

Paper

Cataract Surgery Planning in Amblyopic Patients – Which eye first? Awareness of the Potential for Post-operative Diplopia amongst Consultant Ophthalmic Surgeons in Wales

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ABSTRACT

Aim: To explore the views of consultant ophthalmic surgeons in Wales in the context of planning cataract surgery in patients with amblyopia. To compare prevailing views and preferences with recommendations in published literature.

Method: A cross-sectional survey was conducted in which all consultant ophthalmologists working in Wales were invited to complete an online survey designed using the Survey Monkey tool (<http://www.surveymonkey.com>). The survey included a clinical scenario involving an amblyopic patient with bilateral cataracts with questions designed to elicit responders' preferences with regard to which eye they would operate on first as well as the reasoning behind their clinical decision making.

Results: 32 out of 42 consultants responded to the survey (a response rate of >75%). With regards to the chronological order of surgery 18 (56.26%) indicated that they would perform cataract surgery first on the non-amblyopic eye, 11 (34.4%) would surgically address the amblyopic eye first and three (9.4%) indicated that patient preference would dictate the choice regarding the laterality of the eye to be operated on first. While 24 responders (75.0%) had encountered amblyopic patients who had developed problems after cataract surgery only 10 (31.3%) opined that formal guidance from the Royal College of Ophthalmologists was warranted.

Conclusion: These results indicate that awareness of post-cataract surgery diplopia, and in particular fixation switch diplopia, is not widespread amongst consultant ophthalmic surgeons in Wales.

INTRODUCTION

Meticulous planning prior to cataract surgery with intraocular lens implantation is vital in order to achieve an optimum post-operative outcome. A potentially problematic situation surrounds the planning of adult cataract surgery in patients with a history of amblyopia, a condition known to affect around 3.6% of the population of the United Kingdom¹. Fixation switch diplopia is an acquired form of diplopia which can affect patients with a history of childhood strabismus and/or amblyopia in which relatively impaired vision in the dominant eye encourages fixation with the non-dominant eye². Post cataract surgery diplopia can affect up to 3% of patients³ and published literature recommends the exercise of caution when deciding to perform cataract surgery on an amblyopic eye prior to that on the stronger eye in order to avoid such fixation switch diplopia⁴. Once this occurs, the treatment of this problem can be difficult, with significant resultant morbidity⁵. In view of this, and the large numbers of cataract extractions performed annually in the United Kingdom⁴, we set out to investigate current practices in planning cataract

extractions in such patients amongst consultant ophthalmic surgeons in Wales.

METHODS

A cross sectional survey was designed in which an email was sent to every consultant in Wales inviting them to take part in an anonymous online survey, the link for which was included. The online Survey Monkey tool (<http://www.surveymonkey.com>) was used to construct the survey and analyse the results. The following scenario was described:

“A 56year old gentleman in good general health presents with symptomatic visual impairment. Best corrected spatial acuity measures 6/18 in the right eye and 6/60 in the left. Ocular examination is unremarkable apart from nuclear cataracts of similar density in both eyes and a barely noticeable and

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cosmetically excellent concomitant left esotropia of 10Δ.

Past ophthalmic history includes left amblyopia (previous documented best-corrected acuities are 6/4 right eye and 6/9 left eye). He is eager to continue his occupation as an accountant and also to drive a motor vehicle – and is keen on surgical intervention.”

Respondents were asked which eye they would operate on first and why. In addition, respondents were asked if they were familiar with amblyopic patients who had developed problems following cataract surgery and also whether they thought any formal guidance from the Royal College of Ophthalmologists was warranted. A total of six weeks was allowed for replies to be collected. A second wave of email invitations were then sent in order to give those that had not completed the survey the first time an opportunity to do so.

RESULTS

Thirty two out of forty two polled consultants responded to the survey, a response rate of >75%. Of the 32 responders to the survey 18 (56.26%) opted to perform right (dominant) eye surgery first, 11 (34.4%) opted to perform surgery on the left (amblyopic) eye first and three (9.4%) opted to give the patient the choice. Of those who would operate on the right eye first, 13 (72.2%) stated ‘better visual potential’ as a reason while two (11.1%) responders mentioned post-operative diplopia as a risk were the non-dominant eye to be operated on first. In those opting to perform surgery on the amblyopic eye first the commonest reason stated was the worse acuity (seven responders – 63.6%) in that eye. A further two (18.2%) stated that an operative complication would be less of a problem in an amblyopic eye. In all, while 24 responders (75.0%) had witnessed amblyopic patients develop problems after cataract surgery only 10 (31.3%) thought that formal guidance from the college was warranted.

