Structured assessment tool to evaluate patient suitability for cataract surgery under local anaesthesia

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Introduction. Cataract extraction and intraocular lens implantation is a common surgical procedure. While the vast majority of these operations are performed under local anaesthesia (LA), this is not an appropriate technique for every patient. Likewise it is time-consuming to assess all patients fitness for general anaesthesia when most will not need it.

Methods. We developed an eight-item questionnaire that can be administered before admission to assess patient suitability for surgery under LA. In a prospective study over a 9-month period, 128 patients were seen in a pre-admission clinic, and according to the responses to the questionnaire administered by junior medical staff, 123 were deemed suitable for surgery under LA, and five under general anaesthetic (GA).

Results. All 123 patients went on to have surgery successfully performed under LA. A further two patients from the GA group were determined by the attending anaesthetist to be suitable for surgery under LA.

Conclusion. This assessment instrument has been shown to be a highly specific means of selecting patients for surgery under LA, and can be administered by medical or nursing staff.

Keywords: anaesthetic techniques, regional, peribulbar; anaesthetic techniques, regional, retrobulbar; assessment, pre-anaesthetic; eye, cataract; screening; surgery, cataract

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Cataract extraction and intraocular lens implantation is one of the most common surgical procedures conducted in the world today, and indeed is probably the most common procedure performed in most developed countries. Despite the fact that this surgical population is elderly and frequently have a number of co-morbidities, perioperative morbidity and mortality remain low. This is largely because the majority of patients can have their procedure carried out under local (LA) as opposed to general anaesthesia (GA). However, because of the heterogeneous nature of the patient population it can be a problem deciding which patients are suitable for LA as opposed to GA.

This investigation proposed to design and test a simple questionnaire that would enable non-anaesthetists to accurately select patients to undergo surgery under LA.

Methods

Approval to conduct the study was obtained from the Ethics Committee of Northern Sydney Health.

Questionnaire development

Senior medical staff who were currently providing anaesthetic services for the ophthalmic surgery lists were consulted. After discussion and a review of available literature, a consensus was reached upon a set of criteria that would need to be met before a patient was considered a suitable candidate for surgery under local anaesthesia. The criteria are listed below. Since the questionnaire would be administered by non-anaesthetic staff, some further explanatory notes were provided where needed.

The patient has workable English. Fulfilment of this parameter required that the patient was able to understand and obey basic instructions appropriate to the procedure such as ‘look at the ceiling’, ‘lie still now’ and so on. While a full command of the English language was not a prerequisite, it was equally important the patient could communicate any problems to the medical and nursing staff. The patient can lie flat for 45 min. This meant lying flat with either no pillow or a very low support, and proved to be the most problematical area. If patients were unsure of
their ability to perform this task they were tested at the clinic.

The patient has no significant gastric reflux. It was important to ascertain whether the patient was currently taking antacids or other medications. If patients were taking either H2 antagonists or proton pump inhibitors they were told of the importance to continue with these agents.

The patient has no psychiatric disturbances. Dementia and claustrophobia were the two most common problems we expected to have to assess in this area.

The patient does not have a tremor. This referred specifically to a tremor of the head and neck. Localized tremor involving only the extremities was not considered as an absolute contraindication.

The patient has no chronic cough. This item was also slightly difficult to assess as all patients cough from time to time. An absence of significant respiratory problems such as COPD and asthma was a useful guide.

The patient understands the nature of LA. While there were a variety of techniques used, patients had to understand that there would be at least one, and usually two injections to be made around the eye. In patients taking oral anticoagulants the preferred method of anaesthesia was topical instillation.

During the operation they will be awake. In some circumstances, sedation might be used and memory of the events surrounding the procedure might be blunted.

Study design

A prospective study was designed to assess the validity of this assessment tool. Patients who were seen in the pre-admission clinic had the eight-point questionnaire administered by the admitting medical staff who was either the resident medical officer or the clinic medical officer. If all points were answered appropriately, the patient was to undergo surgery under LA. Patients were not seen by an anaesthetist. A sticker was attached to the anaesthesia chart with answers to the eight questions. Other data that were recorded included whether the patient had either insulin- or non-insulin-dependent diabetes or were taking oral anticoagulants.

Only patients who failed to answer all questions appropriately were to be seen by an anaesthetist to either determine if they were appropriate for surgery under LA or assessed them for fitness for general anaesthesia.

In keeping with contemporary practice,14 patients selected for surgery under LA had no formal medical history taken, no physical examination performed, and no pathology tests ordered. The only investigation routinely undertaken was an ECG.

At the time of operation, the attending anaesthetist recorded the type of anaesthesia used, its success or failure, whether there were any attendant complications, and the use and dose of any adjunctive sedative agents.

| Table 1 Patient characteristics. (N)IDDM=(non-)insulin-dependent diabetes mellitus. Anticoagulated=patients on warfarin therapy |
|---|---|---|
| | n | 128 |
| Male:female | 50:78 |
| Age (range) | 19–92 yr |
| Age (mean) | 70.6 yr |
| NIDDM | 16 |
| IDDM | 9 |
| Anticoagulated | 5 |

Results

During the 9-month period during which this study was conducted, 129 patients undergoing cataract extraction surgery were seen at the pre-admission clinic. Of these, all except one patient had correctly completed assessment sheets, leaving 128 patients included in the final study.

