

# BMJ Open Only eye study 3 (OnES 3): a qualitative study into how surgeons approach surgery in patients with only one seeing eye

Jonathan P Whyte,<sup>1</sup> Graham Lee ,<sup>2</sup> Lee Jones,<sup>3</sup> Peter Shah<sup>4</sup>

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<sup>1</sup>The University of Sydney, Sydney, New South Wales, Australia

<sup>2</sup>Department of Surgery (Ophthalmology), The University of Queensland - Saint Lucia Campus, Saint Lucia, Queensland, Australia

<sup>3</sup>University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

<sup>4</sup>Queen Elizabeth Hospital Birmingham, Birmingham, UK

## Correspondence to

Professor Graham Lee; [g.lee1@uq.edu.au](mailto:g.lee1@uq.edu.au)

## ABSTRACT

**Objective** Performing surgery on an ‘only eye’ patient is considered high stakes. The purpose of this study is to explore the process of only eye surgery from the perspective of ophthalmic surgeons and improve both patient and surgeon experience.

**Design, setting and participants** A cohort of 76 Australian consultant ophthalmologists, divided into three focus groups, were recruited via online webinar to participate in a guided focus group discussion about only eye surgery. Qualitative data regarding participant experience of performing only eye surgery were collected in audio and text form. Thematic analysis was conducted to identify patterns in the data.

**Main outcome measure** Identification of themes relevant to only eye surgery.

**Results** Five overarching themes relevant to only eye surgery were identified: (1) differences in the surgical decision-making process; (2) differences in the approach to consent, (3) implementation of additional risk reduction strategies, (4) value of having colleagues to discuss and plan surgery with and (5) psychological challenges. A divergent theme was identified: (6) that all surgery, only eye or not, should be treated the same.

**Conclusions** This study identifies challenges associated with clinical management of only eye patients across their surgical journey. A conceptual framework to guide surgeons when managing only eye patients is provided which has potential to promote a more unified approach to treating this high-stakes cohort.

## INTRODUCTION

Although there is no standardised definition for an ‘only eye’ patient, it typically refers to the situation where their contralateral eye fulfils the criteria for legal registration as severely sight impaired based on visual acuity or visual field loss. It could also apply to situations where a patient feels that their better seeing eye is the only one with functional vision, and loss of this ‘only eye’ would have life-changing consequences (including loss of independence and need for significant social care). Patients with an only eye are not uncommon in ophthalmology clinics.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Focus groups enabled the research team to gain perspectives from a large and broad group of surgeons, with a range of expertise in the field of only eye surgery.
- ⇒ Use of a qualitative approach resulted in an in-depth and sincere discussion regarding the complexities of only eye surgery.
- ⇒ Differences in the approaches to only eye surgery within various ophthalmic surgical subspecialties were not explored but could be an avenue for further research.

They are a heterogeneous group that may have suffered irreversible vision loss in their fellow eye from a variety of disorders, including advanced disease, trauma, severe amblyopia or surgical complication. Performing surgery on an only eye is considered high-stakes surgery because of the potential life-changing consequences of failure or complication.<sup>1 2</sup>

To date, there has been limited research into the experience of only eye surgery from the surgeon’s perspective. A recent study by Jones *et al* identified, through qualitative in-depth semistructured interviews of ten ophthalmic surgeons, several key differences when it comes to operating on monocular versus binocular patients. These included differences in the consent process, implementation of extra risk reduction strategies and the psychological burdens experienced by the surgeon and/or assisting staff, particularly if there is an unsuccessful outcome. Good mentorship and training were considered important factors that help equip surgeons to perform only eye surgery.<sup>1</sup>

This study seeks to build on this research by analysing the only eye surgery experience of a large cohort of practicing ophthalmic surgeons. Currently, to the best of our knowledge, no guidelines specific to managing only eye surgery patients have been published

by any of the major professional ophthalmology bodies worldwide. This study also aims to provide the foundation for their development.

