

Phacoemulsification Cataract Extraction in Patients with Fuchs' Heterochromic Iridocyclitis

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Abstract. Fuchs' heterochromic iridocyclitis commonly presents with chronic mild uveitis with predisposition to cataract and glaucoma. There are inherent risks of major intra and postoperative complications in uveitic cataracts. The aim was to evaluate the efficacy of phacoemulsification surgery with acrylic foldable intraocular lens in patients with Fuchs' heterochromic iridocyclitis. Thirteen eyes of 12 patients were analyzed with Fuchs' heterochromic iridocyclitis with cataracts who underwent phacoemulsification with in-the-bag foldable intraocular lens implantation. The mean follow up was 7.5 months. All patients had postoperative visual acuity better than 20/25 ($p < 0.00023$). All of them had quite intra and post operative periods without major post operative complications. One patient developed transient cystoid macular edema which resolved with topical steroids. Phacoemulsification with hydrophobic acrylic IOL is the safe technique of cataract removal in patients with Fuchs' heterochromic Uveitis.

Keywords: Fuchs' heterochromic iridocyclitis, Phacoemulsification, Acrylic IOL, Visual acuity.

Introduction

Fuchs' heterochromic iridocyclitis (FHI) (also known as Fuchs' heterochromic cyclitis or Fuchs' heterochromic uveitis) is a chronic unilateral (or rarely bilateral) iridocyclitis appearing with the triad of heterochromia, predisposition to cataracts and glaucoma, and keratic precipitates on the posterior corneal surface^[1]. The uveitis is mostly seen in the age group between 20 and 40 years old^[2].

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The diagnosis of FHI is based on the criteria of Kimura which includes small white diffuse stellate keratic precipitates on the corneal endothelium, mild anterior chamber cells and flare, lack of iridocapsular or posterior synechia, vitreous cells, glaucoma, and iris atrophy with or without heterochromia^[2].

Cataract develops usually secondary to low-grade chronic iritis or long duration of steroid treatment. The incidence of cataract ranges from 15% to 75%^[3,4]. Fuchs' heterochromic iridocyclitis (FHI) is reported to have a better cataract surgery outcome than the other uveitic cataracts due to lack of posterior iridocapsular synechia^[3,4].

The aim of this study was to evaluate the safety and efficacy of phacoemulsification cataract extraction with foldable single piece intraocular lens (IOL) implantation in patient with FHI.

Subjects and Methods

Retrospective analysis of the records of 12 patients diagnosed with FHI and cataract that underwent cataract extraction between January 2006 and July 2010 in King Abdulaziz University Hospital. The diagnosis was made according to the criteria of Kimura^[2].

All patients were free of inflammation at least one month before surgery. Before the day of surgery the patients were started on topical prednisolone acetate 1% (Pred Forte[®] Eye Drops, Allergan, Inc., Irvine, CA USA), non-steroidal diclofenac eye drops (Voltaren, Novartis, Basel, Switzerland) and moxifloxacin (VIGAMOX[®], Alcon Laboratories, Inc. Fort Worth, TX USA) eye drops given 4 times a day.

All patients underwent uneventful phacoemulsification under peribulbar anesthesia, and by the end of the surgery, a one piece hydrophobic acrylic posterior chamber intraocular lens (Acrysoft[®], Alcon Laboratories, Inc. Fort Worth, TX USA) was inserted in the bag. Sun conjunctival injection of dexamethasone sulphate was also given at the end of the surgery.

The patients continued the same preoperative topical eye drops 6 times daily and tapered over 8 weeks. Patients were examined at 1st post day and reviewed after 1st, 4th and 6th weeks and followed for at least 6 months.

At each visit, Snellen's test for visual acuity, intraocular pressure (IOP), anterior chamber and vitreous inflammation, and presence and absence of posterior synechiae and cystoid macular edema (CME), posterior capsule opacity and IOL precipitates were evaluated. Fundoscopy was performed at 5 weeks and every 3 months.

Data were analyzed using SPSS 11.0 for Windows software (SPSS Inc.). Visual acuity data were converted to logarithm of the minimal angle of resolution (logMAR) (values to calculate the mean). A p-value less than 0.05 was considered statistically significant.

Results

In this study, 13 eyes of 12 patients underwent phacoemulsification for visually significant cataract. The mean age were 38 +/- 15 (range 22 to 56 years). The follow up mean was 7.5 (range 4-13) months. Patients were predominantly male (61.5%). One patient had bilateral surgery. The preoperative best corrected visual acuity ranged from 20/30 (logMAR = 0.18) to 20/60 (logMAR = 0.48), postoperative best corrected visual acuity improved in all patients ranged from 20/20 (logMAR = 0.0) to 20/25 (logMAR = 0.1). It was statistically significant (0.00023) (Fig. 1, Table 1).

