

# Conventional routine clinical review may not be necessary after uncomplicated phacoemulsification

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## Abstract

**Aim**—To determine the clinical intervention rate during routine review after uncomplicated phacoemulsification.

**Methods**—A review of case notes in 651 consecutive cases of uncomplicated phacoemulsification from 1994 ( $\leq 5.5$  mm self sealing wound) was performed. The intervention rate at scheduled routine review visits and at unscheduled visits to the eye casualty service in the first 120 postoperative days was recorded. Interventions were defined as departures from predetermined postoperative care protocols.

**Results**—Clinical interventions were reported in 2.8% (95% confidence interval 1.5 to 4.1%) of (n=1652) routine follow up visits. Many of these interventions were avoidable or trivial; 90% of patients had no postoperative intervention at any visit. 7.3% of patients made unscheduled visits to the emergency service. The intervention rate in this group was 50% (35.9 to 64.1%).

**Conclusions**—The intervention rate in routine clinical review after uncomplicated modern cataract surgery is low. Alternatives to conventional postoperative review, including shared care with non-ophthalmologists and improved perioperative patient education with an open channel for self referral, should be evaluated.

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Phacoemulsification techniques and foldable intraocular lens implants allow cataract surgery to be performed safely through a small (3.2-5.5 mm) self sealing pocket incision. No sutures are required. The bursting strength of 5.5 mm scleral pocket wounds exceeds that of the globe itself at its weakest point.<sup>1</sup> Wound integrity can be assessed definitively at the time of surgery. Subsequent wound related complications are rarely seen, and restrictions on postoperative activity are minimal.<sup>2</sup>

Phacoemulsification is quickly becoming the preferred technique of cataract extraction,<sup>3</sup> but routine postoperative follow up protocols in many departments are still largely based on the need for suture management and ongoing assessment of wound integrity associated with conventional extracapsular cataract extraction through a sutured 10-12 mm wound. As with other surgical procedures,<sup>4</sup> follow up practices

vary widely<sup>5</sup> and preferred practice recommendations<sup>6</sup> are not evidence based.

Cataract extraction is the most commonly performed elective operation,<sup>7</sup> and any reduction in the requirement for routine review may have a significant health economic impact. The value of routine postoperative review is defined, at least in part, by the number and nature of clinical interventions that are occasioned at each visit. We set out to examine the intervention rate in routine follow up after uncomplicated phacoemulsification.

## Methods

### STUDY DESIGN

A retrospective review of case notes was performed in which the number and nature of clinical interventions occurring during routine follow up visits were recorded. An intervention was defined as any departure from predetermined routine postoperative care protocols. Data were retrieved from a 120 day postoperative follow up period, this being the maximum period for which routine review would normally have been continued. Interventions resulting from unscheduled visits to the eye casualty service between routine appointments were also recorded along with details of patient age and sex, coexisting pathology (in addition to cataract), the operating surgeon, operative complications, and the final visual outcome.

### STUDY POPULATION

Consecutive cases of cataract extraction by phacoemulsification through a 4.0-5.5 mm self sealing corneal or scleral pocket incision performed at Moorfields Eye Hospital in 1994 were identified from theatre records. Operations were performed by consultants or surgeons in training. Cases with pre-existing ocular pathology in addition to cataract or any intraoperative complication were excluded. In patients with two eyes operated on within the study period, only the first eye was included for study.

