

## Invited Editorial to accompany Muhtaseb, Kalhor and Ionides bjo-2004-46003

### Risk stratification for the humble cataract

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

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Cataract surgery has received more than its fair share of controversy. At the turn of the century, Professor Sir George Alberti repeatedly referred to cataract surgery as minor surgery, and advocated the deployment of non-medically qualified personnel. This view was also partly echoed by Professor David McLeod. 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 microns 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, 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 co-operative patient and no problem with the first eye operation, can go wrong. It is therefore wrong to compare cataract surgery with a tooth extraction. Compare the difference between the devastation of infective endophthalmitis with 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 due to the technical difficulty and/or structural weakness of tissues (e.g. the pseudoexfoliation 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-op 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 for cataract surgery). Low risk cases should be used for training novice surgeons whereas graded higher risk cases 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 sub-specialty 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 eye point of view. 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 & 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 and honesty 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 sterilization and so on. Furthermore, whilst it is easy to assign responsibility to the trainee if a complication has already occurred when the trainer takes over the operating, the situation is not clear if a trainee should produce a leaky wound and cloudy cornea for the trainer to take over who then go 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 surgeon specializing in complex cases may have poor statistics compared with their less able peers.

What makes a good surgeon then? The process of professionalization starts from entering medical school, or even earlier if there has been a role model in the family. The process continues throughout the many years of postgraduate training when the values of peers and mentors are absorbed by osmosis. The good surgeon comes to realize that patient interest is first and foremost. “First do no harm”. The good surgeon hones their skills and keeps up to date, as well as develops new techniques. However, surgery is not just a technical exercise. First a surgeon learns how to operate. Then they learn when to operate. Finally they learn when not to operate. Competency of all three “degrees” is important. The balance of the second and the third is affected by the actual ability, confidence (self-perceived ability), risk-taking behaviour and clinical maturity.

The author would suggest the following list as negative markers of surgical (technical) competence. Imperfect wound architecture, iris damage, anterior capsulorrhexis tear, decentred anterior capsulorrhexis, posterior capsular rupture, vitreous loss, persistent corneal oedema, and endophthalmitis. The questions surgeons may wish to ask themselves after each case could be, “Has full visual potential been realized?”. “Has refractive aim been achieved, both spherical and astigmatic?”. “Is the patient satisfied?”. “Has there been a complication?”. “If so, was the eye at particular risk of that complication?”. “Have I done all that could be done to avoid that complication?”.

Muhtaseb et al have made an excellent start with demonstrating that a simple scoring system works for predicting per-operative complications in cataract surgery. Simplicity is important as there is a universal dislike for form filling. The next step is to have the scoring system validated in other ophthalmic units. At the same time, a longer term multi-centre project should be set up to work out the exact risk for each graded risk factor, as opposed to a simple weighted system based on instinct and intuition. Patient-related (as opposed to eye-related) risk factors should also be included in the study. There should then be adoption of a nationally agreed risk stratification assessment, which should be used for all hospital and national audits. We can then, finally, compare like with like. It is hoped that the Royal College of Ophthalmologists will lead this. It will then be possible to have a glimpse of whether there is a big spread in surgical ability amongst surgeons. Whilst half of us will be

below average, we will have to set a lower limit to identify any surgeons who perform poorly (or who do not care!).

Table 1

**The complex cataract / patient**

Corneal guttata	Posterior polar cataract
Corneal scars / opacity	Children
Glaucoma	Co-existing DMR
Pseudoexfoliation	Vitrectomized eye
Traumatic cataract	Scleritis
Subluxated lens	Bleeding disorders
Small pupil	High risk of expulsive
Nanophthalmos	Deep set eye
High myopia	Torticollis
Iritis	COPD
Mature cataract	Anxious patient
Hard nucleus	Deaf patient
Soft nucleus	Confused patient