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Phacoemulsification Cataract Extraction in Patient with Behçet's Disease

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Abstract. The safety and the efficacy of phacoemulsification cataract surgery in Behçet's disease are evaluated in this report. Retrospective study of phacoemulsification cataract surgeries performed in patients with Behçet's disease in our hospital. All patients were free of inflammation for 3 months prior to surgery. Patients were followed up by visual acuity and for signs of ocular relapses of Behçet's disease for at least 4 months. Thirteen eyes of 8 patients with Behçet's disease were enrolled in the study. There were seven males and one female patient; both eyes were included in 5 male patients. The mean age at time of presentation was 29.5 (range 25-42) years. The mean pre-operative best corrected visual acuity was 0.94 (range 0.48 to 2.0). The mean postoperative visual acuity was 0.35 (range 0.1 to 1.3) ($p = 0.0002$). One patient had posterior capsular opacification, while another patient developed subretinal choroidal neovascular membrane. Two (15.3%) patients had transient rise of the intraocular pressure. Cataract surgery with phacoemulsification is safe and effective in the patients with Behçet's disease, provided they were well managed before, during and after the surgery.

Keywords: Phacoemulsification, Behçet's disease, Ocular relapse, Visual acuity.

Introduction

Behçet's disease is a multisystem disorder characterized by widespread necrotizing vasculitis. Extraocular systemic manifestations include

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genital ulcers, oral mucosal ulcers and erythema nodosum. Ocular Behçet's disease is characterized by recurrent anterior and posterior non granulomatous uveitis and retinal vasculitis[1-3]. It is common in the Middle East and Far Eastern countries. It has been reported that Behçet's disease is the second most common uveitic entity following idiopathic anterior uveitis in our part of the world[4]. Cataract formation is the most common anterior segment complication, either from the disease itself or from its therapy[1,5].

The cataract surgery in Behçet's disease patients is frequently complicated by the exaggerated post of operative inflammation[6-11]. In addition, it may precipitate ocular relapse of Behçet's disease, which can worsen already compromised macula and optic nerve[11].

Better phacoemulsification techniques and instrumentation should reduce the incidence of post operative complications[6-11]. The aim of this study was to evaluate the safety and efficacy of phacoemulsification cataract surgery in patients with Behçet's disease.

Materials and Methods

Retrospective analysis of the records of patients diagnosed with Behçet's disease clinically are based on the diagnostic criteria of the International Study Group Criteria for Behçet's disease[13]. It underwent an uneventful phacoemulsification between March 2005 and June 2008. This includes 13 eyes of 8 patients; 5 patients had bilateral surgery.

All patients were free of systemic or ocular inflammations three months prior to surgery. Patients with signs of optic atrophy or macular atrophy were excluded from the study. Every one of these patients were on azathioprine (Imuran®) and colchicine, except one which was on cyclosporine. All of our patients were kept on their immunosuppressive therapy post operatively, were not steroid responders, and had normal pre operative intraocular pressure.

Three days before the surgery, all these patients received systemic steroids in the form of oral Prednisolone 40 mg and tapered post operatively over 4 weeks. Topical medications were in the form of prednisolone acetate 1% (Pred Forte®, Allergan, CA USA) eye drops, diclofenac 0.5% (Voltaren®, Novartis, Basel, Switzerland) eye drops and

moxifloxacin hydrochloride 0.5% (VIGAMOX®, Alcon, Fort Worth, TX USA) eye drops three days prior to surgery.

Phacoemulsification was done in all the patients with local peribulbar anesthesia using Xylocaine™ 2% and Marcaine® 0.5%. These patients had nucleus density ranging from 2 to 3. Synechiolysis was done by fine iris spatula under viscoelastic (PROVISC®, Alcon, Fort Worth, TX USA) cover. The pupil was dilated by using stretch pupiloplasty. Capsulorrhexis was done and then hydrodissection with hydrodelamination was performed. Various nucleus removal techniques were used depending on the degree of hardness of nucleus and the type of cataract aiming for the minimal manipulation in the anterior chamber. Hydrophilic acrylic foldable intraocular lens (AcrySof®, Alcon, Fort Worth, Texas, USA) was implanted in the bag. Sub-conjunctival 20 mg of Methyl Prednisolone was injected at the conclusion of surgery.

