

# Secondary Intraocular Lens Implantation in University Hospital, Kuala Lumpur

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## Summary

Secondary intraocular lens implantation after cataract surgery done in University Hospital between 1983 to 1993 were reviewed. Thirty three patients (37 eyes) underwent secondary intraocular lens implantation during this period. Twenty four eyes had secondary anterior chamber lens implantation while 13 had posterior chamber lens implantation. There was no case of secondary posterior scleral fixation lens implantation.

Visual acuity of 6/9 or better was seen in 25 of 37 eyes (67%) in the series. Eyes seeing as good or better than before secondary implantation procedure were noted in 34 of 37 eyes (92%). Vision of 6/9 or better was seen in 9 of 13 eyes (70%) with posterior chamber implants and 16 of 24 eyes in (67%) with anterior chamber lenses.

Complications including bullous keratopathy, uveitis and glaucoma were seen with anterior chamber implants of the rigid type resulting in poorer visual acuity than before the secondary procedure.

**Key Words:** Cataract surgery, Secondary intraocular lens implantation, Anterior chamber lens, Posterior chamber lens, Visual acuity

## Introduction

Replacement of the crystalline lens after cataract removal with a lens, usually of PMMA (polymethylmethacrylate) is now routinely done in most centres world wide. Intraocular lens implantation can be performed as a primary or secondary procedure. Primary implantation is planned in most cases and secondary implantation is done at another surgery only when primary implantation failed or when cataract extraction was done without lens implantation at the first instance.

The first intraocular lens implantation in University Hospital was done in 1981 while the first secondary implantation was on a 28 year old due to intolerance to contact lens wear in 1984.

## Materials and Methods

Case notes of patients who had undergone secondary intraocular lens implantation after cataract surgery between 1983 to 1993 were traced. Relevant data on each patient, including age, sex, race, type of implant used, visual acuity before and after implantation as well as complications were collected.

46 out of 1,921 (2.39%) of intraocular lens implantations performed during this period were secondary procedures. Only 33 cases could be traced and of these four were bilateral cases. Thus 37 eyes with secondary lens implantation were reviewed for this study. Twenty four eyes had secondary anterior chamber lens implanted while the remainder 13 had posterior chamber lens implanted.

### Age, sex and racial distribution

The age range of patients who had undergone secondary intraocular implantation were between 4 and 79 years. 26 of the 33 cases were above 40 years of age and the other 7 below this age. Three had primary surgery for congenital cataracts, 5 for traumatic cataracts and the rest for senile cataracts. There were 22 males and 11 females with a ratio of 2:1., 16 were Chinese, 11 Indians and 5 Malays.

### Time interval between cataract removal and secondary lens implantation

26 patients (78.7%) were operated within 4 years of cataract surgery. The rest were operated between 5 to 20 years. The greater time interval were due to the fact that lens implantation was not offered or available at the time of the first surgery (intracapsular method) which was done years earlier.

One patient had the secondary implantations after 15 (one eye) and 20 years (the other eye) of cataract removal for congenital cataracts at the age of 12 years.

### Types of lens implants

24 eyes of 22 patients were implanted with secondary anterior chamber lenses (13 in the right and 11 in the left). Of these 10 were of Choyce rigid anterior chamber lenses and the rest were of the all PMMA flexible open loops type. 13 eyes of 11 patients had secondary posterior chamber lenses of either one piece PMMA or 3 pieces with prolene haptics which were placed in the bag or sulcus. 8 posterior chamber implants were put in the right eyes and 5 in the left. There was no case of secondary posterior scleral fixation lens implantation.

### Indications for secondary lens implantation

Secondary lens implantation was done mainly for aphakia with intolerance to aphakic glasses or contact lens and for cosmetic reasons. There were 12 cases of aphakia due to planned intracapsular cataract extraction, 1 from lens aspiration and the rest due to extracapsular cataract extraction with or without capsule rupture.

Anterior chamber lenses were done on cases who had intracapsular cataract extraction before or had planned extracapsular cataract extraction complicated by capsule rupture with insufficient remaining capsular support or when placement of posterior chamber lens proved difficult due to posterior synechia in spite of the presence of an intact posterior capsule.

Posterior chamber lenses were placed in cases who had undergone extracapsular cataract extraction with intact posterior capsule and where secondary lens insertions were without difficulty.

### Procedure

Secondary implantations were done mostly under general anaesthesia in the eighties. Later local anaesthesia was preferred except where anterior vitrectomy was planned. A 3mm to 4mm limbal or corneal section was made. Anterior vitrectomy was performed where indicated and the lens placed in position under air or later viscoelastics, which became available in the late eighties.

### Post operative results

Visual acuity of 6/9 or better was seen in 25 of 37 eyes implanted (67.5%) (Table I). Those with as good as or better after secondary implantation accounted for 34 of 37 eyes (92%) (Table II). These included those with poor visual acuity due to capsule thickening, a case with amblyopia with doubtful vision pre and post operative and a case of maculopathy with visual improvement of counting fingers from hand movements.

