Original Article

Visual Outcome of Clear Lens Extraction (Phacorefractive) in Myopia Above -12.0 Dioptres

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Purpose: A non-comparative study to evaluate the visual outcome of clear lens extraction (phacorefractive) in myopic eyes of 12 dioptres and above using acrylic foldable intraocular lenses (IOLs).

Material and Methods: The study was conducted in a private setup from Jan 2004 to Dec. 2006. Forty eyes of 20 patients underwent clear lens extraction by phacoemul-sification using single piece acrylic foldable IOL. Twenty eight eyes were of males (70%) and 12 were of females (30%). Their ages ranged between 21 years and 36 years, with mean age of 28.5 years. Myopes of -12 D to -20.0 D with one year stability of myopia and contact lens wearing intolerance were included in this study. Prophylactic 360 degree retinal Argon laser photocoagulation was performed only where it was deemed necessary. All surgeries were performed by the same surgeon and were uneventful.

Results: Preoperative spherical correction was between -12.0 to -20.0 D. Postoperative spherical correction was -0.50 to -2.0 D. Preoperative best spectacle-corrected visual acuity (BSCVA) was 6/12 or better in 50% of the eyes which increased to 70% postoperatively. No vision threatening complications were noted.

Conclusion: Results of clear lens extraction with foldable acrylic IOL implantation are satisfactory and practically acceptable.

Clear lens extraction (CLE) for the correction of both myopia and hyperopia was first introduced by Fukala in 1890[1]. Clear lens extraction by phacoemulsification is an acceptable method in refractive surgery[2]. The main problem with CLE is higher chances of retinal detachment (RD) in myopes following surgery[3]. Intact posterior capsule and implantation of IOL in the bag lower the incidence of RD[4-6].

We present the results of a study including 40 myopic eyes of -12.0 dioptres to -20.0 dioptres for the visual outcome following CLE and foldable acrylic IOL implant. The purpose of the study was to evaluate the visual outcome of clear lens extraction (phacorefractive) in highly myopic eyes using foldable acrylic IOLs.

MATERIAL AND METHODS

This study was carried out in a private setup from Jan 2004 to Dec. 2006. During a period of three years (January 2004 to December 2006), 40 eyes of 20 patients were selected to participate in this study. Each patient who was included in this study had stable myopia for at least one year and contact lens wearing intolerance. Each patient had bilateral myopia ranging between -12.0 and -20.0 diopters with astigmatism no greater than 2.0 D. Patients under the age of 21 years were excluded. Also excluded were those with corneal diseases, cataract, glaucoma, uveitis or a history of retinal detachment.

A detailed history was taken and complete eye examination, including anterior and posterior segment, was performed. Special attention was given to the presence of any peripheral retinal lesions. The eyes deemed to be at risk with peripheral retinal degenerations or breaks were treated with 360 degree prophylactic argon laser photocoagulation atleast two weeks prior to surgery. Previous refractive prescriptions were examined to confirm the stability.

A counseling session was performed with patients and their attendants regarding surgical outcomes and chances of residual myopia. An informed consent was obtained.

Dioptric power of the posterior chamber IOL was calculated by SRK-T formula target of surgery was emmetropia. When the emmetropic lens was not available, our choice was to favour a slight residual myopia, as apposed to hyperopia. All surgeries were performed by the same surgeon using retrobulbar and/or topical anesthesia. After scrubbing the eye with 5% povidone iodine, sterile drapes were applied. A small scleral tunnel was created superotemporally 1 mm posterior to the limbus using slit knife 3.2 pointed bevel up. In all cases lens was aspirated with phacoemulsification using vacuum only. Thin layers of cortex were removed using Simco cannula.

Single piece Acrysof IOL (Alcon) was implanted into the capsular bag with injector. Subconjunctival injection of Dexamethasone 0.5 mg and Gentamycin 20 mg were given at the end of surgery and eye pad was applied. Eye pad was removed next day. Antibiotic-steroid eye drops were advised.

All patients were followed up on first postoperative day then at one week, one month and six months. Refractive correction was checked at one month and then six months.

RESULTS

Forty eyes of twenty patients were included in this study. All patients were screened according to inclusion and exclusion criteria. All patients were between 21-36 years of age (mean 28.5 years). Out of forty eyes, twenty eight belonged to males (70%) while twelve were females (30%) (Table I). Patients were followed up one day after surgery, then one week, one month and six months postoperatively. Follow up ranged between one week to six months (mean 3 months).

