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Cost of Intraocular Lens vs. Contact Lens Treatment after Unilateral Congenital Cataract Surgery in the IATS at Age 5 Years

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Abstract

Purpose—To analyze differences in the cost of treatment for infants randomized to primary intraocular lens (IOL) implantation versus optical correction with a contact lens (CL) after unilateral cataract surgery in the Infant Aphakia Treatment Study (IATS).

Design—Retrospective cost analysis of a prospective, randomized clinical trial based on Georgia Medicaid reimbursement data as well as actual costs of supplies used during the study, adjusted for inflation.

Participants—The IATS is a multicenter (n=12) randomized, clinical trial comparing the optical treatment of aphakia with either primary IOL implantation (n=57) or CL correction (n=57) in 114 infants with unilateral congenital cataract.

Intervention—One hundred fourteen infants underwent unilateral cataract surgery and were either optically corrected by primary IOL implantation at the time of surgery or were corrected with a CL after surgery.

Main Outcome Measures—The mean cost of cataract surgery and all additional surgeries, examinations and supplies used up to 5 years of age.

Results—The 5-year treatment cost of an infant with a unilateral congenital cataract optically corrected with an IOL was $35,293 versus $33,452 for a patient treated with a CL after initial cataract surgery. The total cost of supplies was $2669 in the IOL group vs $6128 in the CL group.

Conclusions—Unilateral cataract surgery in infancy coupled with primary IOL implantation is about 5% more expensive than aphakia and CL correction. Patient costs are more than double with CL versus IOL.

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In the IATS treating infants undergoing cataract extraction with primary IOL implantation was slightly more expensive than aphakia treated with CL correction; however supply costs were higher for patients treated with CL correction versus IOL.

The Infant Aphakia Treatment Study (IATS) was a multicenter, longitudinal, randomized clinical trial that evaluated the visual outcomes of two treatments for infants that underwent unilateral cataract surgery between 28 days and 7 months of age. All infants enrolled (n=114) had unilateral cataract surgery and were randomly assigned to one of two treatment groups. In one treatment group (n=57) the infants were optically corrected by primary intraocular lens (IOL) implantation at the time of cataract surgery. In the second group (n=57) they were optically corrected by an aphakic contact lens (CL) within the first post-operative week. At one year of age, the infants had their vision tested by a travelling examiner via grating acuity. The vision was again assessed at age 4.5 years by a traveling, masked examiner using the ATS-HOTV algorithm[1]. At both points in time, the cumulative data revealed no significant difference in the median visual acuity in the treated eyes between the two groups. [2,3]

Although there was no clear advantage to either treatment arm when comparing final visual outcomes, it is important to assess the financial impact of each treatment as well. This was done previously in a study using data of all patients at 12 months. At that time, primary IOL implantation was 37.5% (~$4,000) more expensive per patient than treatment with CL. The increased cost in the IOL treatment group was primarily attributed to the higher cost associated with the patient's initial cataract surgery as well as the higher frequency of additional surgeries. It was also noted that the average cost of supplies was three times higher in the CL group ($1600 per patient) versus the IOL group ($535 per patient).[4]

Despite the difficulties in analyzing data of this type, due to differing billing codes used by physicians and institutions as well as a wide range of payments for the same services depending on the insurance carrier and the state where the service was rendered, important economic data can be gleaned from a large clinical trial in which the same cohort of patients are followed longitudinally. In this study, patient retention was nearly 100% with only one patient failing to have their vision assessed at 4.5 years of age. Since vision in the IOL group was not better than in the CL group, it is important to determine if the cost advantage found at age one year persisted at age 5 years. As a result, we retrospectively estimated the costs incurred by the IATS at 5 years based on the payment structure of the same third party payer (Georgia Medicaid) utilized in the 1 year study. All office-based care and all additional surgical services performed in the subsequent 4 years were included. In addition, supply costs based on actual invoiced expenditures are included in the total and evaluated as a sub-set of data, as these are costs typically borne by the patients and their families. Supply costs are of particular interest because while the cost of a particular treatment to a third party payer may be more favorable, that same treatment may not be more cost effective to the patient and their family, because of the extra out-of-pocket costs they incur.