## METHODS

### Sampling and recruitment

A focus group study design was chosen to understand the experience of only eye surgery from a surgeon's perspective. The study sample of Australian ophthalmologists were recruited via an ophthalmology professional development webinar hosted in 2019 by one of the authors (GL) over three identically run sessions on different dates. There was a combined total of 76 attendees who were evenly divided across these sessions. This professional development event is hosted annually and is generally attended by a diverse group of Australian ophthalmologists. A different topic is chosen as the focus of the event each year, and for the 2019 edition this was 'only eye surgery'. At each session, the host explained the nature of the study to attendees and invited them to participate on a voluntary basis. Informed consent was obtained from all participants. There were no attendees who declined to participate. Through this approach three piggyback focus groups, one from each session, were created. Thus each focus group consisted of approximately 25 surgeons who were randomly allocated. These large focus groups were considered the most effective approach to engage participants within the context of a busy online webinar, which created a highly dynamic environment to stimulate discussion.

### Data collection

For each focus group, the host (GL) facilitated a discussion about only eye surgery. As an Australian ophthalmologist themselves, the facilitator had a professional relationship with some of the participants. A topic guide was loosely followed, and participants were encouraged to comment freely about their own experience with only eye surgery. Participants were able to speak through their computer microphone or type via a live text box. The content of these discussions was recorded in a secure and de-identified fashion for later analysis.

### Data analysis

Qualitative data from these focus group discussions, in audio and text form, were transcribed verbatim into the NVivo (QSR International, Cambridge Massachusetts, USA) software program for thematic analysis. An inductive experiential realist approach using open coding was used to analyse patterns in participants' responses. This approach to analysis allowed the research team to identify patterns across participants' responses to generate themes from the bottom-up. This more flexible approach to analysis was considered most suitable given the limited prior research and theory on the topic of only eye surgery.

Transcript data were read and reread by one of the researchers (JPW), who did not have a relationship with

**Table 1** Demographic profile and only eye surgery experience level of participating ophthalmology consultants (n=76)

Sex	
Male	64 (84.2%)
Female	12 (15.8%)
Age range	
21–30 years	0 (0.0%)
31–40 years	1 (1.3%)
41–50 years	22 (29.3%)
51–60 years	33 (44.0%)
61 years and older	19 (25.3%)
Years in practice, mean (SD)	23 (8)
No of only eye cases performed	
1–50	22 (31.9%)
51–250	26 (37.7%)
251–500	11 (15.9%)
501 and over	10 (14.5%)
Years taken to feel confident performing only eye surgery	
Less than 1 year	14 (20.9%)
1–2 years	11 (16.4%)
3–5 years	29 (43.3%)
6–10 years	6 (8.9%)
More than 10 years	4 (6.0%)
Still don't feel confident	3 (4.5%)
Results are presented in number (%) unless otherwise indicated. Number of missing responses: age (n=1), number of only eye cases (n=7), years taken to feel confident (n=9).	

any of the participants, and preliminary codes were developed based on impressions of recurring themes. Following this, interpretations of the coding and themes were discussed among the entire research team. Once agreement on the suitability of coding choices was reached, the coding framework was refined and key themes were finalised.

The Standards for Reporting Qualitative Research (SRQR) were used for this qualitative study.<sup>3</sup>

### Patient and public involvement

This report is part of a wider programme of research investigating only eye surgery 'the Only Eye Study (OnES)'. Consultation with patients and professionals during the planning of this study led to the development of the research agenda and informed the design of the interview topic guide used in this study.

## RESULTS

A total of 76 consultant ophthalmic surgeons participated in the study. Their characteristics are summarised in [table 1](#).

Five overarching themes specific to only eye surgery were identified, with one divergent theme also identified:

### Differences in the surgical decision-making process

Participants were consistent in their agreement that the decision to operate on an only eye was a different proposition compared with a patient with two functioning eyes. Participants were highly conscious of patient concerns when it came to considering surgery on their only eye. They remarked how this could affect the patient's willingness to proceed with such surgery.

It is important to acknowledge anxiety about surgery for both the patient and to some degree for the doctor undertaking the responsibility of only eye surgery. (S9)

Because of the high-stakes nature of only eye surgery, participants tended to adopt a higher threshold when deciding to operate on an only eye.