On first postoperative day, no wound leakage or iris prolapse was noted. Striate keratopathy was found in seven eyes (17.5%). This cleared up quickly during the follow up. Anterior chamber reaction was present in ten cases (25%).

Three eyes (7.5%) behaved aggressively with exudative papillary membrane. Partial Descemet's detachment adjacent to the incision was seen in six cases (15%). Single stitch had to be applied in two cases (5%) due to the ragged margins of the incision. Eleven eyes (27.5%) were diagnosed with posterior capsular opacification between ten to sixteen months postoperatively. They were treated with Nd: YAG laser for posterior capsulotomy (Table 2). None showed any deleterious effect of YAG capsulotomy.

Table I: Patient's profile (n=40)

Patients n (eyes)	Age in years	Male n (%)	Female n (%)
20 (40)	21-36 (mean 28.5)	14 (70)	6 (30)

Table 2: Complications

Complications	Eyes n (%)
Striate keratopathy	7 (17.5)
Anterior chamber reaction	10 (25)
Exudative pupillary membrane	3 (7.5)
Partial descemet's detachment	6 (15)
Ragged incision margin	2 (5)
Posterior capsular opacification	11 (27.5)

Table 3: Pre and postoperative vision

BSCVA	Preperative n (%)	Post-operative	
		Day 1	Six Months

	Eyes n (%)	Eyes n (%)	Eyes n (%)
6/6	--	1(2.5)	1(2.5)
6/9	9 (22.5)	9(22.5)	12(30)
6/12	11 (27.5)	12(30)	15(37.5)
6/18	8(20)	7(17.5)	8(20)
6/24	10(25)	8(20)	3(7.5)
6/36	2(5)	3(7.5)	1(2.5)

BSCVA= Best spectacle corrected visual acuity

Pre- operative visual acuity is detailed in Tables 3. On first post-operative day, vision was 6/6p in one eye (2.5%) and 6/9p in nine eyes (22.5%). Twelve patients gained 6/12 (30%), seven were 6/18 (17.5%), eight eyes (20%) had 6/24 vision while three were (7.5%) 6/36 (Table 3).

Postoperative astigmatism was found in 18 eyes (45%) ranging from 0.75 to 2.5 D. Three patients (7.5%) required spherical correction of -0.50 to -2.0D. Majority of the patients were given reading additions according to their near requirements.

At the end of four weeks postoperatively, final correction of glasses were prescribed. At the end of six months, best spectacle corrected visual acuity (BSCVA) was recorded (Table 3).

DISCUSSION

Clear lens extraction has gained acceptance around the world as form of treatment for high myopia. Although our numbers were small, the results favour this assertion. There is a clear match with results obtained in other studies[7]. Visual outcomes on long term follow-up remains stable.

Role of prophylactic argon laser photocoagulation was controversial[1]. That's why only susceptible eyes were treated with Argon laser prior to surgery.

Majority of the eyes improved and reached a final vision equal to or better than the preoperative levels. Preoperative vision was 6/12 or better in 50% of the eyes (Table 3) which increased to 70% postoperatively (Table 4). This was probably because of elimination of aberrations introduced by high spectacle correction by the IOL.

Gris et al[8] reported BCVA of 6/9 or better to have increased from 64.9% preoperatively to 88.5% postoperatively in their patients.

In the study by Vega et al[9]. final best spectacle corrected visual acuity (BSCVA) was better than preoperative BSCVA in 83.68%, equal in 12.63% and worse in 3.68% cases.

At six months postoperatively, refraction was stable, the mean spherical correction being -1.25D with a range of -0.50 to -2.0 D[7,8].

Guell et al[2] also confirm the same results of clear lens extraction. Their study mentions the improvement in BSCVA and mean postoperative spherical equivalent of -1.05D.

In our hands, the complication rate was low and no vision threatening complication, like retinal detachment, was seen. Clear lens extration through scleral tunnel with IOL implantation has been found to be relatively safe in experienced hands[10].

Counseling plays a crucial role in patient's acceptance to the surgical outcomes especially residual myopia[11]. In our study, this helped a great deal.

CONCLUSION

In experienced hands, clear lens extraction using phacoemulsification and implantation of acrylic foldable IOL is a relatively safe and effective way to treat high myopia.

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