recurrent rhegmatogenous retinal detachment. There was no history of trauma. During discharge on the first postoperative day, the anterior chamber was deep and there were no signs of pseudoexfoliation, lental dislocation or zonule defects. Intraocular pressure (IOP) was 19 mm Hg. Five days later, the patient came to outpatient department with acute pupillary block glaucoma secondary to a gas bubble between the iris and crystalline lens causing iridocorneal apposition (Fig. 1A). The IOP was 37 mm Hg. Topical and systemic antiglaucoma medications were started. The patient was maintained in a strict prone position. Two hours later, the gas bubble reduced in size because most of the bubble moved behind the crystalline lens (Fig. 1B). However, the IOP remained high and the iridocorneal apposition did not break down. An inferior Nd:YAG laser peripheral iridotomy at 6 o’clock was performed. It resulted in the immediate deepening of the anterior chamber and reduction in IOP to 16 mm Hg with no
recurrence of the pupillary attack (Fig. 2). Six weeks after surgery, the anterior chamber was deep and the IOP was 17 mmHg with no anti-glaucoma medications.

**Discussion**

Complete iridocorneal apposition is a known complication in aphakic eyes that undergo vitrectomy followed by intraocular gas injection.\(^2\)\(^5\) The incidence of this condition was estimated to be 3% in a retrospective study of 336 aphakic eyes.\(^3\) Buoyant forces from the bubble and pupillary block combine to push the iris forward onto the posterior surface of the cornea. This results in complete iridocorneal apposition. To the best of our knowledge, we report the first case of a phakic patient who developed an acute pupillary block glaucoma related to migration of C3F8 into the anterior chamber.

Zonulysis is the pathological change that allows a migration from the posterior into the anterior chamber. Such changes are usually seen after trauma or in cases of weak zonules such as pseudoexfoliation. Our patient did not report any trauma nor did he have pseudoexfoliation. However, the superior part of the zonules might have been compromised by previous retinal surgery.

Initially, our patient maintained good prone positioning and encountered no problems. However, as he did not maintain the position, this probably resulted in the pupillary block by migration of C3F8 into the anterior chamber, thus pushing the iris diaphragm anteriorly. In our patient, Nd:YAG laser iridotomy at 6 o’clock was sufficient to treat the
pupillary block. A permanent iridocorneal apposition did not occur because of early recognition and intervention.

In conclusion, C3F8 migration into the anterior chamber and inducing a pupillary block glaucoma is a complication that has been not reported in phakic eyes. An early Nd:YAG laser iridotomy is a suitable way to reduce IOP in such cases.
References


Legends

Figure 1  (A) Clinical photograph demonstrates C3F8 gas bubble blocking the pupil. Note the complete iridocorneal apposition. (B) Clinical photograph demonstrates the remnant of the gas bubble after one hour from strict patient’s face down position. Complete iridocorneal apposition still exists.

Figure 2  Clinical photograph demonstrates a formed anterior chamber after Nd:YAG-laser peripheral iridotomy (white arrow).