Does vitreoretinal surgery under local anaesthesia result in missed fellow eye pathology?

S Banerjee¹, AK Tyagi^{1,2}, DG Cottrell² and KP Stannard²

CLINICAL STUDY

Abstract

Purpose There has been a significant increase in the number of vitreoretinal procedures being performed under local anaesthesia over the past few years. This trend is expected to continue. This study was performed to investigate whether by undertaking retinal detachment surgery under local anaesthesia fellow eye examination was compromised.

Design This was a prospective, consecutive, blind, observational study.

Methods:

Setting This study was performed at a tertiary referral vitreoretinal unit in a teaching hospital.

Study population In all, 108 consecutive patients undergoing retinal detachment surgery under general anaesthesia were included.

Observation procedures Patients were examined independently by different retinal surgeons pre- and intraoperatively.

Main outcome measures The findings of the two examiners were compared and differences were analysed.

Results There were 108 patients in this study, 57 of these were males and 51 females. The mean age was 59.01 years (range 16–91). Of these 108 eyes, 48/108 (49.08%) the preoperative examination was regarded as unsatisfactory by the examiner. Over 34% of eyes had fellow eye pathology when examined preoperatively but there were nine (8.33%) eyes in which additional lesions were found intraoperatively.

Conclusion General anaesthesia should be considered for patients in whom preoperative fellow eye examination is unsatisfactory.

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Introduction

There has been a significant increase in the number of ophthalmic procedures performed under local anaesthesia. Vitreoretinal surgery is no exception and this can be expected to increase in the future.¹

The incidence of fellow eye pathology in patients undergoing retinal detachment surgery has been the subject of a number of studies.^{2–4} Some authors suggest that any high-risk lesion in the fellow eye should be treated with retinopexy.^{2–4} Hence, it is important to examine the fellow eye thoroughly as some authors suggest that fellow eye retinal detachment should be preventable.⁵

In the UK retinal detachment, surgery has traditionally been performed under general anaesthetic in most units. This has afforded the opportunity to examine the fellow eye under ideal conditions, to identify and (if necessary) treat lesions, which may predispose to future retinal detachment. Recently, however, there has been a significant increase in the number of vitreoretinal procedures performed under local anaesthesia,¹ which removes this opportunity.

Patients with retinal detachment in whom preoperative assessment of the fellow eye is difficult may have lesions that require treatment. These may be missed if the surgery is performed under local anaesthesia only for the operated eye.

This study was performed to find out if in patients with retinal detachment examination of the fellow eye without general anaesthesia would result in missed pathology.

Design

This was a prospective, consecutive, blind, observational study.

¹Vitreoretinal Unit
Birmingham and Midland
Eye Centre
Birmingham, UK

²Vitreoretinal Unit
Department of
Ophthalmology
Claremont Wing
Royal Victoria Infirmary
Victoria Road, Newcastle
upon Tyne, UK

Correspondence: AK Tyagi
Birmingham and Midland
Eye Centre
City Hospital NHS Trust
Dudley Road
Birmingham B18 7QU, UK
Tel: +44 0121 554 3801
Fax: +44 0121 507 6853
E-mail:ajaityagi@
yahoo.com

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Methods

Setting

This study was performed at a tertiary referral vitreoretinal unit in a teaching hospital.

Study population

This was a prospective study including a consecutive series of all patients undergoing retinal detachment surgery under general anaesthesia during the study period. Patients with retinal detachment secondary to trauma were excluded.

Observation procedures

Fellow-eye retinal examinations were performed by either a consultant vitreoretinal surgeon (DGC or KPS) or a vitreoretinal fellow (AKT). Surgeon A examined the patients preoperatively, examination included use of the slit lamp with a condensing fundus lens and an indirect ophthalmoscope with indentation. The preoperative examiner recorded the findings on a proforma on which he was specifically asked to note whether the examination was difficult (enough to render it unsatisfactory) and if so the reason for this. Any significant vitreoretinal pathology that needed treatment was noted.

Significant pathology was defined as the presence of one or more of the following: lattice degeneration/snail track degeneration, retinal breaks, and vitreoretinal tufts.

Main outcome measures

During surgery, under general anaesthesia the operating Surgeon B examined the fellow eye by indirect ophthalmoscopy with indentation and noted any significant vitreoretinal pathology that required treatment. In all cases, Surgeon A was different from Surgeon B; each examined the patient independently and Surgeon B was initially blinded to Surgeon A's findings. Surgeon B then checked the preoperative notes and any differences were noted.

Results

There were 111 patients who met the inclusion criteria for this study. Of these, three were excluded; one did not have a preoperative assessment and in two patients the intraoperative assessment was not done as the pupil was not dilated in theatre.

There were 108 patients included in the analysis, 57 of these were males and 51 females. The mean age was 59.01 years (range 16–91). All of these patients were

Caucasian. There were 53 right fellow eyes and 55 left fellow eyes.

Of these 108 eyes, 60 (50.92%) were found to have had a satisfactory preoperative examination and 48/108 (49.08%) was found to have an unsatisfactory examination.

The reasons for unsatisfactory examination are shown in Figure 1.

