

Streamlining cataract lists: how are you managing it?

BY JONATHAN ROSS AND BITA MANZOURI

Mr Jonathan Ross, in conversation with **Ms Bita Manzouri**, provides a personal perspective on challenges and opportunities shaping the future of cataract surgery services across the hospital eye service.

Redesigning cataract pathways in response to COVID-19

Bita Manzouri: Over the past year most NHS Trusts in the UK stopped all elective surgical work, with their doctors and nurses being redeployed, and now are faced with huge backlogs, especially of cataracts. Now, more than ever, why do you feel that streamlining the national cataract care pathway is important?

Jonathan Ross: The past year, marked by the COVID-19 pandemic, lockdown and unprecedented restrictions for elective care, is not something that we were prepared for or something that we expected to see in our careers.

But streamlining all care is extremely important now, and streamlining cataract surgery especially so. I characterise this as being a core component of quality of care. If you think about modern cataract surgery performed these days, it is an ongoing product of 70 years of evolution and refinement.

While contemporary cataract surgery is not the finished product, it is a very good product – and improvements now are diminishing. The big gain to be had in improving quality of cataract care is to improve access, so that everyone who needs it can benefit at an early stage.

As we emerge from lockdown and reinstate elective activity, we are going to find that there are enormous backlogs to manage, and additionally we are dealing with changed pathology in that people will be presenting with severe cataracts on a more regular basis, extending the duration of surgery and potentially leading to higher complication rates. So there are important reasons why we want to be looking at anything we can do to better use our valuable limited resources, which are operating theatres, skilled nurses and expert surgeons, to provide the care which is so desperately needed [1].

Higher volume cataract hubs: benefits and experience

Bita Manzouri: The Royal College of Ophthalmologists and Getting It Right First Time (GIRFT) have jointly produced a new document offering guidance and recommendations for setting up cataract hubs and high-volume cataract lists, to help improve patient care post-COVID-19 and help avert a full shutdown of elective cataract surgery amidst any future pandemic [2]. Do you feel this high flow cataract surgery environment is beneficial and what is the patient / surgeon experience of working like this?

Jonathan Ross: From personal experience, there are many benefits to dedicated high flow cataract hubs. In Scotland we have a form of national cataract hub, which is a non-general anaesthesia (GA) day case, six theatre purpose-built cataract centre. If you have an organisation where everybody is focused on one surgical procedure, it provides unique learning, audit and upskill opportunities, because all staff are immersed in a single care pathway. So I think this helps to evolve an end product in a shorter time and a better product that serves the patient more than if you don't have that pooled care pathway process.

Across NHS eye units, the number of cataract cases per surgical list typically ranges from 5-12. Most high-volume cataract centres would be aiming for around 10-12 cases per four-hour theatre session, but this all depends on a really slick turnaround time and sufficient numbers of very experienced staff.

Bita Manzouri: What role do these hubs serve with respect to training and development?

Jonathan Ross: Training is lifelong from a surgeon's point of view. I would make no distinction between the needs of a consultant and a trainee in the sense that

we all want to better ourselves, and to achieve this we need to maximise access to experiential learning and sharing expertise, and this means being in a facility providing high volumes of activity.

When I joined Scotland's high volume cataract centre in 2016, I had been a low volume consultant cataract surgeon for several years before that, delivering approximately 5-10 cataract surgeries per week. My audited results at that time showed a posterior capsule rupture (PCR) complication rate of one in 250 cases, which is 0.4% and about a third of the published national benchmark of one in 75 cases (1.14% for reporting period 2018-19) [3].

Working in a high-volume treatment centre, my audited complication rate dropped to about one in 750 cases doing 40 cataract procedures per week, which is 10 times lower than the national benchmark. This suggests that the high-volume factor meant I was still continuing to improve. That would be an argument in favour of high-volume cataract hubs where it appears to me that you can improve the quantity and the quality of care.

Bita Manzouri: Playing devil's advocate, many people assume that complicated cases are not suitable for high volume centres, and that such centres tend to cherry pick low complexity cases that are easier to do.

Jonathan Ross: We do not cherry pick cases. We take all referrals direct from the community without any filtering. The only cases that we redirect are if GA is indicated or combined vitreoretinal surgery is considered likely to be required, for example, a mature cataract with miosis and phacodonesis.

Restarting surgical training

Bita Manzouri: It has been difficult over the past year for surgical trainees, not

only to start any surgery, but also to regain their confidence through regular surgical sessions. Do you think that training juniors is only the role of low-volume teaching centres or do you think this model needs to be revisited?

Jonathan Ross: If it's the high volume and repetition that gives you the deep learning, and difficult things become easy, then we probably need to be thinking more in terms of much wider access to wet lab facilities and much greater exposure to a high-volume surgical environment.

Surgical training opportunities are possibly even greater in a higher volume surgical hub than a low volume setting. But you have to create two pathways – high-volume care delivered by trained experts and also a space where trainees don't face time pressures and can progress at a manageable pace while surrounded by accessible expertise.