I would only recommend only eye surgery if the patient had deteriorating quality of life related to poor vision, there were no other options and there was a low risk of complications. (S132)

In certain situations, participants found that getting a second opinion was helpful, especially if they sensed the patient had any doubts about the surgery. If an only eye patient required a surgery the surgeon felt less familiar with performing, they might refer these patients to a more experienced colleague.

### Differences in the approach to consent

During consent discussions, participants emphasised the importance of clearly communicating the risks of performing surgery on a patient's only eye, and what this meant in the context of their only eye status.

I use the phrase "you are at no higher risk of a complication having only one eye, but the implication of a complication may have a more significant impact on you and your lifestyle". (S8)

Participants noted that this often required longer or multiple consultations. The concept of a 'cool off' period was mentioned, where another appointment is routinely arranged before signing consent so that the patient has time to consider the information before signing the document.

Always more care is taken with patient explanation, specific and general risks of the surgery. (S45)

I spend much more time explaining the process of the surgery and how we manage the post-operative period so that the patient and carers are completely aware of what to expect. (S67)

Many participants considered the presence of a support person (eg, family member) during the consent process as critical. Some would even refuse to book surgery until a support person had been involved.

The importance of establishing a trusting doctor-patient relationship with these patients was identified.

I usually know these patients well before arranging surgery and have a good doctor-patient relationship with them, which renders preoperative consultation and operative planning easier (S64)

### Implementation of additional risk reduction strategies

Many participants agreed that they implement additional strategies to try and reduce risk when performing only eye surgery. Preoperatively, steps to minimise risk included mental preparation, putting only eye patients at an optimal position on the surgical list, and ensuring the availability of good instruments and a good surgical team, including experienced anaesthetic and scrub-nurse colleagues. Postoperatively, risk mitigating strategies included safely managing low vision in the postoperative period, close follow-up, adequate patient education and easy access channels for them to seek assistance if any concerns.

#### Preoperative

Some participants reported employing mental techniques to prepare for only eye surgery. An example provided was task visualisation, a technique in which the surgeon uses their imagination to mentally rehearse the procedure beforehand.

Choice of patient position on the surgical list was deemed important by several participants. Exactly which spot was considered the best did vary, however, there seemed to be strong agreement that first on the list should be avoided to allow 'warm up'. One participant suggested leaving the most surgically complicated cases until last to avoid any time constraints but did not limit this to only eye cases.

Several participants reported they would personally ensure every piece of equipment that might be required for the surgery was available for their only eye cases.

I make sure that I have everything in theatre and nurses don't have to go looking for things, just in case I need something. (S39)

Many participants considered it important to have a well-trained and experienced surgical team on the day. A consistent and familiar team helped some of the participants feel more comfortable about the surgery.

I think in these ones you really need to be 100 percent sure that your team's good ... I will only do only eyes at the place (hospital) where I get most of my regular eye team. (S63)

It was the experience of some participants that clearly communicating a patient's only eye status with the theatre staff in advance may help ensure the surgeon had the best personnel assisting on the day.

#### Postoperative

Participants described strategies to maximise patient safety in the immediate postoperative period, where

there may be an increased risk of injury or falls in the context of reduced vision. Many participants preferred topical or general anaesthetic for cataract surgery in only eye patients, so that the patient could see immediately after surgery. If a local anaesthetic block was used, short-acting anaesthetic agents were preferred over long-acting agents to avoid an extended period of reduced vision. Covering the patient's eye at completion of the surgery, in a manner that would obscure their vision, was avoided if possible. Only eye patients would be kept in the recovery bay for a longer period of observation until they could demonstrate an ability to navigate safely. They would only be discharged in the presence of a support person, or if necessary, admitted to hospital overnight.

Some participants recommended closer postoperative follow-up for all only eye patients, such that if there were any complications, they would be alerted to them at an earlier stage. Others were comfortable with routine follow-up, provided the surgery had gone well. It was noted that only eye patients are often very keen to be reviewed more frequently.

Participants ensured their only eye patients were adequately educated regarding what to expect postoperatively and had a direct access channel to seek assistance if they encountered any problems. Many would provide their personal phone number or the details of the local eye hospital emergency department.