Methods

The IATS was a National Institute of Health/National Eye Institute-sponsored, multicenter clinical trial that was approved by the respective institutional review boards at all sites. In addition, this study was performed in accordance with the Health Insurance Portability and Accountability Act. The IATS is registered with clinicaltrials.gov and this research adhered to the tenets of the Declaration of Helsinki. The off-label research use of the Acrys of

SN60AT and MA60AC IOL (Alcon Laboratories, Fort Worth, Texas) is covered by US Food and Drug Administration investigational device exemption G020021. Inclusion criteria of the IATS were: the presence of a visually significant cataract in one eye and an age at surgery of 28 days to < 7 months. A complete list of other inclusion and exclusion criteria can be found in previously published IATS manuscripts[4]. Data in this analysis include costs incurred up to 5 year of age.

Financial data were collected from all 12 sites involved in the IATS. However, due to the diverse nature of payer coverage, and to maintain consistency with data reported at an earlier end point, we applied the costs of a single payer, Georgia Medicaid, to the office visits, procedures performed and treatments rendered. Supply expenses included the costs of contact lenses, spectacles and occlusive patches. The cost for contact lenses is based on a the annual mean number of Silsoft (Valeant Pharmaceuticals, Lynchberg, VA) CLs used per study year, which were all invoiced and paid for through the data coordinating center (DCC, Emory University). Our data were collected and broken down into three groups for ease of comparison and interpretation: office visits, surgeries and supplies. Surgical procedures of all types and for all indications are included together, regardless of indication and procedure performed. More detailed data on additional surgeries and adverse events can be found in other publications.[3] The cost of office visits was based on the number and type of visits mandated by the study protocol, not by actual visit number. The cost of supplies is the total cost of contact lenses, glasses and patches for each treatment group. Lastly, all data were adjusted based on the consumer price index (CPI) and adjusted per study year accordingly. Our data are reported in 2013 dollars.[6]

Surgery

The cost of surgical procedures was based on Georgia Medicaid payments for each current procedural terminology (CPT) code from the July 2009 Georgia Medicaid fee schedule and adjusted based on the CPI for the year in which the procedure was performed. A discount for multiple procedures performed on the same day was not taken into account and we assumed a 100% reimbursement rate as allowed by Georgia Medicaid for all procedures included. Surgical procedures performed in years 2-5 included membranectomy (66830), glaucoma surgery (65850, 66625, 65865) IOL exchange (66986) and strabismus surgery (67312). There were 3 secondary IOLs placed (66985) in 3 patients from the CL group in years 2-5 as well. Costs are based on the absolute number of procedures and not per patient, as some patients had the same surgery more than one time. The cost of post-operative medication was not factored into our calculations.

Office Visits

In years 2-4 of the study protocol called for patients to be seen 4 times in each year, with one of those visits requiring a comprehensive exam with pupil dilation and cycloplegic refraction. We used the office based “eye” code 92012 for follow up examinations and 92014 for comprehensive exams. In addition the code 92060 (sensory motor exam) was included based on the rates of strabismus in each arm at the conclusion of the study.[3] In year 5 there were three required visits as the study protocol changed from evaluation at certain post-operative dates to a chronological age-basis. Beginning after age 4 years, the patients were seen at ages 4.25, 4.5 and 5.0 years. All of these were comprehensive examinations and the code 92014 with the corresponding rate of 92060 was used for calculation in this year.

Supplies

Contact lens cost data were tabulated at the DCC. All CL invoicing was done through this center since the vast majority of patients in the CL arm (n=54) were treated with Silsoft CL (Valeant Pharmaceuticals, Lynchberg, VA). Only 3 patients were treated with rigid gas permeable lenses and since these data were not readily available they were excluded. The average number of Silsoft Lenses was then extrapolated to all patients in the CL arm for that study year less any patient(s) that underwent secondary IOL placement.