Twin theatre models

Bitá Manzouri: Coming to the issue of increasing efficiency and productivity, I know you have some experience of the twin theatre model, which in many ways can act as a high-volume hub in a conventional hospital setting. Can you expand on this and tell us more about how this works and issues to consider?

Jonathan Ross: Your scarce resource within the hospital system is surgeon time. One thing that people can look at to improve throughput is surgeon time efficiency. As a broad-brush example, most eye centres do two cataract cases per hour per theatre, but most experienced cataract surgeons complete a routine operation in less than 15 minutes. Which means that during a working day, about a half or two-thirds of a surgeon's time is dead time due to patient turnaround.

With a twin theatre model, the surgeon could potentially do one cataract procedure every 15 minutes, and therefore successfully complete four cases per hour and double productivity. In theory, that is a great idea if you have sufficient theatre capacity and experienced nursing teams but a shortage of surgeons. The benefits of it are that of course you improve productivity and efficiency.

There are a number of issues to think about if you are considering establishing a twin theatre model, for instance the sustainability of the service. You will require a motivated and supportive team that understands the mission. In large teams you often have turnover of staff and training needs can slow things down. If you try to do too much across the working week there can be an element of fatigue

that may creep in. And for the surgeon, you need to enjoy doing it otherwise it will be an intimidating job plan.

Resurgence of interest in immediate simultaneous bilateral cataract surgery

Bitá Manzouri: As you said, the most important issue is having a good supportive multidisciplinary team. I think most competent and capable cataract surgeons would be very keen to undertake this. That leads on nicely to my next point. One of the hot topics to emerge out of the COVID-19 crisis has been immediate sequential bilateral cataract surgery (ISBCS). Personally, I was very much an early adopter of this technique. As a very productive and experienced cataract surgeon, what are your thoughts and experience of ISBCS?

Jonathan Ross: It is a fascinating controversy and there are many countries where ISBCS is common practice. There has been a huge resurgence of interest since lockdown, with online educational events going through the evidence for and against it [4-7].

It seems to me that ISBCS is a classic example of a clash between, on the one hand, culture and anxiety about what can go wrong, versus the supporting data and evidence on the other. The two issues that come up time and again are the truly appalling spectre of bilateral blindness from postoperative endophthalmitis and second-eye refractive planning.

On the latter point, with modern biometry incorporating several excellent formulae which corroborate each other (SRK/T, Olsen, Barrett 2 and Hill-RBF are the four I routinely use), I don't believe that refractive error is a huge issue in the vast majority of cases.

There have been about eight cases of bilateral simultaneous postoperative endophthalmitis reported since 1978, and in every case that has been carefully investigated, multiple significant breaches in sterile protocol occurred [4,5]. ISBCS requires an extra level of care and strict adherence to protocol guidelines and established principles on how to perform ISBCS safely [4]. Recent new guidance on ISBCS has been developed by the Royal College of Ophthalmologists and UK and Ireland Society of Cataract and Refractive Surgeons (UKISCRS) (Table 1) [8].

If you are going to do simultaneous bilateral cataract surgery, you need to be confident that you can reliably construct the corneal wound that will hold tight. But if you meet that criteria, and you follow the latest professional guidance, I think

you are in a really safe place to proceed with ISBCS when patients request it on reasonable grounds.

Bitá Manzouri: The evidence suggests that bilateral endophthalmitis following ISBCS is extremely rare [4,5,9]. The principles of safe ISBCS include treating each eye as a separate independent procedure with new consumables from different batches and following the recommendation for using intracameral antibiotics [5,8].

Our experience at the Queen's Hospital NHS Trust is that ISBCS is a safe technique providing the tenets of the International Society of Bilateral Cataract Surgeons are followed and may be considered as a preferred practice in eligible cases [10]. A retrospective data analysis of patients who underwent ISBCS with intraocular lens implantation between January 2011 and December 2017 found that no sight-threatening complications occurred in any eyes treated at our hospital [10].

Maximising pathway efficiency by incorporating dilation at home and on-table mydriasis.

Bitá Manzouri: Another idea for improving the cataract hub pathway, being trialled by several hospitals, is home dilation, with patients being given preoperative mydriatic drops to be self-applied prior to leaving home on the day of surgery. What are your thoughts on this?

Jonathan Ross: Dilation at home is not a practice we have adopted although it is being followed in the London cataract hub pathway. Preoperative mydriasis has changed quite a lot in recent years generally. Mydriatic drops need to be applied 30 minutes or more before surgery and provide a stable pupil throughout the procedure.

For me, the big game changer has been intracameral Mydrane (standardised intracameral solution of 0.02% tropicamide, combined with 0.31% phenylephrine and 1% lidocaine), developed as an alternative to conventional topical preoperative mydriatics, because it gives me control over that process and reduces the overall surgical admission time for patients by a third or more [11].

