
IS MEASURING INTRAOCULAR PRESSURE NECESSARY ON THE FIRST POST-OPERATIVE DAY FOLLOWING UNCOMPLICATED CATARACT SURGERY?

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SUMMARY

A prospective study was undertaken to assess whether the level of intraocular pressure (IOP) on the first day after cataract surgery could be estimated by clinical examination only, thereby removing the need for applanation tonometry. A total of 70 patients underwent uncomplicated extracapsular cataract extraction and intraocular lens implantation. The following day a Consultant, Registrar and Senior House Officer were asked to identify those patients with significantly raised IOP (>27 mmHg) using slit lamp examination only. A fourth examiner, masked to the assessments of the three observers, measured the IOP using the Goldmann applanation tonometer. Pressures of >27 mmHg by Goldmann tonometry were found in 10 patients (14%) of which 8 (80%) were missed by all three ophthalmologists. Formal measurement of IOP appears a necessary part of the post-operative assessment after uncomplicated cataract surgery.

An intraocular pressure (IOP) rise within 24 hours of extracapsular cataract extraction and intraocular lens implantation¹⁻⁷ is well documented, particularly after the use of sodium hyaluronate.⁷ In some cases, medical therapy is required to reduce the risk of ocular complications such as anterior ischaemic optic neuropathy⁸ and central retinal vein occlusion.⁹ IOP measurement is routinely performed on the first post-operative day yet there are theoretical risks in doing so during this early period, namely corneal abrasion and cross-infection.

High IOP in the early post-operative period following cataract surgery may be associated with several clinical signs that can be assessed by slit lamp examination, such as corneal epithelial oedema, corneal striae, excessive anterior chamber activity and the presence of *in situ* sodium hyaluronate.

A prospective study was undertaken to see whether it is necessary to measure IOP on the first post-operative day following uncomplicated cataract surgery.

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PATIENTS AND METHODS

Over a 10-week period, consecutive patients admitted for cataract surgery under one Consultant at the Birmingham and Midland Eye Hospital were included in the study. Patients with previous ocular surgery or glaucoma were excluded. A total of 70 patients (42 females and 28 males with a mean age of 72 years) underwent uncomplicated extracapsular cataract extraction with posterior chamber intraocular lens implantation. Sodium hyaluronate was used on each patient and every effort was made to remove it completely at the end of surgery.

On the first post-operative day, a Consultant, Registrar and Senior House Officer (SHO) independently attempted to estimate the IOP by slit lamp examination only. Patients were subdivided into three groups: group 1, normal IOP (<22 mmHg); group 2, moderately raised IOP (22–27 mmHg); group 3, significantly raised IOP (>27 mmHg). The IOP was then measured using the Goldmann applanation tonometer by a fourth examiner unaware of the findings of the other three examiners. The assessed IOP grouping of the three observers was compared with the true IOP grouping based on the Goldmann applanation tonometer measurements.

RESULTS

From the Goldmann applanation tonometer measurements, there were 54 patients with normal IOP (<22 mmHg), 6 patients with moderately raised IOP (22–27 mmHg) and 10 patients with significantly raised IOP (>27 mmHg).

In the assessed grouping, the Consultant put 57 patients into group 1, 9 into group 2 and 4 into group 3. Although both the Registrar and the SHO put 57 patients into group 1, 8 into group 2 and 5 into group 3, they did not put the same patients in each group. The breakdown of the results by the three observers is shown in Table I.

By comparing the patients with IOP >27 mmHg by applanation tonometry with those thought to be in group 3 by the observers, 8 patients (80%) were missed by all three

Table I. Comparison of the true and assessed IOP grouping of the three observers

Assessed groups	True groups		
	Group 1	Group 2	Group 3
<i>Consultant</i>			
Group 1	48	2	7
Group 2	5	3	1
Group 3	1	1	2
<i>Registrar</i>			
Group 1	48	2	7
Group 2	3	4	1
Group 3	3	0	2
<i>Senior House Officer</i>			
Group 1	48	3	6
Group 2	4	2	2
Group 3	2	1	2

Group 1, normal IOP (<22 mmHg); group 2, moderately raised IOP (22–27 mmHg); group 3, significantly raised IOP (>27 mmHg).

ophthalmologists. Conversely, of those patients thought to have IOP >27 mmHg by slit lamp examination only, the Consultant, Registrar and SHO were correct in only 50%, 40% and 40% of patients respectively.

DISCUSSION

Transient rise in IOP after cataract surgery is well recognised¹⁻⁷ and was initially described by Gormaz¹⁰ as early as 1962. Certain factors that may influence IOP elevation are watertight wound closure,¹¹ damage to the trabecular meshwork,^{12,13} prostaglandin production,¹⁴ inflammatory debris, peripheral anterior synechiae, hyphaema¹ and the use of viscoelastic material such as sodium hyaluronate.⁷

The differences between the assessments of the three observers were small, with the overall percentage agreement between the Consultant, Registrar and SHO being 75.7%, 77.1% and 74.3% respectively. Furthermore, the ability of the observers to identify the patients without significantly raised IOP (specificity) was also high at 96.7%, 95.0% and 95.0% respectively. Nevertheless, 80% of patients with IOP >27 mmHg were missed.

During the study it was noted that some patients with significantly raised IOP had no abnormal signs on slit lamp examination, which made their identification difficult. Also, some patients with normal pressure had corneal oedema which might have been related to surgical trauma. This may explain the high percentage of 'false positive' group 3 patients found by each observer.

With the current trend towards day case surgery, it may not be long before large numbers of cataract extraction will be carried out as day cases. Thomas *et al.*¹⁵ suggested at least 20% of cataract operations should be day cases and this figure is probably an underestimate. Whilst most units would ask patients to return to hospital for post-operative assessment, some units have found that this can be performed by trained nurses.^{16,17}

This study illustrates the difficulty in assessing IOP using slit lamp examination only, even by experienced ophthalmologists. Nevertheless, it is important to identify and treat these patients in order to prevent ocular mor-

bidity. Post-operative assessment should, therefore, include an accurate IOP measurement. If nursing staff are involved in post-operative assessment, they should be trained to perform this task.

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Key words: Cataract surgery. Intraocular pressure. Measurement.

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