circulating cortisol concentration was found during surgery with the combined technique as retrobulbar block had denervated the eye.

Our conclusion was that retrobulbar block failed to prevent a stress response; indeed it obviously does block the endocrine and metabolic response to cataract surgery. The major finding was that, despite an obviously adequate retrobulbar block preventing the stress response to surgery, on waking from anaesthesia, an increase in cortisol concentration occurred in a pain-free patient.

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Laparoscopy and the laryngeal mask airway

Sir,—I read with interest the study by Malins and colleagues on postoperative nausea and vomiting after gynaecological laparoscopy [1]. Co-incidentally, the standard anaesthetic technique involved ventilation via the laryngeal mask airway (LMA) and in their discussion the authors correctly observed that this technique is controversial [2, 3], even though current trials suggest it is safe [4, 5]. Composite data from previously published literature reveal that the LMA has been used in only 300 patients undergoing gynaecological laparoscopy [4-8], none of whom apparently aspirated or had difficulties with gas exchange. The 153 patients studied by Malins and colleagues therefore represent a large proportion of published data and it would be useful if the authors could provide further details about how much Trendelenburg tilt was used, what levels of intra-abdominal pressure were produced and whether or not there were any problems with the technique.

Finally, the authors state that some of them have been using the LMA for gynaecological laparoscopy for 5 yr without any clinical problems. An indication of the total number of patients involved would add further perspective to this controversy.

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Sir,—The obvious clinical benefits in the early recovery phase persuaded us to pursue the technique of controlled ventilation using a laryngeal mask airway (LMA) for day-case laparoscopy, in selected cases. From the outset, in our clinical practice, we considered the potential risks of aspiration, excluding its use in women with a history of gastro-oesophageal reflux, obvious obesity or when prolonged Trendelenburg position was anticipated. During initial clinical experience with controlled ventilation using an LMA, we observed passive regurgitation in two patients, which did not result in aspiration. Both women were of short stature, 157 cm in height, weighing 80 kg and 85 kg. As a result we became more stringent in patient selection with regard to relative obesity. Co-incidentally, passive regurgitation with aspiration occurred in one patient during induction of anaesthesia for gynaecological laparoscopy when tracheal intubation had been planned from the outset, thus illustrating that it is a potential hazard.

After initial insufflation of the peritoneal cavity with carbon dioxide, intra-abdominal pressure is limited to between 12 and 15 mm Hg using an automatic insufflator (Wolf Endo-chirurgie-pneu). We do not use controlled ventilation with an LMA for laparoscopic pelvic surgery when steep Trendelenburg is required. The amount of tilt used normally is limited to 15°. We have not had any difficulty achieving adequate gas exchange as evidenced by the routine use of end-tidal capnography and pulse oximetry. Occasionally an audible leak has been apparent and resolved by positioning the patient’s head to one side. On four occasions, it was not possible to achieve a satisfactory airway and before leaving the anaesthetic room, elective tracheal intubation was performed.

Although we have used this technique for the past 6 yr, on about 3000 occasions for gynaecological laparoscopy without serious morbidity, we stress the importance of patient selection and precautions.

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Fresh gas requirements during spontaneous ventilation

Sir,—In their recent study, Soni and Ooi compared the fresh gas flow (VF) at the onset of rebreathing in the Mapleson A system expressed as a ratio of minute volume (VF/VE), with the same VF expressed in ml kg⁻¹ min⁻¹ [1]. The authors concluded that both forms of VF were equally good descriptions of the fresh gas requirement of the system during spontaneous ventilation in adults. As we previously studied the fresh gas requirements of children breathing from a modified Mapleson A system [2], we have re-examined our data to find out if this conclusion is valid for a more heterogenous group of patients.

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TABLE 1. Fresh gas flow at onset of rebreathing expressed as a ratio of minute volume (VF/VE) and in ml kg⁻¹ min⁻¹. Data from anaesthetized children breathing from a modified Mapleson A system (n = 10)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF/VE</td>
<td>0.47</td>
<td>0.08</td>
<td>0.30-0.53</td>
</tr>
<tr>
<td>ml kg⁻¹ min⁻¹</td>
<td>74.8</td>
<td>22.9</td>
<td>36-103</td>
</tr>
</tbody>
</table>

The results in Table 1 indicate that while there was a two-fold variation in VF/VE at the onset of rebreathing in our paediatric patients, there was a three-fold variation in VF when expressed in ml kg⁻¹ min⁻¹. This probably reflects the fact that carbon dioxide output is not linearly related to weight but to body surface area and hence metabolic rate. As the surface area to weight ratio is greater in smaller subjects, so carbon dioxide output, normal minute ventilation and the flow rates required for non-absorber breathing systems are also greater in ml kg⁻¹ min⁻¹.

We conclude that for paediatric patients, VF/VE at the onset of
rebreathing provides a more precise measurement of breathing system performance than $\dot{V}$r expressed in ml kg$^{-1}$ min$^{-1}$.

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1. Soni N, Ooi R. Fresh gas requirements during spontaneous ventilation: fresh gas flow to total ventilation ratio or ml kg$^{-1}$ min$^{-1}$ [British Journal of Anaesthesia 1993; 71: 796-799.


