Sir,

We congratulate Rao and colleagues on their recent paper on the subject of local anaesthesia for vitreoretinal surgery[1] but wish to make the following comments. We are unfamiliar with the technique of anterior retrobulbar injection and regret that a more detailed description was not provided.

Plain lignocaine 2% is known to last for 40–60 minutes when given by injection. The addition of adrenaline prolongs anaesthetic time to approximately 2 hours by decreasing clearance of the drug. Bupivacaine 0.75%, which has a duration of action of 8–12 hours, can be mixed with lignocaine to prolong anaesthetic time further. We recommend the use of these agents to reduce the necessity for top-up injection. Top-up injections were used in a number of cases in this study but no description of the method used was supplied.

We commend the development of skills in local anaesthesia for vitreoretinal surgery such that those patients in whom general anaesthesia is contraindicated may be suitably managed. However, we feel that surgeons considering the adoption of local anaesthesia for vitreoretinal surgery should be aware of the potential difficulties that may arise. For instance there are theoretical reasons why local anaesthesia may prove ineffective in patients with endophthalmitis, dropped nucleus or trauma because the lower pH in inflamed tissues alters the pharmacodynamics of lignocaine, and increased blood flow results in faster clearance of the agent from the tissues. Although a few patients with these conditions were included in this paper the numbers involved were too small to warrant separate analysis.

Additionally two complications of local anaesthetic surgery that are known to occur with low frequency[2] were not reported in this series. The first – orbital haemorrhage – can be a particular problem in vitreoretinal surgery if it results in distortion of the normal anatomy or restriction of access to the external surface of the globe. The second – the oculo-cardiac response[3] – is a threat during vitreoretinal surgery in which firm traction on the rectus muscles may be necessary. If this occurs under general anaesthesia the patient will of course be unconcerned and the anaesthetist is likely to be closer to hand. Whilst traditional retrobulbar anaesthesia is reported to be effective in diminishing or abolishing this reflex, other forms of ocular local anaesthesia are less so.[4]

Questionnaires were distributed to 65 of the 100 patients under study. There was no explanation for the omission of the remaining 35 patients and the authors fail to comment on the possibility of this introducing bias to the study. Furthermore, bias is inevitably generated when questioning a surgeon on his willingness to operate again under local anaesthesia in a unit where this technique has been accepted as routine.

Finally we were interested to read that local anaesthesia resulted in a significant decrease in average length of operation. The authors state that 'surgery under LA might be under time pressure'. We would question the wisdom of universally adopting a practice which results in such an additional stress.

References

1. Rao GP, Wong D, Groenwald C, McGalliard JN. Local anaesthesia for vitreoretinal surgery: a case–control study of 200 cases. Eye 1998;12:407–11.
2. Wong DH. Regional anaesthesia for intraocular surgery. Can J Anaesth 1993;40:635–57.
3. Hampl KF, Marsch SC, Schneider M, Flammer J. Vasovagal heart block following cataract surgery under local anaesthesia. Ophthalmic Surg 1993;24:422–4.
4. Batterbury M, Wong D, Williams R, Kelly J, Mostafa SM. Peribulbar anaesthesia: failure to abolish the oculocardiac reflex. Eye 1992;6:293–5.

G.R. Kirkby ✉
M.T. Benson
A.B. Callear
A. Loo

Department of Vitreoretinal Surgery
Birmingham and Midland Eye Centre
City Hospital NHS Trust
Dudley Road
Birmingham B18 7QU, UK

