

## CORRESPONDENCE

**Cormack–Lehane classification revisited**

Editor—Dr Krage and colleagues<sup>1</sup> have done a useful study, which supports our conclusion<sup>2</sup> that discrepancies in reported grade incidences are mainly due to inexpert technique—our 1984 paper clearly states that the grades apply only if laryngoscopy is done correctly. However, it is not entirely clear what Dr Krage and colleagues believe to be the right way forward. To be word-perfect on the four grades (and on various sub-grades that have been proposed) may be important for anatomists interested in variations in normal anatomy, but is that so for trainee anaesthetists? The purpose of our classification was mainly to prevent failed intubation in cases which should be easy. That does not require exact knowledge of grading minutiae. It does require knowing: (i) which cases are at risk of failure and (ii) the technique for handling them. In essence that seems to be what they are advocating—and I agree.

We concluded<sup>3</sup> that, instead of proliferating the grades, it would be more helpful for the novice to focus on just two, depending on whether the cords can, or cannot, be seen. The beginner soon discovers that obesity, limited neck movement, missing teeth, etc., make intubation awkward—but that should never cause failure if the cords are visible. If you can watch the tip of the bougie enter the trachea, then how can you fail, even if only a tiny part of the inlet is visible? However, even with expert laryngoscopy, in about 1% of cases, the cords are not visible and there is a risk of failure—most of these are fairly easy provided the trainee is thoroughly familiar with using the bougie, as described.<sup>4 5</sup> The failure rate should then be about 1 in 1000—but that depends on all senior anaesthetists passing these messages on to those they are supervising.

What about the failures? Recently, we argued<sup>6 7</sup> that it is not possible for all anaesthetists to become expert in fibero-scopy, nor is it necessary. Provided each unit has enough specialists in the use of a fibroscope to deal with these rare failures, then 100% success should be achieved. It is said that in medicine, nothing is ever never, but using the strategy outlined above the report from Liverpool<sup>8</sup> describes 3430 obstetric intubations with no failures, a huge difference from earlier reports—the RCA Training Committee will surely take note.

In the 1980s, many trainees were doing emergency work with no idea what to do if they could not see the cords,<sup>9</sup> so there should be no surprise that disasters occurred, the only surprise is that they were rare. It was reasonable to conclude that obstetric cases should be done under local anaesthesia (LA), if possible. But clearly the situation is now quite different in some units and it is arguable that, in those units, general anaesthesia (GA) is as safe as LA, perhaps safer. Furthermore a meta-analysis<sup>10</sup> showed that Caesarean

babies fare better under GA than under spinal, as judged by fetal acidosis. Clearly, the policy for obstetric anaesthesia needs to be kept under review.

Some other points are worth noting. After the bougie has entered the trachea, the tube may snag at the cords—two simple remedies are described.<sup>5</sup> The trachea may be wide enough to admit the bougie, but not a standard tube; the anaesthetist needs to be prepared for that although most of us will never see a case. Our classification was work-related: grade 1 needs just a tube, grade 2 needs a tube plus a bougie used under direct vision, grade 3 tube plus bougie used blind, and grade 4 a fibroscope. Recently, we advocated<sup>6</sup> a simpler routine, namely using the bougie for all except grade 4's—that maximizes the trainee's experience with this crucial device. The safety and effectiveness of using the bougie for all intubations was demonstrated 48 yr ago on 18 000 cases.<sup>11</sup>

Medical journals currently stress the need for 'Evidence-based Medicine'. It was expressed rather more elegantly by William Harvey: 'I profess both to learn and to teach, not from the positions of philosophers, but from the fabric of Nature'. He might be surprised that it has taken 300 yr for the penny to drop, but better late than never. However, we need to avoid the opposite error of rejecting anything not based on a randomized controlled trial. Common sense is needed. For example, practice is accepted as crucial whenever co-ordination of the hand and eye is required, so we saw no indication for randomized controlled trials to demonstrate that trainees need to practise using the bougie. That need is underlined by two recent developments, the European Working Time Directive and our learning curve work.<sup>12</sup>

**Conflict of interest**

I co-authored the grading system with Dr Lehane, but we have no financial involvement.

R. S. Cormack\*

London, UK

\*E-mail: cormackrsc2@tiscali.co.uk

- 1 Krage R, van Rijn C, Groeningen D, et al. Cormack–Lehane classification revisited. *Br J Anaesth* 2010; **105**: 220–7
- 2 Williams KN, Carli F, Cormack RS. Unexpected difficult laryngoscopy: a prospective study in routine general surgery. *Br J Anaesth* 1991; **66**: 38–44
- 3 Cormack RS, Lehane JR, Adams AP, Carli F. Laryngoscopy grades and percentage glottic opening. *Anaesthesia* 2000; **55**: 184
- 4 Cormack RS, Lehane JR. Simulating difficult intubation. *Br J Anaesth* 1983; **55**: 1155P
- 5 West MRJ, Jonas MM, Adams AP, Carli F. A new tracheal tube for difficult intubation. *Br J Anaesth* 1996; **76**: 673–9

