RESULTS

RESULTS

The forty eyes enrolled in this study were subjected to follow-up examination for a period ranged between 6 and 24 months, with a mean follow-up period of 13.2±8.51 months, (Table 13, Fig. 17)

Table (13): Duration of follow-up throughout the study

Duration	No. of patients
6	8 (20%)
9	9 (22.5%)
12	6 (15%)
18	5 (12.5%)
24	12 (30%)
Total	40 (100%)

* *Percentages in parenthesis*

Fig. (17): Duration (months) of postoperative follow-up

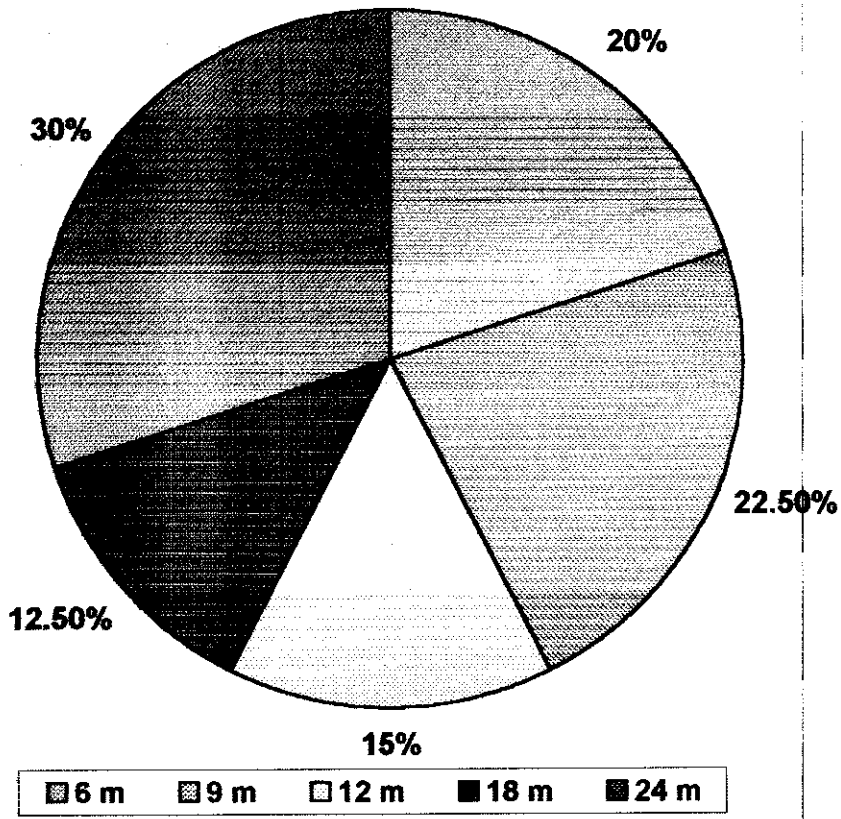


Table (14): The power of IOLs used for patients enrolled in the study

Power of IOLS.	No. of patients
20	3 (7.5%)
21	4 (10%)
22	8 (20%)
23	6 (15%)
24	9 (22.5%)
25	5 (12.5%)
26	2 (5%)
27	2 (5%)
28	0 (0%)
29	1 (2.5%)

* *Percentages in parenthesis*

Forty acrylic IOLs were applied with varying power; the range of power of IOLs used was 20-29 D, with a mean lens power of 23.35±2 D, (Table 14). Follow-up was possible as planned in all except three patients.

Table (15): Preoperative and postoperative best corrected visual acuity with the reference to the post operative refraction

Eye No.	Preoperative V.A.	Postoperative best corrected V.A.	Refraction
1	*	#	+2.0 Sph. +0.75 cyl x90
2	*	#	+3.0 Sph. +0.5 cyl x90
3	*	#	+3.5 Sph. +1.0 cyl x180
4	*	#	+3.0 Sph.
5	*	#	+3.0 Sph. +1.75 cyl x90
6	*	#	+3.5 Sph.
7	*	#	+1.75 Sph. +0.75 cyl x180
8	*	#	+1.75 Sph.
9	*	Disappearance of angle of squint	+2.0 Sph.
10	H.M.	6/18	+1.0 Sph.
11	H.M.	6/9	-
12	H.M.	6/18	-0.5 cyl x90
13	6/60	6/18	+1.75 Sph.
14	2/60	6/12	+1.25 Sph.
15	2/60	6/12	+1.75 Sph. -0.75 cyl x180
16	*	6/24	+1.75 Sph.
17	5/60	6/24	-
18	6/60	6/24	+2.5 Sph.
19	2/60	5/60	+1.25 cyl x140 (amblyopia)
20	2/60	6/24	+1.5 Sph.
21	2/60	6/60	+1.0 Sph. +1.25 cylx90 (amblyopia)
22	*	6/24	+1.5 cyl x90
23	1/60	5/60	+3.75 (amblyopia)
24	1/60	6/36	+1.25 Sph. +0.5 cyl x75
25	2/60	6/24	-1.25 cyl x150
26	*	#	+2.25 Sph.
27	*	#	+2.75 Sph. +0.75 cyl x90

