

Correspondence

Implementing PCA – the importance of information and control

I wish to comment on the report by Chumbley *et al.* (*Anaesthesia* 1998; 53: 216–21) which contributes to the debate concerning the significance of control as a psychological mechanism underlying the efficacy of patient-controlled analgesia (PCA) for the relief of postoperative pain.

The effectiveness of self-administered analgesia depends on a patient's appropriate response to the pain perceived. Psychological factors which influence this response are increasingly better understood and substantial evidence has existed for some years that control confers positive effects on analgesia self-administration and on recovery and conversely that noncontrol impacts negatively [1]. Psychological determinants of control in the context of illness, pain and recovery are complex [2] but for most personality types the potential for control to confer positive benefits is closely linked with the provision of information [3–5]. Similarly, with regard to post-operative pain relief in the clinical setting, the provision of information, instruction and continuing supervision represents a major component contributing to improved analgesia, probably of more importance than the analgesic method *per se* [5–8]. Chumbley and colleagues' findings are consistent with this hypothesis showing the exercise of control, whether real or perceived, to be linked with the provision of information and with more effective use of the PCA pumps. Unfortunately, the majority of their patients received no pre-operative

instruction, did not know what to expect of the PCA pumps and were apparently neither reviewed nor coached during their therapy – all widely regarded as prerequisites for successful implementation of PCA. It is improbable therefore that more than a minority of the patients studied had the capability for control and consequently for a substantial proportion the analgesic technique implemented could not have been patient-controlled analgesia. The inconsistencies found in the perception and exercise of control by patients are explicable by this alone, as are the generally mixed patient evaluations of treatment with the PCA pumps. Despite apparently recognising this in their discussion, the authors make the assertion that 'control is predominantly a feature of the professional's view of PCA rather than a reflection of the patient's experience'. This may apply to patients using PCA pumps in their hospital, but for it to have any validity in respect of PCA programmes implemented by pain management services elsewhere their study would have to be carried out in a patient population where analgesia was in fact patient controlled rather than merely patient administered.

The real value of the data presented by Chumbley *et al.* is in the support it gives to the observation that the efficacy of an analgesic technique lies not intrinsically in that technique but in the quality of its implementation [8].

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Any assessment of patient satisfaction is fraught with difficulties [1]. However, Chumbley and colleagues (*Anaesthesia* 1998; 53: 216–21) have documented some interesting observations regarding patient beliefs of PCA (patient-controlled analgesia) which highlight where PCA patient education can be focused. They mention a previous study by two of the same authors to support their belief that patient control was considered unimportant by patients [2] yet this paper stated that 7/26 patients used the PCA in anticipation of movement, 7/26 to reduce pain to an agreeable level and 6/26 to control pain after waking. In addition, six of the 12 patients with nausea or vomiting attributed the PCA as the cause, suggesting patients could use the PCA to balance increased analgesia or the side-effects being experienced. These examples clearly identify patient control as an important element in their use of PCA despite it not being verbalised without prompting.

In view of the well-recognised side-effects of morphine, it is no surprise that some patients, reported by Chumbley *et al.*, only pressed the button when the pain was so bad that they could not cope. They also express surprise that others may be encouraging patients to the use of PCA. Ward nurses or medical staff often advise pressing the button if the patient is in pain as part of the patient education process. It would also not be unreasonable or unusual for patients to be encouraged to use the PCA prior to mobilisation or physiotherapy. The authors believe their results 'are inconsistent with the notion that patients use PCA to achieve a pain-free state'. My perception from talking to patients on acute pain rounds is that the vast majority expect to have at least some pain after surgery. Chumbley *et al.* also dismiss the potential usefulness of PCA for assessing analgesia consumption when testing efficacy of new analgesic regimens. Several studies have found this to be a useful tool [3, 4] and although not perfect may be better than the alternative or measuring nurse-administered analgesia.

Pain has been described as an 'unpleasant sensory and emotional experience' [5] implying that sensory analgesia is just one aspect of overall pain perception.