### SURGICAL TECHNIQUE AND ROUTINE FOLLOW UP PROTOCOL

Cases were performed under local (peribulbar or topical) or general anaesthesia using standard endolenticular phacoemulsification techniques. Wound positioning was determined by lens type and surgeon preference (Fig 1). At the end of surgery, approximate physiological intraocular pressure was restored with balanced salt solution injection through a side

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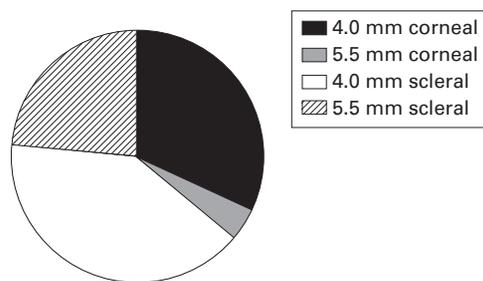


Figure 1 Relative proportions of different self-sealing wound types used. Wound construction was determined by lens type and surgical preference. Rigid all polymethylmethacrylate 5 × 6 mm (5.5 mm wounds—MZ 60 BD, Iolab, UK) and foldable silicone (4 mm wounds—L141U, Iolab, UK) lenses were used.

port paracentesis incision. Subconjunctival cefuroxime (125 mg/ml) and betamethasone (4 mg/ml) injections were then administered. Ocular hypotensive prophylaxis (for example, acetazolamide 250 mg orally 4 hours after surgery) was prescribed routinely by some surgeons only (27% of cases).

The follow up protocol was modified during the study period, reducing the number of routine review visits from three to two. Day cases and inpatients were initially reviewed on day 1, 2 weeks, and 3 months after surgery. Later in the study period day cases were reviewed on the day of surgery<sup>8</sup> and discharged after a single additional review visit 3 weeks after surgery. Inpatients were then also reviewed on two occasions only—on day 1 and 3 weeks after surgery.

Postoperative medication was routinely prescribed as follows: chloramphenicol eyedrops (0.5%) and dexamethasone eyedrops (0.1%) four times daily until the second review (2 to 3 weeks after surgery), then dexamethasone

alone reducing by one drop per day per week over the succeeding 4 weeks.

**Results**

A record of at least two routine follow up visits was available in over 96% of the total number (n = 815) of cases identified from theatre records. After exclusions, 651 uncomplicated cases of phacoemulsification (mean age 68.5 years, range 19–99, SD = 14, female:male 1.3) were studied further. Almost all cases were age-related cataracts including a full spectrum of different nucleus densities. The population characteristics (age and sex ratio) were similar among the study sample and patients excluded from the study.

Clinical interventions were reported in 2.8% (95% confidence limits 1.5 to 4.1%) of (n=1652) routine follow up visits (Table 1); 7.3% of patients (n=48) made unscheduled visits to the emergency service. The intervention rate in this group was 50% (35.9 to 64.1%) (Table 2); 93.5% of patients (n=609) had no intervention during routine follow up, and 90% of patients (n=587) had no postoperative intervention in either the emergency service or at scheduled review visits. Three cases (≤0.5%) had a best corrected visual acuity less than 6/12 at the last review. There were no wound related complications and no cases of endophthalmitis.

**Discussion**

The timing of the development of serious postoperative complications after cataract surgery cannot be predicted with any accuracy. Retinal detachment may present over a year after surgery.<sup>9 10</sup> Similarly, endophthalmitis may occur late in the postoperative period, with a significant proportion of cases presenting outside the first postoperative week.<sup>11 12</sup> It is, therefore, virtually impossible to plan an economically viable schedule for postoperative review designed to detect serious complications at a presymptomatic stage. Many of the patients whose treatment was modified at visits 2 and 3 had already been symptomatic for a variable period. Patients may actually wait for a scheduled routine review visit rather than presenting early with a significant symptomatic problem. In contrast with the low rate of clinical intervention at routine review, the intervention rate in patients presenting to the eye casualty service between scheduled visits was 50%. A more realistic approach may be to base routine follow up protocols on the detection of treatable, asymptomatic complications, with an open channel for immediate self-referral where symptomatic problems develop.