28	*	Persistent squint with development of PCO	+3.0 Sph.
29	5/60	6/24	-0.75 Sph.
30	*	6/60	+3.75 Sph. (amblyopia)
31	*	#	Unaided
32	2/60	6/18	+0.75 cyl x180
33	2/60	6/18	+1.25 Sph. +0.5 cyl x110
34	4/60	6/12	-
35	2/60	H.M.	Unrefractable
36	*	#	+2.5 Sph.
37	5/60	6/18	+1.5 Sph. +2.0 cyl x140
38	*	#	+2.75 Sph. +1.0 cyl x90
39	H.M.	6/18	-1.25 Sph.
40	*	#	+3.75 Sph

* Referred to subjective visual acuity assessed by fixation pattern or picking small toys.

Referred to subjective assessment of visual acuity by either CMF or decreased angle of squint or parents observation.

Visual acuity could be determined directly in 21 eyes (52.5%), while in the other 19 eyes (47.5%) visual acuity was difficult to determine due to their young age, (Table 15).

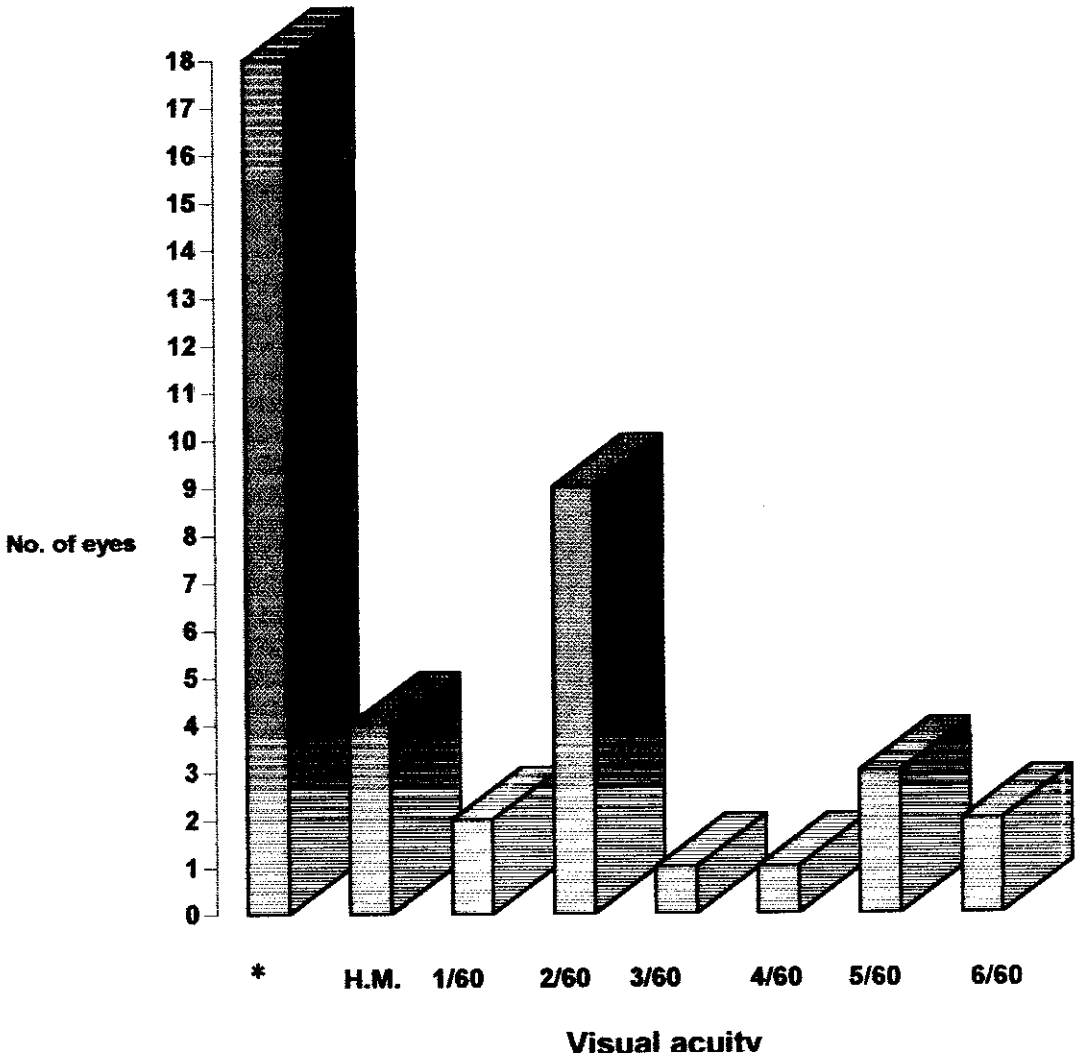
Table (~~16~~ 15): Preoperative visual acuity

