EFFECTIVITY OF BIFOCALS IN PSEUDOPHAKIC CHILDREN

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ABSTRACT

OBJECTIVE: *To measure efficacy of bifocals in pseudophakic children and to solve their problems while using bifocals.*

METHOD: *In this study, effectiveness of bifocals in pseudophakic children was measured. The children who had cataract surgery and implanted intraocular lens were included in the study. We prescribed bifocal glasses (for distance and near) to pseudophakic children. The follow up was done after 15 days and a questionnaire based proforma was filled. After follow up, we had to find out whether patients are satisfied with bifocals or not.*

RESULTS: *The total of 46 children of age upto 12 years was included in this study. After follow up, we come to know that 8.7% of patients faced strain after using bifocals. The children who faced issue while seeing from distance to near were 6.5%. 8.7% faced issue in copying work from white board. Only 2.2% faced issue while moving up stairs and down stairs. Also 2.2% faced acceptance issue when they started bifocals.2.2% felt nausea, 6.5% faced issue during playing, 2.2% faced jumping of objects, 6.5% felt problem in choosing whether which part of bifocals was used to see,2.2% faced problem while using mobile phones,4.3% faced problem while watching television. Rests of patients were highly satisfied with bifocals.*

CONCLUSION: *Patients were highly satisfied with bifocals. Very few faced minor issues but overall they were highly satisfied with bifocals and were quite happy.*

KEYWORDS: *Pseudophakia, Bifocals, Prescribed, Strain, Follow up.*

INTRODUCTION

Cataract is the leading cause of blindness in children, accounting for 190000 of the world's 1.4 million blind children (14 percent). In low-income nations, the incidence ranges from 1 to 3/10000 live births, or 10 per million of the overall population.[1] A cataract, or opacification of the lens, is one of the most prevalent causes of vision loss.[2] With an estimated 16 million persons affected worldwide, In Sub-Saharan Africa (SSA), the major cause of preventable blindness in children is cataract.[3] The importance of early diagnosis, referral, and surgery in improving outcomes cannot be overstated. According to a recent Swedish study, maternity ward examinations result in earlier referrals as compared to well-baby clinics or no formal screening.[4] Cataracts are frequently identified and treated late. This could be attributed to a variety of factors.[5]

The lens, which focuses light entering the eye onto the retina, is clouded by a cataract. If left untreated, this cloudiness can cause a reduction in vision and eventually lead to blindness. Cataracts develop slowly and can influence a person's lifestyle without recognizing it. 76 patients (146 eyes) were assessed for morphological features and causation in a study of congenital cataract in northern India. Partial cataracts are three times more prevalent than total cataracts according to research.[6] There is no medical treatment

that can stop cataracts from developing or progressing. Cataract surgery is the most common and effective treatment for cataract in unilateral pseudophakia. If the other eye is blocked or optically and/or pharmacologically penalized, amblyopia occurs after surgery. As a result, treatment is required.[7]

Primary IOL implantation is an efficient technique for preschool children to achieve aphakic visual rehabilitation quickly. Children above the age of one year can have their intraocular lenses implanted securely. The long-term safety and implications of pediatric pseudophakia are still being studied. In youngsters, intraocular lens implantation is being pursued aggressively. For children with traumatic cataracts, intraocular lens (IOL) implantation may be a safe and efficient means of optical correction.[8] The fake lens is called Pseudophakia in Latin. After inserting an artificial lens into the eye, we use this phrase. To assess the long-term evolution of refractive error changes in the eyes of children who have had a primary intraocular lens (IOL) implanted, in order to better accurately determine what IOL power should be implanted at a particular age the growth of the eye induces a refractive change in aphakic and pseudo phakic eyes during childhood. After the age of six months, cataract surgery, with or without lens implantation, appears to have no effect on the rate of refractive growth. Pseudo phakia causes considerable refractive change in the majority of youngsters. Children who have had surgery at an early age show the most obvious refractive change. It is also bigger in eyes with high-power intraocular lenses due to an optical phenomenon comparable to the impact of axial distance.[9]