### Anterior chamber implantation

16 of 24 (66.6%) cases with secondary anterior chamber lens implantation had 6/9 vision or better. Of these 8 had Choyce rigid lenses and 7 had the flexible open loop type. One patient in this group (with flexible open loops) had vision post operative of 6/36 due to cystoid macula oedema. He had history of capsule rupture with vitreous loss in the primary surgery. 2 patients with secondary lens implantation (Choyce rigid type) had visual acuity much less than before operation.

**Table I**  
**Visual Acuity Before & After**

Visual Acuity	Secondary Anterior Chamber Implant		Secondary Posterior Chamber Implant		Total	
	Before	After	Before	After	Before	After
6/6	10	7	3	0	13	7
6/9	4	9	1	9	5	18
6/12	2	2	2	1	4	3
6/18	1	2	2	2	3	4
6/24	0	1	2	0	2	1
6/36	4	1	1	0	5	1
6/60	1	1	1	0	2	1
Hand movements	0	0	1	0	1	0
Counting fingers	0	0	0	1	0	1
Perception of light	1	0	0	0	1	0
? Vision	1	1	0	0	1	1
<b>Total</b>	<b>24</b>		<b>13</b>		<b>37</b>	<b>37</b>

**Table II**  
**Table showing visual acuity as better, same or worse than before secondary implantation.**

Visual Acuity	Anterior Chamber Implant	Posterior Chamber Implant	Total
Better	10	10	20
Same	12	2	14
Worse	2	1	3
<b>Total</b>	<b>24</b>	<b>13</b>	<b>37</b>

One was complicated by bullous keratopathy. His vision dropped from 6/6 to 6/60 and he needed penetrating keratoplasty. The other had uveitis and glaucoma which was controlled with medications and his vision was 6/12 from preoperation vision of 6/6. Still another with this implant had hyphaema and later hypotony but vision remained at 6/9 after hyphaema cleared.

### Posterior chamber implantation

9 of 13 patients had visual acuity of 6/9 or better (69%). 1 patient had traumatic maculopathy and had vision of counting fingers from hand movements. One had 6/12 vision due to lens decentration and astigmatism.

### Discussion

Secondary lens implantation is done when primary lens implantation after cataract removal failed or deferred for various reasons. Indications for secondary lens implantation include aphakia after intracapsular cataract extraction,<sup>1,2,3</sup> and failed primary implantation in general. In this review 12 cases were aphakic after intracapsular cataract extraction, 10 had extracapsular cataract extraction with posterior capsule rupture and vitreous loss and one had lens aspiration done. The rest had planned extracapsular cataract extraction but primary implantation deferred due to difficult surgery and positive vitreous pressure, or patient's refusal due to financial, personal and religious reasons. Intracapsular cataract surgery was the method of cataract removal in the seventies and early eighties in the University hospital and most patients were not offered intraocular lens implantation then.

Contact lens intolerance, aphakic glasses intolerance and cosmetic reasons were given for secondary implantation. Others requested for it after refusal at primary surgery on being convinced of the benefits from patients who had lens implantation done. 24 of 37 eyes had anterior chamber implants and 13 had posterior chamber ones.

Complications including bullous keratopathy, uveitis, hyphaema, glaucoma, cystoid macula oedema were seen

more in with anterior chamber implants (rigid type) than posterior chamber implants. This association was also noted by others<sup>4</sup>. Anterior chamber has also been implied in corneal bullous keratopathy.<sup>5</sup>

Secondary anterior chamber implantation is preferred by some authors when there is vitreous loss in the first surgery<sup>6</sup> as conditions for lens insertions are more favourable as there is less post operative inflammations. 10 of the eyes with secondary anterior chamber lens implantation in this review had vitreous loss, 5 had visual acuity of 6/9 or better and only one had visual acuity of 6/36 (less than before operation) due to cystoid macula oedema. This however was probably related to vitreous loss than the secondary lens implantation itself.<sup>6</sup>

Postoperative visual acuity is a good indicator for successful eye surgery and for cataract surgery, visual acuity of 6/12 or better is considered successful<sup>7,8,9</sup>. Others consider 6/9 or better as success. The better approach is to compare the visual acuity before and after operation and the successful operation is the one where the visual acuity has improved compared to preoperative vision<sup>10</sup>.

In this review, 25 of 37 eyes had 6/9 vision or better (67%); 28 of 37 (75.6%) eyes had corrected visual acuity of 6/12 or better than before secondary implantation while 34 of 37 (91.6%) eyes had corrected visual acuity as good or better than before the procedure.

### Conclusion

Secondary intraocular lens implantation is a relatively safe procedure and gives satisfactory visual results. There will be no secondary implantation after routine intracapsular cataract extraction in the future as the method of cataract surgery now is extracapsular and phacoemulsification. Indeed but for a few cases, primary implantation is now routine as lens insertion is easier with improved surgical techniques and with availability of viscoelastic materials.

Refusal for personal and religious reasons is no longer

important as patients are better advised and reassured especially by those who already had lens implantation

done. For those who cannot afford help is sought from welfare services.

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