Emergency anaesthetic strategies for the bleeding upper airway

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INTRODUCTION

The shocked patient with life-threatening haemorrhage from the upper airway is a major anaesthetic and surgical challenge. Causes of bleeding, may include infective, trauma, tumour or postoperative sequelae. Sources of bleeding, include epistaxis, tonsillar bed, tongue and oro- or nasopharynx. Despite full resuscitative measures, bleeding may persist and the airway can become increasingly compromised. Surgical intervention is required sooner rather than later. A strategic anaesthetic approach to this emergency is essential before surgery. The risks and benefits of several alternative strategies are considered (*Table 1*).

TABLE 1.
Risks and benefits of emergency anaesthetic strategies for the bleeding upper airway

Strategy	Risks	Benefits
Rapid sequence induction and direct laryngoscopy	Difficult to effectively preoxygenate because of bleeding Blood will pool in oropharynx obscuring view at laryngoscopy Suction tubing may block with clot Soiling of lower airway until secured with tracheal tube Tissues may swell making direct laryngoscopy difficult Intravenous induction agent may precipitate cardiovascular collapse Succinylcholine may provoke bradycardia in presence of hypoxia Risk of 'can't intubate, can't ventilate' scenario	Familiar technique to all anaesthetists Allows rapid tracheal intubation if effective suction and easy laryngoscopy Does not require manual inflation of the lungs before intubation Can be performed with patient lying head down on left side The patient should breathe even after failed intubation as succinylcholine wears off
Rapid sequence induction and insertion of laryngeal mask airway (LMA)	All the risks of a rapid sequence induction	The LMA protects the lower airway from a bleeding upper airway The LMA allows ventilation and serves as a useful conduit to the glottis A fibrescope will easily pass down the LMA allowing tracheal intubation
Inhalational induction and direct laryngoscopy	Dependent on skill level Less familiar technique Difficult to achieve surgical anaesthesia with a patient coughing blood and unable to maintain a gas tight seal with the facemask May provoke laryngospasm	Patient should continue to self ventilate Technique can be performed with patient sitting up
Blind nasal intubation	Dependent on skill level May provoke laryngospasm May exacerbate airway bleeding	Patient continues to self ventilate
Awake fibreoptic intubation under local anaesthesia	Dependent on skill level Requires a cooperative patient Topical anaesthesia may provoke coughing and exacerbate bleeding Blood will obscure fibreoptic view Safe sedation is difficult in a shocked patient	Effective in experienced hands Patient can be sitting upright and forward Patient continues to protect own airway
Needle cricothyroidotomy under local anaesthesia	Dependent on skill level Does not protect the lower airway with a cuffed tube Need patent upper airway for entrainment and exhalation Requires paralysis of the patient for jet ventilation May become displaced	Lifesaving in 'can't intubate, can't ventilate' situation May be inserted with the patient awake and sitting up with local anaesthetic as a precaution before any of the above techniques
Surgical tracheostomy under local anaesthesia	Dependent on surgical skill level Very difficult to perform in a distressed coughing patient Stressful for the patient	Secures the lower airway with a cuffed airway A proven life-saving option in experienced hands

DISCUSSION

The most effective airway strategy will depend on the source of the bleeding, the individual experience of the anaesthetist and the surgeon. A primary and a secondary airway strategy should be accompanied with a safe exit strategy. These strategies should be discussed with the surgeon in theatre. Planning ahead is essential and this includes carefully considering what staff and equipment are required.

Plan A may be a rapid sequence induction in the left lateral head down position. If Plan A fails then Plan B should involve insertion of an laryngeal mask airway. Fibreoptic intubation via the laryngeal mask airway should then be considered. Plan C may be a needle cricothyroidotomy depending on the skill of the anaesthetist and availability of jet ventilation.

Alternatively, Plan A could be an awake fibreoptic intubation under local anaesthesia with the patient sitting forward depending on the experience of the anaesthetist. A cricothyroid cannula could be inserted under local anaesthesia to aid topicalization of the lower airway and to allow for transtracheal ventilation should it become required if the airway is lost.

The surgeon should always be scrubbed and prepared to perform a surgical tracheostomy either electively as a Plan A or as a default Plan D. Local anaesthetic may be infiltrated in preparation for this eventuality. It is prudent to transfer the patient postoperatively to intensive care for stabilization and reassessment during daylight hours after a period of calm and stability allowing any associated airway swelling to resolve.

CONCLUSIONS

For a successful outcome of this difficult dilemma, effective communication between the anaesthetist and the surgeon is important. A primary airway strategy and a secondary default strategy should be based on the experience of the anaesthetist. A safe exit strategy should also be planned for the end of the procedure. HM

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