Post operatively, all patients received topical regimen in the form of prednisolone acetate 1% eye drops, Moxifloxacin hydrochloride 0.5% eye drops, and cyclopentolate eye drops 0.5%. Patients were instructed to taper the drops over three months period based on the degree of intraocular inflammation. Anti glaucoma medications were introduced if the intraocular pressure (IOP) rose during the follow up period. Patients were followed by visual acuity, IOP and for signs of ocular attacks defined as new development of aqueous cells, flare, fibrin deposits, hypopyon or their combinations or by development of retinal exudates, hemorrhage and retinal vasculitis or their combination defined as retinitis. Patients were followed 24 h postoperatively, then on weeks 1, 4, 8, 12 and 4 months and bimonthly thereafter.

Results

Thirteen eyes of 8 patients were included in the study. Five patients had bilateral surgery. There were 7 males and one female patient.

The mean age at time of presentation was 29.5 (range 25-42) years, and the mean follow-up period was 18.25 ± 6.1 months (range 4 to 30 months). Patients' demography, pre operative visual acuity, anterior chamber reaction, post operative visual acuity, complications and follow up were shown in Table 1.

Visual acuity was improved in all the patients, and was measured using the logarithm of minimum angle of resolution unit (logMAR) by using a distant Snellen equivalent converted geometrically. The mean pre-operative best corrected visual acuity (BCVA) was 0.94 (range 0.48 to 2.0); the mean post operative BCVA was 0.35 (range 0.1 to 1.3). This was statistically significant (p = 0.0002) ("student's" *t* test). Table 2, box plot Fig. 1.

Table 1. Patient's demography, pre- and post-visual acuity, anterior chamber inflammation, complications and follow up.

Patient No./Eyes	Age	Sex	Pre Operative Visual Acuity	Post Operative Visual Acuity	AC Cells Day One	AC Cells 4 Weeks	Complications	Follow up in months
1/1	31	M	0.7	0.3	+1	Quite	Nil	16
1/2	35	M	0.6	0.1	+1	Quite	Nil	16
2/3	42	M	1	0.3	+1	Quite	Nil	4
2/4	32	M	0.7	0.4	+1	Quite	Glaucoma	4
3/5	36	M	1.3	0.18	+4	Quite	Nil	9
3/6	40	M	1	0.3	+1	Quite	Nil	9
4/7	33	F	0.7	0.18	+3	Quite	Glaucoma	15
5/8	34	M	0.48	0.1	+3	Quite	Nil	30
5/9	30	M	2	1.3	+2	Quite	CNVM	30
6/10	28	M	0.7	0.6	+3	Quite	Nil	8
6/11	29	M	1	0.4	+4	+1	Nil	8
7/12	25	M	1.3	0.18	+2	Quite	Nil	12
8/13	40	M	0.7	0.1	+3	Quite	PCO	10

Visual acuity measured by logMar = logarithm of the minimum angle of resolution.
AC = Anterior Chamber.
CNVM = Choroidal Neovascular Membrane.
PCO = Posterior Capsule Opacification.

Table 2. Comparison between pre and post operative visual acuity.

	Pre Operative	Post Operative
Range	0.48 - 2.0	0.1 - 1.3
Mean	0.94	0.35
SD	0.41	0.32
t	4.05	
p	0.0002*	

* *"student's" t test (p 0.001)*

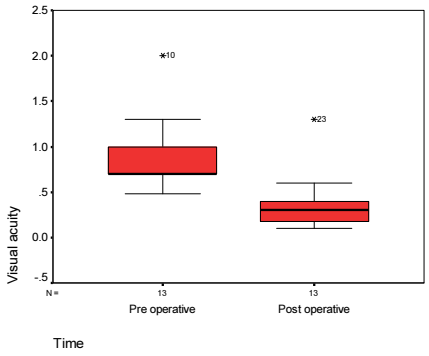

Fig. 1. Box plot of the pre and post operative visual acuity.