Coleman and Booker-Milburn suggest that the advantages of PCA can be negated by failure to address deficiencies in knowledge of pain management by both ward staff and patients [6]. The limitations of currently available analgesics together with inadequate education of ward nurses and medical staff regarding acute pain may be the main factors contributing to inappropriate use of and consequent suboptimal efficacy of PCA rather than the technique itself.

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Reply

We note with interest the comments made by both correspondents. Gabrielczyk has summarised the professional view of patient-controlled analgesia (PCA), that the control the patient experiences whilst using it improves analgesia, self-medication and recovery. Although we are aware of this view, our aim in this and related studies has been to identify

the **patient's** experience which we have found to differ from the professional view [1, 2]. Cyna implied that control can be achieved by the simple titration of analgesia against pain and side-effects. To redefine control in this way trivialises the concept. Indeed, in our present and previous studies patients experienced side-effects as restricting control [2, 3]. It is likely that when patients describe a feeling of control, they are just describing success in operating the machine.

We acknowledged that 43% patients in our study were not given pre-operative information. The amount of pre-operative information that patients received had no significant effect on the amount of control they achieved ($p=0.19$); however, those patients who achieved complete control did receive more information over time. The importance of pre-operative information is unclear. Some authors have found that providing detailed pre-anaesthetic information was of little benefit compared with routine information [4]. This area warrants intensive investigation and is the focus of our current work. Nevertheless, although pre-operative information may produce a feeling of control, it cannot influence the side-effects associated with the drug.

It would appear that to preserve current views of the value of PCA, the concept of control must be redefined so as to be consistent with PCA and any remaining problems must be left to 'information' and 'education' to solve. Clearly the appeal of this new technique has provided an alternative to understanding and addressing the problems that have long been known to compromise postoperative analgesia. The plea for more education is simplistic; what is essential is more questioning and more analysis.

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Oral transmucosal fentanyl

Oral transmucosal fentanyl has been available in the USA for anaesthetic premedication since 1994. The commercial preparation, Fentanyl Oralet[®] which consists of a raspberry-flavoured, fentanyl-impregnated, sugar-matrix mounted on a stick, has provided anaesthetists with an opportunity to deliver anxiolysis and analgesia to children safely and reliably by a readily acceptable route of administration. Children are encouraged to suck and not bite or chew as 25% of the total dose is absorbed 'trans-buccally'. This accounts for the early onset of centrally mediated anxiolytic and analgesic effects seen within 15 min of administration. Of the remainder, which is swallowed with saliva, only 25% escapes hepatic first-pass metabolism to become more slowly available systemically [2].

The authors, wanting to evaluate the acceptability of this preparation to children in the UK, manufactured units containing 200, 300 or 400 µg of fentanyl and offered 15 healthy children, aged 3–9 years, presenting for tonsillectomy the choice of having either midazolam syrup or oral transmucosal fentanyl (15–20 µg.kg⁻¹) [1] as part of their premedication. All but one child, who refused it because it resembled a lollipop, chose the new preparation and consumption was, in all cases, complete within 20 min. Twelve children presented in an unsedated yet calm manner and co-operated fully with venous cannulation and induction of anaesthesia.

Despite prophylaxis with ondansetron (100 µg.kg⁻¹) postoperative nausea occurred in three children, one of whom vomited. These incidences, though still appreciable, compare with previous observations [1, 3].

Fentanyl Oralets[®] are currently only commercially available in the USA, where sales approach 20 000 units each year, but the manufacturer is exploring the feasibility of introducing them in the UK. We are encouraged by our provisional findings and would welcome their introduction in the U.K. for further evaluation.

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Safety of fine-gauge, pencil point spinal needles

We read with interest and concern the letter to *Anaesthesia* (1997; **53**: 411) by Drs Collier and Turner who have '... virtually abandoned the use of a combined spinal epidural (CSE) technique with pencil point needles', implying that these needles are unsafe. We suggest that their conclusion is unfounded and that it is most likely their CSE technique which is at fault.

Your correspondents referred to a letter by Turner and Shaw who observed paraesthesia in 6 out of 36 patients having

CSE anaesthesia for Caesarean section [1]. One of the six had a dysaesthesia some 6 months after the procedure. We assume that the CSE technique used was the 'double-barrel' method advocated by Turner and Reifenberg, a method which involves inserting a fine (25G) Whitacre needle via a short introducer, through the interspinous ligament, ligamentum flavum and epidural space to reach the theca [2]. This technique of spinal needle insertion is associated with a high incidence of needle deflection, misdirection and damage [3–6].

