
LETTERS TO THE JOURNAL

Complications of 5-fluorouracil after trabeculectomy

Sir,

We read with great interest the report by Franks and Hitchings¹ of complications after 5-fluorouracil use in patients judged to be at high risk of failure of trabeculectomy. Subconjunctival 5-fluorouracil was started on the first post-operative day inferiorly, a total of 50 mg in divided doses was injected over the following 14 days. Although control of IOP > 21 mm Hg (without additional topical medication) was achieved in 90% of patients, a high complication rate was reported.

This report has prompted us to review our experience of adjunctive 5-fluorouracil, in patients with similar risk factors, where only a single dose of 10 mg of 5-fluorouracil is injected into the conjunctival flap at the time of surgery.

Between August 1988 and July 1991, 15 eyes of 12 patients underwent trabeculectomy with 5-fluorouracil injection. Indications for 5-fluorouracil use were, previous filtration surgery (4 eyes), aphakia (4 eyes), uveitis (2 eyes), age < 45 yrs (4 eyes) and pigmentary glaucoma (1 eye). Mean pre-operative IOP was 28.4 mm Hg (SD 6.14). No patient underwent simultaneous cataract surgery.

Trabeculectomy was performed using a fornix based conjunctival flap and a triangular limbal based scleral flap. The scleral flap was closed with a single 8/0 vicryl suture at the flap's apex. Then 10 mg (0.4ml) 5-fluorouracil was injected into the potential space between Tenon's capsule and conjunctiva. The conjunctival flap was then closed with 8/0 vicryl.

Complications were: choroidal effusion in two eyes and bleb dehiscence (requiring resuture) in one eye. Intraocular pressure was not controlled in two eyes, (one aphakic and one that had undergone previous surgery) both of whom subsequently required tube drainage. In the remaining 13 eyes mean IOP at six months follow-up was 12.15 mm Hg (SD, 4.04).

The results of surgery in our patients is similar to those of Franks and Hitchings but with a much lower complication rate. The rationale for use of 5-fluorouracil is accepted and its use in glaucoma drainage surgery is increasing. There is however concern as to the optimum dosage schedule. Ball has reported favourable results injecting a single dose of fluorouracil directly into the bleb at the time

of surgery.² Mitomycin (an antitumour antibiotic with a greater antiproliferative effect than fluorouracil) has been used by a single application of a soaked swab to the sclera intraoperatively³ producing fewer complications than fluorouracil. We believe other surgeons have used 5-fluorouracil in a similar fashion with good results. Reducing the dose of 5-fluorouracil failed to inhibit fibroblasts proliferation in experimental rabbits⁴ our results would suggest that this does not necessarily apply to man. We agree with Ball² that the peak concentration of 5-fluorouracil may be of greater relevance than total dose in determining the outcome of drainage surgery. Adjunctive 5-fluorouracil therapy has been successfully used in uncomplicated glaucoma surgery⁵ with a complication rate similar to that reported by Franks and Hitchings.¹ We suggest the lower complication rate of a single 10 mg intrableb injection may make this regime acceptable as an adjunct to uncomplicated glaucoma surgery.

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A Complication of Orbital Emphysema

Sir,

The complications of orbital trauma include perforating eye injury and orbital emphysema. We report a case in which surgical repair of the globe following trauma was complicated by expansion of orbital gas by the nitrous

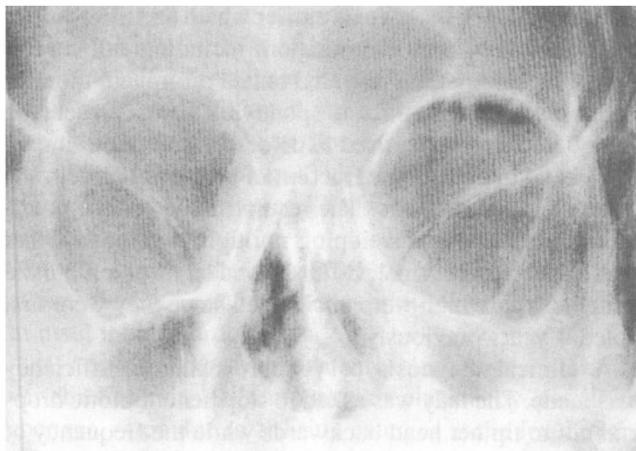


Fig. 1. X-ray showing left orbital gas.

oxide used during anaesthesia. It is important to be aware of the possibility of this complication occurring in patients with perforating eye injuries following orbital trauma.

Orbital emphysema following trauma normally resorbs spontaneously without complication. Visual loss, secondary to an increase in intraorbital pressure, may rarely occur. We wish to report what is to our knowledge a previously unrecognised complication of orbital emphysema, that is expansion of orbital gas following nitrous oxide anaesthesia.

CASE REPORT

A twenty-eight-year-old man sustained a deep laceration across the bridge of the nose and a full thickness left corneal laceration in a road traffic accident. There was no proptosis or periorbital emphysema. X-rays showed a fracture of the nasal bone. Surgical repair of the left corneal laceration was undertaken under general anaesthesia using isoflurane and nitrous oxide. During the procedure the anterior chamber became increasingly difficult to maintain, the orbital contents became tense, and gross conjunctival chemosis developed. A lateral canthotomy was necessary for lid closure.

Examination twelve hours later revealed a less tense orbit, a deeper anterior chamber, and an unaided visual acuity of hand movements. An X-ray showed the presence of gas in the left orbit (Fig. 1), which resolved without further complication.

DISCUSSION

Orbital emphysema indicates a communication between the orbit and one of the nasal sinuses, a circumstance which can only be achieved by a fracture of the bony walls and a laceration of the mucosa.¹

Expiratory movements, such as nose blowing or sneezing, force air into the orbit, where it may become trapped if the orientation of the tissues at the fracture site is such that a ball-valve mechanism allows air to enter but not leave the orbit.² Visual loss from increased intraorbital pressure may occur, and has been treated with a lateral canthotomy with superior or inferior cantholysis, or direct aspiration of orbital air.²⁻³

We believe that the surgical difficulties encountered in our patient were due to expansion of trapped orbital gas by the nitrous oxide used during anaesthesia. The effect of nitrous oxide on closed gas spaces is well recognised, causing an increase in volume in highly compliant spaces and an increase in pressure in less compliant spaces.⁴ The main anaesthetic complications of this phenomenon recognised to date are expansion of gas in a closed pneumothorax, expansion of trapped bowel gas, expansion of air emboli, and expansion of air in the middle ear.⁴

We recommend that nitrous oxide is not used as an anaesthetic agent in patients with orbital emphysema, and that where unexplained difficulty is encountered during ocular surgery following trauma, expansion of intraorbital gas by nitrous oxide should be considered.

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Two cases of dizziness after using eye drops

Sir,

The authors describe two cases of dizziness associated with instillation of eye drops. The symptoms were not due to pharmacological side-effects but rather due to vertebral basilar insufficiency on neck extension.

Case 1

A 67-year-old lady presented in October 1989 with a three-day-old right subconjunctival haemorrhage and gradual deterioration of her vision. Examination revealed a vision of 0.125 right with -6DS and 0.1 left with -4DS spectacle correction, intraocular pressures of 20 mmHg, bilateral nuclear cataracts and normal looking fundi. Blood pressure was 180/100. Left extracapsular cataract extraction with intraocular lens implantation was carried out under general anaesthetic in November 1989. Her operation was uncomplicated, though positive vitreous