Educational Article

Pediatric cataract

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ABSTRACT

Pediatric cataract constitutes one amongst the leading causes of childhood blindness. Blindness due to pediatric cataract can be treated with early identification and thoughtful management. When left untreated, cataract in children can result in social and economic hurdles for the child but also for society. Hence, the early diagnosis followed by prompt treatment is of great significance. Routine screening usually leads to diagnosis while some cases may be referred after parents notice of leukocoria or strabismus. Etiology of pediatric cataract is widely miscellaneous and diagnosis of specific etiology assists in effective management. Considering therapy, pediatric cataract surgery has evolved, by improving knowledge of myopic shift and axial length growth, with the implementation of IOLs being in the spotlight. The number of procedures for IOL implantations increases steadily every year. Favorable results depend not only on effective surgery, but also on postoperative care and rehabilitation. Nevertheless, parents, surgeons, anesthesiologists, pediatricians, and optometrists need to work together in order to achieve desirable outcomes.

Key words: Pediatric cataract, childhood blindness, IOL implantation, aphakic contact lenses.

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INTRODUCTION

Cataract is an opacification of the crystalline lens of the eye that can result in blindness if not treated soon enough, partially or totally. For children, cataracts of a wide etiology constitute a common cause of blindness, developing often slowly laterally or bilaterally. Early signs of cataract can occur as blurry or double vision, halos around light, trouble seeing at night or with bright lighting and faded colors while parents usually point out leukocoria or strabismus. Timely identification and intervention are of critical significance for a favorable visual outcome.[1]

EPIDEMIOLOGY

The prevalence of childhood cataracts ranges extensively in the reports due to differences in populations, definition of cases, pediatric clinic identification methods and control, age groups, from 1 to 3 and 1 to 15 per 10,000 children for congenital and childhood cataract respectively.[2,3]

ANATOMY-EMBRYOLOGY

The major anatomical structures of the lens are the embryonic nucleus, the fetal nucleus, the cortex, the lens epithelium, and the lens capsule, all working as a “biological glass”

in order to focus the light rays onto the retina. The eye starts developing at 22 days of gestation. Fibroblast growth factor induces migration, differentiation and induction interacting with bone morphogenetic protein. Proteins encoded by genes Pax6, Pitx3, c-Maf, and Foxe3 are transcription factors playing an important role for lens development. Mutations of these genes have been associated with congenital cataracts as well as mutations of genes coding proteins of the lens structure (crystallins, connexins), metabolic pathways such as the galactose pathway and ephrins, axon guidance molecules.[4-7]

CLASSIFICATION

Cataracts are usually classified depending on the location, morphologically or depending the underlying pathology.[8]

Location

- Congenital anterior polar cataract: typically bilateral, symmetrical, usually non-progressive, familial. Even if they are usually connected with a good visual outcome, they should be followed in case of progression.[9]

- Persistent fetal vasculature (PFV persistent hyperplastic primary vitreous): an arrest of embryonic development in which the eye is mildly microphthalmic and a vascularized stalk extends from the optic nerve to the posterior aspect of the lens, causing a posterior lens plaque that can obstruct the visual axis. PFV pediatric cataract surgery usually often is complicated. Visual prognosis may be limited by associated optic nerve or macular disease.[10]

- Congenital posterior polar cataract : lateral or bilateral, usually inherited as an autosomal dominant disease, yet it can be sporadic.[11]

- Unilateral posterior polar cataract ("Mittendorf" dot): generally non-progressive, inherently higher propensity for posterior capsule rupture.[12]

- Bilateral Posterior polar cataracts (familial or sporadic, usually progressive).

- Posterior lenticonus or lentiglobus: congenital defects of the posterior lens capsule that cause a conical or spherical bulge in the capsule and progressive cataract formation. Slow progression is usually associated with good visual prognosis.[13]

- Posterior subcapsular cataracts: usually secondary to glucocorticoid therapy or ionizing radiation.

- Total cataracts: involve the complete crystalline lens and preclude any view of the retina.

- Zonular cataracts: involve a particular zone of the developing lens (nuclear, lamellar, sutural, or cortical) because of an insult occurring at a particular time during lens development.

- Nuclear cataracts: involve the embryonic or fetal nucleus and are highly amblyogenic. They usually are bilateral, can represent an intrauterine insult, and often are associated with microphthalmos. Bilateral cases may be associated with autosomal dominant inheritance.