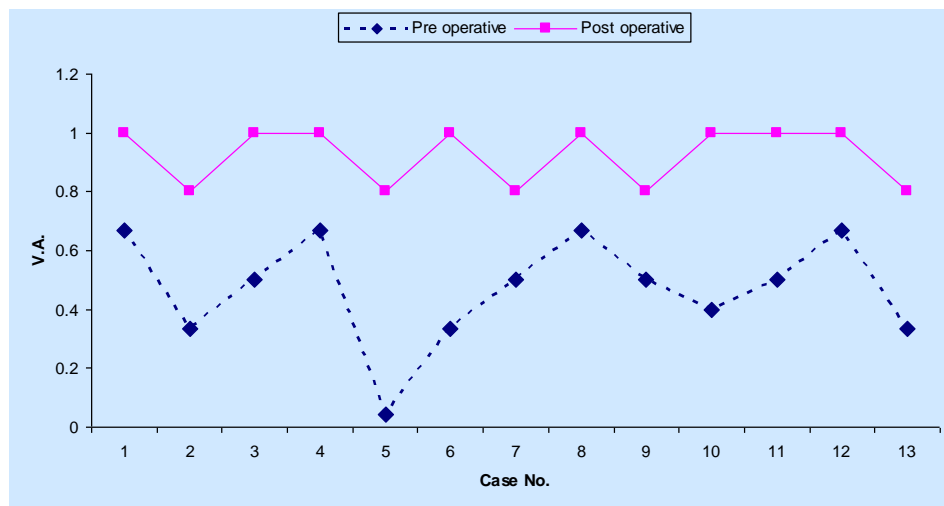


Fig. 1. Linear graph for pre and post operative distant corrected visual acuity results at 2 months follow up.

Table 1. Pre- and post-operative distant corrected visual acuity results at 2 months follow up.

	Pre operative	Post operative	P
LogMAR * Visual acuity			
Range	0.043-0.667	0.800-1.000	
Mean \pm S.D.	0.470 \pm 0.183	0.923 \pm 0.101	0.00023*

(*Logarithm of the minimum angle of resolution, arithmetic mean, standard deviation, for categorized parameters, t test was used for parametric data. The level of significance was 0.05.)

The type of cataract was posterior subcapsular in 11 eyes (84.6%), and posterior subcapsular and nuclear cataract in 2 eyes (15.4%). Anterior chamber reaction was present postoperatively in 11 eyes (84.6%) in the form of +2 cells and 2 eyes (15.4%) showed +3 cells, all disappeared by the second week. No patient had severe post operative inflammation. One patient developed 1+ vitreous haze postoperatively and disappeared after 2 weeks. Lens precipitation did not occur in all eyes (Table 2).

There was no elevation of intraocular pressure postoperatively in all patients. One patient was on antiglaucoma medications in the form of beta blockers and was continued postoperatively. Clinically detected cystoid macular edema (CME), which resolved with topical steroids, occurred in 1 eye at the 4week follow-up period. At the final follow-up, no eye had CME.

Discussion

The etiology for inflammation of the iris and the ciliary body in FHI is unknown. Several unsubstantiated theories have been proposed including infection from toxoplasma gondii, immune dysfunction, infiltration of sensitized lymphocytes and chronic herpetic infection. In addition, because iris heterochromia occurs in congenital Horner's syndrome, a neurogenic factor contributing to inflammation and structural changes has been proposed^[5].

Cataract formation is a common complication of FHI and is reported to have better cataract surgery outcomes than other uveitic cataracts^[6-20]. The lens opacities are usually posterior subcapsular in morphology (typical of complicated cataract) and may rapidly progress. It has a reported incidence of 15% to 75%, with most studies reporting a 50% incidence^[3-9]. Patients usually present with cataract at 40 years of age or older^[1]. In this study, the mean age at presentation was 31.36 years.

Table 2. Results of phacoemulsification cataract extraction and posterior chamber intraocular lens implantation in 13 patients with Fuchs' heterochromic uveitis.

Patient No./Eye	Age	Sex	OD/OS	Pre Op V.A	Cataract Type	Pre Op AC Reaction	I.O.P	Eye Drops	D.1	Post Operative							
										W.1	W.4	W.8	V.A	I.O.P W.8	Complication	Follow Up	
1/1	43	M	OD	20/30	PSCC	1/2+	18	None	2+	1+	1/2+	1/2+	20/20	17	None	6 months	
2/2	22	M	OS	20/60	PSCC	1/2+	12	Acular	3+	1+	1/2+	1/2+	20/25	14	PCO	8 months	
3/3	40	M	OS	20/40	PSCC	Rare	12	None	2+	1/2+	rare	rare	20/20	11	None	5 months	
4/4	54	M	OS	20/30	PSCC	Rare	16	None	1+	1/2+	rare	rare	20/20	16	None	10 months	
5/5	30	F	OD	20/40	PSCC	1/2+	14	Voltaren	2+	1+	1/2+	1/2+	20/25	11	None	10 months	
6/6	23	M	OD	20/60	PSCC	1/2+	20	Acular	2+	1+	1/2+	1/2+	20/20	19	None	4 months	
7/7	28	M	OS	20/40	PSCC	1/2+	17	None	3+	1+	1/2+	1/2+	20/25	17	None	5 months	
8/8	36	M	OS	20/30	PSCC	Rare	13	None	2+	1/2+	1/2+	rare	20/20	15	None	7 months	
9/9	33	F	OS	20/40	PSCC	1/2+	17	Acular Betagan	2+	1+	1/2+	1/2+	20/25	15	None	9 months	
10/10	59	F	OD	20/50	PSCC Nuclear	1/2+	15	Voltaren	2+	1+	1/2+	1/2+	20/20	12	None	8 months	
10/11	59	F	OS	20/40	PSCC Nuclear	1/2+	15	Voltaren	2+	1+	1/2+	1/2+	20/20	14	None	8 months	
11/12	30	F	OD	20/30	PSCC	1/2+	12	None	1+	1/2+	1/2+	1/2+	20/20	12	None	6 months	
12/13	39	M	OS	20/60	PSCC	1/2+	15	None	2+	1+	1/2+	1/2+	20/25	15	None	13 months	

