History of Ophthalmology

First international live cataract surgeries of 2003 and 2007 for children with congenital cataract in Ukraine

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The Modern Surgery for Congenital Cataract in Children international conferences including master classes and live surgical demonstrations were conducted at the Filatov institute in 2003 and 2007 partly due to a keen interest of eye surgeons over the world in the subject and numerous unresolved problems in the field of pediatric surgery.

The leading cataract surgeons, Charlotta Zetterström (Sweden), Yu.V. Takhtaev and K.B. Pershin (Russia), G. Tassinari (Italy) and N.F. Bobrova (Ukraine) participated in the first pediatric live surgical event in 2003 (Fig. 1).

Fig. 1. Proceedings of the conference

The audience watched the surgery course on a screen and used the opportunity to interact with surgeons, asking them questions and getting answers in real time (Fig. 2). No intraoperative or postoperative complications were recorded. The following day, postoperative status of the eyes with restored visual acuity was shown to the audience. Anyone who wished could use the slit lamp installed at the conference hall to examine the child who had undergone live surgery.

Reports and discussions seemed to be endless, because it was the first live surgical event in Ukraine, and, which is important, for children and using general anesthesia. Within the framework of the conference, leading ophthalmologists from Sweden, Italy, Russia, Ukraine, etc made presentations on the issues of pediatric cataract surgery.

At that time, the question of selecting the best approach to surgery for congenital cataract in children between the two (an anterior approach, through the sclera,

Fig. 2. Professors Charlotta Zetterström and N.F. Bobrova sitting at the operating room and answering questions from the conference hall audience. The 2003 Live Surgery for Congenital Cataract Event

limbus, and cornea, and a posterior approach, with pars plana lensectomy) was of the most interest and value for ophthalmologist practitioners. Other interesting issues were the possibility of primary intraocular lens (IOL) implantation in binocular congenital cataract and selecting the model, fixation and optical power.

Since 2000 to 2003, the Pediatric Ophthalmology Department was the setting of a great joint pediatric cataract surgery programme between the Filatov Institute and St. Erik's Eye Hospital (Stockholm), with more than 150 children followed up for two years after surgery, and the results of the programme made it possible to answer many previously unresolved questions. Non-invasiveness of the developed optimal strategy for congenital cataract surgery was demonstrated in specific live surgery cases and subsequent reports by Prof. Zetterström and Prof. Bobrova. The strategy included (a) an anterior approach through corneal tunnel or limbal incisions, anterior capsulorhexis, with removal of lens masses, (b) posterior capsulorhexis, and (c) dry vitrectomy.

The safety of cataract surgery combined with endocapsular implantation of a hydrophobic flexible IOL (at that time not yet registered in Ukraine) using IOL folding forceps, with good capsular bag (capsular tension ring) centration and without IOL dislocation during follow-up was for the first time demonstrated in a large number of observations.

Foldable IOL implantation enabled the reasonable completion of the pediatric cataract procedure by small incision phacoaspiration. It is noteworthy that at that time there were difficulties with phacoemulsification for senile cataract because fragmentation of the nucleus luxated to the anterior chamber was followed by the development of ultrasound-induced endothelial-and-epithelial dystrophy of the cornea, which required penetrating corneal grafting. In this connection, many surgeons came back to large-incision extracapsular surgery, and a two-fold reduction in the size of implanted IOL optics became less important than previously.

Therefore, it can be stated that the pediatric eye surgeons who had been always advocating small-incision surgery for soft congenital cataracts contributed to further development and advancement of the now prevalent idea of small-incision surgery.

The second international conference including live surgical demonstrations was conducted simultaneously with the 5th Congress of the Black Sea Ophthalmological Society at the Filatov institute in May, 2007, due to the continuing interest of European ophthalmologists in the features of pediatric cataract surgery and the relevant indications, complications and methods of IOL implantation.

The conference was greeted by the welcome message by Prof. N.V. Pasyechnikova, the Director of the institute. Ophthalmologists from Turkey, Poland, Norway, Slovenia, Moldova, Belarus, Russia and Ukraine participated in the conference.