Preoperative ~~VA~~ V.A	No. of eyes
6/60	2 (5%)
5/60	3 (7.5%)
4/60	1 (2.5%)
3/60	1 (2.5%)
2/60	9 (22.5%)
1/60	2 (5%)
MH	4 (10%)
Subjective assessment	18 (45%)

* *Percentages in parenthesis.*

Preoperative visual acuity had ranged between hand movement (HM) and 6/60. Two eyes had preoperative visual acuity of 6/60, three cases with preoperative visual acuity of 5/60, one case with preoperative visual acuity of 4/60, nine case with preoperative visual acuity of 2/60, and two cases with preoperative visual acuity of 1/60. Four cases had preoperative visual acuity of HM, (Table 16, Fig. 18).

Fig. (18): Preoperative visual acuity of eyes operated upon



* Referred to subjective visual acuity assessed by fixation pattern or picking small toys.

Table (16): Postoperative corrected visual acuity

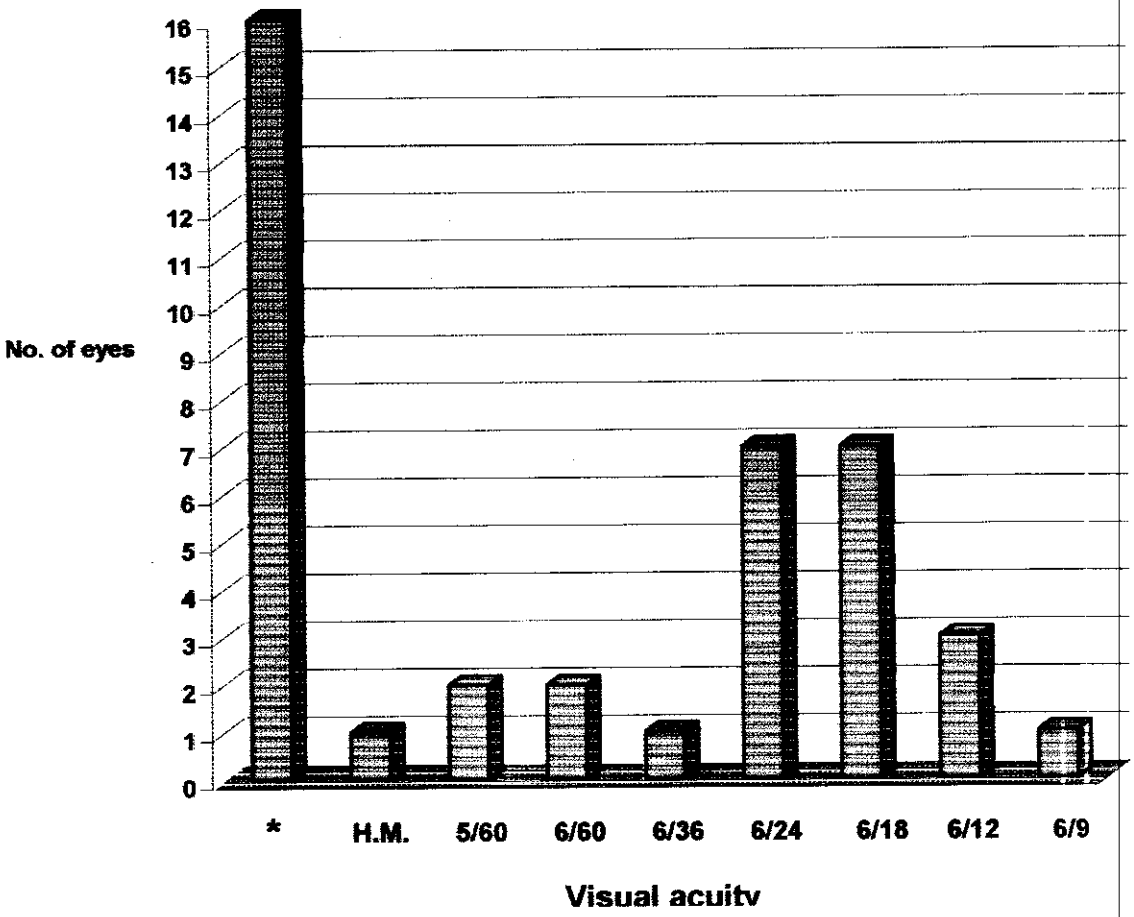
Postoperative VA	No. of eyes
6/9	1 (2.5%)
6/12	3 (7.5%)
6/18	7 (17.5%)
6/24	7 (17.5%)
6/36	1 (2.5%)
6/60	2 (5%)
5/60	2 (5%)
1/60	1 (2.5%)
Subjective assessment	16 (40%)

** Percentages in parenthesis.*

Only eyes in which Snellen acuity could be recorded were considered for analysis of visual results. Snellen visual acuity could be recorded patients in the age group above 4 years.