- 6 Cormack RS, Lehane JR. Intubation training in the real world: a defence of the Northwick Park drill. *Anaesthesia* 2007; **62**: 975–8
- 7 Cormack RS. Intubation training in the real world—a reply. *Anaesthesia* 2008; **63**: 436–8
- 8 Djabatey EA, Barclay PM. Difficult and failed intubation in 3,430 obstetric general anaesthetics. *Anaesthesia* 2009; **64**: 1168–73
- 9 Cormack RS. Failed intubation in obstetrics. *Anaesthesia* 2006; **61**: 505
- 10 Reynolds F. Spinal anaesthesia for Caesarean section and foetal acidosis. *Anaesthesia* 2005; **60**: 1238–41
- 11 Duckworth SI. The Oxford non-kinking endotracheal tube: results in about 18,000 cases. *Anaesthesia* 1962; **17**: 208–14
- 12 Cormack RS, Smith JE. Training requirements for intubation. *Br J Anaesth* 2006; **97**: 433P

doi:10.1093/bja/aeq324

### Simultaneous epidural blood patches at different intervertebral spaces for spontaneous intracranial hypotension

Editor—Spontaneous intracranial hypotension (SIH) is an important, but rare, cause of new onset persistent headaches. It affects women more frequently than men, typically in the fourth or fifth decade, but it can also occur in children and the elderly.<sup>1</sup> It is caused by spontaneous leak of cerebrospinal fluid (CSF) attributed to an underlying weakness of the spinal meninges or fragile arachnoid cysts.<sup>2</sup> Although many cases resolve spontaneously with ‘conservative’ treatment, others require the injection of autologous blood into the epidural space. However, a single epidural blood patch may fail to provide a definitive symptom relief and a repeated epidural injection is sometimes needed.<sup>3</sup> We report a patient who was treated with two epidural blood patches each at a different spinal segment, several days following a previous, apparently effective, epidural blood patch.

A 66-yr-old man was admitted to the neurology department for a severe intractable fronto-occipital headache of subacute onset. The headache was associated with nausea and vomiting and was exacerbated by the upright position and physical activity whereas it gradually resolved on lying down. He had no previous history of spinal/epidural puncture. A CT scan of the brain revealed no significant findings. Owing to persistent symptoms, he underwent a magnetic resonance imaging (MRI) that demonstrated a high-thoracic to lumbar epidural fluid collection with a moderate pachymeningeal enhancement. Treatment with oral analgesics, caffeine, good fluid intake, and lying supine led to no improvement, and therefore an epidural blood patch (20 ml of autologous blood) at T12–L1 interspace was performed. He underwent epidural puncture 5 days from the diagnosis of SIH, after a switch from warfarin (for chronic atrial fibrillation) to low molecular weight heparin (LMWH).

A few hours of bed rest in the supine position and a generous fluid intake were prescribed after the blood patch; LMWH was restarted 12 h after the procedure. His headache

completely resolved and he returned to his normal daily activity 4 days after the blood patch. Before discharge, LMWH was switched to warfarin again. At about 10 days after the epidural, he complained of headache again, this time with vertigo; the headache became more and more intense and was then associated with somnolence and dysarthria. A CT scan revealed a right hemisphere subdural haematoma with signs of recent bleeding. He underwent craniotomy to remove the blood and clots. Recovery from anaesthesia and surgery were uneventful with complete relief of symptoms and neurological deficits within the first 24 h. The CT scan on the following day demonstrated the persistence of minimal residual blood in the parietal area. As soon as he was allowed to assume the upright position, the headache returned. A residual small subdural hygroma was found on the cranial MRI, while the spinal MRI showed ventral and posterior epidural fluid collection from C2 to L2, with dilated epidural veins, meningeal enhancement, and initial sagging of the brain.

The opportunity of performing a CT myelography, potentially useful to identify the leak site/sites, was discussed but eventually we opted for repeating the epidural blood patch.

With the patient in the lateral decubitus, a first T12–L1 epidural puncture was performed, immediately followed by a second puncture at T6–T7; 15 ml of autologous blood was injected through each needle. No complications or direct or indirect signs of spinal cord compression occurred during or after. Mandatory flat decubitus was prescribed for the first 24 h followed by another day of intermittent semi-recumbent position in the bed. Optimal symptomatic relief was achieved with no residual headache at the resumption of the upright standing position. Patient was discharged 5 days after the epidural patches, and was strongly advised against any strenuous exertion. Warfarin was restarted a week later and in a few days increased to full therapeutic dose. At 1 month follow-up, the MRI revealed no spinal fluid collection and a significant reduction in dural enhancement.

No headache recurrence or other intracranial hypotension-related symptoms were reported at 6 months follow-up.

This case highlights the risk of performing an epidural blood patch in a subject on anticoagulants. It can be speculated that the early return to heavy work and the resumption of anticoagulation could have increased intracranial and spinal pressure and weakened the stability of the epidural clot. Loss of the seal may have reopened dural ‘holes’ and the consequent sudden decrease in CSF pressure was responsible for the recurrence of headache and the subdural haematoma development. Once the coagulated blood dissipated CSF escape may have determined downward brain displacement causing traction on the pain-sensitive structures and tearing of bridging veins which anchor the brain to the cranium. The natural lysis of the epidural blood clot, which obviously predisposes to recurrence of CSF leaks, and the reinitiation of warfarin treatment, could have favoured the dissolution of potentially stable clots before dural ‘reinforcement’ had taken place.