Undoubtedly the best way to minimise such damage is to avoid passing the fine-gauge needle through these tissues. In other words, insertion should be through a Tuohy (or other similar, blunt) needle first sited in the epidural space. This is the basis of the needle-through-needle CSE method, which is arguably the most widely used CSE technique today. Almost all the studies cited in a recent comprehensive review of CSE used this needle-through-needle method [7], a technique which has been used at Queen Charlotte's Hospital in more than 11 000 patients since 1991. Most of those blocks were administered to obstetric and gynaecological patients by trainees and to the best of our knowledge no problems involving damaged 27G Whitacre needles have been encountered. A recent audit of 1000 consecutive CSEs performed at Queen Charlotte's Hospital indicates an incidence of paraesthesia of 6% with one case of an associated short-term dysaesthesia. Paraesthesia reported by a patient during epidural and/or spinal or other regional procedure should always be recorded, accorded some concern and the patient followed-up postoperatively; but paraesthesia *per se* does not imply neural damage. Dysaesthesia, hypoaesthesia and similar sequelae can result from CSE where no paraesthesia is observed [8].

The significance of paraesthesia associated with *all* lumbar puncture techniques has not been satisfactorily resolved with respect to spinal needle type or insertion method used. But, as your correspondents report, incidences of paraesthesia of up to 27% have been reported for needle-through-tissues techniques [3] and the extra depth of thecal

insertion of pencil-point needles does require further investigation [2]. Your correspondents' anecdotes and an audit of 36 administrations are not a sound basis to conclude that paraesthesiae axiomatically indicate neurotrauma due to these needles.

We submit that the needle-through-needle CSE technique is emerging as a most important advance in anaesthetic practice and pain management. Like all regional anaesthetic procedures CSE is not without unexpected hazards and these and other aspects of *all* techniques of lumbar puncture require further study.

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Another angle on LMA stability

Traction applied by the breathing system from the head end of the table can markedly distort the shaft of a laryngeal mask airway (LMA). Even if the tubing is supported to minimise the effects of gravity, traction may still exist due to the elasticity of the tubing. In addition to tying or taping the LMA into place, stability of the LMA can be achieved if the natural curve is maintained following insertion [1]. One method to achieve this involves looping the inspiratory and expiratory limbs of the breathing system around each side of the head to meet the LMA via an angle piece just infero-anterior to the chin [2]. This technique is obviously not suitable for co-axial breathing systems or T-pieces and may reduce surgical access to both sides of the head.

We would like to describe an effective, yet simple, way of improving LMA stability. By attaching a second right-angle piece to the LMA (Fig. 1), it is possible to adjust the position of the breathing system in relation to the LMA so that the profile of the LMA prior to connection is maintained. The tubing now runs parallel to shaft of the LMA, and therefore traction is no longer

applied at right angles to the shaft of the LMA but tends to retain the device in its natural position. This configuration can be used with any breathing system. It is particularly useful in edentulous patients in whom there is less support for the LMA and may also reduce the pressure of the LMA against the upper incisors, possibly avoiding damage to patients with poor dentition. The benefits of this technique must be weighed against the small additional deadspace and the presence of an extra connection in the breathing system.

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Figure 1 Ordinary traction by the breathing system does not distort the LMA. Bacterial filter with gas sampling port removed for photograph.

Cuffed oropharyngeal airway (COPA) and pharyngeal tumours

We read with interest the report by Pigott *et al.* (*Anaesthesia* 1998; 53: 480–3) describing the use of the cuffed oropharyngeal airway (COPA) as an aid to fiberoptic intubation. The patient, known to have a friable necrotic tumour invading the tonsil, parapharyngeal space, soft and hard palate and base of tongue, was at risk of bleeding from trauma to the tumour surface. We were therefore surprised that the COPA had been used in these circumstances.

