CATARACT

Risk stratification for the humble cataract

C Liu

A chance to look at surgeon statistics, training, and ophthalmic surgical competence

Cataract surgery has received more than its fair share of controversy. Senior figures in medicine, both ophthalmological and non-ophthalmological, have referred to cataract surgery as minor surgery, and advocated the deployment of non-medically qualified personnel. But “minor op” it certainly is not. There is a minute margin of error, with an anterior chamber volume of only 0.25 ml, the depth of which separates non-regenerating corneal endothelium, and the posterior capsule, which is only micrometres in thickness. Damage either at your own peril. “Experts” who worked on the Relative Values Review comparing how to remunerate surgeons working in different fields in the private sector should have taken this into consideration, and not how much time and physical work is involved.

In this issue of the BJO (p 1242), Muhtaseb et al found that over 40% of their cataract workload contained one or more risk factors. This was probably an underestimate with some risk factors not scored. These cases are more difficult to do and have a higher risk of developing operative complications. But even a routine case with a fully dilating pupil, crystal clear cornea with huge endothelial reserve, moderate nuclear hardness, a cooperative patient, and no problem with the first eye operation can go wrong. Patients often compare cataract surgery with a tooth extraction. They need to be reminded of the difference between the devastation of infective endophthalmitis and a tooth socket infection. In any case there are 32 teeth but only two eyes (in some cases only one).

What is risk stratification? Basically, not all cases are the same and some (higher risk) cases will be more prone to develop complications because of the technical difficulty and/or structural weakness of tissues (for example, the pseudoxefoliation cataract with poorly dilating pupil, weak zonules, and association with glaucoma). In other words, a cataract is not a cataract is not a cataract. Cardiac surgeons have understood the importance of risk stratification for many years.

There are a number of reasons why surgery should be risk stratified. It is only through knowing the risk of any particular case that meaningful pre-operative counselling could take place, with mention of hospital or, even better, surgeon statistics for the particular risk group. Then there is the business of team building for high risk complex cases (see table 1 for cataract surgery). Low risk cases should be used for training novice surgeons, whereas graded higher risk cases are for advance training. Without knowing the case mix, surgeons’ individual statistics as well as hospital statistics could not be compared with other surgeons and hospitals. Both in the NHS and in the private sector, one could argue for higher reimbursement for more complex cases. Finally, it could be argued that (complex) cataract surgery is in itself a subspecialty within ophthalmology.

Case mix in cataract surgery has become even more important in this decade as there is a trend to cream off routine cases for waiting list initiatives and for treatment centres. These routine cases will take less time to carry out. Surgeons operating on these could be less competent and yet would still have good statistics. Traditional NHS providers are then left with more complex cases, not just from the point of view of the eye. This will have a deleterious effect on both hospital and surgeon statistics. The cost per case also will be higher (more time, increased use of more expensive devices, higher risk of complications requiring vitrectomy equipment, higher risk of retinal detachment and endophthalmitis requiring further admission and treatment, etc). Such cases could cost up to several thousand pounds each. Muhtaseb et al have shown that even experienced consultants are getting 30% plus complications rate in their highest risk group. Surgical training of inexperienced residents will suffer, or patients will suffer as a result of this creaming off process, although master class surgical training may improve.

There are a number of pitfalls of statistics. Firstly, there is “rubbish (data) in, rubbish (statistics) out”—a sad fact of life. Probity is also sometimes called into question. Detailed risk stratification is essential for meaningful comparison between individual surgeons and between hospitals. But even if the above could be fully dealt with, individual surgeon statistics is never really just that. The results of cataract surgery is team dependent, from the quality of biometry, of pre-assessment, experience, calibre and harmony of ward and theatre staff, the standard of equipment, adequate maintenance of same, quality of devices, of cleaning and sterilisation, and so on. Furthermore, while it is easy to assign responsibility to the trainee if a complication has already occurred when the trainer takes over the operation; the situation is not clear when a trainee produces a leaky wound and cloudy cornea, then the trainer takes over and then goes on to break the posterior capsule. Thus, the same surgeon may have different statistics in different NHS hospitals and in private hospitals because of the above and difference in case mix. And it goes without saying that the best surgeons specialising in complex cases may have poor statistics compared with their less able peers.