DISCUSSION

The results of this online cross sectional study suggest that awareness of post cataract surgery diplopia, and in particular fixation switch diplopia, is not widespread amongst consultant ophthalmic surgeons in Wales.

Implicit to the clinical problem is the fact that, subject to the procedure being uneventful, the post-operative best corrected spatial acuity in the left (non-dominant) eye would be 6/9, whilst the acuity of the right (dominant) eye would remain at 6/18 – a minimum angle of resolution of double the magnitude - arguably conditions that would be ideal for the development of FSD.

It is interesting that 34.4% of responders would operate on the amblyopic eye first. Not only would this run the risk of fixation switch diplopia, it would also leave unaddressed the principal complaint of the patient - i.e. subjective visual impairment, a symptom related to the dominant eye. Also the majority (63.3%) of those who opted to operate initially on the amblyopic eye selected ‘eye with the worse visual acuity’ as their reason for doing so. In itself this belies a

fundamental misunderstanding of the nature of amblyopia. It is also of concern that 18.2% indicated that they would perform surgery on the amblyopic eye first on the grounds that any complications would be less significant than were they to occur in the better eye. This leaves unaddressed the fact that the better eye would still need to undergo cataract surgery in order to resolve the visual symptoms and arguably, operating initially on the amblyopic eye merely delays this risk. Also of note is that whilst 75% of responders had personally encountered amblyopic patients with problems following cataract surgery, only 31.3% felt that formal guidance from the college was warranted. It would appear reasonable to infer that these clinicians felt that cataract surgery planning in such patients was already well understood by the current generation of cataract surgeons working in Wales; whereas the results of this study would suggest otherwise. At the very least in the drafting of such guidelines priority might perhaps be leant to pre-cataract visual acuity function in each eye, a factor not routinely taken account during planning of surgery.

Whilst the incidence of diplopia following cataract surgery can affect up to 3% of patients³, the reasons for this are varied and include poor suppression, central fusion disruption and concurrent onset of systemic disease; as well as the potential for fixation switch diplopia discussed in this study. It is a possibility that the type of amblyopia; deprivational, strabismic and refractive, might also play a role in generating post operative diplopia; although no studies have explored this to date. Only a few of these factors are included in standard pre-operative cataract checks and it might be helpful for orthoptists to have a role in cataract surgery planning, although the provision of this new service could of course cause quite considerable strain to eye department service organisation.

Some might argue that treatment of post-operative diplopia produced in this fashion can be treated easily by performing surgery on the fellow eye or by fitting prisms to the patient’s glasses or even by performing muscle balance surgery to align the eyes. Whilst this is true it should not substitute for a well thought out cataract surgery planning process and a proper informed consent of all the potential risks, including diplopia in all it’s forms following cataract surgery.

The response rate was gratifyingly high for a questionnaire based study, with more than 75% of all ophthalmic consultants in Wales responding. This being said, it is also relevant that Wales as a region is small and whilst this response rate is indeed impressive it nevertheless amounts to only 32 individual ophthalmic consultants. It would have been pleasing to achieve a 100% response rate but unfortunately the constraints of the questionnaire system used meant we were unable to identify who had and who had not responded in order to target specifically the non-responders, although reminder emails were sent out to the entire cohort. Whilst a small study, we submit that the findings are relevant in the contexts of the large number of cataract surgeries performed in the United Kingdom each year (>300,000)⁴

and the estimated prevalence of amblyopia of around 3.6%¹. We therefore suggest that a nationwide survey with a view to generating increased awareness of this issue would be most relevant, whilst also establishing the case as to whether formal guidance from the Royal College of Ophthalmologists is warranted in the context of cataract planning in amblyopia. In addition to this a prospective analysis of amblyopic patients undergoing cataract surgery that subsequently develop diplopia would also be very useful as a means of attempting to discern which additional factors might need to be taken into account and thus be controlled for in the drafting of such new guidelines.

The authors have no conflict of interest

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