Sir,

We are grateful to Kirkby *et al.* for their comments on our article.[1] The detailed technique of anterior retrobulbar injection was presented in video form at the Congress of the Royal College of Ophthalmologists, Edinburgh 1996. It was also described in our submitted manuscript but was subsequently deleted from the article at the suggestion of the referees, who considered that the main thrust of our article was to compare the outcomes under two different forms of anaesthesia. Briefly, the technique is as follows. The shaft of a 1 inch 25 gauge needle is applied to the posterior-most point of the conjunctival fornix in the inferotemporal quadrant, this being the surface landmark for the equator of the eye. The needle is then rotated through 90° and advanced in an antero-posterior direction for a quarter of an inch, to pass the equator before being directed superiorly, medially and posteriorly, hugging the contour of the globe. As the needle is advanced the shaft is used to ballot the globe to give a clear idea of the relationship between the eyeball and the needle tip. Care is taken not to engage the inferior and lateral recti and usually two distinct 'gives' are felt, firstly as the needle penetrates the orbital septum and secondly as it enters the tissue septum of muscle cone. When the needle is fully advanced the local anaesthetic agent is injected (Fig. 1). We now routinely use a 50:50 mixture of 2% lignocaine and 0.75% bupivacaine. In our experience, when anaesthesia begins to wear off with prolonged surgery, usually it is the conjunctiva which first becomes sensitive to pain. This might be due to the fact that the innervation of the conjunctiva is derived from branches of the supraorbital, lacrimal and infraorbital nerves, which are not directly infiltrated by the single retrobulbar injection. Top-up local anaesthetic injections are given into the subconjunctival tissue around the globe at the first indication of discomfort by the patient.

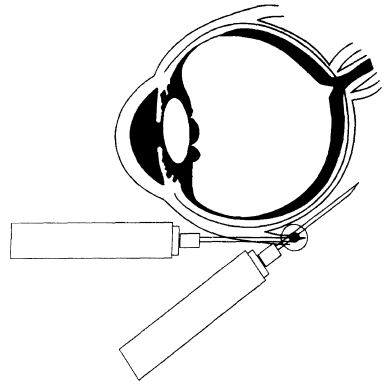

Fig. 1. *Position of the needle tip in relation to the globe in the anterior retrobulbar technique.*

Eye (1999) 13, 122–124

In our experience local anaesthesia (LA) is effective in patients with endophthalmitis, trauma and dropped nuclei. Over the last 24 months we operated on 20 of 26 (76%) cases of dropped nuclei and 16 of 22 (72%) cases of endophthalmitis under LA and now routinely use LA in all such cases except when the patient expresses a preference for general anaesthetic or when there is a contraindication for LA. In our paper we have reported no occurrence of orbital haemorrhage in 100 consecutive cases.

We are fully aware that peribulbar injections do not obtund the oculocardiac reflex (OCR), as we have published on this subject.[2] This reflex, however, is more effectively suppressed with accurate intraconal injections.[3] All our patients under LA had full cardiac monitoring with ECG and pulse oximetry. An anaesthetist was available, in accordance with the guidelines in the 'Report of the Joint Working Party on Anaesthesia in Ophthalmic Surgery'.[4] The OCR is of course a common occurrence with general anaesthesia unless it is suppressed by atropine or glycopyrrolate. The undesirability of the routine use of these drugs in general anaesthesia is acknowledged and discussed in our previous paper.[2] Happily, in our experience of LA over the last 3 years there was no incidence of OCR nor was there the necessity for use of any of these anticholinergic agents by the anaesthetist.

In the introduction to our paper we pointed out that many surgeons are dissuaded from using LA for the fear of stress it may induce. Surely our correspondents would agree a more directed approach to surgery is desirable and we have shown that using LA the surgical outcomes and complications were the same. We predict a steady change in clinical practice by surgeons increasingly adopting LA in future.

References

1. Rao GP, Wong D, Groenewald C, McGalliard JN, Jones A, Ridges PJ. Local anaesthesia for vitreoretinal surgery: a case–control study of 200 cases. Eye 1998;12:407–11.
2. Batterbury M, Wong D, Williams R, Kelly J, Mostafa SM. Peribulbar anaesthesia: failure to abolish the oculocardiac reflex. Eye 1992;6:293–5.
3. Defalque RJ. Retrobulbar block for oculocardiac reflex: duration of protection by common local anaesthetics. Acta Ophthalmol 1969;47:998–1003.
4. Report of the Joint Working Party on Anaesthesia in Ophthalmic Surgery: Royal College of Anaesthetists and College of Ophthalmologists. London: March, 1993.

