SAFETY OF CATARACT SURGERYIN CHILDREN ABOVE TWO YEARS WITHOUT POSTERIOR CAPSULORHEXIS: A RETROSPECTIVE STUDY

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Introduction

Visual axis opacification is the commonest complication of cataract surgery in children. This is a serious complication in this age group because it can lead to sensory deprivation amblyopia. A posterior capsulorhexis with or without anterior vitrectomy is one way to avoid this issue. An IOL can prevent the formation of a fibrous Sommering's ring, but it would also be easier for the lens epithelial cells to migrate to the pupil centre. Others have suggested the optic capture technique i.e. capturing the optic by placing its haptics in the bag and pushing the optic through the posterior capsular opening which may prevent its opacification. If PCO occurs, a Nd: YAG laser capsulotomy should be attempted. In this uncooperative age group, general anesthesia is sometimes necessary and a surgical membranectomy may be indicated if laser is not effective or available.

Preventive measures for visual axis opacification following pediatric cataract surgery include primary posterior capsulectomy with or without anterior vitrectomy and posterior capsulectomy with capture of the IOL optic without vitrectomy. A range of strategies have been described to manage visual axis opacification such as Nd:YAG laser capsulotomy or membranotomy and pars plana capsulectomy or membranectomy with anterior vitrectomy.

Aim of the work

The aim of this work was to determine the safety of performing cataract surgery in children older than two years without performing posterior capsulorhexis. Safety of this technique is determined by detecting the possible intra-operative and post-operative complications, mainly posterior capsular opacification and secondary sensory-deprivation amblyopia.

Subjects and Methods

PATIENTS: We reviewed 13 medical records of children above two years who underwent cataract surgery.

Inclusion criteria:

Children above two years with congenital or developmental cataract.

Children with well-dilatable pupils.

Exclusion criteria:

Membranous cataract.

Any associated ocular anomalies eg. microphthalmos, anterior dysgenesis syndromes, zonular dehiscence, etc.

Any other unrelated ocular pathology eg. keratopathy, uveitis, glaucoma, etc.

IOLs used other than acrylic 360 degrees square-edged (Tecnis IOLs).

METHODS: The study was conducted as a retrospective study. The parents were notified and assured that their children's data will be confidential.

Pre-operative, operative and post-operative data were collected, in addition to slit lamp photographs when possible and a recorded video of the surgical operation.

The following points were analyzed:

Visual axis clarity & PCO grading using slit lamp photography based on the Kruger system of 0 to 3. The criteria used were 0 = absent, 1 = very mild, 2 = moderate, 3 = dense white. The capsule behind the optic disc was evaluated within a central area measuring 3 mm in diameter, and also evaluated in the periphery.

Whether secondary intervention was needed or not (YAG-laser capsulotomy or pars plana membranectomy) and its timing.

Results

Table 1: Distribution of the studied cases according to gender (n = 13)

Gender	No.	%
Male	7	53.8
Female	6	46.2

Table 2: Distribution of the studied cases according to age of first presentation (n = 20)

Age of first presentation (years)	No.	%
<4	4	20.0
4 – 8	7	35.0
>8	9	45.0
Min. – Max.	2.0 – 12.0	
Mean ± SD.	7.20 ± 3.30	
Median (IQR)	8.0 (3.0 – 11.0)	

Table 3: Distribution of the studied cases according to eyes (n = 20)

Eyes	No.	%
OD	9	45.0
OS	11	55.0

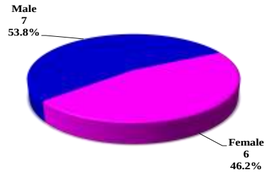

Figure 1: Distribution of the studied cases according to gender (n = 13)z

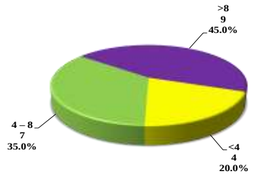

Figure 2: Distribution of the studied cases according to age of first presentation (n = 20)

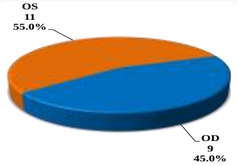

Figure 3: Distribution of the studied cases according to eyes (n = 20)

Table 4: Summary of post-operative patient data

No. eyes	No.	Gender	Age of first presentation	Eyes	Pre-op VA	Post-op VA	Post-op refraction (spherical equivalent)
1	1	M	4	OS	0.4	0.6	0
2	2	M	3	OS	0.1	0.1	-2.75
3	3	M	12	OD	0.06	0.08	0.75
4			12	OS	0.5	0.2	-1
5	4	M	5	OD	0.6	0.8	0.5
6			9	OS	0.7	0.8	0.25
7	5	F	7	OD	0.6	0.7	1.125
8			9	OS	0.8	0.9	-0.75
9	6	F	3	OD	0.1	0.2	-2.25
10	7	F	10	OD	0.7	0.8	1
11			11	OS	0.7	0.8	-0.875
12	8	F	4	OD	0.6	0.9	0.125
13			8	OS	0.6	0.9	-1
14	9	M	5	OS	0.6	0.7	0
15	10	M	2	OS	0.4	0.1	1
16	11	M	8	OD	0.2	0.08	0.75
17			9	OS	0.5	0.7	-1
18	12	F	3	OD	0.3	0.5	-2.25
19	13	F	9	OD	0.7	0.8	1
20			11	OS	0.7	0.8	-0.875

Table 5: Descriptive analysis of the studied cases according to age of PCO/YAG (n =14) (Dot Plot)

	N	Min. – Max.	Mean ± SD.	Median (IQR)
Age of PCO/YAG (years)	14	5.0 – 14.0	11.07 ± 2.76	11.50 (10.0 – 13.0)

Conclusion

- Post-operative visual acuities even after PCO occurrence may encourage ophthalmic surgeons to delay posterior capsulorhexis.
- The surgeon should be experienced enough to operate on these children by ensuring an ideal capsulorhexis and efficient cortical polishing to limit epithelial cell migration.
- The patient should be a suitable candidate for YAG-laser; being old and co-operative enough.
- The main advantages of this approach would be the less technically challenging operation, the less risk of vitreous loss and retinal traction.