A tricky tracheotomy: airway management dilemma following unusual stab injury to the mouth

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ABSTRACT

Traumatic wounding to the upper aerodigestive tract can cause acute airway compromise. In these circumstances establishment of a safe airway is vital. We present a case report illustrating the decision making pathway in such a difficult case.

KEYWORDS

Trauma – Tongue – Floor of mouth – Airway – Tracheotomy

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The tongue and floor of the mouth have a rich vascular supply and substantial haemorrhage can occur following penetrating injury. The ventral surface of the tongue and region above the sublingual and submandibular salivary glands are areas where lingual vessels are likely to be injured.¹ The sublingual artery, a major branch of the lingual artery, runs along the superior plane of the mylohyoid muscle. The submental artery, which branches off the facial artery, runs along its inferior aspect.² Vascular trauma potentially causes massive bleeding. A haematoma can result in superior and posterior displacement of the tongue with subsequent airway compromise.

Awake fibre-optic intubation is preferred when oropharyngeal oedema or restricted mouth opening would make orotracheal intubation difficult. Avoidance of paralysing

agents during intubation maintains airway patency. However, the use of topical local anaesthetic agents during the intubation process can result in loss of vocal cord control and subsequent loss of the airway. Tracheotomy under local anaesthesia is recommended if fibre-optic intubation is not feasible.³ We report a case with difficult access in which successful airway management was achieved by performing a tracheotomy while the patient was awake in the sitting position.

Case history

A 17-year-old man presented to the accident and emergency department of a major trauma centre with gross swelling of his tongue and lower lip (Fig 1). He had been stabbed in the orofacial region 36 hours earlier, sustaining lacerations to the lower lip, ventral tongue and floor of the mouth. He had been assessed by the on-call maxillofacial clinician and his injuries were judged to be superficial. His wounds were sutured under local anaesthesia and he was discharged home.

At second presentation the patient was unable to swallow his own saliva and had altered speech but no stridor. He had significantly reduced mouth opening and the floor of the mouth was raised and firm, with the tongue displaced superiorly. He had a Mallampati score of four. He had an obviously compromised airway that appeared to be deteriorating. He was transferred to the resuscitation area and given supplemental oxygen, intravenous antibiotic and steroid therapy. Urgent computed tomography (Fig 2) was performed to determine the extent of tongue and oropharyngeal swelling.

Figure 1 Extensive swelling of tongue with drooling of saliva

Figure 2 Axial, coronal and sagittal views of computed tomography showing sublingual and submental haematoma with upper airway obstruction

Figure 3 Wound exploration and evacuation of haematoma

An enlarging haematoma and associated soft tissue oedema was resulting in airway compromise. Possible ongoing bleeding could result in a catastrophic loss of the patient’s airway. He required urgent exploration of his wound to evacuate the haematoma and prevent further bleeding. Following consultation with a senior anaesthetist, awake fibre-optic intubation was deemed potentially hazardous. The patient was maintaining his airway using his intrinsic vocal cord muscles and spraying the cords with local anaesthetic could result in loss of muscular control and a subsequent loss of airway. It was decided that the safest way to intubate him was to perform an awake surgical tracheotomy under local anaesthesia.

Laying the patient flat caused stridor. A tracheotomy was therefore performed with the patient sitting forwards. The surgical landmarks for a tracheotomy were identified and the area was infiltrated with local anaesthetic. A standard transverse incision was made midway between the suprasternal notch and cricoid cartilage. Dissection was carried out in the midline between the strap muscles down to the thyroid isthmus, which was mobilised and retracted superiorly. A window was cut in the third tracheal ring and

a cuffed double lumen tracheotomy tube was inserted. After securing the airway, the patient was anaesthetised.

The tongue wound was examined, the haematoma evacuated and active bleeding arrested (Fig 3). The submental space was explored and a corrugated drain inserted. The patient was transferred to the intensive care unit overnight and to the trauma unit the following day. Intravenous steroids and antibiotics were continued and nasogastric feeding was started as the oropharyngeal oedema and tracheotomy were preventing swallowing. Weaning from the tracheotomy tube was prolonged because of the swelling. The patient remained in hospital for a further two weeks before successful decanulation.

Discussion

Tongue and floor of mouth injuries may appear trivial on initial presentation. Bleeding into the tissue spaces under the tongue can cause airway obstruction in the same manner as in Ludwig’s angina. The expansion of a lingual haematoma is limited by the superficial layers of the cervical fascia,⁴ resulting in superior and posterior displacement of the tongue with subsequent airway obstruction. A compromised airway such as this presents the anaesthetist and surgeon with an uncommon diagnostic and surgical challenge. This case highlights the need to anticipate possible complications arising from a relatively simple injury.

References

- 1. Jaiswal SK. Care of lingual vessels during surgery over floor of mouth. *Indian J Otolaryngol* 2003; **55**: 62–64.
- 2. Kalpidis CD, Setayesh RM. Hemorrhaging associated with endosseous implant placement in the anterior mandible: a review of the literature. *J Periodontol* 2004; **75**: 631–645.
- 3. Ovassapian A, Tuncbilek M, Weitzel EK, Joshi CW. Airway management in adult patients with deep neck infections: a case series and review of the literature. *Anesth Analg* 2005; **100**: 585–589.
- 4. Hing NR, Bowler MD, Byth PL, Daly CG. Lingual haematoma leading to upper airway obstruction. *Br J Oral Maxillofac Surg* 1985; **23**: 322–325.