



USE OF THE DELPHI PROCESS IN PEDIATRIC CATARACT MANAGEMENT

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ABSTRACT

While few randomized clinical trials have been conducted on children with cataracts, there have been increased attempts to study the subject methodically over the last 15 years. They have been carried out using a method to recognize areas of contention could aid in focusing research dollars and restricting the use of children in research to areas where there isn't enough proof and consensus. The Delphi method¹ is a commonly used and accepted method for achieving expert consensus in contentious areas. Using a panel of experts, this analysis tool offers a versatile and adaptable approach for gathering and analyzing data about practice trends. Unlike unstructured group discussions, the Delphi methodology ensures that each member has an equal voice and that no single person exerts undue influence. An expert panel was asked to complete confidential questionnaires in two or more rounds. The aim of this study was to use a modified Delphi methodology, we were able to recognize areas of agreement and disagreement in the management of pediatric cataract. There was no agreement on which formula should be used to calculate IOL power regardless of globe scale. Although it was accepted that a hydrophobic IOL is preferred for in-the-bag fixation, the form of IOL (i.e., single piece Vs three piece) could not be agreed upon. As far as we are aware, this recognition of areas of agreement and disagreement in the management of pediatric cataract has never been done previously, and could serve as a model for its application in other areas of pediatric ophthalmology.

Key words Pediatric Cataract, Delphi Method, Cataract Management, Pediatrics.

INTRODUCTION

While few randomized clinical trials have been conducted on children with cataracts, there have been increased attempts to study the subject methodically over the last 15 years [1]. They have been carried out using a method to recognize areas of contention could aid in focusing research dollars and restricting the use of children in research to areas where there isn't enough proof and consensus [2, 3]. The Delphi method¹ is a commonly used and accepted method for achieving expert consensus in contentious areas. [4, 5] Using a panel of experts, this analysis tool offers a versatile and adaptable approach for gathering and analyzing data about practice trends. Unlike

unstructured group discussions, the Delphi methodology ensures that each member has an equal voice and that no single person exerts undue influence. An expert panel was asked to complete confidential questionnaires in two or more rounds [6, 7]. Those issues that do not yield a consensus are then revisited with the help of a facilitator in a face-to-face discussion meeting [8]. After hearing the questionnaire responses, experts are urged to update their answers to earlier questions in order to identify places where consensus can or cannot be reached [9, 10]. The range of answers narrows as a result of this process, and the community comes closer to a consensus.

A modified Delphi approach is described as the addition of a face-to-face group discussion meeting [11, 12]. The Delphi approach has previously been widely used to develop treatment recommendations for a variety of disorders, especially where there is little or no evidence base in the published literature [13]. It can also be used to define areas for potential study based on areas where there is a lack of agreement. The Delphi process has never been used in pediatric ophthalmology, to the best of our knowledge [14].

Aim and objective

The aim of this study was to use a modified Delphi methodology, we were able to recognize areas of agreement and disagreement in the management of pediatric cataract.

MATERIAL AND METHODS:

As a structured rules-driven communication technique, a modified Delphi2 mechanism was used. A self-selected executive committee (EC) was created (MS, RHT, AVL and MEW). MS was appointed as the facilitator. The members of the EC chose Delphi process participants (experts) based on scholarly contributions in peer-reviewed journals (based on PubMed searches) and other means of written scientific correspondence, presentations or panel involvement in international meetings, and surgical experience. Three rounds of electronic questionnaires were used in the Delphi process, followed by a face-to-face meeting and a fourth electronic questionnaire. For the first two rounds, the experts on the panel were blind to each other's identities. The Pediatric Cataract Delphi-Approach Working Group is made up of the members, who are described in the online supplementary appendix. For the electronic surveys, the EC generated questions with unit-based, multiple choice or true-false responses, and three of the four members (AVL, RHT, and MEW) beta-tested each questionnaire. The final, updated first round questionnaire was then sent to the community via Google Survey (<https://drive.google.com>), with a week's notice sent via email. Before the data was analysed, we described consensus as 85 percent agreement on a specific response to the same question during the electronic questionnaire. Without consensus, questions were reformulated, and the new questions were added to each subsequent round and the face-to-face conference. For

example, the question 'For bilateral, visually-significant cataract in an otherwise healthy infant (without specific anesthesiology risk factors), what interval do you prefer between cataract surgery on the first eye and cataract surgery on the second eye (assuming you are NOT doing immediately sequential bilateral cataract surgery under the same anesthetic?)' had response options of 7 days, 1-2 weeks, and 1-2 months. Despite the fact that no one responded for more than two weeks, we were unable to reach an agreement. We rephrased the options to 7 days or 8-14 days, which enabled us to reach a 7-day agreement. There were four rounds of electronic voting. Each participant was given two weeks to respond to the first, third, and fourth rounds, and one week to respond to the second round (including two of the EC: AVL and MEW). The answers of the participants were hidden from each other. Questions from the first three rounds that lacked consensus were deferred to the face-to-face conference. Following the completion of three electronic survey rounds, a two-day face-to-face Delphi process meeting was held at Wills Eye Hospital, Mumbai, with participants from outside Mumbai able to participate through WebEx videoconferencing (<http://www.webex.com>). Each query and its potential responses were read aloud by a moderator who was not present (MS). After the face-to-face meeting concluded, a fourth electronic round was conducted to poll the original participants on new issues that emerged during the face-to-face meeting. Consensus criteria were the same as with the other electronic questionnaires, but if consensus was not reached, no further debate or questionnaires were conducted [11-13].