Eight children of various ages were operated on conference day 1, with live surgical procedures performed in the institute operating rooms by the leading European pediatric eye surgeons, Vladimir Pfeifer (Slovenia), Charlotta Zetterström (Norway), Cesare Forlini (Italy), B.E. Malyugin and K.B. Pershin (Moscow), Yu.V. Takhtaev (St Petersburg), and N.F. Bobrova and D.G. Zhaboiedov (Ukraine) (Fig. 3).

The interest of ophthalmologists in life surgery was great, and the 500-seat conference hall was jam packed. Vladimir Pfeifer chartered a private plane to arrive to Odesa from Ljubljana, Slovenia, because there were no direct flights between the two cities, and Cesare Forlini got to the operating room directly from the airport due to flight delay. Various reported techniques for facoaspiration of pediatric cataract combined with implantation of a hydrophobic IOL were specific with regard to the location and profile of the cataract incision, formation of posterior capsulorhexis (before or after IOL implantation) or leaving a transparent posterior capsule intact, and indications for vitrectomy combined with cataract surgery. Vladimir Pfeifer (Slovenia) used an IOL optic capture technique (Fig. 4), with a three-piece IOL optics placed under posterior capsulorhexis. Cesare Forlini performed a series of reconstructive interventions for traumatic cataract.

After the live surgery event, all the operating surgeons took part in a panel discussion (Fig. 5). So much interest was generated that most of them and most of the audience spent the break time at the conference hall, because it was difficult to answer all the numerous questions in a scheduled time frame.

Following the panel discussion, several conference sections discussed such problems as:

Surgery for ectopia lentis with implantation of an IOL of various models, and various IOL fixation techniques and devices; and features of ectopia lentis of various extents in Marfan syndrome (lectures delivered by Charlotta Zetterström (Norway) and O.V. Shilovskikh (Ekaterinburg, Russia));

Fig. 3. A.N. Dembovetska, Cand Sc (Med), shows the youngest live surgery patient to Prof. Charlotta Zetterström during the 2007 Live Surgery for Congenital Cataract Event

Fig. 4. Vladimir Pfiefer during the 2007 live surgery event.

Fig. 5. Panel discussion after the live surgery event. Operating surgeons (left to right): Vladimir Pfiefer, D.G. Zhaboiedov, K.B. Pershin, Yu.V. Takhtaev, Ch. Zetterström, B.E. Malyugin, and N.F. Bobrova.

Pediatric secondary cataracts: character, features, the potential for prevention by various intraoperative prophylactic measures, and features of secondary IOL implantation (the lecture delivered by N.F. Bobrova); and

Reconstructive surgery for pediatric traumatic cataract; application of multifocal IOLs; surgery for pediatric diabetic cataract; and single-stage restoration of the damaged lens and iris. Cesare Forlini (Rovenna, Italy) delivered a lecture on Dancer Philosophy in Eye Trauma and Selecting an IOL for a Patient with Traumatic Cataract. His somewhat poor English was compensated for by numerous pieces of video material with discussable questions on selecting a strategy for combined anterior and posterior segment surgery for eye trauma.

A round table was held to discuss the important issue of correcting aphakia in infants. Opinions were divided on this issue. S.E. Avetisov and his colleagues from Moscow, Russia, were in favor of contact-lens correction with secondary IOL surgery, whereas others (particularly, A.V. Khvatova, T.V. Kruglova and colleagues from Moscow, Russia; N.F. Bobrova from Odesa, Ukraine; and Vladimir Pfeifer from Ljubljana, Slovenia) advocated removal of congenital cataract combined with implantation of an IOL, and presented the advantages, difficulties and treatment outcomes of this approach. The ensuing round-table discussion was stormy, but left many questions unresolved.

At the last conference meeting, the following issues were discussed: treating deprivation amblyopia (E.E. Somov, E.L. Sapegina and colleagues, St Petersburg, Russia; N.G. Zavgorodnia and colleagues, Zaporizhzhia, Ukraine), using a computerized amblyotrainer (R.K. Botabekova, A.K. Abubakirova and colleagues, Alma-Ata, Kazakhstan), and reviewing residual ametropia after intraocular correction for ametropia (M.M. Bikbov, Ufa, Russia). The participants of the conference left with additional knowledge regarding the subject matter and understanding of the presence of new unresolved issues in pediatric cataract surgery, these issues being identified at the conference.

Pediatric ophthalmologists over the world keep working to resolve many of these issues. It is still much to be done to complete this work.

References

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