Table 1 The complex cataract/patient

<table>
<thead>
<tr>
<th>Condition</th>
<th>Note</th>
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<tbody>
<tr>
<td>Corneal guttae</td>
<td>Posterior polar cataract</td>
</tr>
<tr>
<td>Corneal scars/opacity</td>
<td>Children</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>Co-existing diabetic retinopathy</td>
</tr>
<tr>
<td>Pseudoxefoliation</td>
<td>Vitrectomised eye</td>
</tr>
<tr>
<td>Traumatic cataract</td>
<td>Scleritis</td>
</tr>
<tr>
<td>Subluxated lens</td>
<td>Bleeding disorders</td>
</tr>
<tr>
<td>Small pupil</td>
<td>High risk of expulsive haemorrhage</td>
</tr>
<tr>
<td>Nanophthalmitis</td>
<td>Deep set eye</td>
</tr>
<tr>
<td>High myopia</td>
<td>Torticollis</td>
</tr>
<tr>
<td>Iritis</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>Mature cataract</td>
<td>Anxious patient</td>
</tr>
<tr>
<td>Hard nucleus</td>
<td>Deaf patient</td>
</tr>
<tr>
<td>Soft nucleus</td>
<td>Confused patient</td>
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Frequency doubling technology

Frequency doubling technology perimetry for neuro-ophthalmological diseases

C A Johnson

It will be beneficial to all eye care practitioners if investigations of a wide variety of ocular and neurological diseases are evaluated with FDT perimetry

In the past decade, there have been many advances in diagnostic test procedures for evaluation of structural and functional changes affecting the visual pathways. Perimetry and visual field testing have undergone improvements that allow tests to be performed more efficiently and accurately, detect earlier signs of pathological changes, quantitatively evaluate progressive losses, and provide enhanced diagnostic information. One of these emerging visual field test procedures is frequency doubling technology (FDT) perimetry, which has been shown to be effective in detecting visual field loss produced by glaucoma and other visual disorders, and may detect early perimetric changes before standard automated perimetry. Because of its clinical value and importance, an improved second generation of FDT instrumentation, known as the Humphrey Matrix, has recently become available. This new device attests to the significance and success of FDT perimetry as a clinical diagnostic tool.

The emphasis of FDT perimetry has been directed towards the detection and evaluation of glaucomatous visual field loss, and some papers have alluded to FDT perimetry as a procedure to be used predominantly for glaucoma patients and individuals at risk of developing glaucoma. However, FDT perimetry, like most visual field test procedures, was designed to evaluate peripheral sensitivity loss produced by a variety of disorders affecting the visual system, including neuro-ophthalmological disorders. It is unfortunate that only a few investigators have reporting FDT findings for visual dysfunction other than glaucoma. In this view, it is most encouraging to observe the article by Girkin et al in this issue of the 

http://bjo.bmj.com/content/88/8/1231-
1232.

it will be beneficial to all eye care practitioners if investigations of a wide variety of ocular and neurological diseases are evaluated with FDT perimetry. The study of FDT findings in patients with non-arteritic ischaemic optic neuropathy and altitudinal

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defects, as reported here, is an excellent example of this type of research. The authors are to be congratulated for conducting such a careful, well designed, and timely study. Through these and similar efforts we will gain a better understanding of the clinical capabilities and limitations of FDT perimetry, enhance our understanding of the underlying pathophysiological basis of visual pathway disorders, and obtain an improved awareness of the association between structural and functional damage produced by ocular and neurological diseases. Hopefully, this work may serve as a source of motivation and inspiration for other researchers to pursue these types of studies pertaining to the clinical utility of FDT perimetry.

References

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