CLINICAL STUDY

Is the first post-operative day review necessary following uncomplicated phacoemulsification surgery?

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Abstract

Purpose **To assess the necessity for first post-operative day review in determining the need for post-operative intervention in patients who had uncomplicated phacoemulsification surgery.**

Methods **A retrospective study was carried out to review the first post-operative day findings in patients who underwent uncomplicated phacoemulsification surgery by a single surgeon between January 1997 and March 1998. The findings analysed were wound integrity, corneal clarity, anterior chamber activity, intraocular pressure and the intraocular lens status. The need for medical or surgical intervention was also analysed. Those eyes that had coexisting ocular pathology such as glaucoma, ocular hypertension, uveitis, trauma or previous intraocular surgery were excluded from the study. Fisher's exact test was used to compare the difference between the groups.**

Results **Seventy-one eyes of 71 patients who underwent an uncomplicated phacoemulsification procedure were included in the study. Intraocular pressure of 30 mmHg or greater was found in 7 eyes (10%), all of which also had corneal oedema. These patients received acetazolamide SR 250 mg twice daily for 3 days. Another 21 eyes (30%) had corneal oedema for which no specific treatment was given. The intraocular pressure had returned to baseline and corneal oedema resolved by the first clinic follow-up in 1–2 weeks. None of the 71 patients needed surgical intervention in the post-operative period.**

Conclusion **First post-operative day review is necessary as it gives an opportunity to manage the post-operative rise in intraocular pressure.**

Key words Complication, Intraocular pressure, Phacoemulsification, Post-operative, Review

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Phacoemulsification has become the preferred technique for removal of cataracts. This technique has also helped in reducing the number of post-operative visits and promoting the early visual rehabilitation and discharge of patients. Traditionally ophthalmologists reviewed patients following intraocular surgery on the first post-operative day. The document 'Guidelines for cataract surgery 1995' from the Royal College of Ophthalmologists advises review of patients within the first 48 h after surgery. This visit is intended to identify and manage early post-operative complications. The aim of this study was to assess the need for this visit in the management of patients who underwent uncomplicated phacoemulsification surgery.

Subjects and methods

All patients who underwent phacoemulsification between January 1997 and March 1998 by a single person (S.P.D.) were identified from the operating theatre records. Their case notes were reviewed for this study. Patients were excluded from the study if they had coexisting ocular pathology such as glaucoma, ocular hypertension, uveitis, trauma or previous intraocular surgery. Patients were also excluded if there were intraoperative complications such as posterior capsular rupture, vitreous loss or loss of nucleus. The second eye of a patient was excluded if their first eye was already included in the study. In addition to patients' demographic details, the following details were collected using a data collection form: details of the operated eye, types of anaesthesia, incision, intraocular lens (IOL) and suture if any. The first post-operative day findings noted were wound integrity, corneal clarity, anterior chamber activity, intraocular pressure (IOP) and intraocular lens status. Any post-operative medical and surgical

intervention was also noted. Findings on subsequent clinic visits were also entered on the form.

Pre-operative preparation

All the patients were admitted on the day of surgery. The routine pre-operative preparation involved instillation of cyclopentolate hydrochloride 1%, phenylephrine hydrochloride 2.5% and diclofenac sodium 0.1% eye drops at 15 min intervals 1 h prior to commencement of surgery. The surgery was carried out under local (LA) or general anaesthesia (GA). LA was administered using the peribulbar or retrobulbar technique.

Surgery

The skin and the conjunctival sac were prepared with 5% povidone iodine. Surgery was performed through a superior 2.5 mm corneal incision. Continuous curvilinear capsulorrhexis was performed after filling the anterior chamber with a viscoelastic substance (sodium hyaluronate 1.4%). Following hydrodissection, phacoemulsification was performed using the 'divide and conquer' technique. The soft lens matter was aspirated using the automated irrigation and aspiration (I/A) system. The wound was extended to 3.5 mm or 5.5 mm to introduce a foldable silicone IOL or a polymethylmethacrylate (PMMA) IOL respectively into the capsular bag. The surgeon's practice was to aspirate the viscoelastic substance from the capsular bag by introducing the tip of the I/A cannula behind the IOL. A single 10.0 prolene suture was placed if the wound was extended to 5.5 mm. Corneal stromal hydration was performed in those cases with a 3.5 mm wound. No ocular hypotensive or cycloplegic was used at the end of surgery.

Post-operative routine

On the first post-operative day (17–24 h post-operatively), patients underwent slit-lamp examination and measurement of IOP using a Goldmann applanation tonometer. The routine post-operative treatment was dexamethasone 0.1% four times a day. No cycloplegic agent was prescribed routinely. If the IOP was 30 mmHg or higher acetazolamide SR 250 mg twice a day was prescribed for 3 days. The patients were then seen in the eye clinic at between 1 and 2 weeks.