The only common silent complication of uncomplicated sutureless phacoemulsification is raised intraocular pressure. Untreated pressure elevations may cause irreversible optic nerve damage.<sup>13–15</sup> Intraocular pressure may rise temporarily in the immediate postoperative period,<sup>14</sup> or later as a side effect of topical steroid medication.<sup>13</sup> Prophylactic short term ocular hypotensive medication has been shown to be effective in guarding against early pressure spikes,<sup>16 17</sup> and in our study it may

Table 1 Clinical interventions at routine review

1st review:	(100% of patients; day 0–17%; day 1–83%)	
Raised IOP	Ocular hypotensive medication	15
Uveitis	Increased topical steroid medication	6
2nd review:	(100% of patients; average 17 (SD 6.1) days postop)	
Raised IOP	Ocular hypotensive medication	5
Uveitis	Increased topical steroid medication	2
Incidental pathology	Referral to another specialty service	5
Blepharitis	Lid hygiene instruction	1
CMO	Orbital floor steroid injection	1
3rd review:	(48% of patients; average 53 (SD 20.7) days postop)	
Uveitis	Topical steroid medication restarted	2
Capsular opacification	YAG capsulotomy	4
Lens material in AC	Lens material removed in theatre	1
Incidental pathology	Referral to another specialty service	4
Total interventions in 1652 visits		46

Clinical interventions were defined as any departure from predetermined routine postoperative management protocols. Uveitis = intraocular inflammation greater than expected for the stage in the postoperative course. CMO = cystoid macular oedema. AC = anterior chamber. Incidental pathology refers to the diagnosis of ocular pathology unrelated to cataract surgery.

Table 2 Clinical interventions in the eye casualty service

Uveitis	Topical steroid medication increased	13
Blepharitis	Lid hygiene instruction/tetracycline	5
Conjunctivitis	Antibiotic medication restarted	2
Retinal detachment	Referral to vitreoretinal service	2
Wound site inflammation	Topical steroid medication restarted	1
Incidental pathology	Referral to specialty service	1
Total interventions in 48 visits		24

Half of the patients (total = 48) presenting to the casualty service required advice and reassurance only after examination and no active therapeutic or investigational intervention. Definitions for interventions in the remaining cases are as for Table 1.

have been possible to avoid up to one third (n=15) of all the interventions recorded in routine review if ocular hypotensive prophylaxis had been prescribed in all cases. It may also be possible to circumvent the problem of steroid induced intraocular pressure rises. Recent evidence suggests that topical non-steroidal anti-inflammatory drugs may be as effective as steroids in suppressing inflammation after cataract surgery.<sup>18 19</sup> Where topical steroids are used, early refractive stability after sutureless phacoemulsification<sup>20 21</sup> should allow screening for a steroid induced pressure rise to be combined with postoperative refraction, at 2–3 weeks after surgery. Whether or not this combined refraction and intraoperative pressure examination would need to be performed by an ophthalmologist is a matter for debate.<sup>22 23</sup>

Moorfields Eye Hospital is a postgraduate teaching hospital with a large primary referral base from which the vast majority of patients included for study were drawn. In the context of an intervention rate study in routine clinical follow up, the retrospective design used here may well provide a better reflection of reality in clinical practice than prospective studies in which decisions about intervention may be influenced by investigator bias. A very high rate of data retrieval was achieved. Errors of omission or variable definition should have been minimal since the main outcome measure (intervention rate) simply requires that some record was made in the notes (not necessarily an accurate one) of any therapeutic intervention. A similarly low intervention rate (3%) has recently been reported in a smaller scale prospective study examining the value of routine review on day 1 after phacoemulsification.<sup>24</sup>

This study focuses on uncomplicated sutureless phacoemulsification, and does not address other techniques of cataract extraction or the review requirements for complicated cases. Within these confines, the striking finding was the number of review visits ( $\geq 95\%$ ) at which nothing was achieved beyond perhaps mutual reassurance. Clearly, reassurance is important, but prioritisation is becoming increasingly necessary in many healthcare settings, and screening patients with a low yield of complications may become difficult to justify,<sup>25</sup> particularly where time could be freed for decision making in more complex cases. Alternatives to conventional postoperative review, including shared care with non-ophthalmologists and improved perioperative patient education with an open channel for self referral, should be evaluated.

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