The most common IOL types are anterior chamber IOLs with iris support, posterior chamber lenses, and scleral fixed IOLs. Emmetropia, consecutive myopia, consecutive hyperopia, and astigmatism can be the refractive condition of the pseudo phakic eye depending upon the biometry. Cloudy or blurry vision, faded colors, difficulty seeing at night, sensitivity to glare from sunlight, lamps, or headlights, double vision in one eye, frequent need to change your eyeglasses, and a need for bright light when reading or doing other close-up activities are the most common problems that pseudophakic patients face. During childhood, the expansion of the eye causes refractive change in aphakic and pseudophakic eyes. Cataract surgery, with or without lens implantation, after the age of six months appears to have minimal effect on the rate of refractive growth. The majority of children with pseudophakia exhibit significant refractive change. This refractive change is most noticeable in children who have had surgery at a young age. Due to an optical phenomenon similar to the impact of vertex distance, it is also stronger in eyes with high-power intraocular lenses. When there is no natural lens, there is no accommodation, and the patient is unable to do close work without the use of near add. We need to prescribe distant glasses in addition to near glasses. It's common for children to struggle with keeping their distance and near glasses separate. The use of bifocals rather than single-vision glasses appeared to decrease myopia progression slightly.[10]

Bifocal glasses are helpful for youngsters with poor near vision focusing ability. The bifocal has a plus lens that gives them the close-vision support they need without affecting their distance vision. Bifocals are eye glasses with two distinct optical powers, an upper section for distance vision and an additional power on the bottom part of the lens for close up focus, the result is vision clarity at both distance and close with one pair of glasses, bifocals are effective in supporting a child focusing for all school work and may even alleviate eyestrains, headaches, blurred vision, and fatigue.

There are usually two options in cataract surgery. Children without IOL implant are called aphakic patients. Children with IOL implant are called pseudophakic.

We usually have two options for pseudo phakic patients in glasses. Separate glasses and bifocals. Children are not happy usually with two pair of glasses for distance and near vision. It's difficult for them to change glasses again and again. Bifocals are the most accepted treatment for children and we usually prescribe bifocals. Bifocals have been shown to reduce myopic progression[11.] Even after years of wearing bifocals, there is no risk of persistent accommodation insufficiency, according to experience.[12]

Bifocal lenses have been around for over 70 years. Bifocal has made significant progress recently.[13]the bifocal, which is said to have originated in the 1700s, has long been a staple in optometry and has benefited many patients. However, in today's world, there are so

many lens options that determining which type is best for your prescription and personal choice can be difficult[13].

There are a few different varieties of bifocals to pick from, each with a different level of popularity. Executive bifocals, flat top, round segment, ribbon segment though there are many different types of bifocals, we typically use executive's bifocals in children because they are more acceptable and easier to use. The upper half of the lens is dedicated to distance vision, while the lower half is for reading. They provide a significantly larger reading area than other types of bifocals. Accommodation accuracy was found to increase with bifocals, i.e., the accommodation lag decreased, which corresponded to a decrease in near blur, leading in the VA improvements seen. For myopic youngsters with short accommodation lags, bifocals are more successful.[14]

When seeing through the bifocal segment, pair of bifocal spectacles maintain a steady level of accommodation but relax their accommodation to some extent. The children adjust nicely to wearing bifocals. Using bifocals not only increases the accuracy of concentrating on close objects, but it also 'trains' the children's accommodative capacity, with a success rate of 62.16 percent thus far. Bifocals are simple to use and take little time; unlike cycloplegic medications, they have no negative side effects.

METHOD

The materials and methods used in this research are simple and questionnaire based. Data was entered and analyzed by using statistical package for social sciences. Qualitative variables are measured by frequency and percentage. Quantitative variables are measured by mean and standard deviation. Different questions related to the use of bifocals glasses were included in the questionnaire. Data was collected from children coming in pediatric optometry clinic after cataract surgery at Mayo Hospital Lahore. We measured their near and distant visual acuity and prescribed them bifocals. After prescription use, follow ups were done after use of 15 days of glasses. They were asked for problems they were suffering after using bifocals. Questionnaire had been attached which includes almost all questions related to all problems patient could face while using bifocals. T-test was applied for quantitative variables and Chi square test was applied for qualitative variables. The value of $P < 0.05$ is considered significant.

