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# A SURVEY OF OCULAR PERFORATION DURING OPHTHALMIC LOCAL ANAESTHESIA IN THE UNITED KINGDOM

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## SUMMARY

**A survey of local anaesthetic related ocular perforation in the United Kingdom is reported. A total of 531 consultant ophthalmologists were sent a postal questionnaire and there was a 71% response rate. Thirty respondents reported 39 perforations occurring under their care during the previous year. Details of the cases are presented. The rate of local anaesthetic related ocular perforation is higher than in previous reported series. Efforts to reduce the incidence will require consideration of alternative techniques, audit, and training.**

This survey originated in the concerns raised by a cluster of ocular perforations following ophthalmic local anaesthesia in the West Midlands region in 1994.<sup>1</sup> The authors wished to establish whether this cluster was an isolated phenomenon or part of a national epidemic of ocular perforation, perhaps associated with changes in the organisation and provision of ophthalmic anaesthesia.

## METHOD

A postal questionnaire was sent to consultant ophthalmologists in the United Kingdom (Table I). A stamped and addressed envelope was provided for the reply.

The data were analysed for number of perforations and their characteristics, including the type of local anaesthetic, the speciality of the doctor performing the anaesthetic, and the subsequent treatment required. The respondents were anonymous.

Details of national local anaesthetic practice were obtained from the Royal College of Ophthalmologists' National Cataract Surgery Survey, and this was used to give an estimate of the incidence rate of perforation from ophthalmic local anaesthesia.

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## RESULTS

There were 377 replies to 531 questionnaires (71% response rate). Thirty respondents reported 39 perforations occurring under their care during the previous 12 months. Details of the speciality of the doctor performing the procedure, the type of local anaesthesia and the subsequent treatment required are listed in Table II. Thirteen vitreo-retinal surgeons reported 23 patients with ocular perforation referred to them for further care.

Respondents were asked for comments and their opinion whether the incidence of ocular perforation due to local anaesthesia was rising, stable or falling (Table III). Of the respondents who gave an opinion

**Table I.** Questionnaire

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- A.** Have you seen any fresh ocular perforation caused by local anaesthetics in patients you have treated in the last 12 months?  
YES / NO (delete as appropriate)
- If yes, proceed to part B  
If no, proceed to part D
- B.** Are you a vitreo-retinal surgeon?  
YES / NO (delete as appropriate)
- If no, proceed to part C  
If yes, state:  
How many patients have been referred to you with ocular perforation due to local anaesthesia in the last 12 months. [ ]  
Now proceed to part C
- C.** How many of your own patients have suffered ocular perforation due to local anaesthesia in the last 12 months?  
Concerning your own patients with ocular perforation please state how many:
- |   |   |
|---|---|
| -had peribulbar anaesthetics                  | { |
| -had retrobulbar anaesthetics                 | { |
| -had injections given by anaesthetists        | { |
| -had injections given by ophthalmologists     | { |
| -required further major surgical intervention | { |
| -required cryotherapy / laser                 | { |
| -required observation only                    | { |
- Now proceed to part D
- D.** Do you believe the incidence of ocular perforation due to local anaesthesia is rising / stable / falling? (delete as appropriate)

Thank you  
Comments:

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**Table II.** Respondents with perforations occurring under their care: case characteristics

No. of respondents	30
No. of cases	39
Type of anaesthetic	
Peribulbar	33
Retrolubar	5
Not stated	1
Speciality of doctor giving anaesthetic	
Anaesthetist	29
Ophthalmologist	6
Not stated	4
Treatment required by patient	
Major surgery	23
Cryotherapy / laser	2
Observation only	12
Not stated	2

the incidence was felt to be stable by the majority (53.6%), whilst 24.2% believed the incidence was rising and 22.2% believed it was falling. Recent personal experience of local anaesthetic associated ocular perforation made respondents more pessimistic.

### DISCUSSION

The majority of retrolubar and peribulbar anaesthesia is carried out for cataract surgery and in 1990 there were 48 000 cataract operations performed under local anaesthesia.<sup>2</sup> From this figure our survey, corrected for the 71% response rate, would give an estimate of the rate of ocular perforation of 1 in 874 cases (0.114%). This perforation rate is similar to the commonly stated rate of 0.1% for retrolubar anaesthesia, but higher than would be expected in peribulbar anaesthesia (Table IV). This figure must be interpreted with caution; first some perforations will have been missed (due to incomplete response rate, non-recognition of perforation, imperfect retrospective recall of events), and secondly the number of local anaesthetics now performed will be higher (due to surgery for non-cataract indications, increased surgical activity, and increased day-surgery). However, it does give an indication of the scale of the problem nationally.

The peribulbar technique was introduced as a less hazardous alternative to retrolubar anaesthesia, particularly in axial myopia. Zaturansky and Hyams<sup>8</sup> stated that peribulbar anaesthesia 'minimises and perhaps eliminates' the risk of globe perforation. Some of the respondents to our survey

**Table III.** Attitudes of respondents to local anaesthetic related ocular perforation: responses to the question 'Do you believe the incidence of ocular perforation is rising, stable or falling?'

	Perforation group	Negative group
Rising	19	52
Stable	13	144
Falling	5	60
Don't know / no reply	6	78

**Table IV.** Risk of ocular perforation: series of 1000 patients or more

<i>Retrolubar</i>	
Cibis (1965) <sup>3</sup>	0.1%
Ramsay and Knobloch (1978) <sup>4</sup>	0.075%
<i>Peribulbar</i>	
Davis and Mandel (1994) <sup>5</sup>	0.0062%
Kimble <i>et al.</i> (1987) <sup>6</sup>	0.025%
Arnold (1992) <sup>7</sup>	nil

repeated this view but the survey results indicate there should not be a false sense of security associated with peribulbar injection. The large number of ocular perforations following peribulbar anaesthesia in this survey reflects a defect in training rather than an intrinsic fault of the method. Most of the perforations were induced by anaesthetists, which may reflect changes in working practices since new national guidelines were introduced in 1992.<sup>9</sup> Most cases required further major surgical intervention.

### CONCLUSION

This survey was designed to discover whether the cluster of ocular perforations in the West Midlands was an isolated phenomenon or part of a more widespread problem. Contrary to comments of some respondents, ocular perforation caused by local anaesthesia is a significant hazard on a national scale. Addressing this issue will require consideration of alternative techniques, audit, and training.

Key words: Cataract extraction, Ocular perforation, Peribulbar, Survey.

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