- Lamellar cataracts involve the lamella peripheral to the Y sutures of the lens (which is the area where lens fibers meet and interdigitate near the anterior and posterior poles of the crystalline lens).

- Sutural cataracts involve the Y sutures of the lens and can be unilateral or bilateral, and inheritance is X-linked or autosomal recessive.[14,15]

ETIOLOGY

Cataracts that are inherited, result of systemic diseases and idiopathic or sporadic count each about one third of the pediatric cataract cases.

Hereditary: Being inherited with autosomal dominant pattern usually, with almost complete penetrance but variable expressivity, this kind of cataracts need special caution. Autosomal recessive and X-linked forms can also appear but remain rare. Hereditary cataracts may be congenital or develop over time; also topographically, they may be sutural, anterior or posterior capsular/polar.[16]

Disease - associated: The list of systemic and ocular disorders in which cataracts occur is extensive. All pediatric cases with this type of disorders warrant ophthalmic evaluation and careful following.

Pediatric disorders associated with cataracts [17]

Ocular conditions and syndromes: Aniridia, Persistent fetal vasculature, Retinopathy of prematurity, Uveitis.

Craniofacial syndromes: Apert syndrome, Crouzon syndrome, Hallermann-Streiff syndrome, Smith-Lemli-Opitz syndrome.

Metabolic diseases: Cerebrotendinous xanthomatosis, Fabry disease, Galactosemia, Mannosidosis, Refsum disease, Zellweger syndrome.

Endocrine diseases: Diabetes mellitus, Hypoparathyroidism, Infantile hypoglycemia.[18]

Skeletal syndromes: Chondrodysplasia punctata (Conradi-Hünermann syndrome), Stickler syndrome.

Intrauterine infections: Cytomegalovirus, Herpes simplex and Varicella, Rubella, Syphilis, Toxoplasmosis.

Dermatologic syndromes: Ectodermal dysplasia, Incontinentia pigmenti, Rothmund-Thomson syndrome, Werner syndrome, Congenital ichthyosis.

Renal syndromes: Alport syndrome, Lowe syndrome.[19]

Central nervous system and neuromuscular syndromes: Marinesco-Sjogren syndrome, Myotonic dystrophy, Neurofibromatosis type 2, Walker-Warburg syndrome.

Multisystem genetic syndromes: Bardet-Biedl syndrome, Cockayne syndrome, Marshall syndrome, Meckel-Gruber syndrome, Nail-patella syndrome, Norrie disease, Oculodentodigital dysplasia, Progeria, Rubinstein-Taybi syndrome.

Chromosomal anomalies: Down syndrome (trisomy 21), Edward syndrome (trisomy 18), Patau syndrome (trisomy 13), Wolf-Hirschhorn syndrome (4p-syndrome), Turner syndrome, Cri du chat syndrome (5p-syndrome).

Ocular trauma: Cataract be immediate, early, or late complication of an ocular injury (usually penetrating) that usually results from activities related to sports and play. The possibility of non-accidental injury should be considered in cases of total cataracts when the reason is uncertain, for potential child abuse.

Glucocorticoids: The cataractogenic effect of systemic use of glucocorticoids have been in the focus of many studies and are well documented. Children receiving long-term systemic glucocorticoids or adrenocorticotropic hormone should be carefully followed and evaluated. As for inhaled glucocorticoids, the possible connection with pediatric cataract is not well established yet.[20]

Radiation is a well-established etiology of cataracts. The pediatric lens is particularly delicate, hence, a small dose of radiation can result in cataractogenesis (min dose being 500 rad). Cranial irradiation constitutes a reason for annual ophthalmological examination.[21]

Low birth weight: Infants with low birth weight (<2000 g) have been documented to have a higher risk of bilateral congenital cataract.[22]

CLINICAL FEATURES

Pediatric cataract may present with:

Parental notice

This is the most common presentation for anterior polar cataracts, because it can be seen by the unaided eye.

Family history

Hereditary cataracts usually have an autosomal dominant inheritance pattern and require early ophthalmological referral in order to achieve prompt diagnosis and treatment.

Poor vision

Poor vision in infants mainly indicates congenital cataract that most commonly occurs with unusual visual behavior.