The cost of glasses across the 12 sites was somewhat more variable. In addition, detailed paper work was not necessarily submitted to the DCC or even to the provider because glasses prescriptions were not required to be filled at one specific optical shop. As such, our data were averaged from the data sets of 4 sites where it was readily attainable due to the fact that all patients used the same optical shop for the entire duration of the study (Miami, FL; Atlanta, GA; Nashville, TN; Portland, OR); these data were then averaged and extrapolated for the total number of patients in that arm for that study year (n=57 in each IOL and CL arm). There was an equal amount of data in the IOL arm (n=17) and CL arm (n=17) obtained.

The cost of a box of patches is also variable but to a lesser degree. The price per box was based on invoicing from the manufacturer for one brand (“Ortopad”, Eye Care and Cure, Tucson, AZ) to a physician's office (SJK, Miami, FL). The total number of patches dispensed was calculated based on 1 patch for each day between study-mandated follow up visits plus one box extra, to account for loss and use of more than one patch in the course of a day. The number of boxes distributed to the patient was based on 50 patches per box.

Consumer Price Index

All dollar amounts were recorded in 2013 dollars by adjusting for changes in the Medical Component of the Consumer Price Index from 2009 as follows: 2009=113.2%, 2010=110.5%, 2011=106.6%, 2012=103.4% and 2013=100.0%.

Results

A total of 114 patients were enrolled in the IATS; half were randomized to the IOL arm (n=57) and half were randomized to the CL arm (n=57). Only one patient was lost to follow up and all remaining patients had their visual acuity checked by the traveling examiner at age 4.5 years. Three patients in the CL group had a secondary IOL placed due to CL failure during the study (one in each: year 2, year 4 and year 5). [3] Their glasses and patching costs were still included in the CL arm while the number of CL's extrapolated to this arm for calculations of total CL cost was reduced by 1 in each of the respective years. A detailed tabulation of all costs in years 2-5 is presented in online Tables 1 (IOL) and 2 (CL). (Tables 1 and 2 available at: http://aaojournal.org)

With the exception of year 4, the CL arm was more costly in years 2-5. The total cost per patient is summarized in Table 3 (IOL) and Table 4 (CL). The costs of patient office visits was equal in the two treatment groups and progressively decreased from year-to -year, most notably in the 5th year as there were only three study-mandated follow up visits during this year. Costs relating to surgical procedures were higher in the IOL group in each study year, but peaked at different times within each group. In the CL group, additional surgical costs were highest in year 2 while in the IOL group there was a peak over years 3-4. The costs of supplies were considerably more in the CL group in each study year. Interestingly in each group, the peak in supply costs followed the peak in surgical costs. This increase in supply cost (year 4 in IOL group, year 3 in CL group) could be related to the additional surgeries performed in the preceding year creating the need for adjustment in CL or glasses power; it is also possible that this increased supply cost coincided with prescribing of bifocal lenses (which are more expensive) or some combination of these and other factors. Lastly, data from the previous report documenting the costs associated with the IATS after 1 year[4] were adjusted for CPI. In combining these data with our data we find that after 5 years, placement of an IOL at the time of unilateral cataract surgery cataract surgery is only 5.5% more expensive ($1,940) than unilateral cataract surgery and aphakic contact lens correction. The side by side comparison of annual study cost, cost per patient, and rate of cost change can be seen in Table 5.

Discussion

In the IATS, we estimate that the cost of performing primary IOL implantation in conjunction with cataract removal in infants between 28 days and 7 months of age is only about 5.5% ($1,940) more expensive than cataract removal with CL use over 5 years. This finding is substantially different from the associated costs of this same cohort of patients examined after only one year where the IOL treatment was found to be about 37.5% more expensive.[4]

In contrast to the data examined at one year, in each subsequent year of the IATS the CL arm was more costly, with the exception of year 4. The increased costs in the CL arm can be primarily attributed to the cost of aphakic contact lenses. The average number of lenses required annually per patient in this arm of the study was: 10 in year 1, 9 in year 2, 7 in year 3 and 5 in years 4 and 5. We cannot fully account for the change in the cost trend in year 4, but it appears from tabulated data, there was an increase in the number of surgeries performed in the IOL group that year due to an increased need to clear the visual axis in the IOL group as well as two IOL exchange procedures. (See Table 6)[3]

Another trend found in our study is that in the IOL treatment group there was a small increase in the cost of supplies in year 5. The authors attribute this increase to five possibilities including: (1) an increase in the breakage and/or loss of glasses as the children became active toddlers, (2) a myopic shift requiring the purchase of high refractive index (and therefore more costly) lenses, (3) more frequent dilated exams and cycloplegic refractions in year 5 that resulted in more frequent changes in the prescription and (5) patients requesting extra frames and lenses near the end of the study since these items were paid for by the study grant.