Twenty-four patients (60%) were able to report postoperative best-corrected visual acuity that ranged between 1/60 and 6/9. One eye had postoperative visual acuity of 6/9, three eyes with postoperative visual acuity of 6/12, seven eyes with postoperative visual acuity of 6/18, seven eyes with postoperative visual acuity of 6/24, one eye with postoperative visual acuity of 6/36, two eyes with postoperative visual acuity of 6/60, and two eye with postoperative visual acuity of 5/60. One case had postoperative visual acuity of 1/60, (Table 17, Fig. 19).

Fig. (19): Postoperative visual acuity



* Referred to subjective visual acuity assessed by fixation pattern or picking small toys.

17

Table (18): Postoperative corrected visual acuity

No. of patients / V.A.	Preoperative	Postoperative
6/9	0	1 (2.5%)
6/12	0	3 (7.5%)
6/18	0	7 (17.5%)
6/24	0	7 (17.5%)
6/36	0	1 (2.5%)
6/60	2 (5%)	2 (5%)
5/60	3 (7.5%)	2 (5%)
4/60	1 (2.5%)	0
3/60	1 (2.5%)	0
2/60	9 (22.5%)	0
1/60	2 (5%)	1 (2.5%)
HM	4 (10%)	0
Subjective assessment	18 (45%)	16 (40%)

** Percentages in parenthesis.*

By other mean 45.9% of the eyes for which visual acuity could be measured, achieving a best-corrected visual acuity of 6/18, whereas 29% of those eyes achieved a visual acuity 6/24. If one considered a visual acuity of 6/24 to 6/6 an acceptable good visual outcome, 74.9% of our patients would fall in this category.

All the four eyes with HM preoperative visual acuity showed marked improvement of the visual acuity after the operation. However, one eye showed deteriorated visual acuity from 2/60 to HM, which was due to postoperative corneal decompensation, so was unrefractable.

RESULTS

In children below 3 years, we used the following subjective criteria to assess the postoperative vision:

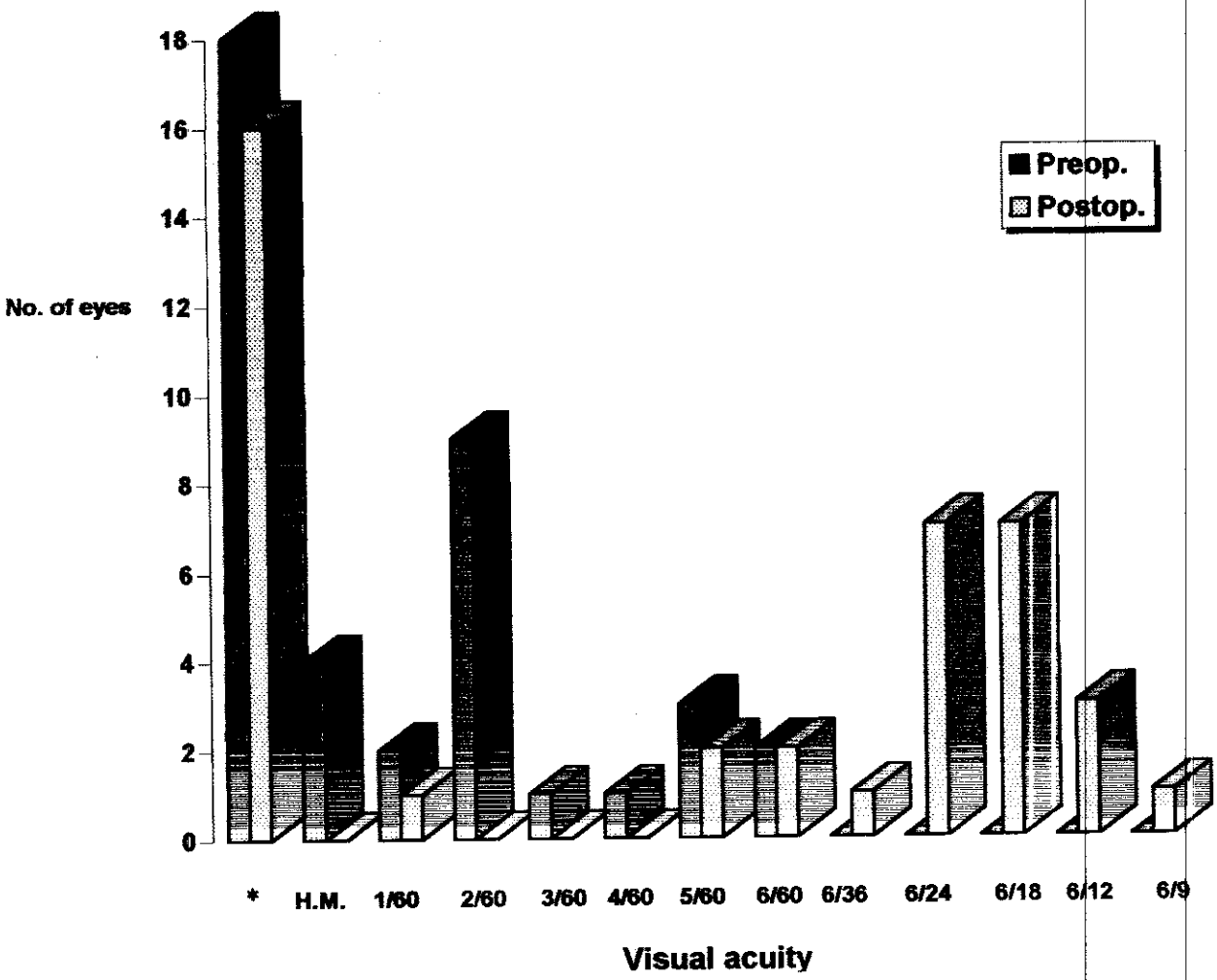
1. Looking and picking up small rubber toys placed at various distances.
2. Following and picking up rolling wood beads.
3. Ability to recognize family members, and
4. Parent observation.