RESULTS AND DISCUSSION:

The online supplementary appendix includes a list of panelists. Seize Participation was agreed upon by 20 pediatric cataract surgeons. Six-Four surgeons attended the two-day in-person meeting and four by video conference to address 52 unresolved issues from the three previous rounds. On the first day, we had ten participants and 10 on the next day. We reached consensus on or near consensus on 85/100 (82 percent) of the questions (consensus on 75 or 69.4 percent of the questions; Near-consensus: 10% or 9.3%). Regarding the remaining 20 (21.3 percent) Despite several rounds of debate and voting on the questions, there was no consistent community choice.

Table 1 : Pediatric cataract management : Questions and answers where consensus was achieved

Questions	
Do you look for other systemic findings that may be relevant ?	yes
Do you personally perform a complete physical examination of the patient with bilateral cataract when the etiology of the cataract is not known ?	no

If the etiology of bilateral cataract is unknown , and there are other systemic findings which may or may not be relevant do you refer the patient to a geneticist ?	Yes
Do you examine family members of children with bilateral cataract when the cause of cataract is not known	yes
Which of the followings is the most important when determining a visual clinically significant cataract (in addition to size greater than 3 mm)	Always
What is your suggested age for surgery in visually significant unilateral congenital cataract diagnosed within the first month ?	Retinoscopic reflex a blackened
What is your suggested age for surgery in visually significant bilateral cataract diagnosed within first month ?	4- 6 weeks of age before 8 weeks of age
For bilateral visually significant cataract in an otherwise healthy infant (without specific anesthesiology risk factors) what interval do you prefer between cataract surgery on the first eye and the second eye (assuming you are NOT doing immediately sequential bilateral cataract surgery under the same anesthetic?	7 day or less
In the absence of anesthetic risk factors is it wrong to do both eyes on the same day?	no
What is the minimum corneal diameter for primary IOL implantation you generally use in infants age 1 year or less?	9 mm
For examination under anesthesia, do you prefer A scan immersion or a plantation?	A scan immersion
For a cooperate child in a clinic do you prefer IOL master or A scan	IOL master
Which keratometry reading would you see in a child with traumatic cataract, when keratometry of the operative eyes is not possible?	Fellow eye
Indicate if you can approximately agree with these target refractions for age in cases of routine cataract surgery (< 6 months : 6- 100)	Yes
Indicate if you approximately agree with these refractions for age in cases of routine cataract surgery (6 – 12 months , 4- 60)	Yes
Which IOL material do you prefer for bag implantation?	Hydrophobic
Which IOI type do you prefer for sulcus fixation with a good capsular remnant?	Three pieces
In the case of persistent fetal vasculature (PFV) without a view of the posterior segment which investigation would you recommend?	B scan

We did not reach consensus on whether a pediatric cataract surgeon should order laboratory and/or radiology tests on his or her own. When the cause of the cataract is unknown, there is no agreement about whether pharmacological dilation is necessary when examining family members. In the absence of structural manifestations of bilateralism. Although there was consensus that immediate sequential bilateral cataract surgery is an acceptable option when the risk of anesthesia is greater than the average, there was no agreement on whether to conduct immediate sequential strabismus and intraocular surgery under the same anesthetic when both are indicated in the absence of a greater than average risk of anesthesia. There was no agreement on the minimum age for primary intraocular lens (IOL) implantation in patients with unilateral or bilateral cataract.

There was no agreement on which formula should be used to calculate IOL power regardless of globe scale. Although it was accepted that a hydrophobic IOL is preferred for in-the-bag fixation, the form of IOL (i.e., single piece Vs three piece) could not be agreed upon.

Our panel reached agreement on a variety of points. Both are confirmed by the pediatric cataract surgery literature (e.g., surgical timing), the adult cataract surgery literature (e.g., preoperative povidone iodine), and/or the participants' personal experience (e.g., use of epinephrine in the irrigating fluid, superior incision). We reached close consensus on a number of issues that are mostly determined by individual expectations (e.g., follow-up schedules) or surgeon experiences (eg, preferred contact lens material) (2) Formula for calculating the IOL power for in-the-bag IOL implantation, (3) IOL type for in-the-bag IOL implantation, (4) drugs on the operating table at the conclusion of surgery, and (5) maximum age for performing posterior capsulectomy and anterior vitrectomy [14,15].

CONCLUSION:

As far as we are aware, this recognition of areas of agreement and disagreement in the management of pediatric cataract has never been done previously, and could serve as a model for its application in other areas of pediatric ophthalmology.

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