#### Value of having colleagues to discuss and plan surgery with

Many participants agreed that it was beneficial to have mentors or experienced colleagues that they could talk to about difficult only eye cases. This could be during the decision-making process on whether to operate on an only eye.

Find it particularly useful when deciding re filtering surgery in progressive glaucoma where pressures are normal. (S3)

Or it could be for advice prior to performing a less familiar procedure.

Sometimes you're forced to do an unusual procedure in these extreme cases and well, you know, that's when you consult as widely as you can with your colleagues. (S54)

The mere act of involving another colleague also provided a degree of psychological reassurance for some participants.

A problem shared is a problem halved (S3)

#### Psychological challenges

Participants acknowledged that as the surgeon they carried ultimate responsibility for their patients, and they felt an additional weight of responsibility for their only eye patients.

There is always a feeling of greater responsibility in operating on these patients. (S165)

I often feel me as the surgeon carries the burden. (S1)

Some participants revealed that they experience stress in the lead up to difficult only eye surgery.

I don't sleep well before doing a complex only eye e.g, small pupil, shallow anterior chamber. (S33)

Other participants acknowledged the stress caused by only eye surgery but did not necessarily perceive it in a negative way.

When things start to go pear-shaped, it's how you interpret your physiological responses. If you interpret the tachycardia as fear, you are in trouble. But if you interpret it as your body preparing you to meet the challenge you will be well placed to deal with it. (S44)

Some participants found that meditation techniques, such as mindfulness, helped them manage their stress.

Participants were acutely aware of how an adverse surgical outcome could have catastrophic consequences for an only eye patient.

Losing an eye from surgery is devastating, but to realise you have blinded somebody that is, made them dependent for the rest of their lives is a very heavy blow to your psyche. (S1)

Participants described how a negative past experience, such as an adverse surgical outcome in an only eye patient that had occurred under their care, could still affect them psychologically.

#### All surgery, only eye or not, should be treated the same

A divergent theme emerged within the data that appeared to disagree with the sentiment that only eye surgery should be approached differently. Some participants argued that all eyes were equally important, and that any approach that potentially led to safer outcomes for only eye patients should be applied to all patients.

Should we not be treating every eye surgery as if it is the only eye always? (S39)

Each eye in every person is important and deserves full attention, whether or not it's the only one remaining for that particular individual. (S146)

Some participants acknowledged the additional psychological burdens that could arise when performing only eye surgery but believed that devoting too much attention to this was more of a hinderance than help. These participants implicitly agreed that only eye surgery was different, but despite this, surgeons should try and keep their approach the same.

Maybe we are making this more stressful than it should be ... I agree that I would never sleep if I thought of the consequences to my patient's life if it went wrong. You do the best for all your patients each time you operate without putting extra stress on yourself and staff? (S12)

## DISCUSSION

The decision to operate on an only eye should be individualised for each patient. The decision is shared and involves collaboration between both patient and surgeon. In our study, surgeons regarded being able to explore and address individual patient concerns as an important step in the only eye surgery decision-making process. Patients are understandably more anxious when it comes to surgery on their only eye.<sup>4</sup> Individual variation in patients' level of anxiety may exist due to differences in personality and risk tolerance, but past experiences may also play a role. A patient who lost one eye due to a surgical complication would probably be much more fearful of undergoing surgery in their good eye than a patient who had long-standing poor vision secondary to amblyopia. A patient who has already undergone successful vision improving surgery to their only eye may be more anxious about subsequent surgery that will place this 'better vision' at risk. Some patients may require multidisciplinary input including psychological support to assist them through the surgical process.

This study highlighted the use of second opinions as a valuable tool to assist with the only eye surgery decision-making process. Patients may seek a second opinion to acquire more information and help them make a sound treatment decision.<sup>5</sup> Doctors may seek a second opinion when a difficult clinical decision needs to be made.<sup>6</sup> Some ophthalmic surgeons in our study reported engaging the advice of a colleague when faced with a difficult decision about whether to offer surgery to an only eye patient, such as whether to perform filtration surgery for progressive glaucoma with normal intraocular pressures. A formalised version of this process exists for cardiothoracic surgeons in the UK, where high-risk patients are referred to a Surgical Council or 'Star Chamber' and a group of surgeons collectively decide on the best course of management.<sup>7</sup>