All eyes showed marked improvement as measured by these subjective criteria.

Comparison of postoperative visual acuity versus the preoperative acuity revealed a significant improvement ($P<0.05$), (Table 18, Fig. 20).

Spectacle correction was necessary in all eyes that underwent IOL implantation. The postoperative refraction ranged from –1.25 to +3.75. No patient had a postoperative refraction significantly different than expected.

Fig. (20): Pre- & post-operative visual acuity of the studied eyes



* Referred to subjective visual acuity assessed by fixation pattern or picking small toys.

STRABISMUS

Preoperatively there were 10 (25%) eyes of manifest strabismus, two of which had unilateral exotropia and eight eyes had bilateral esotropia. Postoperative results were variable:

- In six eyes, strabismus disappeared.
- In one eyes, the angle of strabismus decreased.
- In the other three eyes, squint remained the same angle. The correction of the residual angle was carried out by glasses.

AMBLYOPIA

All of the ten eyes with manifest strabismus were considered to be amblyopic, with variable degrees of amblyopia. Those eyes, that did not show improvement of visual acuity more than 6/60, despite of proper optical correction were considered deeply amblyopic. This was observed in 5 eyes (12.5%). Four eyes (20%) have congenital and one eye (2.5%) of developmental cataract. All cases were unilateral except one case was bilateral asymmetrical congenital cataract.

Table (19): Surgical complications

Complications	No. of eyes
Difficult anterior capsulorhexis	12 (30%)
Premature posterior capsule rupture & vitreous loss	7 (17.5%)
Significant anterior chamber bleeding	0
Iris prolapse	0
Difficulty in folding and implantation of foldable acrylic IOLS.	7 (17.5%)
Sulcus placement of the IOLS.	13 (32.5%)
Posterior capsulotomy	12 (30%)
Miotic pupil	2 (5%)

* *Percentages in parenthesis*

SURGICAL COMPLICATIONS

1. **Difficult anterior capsulorhexis**

   In most eyes a continuous circular capsulorhexis was done. The elasticity of the anterior capsule made it difficult to control the size and direction of the rhexis. In about 12 eyes (30%), the capsular tears tended to extend towards the periphery. In these cases, we stopped the continuation of the rhexis in that side and started to the other side.

2. **Posterior capsule rupture and vitreous loss**

   Premature posterior capsule rupture occurred in 7 eyes (17.5%). The vitrectomy was carried out using mechanical vitrector. During the anterior vitrectomy, the cutting rate was 300 cut/min and suction was kept at 180 mmHg. These parameters were set to avoid traction on the vitreous base and the retina. It was noted that on performing the vitrectomy, we tended to start cutting the vitreous first behind

the PC so as to create a concavity preventing vitreous prolapse in the anterior chamber.

3. **Significant anterior chamber bleeding**

   No significant anterior chamber bleeding occurred in any eye.

4. **Iris prolapse**

   Iris prolapse was not encountered in any eye, as the corneal incision is valvular in nature.

5. **Difficulty in folding and implantation of foldable acrylic IOLS.**

   This occurred in the earlier eyes throughout this work, and occurred in 7 (17.5%) eyes, however on gaining experience, the methods of folding and implantation became much easier. It was noted that high power IOL showed difficulty in insertion and need slightly more force and longer time than lenses of low power. Haptic of the IOL was bent during dialing in two eyes (5%); IOL was extruded and replaced by another one.

6. **Sulcus placement of the IOLs.**

   Sulcus placement of the IOLs was carried out in 13 eyes (32.5%). Our goal was intentionally to place the IOLs. In the bag, but this was not accomplished because of intraoperative difficulties.

7. **Posterior capsulotomy**

   In this study, we elected to perform a primary posterior capsulorhexis in 12 eyes (30%) where a central dense

plaque was noticed. We performed plaque peeling and PCCC, with the help of a bent cystotome and forceps and with the use of viscoelastic sodium hyaluronate. The latter assisted in stretching the posterior capsule with an almost equal pressure in front and behind it thus facilitating posterior capsulorhexis.