During the preoperative examination, significant retinal pathology requiring treatment was found to be present in 37 (34.26%) eyes. Some eyes had more than one lesion that required treatment (Table 1).

There were nine (8.33%) eyes in which there was a significant difference between preoperative and intraoperative findings. These would have been missed if the patient had undergone surgery under local anaesthesia.

These cases are presented in detail in Table 2.

Of all our patients, 49 (45.37%) were found to have a posterior vitreous detachment (PVD) indicated by the presence of a Weiss ring. Of the nine patients where significant pathology was missed, five had a PVD.

Reasons for Unsatisfactory Preoperative Examination

NB: some eyes had more than one reason; some of the above reasons may make it equally difficult to examine the retina under both local and general anaesthesia

Figure 1 Reasons for unsatisfactory preoperative examination

Table 1 Lesions requiring treatment found at preoperative assessment

Lesion	Number of eyes
Retinal detachment	1
Operculated retinal tear	3
Lattice/snail track degeneration	21
Lattice with holes	5
Retinal hole with SRF	5
Retinal hole with pigment	3
Vitreoretinal tufts	2

SRF, subretinal fluid.

Table 2 Patients with significant fellow eye pathology missed preoperatively

Patient	Age (years)	Sex	Preoperative Examination	Significant findings intraoperatively	Treatment
1	62	F	Painful, NAD no PVD	Lattice with hole	Cryopexy
2	72	F	Capsular opacity, lattice with hole no PVD	Further holes found	Cryopexy
3	81	M	Small pupil, NAD no PVD	Three large flat breaks	Cryopexy
4	56	M	Small pupil, NAD, PVD	Two flat U tears	Cryopexy
5	21	M	Pain, photophobia, chronic inferior RD, PVD	Retinal holes and SRF	Cryopexy
6	66	M	Photophobia, NAD, PVD	Single round hole	Cryopexy
7	50	M	Pain, eye movement, NAD no PVD	Lattice	Cryopexy
8	78	F	Lens opacity, pain NAD, PVD	Lattice	Cryopexy
9	34	F	Photophobia, pain, Lattice, PVD	Hole with SRF	Laser and cryopexy

NAD-normal, RD-retinal detachment, SRF-sub retinal fluid, PVD-posterior vitreous detachment

Discussion

Value of fellow eye examination/treatment

We are aware that there remains some controversy concerning the topic of prophylactic treatment to the fellow eye in rhegmatogenous retinal detachment, and we accept that there are good reasons for reservations about this (for example, Schroeder and Baden⁶ found that 7.2% of patients undergoing retinal reattachment surgery had previously undergone prophylactic photocoagulation for lattice degeneration and retinal tears). However, we believe that there is a significant body of opinion in its favour, not least because the incidence of retinal detachment in the fellow eye is said to be between 4 and 14%.^{5,7-9}

Symptomatic recent retinal tears are the main indication for prophylaxis;⁷ other potential indications include asymptomatic lattice degeneration, vitreoretinal tufts, operculated retinal tears, and lattice degeneration with holes, although it is difficult to quantify the risk of subsequent detachment with these lesions.

One school suggests that in the presence of a PVD, no prophylactic treatment is generally required.¹⁰ However, in our unit, we prefer to treat any of these lesions in the fellow eye, whether symptomatic or not and whether or not there is a PVD.

Role of general anaesthesia in the detection of significant fellow eye lesions

If one accepts that prophylactic fellow eye treatment is beneficial, one is then obliged to perform an effective fellow eye examination to detect significant pathology. The use of general anaesthesia does not remove the need for careful preoperative fellow eye examination but does afford the opportunity to perform a thorough examination with the indirect ophthalmoscope and indentation, without causing any patient discomfort. This opportunity does not exist with local anaesthesia

administered only to the operated eye (assuming that sedation has not been used).

Results of current study

Our study illustrates that in patients with retinal detachment, preoperative fellow eye examination frequently reveals significant lesions: 34% of eyes were found to have significant fellow eye pathology when examined preoperatively. However, in nine eyes significant lesions were missed; three cases (Pt 2,5, and 9) had been noted to have other lesions requiring treatment preoperatively and six had been noted to require no treatment at all. There was some difficulty in the preoperative examination of all these patients.

If these patients had undergone surgery under local anaesthesia then the fellow eye lesions that were found under general anaesthetic would not have been found. Strenuous efforts had been made to ensure that the preoperative examination was as effective as possible, so the only other way in which these lesions could have been found would have been to subject the patient to bilateral local anaesthetic, either concurrently or sequentially or to heavy sedation bordering on general anaesthetic. We believe that many patients would find this unacceptable.

Study design

This prospective study was designed in such a way as to ensure that the surgeon performing the examination under general anaesthetic was blinded to the results of the preoperative examination, by specifying that different surgeons perform these checks.

We believe that this was important to ensure a true comparison between the two forms of examination. This does of course introduce the possibility that the examiners on any particular case may have had significantly different degrees of skill at retinal

examination. Analysis of the results however has shown that there was no such observer effect identifiable.

Conclusion

We suggest that for patients in whom preoperative examination of the fellow eye is difficult, general anaesthesia should be considered to reduce the risk of missing significant pathology requiring prophylactic treatment.

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