Relapse of the inflammation occurred in one eye (7.7%) within six months after surgery in the form of retinitis. Hence, it was treated with reinstitution of full course of systemic immunosuppressive and corticosteroids.

Regarding the post operative complications, one (7.7%) patient had posterior capsular opacification (PCO) three months after the cataract surgery and was treated with Neodymium: yttrium aluminum garnet laser (ND: YAG laser) capsulotomy. One patient developed subfoveal post inflammatory subretinal choroidal neovascular membrane (CNVM) (7.7) eight months after the cataract surgery and received two intraocular injection of avastin which ultimately healed with macular scar. Two (15.3%) patients had transient rise of the intraocular pressure and was controlled medically by beta blockers.

Discussion

Behçet's disease is a multi system, immune-complex mediated occlusive vasculitis characterized by recurrent attacks of acute severe inflammation involving retinal arteries and veins[1-3]. It is such a visually incapacitating disease which warrants the most powerful available treatment, once the diagnosis is made[13].

The immunosuppressive drugs (azathioprine, cyclosporine, alpha interferon in combination or as monotherapy), anti tumor necrosis factor agents (Adalimumab and Infliximab) along with corticosteroids have been the mainstay of treatments for ocular Behçet's disease[13,14].

Visual prognosis after cataract surgery in eyes with chronic Behçet's disease is affected by the pre-existing posterior segment sequelae, like

occlusive vasculitis and optic atrophy[1,2]. Furthermore, it is known to have severe post operative complications such as exaggerated post operative inflammatory reaction, posterior capsular opacification, glaucoma and pupillary membrane formation[6-11] which may affect the ultimate post operative visual improvement following the cataract surgery. Hence, the need for careful preparation of these patients preoperatively and effectively can control inflammation postoperatively by systemic immunosuppressives, and by systemic and topical corticosteroids.

Recently the outcome of cataract surgery in patients with uveitis has improved mainly with the improvement of surgical techniques *i.e.,* phacoemulsification, availability of high quality viscoelastic materials and foldable intraocular lenses[9,15,16]. The in the bag placement of the intraocular lens has eliminated the source of irritation to the ciliary sulcus. Süllü *et al.*[9] found out in 19 eyes of 12 patients with Behçet's disease that the eyes who underwent phacoemulsification had fewer complications than the extracapsular cataract extraction

In this study, all patients with Behçet's disease underwent phacoemulsification with in the bag placement of foldable IOL under the cover of immunosuppressive therapy, systemic and topical steroids in the pre operative and post operative periods.

Similar to our study, Berker *et al.*[15] studied phacoemulsification cataract surgery in 40 eyes of 34 patients with Behçet's disease. In their patients visual acuity improved in 72.5% of patients. PCO was the most frequent post operative complication (37.5%) followed by posterior synechiae in 17.5%, severe inflammation in 12.5%, cystoid macular edema in 12.5%, epiretinal membranes in 7.5%, and optic atrophy in 5%.

They excluded the patients with macular lesions and optic atrophy.

In this current study, all patients (13 eyes of 8 patients) had significant improvement of vision (Table 2). It also excluded the eyes with macular lesions and optic atrophy. Visual acuity improved by 0.3 or more logMar units in all patients and 84.6% of eyes attained a final visual acuity of 0.5 or better. These results are also comparable to the other reports of phacoemulsification and intraocular lens implantation in uveitic eyes[15-19]. Kawagushi *et al.*[17] in a study on phacoemulsification cataract and intraocular lens implantation in patients with uveitis with

different etiologies found that in the Behçet's group (11 eyes) the improvement in visual acuity was within 0.7. He attributed this poor improvement to the preexisting optic atrophy or macular degeneration in these patients. In this study, good preparation before and after surgery, and the exclusion of these cases could have improved the results.