A premature rupture of PC and vitreous loss occurred in 7 eyes (17.5%), so we performed an anterior vitrectomy and capsulectomy. In the remaining 21 eyes (52.5%), the clear PC was left untreated.

8. Miotic pupil

Mitotic pupil was encountered in two eyes (5%), in which pupil was reactive but difficult to dilate on using cycloplegics, as a congenital pupillary dilator muscle defect. This was accomplished by doing intraoperative mechanical dilatation of pupil by aid of iris spatula.

Fig. (21): Surgical complicatins

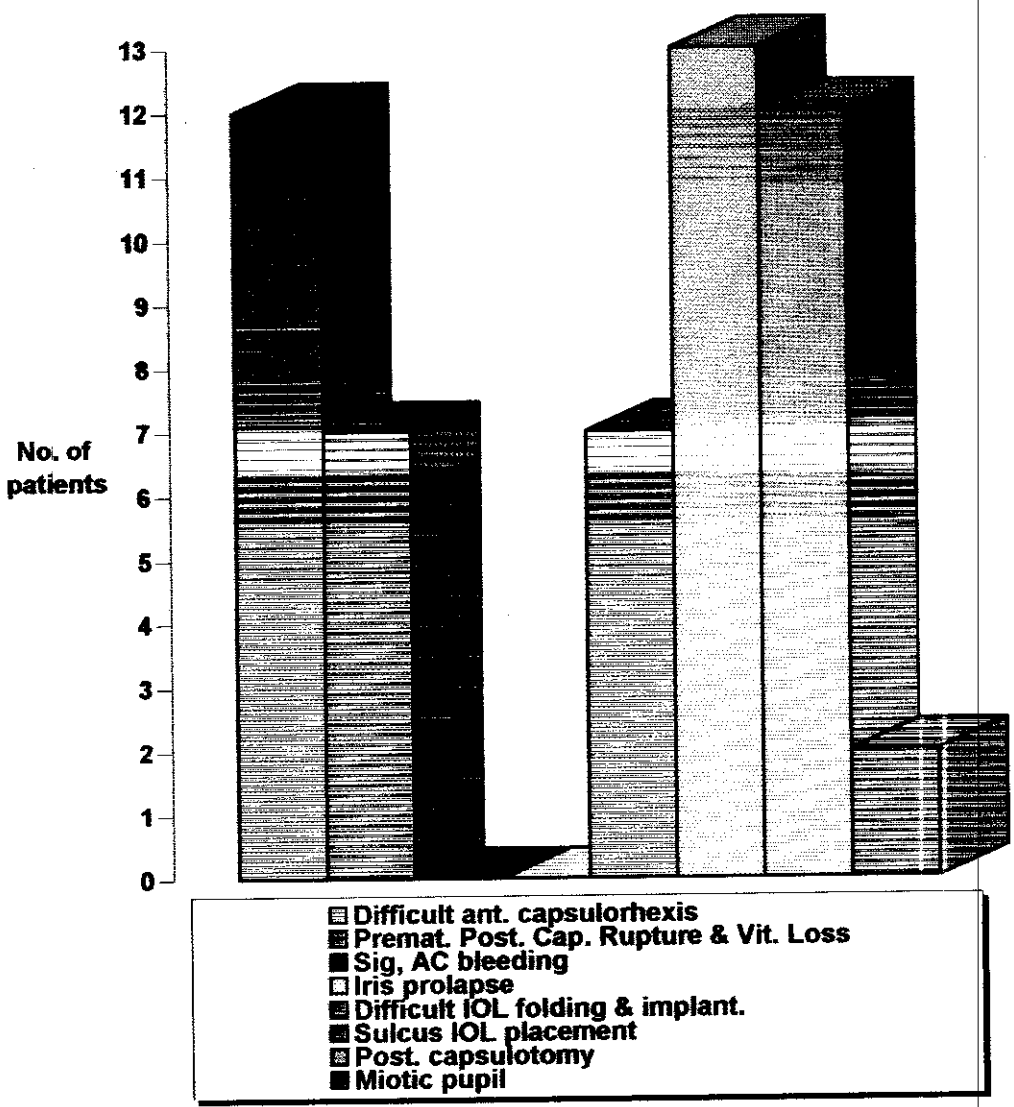


Table (20): Postoperative complications

Complications	No. of patients
Corneal edema	5 (12.5%)
Inflammatory complications	
• Mild iritis	34 (85%)
• Moderate iritis	4 (10%)
• Severe iritis	2 (5%)
Posterior synaechia	7 (17.5%)
Opacified posterior capsule	5 (12.5%)
Changes in the shape of the pupil	10 (25%)
Changes in the pupillary reaction	7 (17.5%)
Intraoccular lens displacement	3 (7.5%)
Pupillary capture	2 (5%)
Intra-ocular lens deposits	40 (100%)
Secondary glaucoma	2 (5%)
Endophthalmitis	0
Retinal detachment	1 (2.5%)