RESULTS

This research was about the effectivity of bifocals in pseudo phakic children. Children less than 12 years were included in this research. We dealt with both congenital and traumatic cataract children.46 patients were included in this research. We prescribe bifocals in pseudo phakic children and call them for followups after 15 days. After 15 days of follow ups, we asked all those questions from them which wereincluded inourquestionnaire.

They had no issue with bifocals. All of them were highly satisfied with bifocals. Few of them faced very few problems with bifocals but overall bifocals were highly effective for pseudo phakic children.

DISCUSSION

This study was about the effectivity of bifocals in pseudophakic children. Patients were highly satisfied after using bifocals. Almost all children did not face any kind of stress issue after using bifocals. Very few faced headache issue. Analysis of patients presenting with headache shows that in very few cases, headache is related to refractive error. Similarly in presbyopia and hypermetropia headaches are infrequent. A significant proportion (up to 50%) of those patients presenting with a close relationship of headache to accommodation difficulty can be helped by glasses. It is postulated that ciliary muscle contraction is effortless and symptom less and that any headaches produced are due to associated contraction of the scalp muscles.

Children did not feel that much problem in reading and copying work from white board after using bifocals. They were quite happy and satisfied. The new concept of a combined implantation of a small-aperture IOL and a segmental-refractive bifocal lens showed good results in far and intermediate distances and functional results at near distance, while causing minimal asthenopia. The reading visual acuity at intermediate and near distances was assessed using the Salzburg reading desk.[15]

This research also showed that children has no issue while walking upstairs and down stairs and also satisfy during playing after using bifocals. They also had not any kind of acceptance issue with bifocals. Kids were

also using cell phones without any problem and were also relax during watching television. Using bifocals (+1.75 add) or reading without glasses or accommodation stimulus during the 3-year period in childhood did not correlate with adulthood refraction. Short reading distance in childhood predicted higher adulthood myopia among females. Myopia in the parents and less time spent on sports and outdoor activities throughout youth were also indicate that predicted faster myopic growth. During the first three years of life, time spent reading and doing close work was linked to myopia growth, however adulthood myopia was not predicted. Those who watched less than 3 hours of television each day had more myopia at the end of the study than those who watched more. The mean myopic progression 8 years after age 20–24 was 0.45 d 0.71 (SD), and progression was 0.5 d22 in 45 percent of individuals. This research also proved that consecutive bifocals were satisfactory and patients were highly satisfied with it.

CONCLUSION

According to this research, bifocals are highly effective for pseudo phakic children. Almost all problems of pseudo phakic children are solved by using bifocals. I will highly recommend bifocals to pseudo phakic children after this research. No matter it is congenital or traumatic cataract,patient should get done with cataract surgery as soon as possible and should start using bifocals after IOL implant. Delaying can cause severe vision loss issues

Sr #.	QUESTIONS	YES	OFTEN	SOME TIME	NO
1	Do you feel any kind of strain after using bifocals?	8.7	0.0	0.0	91.3
2	Do you feel any problem when you see from distance to near?	6.5	0.0	4.3	89.1
3	Ever faced problem while copying work from white board?	8.7	0.0	2.2	82.6
4	Do you feel any problem while moving up stairs and down stairs?	2.2	0.0	0.0	97.8
5	Do you feel any stress after using bifocals?	0.0	0.0	0.0	100
6	According to your which glasses are better, separate or bifocals?	100	0.0	0.0	0.0
7	Did you face any kind of acceptance issue when started bifocals?	2.2	0.0	0.0	97.8
8	Ever faced blurring of vision with near work or far distance?	10.9	0.0	0.0	84.8
9	Ever faced headache issue after using bifocals?	2.2	0.0	2.2	95.7
10	Ever felt nausea after using bifocals?	2.2	0.0	4.3	95.7
11	Do you face any problem during playing?	6.5	0.0	0.0	93.5
12	Ever experienced jumping of objects?	2.2	0.0	0.0	97.8
13	Ever faced difficulty in choosing whether which part of bifocal is use to see?	6.5	0.0	0.0	93.5
14	Any problem while using mobile phones?	2.2	0.0	0.0	97.8
15	Any problem while watching television?	4.3	0.0	0.0	95.7

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