Asymmetry of the red reflex

"Bruckner testing" is a simple test to detect cataracts in childhood.

Leukocoria (white pupillary reflex)

Leukocoria, regardless of the cause, warrants great attention from the ophthalmologists. Amongst other causes are: retinoblastoma, Coats disease, toxocariasis, persistent fetal vasculature (PFV), retinal coloboma.

Nystagmus

Visual deprivation can lead to nystagmus in the first months of life, and should be referred early due to poor visual prognosis. When having congenital cataract nystagmus occurs in the first 2-3 months of life.[23]

Strabismus

Strabismus may not develop until irreversible visual loss has been established.

Photophobia (Light sensitivity)

The glare of bright lights can be painful, especially in cases of posterior subcapsular cataracts.

Extraocular findings

Cataract-related diseases.[24,25]

FOLLOWING

Although cataracts may be stationary or progressive, any type can progress. Hence, especially in the first five years of life, that is the "amblyogenic period" ophthalmological following for progression and intervention in order to avoid visual loss is mandatory. Cataract surgery of later age can also result in amblyopia but to a lesser extent and refractive errors.[26,27]

COMPLICATIONS

Cataracts constitute one major cause of partial or total blindness in children globally. Visual loss comes as a result when cataracts interfere with and cause delay to normal visual development.

From birth to approximately eight years of age is a critical period of visual development, any reduction of retinal stimulation then results in amblyopia.

Decreasing the retinal stimulation, cataract in children normally leads to amblyopia, the degree of which depends on the age of onset and the density of the cataract. Therefore, the amblyopic degree gets worse with earlier onset and denser opacification. Irreversible visual loss due to cataract of the first 6 months of life is a real ophthalmological emergency that requires early detection.[28]

MANAGEMENT

There are various ways to manage pediatric cataracts that vary depending on the age and the visual development interference of the procedure. Removal of the crystalline lens and visual rehabilitation are most often required in order to assure visual impairment or amblyopia are being prevented while other approaches have been discussed.[29]

Instead of surgery, conservative treatment can apply for cases with visual acuity of 20/50 or higher, small opacities (<3mm) or extra-axial opacities.[30]

Refraction errors related to cataracts are treated with spectacles or contact lenses.

Post-operatively, occlusion therapy is sometimes required, especially in cases of unilateral cataracts or amblyopia.[31]

BILATERAL CATARACT SURGERY

Bilateral cataracts are associated with better visual outcome than unilateral cataracts, as reported in Bonaparte et al, 78% of the children with bilateral cataract had >20/40 visual acuity. Visual acuity decreases if comorbidities are present. Compliance postoperatively is of great importance to achieving a good visual outcome. Surgery takes place ideally within the first 6 to 8 weeks of life. Lundvall et al demonstrated the high possibility of chronic glaucoma if the surgery is performed during the first week of life. Timely cataract extraction and immediate optical correction are key elements for preventing irreversible deprivation amblyopia.[32,33]

CATARACT EXTRACTION

Indications

Surgical extraction is highly indicated when bilateral complete cataracts are present in children.

For incomplete cataracts, indications for surgery include:

a. reduced visual response

b. visual acuity 20/50 or worse

c. opacity >3 mm (diameter)

d. presentation of strabismus and/or nystagmus, which act as indicators of major disruption in vision.[34]

Timing

Congenital cataracts should be operated on without delay, usually within the first four to six weeks or months of life while the visual axis should be cleared in order to assure visual acuity of at least 20/40 by 4 months of age.

In cases of pediatric bilateral cataract, the extractions should be done within one week of each other, if not simultaneously, to reduce as much as possible the postoperative anisometropic (deprivation) amblyopia.

Especially the first five years of life, the «amblyogenic phase», constitutes a necessary period for ophthalmological following for development and intervention to prevent vision impairment. Later-onset cataracts can also lead to amblyopia. Hence, any type of cataract should be followed carefully, because also, any type can progress.[35]

Procedure

Pediatric cataract surgery involves various procedures that are combined depending the case characteristics, including: removal of the crystalline lens, placement of an intraocular lens (IOL) without disrupting the integrity of the posterior capsule, anterior vitrectomy/posterior capsulotomy with or without the placement of an intraocular lens (figure 1, 2).[36,37]

Key components of surgery are:

a. Anterior capsule management

Anterior capsulorhexis is a step of cataract surgery that determines the surgical strategy, site of IOL-fixation and surgery outcome. Controlled manual continuous curvilinear capsulorhexis (CCC) constitutes the gold standard, even if the difficulty is increased due to highly elastic anterior capsule in children.