The authors state that insertion of a laryngeal mask airway could be traumatic; we would suggest the COPA could be as traumatic particularly because 45 ml of air was introduced to inflate the cuff. Also, introduction of the fibroscope between the COPA and pharyngeal wall may cause trauma as 'friction between the cuff and pharyngeal wall stabilises the proximal bronchoscope to allow control of the distal end'. The authors comment on the major advantage of the COPA over other devices as being continuous fresh gas flow and unhurried intubation. Many of these devices [1, 2] can, however, be used with a facemask and breathing system connector (Mainz universal adaptor, Rusch UK or VBM endoscopy mask) in which a diaphragm is present that produces a seal around the fibroscope. The patient can breathe spontaneously or by assisted ventilation for a prolonged period with less danger of trauma as no cuff is inflated. A further advantage is that the fibroscope is directed to the larynx unlike the COPA where orientation and positioning are along one side of the oropharynx. The authors also commented on the options available for securing the airway in patients with advanced oropharyngeal tumours, but failed to mention transtracheal jet ventilation [3, 4] which bypasses the upper airway and provides an alternative technique of ventilation during fiberoptic intubation under general anaesthesia with unhurried conditions.

The COPA may have a role in airway management, but its role in the management of the difficult airway due to

necrotic tumours of the oropharynx is questionable. Other devices are available which allow spontaneous ventilation for prolonged periods, with less risk of trauma to necrotic surfaces and provide improved positioning of the fibroscope for visualising the larynx.

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External or internal jugular cannulation?

I was interested by the report of Zaida *et al.* of cerebral infarction following central venous cannulation (*Anaesthesia* 1998; 53: 186–91) because it is an opportunity to contrast internal jugular vein cannulation with the relatively risk-free external jugular approach. The patient described was a 65-year-old hypertensive, cigarette smoking, diabetic man with a very high risk of carotid artery disease and hence avoiding the risk of arterial puncture would be desirable. Blitt *et al.* [1] reported a 96% success rate of caval cannulation via the external route and stated that this may underestimate the success rate gained with experience. An earlier series of 1537 external and 9973 internal jugular cannulations [2] yielded complication rates of vein thrombosis and phlebitis of 1.74% and 2.2%, respectively, with the external route, but compared to the

more serious complications of hydrothorax, pneumothorax and arterial puncture that occurred with internal jugular cannulation, these rates are not unfavourable. Isolated reports of hydrothorax following external jugular cannulation can be found [3], but an exact incidence of this complication is not available.

Perhaps the authors would consider using a 23 gauge needle when locating the internal jugular vein instead of the 21 gauge needle described in their report. It is possible that arterial puncture by a small seeker needle has fewer sequelae.

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Spinal flexion and CSF pressure

The paper by Dinsmore *et al.* (*Anaesthesia* 1998; 53: 431–4) shows that flexion of the spine decreases the capacity of the cerebrospinal fluid (CSF) space and increases the CSF pressure. Figure 1 in their paper shows an increase in CSF pressure with increasing flexion of the spine. However, in their summary and paragraph one of the discussion, they erroneously state that the CSF pressure increased from the fully flexed to the flexed position. This should read 'the CSF pressure decreased from the fully flexed to the flexed position'.

They found a mean increase of 5.3 mmHg in CSF pressure when patients moved from the flexed to the

fully flexed position. The maximum increase in CSF pressure they recorded was 11 mmHg. With these results they conclude that epidural puncture performed in a fully flexed position may increase the incidence of inadvertent dural puncture. However, when moving from lateral to the sitting position, the mean CSF pressure increases by 28 mmHg [1]. Yet with this greatly increased CSF pressure, there is no evidence that epidural puncture performed in the sitting position carries a greater risk of inadvertent dural puncture.