It is not that rare to have a situation where a patient is about to go into theatre and is insufficiently dilated. In a modern surgical environment, rearranging theatre lists can be disruptive and potentially increase the risk of something going wrong. Using on-table intracameral mydriasis alone helps reduce preoperative time and provides adequate intraoperative pupillary dilation.

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(All links last accessed August 2021)

Table 1: UKISCRS and RCOphth: Surgical considerations for immediate simultaneous bilateral cataract surgery (ISBCS)*.

- Concomitant ocular or periocular disease should be controlled and managed before surgery.
- There should be a clear planning as to which eye to do first.
- To avoid wrong intraocular lenses and never events, particularly to minimise the risk of right-left eye errors, existing RCOphth / UKOA guidance[‡] including using the WHO Surgical Safety operative checklist should be followed at the start of each eye as if it were a separate case. The surgical plan must be clearly differentiated for each eye (e.g. selected intraocular lens (IOL), astigmatism management) and all checks should include reference to source biometry documentation during safety checks.
- In the context of high refractive error, if expedited second eye surgery cannot be assured, ISBCS may be considered for unilateral cataract, but only usually if there are safety issues or if postoperative anisometropia cannot be managed in any other way (such as contact lens wear).
- Topical anaesthesia is preferred, with or without sedation, or sub-tenons in one eye only. It is preferable not to 'block' both eyes.
- Complete aseptic separation of the first and second eye surgeries is mandatory to minimise the risk of postoperative bilateral endophthalmitis. The following precautions are important safety arrangements for ISBCS:
 - Before the operation of the second eye, the surgeon and nurse shall use scrupulous sterile routines treating each as a completely separate procedure with completely separate aseptic preparation
 - Theatre team to rescrub, re-gown, re-glove and undertake repeat prepping and draping of the surgical site
 - The separate instrument trays for the two eyes should go through complete and separate sterilisation cycles with indicators
 - There should be no physical contact with or cross-over of instruments, drugs or devices between the two trays for the two eyes at any time before or during the surgery of either eye
 - Consider the use of disposable surgical instrument sets
 - Different batches / lots of surgical supplies should be used for each eye; this should be specified on ordering
 - If possible, different IOL batches should be used for the two eyes; some very experienced ISBCS units do not make this stipulation, so long as the IOL manufacturer is reputable with a proven track record
 - Nothing should be changed with respect to suppliers or devices used in surgery without a thorough review by the entire surgical team, to assure the safety of proposed changes.
- Careful wound architecture and low threshold for suture use.
- Intracameral antibiotics at the end of surgery are mandatory for both eyes, with an agreed local policy with respect to patients with known or suspected drug allergies – i.e. either use intracameral antibiotics or do not proceed with ISBCS.
- Any issues with first eye surgery must be resolved before proceeding; if there is a suggestion that there is a significant complication in the first eye (including but not limited to capsule rupture, vitreous loss, zonular dialysis or increased surgical time for some other reason) especially if it increases the risk of endophthalmitis or other adverse outcome, second eye surgery must be deferred.
- It is important that, in training units, ISBCS does not reduce access to training opportunities. There should be particularly careful consideration of the level of trainee experience and performance and close supervision for trainees performing ISBCS cases. It is expected that initially a senior surgeon will do the first eye, and if uneventful it may be appropriate for a less experienced surgeon to undertake second eye surgery – this may change as units gain more experience in training on ISBCS cases.

*Extract adapted from: UKISCRS and Royal College of Ophthalmologists. Immediate Sequential Bilateral Cataract Surgery (ISBCS) during COVID recovery: RCOphth / UKISCRS rapid advice document. July 2020. Courtesy of The Royal College of Ophthalmologists.

[‡]The Royal College of Ophthalmologists. Quality Standard. Correct IOL implantation in cataract surgery. RCOphth/UKOA 2018. <https://www.rcophth.ac.uk/wp-content/uploads/2018/03/Correct-IOL-implantation-in-cataract-surgery-quality-standard.pdf>

TAKE HOME MESSAGE

- The process of high-volume cataract hubs not only provides more care but better outcomes for patients and offers unique learning and upskill opportunities for multidisciplinary staff.
- A twin theatre model can enhance productivity and efficiency, significantly increasing case flow, but requires a supportive collaborative team and established processes to help sustain the service pathway.
- Surgical trainees would benefit from wider access to wet labs and greater exposure to a high-volume surgical environment.
- Immediate sequential bilateral cataract surgery is a low risk and effective procedure and offers the potential to maximise theatre use and limit hospital attendance; bilateral endophthalmitis following ISBCS is extremely rare.
- Dilation at home has been incorporated in the London cataract hub pathway, while practitioner experience demonstrates that on-table intracameral mydriasis as an alternative to topical preoperative mydriatics can reduce overall surgical mission time by around a third.

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