

SHORT COMMUNICATION

25-Gauge peripheral iridectomy during vitrectomy

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PURPOSE. To report peripheral iridectomy using a 25-gauge vitreous cutter in a 42-year-old man with pupillary block due to adhesion of the internal iris surface to the continuous circular capsulorhexis.

METHODS. A corneal opening was made at 10 o'clock during vitrectomy. A 25-gauge vitreous cutter was inserted into the anterior chamber with the port facing downward, and peripheral iridectomy at the 12 o'clock position was performed. The vitreous cutter was set at a cutting speed of 2500 cpm and the aspiration pressure at 600 mmHg.

RESULTS. A 25-gauge vitreous cutter with a fine shaft could easily be inserted into the peripheral anterior chamber, and there was no contact with the corneal endothelium even when the anterior chamber became shallow in association with iridectomy. In this patient, pupillary block resolved with peripheral iridectomy, and ocular pressure was also controlled.

CONCLUSIONS. 25-Gauge peripheral iridectomy is a simple technique that permits iridectomy of appropriate size at any desirable location. (*Eur J Ophthalmol* 2007; 17: 857-9)

KEY WORDS. Peripheral iridectomy, Pupillary block, 25-Gauge transconjunctival vitrectomy, High-speed cutter

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INTRODUCTION

The 20-gauge vitreous cutter used currently has a large diameter (0.9 mm), and is difficult to insert into the narrow space of the peripheral anterior chamber. Even if successfully inserted, there is a risk of touching the corneal endothelium as the anterior chamber becomes shallow in association with iridectomy and aspiration. Therefore, in an aphakic eye, a small excision is made on the inner iris surface from the vitreal side, followed by additional ab externo iridectomy. Using this method, it is difficult to achieve iridectomy of an appropriate size at any desired location.

With simultaneous cataract surgery and vitrectomy, pupillary block may occur as a postoperative complication, due to adhesion of the internal iris surface to the continuous circular capsulorhexis (CCC). In cases

showing strong adhesion with iris neovascularization, anterior chamber hemorrhage may occur secondary to adhesion and detachment. We designed a peripheral iridectomy method using a 25-gauge vitreous cutter in a patient who developed pupillary block due to adhesion of the inner iris surface to the CCC.

Case report

A 42-year-old man who had a cataract and proliferative diabetic retinopathy with vitreous hemorrhage in the right eye underwent combined cataract surgery and vitrectomy. Preoperative visual acuity was 0.01 using the standard Japanese decimal visual acuity chart, intraocular pressure 18 mmHg, and there was no iris neovascularization. Cataract surgery was per-

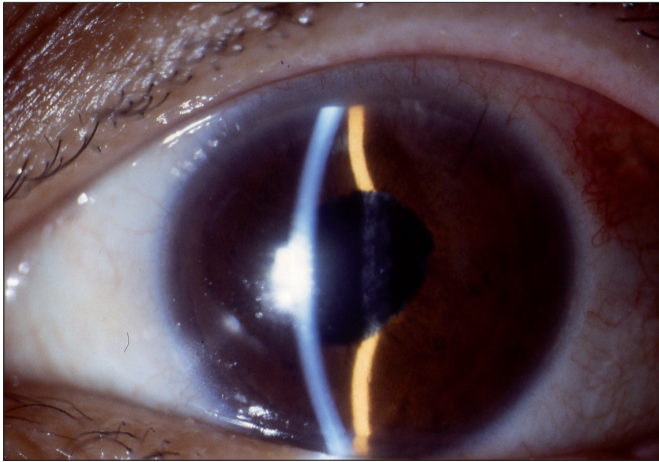


Fig. 1 - Preoperative findings. One month after surgery for proliferative diabetic retinopathy with cataract, vitreous hemorrhage occurred. Iris neovascularization and pupillary block were observed.

traocular pressure was controlled at 16 mmHg. One month after surgery, vitreous hemorrhage occurred and iris neovascularization was observed. Posterior synechia of the iris to the CCC led to pupillary block. Visual acuity deteriorated to hand motion and intraocular pressure rose to 28 mmHg. Iris neovascularization was also present in the angle, but no anterior synechia was observed (Fig. 1).