The authors acknowledge that analyzing the cost of treatment is complicated by many factors such as the great number of third party payers, variability in reimbursement rates by third party payers, geographical location (which can affect reimbursement even within the same third party payer) as well as how individual physicians code and bill their services. In our study we chose to use a single third party payer, Georgia Medicaid, to tally our costs. This payer was chosen to maintain continuity with the previously published 1-year cost data from IATS[4]. We acknowledge that this may underestimate costs for certain services and procedures but feel it would apply equally to both treatment groups. Moreover, we would suggest that the relative cost relationships between the treatment groups and within the groups are likely typically of those that would be found if other payers were used.

The only other attempt to calculate the financial burden of unilateral congenital cataract surgery in infants was undertaken by Stager *et al* in 2009[7]. In their assessment the authors constructed a "basic scenario" in which infants undergo unilateral cataract surgery in the first year of life and are left aphakic and optically corrected with CL until age 6 when a secondary IOL is placed and glasses are used in lieu of CL. Patients are presumed to be on a patching regimen to 8 years of age and receive regular follow up including exams under anesthesia if required, until age 12 years. The Stager et al study differs from ours in that it was based on theoretical costs, with complications and additional surgeries being estimated from rates in the medical literature. In contrast, our analysis included the costs of procedures actually performed. In addition, they used Medicare rates to calculate costs whereas we used Georgia Medicaid reimbursement rates which are lower than Medicare reimbursement rates. This limitation is important to note. The representativeness of Georgia Medicaid costs in other states or healthcare markets needs to be viewed cautiously. There is considerable evidence that there are wide hospital and physician pricing differences among third-party payers across the nation and even within local markets. [8-11] A recent Kaiser Family Foundation report, for example, showed that payments for Georgia Medicaid physician fees for primary care in 2012 were 12% higher than national Medicaid average primary care payments but still 30% below what Medicare would pay for the same primary care services in Georgia. Consequently, while using Georgia Medicaid data will reflect Georgia Medicaid cost differences, Georgia Medicaid costs will likely understate the true costs of these procedures in the US health care system.[10,11] In light of these differences, it is of great interest to note that the 5 year cost per patient in the IOL arm ($35,293) and in the CL arm ($33,452) vastly eclipsed the estimated 12 year cost per patient in the 2009 paper whether compared to the basic scenario ($18,839) or the basic scenario plus costs of additional "sequelae and complications" ($21,060). Therefore it seems, the actual cost of treating a patient with unilateral congenital cataract beginning from infancy, is much higher than what could only be estimated in 2009. We did not perform a cost effectiveness analysis nor calculate quality-adjusted life years in this review. This is something that can be done in future analyses of our data. In our study we also attempted to estimate potential costs to the family of an infant treated for a unilateral congenital cataract. It is interesting and important to note that in all years of the IATS, supply costs are 2.5 times more expensive in infants left aphakic at the time of cataract surgery and treated with an aphakic CL. The difference is directly attributable to the cost of the CLs. While an average lens usage per year per patient is used for our calculations, there were many individual patients who required many more lenses in the course of the 5 years. Even though there were no costs associated with glasses in the patients' first two years of life in the CL arm, patients in both arms were required to wear bifocal correction after age 2. In years where both IOL and CL patients were wearing glasses, the average annual costs were sometimes higher in the CL group. This may be because patients in this arm were purchasing new frames as well as lenses, where an IOL patient may have had frames from earlier use and merely needed to switch the lenses when it became time for them to use bifocals.

