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# Fibreoptic awake intubation - a method of topical anaesthesia and orotracheal intubation

A.D. Sutherland MBBS FFARACS,  
J.P. Sale MBBS FFARCS

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*Three cases of trismus caused by oropharyngeal sepsis are described where fibreoptic-assisted awake intubation using an oral airway intubator and nebulised lidocaine was safely and successfully achieved.*

Patients requiring general anaesthesia for oropharyngeal or cervical sepsis may present with severe pain, marked swelling and tissue oedema producing trismus which prevents standard laryngoscopy and tracheal intubation. Three case reports of such patients are presented where after application of nebulised lidocaine, an oral route of fibreoptic-assisted awake intubation was used to safely intubate the trachea.

## Case histories

### Case #1

A 26-year-old 76 kg woman developed a large left submandibular abscess which required surgical drainage. Preoperative medical history was unremarkable. Clinical examination revealed extensive swelling involving the left cervical, submandibular

and temporomandibular areas. Marked trismus was present allowing only a 5 mm opening. Removal of a partial upper denture of the central two incisors increased the opening to 17 mm.

### Case #2

A 56-year-old man had a pharyngeal diverticulum excised uneventfully under general anaesthesia. The patient developed marked oedema, swelling and crepitus in the neck with associated trismus on the seventh postoperative day. A cervical abscess required surgical drainage under general anaesthesia. Mouth opening was limited to 15 mm; however, there was no evidence of stridor or respiratory obstruction.

### Case #3

A 32-year-old 65 kg man presented with a four-day history of sore throat, fever, and had a three-day history of difficulty in swallowing. Clinical examination revealed a right sided neck swelling, drooling of saliva and trismus limiting mouth opening to 15 mm. No stridor or respiratory obstruction were evident. A diagnosis of peritonsillar abscess was made requiring drainage under general anaesthesia.

## Key words

COMPLICATIONS; airway, abscess; EQUIPMENT; airway intubator, fibreoptic bronchoscope; TECHNIQUE; local anaesthetic, awake intubation.

## Methods

In each patient, the safest method of airway management was considered to be awake fibreoptic intubation using the Williams oral airway intubator and fibreoptic bronchoscope (FOB).<sup>1</sup> After discussion with the patient it was explained that special care was needed for anaesthesia and potential difficulties were outlined. The patients were premedicated with a single dose of ranitidine 50 mg intravenously 90 minutes preoperatively. After arrival in the operating room, blood pressure and

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From the Department of Anaesthesia, Foothills Hospital at the University of Calgary, Alberta, Canada.

Address correspondence to: Dr. A.D. Sutherland, Department of Anaesthesia, Foothills Hospital at the University of Calgary, 29th St NW, Calgary, Alberta, Canada T2N 2T9.



FIGURE Patient 3 breathing nebulised four per cent lidocaine through the airway intubator.

ECG monitoring and intranasal oxygen were instituted.

With the patient lying with a head up tilt of 45 degrees on the operating table, 4 ml of four per cent lidocaine was nebulised in a standard Hudson (Model No. 1732) nebuliser using eight litres of oxygen flow with the patient inhaling the mist through a standard mouthpiece for three minutes. The airway intubator was then attached to the same nebuliser allowing the patient to slowly advance the airway into the oropharynx and breathe the mist at the same time (Figure). After five minutes further nebulisation, the FOB was introduced through the airway, positioned above the vocal cords and 2 ml of two per cent lidocaine was injected via one of the channels in the FOB onto the vocal cords under direct vision. Another 2 ml was sprayed after advancing the FOB into the trachea just distal to the vocal cords. Nebulisation was resumed for a further two minutes while a size 7.0 cuffed endotracheal tube was lubricated with a water soluble ointment and ensleeved over the FOB. The FOB was again advanced into the trachea and positioned above the carina and the patient was asked to take some slow deep breaths to maximise vocal cord abduction. The endotracheal tube was advanced through the airway and through the larynx during inspiration, its position above the main carina confirmed visually and the cuff inflated. General anaesthesia was then induced with thiopentone  $2-3 \text{ mg} \cdot \text{kg}^{-1}$  intravenously and maintained with 70 per cent nitrous oxide in oxygen and isoflurane. In patients 1 and 3,

incremental doses of  $25 \mu\text{g}$  of intravenous fentanyl were given during the intubation procedure, totalling  $75 \mu\text{g}$  in each case.

After intubation, the airway was withdrawn over the endotracheal tube to allow greater oral surgical access. Surgery was uneventful in all cases. Patient 2 had marked oedema and swelling of the glottis and pharynx when viewed through the FOB and was transferred electively to the intensive care unit where he was extubated on the third postoperative day after resolution of his swelling. Patients 1 and 3 were extubated after recovery of consciousness. Two patients remembered the intubation postoperatively and claimed to have experienced minimal discomfort during the topical anaesthesia, airway insertion and intubation.

#### Discussion

Patients presenting for surgery who have trismus can be managed in various ways. Regional anaesthesia or mask inhalational anaesthesia may be alternatives to endotracheal intubation. If intubation is required then the nasal or oral route can be chosen. Blind nasal intubation is a valuable procedure; however, bleeding and possible inadvertent rupture of an oropharyngeal abscess are potentially hazardous complications. Perioral and pharyngeal sepsis can cause oedema and swelling with distortion of normal anatomy. The FOB is a useful method to overcome many of these difficulties. The nasal route may be chosen when trismus is complete but again suffers from problems of bleeding, greater discomfort and occasional inability to pass either the FOB and/or the ensleeved endotracheal tube through the nasopharynx. The oral airway intubator is a valuable alternative acting as a vehicle for topical anaesthesia, protection for the FOB, and a guide through the pharynx. It requires approximately 15 mm opening of the mouth similar to a standard oropharyngeal airway.

Nebulised lidocaine provided the basis for the topical anaesthesia in these awake patients. Oropharyngeal application of nebulised lidocaine has also been shown to be beneficial in preventing hypertension and tachycardia during direct laryngoscopy and endotracheal intubation.<sup>2</sup> Measurement of serial plasma lidocaine concentrations during and up to one hour after fiberoptic assisted awake intubation using a similar application protocol for topical lidocaine revealed very low systemic

absorption of the topical lidocaine and minimal cardiovascular response during the procedure.<sup>3</sup> Although FOB assisted awake oral intubation is a safe and simple procedure, experience using the FOB is best gained in healthy patients without airway problems.

#### References

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#### Résumé

*Trois cas de trismus provoqués par une infection oropharyngée sont décrits où l'intubation a été accomplie avec succès suite à l'utilisation d'un bronchoscope à fibre optique.*