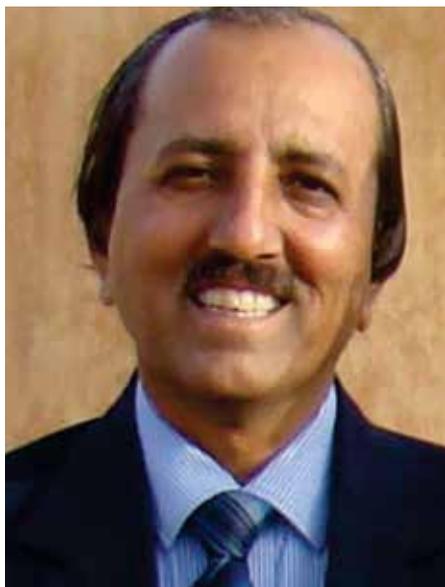


Guest Editorial

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An Update on Pediatric Cataract Surgery: Where Are We Today?

Despite significant advances in the field of Ophthalmology, childhood blindness remains a major challenge and a cause of worry for ophthalmologists the world over. The magnitude of the problem is compounded in resource-limited countries such as India where the number of patients may be very high and the system is not designed well enough to suit the needs of the entire population. In India, more than 20% children may be visually impaired.¹ This poses a challenge to the system; appropriate care and follow-up of these children requires significant dedication, skill and clinical resources, some of which may be scarce in our country.² In the index editorial, we have summed up our experiences in pediatric cataract surgery from a large tertiary eye care center, and report the challenges that still need to be tackled in the present times.

A large number of children with cataract may be unreported.¹⁻³ Among the general population, though the awareness of eye disorders in children has increased, the magnitude and seriousness of the problem is largely misunderstood. In our clinics, more than 30 children with congenital/developmental cataract are referred every week. The sheer number of surgeries performed in high volume centers may exceed 20 per week. This leads to an enormous strain on the health system. One of the difficulty is the availability of skilled anesthetists to support such a large number of patients. In addition, young children require frequent examinations under anesthesia during their early follow-up for detection of various conditions such as secondary glaucoma (and measurement of intraocular pressures), visual axis obscuration, inflammation, need for additional surgeries, among others.^{2,4}

In addition to the manpower required for performing surgeries and follow-up, wholesome management of pediatric cataract surgeries requires a team effort – which includes counselors, skilled optometrists, pediatricians, pediatric nurses, experienced ophthalmic surgeons, pediatric ophthalmologists, and researchers.^{4,5} While advances have been made in the field of pediatric cataract surgery, setups and hospitals consisting of such dedicated teams are few in our country. Thus, with the expansion of knowledge, it is imperative to plan, innovate and open centers of excellence in the field of pediatric cataract surgery.

One must also consider the need for rapid expansion in the field of advanced diagnostics and laboratory sciences that focus on research in the field of etiopathogenesis of infantile/developmental cataract.^{6,7} Bench side-to-clinic research in the field of pediatric cataract surgery is lacking. Recently, novel tools such as next-generation DNA sequencing have been introduced to identify various genetic loci responsible for lenticular opacity in young children.⁸ In addition, bioengineering research that helps in the designing of new intraocular lenses (IOL), ocular instruments, and pharmacological agents for prevention of visual axis obscuration/posterior capsular opacification are needed.⁹

In the literature, there are several reports on the use of improved surgical techniques for optimizing results in pediatric cataract surgery.¹⁰⁻¹⁴ More prospective studies are needed that explain the long-term efficacy of newer IOL calculation formulae,¹⁵ IOL design and materials,¹⁶ and use of pharmacological agents to prevent secondary cataract.¹⁷ More literature on the approaches to tackle complicated pediatric cataract cases such as those with spherophakia and lenticonus from skilled surgeons across the globe is needed as well. Children with congenital/developmental cataract require adequate time for a thorough clinical and systemic evaluation. Often congenital cataract may be associated with corneal opacities or glaucoma.⁴ Such cases may be very difficult to diagnose and manage and require specialized case in tertiary care centers with an experienced pediatric ophthalmology team. Children with concomitant retinal diseases also require special attention, such as those with persistent fetal vasculature. Thus, the ophthalmologist working in the field of pediatric cataract surgery requires significant dedication, devotion and time, and may need to prioritize pediatric cases over adult cataracts so that justifiable care is provided to the children in need. It is the goal of pediatric cataract surgery to ensure clear visual

axis and placement of the IOL in the capsular bag.^{4,11} With innovations such as toric and multifocal IOLs, it has become a challenge to choose patients that are likely to have improved visual results with such IOLs. Thus, preoperative planning in the present times requires expertise more than ever before. The clinician must keep in mind the need to perform appropriate procedures to ensure adequate development of vision during the critical stage of brain growth.^{2,4}

Post-cataract surgery inflammation may lead to failure of all the hard work and short-lived success of successful IOL implantation. The authors have worked on various techniques over the past several decades such as continuous curvilinear capsulorhexis, primary posterior capsulotomy with limited anterior vitrectomy, and use of phacoaspiration systems with better fluidics and control system, among others.¹⁶ In our center, we receive a significant number of children with uveitis, trauma and other pathologies such as microphthalmia. In order to innovate, we have employed newer techniques such as use of intraocular depot steroids like dexamethasone implants (Ozurdex®) to improve outcomes after pediatric cataract surgery.¹⁸ However, much needs to be learnt in order to optimize postoperative inflammation control to prevent further complications such as capsular phimosis, opacification, IOL tilt, and decentration.

In conclusion, there are a number of challenges that we need to overcome in the field of pediatric cataract surgery. Over a period of time, we have experienced improved surgical results in our patients undergoing modern pediatric cataract surgery. In the past couple of decades, there have been numerous advances in fields such as surgical instrumentation, phacoaspiration devices, materials and design of IOLs and development of more potent anti-inflammatory drugs. It is prudent for ophthalmologists working in the field of pediatric cataract surgery to join hands and make further efforts to ensure wholesome development of blind children in our country as well as internationally.

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