

We feel that while the current competencies give an indication of the ability of an SHO to perform basic anaesthetic skills, these skills are not adequate by themselves to allow safe independent practice. A course covering the management of critical incidents should form part of the basic curriculum for novice anaesthetists prior to being placed on the on-call rota. Having the opportunity to manage these types of cases in a controlled simulator environment adds to both the enjoyment and the efficacy of the learning process.

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Confirming tracheal intubation

Oesophageal intubation and ventilation is well recognised as a cause of morbidity and mortality [1], as Dr Absolom and colleagues acknowledge in their article [2]. I was surprised therefore that their study had obtained Ethics Committee approval and parental consent. As capnography is accepted as the 'gold standard' in confirming correct placement of tracheal tubes, I see little merit in attempting to 're-invent the wheel' and place patients at risk of gastric rupture and aspiration.

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A reply

We are grateful to Dr Varley for his comments and concerns about our study. We would, however, disagree with the main thrust of his argument. Unrecognised oesophageal intubation is the fundamental danger in anaesthesia. Although capnography is the current standard method to confirm tracheal intubation, it is not infallible. It is quite correct to think of capnography as the gold standard in certain situations. The point of research is to explore and develop new gold standards. We do not propose to replace capnography but to supplement it and therefore make intubation potentially safer. Consider, for example, situations where capnography is not readily available, such as 'out of hospital' care. Impedance respirometry, having a faster response time, would be especially useful in emergency situations (we did not compare the two methods in our study but the average number of tidal ventilations to detect either oesophageal or tracheal intubation was two). Furthermore, it might be a useful additional method when performing intubations in low cardiac output states. Our study had its limitations, but by fine-tuning the technique we believe it might well become a very useful tool which has the advantage of being simple, easy to use and readily available. Further studies are underway to improve the success of the technique.

The study had full ethical approval. The parents were fully informed and it was not difficult to recruit patients. The number of breaths was limited to six (on average only two were used) to avoid any complications and none were seen in our study.

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Management of emergence agitation

We read with interest the report by Hatzakorzian et al. describing the successful treatment of emergence agitation with droperidol [1]. In our institution a smaller dose of droperidol is used for prophylaxis and treatment of postoperative nausea and vomiting. We have found that clonidine given intravenously for its analgesic and sedative effects works well in reducing the incidence of postoperative emergence agitation. We recently reported the efficacy of prophylactic clonidine in reducing the incidence of emergence agitation in children [2]. A single dose of clonidine ($1\text{--}2\ \mu\text{g}\cdot\text{kg}^{-1}$) given intraoperatively may be useful in preventing this complication in the high risk patients. Previous studies, however, have shown that clonidine causes sleepiness without respiratory depression postoperatively [2]. Dexmetomidine with a greater degree of specificity for alpha 2 receptors, is shorter acting, and is associated with fewer sedative effects compared with clonidine. Currently there are not enough data comparing clonidine and dexmetomidine for the prevention of emergence agitation. In countries such as the UK where droperidol is not available, clonidine would be a useful alternative.

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Death after a sub-Tenon's block

We read with interest the report by Quantock and Goswami [1] describing a death associated with a sub-Tenon's block. The authors speculate that either central spread of local anaesthetic or non-ophthalmologic, non-anaesthetic issues were responsible. While we have a few thoughts on aspects of the report, we acknowledge the underlying pathogenesis remains an enigma.

Our initial concern is the statement '3 ml of the injectate ...was injected over 3–4 min'. Although conceivable, a rate of injection approximating $1 \text{ ml} \cdot \text{min}^{-1}$ would be unusual in the performance of a sub-Tenon's block. Indeed, the resistance to initial injection often dictates the local anaesthetic volume be delivered fairly rapidly to ensure tracking to the posterior pole of the globe.

Hyaluronidase is an accepted adjunctive agent. Its benefit for retrobulbar anaesthesia was first described by Atkinson in 1949 [2]. Its use facilitates the onset of akinesia and an improved quality of block. Guise et al. [3] found that sub-Tenon's injections with concentrations of $30 \text{ IU} \cdot \text{ml}^{-1}$ produced less pain and better early akinesia and Alwitry et al. [4] demonstrated that an increased hyaluronidase concentration ($150 \text{ IU} \cdot \text{ml}^{-1}$) resulted in earlier onset of akinesia [4]. Furthermore, hyaluronidase has been demonstrated to decrease the risk of peribulbar-induced postoperative vertical diplopia [5]. The concentration of hyaluronidase employed in this case ($250 \text{ IU} \cdot \text{ml}^{-1}$) seems extraordinarily high. Kallio et al. demonstrated that hyaluronidase concentrations as low as $3.75 \text{ IU} \cdot \text{ml}^{-1}$ were effective in achieving satisfactory peribulbar anaesthesia [6]. Their success rates matched those of Sarvela et al. [7] and Dempsey et al. [8], who used higher concentrations. Hyaluronidase, a testicular protein extract, is known to cause allergic adverse events; often mediated through Type 1 IgE hypersensitivity.

This manifests clinically as early periorbital erythema and oedema, often spreading to the contralateral side, and terminated by antihistamine treatment [9, 10]. Perhaps the allergic propensity of hyaluronidase should mitigate against its routine use in high concentrations?

Another concern centres on the use of a 25-mm metallic cannula. Cannulae employed for sub-Tenon's block may be either metallic or plastic, long (25 mm) or short (6 mm) [11]. Although the rigidity of long metallic cannulae facilitates insertion, their use may be associated with complications. Amongst others, these include orbital haemorrhage [12], globe perforation [13], optic neuropathy [14] and central spread of local anaesthetic with cardio-pulmonary sequelae [12]. The likelihood of encountering these untoward outcomes is reduced by the use of shorter, flexible cannulae. However, these may be associated with variable degrees of akinesia and greater chemosis [15, 16].

In summary, we are unable to offer a definitive pathogenesis. There are multiple possibilities, including high hyaluronidase concentration, hypersensitivity reaction, block technique and central spread of local anaesthetic. The sub-Tenon's block is a well-accepted mode of ophthalmic anaesthesia. No doubt, greater application in the future will result in further reports of complications of this nature.

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