Is Bilateral Simultaneous Cataract Surgery Safe in Children?

Performing two surgeries during the same operating room visit reduces the risks of general anesthesia complications, amblyopia development, and patients lost to follow up.

BY LEELA V. RAJU, MD; MADHAVI GHANTA, DNB; SUCHARITA BODDU, BA; AND V.K. RAJU, MD, FRCS, FACS

The safety of immediate sequential bilateral cataract surgery (ISBCS) under general anesthesia has been debated for some time. In adults, ISBCS is often chosen for patients who are very ill or to defray surgical costs. In children, in addition to reducing the risk of multiple anesthesia exposures, ISBCS may decrease the risk of patients lost to follow-up, enable faster visual rehabilitation, and lower the risk of deprivation amblyopia. However, regardless of age, the greatest risk in all patients undergoing ISBCS remains endophthalmitis.

SURGICAL PROTOCOL

At the Goutami Eye Institute in Rajahmundry, Andhra Pradesh, India, we have established a safe and effective protocol for ISBCS in children. We treat each eye as a separate procedure, including separate povidone-iodine washes of the skin and the ocular surface. Surgical drapes and gloves are changed between procedures, and separate instruments and equipment are used for each eye, including irrigation solutions from different lots or manufacturers.

We prefer a manual small incision extracapsular technique, and we implant a one-piece, PMMA IOL in each eye in children older than 2 years. Pediatric ISBCS begins with creation of a paracentesis incision. After a small conjunctival peritomy, a 4-mm scleral tunnel is made superiorly (Figure 1). Care is taken to make a trapezoidal tunnel, with the inner lip of the wound extending to the full width of the cornea. After injection of an ophthalmic viscosurgical device (OVD), a continuous curvilinear capsulorrhexis is performed, and the lens is then aspirated with a Simcoe I/A cannula (Figure 2).

If a safe Nd:YAG capsulotomy is thought unlikely to be achieved after ISBCS, a posterior capsulorrhexis is performed with a cystotome, and limited anterior vitrectomy is completed (Figure 3). After lens implantation, if applicable, a 10-0 nylon suture is placed at the main wound, and subconjunctival injections of antibiotics and steroid are given. The eye is patched and shielded; the following day, topical antibiotic and steroid drops are started.

CASE REVIEW

We reviewed 23 ISBCS pediatric cases (22 under general anesthesia and one under local anesthesia) that were performed by one surgeon (MG) using the technique described above between June 2006 and May 2009. Our study group consisted of 11 males and 12 females, ranging from 4 months to 14 years old. Preoperative visual acuity ranged from light perception to 20/200.

After a mean follow-up of 10 months, postoperative visual acuity ranged from central/steady/maintained vision (due to patient cooperation) to 20/40. One patient was lost to follow-up, and there were no cases of endophthalmitis. Postoperative interventions included Nd:YAG capsulotomy, strabismus surgery, and pupil reconstruction.

Figure 1. A 4-mm scleral tunnel is made superiorly.
We compared these ISBCS results with 42 pediatric cases that were completed with successive manual small-incision extracapsular cataract surgeries done by the same surgeon. Similar results were achieved in both patient populations.

ENDOPHTHALMITIS ADDRESSED

When ISBCS is discussed, the question of endophthalmitis must be addressed. This has been evaluated in both adult and pediatric populations. Huang et al reported on a mixed pediatric and adult cohort in which no cases of endophthalmitis were noted, and others have reported no cases of endophthalmitis in pediatric ISBCS series.

However, this is not to say that the incidence of endophthalmitis in children is so low that it does not appear in the literature. Good et al reported three cases of endophthalmitis in a series of 671 cataract extractions, and Wheeler et al reported that 17 of 2,400 eyes with congenital cataracts and glaucoma contracted endophthalmitis after surgery.

The risk of general anesthesia in children is also a consideration for the use of ISBCS, with reported mortality rates ranging from 0.2 to 12.8 per 10,000 procedures. The rate may be higher in some developing countries. Limiting exposure to anesthesia in these young patients is ideal.

By performing both surgeries during the same operating room visit, the risks of complications of general anesthesia, amblyopia development, and loss of patients to follow-up are reduced. Additionally, the number of follow-up visits can be reduced. Longer-term results, especially regarding visual outcomes, are necessary to confirm our results.

In a developing country where efficiency of health care services is paramount, especially when serving a large population, it is often more economically feasible to perform ISBCS. Our finding that postoperative interventions such as Nd:YAG capsulotomy were necessary is unsurprising, in that capsular opacity is common in children. Our sample size is small, but we are confidently able to say that pediatric ISBCS can safely be performed using a small-incision extracapsular technique when each eye is treated as a completely different procedure. This includes changing surgeon clothing, drapes, instrumentation, and fluids.

Sucharita Boddu, BA, is a second-year medical student. Dr. Boddu states that she has no financial interest in the products or companies mentioned. She may be reached at e-mail: sboddu@gmail.com.

Madhavi Ghanta, DNB, is the Medical Director, Goutami Eye Institute, Rajahmundry, Andhra Pradesh, India. Dr. Ghanta states that he has no financial interest in the products or companies mentioned. He may be reached at e-mail: madhavi.ghanta@gmail.com.

Leela V. Raju, MD, is an Assistant Clinical Professor, Department of Ophthalmology, University of Pittsburgh Medical Center. Dr. Raju states that he has no financial interest in the products or companies mentioned. He may be reached at tel: +1 412 651 3086; fax +1 412 647 5119; e-mail: raju.v25@gmail.com.

V.K. Raju, MD, FRCS, FACS, practices at Monongalia Eye Clinic, and is a Clinical Professor, West Virginia University, and Founder and Medical Director, Eye Foundation of America, all in Morgantown, West Virginia. Dr. Raju states that he has no financial interest in the products or companies mentioned. He may be reached at e-mail: vkr@vkraju.com.