Results

The total number of phacoemulsification procedures carried out by the study surgeon (S.P.D.) was 115. Eyes excluded from the analysis included 29 with coexisting ocular pathology (glaucoma, uveitis, etc.), 2 that had intraoperative complications and 13 that were the second eyes of patients whose first eyes were included in the analysis. Seventy-one eyes of 71 patients were included in the analysis. Forty-six patients were male and 25 were female. The mean age was 76 years with a range of 38–97 years. Forty-nine patients underwent surgery under LA and 22 patients under GA. The first 40 patients received a PMMA IOL and the remaining 31 received a foldable silicone IOL. The age and sex distribution of patients in the LA and GA groups and the two IOL groups were comparable.

The IOP was 30 mmHg or higher (range 30–48 mmHg) in 7 patients (10%). Corneal oedema was found in all these eyes. Another 21 eyes had corneal oedema that was not associated with raised IOP. One patient had a corneal abrasion. No statistically significant difference was found in the number of patients with a post-operative IOP greater than or equal to 30 mmHg between the two groups of patients with the different types of IOL ($p = 0.22$, Fisher's exact test) or anaesthetic ($p = 1.00$, Fisher's exact test). There were no complications related to the corneal wound or the IOL. None of the patients required any surgical intervention. The IOP had returned to baseline following the treatment in all the eyes with raised IOP and the corneal oedema had resolved by the clinic visit 1–2 weeks later.

Discussion

The first post-operative day review has been carried out following cataract surgery as it gives an opportunity to identify and manage early post-operative complications such as endophthalmitis. However, it has been questioned whether the first post-operative day is the best time for the diagnosis of endophthalmitis.[1] In a meta-analysis of 17 studies on complications following cataract surgery Powe *et al.*[2] found that the pooled results for wound gape and iris prolapse rate were 0.2%. Francis and Morris,[3] in their retrospective study, found that the rate of iris prolapse was 0.2% following phacoemulsification, which occurred in those eyes where the wound was extended to insert a 7 mm optic IOL and left unsutured. One would expect the wound-related complications to be much less if a foldable IOL is implanted through a self-sealing corneal wound.

The increase in phacoemulsification procedures has made day-case surgery more common. However, the need for review on the first post-operative day creates difficulty for some patients due to problems with transport and escort. Hence they prefer to stay overnight. Avoiding this visit would certainly increase the proportion of patients willing to have day-case surgery. Whitefield *et al.*[4] and Cohen *et al.*[5] conclude differently on the question of the need for the first post-operative day review. Both these studies report on IOP being the only factor that needed intervention. Our results concur with both of them on this point. However, Whitefield *et al.*[4] conclude that this review is not necessary as only 3% of patients were found to have raised IOP. They suggest the possibility of routine post-operative prophylaxis against a rise in IOP to avoid the first post-operative day review. Cohen *et al.*[5] found that around 6% of their patients had IOP greater than or equal to 30 mmHg and conclude that the first post-operative day review should be continued.

Although the first post-operative day review provides an opportunity to manage raised IOP, whether one should wait until the first post-operative day to treat it needs evaluation. It has been noted that the peak level of IOP is usually in the early post-operative period between 3 and 6 h post-operatively following phacoemulsification.[6,7] Preventing the rise in IOP may be more appropriate if an effective prophylactic measure is available. Gross *et al*.[8] measured IOP in their patients 2–3 h post-operatively and treated with betaxolol 0.5% if the IOP was greater than 30 mmHg. However, the IOP was still at least 25 mmHg at 24 h in 64% of the treated eyes. Zohdy *et al*.[9] in their study comparing the prophylactic effect of topical dorzolamide and systemic acetazolamide as a single dose found that this was not effective in 13.3% of patients. These patients required additional systemic acetazolamide for 3 days. Of the prophylactic regimes described in the literature none was totally effective in preventing the post-operative rise in IOP.

Many ophthalmologists treat post-operative IOP greater than or equal to 30 mmHg. This may be justified if the potential risk of damage to the optic nerve is significant. Hayreh[10] reported on 13 eyes that suffered what he called post-cataract-extraction anterior ischaemic optic neuropathy (PCE-AION). This occurred in those eyes that had raised post-operative IOP following intracapsular cataract extraction. He distinguished this condition from what he called ordinary AION in aphakic eyes based on the time lapse following cataract surgery. We are unaware of any reports similar to PCE-AION following phacoemulsification. The risk of this condition occurring following phacoemulsification is unknown.

Many ophthalmic units in the United Kingdom may already have stopped the first post-operative day review following phacoemulsification. However, until there is evidence to support the view that the post-operative rise in IOP is transient and hence harmless, the first post-operative day review should be continued. This review gives an opportunity to manage the post-operative rise in IOP, which could be a potentially serious and common post-operative complication.

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