With respect to ECG analysis, the majority of patients (n=90) were in sinus rhythm. The most common abnormalities were heart block (n=22), atrial fibrillation (n=6), and evidence of previous myocardial infarction (n=6). Patient characteristics and the prevalence of diabetes or anticoagulant use are shown in Table 1.

At the pre-admission clinic, 123 patients scored 8/8 on their assessment questionnaire and were to undergo anaesthesia under LA. Five patients were considered unsuitable for LA because of varying reasons: patient dislike of LA; claustrophobia; lower back pain making lying still difficult; inadequate English, and cough.

Of the 128 patients presenting for surgery, 125 proceeded to have the procedure performed under LA. This included all of the patients (123) selected for LA at the clinic appointment and two patients from the GA group. These two, after assessment on the day by the attending anaesthetist, were considered suitable for LA.

All local anaesthetic procedures were successfully completed. There were no complications and no requirement for any of the procedures to be converted to GA. On occasion (n=53), either midazolam (1–3 mg) or propofol (10–30 mg) was used to provide light sedation whilst the block was performed. The types of block used included peribulbar (n=100), retrobulbar (n=17), and topical anaesthesia (n=8). Topical anaesthetic was used in those patients taking anticoagulant medications.

Discussion

Cataract extraction and intra-ocular lens implantation is one of the commonest surgical procedures performed in the world today.5 The large population of patients who have undergone this procedure has allowed for a number of important generalizations to be made.

First, the conclusions from a number of studies suggest that LA is the preferred method of anaesthesia,5,6 accepting
that there may be local variation depending on surgeon 
preference and practice setting.\textsuperscript{7,8}

Secondly, patients undergoing cataract extraction are 
drawn primarily from an elderly population with a high 
incidence of co-morbidities,\textsuperscript{19} the most common being 
diabetes mellitus, rheumatoid and osteoarthritis, hypertension 
and previous cerebrovascular accident.\textsuperscript{10} However, despite 
this rather gloomy picture, patients generally tolerate the 
procedure and associated anaesthesia very well with low 
rates of mortality and morbidity.\textsuperscript{11–13}

Lastly, with the exception of an ECG, banks of pathology 
tests and radiology examinations can be avoided.\textsuperscript{14,15}
When such tests are ordered they more often than not 
reflect the specialty of the individual\textsuperscript{16} and have 
been shown to be of no benefit in either predicting patients 
liable to suffer perioperative complication or in lowering 
operative risk.\textsuperscript{15–20}

Various professional groups have proposed guidelines to 
help select patients for cataract surgery under LA. The docu-
ment produced by the Royal Colleges of Anaesthetists and 
Ophthalmologists\textsuperscript{5} suggests that in adult patients, LA is 
contraindicated in patients who decline it; in those who 
are unable to communicate; in patients with tremor; or 
who cannot be positioned correctly. Other guidelines have 
suggested that performing the procedure under LA would 
be difficult in patients with deformities such as kyphosco-
liosis\textsuperscript{21} or in uncooperative patients.\textsuperscript{2} However, all of these 
suggestions seem to have been made on the basis of assump-
tion rather than by actual testing. This study appears to be 
the first attempt test and extend these varied guidelines.

There are often logistical problems in patient selection for 
cataract surgery. The patient will be seen initially by the 
ophthalmologist, usually with the assumption that the sur-
gery will be performed under LA. Should the patient later 
be found to be an unsuitable candidate for LA, this might 
result in surgery either being either cancelled or delayed.
This screening tool, which has demonstrated a sensitivity of 
98.4\% and a specificity of 100\% in this sample, allows the 
ophthalmologist, nursing, or pre-admission clinic staff to 
quickly identify patients who might require a more detailed 
assessment or who may not be candidates for LA. In addition 
to simply providing simple screening statements to select 
patients, it was found that adding a short explanatory back-
ground note for each of the eight points gave added guidance 
for the interviewer. For example, the presence of a tremor 
\textit{per se} need not be a contraindication to LA provided it does 
not involve the head and neck.

In this study there were some cases where either propofol 
or midazolam was used by the attending anaesthetist in 
addition to LA. Doses were low and the medications 
were given for the purpose of facilitating the placement of 
the block injection, a common practice.\textsuperscript{22,23}

The assessment tool used in this study does not take the 
place of a preoperative visit by the attending anaesthetist. 
However in today’s hospital setting, where so many patients 
are seen in pre-admission centres, and frequently by 
non-anaesthetic personnel\textsuperscript{24,25} and attend hospital only on 
the day of surgery, this instrument has proved to be an 
accurate means to allow non-anaesthetists to quickly deter-
mine suitability for surgery under local anaesthesia.

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