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Reference

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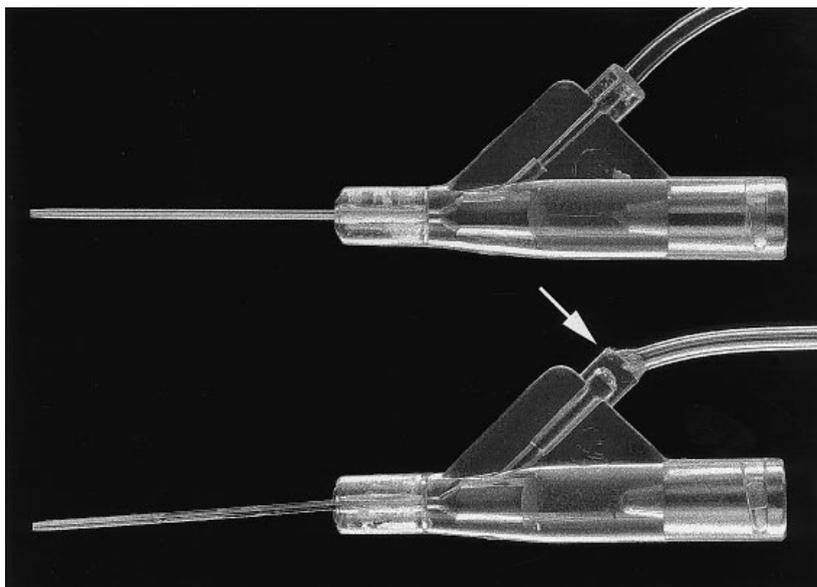
A reply

We thank the Dr Shah for drawing attention to this error. The summary should have read: 'There was a significant decrease in cerebrospinal fluid pressure on moving from the fully flexed to the flexed position'. Regarding their second point, the increased incidence of inadvertent dural puncture. Perhaps the message here is that any theoretical increased risk posed by different positions is usually outweighed by the position in which the practitioner is most experienced.

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My 'Y-can' can't

I recently encountered a problem on inserting a Y-CAN intravenous cannula (ref. YC23SY, lot 98 A 22, expires 20 00 01, Sims Portex Limited, Colchester, Essex) into a large forearm vein as a preliminary to inducing anaesthesia. A rapid flashback of blood into the chamber was obtained on cannulation of the vein, the needle was withdrawn from the cannula but absolute resistance was met



on attempted injection through the one-way valve. Removal of the valve failed to produce the usual blood backflow up the 'Y' side channel and the resistance to injection remained absolute, even on removal of the cannula from the patient. Close scrutiny revealed that the Y-CAN was defective, with the side channel lumen obliterated for approximately 1 mm where it joined the main body of the cannula. This was more evident when the faulty Y-CAN (Figure) was compared with a functional one.

Besides the cost implication of using a second cannula, intravenous cannulation with Y-CANS that can't be injected through does little to speed up busy operating lists and even less to reassure anxious patients in the anaesthetic room. Other Y-CANS from the same lot that have been used in our department have not shared this defect.

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A reply

Thank you for the opportunity to comment on the recent experience which Dr Goldsmith has brought to our attention. The Y-Can has been available for 18 years, during which time millions of cannulae have been sold. We insist on

thorough quality inspections throughout manufacture and are disappointed that this product became available for use. Since we consider any such incident to be unacceptable, we have revised our manufacturing and in-process quality assurance procedures in order to minimise the likelihood of a recurrence of blockage of the side-channel of the catheter.

We would like to offer our sincere apologies to Dr Goldsmith for the inconvenience caused and thank him for bringing this incident to our attention.

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Unanticipated admission following day surgery

Unanticipated admission following day case surgery is a useful marker for predicting outcome following surgery and is an indicator of morbidity and mortality [1]. The admission rate after ambulatory surgery varies between 0.1% and 5% [2]. Anaesthetic factors (nausea and vomiting, drowsiness, pain) play a significant role in the detainment as an inpatient following surgery [3, 4]. With the introduction of newer anaesthetic

agents, particularly propofol and sevoflurane and improved pain management techniques, we wished to determine whether anaesthesia was still a major contributing factor to patient admission after day surgery. To this end, in April 1998 an audit was performed to determine the incidence of and reasons for admission as an in-patient following day surgery. Reasons for admission were classified as either surgical, anaesthetic or social.