Nasotracheal intubating skills

Sir,—The recent article “A survey of nasotracheal intubating skills among Advanced Trauma Life Support course graduates” [1] makes several erroneous statements which require clarification. Some of these occur as a result of the authors being unfamiliar with the current Advanced Trauma Life Support (ATLS) course core content, as contained in the 1993 edition of the ATLS manual [2] which I suspect has appeared since they carried out their investigation.

Students are NOT taught that, in the breathing but unconscious patient with either proven or suspected cervical spine injury, intubation should be performed using a blind nasotracheal technique. The route is described as an optional procedure; the manual emphasizes “Note: The most important determinant of whether to proceed with orotracheal or nasotracheal intubation is the experience of the physician. Both techniques are safe and effective when performed properly.”

The occurrence of neck movement (6%) found during their study is not surprising as their technique of cervical spine immobilization, a sandbag each side of the neck together with adhesive tape across the forehead, is inadequate and certainly NOT “as indicated by the ATLS course for use during intubation when manual in-line immobilization is the recommended technique.”

The statements that “supervision of the attempts” (to intubate a mannikin) “may be by an ATLS provider who is not trained in anaesthesia” is untrue. All teaching on ATLS courses is carried out by instructors who have attended and successfully completed the training. Each ATLS course must have on its teaching. There are seven steps in learning and teaching psychomotor skills. The aims of the ATLS course is not to enable “horizontal transmission” of responsibility of airway management. I imagine that the authors are thinking of the concept of “horizontal vs vertical management” [3], a concept relating to the organization of trauma teams [3] in which vertical management involves a single physician sequentially diagnosing and treating each injury in a multi-trauma patient, as distinct from horizontal management where a team of physicians and nurses are allocated specific tasks within the primary and secondary survey of the patient. In the view of the opinion of the ATLS Committee of the Royal College of Surgeons that an anaesthetist is an essential member of trauma teams.

I would contest the statement that blind nasotracheal intubation is taught inadequately on UK ATLS courses but agree that it is, like all psychomotor skills, learned only by practice. The authors seem unaware of the principles of effective skill-learning and teaching. There are seven steps in learning and teaching psychomotor skills. Conceptualization: the learner understands the relationship between the skill and the broader concept of the skill, for example when to do it; when not to do it; precautions and complications, etc. Visualization: the learner must see the skill in its entirety. Verbalization: the learner must be able to verbally describe the skill accurately. Physical practice: consisting of practising individual components of the skill, linking all the individual components of and practising the entire skill. Correction and reinforcement: where skill errors are corrected during practice and positive success reinforced. Achievement of skill mastery: repetitive, normal use of the skill as a matter of routine. Autonomy: use of the skill in real-life situations.

Any course aiming to teach psychomotor skills in a non-clinical environment cannot possibly achieve anything other than the first five goals; ATLS courses are no exception. My dear old Grandmother could toss pancakes with a 100% success rate, when I asked her the secret of her success she replied, “the more I do the luckier I get” [5]. The authors results (and my Grandmother’s statement!) do nothing other than illustrate the importance of the final two steps in the acquisition of psychomotor skills.

The authors make several valuable suggestions of other airway management skills that could be incorporated in ATLS. The course is constantly up-dated and all UK instructors have been requested to contribute suggestions for inclusion in the 1997 edition of the manual. As the largest number of instructors in the UK are anaesthetists, as is the current chairman of the ATLS Committee, then it seems very likely that they will not be disappointed to find several, if not all, of their suggestions discussed in the new core content.

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Sir,—It was our local Ethics Committee that determined the method of neck stabilization. The new edition of the ATLS manual for students was indeed published after our paper was accepted. However, it unfortunately repeats the assertion in the first edition that “nasotracheal intubation is a useful technique when a cervical spine fracture is confirmed or suspected, or when urgency of airway management precludes a cervical spine roentgenogram.” Our survey showed that this difficult technique is poorly mastered and unsuccessful in a clinical setting. We thank Dr Riley for outlining the seven steps in learning and teaching psychomotor skills. Our survey was designed to see if this skill was adequately taught and learnt. It obviously was not. If the ATLS teachers truly believe that teaching the skill of blind nasotracheal intubation to doctors who need to “use the skill as a matter of routine” in order to master it, they should only be teaching it to anaesthetists who are able to routinely practice the skill. As we wrote in our discussion, there are other more easily learned and successful methods of oxygenating the lungs of patients. We are astounded that Dr Riley regards the ability to successfully secure the airway of a traumatized patient as luck. We are sure that his dear old Grandmother would be alarmed to think that a group of physicians are being taught that if they do not difficult technique to place a nasotracheal tube into the correct hole they should not be concerned as eventually they will get “lucky”. Unlike a dropped pancake, the hypoxic damage caused by inadequate oxygenation cannot be remedied easily.

We are indeed delighted that all of our suggestions may be discussed in the next edition of the ATLS manual.

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Memory for auditory material presented during anaesthesia

Sir,—In the recent study by Parker and colleagues [1], memory for words presented during general anaesthesia was studied in surgical patients in two ways. Patients were asked to name the words played during anaesthesia (free recall) and to identify the presented words from a larger list of words (recognition). Free recall and recognition are explicit memory tests [2] which require conscious or deliberate recollection of a previous learning phase. Memory for previous experiences can also be revealed in the