

LETTERS

Improvement for dry pars plana posterior capsulotomy and anterior vitrectomy using a 25-gauge vitrectomy system in paediatric cataract surgery

We previously described a technique of dry pars plana posterior capsulotomy combined with anterior vitrectomy using a 25-gauge vitrectomy system after in-the-bag intraocular lens (IOL) implantation in paediatric cataract surgery.¹ However, two eyes (2.5%) in the series suffered transient hypotony (<8 mm Hg), which was related to the vitrectomy incision. In our clinical practice afterwards, such a situation also occurred. Meanwhile, low cutter efficiency was noted in a few cases, which required over 60 s for posterior capsulotomy and vitrectomy with viscoelastic materials remaining in the capsular bag. Therefore, we tried to improve the technique, and report our further surgical experience herein.

METHODS

A consecutive series of 57 patients (80 eyes) with paediatric cataract were included in this study. All children underwent anterior continuous curvilinear capsulorhexis, phacoemulsification and IOL (Akreos Adapt, Baush & Lomb, Rochester, New York, USA) implantation in the capsular bag through a 3.2 mm scleral incision. The viscoelastic materials were removed by irrigation and aspiration from the capsular bag and anterior chamber, and then reinjected into the anterior chamber. (In our primary report,¹ viscoelastic materials remained in the capsular bag and the anterior chamber.) A modified scleral tunnel incision was

created at the 11 o'clock position using a bevelled trocar with no microcannula (figure 1). Pars plana posterior capsulotomy and anterior vitrectomy were performed using a 25-gauge system through this incision without intraocular infusion. The subsequent surgical procedure and post-operative examinations were the same as we previously described.¹

RESULTS

All procedures were uneventful, and all eyes had well-centered IOLs in the bag. No intraoperative incision leakage or vitreous incarceration attributable to the vitrectomy incision was observed at the end of the surgery by Seidel test. No hypotony was detected during the follow-up period. The efficiency of posterior capsulotomy and anterior vitrectomy was obviously improved, and no eye had vitrectomy for more than 60 s.

DISCUSSION

There are variable techniques for wound construction of 25-gauge vitrectomy incisions, such as conventional vertical incisions and oblique incisions. The rate of transient postoperative hypotony related to the conventional vertical incision technique was reported to be 11.4% (4/35)² and 40% (4/10).³ In our primary report,¹ only one port was created without intraocular infusion, but two eyes (2.5%) had transient hypotony, which may increase the incidence of choroidal folds and endophthalmitis.⁴

Some surgeons prefer oblique incisions for reduction of postoperative leakage and hypotony.⁵ However, the necessary force required for penetrating sclera sometimes can cause the microcannula to bend or deform.⁶ In this study, we created a modified scleral tunnel incision, for which a 25-gauge bevelled trocar was used with

no microcannula, and a short horizontal scleral tunnel was made, slightly different from the conventional vertical or oblique ones. Short vitrectomy time and no extensive intraocular manipulation made it unnecessary to use a microcannula, resulting in a smaller incision (0.5 mm in diameter) and a more easily self-sealing tunnel.

When the 25-gauge vitrectomy cutter produces a lower aspiration flow compared with the conventional 20-gauge vitrectomy system, viscoelastic materials seem to be too viscous, which may reduce the suction efficiency of the instrument. In the current study, the viscoelastic materials just remained in the anterior chamber but not in the capsular bag, which made it comparatively easy to perform posterior capsulotomy and anterior vitrectomy.

In conclusion, the modified management for vitrectomy incisions and viscoelastic materials could help improve the efficacy and safety of dry pars plana posterior capsulotomy and anterior vitrectomy using a 25-gauge vitrectomy system after in-the-bag IOL implantation in paediatric cataract surgery. However, further evaluation on the other theoretical disadvantages of pars plana incisions, such as vitreous haemorrhage in the immediate postoperative period and entry site breaks in the late postoperative period, needs to be made.

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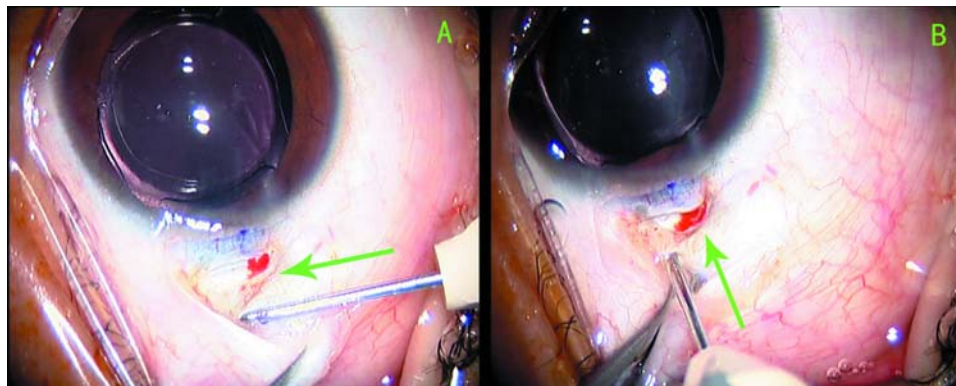


Figure 1 The incision is constructed by passing the trocar in a horizontal manner (at an angle of 5–10°) into the bare sclera almost up to the level of the bevel (1.0–1.5 mm) (A). Then the trocar is vertically inserted into the vitreous cavity (B). In our primary report,¹ the incision was just constructed vertically.

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