There was evidence of a differential threshold at which surgery is performed on an only eye compared with a binocular patient's eye. Many surgeons in our study adopt a higher threshold to offer surgery to their only eye patients. This can be considered under the broader concept of material risk, which is defined as risk that a reasonable person in the patient's position would be likely to attach significance to, as opposed to a 'one-size-fits all' approach. Using the test of materiality, greater risk is attached to performing eye surgery in an only eye patient compared with performing the same surgery in a binocular patient. As evidenced by major court rulings in the USA, Australia and more recently the UK, there has been a shift in thinking over the past few decades such that doctors now have a legal duty to disclose material risk during the consent process.<sup>8-10</sup> This means that in order to adequately consent only eye patients for surgery, they must not only be made aware of the surgical risks, but also fully appreciate the impact that these may have in the context of their only eye status. This necessitates

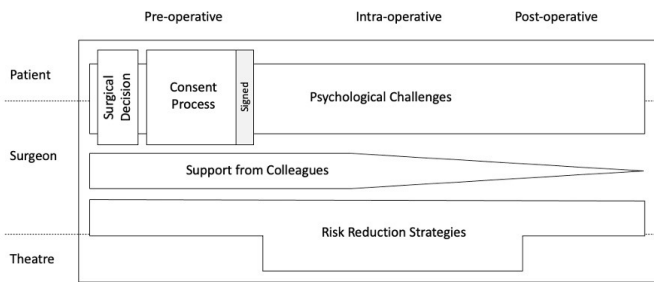
that extra time is spent on the consent process for these patients.

Our study identified that the presence of a support person such as a family member or close friend of the patient during the only eye surgery consent process was considered critical by many surgeons. Patients worldwide look to family and community for help with important decisions.<sup>11</sup> In the surgical context, a support person could help provide emotional support, input into the treatment decision and assistance with information recall later.

Surgeons in our study found that engaging surgical peers or mentors was useful when managing only eye patients. The importance of mentorship as part of surgical training is well established.<sup>12 13</sup> After completing surgical training, mentoring relationships remain important throughout one's career.<sup>14</sup> Even among fully qualified surgeons, there exists individual variation in expertise and experience. Our study found that surgeons may consult widely with their colleagues prior to performing a complex or unusual procedure that is required in a challenging only eye case. With the increasing digitisation of ophthalmic clinical assessment tools and the rapid uptake of telehealth during the current worldwide pandemic,<sup>15 16</sup> access to colleague support should be better than ever before. Online services that provide patients with access to second opinions already exist.<sup>17 18</sup> The cultivation of both informal and formal peer networks where surgeons can seek advice on the management of only eye patients should be encouraged.

A unique aspect of operating on a patient's only eye is safely managing their low vision in the post-operative period. Poor vision correlates with increased risk of falls and injury.<sup>19 20</sup> Surgeons in our study would adjust their approach during only eye cases to maximise the patient's vision in the immediate postoperative period. Such adjustments included selecting general anaesthesia, topical anaesthesia or a short-acting block as the preferred mode of anaesthesia and minimising or avoiding patching the eye at the completion of surgery. A longer period of observation is generally recommended to ensure the patient is safe for discharge post operatively. Alternatively, admission to hospital may be required if they do not have a safe supervised home environment to discharge to.

An adverse outcome in only eye surgery can have catastrophic consequences for the patient. It may result in total blindness and loss of independence, completely transforming their way of life. It is known that serious complications can have negative emotional impacts on the surgeon too, the so-called 'second victim' phenomenon.<sup>21 22</sup> This may lead to feelings of guilt, burnout or depression.<sup>22</sup> Surgeons in our study were acutely aware of the devastating consequences of a poor outcome in only eye surgery, and how it could affect their own psyche. They reported how the negative thoughts associated with such an event could persist long term. Jones *et al* found similar experiences among surgeons who had lost an only eye. Surgeons in their study felt like there was a lack of



**Figure 1** Conceptualisation of the only eye surgery process.

formal support available for individuals going through this.<sup>1</sup> Available literature suggests it is important that the second victim receives emotional support. This may be accomplished through extensive and open discussion with peers, family and counsellors.<sup>22 23</sup> More research needs to be done into the emotional effect that complications can have on surgeons and the optimal way of managing and preventing these.