It is also important to note that the patients enrolled in the IATS had the CLs provided to them free of charge with an extra lens regularly being dispensed. The protocol dictated that all patients have two lenses at all times. Therefore, none of the patients had to endure lengthy periods of uncorrected aphakia. We imagine that if this cost was not absorbed by the study that many families may have had a difficult time paying for these lenses and as a result, this could have adversely affected the patient's ultimate visual outcome. Aphakic CLs and CLs in general, are not an item traditionally covered by third party payers. As a result, this financial burden is put on the patient and their families. One investigator is actively working within his state to draft and pass legislation requiring coverage for these lenses as well as other forms of optical correction prescribed which are medically necessary in the prevention of amblyopia. We are hopeful that other providers in other states will follow suit in this matter. We have attempted to provide a framework for counseling parents regarding the potential direct out of pocket costs when their child will undergo unilateral cataract surgery in infancy. We acknowledge we cannot estimate indirect costs which are understood to be the resources forgone as a result of a health condition. Parents incur these ‘indirect’ costs in dealing with the child's procedure when they miss time from work, experience the costs of commuting to visits, costs of childcare for other siblings, changes in lifestyle, etc. These costs have the potential to be substantial, perhaps even eclipsing the direct costs over 5 years. The perceived stress to care-givers of these infants was evaluated in infancy and after two years of the IATS. Assignment to one treatment group or the other did not have a significant impact on the stress level reported during infancy or at the two year post-operative time frame. [12]

In addition, this manuscript is written in a time of great change to the health care system in the United States. We cannot estimate other costs patients will start to bear with the emergence of the many low-cost, high deductible insurance coverage options that have already begun to appear in the consumer insurance market. These plans will likely shift more of the financial burden to patients in terms of medical services previously covered in full.

In conclusion, given the growing national importance of costs in medical decision making it is essential to understand the important cost drivers in alternative medical treatments. From a societal perspective we find that after 5 years, cataract extraction coupled with IOL implantation is only 5.5% more expensive than cataract extraction and optical correction with contact lenses. However, it is important to also bear in mind that with these two treatment choices there are also substantial additional direct costs to the family if aphakia with contact lens correction is chosen and therefore this is an important item to discuss with families during the educational and informed consent processes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix: The Infant Aphakia Treatment Study Group

Administrative Units

Clinical Coordinating Center (Emory University): Scott R. Lambert, MD (Study Chair); Lindreth DuBois, MEd, MMSc (National Coordinator)

Contact Lens Committee: Buddy Russell, COMT; Michael Ward, MMSc

Data and Safety Monitoring Committee: Robert Hardy, PHD (Chair); Eileen Birch, PhD; Ken Cheng, MD; Richard Hertle, MD; Craig Kollman, PhD; Marshalyn Yeargin-Allsopp, MD (resigned); Cyd McDowell; Donald F. Everett, MA (ex officio)

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Participating Clinical Centers (In order by the number of patients enrolled)

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Table 1

IOL ARM

		CPT codes	Hospital	Surgeon	Anesthesia	Mean Cost	Number	Total	Subset Total	% of yearly total	CPI Adjusted Price
Year 2	Office visits	92012 (×3) 92014 (×1)				$736	228	$167,808	$170,958	69.7%	$193,497
	Sensory Motor Exam	92060 (× 74%)				$75	42	$3,150			
	patches	3 boxes at $18 (×4)				$216	57	$12,312	$32,376	13.2%	$36,644
	glasses					$352	57	$20,064			
	contact lenses										
	Membranectomy	66830	$4,037	$420	$228	$4,685	1	$4,685	$41,864	17.1%	$47,383
	Glaucoma Surgery	65850, 66625, 65865	$3,331	$632	$251	$4,214	1	$4,214			
	Secondary IOL	66985	$15,292	$1,633	$1,244	$18,169	0	$0			
	strabismus surgery	67312	$5,932	$433	$228	$6,593	5	$32,965			
								$245,198			$277,525
Year 3	visits	92012 (×3) 92014 (×1)				$736	228	$167,808	$170,958	60.19%	$188,850
	strabismus	92060 (× 74%)				$75	42	$3,150			
	patches	3 boxes at $18 (×4)				$216	57	$12,312	$32,205	11.34%	$35,576
	glasses					$349	57	$19,893			
	contact lenses										
	Membranectomy	66830	$4,037	$420	$228	$4,685	6	$28,110	$80,854	28.47%	$89,316
	strabismus surgery	67312	$5,932	$433	$228	$6,593	8	$52,744			
								$284,017			$313,742
Year 4	visits	92012 (×3) 92014 (×1)				$736	228	$167,808	$170,958	58.8%	$182,175
	strabismus	92060 (× 74%)				$75	42	$3,150			
	patches	3 boxes at $18 (×4)				$216	57	$12,312	$39,558	13.6%	$42,154
	glasses					$478	57	$27,246			
	contact lenses										
	Membranectomy	66830	$4,037	$420	$228	$4,685	2	$9,370	$80,196	27.6%	$85,458
	Glaucoma Surgery	65850, 66625, 65865	$3,331	$632	$251	$4,214	1	$4,214			
	IOL Exchange	66986	$14,159	$1,512	$1,152	$16,823	2	$33,647			