Anterior capsulotomy influences strongly the long-term centration of IOL. Alternatively, femtosecond laser-assisted capsulorhexis, vitrectorhexis, radiofrequency diathermy and Fugo plasma blade-assisted rhexis resulting in less extensible capsulotomy.[38,39]

b. Management of posterior capsule and anterior vitreous face

Primary posterior capsulotomy, particularly in children up to 8 years old, is considered routine in cataract surgery because of visual axis opacification being the main post operative problem that can affect vision in many ways, causing visual impairment and amblyopia.

To perform primary posterior capsulotomy, most surgeons prefer manual posterior continuous curvilinear capsulorhexis (PCCC), as it offers controlled size and strong edges.

Alternatives such as femtosecond laser assisted capsulorhexis, vitrectorhexis, radiofrequency diathermy and Fugo plasma blade depend on surgeon's choice. Attention should be addressed in possible disruption of the anterior vitreous face.[40]

When PCCC is completed, 0.1 mL of preservative free triamcinolone acetonide injection follows. This way, the anterior vitreous face can be visualized and so can the extent of vitreous in the anterior chamber.

The anterior vitreous face may cause inflammatory response that mainly in small children is severe with fibrous membranes that form on the intact AVF. Thus, there is difference in the preference of surgical techniques depending on the childrens' age and anterior vitrectomy along with posterior capsulotomy is advocated in infants and young children.[41]

Primary posterior capsulorhexis with anterior vitrectomy is preferred by most surgeons in younger children up to 3-5 years old. Children up to the age of 8 years, are usually managed with posterior capsulorhexis without anterior vitrectomy. Above the age of 8 years, the posterior capsule can be left intact.

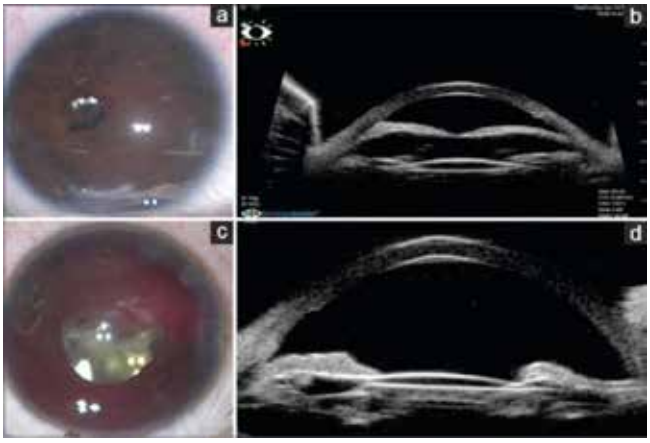

Fig. (1): Visual axis opacification. (a) A 6-month-old child with 1-mm pupil with pupillary membrane. (b) Ultrasound biomicroscopy showing membrane only anterior to intraocular lens which was tackled with anterior route surgery. (c) A 2-year-old child with thick posterior capsular opacification. (d) Ultrasound biomicroscopy showing thick membrane behind the intraocular lens which was removed using pars plana membranectomy
Source: Khokhar SK, Pillay G, Dhull C, Agarwal E, Mahabir M, Agarwal P. Pediatric cataract. Indian J Ophthalmol 2017; 65(12):1340-1349. doi:10.4103/ijo.IJO_1023_17