There was a subset of surgeons in our study who felt that all eye surgery should be treated the same. It is interesting to note that there is inherent logical inconsistency in this approach. All surgeons stratify patients (with one or two eyes) for complexity and risk. Only eye surgery is a subset of high-stakes surgery, and one would not advise training a new scrub-nurse or junior anaesthetist on these cases. Therefore, one can assume that surgeons do not treat all patients in the same way—variation in approach is key in more complex work.

We propose integrating the key elements of the only eye surgery process into a conceptual framework (figure 1). Along the vertical axis are the three separate entities involved in the process: the patient, surgeon and operating theatre. As this study focuses on the surgeon experience of only eye surgery, the surgeon finds themselves in the centre of this axis. The horizontal axis is a timeline extending from pre-operative to postoperative phases. Within the figure each of the five elements are positioned relative to their temporal position in the surgical process along the horizontal axis and relative to the directly involved entity along the vertical axis. Surgical decision is generally followed by the consent process. Note that there may not necessarily be such a clear distinction between the two in real life. The actual signing of the consent form is the final step in the consent process and should be considered a small although essential part. Psychological challenges for the patient and surgeon are present throughout the entire surgical process. Colleague support is a prominent factor early on but dwindles in the intraoperative and postoperative phases. While the surgeon must be cognisant of risk minimisation through the entire process, the operating theatre's involvement is limited to the perioperative period. This framework allows us to consider the process of only eye surgery from beginning to end and highlights the relevant considerations at each point along the way.

We would like to address the strengths and weaknesses of this study. The demographic breakdown of participants suggests it captures the views of a senior group of ophthalmology consultants within the Australian context. We believe that this is an advantage, as the data is drawn from cumulative decades of only eye surgery experience. Most surgeons in the study were male, however this approximately reflects the current sex distribution of ophthalmology fellows in Australia and New Zealand.<sup>24</sup> Although these professional development webinars have covered various topics in the past and are generally attended by a diverse rather than subspecialised group of ophthalmologists, it is important to note that only eye surgery was the key topic of the 2019 webinar from which surgeons were recruited for this study, and thus the possibility of selection bias must be considered. The focus groups in this study were quite large, containing up to 26 surgeons. This has the benefit of capturing a great breadth of experiences. Conversely, large focus groups may limit each surgeon's opportunity to share their individual insights, particularly those who may be less confident. This was offset in our study through the availability of a discussion text box and anonymous comment section, which have been shown to raise participation rates and create equalisation among study participants.<sup>25 26</sup> Examining if there are differences in the approach to only eye surgery within the various ophthalmic surgical subspecialties would be an interesting avenue for further research.

Our data supported many of the findings of the previous study into only eye surgery by Jones *et al.*<sup>1</sup> The focus group design and larger number of participants in our study allowed for the dynamic exchange of viewpoints among participants and gave extra breadth to the results, although this approach did limit the depth of analysis achievable compared with face-to-face interviews. Aside from proposing a new conceptual model, there are several important findings that our study adds to the current literature. These include practical tips on reducing risk and managing low vision in the perioperative period, the importance of having a support person involved in the consent process and the existence of a differential threshold at which surgeons may be willing to perform surgery on a monocular patient. Although we would like to highlight the decision to operate on an only eye is complex and individualised, involving close collaboration between both patient and surgeon.

## CONCLUSION

This study provides a broad insight into how only eye surgery is perceived by ophthalmic surgeons. We have identified unique and important aspects of the only eye surgery process that the surgeon should be aware of. We have proposed a conceptual framework to help guide surgeons, which has the potential to promote a more unified approach to treating this high-stakes cohort. The findings of this study are relevant to surgeons, trainees and surgical educators involved in the care of the only

eye patient population. Promoting awareness and skills development in the key areas identified in this study may lead to better patient experience and outcomes.

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**Patient consent for publication** Not applicable.

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**Data availability statement** Data are available on reasonable request.

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#### ORCID iD

Graham Lee <http://orcid.org/0000-0002-9359-1473>

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