		CPT codes	Hospital	Surgeon	Anesthesia	Mean Cost	Number	Total	Subset Total	% of yearly total	CPI Adjusted Price
	Secondary IOL	**66985**	$15,292	$1,633	$1,244	$18,169	**0**	$0			
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	5	$32,965			
								$290,712			**$309,786**
Year 5	**visits**	**92014 (×3)**				$723	171	$123,633	$126,783	68.2%	$131,111
	strabismus	**92060 (× 74%)**				$75	42	$3,150			
	patches	**4 boxes at $18 (×3)**				**$216**	**57**	**$12,312**	$41,154	24.5%	$42,559
	glasses					**$506**	**57**	**$28,842**			
	contact lenses										
	Membranectomy	66830	$4,037	$420	$228	$4,685	1	$4,685	$17,871	10.6%	$18,481
	Secondary IOL	**66985**	$15,292	$1,633	$1,244	$18,169	0	$0			
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	2	$13,186			
								$185,808			**$192,151**
										TOTAL IOL	$1,093,204

Table 2

CL ARM

		CPT codes	Hospital	Surgeon	Anesthesia	Mean Cost	Number	Total	Subset Total	% of yearly total	CPI Adjusted Price
Year 2	**Office visits**	**92012 (×3) 92014 (×1)**				$736	228	$167,808	$171,483	54.9%	$194,091
	Sensory Motor Exam	**92060 (× 74%)**				$75	49	$3,675			
	supplies	**3 boxes at $18 (×4)**				**$216**	**57**	**$12,312**	$83,093	26.6%	$94,048
	glasses					**$221**	**57**	**$12,597**			
	contact lenses					**$1,039**	**56**	**$58,184**			
	Membranectomy	66830					**0**	**$0**	$57,727	18.5%	$65,338
	Glaucoma Surgery	65850, 66625, 65865					**0**	**$0**			
	Secondary IOL	**66985**				**$18,169**	**1**	**$18,169**			
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	6	$39,558			
								$312,303			**$353,477**
Year 3	**visits**	**92012 (×3) 92014 (×1)**				$736	**228**	$167,808	$171,483	53.8%	$189,430
	strabismus	**92060 (× 74%)**				$75	**49**	$3,675			
	supplies	**3 boxes at $18 (×4)**				**$216**	**57**	**$12,312**	$100,370	31.5%	$110,875
	glasses					**$362**	**57**	**$20,634**			
	contact lenses					**$1,204**	**56**	**$67,424**			
	Membranectomy	66830				**$4,685**	**3**	**$14,055**	$47,020	14.7%	$51,941
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	**5**	$32,965			
								$318,873			**$352,246**
Year 4	**visits**	**92012 (×3) 92014 (×1)**				$736	**228**	$167,808	$171,483	60.5%	$182,734
	strabismus	**92060 (× 74%)**				$75	**49**	$3,675			
	supplies - patches	**3 boxes at $18 (×4)**				**$216**	**57**	**$12,312**	$76,385	26.9%	$81,397
	glasses - actual					**$439**	**57**	**$25,023**			
	contact lenses					**$710**	**55**	**$39,050**			
	Membranectomy	66830					**0**	**$0**	$35,569	12.5%	$37,903
	Glaucoma Surgery	65850, 66625, 65865				**$4,214**	**1**	**$4,214**			
	IOL Exchange	**66986**					**0**	**$0**			