* *Percentages in parenthesis*

POSTOPERATIVE COMPLICATIONS

Postoperative complications encountered are the following (Table 20, Fig 23)

1. **Corneal edema**
   - Early postoperative transient striate keratitis and corneal edema commonly occur in children following intra-occular lens implantation. The edema usually resolved without sequalae in 48-72 hours.
   - In our study mild corneal edema occurred in 5 eyes (12.5%), of which 4 eyes had mild corneal edema that resolved spontaneously and the cornea regained its clarity within the first postoperative week. The fifth eye had persistent corneal edema due to corneal decompensation.

2. Inflammatory complications

Inflammatory complications included postoperative uveitis, fibrinous reaction and cystoid macular edema. Iritis was classified into three categories according to the amount of the flare as judged by the slit lamp:

- Mild iritis occurred in 34 eyes (85%), and resolved within the first postoperative week.
- Moderate iritis occurred in 4 eyes (10%), and resolved within the first three postoperative weeks.
- Severe iritis occurred in 2 eyes (5%) in whom a fibrinoid reaction was seen in the anterior chamber one month after the operation and had resolved three weeks later. This occurred due to non-compliance of parents. Frequent topical steroids and cycloplegic eye drops, in addition to systemic steroid were enough to overcome uveitis.

3. Synaechia

Posterior synaechia occurred in 7 eyes (17.5%). Partial synaechia were reported in 4 eyes, 2 months postoperatively. In two eyes posterior synaechia occurred 3 weeks after surgery, and in one sixth eye the synaechia had occurred about 4 months after surgery with inflammatory membrane. Synectomy operation was done for the cases of complete synaechia with successful results.

4. Opacified posterior capsule

- After IOLs implantation almost all pediatric patients develop over a period of time an opaque posterior

capsule. In our series, posterior capsule opacification was noted in 5 eyes (12.5%). One eye of traumatic cataract and the other 4 eyes were infant aging between 6 and 9 months at time of surgery and developed this opacification about 4-6 months postoperative. In 3 eyes (7.5%), we performed parsplana capsulotomy and anterior vitrectomy, while in the other 2 eyes (5%) the opacity was not dense enough to require surgical interference.

- In cases underwent posterior capsulorhexis, no eyes had obstruction of the visual axis by inflammatory membrane behind the IOL, but a ring of opacification at the ring of PCC was noted in 4 eyes.

5. Changes in the shape of the pupil

Ten eyes (25%) showed a postoperative distortion of the pupil. Distorted pupils were associated with posterior synaechia or pupillary capture, and in one eye distortion of the pupil is related to the trauma.

6. Changes in the pupillary reaction

There was no pupillary reaction in the first postoperative month due to the use of cycloplegic eye drops. After that most cases regained pupillary reaction except for 2 eyes of pupillary capture where the pupillary reaction was sluggish. In the cases of posterior synaechia, the pupillary reaction was sluggish in the 7 eyes (17.5%) of partial posterior synaechia.

7. **Intraoccular lens displacement**

This occurred in 3 eyes (7.5%). In one eye the lens was dislocated posteriorly in the anterior vitreous face and was removed 2 months after the operation and was replaced by hard PMMA IOL. In the second eye, the lens was dislocated on the first postoperative week and was repositioned on the second postoperative week. In the third eye the lens was slightly displaced down [sunset] on the first month and reposition was done later.

8. **Pupillary capture**

Pupillary capture had occurred in 2 eyes (5%). Pupillary capture occurred in one eye in the second postoperative week and in the second eye had occurred at two months postoperatively.

9. **Intra-ocular lens deposits**

This occurred in nearly all eyes (~100%). The deposits were finely pigmented or pigment deposits. These pigment deposits tend to disappear spontaneously or decrease in number within 2 to 4 weeks after the operation. They are thought to be composed of lens remnants, iris pigment, or inflammatory debris. Generally, they do not interfere with vision.

10. **Secondary glaucoma [Postoperative increased intra-ocular pressure]**

Secondary glaucoma occurred in 2 eyes (5%), in the fist eye, the rise of intra-ocular pressure was transient during the first 10 days postoperatively, and was controlled with the use of

topical beta-blockers for two weeks. The rise of the intra-ocular pressure of the second eye had occurred in the first postoperative week, but was controlled by the use of beta-blockers, it was to be noted that this eye had traumatic cataract.

11. Endophthalmitis

Endophthalmitis did not occur in any eye.

12. Retinal detachment

Retinal detachment occurred in one eye (2.5%) that had blunt trauma and developed retinal detachment. The patient underwent pars plana vitrectomy and silicon oil injection.