(M = Male; F = Female; OD = Right Eye; OS = Left Eye; PSCC = Posterior subcapsular cataract; IOP = Intraocular pressure; D.1 = Post operative day 1; W.1 = Post Operative week 1; W.4 = Post operative week 4; W.8 = Post operative week 8.)

Even though, most of the studies report an excellent prognosis^[6-8], there are some studies which reported significant complications^[9-10].

Severe postoperative anterior chamber inflammation is the major concern in cataract surgery in patients with uveitis^[12]. Fuchs' heterochromic iridocyclitis (FHI) is not usually associated with severe uveitis in the postoperative period. Typically, these patients have mild anterior segment inflammation that resolves over a year. There were no cases of severe post operative uveitis in this study. Ten eyes (77%) had mild anterior chamber reaction at 8 weeks which resolved after 3 months and remained free of recurrence at the final follow-up ranged from 4 months to 13 months with a mean follow up of 7.5 months. Other studies^[8-20] reported a 31% incidence of early uveitis and 13.7% with late recurrences.

Modern phaco techniques with smaller incision and in the bag lens placement, with no iris contact of a hydrophobic acrylic lenses had improved the post operative results. This yield a better capsular biocompatibility and a less inflammatory reaction^[15].

All of this study patients had a good visual acuity post operatively in accordance with the published studies^[10-20]. This could be related to the quite post operative period, better IOL biocompatibility with absence of IOL deposits and posterior capsular opacification and lesser incidence of CME (one patient).

Most studies cite glaucoma as one of the most severe postoperative complications in these patients^[11-16]. The incidence of glaucoma after cataract surgery varies from 3% to 35% in these studies. One of this study's patients was on antiglaucoma medications preoperatively and was remained controlled postoperatively

Vitreous opacities are commonly reported in eyes with FHI, with an incidence of 12% to 50%^[5]. In this study, transient vitreous cells in one patient were encountered. Cystoid macular edema is a major obstacle to visual rehabilitation after cataract surgery in patients with uveitis^[16,19]. A lower incidence of CME (one case 7.6%) was found as was reported in other studies with FHI^[16-20].

This present study suffers from the inherent drawbacks of any retrospective study. In addition, fewer patients and limited follow up was encountered. However this is the first study reported regarding the efficacy of phacoemulsification in our part of the world^[9].

Conclusion

In conclusion, phacoemulsification with IOL implantation was safe in patients with Fuchs' heterochromic uveitis. All of our patients achieved a visual acuity of 20/25 or better. Modern phacoemulsification surgery with hydrophobic foldable in the bag intraocular lens implantation may be the preferred technique of cataract surgery in the patients with FHI.

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عملية استحلاب العدسة لعلاج الماء الأبيض عند مرضي التهاب قزحية مغاير الصباغ لفوكس

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المستخلص هدف هذه الدراسة هو تقييم فعالية جراحة الساد عن طريق استحلاب العدسة (الفاكو) مع استخدام عدسة مطوية إكربليكية في المرضى الذين يعانون من مياه بيضاء نتيجة التهاب قزحية وجسم هدي مغاير الصباغ لفوكس . لقد قمنا بدراسة^(١) عين (١٢) مريض تم لهم إجراء عملية استخراج الساد بالاستحلاب مع وضع عدسة مطوية إكربليكية في المحفظة وكان متوسط فترة المتابعة سبعة أشهر ونصف . وجدنا أن كل المرضى كان لديهم حدة إبصار أفضل من ٢٥/٢٠ بعد العملية ، وكانت فترة الجراحة وما بعد الجراحة هادئة بدون مضاعفات رئيسية وكبرى وسجلنا حدوث وزمة لطخة كيسية عابرة في حالة واحدة وتم علاجها بالكورتيزون الموضعي . إن استحلاب العدسة (الفاكو) مع وضع عدسة إكربليكية داخل العين هو تقنية آمنة لاستخراج الساد عند المرضى الذين يعانون من التهاب القزحية والجسم الهدي مغاير الصباغ لفوكس .