Management of severe upper airway trauma

Simon Tomlinson, Chris Earlam

A 32-year-old man presented to casualty at night following an accident at work with a large industrial circular saw. His overalls were caught by the blade and he was pulled into the machine. The blade had struck him on the left side of his face and neck but nowhere else. He had been conscious throughout even though he had bled profusely from his wounds. On arrival he was pale, tachycardic (pulse 130 beats/minute) and hypotensive (blood pressure 90/40 mmHg). He had been given 2 litres of colloid by the paramedics. He was sitting upright and his Glasgow Coma Score was 15.

He was bleeding steadily from his mouth and from two cuts on his left side. One extended from the parotid area forward along the line of the mandible ending below his lower lip. The second had cut off his left ear lobe and extended just inferior to the mandible ending in the submandibular region. A pressure dressing had been applied to the cuts and a bandage wrapped below his jaw and around the top of his head to support his mandible.

Clinically he had multiple mandibular fractures and had lost several lower teeth. He maintained his airway by leaning forward and spitting blood. His oxygen saturation was >96% with 15 litres of oxygen via a face mask. Two large intravenous cannulae were inserted and a further 2 litres of warmed colloid was infused quickly. Routine bloods were sent and a cross-match of six units requested. It was difficult to assess how deep the blade had cut into the neck but we assumed that as his airway was clear and his larynx felt normal, with no crepitus, then the blade had not cut through his larynx or trachea. He was normally fit and well.

Dr Simon Tomlinson is Specialist Registrar in Anaesthesia in the Department of Anaesthesia, North Manchester General Hospital, Manchester M8 5RB and **Dr Chris Earlam** is Consultant Anaesthetist in the Department of Anaesthesia, Hope Hospital, Salford

Correspondence to: Dr S Tomlinson

The consultant anaesthetist was called for assistance and the patient moved to theatre. The maxillofacial surgeon on call felt that the bleeding was mainly from the mandibular fractures rather than structures lower down the airway. The patient was beginning to panic and we did not feel he would cooperate with us for much longer. He had to be anaesthetized to allow control of haemorrhage and to protect his airway postoperatively from the swelling that we expected to develop.

Our options for anaesthetizing this man were:

1. An awake fibreoptic intubation
2. A tracheostomy performed under local anaesthesia
3. An inhalational induction with sevoflurane with the patient in the lateral position
4. A rapid sequence induction.

Option 1 was rejected as there was a lot of blood in an anatomically distorted airway in this patient. This would have made absorption of local anaesthesia unpredictable and identification of landmarks difficult.

Option 2 was rejected as the patient would have found it impossible to lie semi-recumbent let alone flat.

Option 3 was rejected as the patient would not assume any other position than upright and we felt there was a high risk of laryngospasm and aspiration because of blood in the airway and stomach. Option 4 was chosen.

The difficult airway equipment was assembled including various laryngoscope blades, a fibreoptic scope, an intubating laryngeal mask airway (LMA), a normal LMA, a minitrachoeostomy kit, various sized oral and nasal endotracheal tubes and two powerful suckers.

The patient was preoxygenated sitting upright for 5 full minutes. He was given propofol 180 mg. Someone applied cricoid pressure while another person cut off the pressure bandage and he was lain flat. On laryngoscopy a grade 1 view of the larynx was obtained and a size 9 reinforced oral endotracheal tube (ETT) was easily passed through normal looking cords without the need for muscle relaxants. Tube position was confirmed by capnography. The patient was paralysed with atracurium, given 200 μg fentanyl and ventilated with oxygen, nitrous oxide and isoflurane. Invasive arterial and central venous monitoring was inserted.

The damage was more extensive than expected. The blade had cut the carotid sheath but not the artery, transected his hyoid cartilage and on exploration of the wound the epiglottis and ETT were clearly visible through a small hole in his larynx. An ENT surgeon repaired deeper damage and formed a tracheostomy.

The patient was sent to the intensive care unit to be woken the following morning, and has since made a full recovery.

This was a difficult anaesthetic scenario and with hindsight we were fortunate that the ETT passed straight down the trachea and did not pass out of the laryngeal wound. We felt that a rapid sequence induction, with all airway adjuncts to hand, was the most appropriate technique in this situation. All in all the patient was extremely lucky to survive this injury. HM