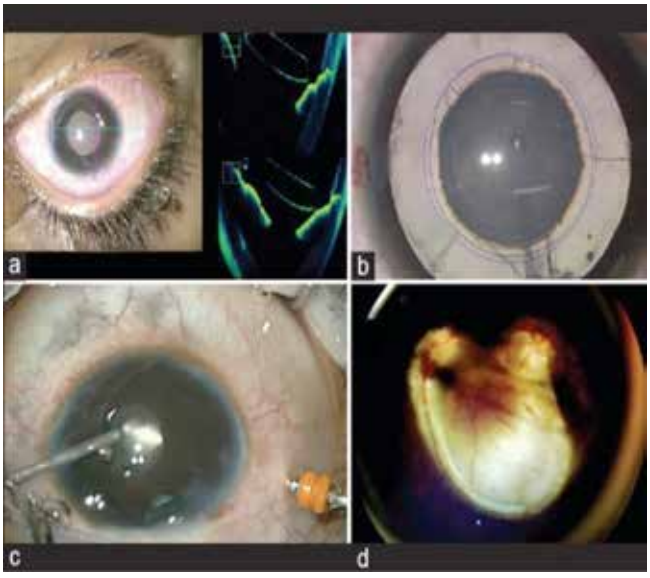

Fig. (2): (a) Intraoperative continuous optical coherence tomography showing proper anterior chamber intraocular lens positioning (b) rhexis assistant for sizing anterior and posterior capsulorhexis (c) 23-gauge vitrectomy probe for membranectomy (d) retcam image showing fundal coloboma

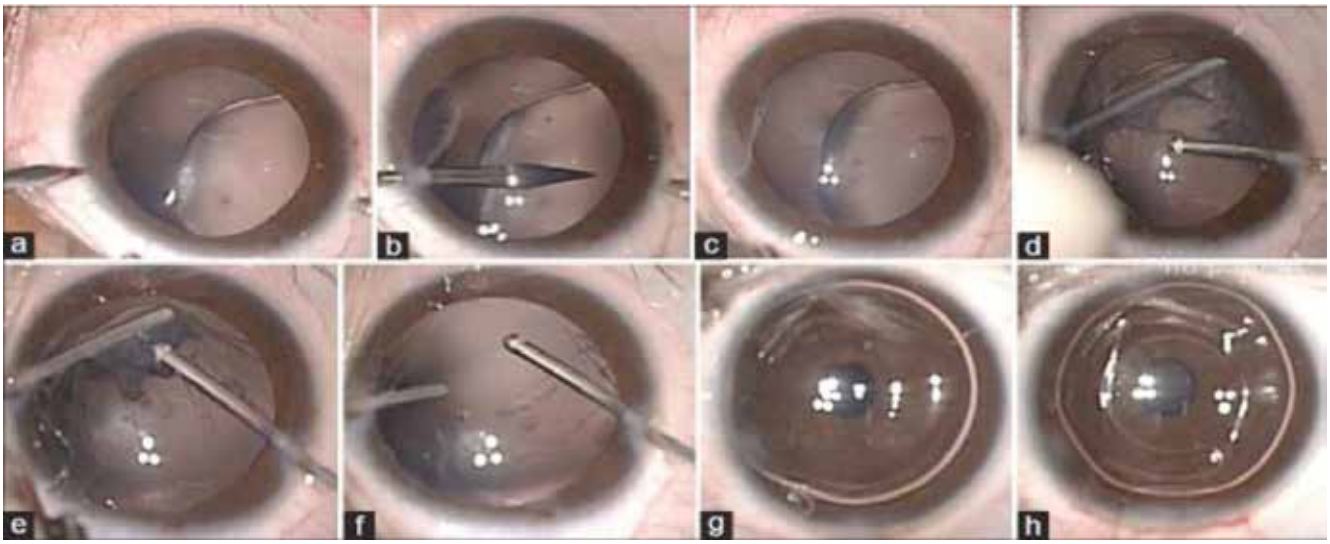

Fig. (3): (a) Subluxated lens (b) mid-peripheral microvitreoretinal entry (c) 2 microvitreoretinal entries made (d) bag stabilized with irrigation probe (e) lens aspiration on irrigation/aspiration mode with vitrectomy cutter (f) anterior vitrectomy at 4000 cuts/sec (g) pupil constricted with pilocarpine and air injected (h) anterior chamber intraocular lens and suture placed