The frequency of PCO in our study was lower (7.7%) than the other studies. Estefanous *et al.*[19] reported a rate of 31%. This could be attributed to the meticulous clean up of cortical material, polishing of the capsule and the use of a lens material (AcrySof®) that has a low PCO incidence. However, Rauz *et al.*[16] in their study had found that occurrence of PCO was more related to the inflammation than the lens material.

In this study only one (7.7%) patient developed relapse of the intraocular inflammation after six months and was controlled with the systemic medications. This low percentage of relapses in our study could be related to good preparation of the patients pre-operatively and good control of inflammation post-operatively. Matsuo *et al.*[11] studied the factors, which could result in ocular relapses following phacoemulsification in 16 eyes of 12 patients. They concluded that the occurrence of ocular attack within one year before surgery was significantly related to the post operative ocular relapse of Behçet's disease.

In this current study, one (7.7%) eye developed subfoveal post inflammatory CNVM eight months after the surgery, which was treated with two injections of intravitreal avastin. The CNVM ultimately healed by scarring. There are no reports of occurrence of subretinal choroidal neovascular membrane after cataract surgery in Behçet's disease in the literature.

This present study suffers from the inherent drawbacks of a retrospective study. However, to our knowledge, this is the largest study evaluating the phacoemulsification surgery in Behçet's disease in this part of the world.

In conclusion, phacoemulsification cataract surgery with foldable intraocular lens is well tolerated in patients with Behçet's disease. It can be considered as a safe procedure with proper patient selection, good pre

and post operative control of inflammation, and adequate suppression of the vasculitis.

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جراحه استحلاب العدسة البلّورية عند المرضى المصابين بداء بهجت

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قسم العيون ، كلية الطب، جامعة الملك عبد العزيز ومركز مغربي للعيون جدة - المملكة العربية السعودية

المستخلص . لتقييم فعالية وأمان استخراج الساد عن طريق استحلاب العدسة البلّوريّة عند المرضي المصابين بداء بهجت، تم اعتماد طريقة مراجعة الحالات التي تم فيها استخراج الساد عن طريق استحلاب العدسة البلّورية في ١٣ عيناً لثمانية مرضى يعانون من داء بهجت، بحيث أن كل هؤلاء المرضى كانوا خالين من التهابات العين لمدة ثلاثة أشهر قبل العمل الجراحي، ومن ثم تم إجراء الجراحة باستخدام الفاكو مع زرع عدسات مطوية، ومن ثم متابعة المرضى بقياس حدة الإبصار ومراقبة الهجمات الالتهابية لمدة أربعة أشهر على الأقل، تم إجراء العمليات على ٧ ذكور وامرأة واحدة، خمسة ذكور فى العينين. متوسط العمر ٢٩ سنة ونصف، وكان متوسط القدرة البصرية قبل العملية ٠,٤٩ (٠,٤٨ إلى ٢,٠) ومن ثم تحسن متوسط القدرة البصرية بعد العملية إلى ٠,٣٥ (٠,١ إلى ١,٣) وكان هذا التحسن مهمًا احصائيًا.

وجد لدينا مريض واحد (٧,٧٪) حدث لديه تكثف بالمحفظة الخلفية للعدسة، ومريض واحد (٧,٧٪) تطور لديه غشاء وعائي متنامي تحت الشبكية، ومريضان (٣,١٥٪) حدث لديهم ارتفاع عابر في ضغط العين وتم السيطرة عليه بحاصرات بيتا. جراحة الساد باستحلاب العدسة هو إجراء آمن وفعال في المرضى المصابين بداء بهجت، وذلك بعد تحضير المرضى بشكل فعال للعمل الجراحي ومتابعتهم بشكل جيد بعد الجراحة.