The total number of cases performed at Rossendale General Hospital between 1 April 1997 and 28 February 1998 was 2520; 47.61% were ASA grade 1, 23.80% grade 2 and 23.57% grade 3. All ASA 3 patients were over 70 years of age and had three or more intercurrent illnesses (e.g. asthma, heart disease, hypertension, diabetes mellitus, cerebrovascular accidents, thyroid disease, epilepsy, connective tissue disorders and renal disease). Of these patients, 758 were general surgical cases, 451 were urological, 235 orthopaedic, 116 gynaecological, 115 ENT and 131 medical cases. All medical procedures were performed under local anaesthesia and sedation. Twenty-six patients were detained as in-patients and 21 sets of notes were available for review. Of these patients, 12 were general surgical (1.6%) and 10 of these were detained due to unanticipated extensive surgery and two were admitted for social reasons.

Three urological patients (0.7%) were admitted, one for pharyngeal bleeding following trauma to an enlarged tonsil during laryngeal mask airway insertion, while another developed ventricular ectopics during the procedure and was admitted for 24-h ECG monitoring. The third underwent a procedure that took longer than anticipated. Three orthopaedic patients (1.3%) were admitted, one due to leg weakness following an epidural injection for a prolapsed disc, one had a drain inserted during surgery and the third for social reasons. One ENT patient (0.9%) was admitted for observation following therapeutic endoscopic procedures because of pre-existing illness. In total, 15 admissions were for surgical reasons, three were for anaesthetic complications and three for social reasons.

This audit showed that the admission rate following day case surgery was small and that anaesthesia made little contribution. The need for admission due to surgical or social factors may have been predictable and better adherence to the revised guidelines of the Royal College of Surgeons of England [5] may have reduced the number of unexpected admissions further.

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Respiratory insufficiency in Charcot-Marie-Tooth disease

I congratulate Drs Reah, Lyons and Wilson on their successful management of a Caesarean section in a patient with hereditary motor and sensory neuropathy type I (HMSN I) or Charcot-Marie-Tooth disease (*Anaesthesia* 1998; **53**: 580–3). However, I would like to make a point about respiratory insufficiency in this disease. Although HMSN I predominantly affects distal nerves and therefore musculature, in severe, advanced disease, as in the patient

described, the diaphragm may also be involved [1]. Two years prior to pregnancy, the patient complained of severe orthopnoea (in the absence of cardiac failure) and this is highly indicative of diaphragmatic failure [2]. A decrease of more than 30% in forced vital capacity between the erect and lying position and paradoxical abdominal movement on inspiration would have supported the diagnosis although more sensitive tests for diaphragmatic function such as measurement of transdiaphragmatic pressure are necessary for quantitative assessment. The presence of a gravid uterus and a thoracic kyphosis would clearly further compromise respiratory function.

In summary, patients with severe HMSN I presenting for anaesthesia must have diaphragmatic function assessed carefully before planning any intervention.

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The bearded airway

Maintaining an airway using a facemask in patients who have beards can be difficult. This is due to failure to achieve an effective seal and in the difficulty of performing adequate chin lift, particularly if the beard growth is thick.

A simple solution to this problem is to wrap cling film repeatedly around the face and head of the unconscious patient. Perforating a hole through the cling film at the mouth will then permit placement of the face mask to achieve a good seal and establish easy assisted ventilation. We believe that this approach

has been life saving on at least one occasion, when an unconscious trauma patient, with an abundant growth of facial hair, presented to the casualty department. Following difficulty in adequate placement of the face mask, this technique was employed. Assisted ventilation was then easily achieved and the patient successfully oxygenated prior to the establishment of a definitive airway.

As a result we recommend that no casualty department should be without a roll of cling film.

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Critical incidents

The article by Findlay and colleagues (*Anaesthesia* 1998; 53: 595–7) was interesting, but there is perhaps more that could be made of their data.

The characteristics of a critical incident [1] have been described as: it involved an error by a member of the anaesthetic team or a failure of the anaesthetists' equipment to function properly; it occurred at a time when the patient was under the care of the anaesthetist; it was described in clear detail by a person who observed, or was involved, in the incident; it was clearly preventable.

By studying them we can hope to develop strategies for their avoidance. To assist this, a scale of preventability has been built into the Royal College of Anaesthetists critical incident study, as follows: (1) probably preventable within current resource, e.g. failure to do pre-operative check; (2) probably preventable with reasonable extra resource, e.g. failure to detect oesophageal intubation would be improved by having capnographs; (3) possibly preventable with current resource, e.g. pneumothorax insertion *might be* prevented by better teaching and supervision; (4) possibly preventable with reasonable extra resource, e.g. problem arising because anaesthetist unwell *might be* prevented by more cover; (5) not obviously preventable by any change in practice, e.g. electricity grid failure.

