Reflux and the difficult airway

SGO Rees

A 74-year-old male presented for elective transurethral resection of the prostate with typical symptoms and signs of benign prostatic hypertrophy. He had a 35-year history of ankylosing spondylitis affecting his entire vertebral column with a fixed kyphosis, loss of the normal cervical and lumbar lordosis and inability to lie down without 3 or 4 pillows supporting his head and shoulders. Neck movement was very limited, but he had good mouth opening with uvula fully visible (Mallampati I), a full set of teeth and a thyromental distance of 7 cm.

In the past he had suffered frequent symptoms of acid reflux when he lay relatively flat, however, omeprazole 10 mg daily had reduced these episodes to about one per week. The options for anaesthesia were:

1. Regional anaesthesia (spinal or epidural)
2. Rapid sequence induction with cricoid pressure and tracheal intubation
3. Intravenous (iv) induction, assessment of mask ventilation, then tracheal intubation
4. Topical anaesthesia to the airway followed by awake fibreoptic intubation
5. Any of these techniques with cricoid pressure until trachea intubated or for the duration of the anaesthetic
6. Inhalation induction
7. Iv induction, maintenance with face mask and oropharyngeal airway
8. Iv induction and insertion of laryngeal mask airway.

Regional anaesthesia is usually impossible in advanced ankylosing spondylitis because of extensive calcification of vertebral ligaments, in particular ligamentum flavum. Option 1 was therefore not considered.

The choice of general anaesthetic technique is complicated both by fixed cervical kyphosis, making direct laryngoscopy difficult or impossible, and by the need to protect against aspiration of regurgitated stomach contents. The latter can be partially overcome by preoperative fasting and the administration of drugs to reduce the volume and acidity of stomach contents. In addition the pronounced kyphosis and enforced semi-recumbent position may render passive regurgitation less likely.

Rapid sequence induction with cricoid pressure is the preferred technique of general anaesthesia in patients at risk of gastric aspiration. However, the administration of a muscle relaxant to a patient with an expected difficult intubation without first assessing the adequacy of mask ventilation is unnecessarily hazardous. Although option 3 is safer than 2, both may result in a paralysed, unintubatable patient who may then be at increased risk of aspiration and they were discounted. If intubation were to be attempted under general anaesthesia then techniques involving the gum elastic or illuminated bougie, Bullard, McCoy or fibreoptic laryngoscope or blind nasal intubation might be useful. Of these, fibreoptic and blind nasal intubation do not require muscle relaxation.

Awake fibreoptic intubation (option 4) can be performed using the 'spray-as-you-go' method to minimize the risk of aspiration, but it does not afford complete protection and the necessary skills were unavailable. It was therefore ruled out.

Inhalation induction is slower than iv induction with greater likelihood of coughing, laryngospasm and regurgitation. Therefore option 5 was discounted.

In the absence of a cuffed tracheal tube protecting the airway for the duration of the case, cricoid pressure may be applied (option 6). However, it is difficult to perform effectively for prolonged periods without interruption (in this case about an hour) and would interfere with placement of a laryngeal mask if this is used. Option 6 was thus not considered.

Options 7 and 8 offer simplicity and the avoidance of muscle relaxants and possible failed intubation, without affording airway protection, although if coughing or laryngospasm can be avoided, the risk of significant aspiration is much reduced. The face-mask has the advantage over the laryngeal mask that lower oesophageal sphincter tone is maintained to a greater extent and, should regurgitation occur, it may be associated with less aspiration.

Option 8 was chosen because iv induction and laryngeal mask insertion is straightforward, allows hands-free maintenance and carried the lowest risk of airway complications. The patient was premedicated orally with omeprazole 10 mg the preceding night, metoclopramide 20 mg and omeprazole 10mg 90 minutes before surgery and sodium citrate 0.3M 30 ml immediately before induction. He fasted overnight except for a drink of clear fluid 2 hours before the operation. After pre-oxygenation, anaesthesia was induced with fentanyl 100 μg and propofol 120 mg. A laryngeal mask (size 4) was inserted smoothly and cricoid pressure was not used. The anaesthetic passed without incident and postoperatively there was no clinical evidence of pulmonary aspiration. HM

Dr SGO Rees is Specialist Registrar in the Department of Anaesthesia, Gloucestershire Royal Hospital, Gloucester GL1 3NN