A second surgery was conducted immediately, with the aim of removing vitreous hemorrhage, and additional retinal photocoagulation was conducted. Due to the iris neovascularization and pupillary block, mechanical detachment of posterior synechia from the CCC was difficult. Peripheral iridectomy using a 25-gauge vitreous cutter was attempted. First, a trocar was inserted at an inferotemporal position 4 mm from the limbus, and an infusion line was installed. Next, a

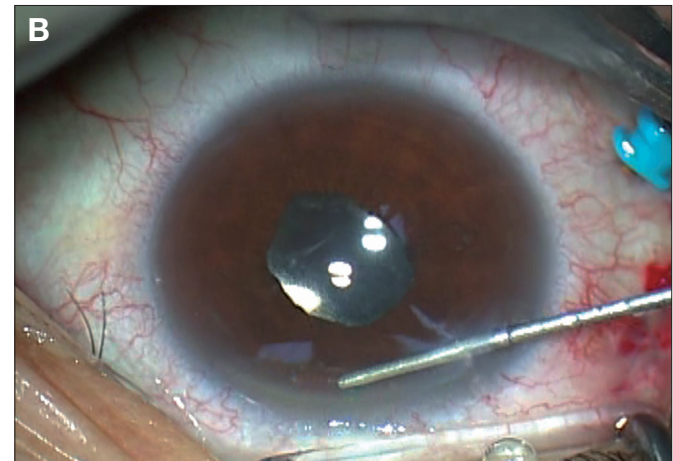
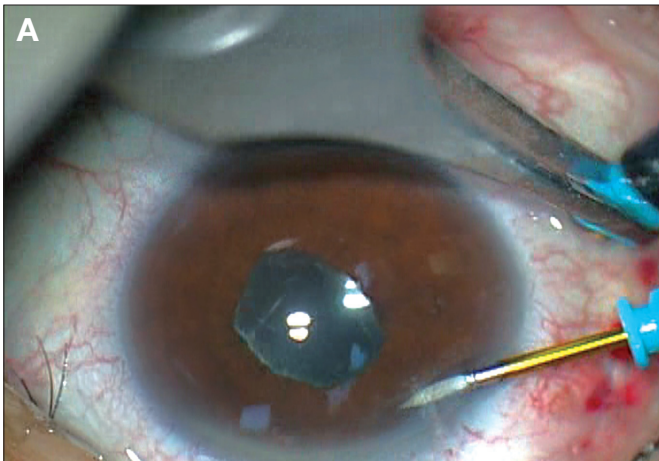
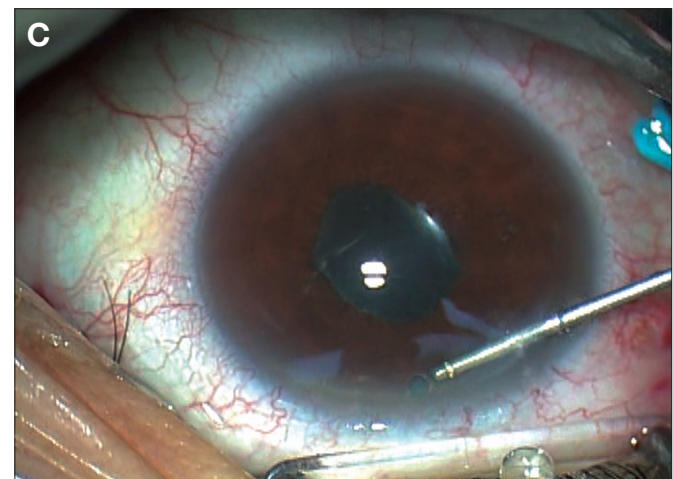


Fig. 2 - 25-Gauge iridectomy procedures. **(A)** After installing an infusion line, a corneal opening is made at 10 o'clock using a 25-gauge trocar. **(B)** A 25-gauge vitreous cutter is inserted into the anterior chamber with the port facing downward, and iridectomy is performed at the 12 o'clock position. The fine cutter shaft facilitates insertion into the peripheral region. **(C)** The high-speed (2500 cpm) cutter allows iridectomy of small amounts of tissue. Cpm = cuts per minute.



