own conclusion is that a '10% solution offers little benefit over a 2.5% solution in terms of reducing the surgically induced miosis in a patient with blue or grey eyes and some benefit in a patient with hazel, green or tan eyes'.

Symons *et al.* also mention a study by Brown and co-workers where no statistically significant difference was found in mean blood pressure between a group of patients receiving 10% phenylephrine and a group receiving 1% tropicamide. As Dr Symons comments, these patients were not in a pre-operative situation and unfortunately no analysis was performed as regards patient age, which may have revealed an increase in blood pressure in the older patients in this trial.

We agree that Kumar *et al.*'s study reported no statistically significant difference in mean blood pressure but unfortunately compared viscous 10% phenylephrine with 2.5% phenylephrine. They also commented that plasma levels of phenylephrine were consistently higher in the 10% phenylephrine group, and there was a trend to higher blood pressure in the 10% phenylephrine group, with several isolated cases of marked hypertensive response. Blood pressure measurements in this study were done per-operatively which, as we mentioned in our original paper, may be too late to detect marked elevations of blood pressure occurring in conjunction with peak plasma concentrations at approximately 30 minutes following drop instillation.

Symons *et al.*'s own study is interesting in that it appears to highlight significantly greater volatility in blood pressure in the 45 minutes following phenylephrine administration. It is unfortunate that their control group of 14 patients receiving cyclopentolate alone is so small. Nevertheless we would agree that cardiovascular fluctuations are to be avoided over the peri-operative period and may actually be more important than the absolute levels of blood pressure recorded.

We thank Symons *et al.* for providing further information regarding the potential systemic side-effects of 10% phenylephrine and in particular highlighting the volatility of blood pressure in the pre-operative period following 10% phenylephrine instillation. We believe that this adds further weight to our original conclusion that use of 10% phenylephrine is no longer justified on a routine basis in pupil dilation prior to uncomplicated cataract surgery in the elderly. We emphasise that the patients we studied were Caucasian, elderly and undergoing uncomplicated cataract surgery. In a younger patient with a dark iris and no cardiovascular pathology undergoing a more complicated procedure the use of 10% phenylephrine may give additional benefit in terms of mydriasis with minimal risk of significant systemic side-effects. The potential hazards of phenylephrine administration without proper patient screening have been emphasised and we recommend that the cataract surgeon individualises the pre-operative mydriatic regime to reduce risk and maximise benefit for each patient.

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Sir,

Potamitis and colleagues have chosen to address the important issue of suture management in post-operative astigmatism (Astigmatism decay immediately following suture removal. *Eye* 1997;11:84–6), but their results need looking at critically. Weak study methodology and inappropriate data analysis, together with the lack of tabulated individual results, make their conclusions difficult to appreciate.

How was the keratometry done: were serial measurements made and was the observer masked? No mention is made of the number of sutures removed (one or all?), and whether topical steroid was still used at the time of suture removal or afterwards. Although post-operative keratometry has been found to correlate with refraction as a method of determining astigmatism,[1] Butcher recommends the averaging of serial measurements to avoid error.[2] Surely all patients should have undergone suture removal at the same post-operative interval, rather than at a point between 8 and 14 weeks?

The authors propose that cylindrical power decreases most at 5 minutes after suture removal and that the decrease is proportional to initial value. This is not appreciable in Fig. 1, which curiously shows the opposite phenomenon (the 3 higher values decline more extensively after 5 minutes). Furthermore, without access to their original data it is difficult to agree with the authors that cylindrical power changes by 1.29 dioptres at 2 weeks when Fig. 1 shows an upward trend.

Importantly, the authors have not stated how they analysed astigmatic axes, but imply that subtracted axis changes were averaged. Vector analysis is considered essential in any circumstances in which changing astigmatism is of interest because the magnitude and axis of any cylinder are not separable entities but rather a qualifier of each other.[3] Several methods are available for vector analysis but the theorem of obliquely crossed cylinders is commonly

employed for this type of problem. Finally, keratometry measures central corneal curvature in orthogonal meridians and assumes the whole cornea adopts this regular spherocylinder. All incisions have a paracentral flattening effect which is initially tempered by sutures. Removing them hastens the swing towards against-the-wound astigmatism which the coupling effect compounds. We have presented work that establishes how incisions have differing effects on vectored cylindrical outcome depending on their orientation.[4] This is why selective suture removal is important. Removal of the closest aligned suture to the steep meridian will not necessarily reduce the magnitude of that cylinder but rather swing the axis of the vector in the opposite direction.

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Sir,

We thank Mr Horgan for his comments on our recent publication.[1] Several points are made in his letter, which are dealt with individually.

1. Automated keratometry was performed using the Canon IOL estimator, and this instrument was programmed to calculate the mean of five separate readings.
2. Sutures that appeared tight were removed. Twenty-two patients had one suture removed, 10 patients had two sutures removed and 2 patients had three sutures removed.
3. The topical corticosteroid–antibiotic preparation had been discontinued for at least 2 weeks prior to suture removal and all patients received a 5-day course of prophylactic chloramphenicol drops following suture removal.
4. We did not specifically design our study to address the issue of timing of suture removal but we found no statistically significant effect on the rate of astigmatic decay (see Results, last paragraph).
5. The mean change in cylindrical power and axis are clearly tabulated and show that the mean cylindrical power does indeed decrease the most in the first 5 minutes following suture removal. We also state clearly in the results that 'the greater the initial astigmatism, the greater the change induced by suture removal' – not in the first 5 minutes but total change.
6. The mean change in astigmatism at 2 weeks is 1.29 dioptres; this value is clearly tabulated. The reason there is an upward trend in Fig. 1 is that the magnitude of change in astigmatism between 15 and 30 minutes is less than the change seen between 30 minutes and 2 weeks. Again this is clearly tabulated and demonstrated in Fig. 1.
7. We did not use vector analysis because the main aim of our paper was to assess in a simple clinical manner whether the resulting astigmatism 30 minutes following suture removal differs significantly from the residual astigmatism 2 weeks later. The most important readings, therefore, were those comparing astigmatic change between 30 minutes and 2 weeks after suture removal. The mean change (11.77) and range of change in axis (10.84–12.76) shown in the table for this time period of observation would not have influenced the results greatly if vector analysis had been performed. Secondly, it was felt that although the role of vector analysis in small incision and refractive surgery has been well defined, this is not the case in large sutured incisions.

Our paper dealt with what was at the time a common surgical problem in a clinical and practical way. It is, we believe, possible to approximately estimate the residual astigmatism 2 weeks following suture removal from the keratometry findings 30 minutes after suture removal.

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Reference

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Sir,

I am grateful to Martin Leyland[1] for highlighting my concern over the use of CS aerosols by the police.[2,3] I have personally seen three police officers who developed significant ocular morbidity secondary to acquired dry eye states following a 'demonstration' of the CS aerosols – although these are more appropriately described as 'squirt cans' because they emit a pressurised stream of the solution of CS in a similar manner to windscreen de-icer cans, and not the mist