		CPT codes	Hospital	Surgeon	Anesthesia	Mean Cost	Number	Total	Subset Total	% of yearly total	CPI Adjusted Price
	Secondary IOL	**66985**				$18,169	**1**	**$18,169**			
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	**2**	$13,186			
								$283,437			**$302,034**
Year 5	**visits**	**92014 (×3)**				$723	**171**	$123,633	$127,308	53.8%	$131,654
	strabismus	**92060 (× 74%)**				$75	**49**	$3,675			
	supplies - patches	**4 boxes at $18 (×3)**				**$216**	**57**	**$12,312**	$71,571	30.2%	$74,014
	glasses - actual					**$367**	**57**	**$20,919**			
	contact lenses					**$710**	**54**	**$38,340**			
	Membranectomy	66830					0	$0	$37,948	16.0%	$39,244
	Secondary IOL	**66985**				$18,169	1	$18,169			
	strabismus surgery	**67312**	$5,932	$433	$228	$6,593	**3**	$19,779			
								$236,827			**$244,912**
										TOTAL CL	$1,252,669

Table 3

Cost Per Patient in Year 2-5, IOL Arm

	Year 2	Year 3	Year 4	Year 5	Total
Office Visits	$3,313	$3,196	$3,102	$2,224	**$11,835**
Surgery	$811	$1,512	$1,455	$314	**$4,092**
Supplies	$627	$602	$718	$722	**$2,669**
Total	**$4,751**	**$5,310**	**$5,275**	**$3,260**	**$18,596**

Table 4

Cost Per Patient in Year 2-5, CL Arm

	Year 2	Year 3	Year 4	Year 5	Total
Office Visits	$3,323	$3,206	$3,111	$2,233	**$11,873**
Surgery	$1,119	$879	$645	$666	**$3,309**
Supplies	$1,610	$1,876	$1,386	$1,256	**$6,128**
Total	**$6,052**	**$5,961**	**$5,142**	**$4,155**	**$21,310**

Table 5

% IOL cost over CL cost, inclusive of year 1

	Study Total		Per Patient		% IOL over CL
	IOL	**CL**	**IOL**	**CL**	
Y1	$951,736	$692,015	$16,697	$12,141	**37.5%**
Y2	$270,860	$344,988	$4,752	$6,052	**-21.5%**
Y3	$302,652	$339,795	$5,310	$5,961	**-10.9%**
Y4	$300,636	$293,113	$5,274	$5,142	**2.6%**
Y5	$185.808	$236,827	$3,260	$4,155	**-21.5%**
Total	**$2,011,692**	**$1,906,738**	**$35,293**	**$33,452**	**5.5%**

Table 6

Number of Patients with Additional Intraocular Surgical Procedures By Treatment Group and Time Period

Type of Surgical Procedure*	Treatment					
	CL (57 Patients)			IOL (57 Patients)		
	During First Post-op Year	After First Post-op Year	Total	During First Post-op Year	After First Post-op Year	Total
Clearing Visual Axis Opacities	6	3	8†(14%)	34	8	39†(68%)
Glaucoma Surgery	1	1	2(4%)	4	2	5‡ (9%)
Repair Retinal Detachment	2	0	2(4%)	0	0	0(0%)
Repair Wound Dehiscence	0	0	0(0%)	1	0	1(2%)
IOL Exchange	-	-	-	1	2	3(5%)
Iridectomy/Iridotomy	1	0	1(2%)	1	0	1(2%)
Lysis of Vitreous Wick	0	0	0(0%)	1	0	1(2%)
Secondary IOL	0	3	3(5%)	-	-	-
At Least 1 Surgical Procedure	7	7	12§(21%)	36	8	41§(72%)

*Multiple surgical procedures could have been done during the same episode. Exam under anesthesia only or strabismus surgery only are not included.

†1 CL patient and 3 IOL patients had surgery to clear the visual axis in both time periods.

‡1 IOL patient had glaucoma surgery in both time periods.

§2 CL patients and 3 IOL patients had at least 1 surgical procedure in both time periods.