Cohen *et al.* [2] did indeed also find

that individuals reported only 30% of incidents compared with reporting by a third party observer. Some of the reasons for this discrepancy have been explored [3], but in summary were: forgetfulness by the anaesthetist; inadequate definitions of incidents; late showing of the outcomes; fear of reporting; classification difficulties; need for direct questioning of patients about outcomes. This flags up the major difficulty with critical incident reporting – that the numbers concerned, either as numerator or denominator, are never likely to be accurate and can only be taken as painting a misty picture. The three oesophageal intubations would surely have been detected by capnography; its value in the anaesthetic room is unquestionable and the time is fast approaching when it will be considered negligent to induce anaesthesia without its presence.

To appreciate the relative value of monitors, we need to know not just which monitor was the first to alert the anaesthetist to the presence of a critical incident, but what feature of that signal was valuable. There are several parameters in each signal which often overlap; for example, a bradycardia consequent upon inadequate atropinisation of a young man having a spinal anaesthetic would simultaneously show on the oximeter and ECG; this is well explored by Webb *et al.* [4]. What, for example, was the unique contribution made by the ECG in the anaesthetic room; probably little. It would be surprising to hear that its unique attributes, arrhythmia classification and ST segment analysis, were noted in many incidents before the oximeter revealed the presence of an arrhythmia or any hypoxaemia.

The data the authors have collected are surely most valuable, but perhaps it could usefully be subjected to further examination.

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Use of suxamethonium in cord patients – whether and when

The interesting paper by Hambly and Martin (*Anaesthesia* 1998; 53: 273–89) on patients with spinal cord lesions has two provocative statements regarding use of suxamethonium and changes in plasma potassium: (1) '... few would deny that elective use of suxamethonium is safe after 9 months'. The statement refers to 9 months following a cord lesion; (2) 'It would therefore be unfortunate to allow any spinal patient to die of airway obstruction for fear of causing a hyperkalaemic arrest'. This statement refers to the fact that all of the patients described in their bibliography who suffered hyperkalaemic arrest were successfully resuscitated.

Cooperman [1] reported an increase of 2 mmol.l⁻¹ after suxamethonium in a patient as long as 7 years after onset and an increase > 4 mmol.l⁻¹ in a patient with progressive motor-related disease 10 years after onset. This exaggerated potassium release is an upregulatory phenomenon of nicotinic acetylcholine receptors in skeletal muscle and pharmacodynamic resistance to nondepolarising relaxants is a paired aspect of this upregulation [2]. If this receptor theory is true, then a normal response to nondepolarising relaxants would indicate a return to a normal potassium change after use of suxamethonium. I say this because the resistance is due to extra receptors at or around the endplate, while the agonist sensitivity of suxamethonium is due to the cumulative effect of multiple receptors even far

beyond the endplate [2, 3]. Quantitative evaluation of nondepolarising relaxants in cord patients would perhaps be of some aid in this matter.

Deaths or neurological deficits after use of suxamethonium in these patients are now seldom reported; in our country they do occur and they become legal cases. In the survival studies cited by Hambly and Martin, most of the patients were young and otherwise fit as regards their cardiovascular system. Youth and fitness may indeed play a role in survival of acute hyperkalaemia, with or without cardiac arrest. In our studies of 89 young and formerly fit burn patients three decades ago, not one suffered a cardiac arrest, despite potassium levels to $>6 \text{ mmol.l}^{-1}$ in 29 patients, and $>9 \text{ mmol.l}^{-1}$ in two patients [4, 5].