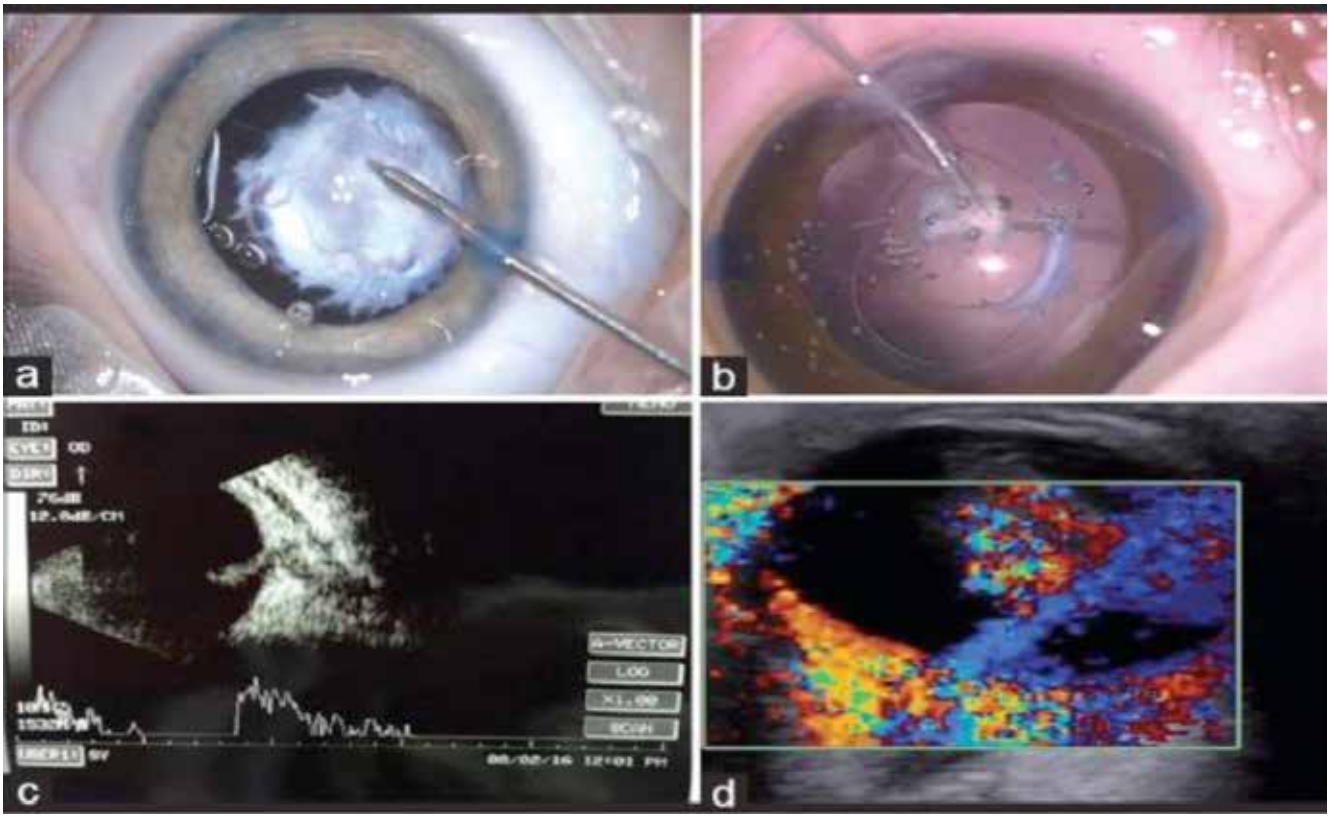

Fig. (4): Persistent fetal vasculature (a) hemostasis using diathermy (b) Fugo's™ plasma blade (c) persistent fetal vasculature stalk on ultrasonography (d) color Doppler showing flow in persistent fetal vasculature

Source for fig. 2, 3, 4: Khokhar SK, Pillay G, Agarwal E, Mahabir M. Innovations in pediatric cataract surgery. Indian J Ophthalmol 2017; 65(3):210-216. doi:10.4103/ijo.IJO_860_16

c. Primary IOL implantation

Primary IOL implantation is one of the preoperative considerations that have been controversial between cataract surgeons for a long time.

More and more surgeons prefer primary IOL implantation even in infants. Advantages of IOL include that IOL implantation offers constant visual input and provides at all times partial optical correction. Hydrophobic acrylic IOLs are mostly preferred because of their uveal biocompatibility and decreased visual axis incidence.