Fig. (23):Postoperative complications

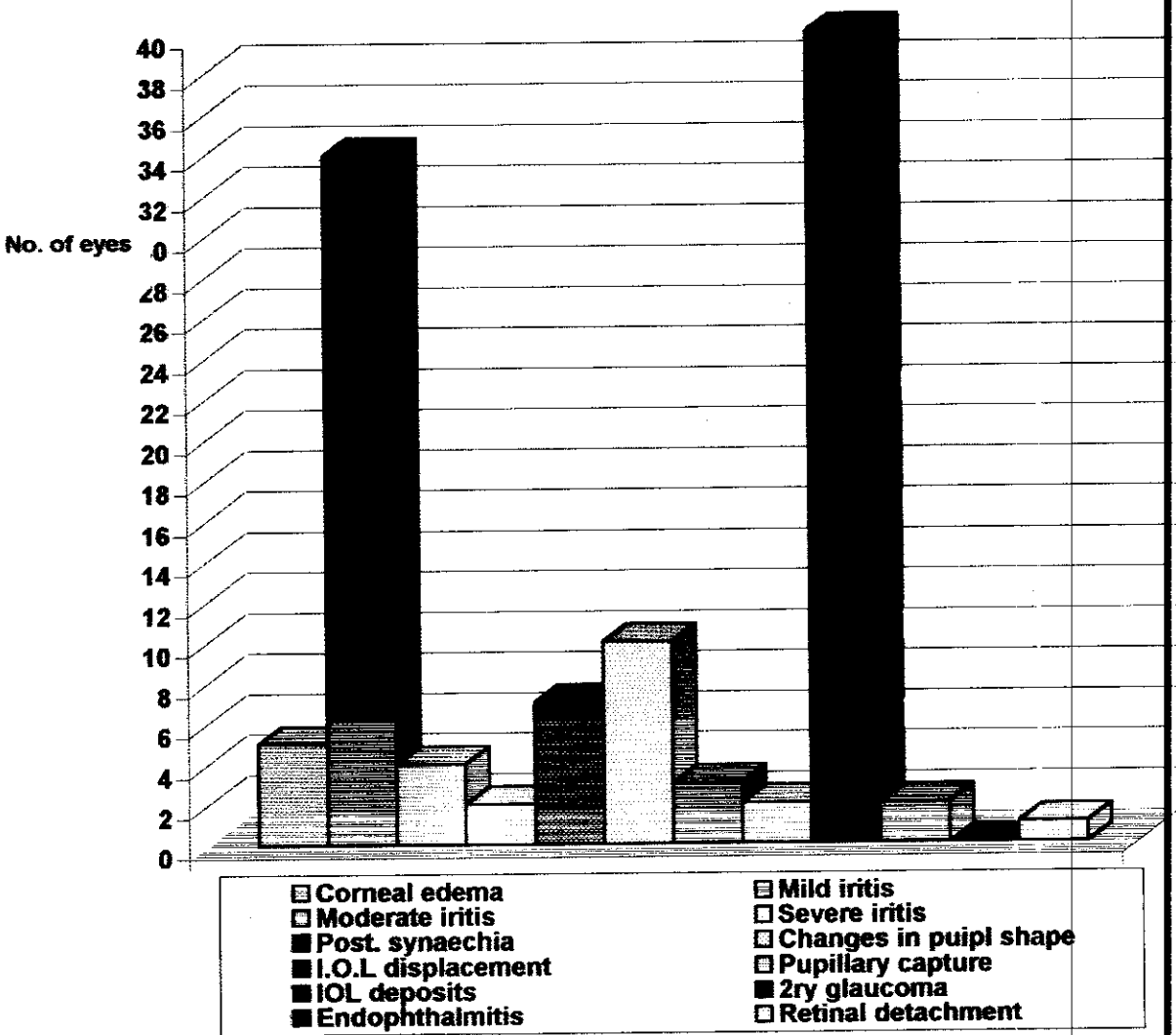


Table (21): Secondary surgeries

Complications	No. of patients
Lens repositioning	2 (5%)
Pars plana capsulotomy & anterior vitrectomy	3 (7.5%)
Retinal detachment	1 (2.5%)
Removal of loose 10/0 stitch	1 (2.5%)
Synecholysis	3 (7.5%)

* *Percentages in parenthesis*

SECONDARY SURGERIES

Secondary surgeries included the following, (Table 21, Fig. 24):

1. **Lens repositioning**

   Lens repositioning was requested in two eyes (5%), which were displaced posterior with the lens optic crossing the papillary area. Both eyes successfully repositioned to settle on the anterior capsular rim and remained so throughout the follow-up period.

2. **Pars plana capsulotomy and anterior vitrectomy**

   Three eyes (7.5%) underwent parsplana capsulotomy and anterior vitrectomy due to PCO.

3. **Retinal detachment**

   Occurred in one eye (2.5%).

4. **Removal of loose 10/0 stitch**

   Occurred in one eye (2.5%).

5. **Synecholysis**

   Occurred in three eyes (5%).

Fig. (24): No. of patients needed secondary surgery