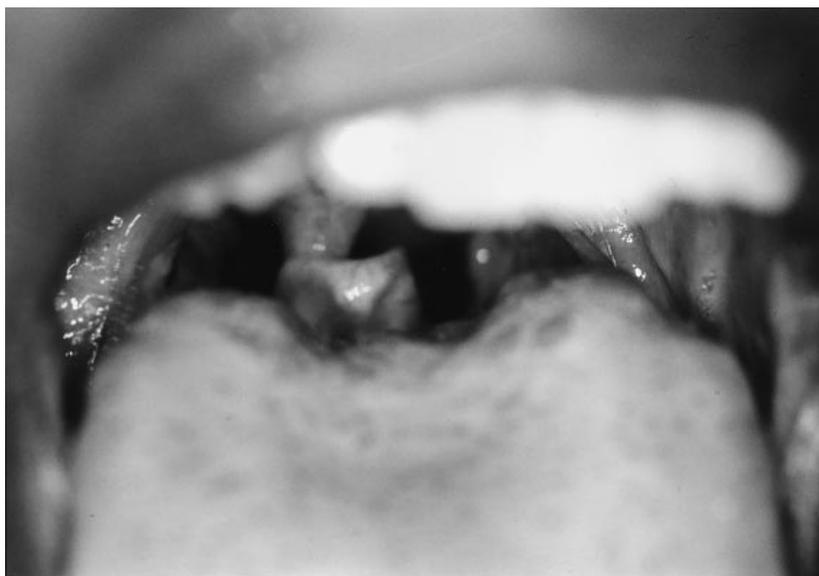
Nonetheless, I do not believe that use of suxamethonium is generally appropriate in patients with upper motor neurone lesions, as there are reasonable substitutes. This period of risk begins about 4 days following onset of the lesion [2]. Should suxamethonium be used in a patient in whom there might be a risk of hyperkalaemia, blood samples should be drawn before and after to document any potassium changes.

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An abnormal epiglottis but an easy intubation

The Mallampatti test was devised as a simple bedside examination to predict the likelihood of difficult intubation. We would like to report a case of unusual anatomy seen when performing this test.

The on-call anaesthetist was requested to provide anaesthesia for an otherwise healthy 33-year-old woman requiring an urgent Caesarean section. A Mallampatti test was performed as part of the pre-operative assessment and a 2-cm mass was immediately evident protruding from the base of the tongue. Closer inspection revealed this to be the patient's epiglottis (Figure). The patient received a general anaesthetic for the operation and was noted to be an extremely easy intubation. There were no intra- or postoperative complications.

In their paper describing what has

now come to be known as the Mallampatti test, Mallampatti *et al.* [1] printed an illustration of a Mallampatti Class 1 patient in whom the faucial pillars, soft palate and uvula are visible. The illustration also shows a small part of the epiglottis seen at the base of the tongue, although no mention is made of this in the text. We have been unable to find any case in the literature where an epiglottis is visible on performing a Mallampatti test, although there is a case report of an elongated epiglottis with an unusual angle causing a difficult intubation [2].

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Music and anaesthetists

Bully for Dr Zorab (*Anaesthesia* 1998; 53: 613)! He is fortunate to have escaped the plague of music during surgery for so long: in the mid-seventies, as a senior registrar in a London Teaching Hospital, I was unwillingly exposed to it in the cardiac theatre during the 'bypass' lists of the consultant surgeon. Rank had its privileges and thanks to his predilections I am still able to recall verbatim and with a ghastly accuracy the lyrics of all the early works of Mr Neil Diamond. Even after a quarter of a century hearing the songs again produces a catecholamine response in me that I was not able to demonstrate in his patients at the time [1]; they, of course, were mercifully protected by general anaesthesia!

To those colleagues without the moral authority and cooperative colleagues enjoyed by Dr Zorab, or unprepared to play Dr Grumpy to protect their sanity, may I offer a strategem? It is simply to hum, whistle or sing along with the tape at every list, enthusiastically and at a decibel level between 'audible' and 'assertive', with every expression of enjoyment of the tune. If possible, choose one of the subordinate harmonic lines such as the viola part in a Brahms symphony or the bass line of a pop standard. If the anaesthetist can contrive to be slightly off-key (should contrivance be necessary) the effect is mightily enhanced, especially if the surgeon has a musical ear, whilst the persistent inclusion of an incorrect word in one's rendition of Sister's favourite hit is similarly effective.

Two or three weeks is all it usually takes. 'Qui desiderat pacem, praeparet bellum'.

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