As for IOL power calculation, SRK-T and Holladay 2 formulae are the ones demonstrated to have the least prediction error. Myopic shift that appears as the child grows, conscers the surgeons, so they plan an initial undercorrection and add refractive correction with glasses or contact lenses over time. However, there are problems associated with this situation, such as likelihood of poor compliance and socioeconomic considerations due to the life-long costs of refractive correction.[42-45]

Nevertheless, technical difficulties exist, especially for infants, concerning implantation and selecting IOL power while the rate of possible visual axis increases. IOL are only adult-size presently and so, the difficulty of implanting them in small infant eyes constitutes a major concern. The Infant Aphakia Treatment Study, comparing infants that underwent bilateral cataract surgery to primary aphakia show cased similar visual outcomes for both groups but higher rate of complications to the IOL group.[46]

d. Secondary IOL implantation

Secondary IOL implantation is usually required in eyes that are left aphakic. Anterior and posterior capsular support is needed to act as a facilitator for the future in-the-bag or sulcus IOL as soon as the eye grows.

e. Alternate approaches

Optic capture through the posterior capsulorhexis and lens-in-the-bag implantation constitute alternatives that avoid anterior vitrectomy.[47,48]

POSTOPERATIVE CARE

Postoperative schedule of occlusion therapy remains critical in order to reach a good visual outcome. Nevertheless, this requires commitment of the patient and in pediatric cases, compliance of the child's family to participate actively in the postoperative care. Often administration of eye drops (every 2 hours early after surgery) is one of the tasks that are critical for visual rehabilitation and if not followed correctly may result in adverse visual sequelae, due to postoperative inflammation. Ophthalmological visits and occlusion therapy for possible amblyopia are also tasks that need adherence so that the visual outcome is optimal.[49,50]

CHOICES FOR VISUAL REHABILITATION

In children until the age of 6 to 9 months or in patients with very small eyes, aphakic contact lenses are used.

An aphakic contact lens serves to meet the needs of patients that have had their crystalline lens removed due to the development of cataract without implantation of an IOL and is a high plus-powered contact lens for optical focus in infants.

In children older than 6-9 months old, an IOL is usually implanted. IOL is very useful but cannot accommodate, and sometimes, is powered for distance. Bifocal glasses serve for solving this postoperative issue.

Aphakic spectacles were also being used in the past to restore focus but are now becoming less popular because of the improvement that has taken place in the IOL technology and the wide use of contact lenses but also for cosmetic reasons.[51,52]

The age of the patient at the time of surgery determines the type of optical rehabilitation that will be followed, especially when it comes to IOLs:

Infants <6 months — For this young age of cataract surgery, aphakic contact lenses are being the most popular choice for rehabilitation rather than IOL implantation after cataract surgery, the authors suggest aphakic contact lenses rather than IOL implantation for optical rehabilitation due to highest risk of postoperative complications.

The Infant Aphakia Treatment Study (IATS) is a multicenter randomized trial that highlights important differences between the implantation of IOL and aphakic contact lenses. This trial compared IOL and contact lens correction for monocular aphakia in 114 infants aged 1-6 months: visual

acuity outcomes were similar at 1 and 4.5 years of age but the adverse events rate was lower in the group with contact lenses and also, this group required less additional intraocular procedures.

The refractive power changes with age especially in the first years of ocular growth, and so, intraocular lenses are not the optimal tool to use in an eye that is changing rapidly. Contact lenses provide the ability to change the refractive power, pointing to a serious advantage for young infants.[53]

For the eye that has undergone cataract surgery without implantation of an IOL, the total refractive power decreases as follows: +30.75(birth), +26.36(1st year), +23.00(2nd year), +21.20(3rd year). To achieve emmetropia a +30 diopter IOL at birth and a +21 diopter IOL at three years would be required. Usually, infants who are initially rehabilitated with aphakic contact lenses may have to undergo secondary IOL implantation later in their life especially when contact lenses become more difficult to manage.

However, aphakic contact lenses require daily maintenance and lurk the risk of corneal infections. Furthermore, high costs for the patient constitute another disadvantage, because of the need for frequent replacement (lens loss or change of refractive power).

Even if the treatment cost for IOL implantation is higher, the patient's costs for contact lenses remain much higher. Frequent replacement results from: IOL opacification, IOL dislocation, IOL decentration, bad quality of image perceived by the patient after monofocal or premium IOL implantation, unexpected refractive outcome, damaged IOL that can lead in additional surgery, posing as a disadvantage for IOLs.[54]

For children >6 months old, IOL implantation (pseudophakia) is possibly the best choice for rehabilitation, offering the best visual results.