G.P. Rao ✉
D. Wong
J.N. McGalliard
C. Groenewald
St Paul's Eye Unit
Royal Liverpool University Hospital
Prescot Road
Liverpool L7 8XP, UK

Fax: +44 (0)151 706 5861

Sir,

We read with interest the study by Beigi *et al.* on the effect of intracameral, per-operative antibiotics on microbial contamination of anterior chamber (AC) aspirates during phacoemulsification.[1] The statement concluding that there was a 7-fold reduction in bacterial contamination of the AC is misleading as we have strong reservations about the methodology, which is flawed from at least two aspects.

The paper states that at the end of each operation list the AC aspirates were sent for microbiological studies. There is no indication as to the time delay before eventual inoculation of these samples onto plates. The effect, then, is that bacteria left within the cassettes and sterile specimen bottles would experience long periods of exposure to antibiotics prior to eventual culture. The paper failed to address key pharmacokinetic issues. The half-life of antibiotics within the AC would differ from that retrieved from the phaco aspiration cassette. The aqueous humour half-lives of common drugs used in ophthalmology are between 0.6 and 3.0 h, based on studies in rabbits (1.9 h for gentamicin). As far as we know, human data are not available for either gentamicin or vancomycin.[2] Our feeling is that a more accurate *in vivo* specimen would have been achieved if aqueous samples had been recovered directly from the AC once the operation had ended, and cultured immediately.

We also contest the statement that subconjunctival antibiotics have no impact on post-operative inflammation and infection. The referenced study in question[3] was of a small size, and specifically did not draw any conclusions as to the rate of post-operative infection. We believe that this remains an unresolved question.

One other issue of concern is the use of vancomycin in the study as a prophylactic antibiotic. We feel strongly that this is an inappropriate use of such a narrow spectrum antibiotic, which has an important role in the treatment of methicillin-resistant *Staphylococcus aureus* (MRSA) infections and is one of only a few antibiotics left that still has activity against this organism. Widespread prophylactic use of vancomycin could result in the evolution of potentially super-resistant bacteria.

References

1. Beigi B, *et al.* The effect of intracameral, per-operative antibiotics on microbial contamination of anterior chamber aspirates during phacoemulsifiaction. Eye 1998;12:390–4.
2. Scheonwald RD. Ocular pharmacokinetics/pharmacodynamics. In: Mitra AK, editor. Ophthalmic drug delivery systems. New York: Marcel Dekker, 1993.
3. Sanders R, *et al.* A comparison of prophylactic, topical and subconjunctival treatment in cataract surgery. Eye 1992;6:105–10.

Nicholas Jon Sargent ✉
Tina T.L. Wong
Evelyn Mensah
Jeremy Joseph

Central Eye Services
Central Middlesex Hospital
Acton Lane
Park Royal
Middlesex NW10 7NS, UK

Tel: +44 (0)181 453 2528
Fax: +44 (0)181 453 2404

Sir,

We thank Dr N.J. Sargent and colleagues for their interest in our paper.

We disagree that the methodology of our study is flawed. We are unable to comment as to the *exact* timing of when the specimens were plated. However, they were processed without delay at the end of the list and the exposure time to the antibiotics was comparable to the *in vivo* 2–3 h half-life of intracameral antibiotics. To have plated the specimens immediately in theatre would possibly have biased the study by shortening the exposure time of the specimens to the antibiotics as well as creating logistical problems for their transport and the preparation of enrichment cultures. The procedures employed certainly did not lead to 'long periods of exposure to antibiotics prior to eventual culture'.

Sargent *et al.* would have been more logical to suggest that we collected the specimens via an anterior chamber paracentesis 2–3 h after the completion of surgery, having first prepared the eye with 5% povidone iodine solution. Apart from being impractical, the very small specimens obtained would have precluded the use of enrichment cultures. Such a study design may also not have enjoyed the ready cooperation of 220 patients or ethics committee approval. The method we used was in