formed through an incision in the superior cornea, and a foldable intraocular lens (SA60AT®, Alcon Surgical, Fort Worth, TX, USA) was implanted. A 25-gauge scleral tunnel transconjunctival vitrectomy was conducted using the Accurus 800CS™ (Alcon Surgical) with a 25G system (Medical Instrument Development Laboratories, San Leandro, CA, USA) (1). Postoperative visual acuity improved to 0.3 and in-

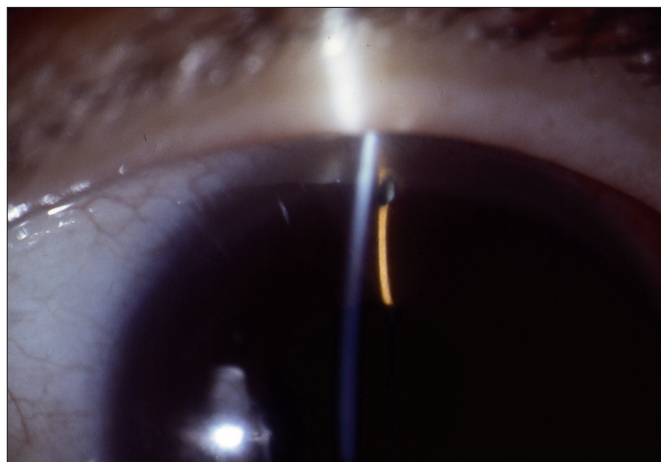


Fig. 3 - Postoperative findings. Seven days after iridectomy, a sharp peripheral incision at the 12 o'clock position is observed.

corneal opening was made at 10 o'clock using a 25-gauge trocar. A 25-gauge vitreous cutter was then inserted into the anterior chamber with the port facing downward, and peripheral iridectomy, at 12 o'clock, was performed with the vitreous cutter set at a cutting speed of 2500 cuts per minute (cpm) and aspiration pressure at 600 mmHg (Fig. 2, A–C). The vitreous hemorrhage was then removed and additional retinal photocoagulation was performed.

After the second surgery, iris neovascularization was resolved. Intraocular pressure was controlled at 16 mmHg and visual acuity improved to 0.3. A sharp peripheral iris excision was observed at the 12 o'clock position (Fig. 3).

DISCUSSION

In 1984, Mizuno et al reported a method of peripheral iridectomy from the inner surface of the iris (ab interno iridectomy) using a vitreous cutter during vitrectomy (2). Since 1985, 6 o'clock peripheral iridectomy during vitrectomy has been used to prevent the development of pupillary block in the aphakic eye due to silicone oil infusion (3). A recent report described a method of peripheral iridectomy alone which involves inserting a 25-gauge aspiration-cutting probe into the anterior chamber and applying an aspiration pressure of 600 mmHg and cutter speed of 300 cpm (4).

The 25-gauge vitreous cutter with a fine shaft (0.5 mm diameter) can be inserted easily into the peripheral anterior chamber, without contacting the corneal endothelium even when the anterior chamber becomes shallow in association with iridectomy. In contrast to the 20-gauge instrument, the 25-gauge vitrectomy cutter has a small port and is positioned at the tip of the shaft, allowing iridectomy of an appropriate size at any desirable location. With our method, a high-speed 2500 cpm is used. This permits sharp excisions of small amounts of tissue. Intraoperative bleeding from the iridectomy site can be stopped using a 25-gauge diathermy.

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REFERENCES

1. Shimada H, Nakashizuka H, Mori R, Mizutani Y, Hattori T. 25-gauge scleral tunnel transconjunctival vitrectomy. *Am J Ophthalmol* 2006; 142: 871-3.
2. Mizuno K, Fukuyo T. Ab interno iridectomy combined with pars plicata lensectomy. *Jpn J Ophthalmol* 1984; 28: 416-20.
3. Ando F. Intraocular hypertension resulting from pupillary block by silicon oil. *Am J Ophthalmol* 1985; 99: 87-8.
4. Finger PT. Small incision surgical iridotomy and iridectomy. *Graefes Arch Clin Exp Ophthalmol* 2006; 244: 399-400.