Benefits of IOL implantation include immediate and permanent optical correction, preventing and aiding in amblyopia management.

Nevertheless, disproportion of visual development and ocular growth with the refractive power of the IOL and the possibility of secondary cataract are challenges that need careful management of the IOL.

Special clinical situations can pose as conditions that IOL implantation can be salutary such as radiation induced cataracts (usually the use of contact lenses is not possible due to ocular disease), neurobehavioral disorders and low compliance of the family (contact lenses use can be challenging difficult in these cases).

After the IOL implantation, most children in order to have optimal focus require glasses for visual rehabilitation. Also, as the age progresses, children require bifocal glasses to have clear near vision. The future use of multifocal IOL is still under research.[55]

POSTOPERATIVE COMPLICATIONS

Complications after pediatric cataract surgery include:

- Secondary cataract: Opacification of the posterior capsule follows the surgery of pediatric cataract in almost 100% of young children that undergo it. Hence, it is standard to remove the posterior capsule and perform a primary anterior vitrectomy simultaneously of cataract extraction in children younger than five to six years of age. In older children, this is not the popular choice for surgeons because older children can usually cooperate with laser capsulotomy when the need shows up.

- Glaucoma: In the IATS study 9% of 114 subjects developed glaucoma or suspected glaucoma during the first year of follow-up; the risk of glaucoma was greater for younger age children at the time of surgery. Risk of glaucoma was similar for both patient groups, meaning the complication possibility is equal for IOL and contact lenses rehabilitation.

- Strabismus: Strabismus is very common among cases with unilateral cataract. In the IATS, 70% of patients developed strabismus by the first year of follow-up. The hazard of strabismus is the same between the groups of IOL and contact lenses in the IATS.[56]

- Retinal detachment: Sudden vision loss or appearance of flashes of light or «floaters» in a child after cataract surgery represents an immediate referral to the ophthalmologist.

- Endophthalmitis: Infection of the eye, even if rare, can be a catastrophic complication that occurs in less than 1% of the procedures. Nasolacrimal duct obstruction, upper respiratory infection and periorbital eczema at the time of surgery can pose as predisposing factors for postoperative inflammation several days or weeks after surgery. This constitutes an ophthalmological emergency that presents with pain, redness, and haziness within the eye from inflammatory cells and calls for urgent treatment.[57]

PROGNOSIS

The cornerstone in prognosis of pediatric cataract is the early identification and timely treatment. During the years, visual prognosis has been improving, and today 20/20 to 20/40 visual acuities can be reached if managed correctly.

Visual outcome is multifactorial: onset-age, unilateral or bilateral cataract, morphology, ocular abnormalities and related diseases, postoperative complications, compliance to rehabilitation treatment, presence of nystagmus or strabismus in the follow up course, all play a crucial role in prognosis.[58]

FOLLOW UP

Successful outcome in pediatric cataract surgery with or without intraocular lens implantation ordinal ophthalmological requires follow up is needed. Because the human eye changes a lot especially in the first years of life, frequent changes in refraction for spectacles are required and amblyopia therapy is usually needed. Any appearing ocular abnormality in vision should be referred to the ophthalmologist immediately to prevent any postoperative complication and optimize the visual outcome.[59]

CONCLUSION

Cataracts cause significant impairment of vision in the pediatric population worldwide and can tremendously affect the development of a child's eye and vision. Consequently, their quality of life is reduced if cataract is not treated adequately in early age. Careful diagnosis and prompt surgery are vital to prevent irreversible amblyopia.

Detailed and frequent ocular evaluation, including all factors affecting cataracts such as onset, duration and location of a cataract, is necessary to determine the time of surgery and the method to be followed.

Advances in surgical techniques and visual rehabilitation have dramatically improved the outcomes of pediatric cataract surgery mainly due to the introduction of intraocular lenses into ophthalmology.

However, the possible complications continue to concern pediatric ophthalmologists and highlight the need for future studies that will help in the construction of advanced intraocular lenses or diverse surgical techniques.

Management of early-age cataract surgery depends on the individual care and experienced teamwork of both pediatrician and ophthalmologist but also compliance of parents and child. In this review we referred to the current data on the etiology of cataracts, the choice of appropriate surgical treatment and postoperative complications.

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