

Failed tracheostomy under local anaesthesia. . .plan B?

B MAIYA, MBBS, FRCA, H L SMITH, MBBS, FRCA

Abstract

Severe stridor of recent onset is a challenge to deal with because of the lack of investigations on which to base the management plan. We describe a case of an elderly lady who presented to us with a short history of severe stridor. We encountered unanticipated difficulties with tracheostomy under local anaesthesia as the thyroid was replaced by a diffuse mass and the airway had to be secured by an awake fibre-optic intubation. Awake fibre-optic intubation is thought to be a relative contraindication in acute upper airway obstruction, but occasionally tracheostomy under local anaesthesia may not be possible and in experienced hands an awake fibre-optic intubation is a reasonable alternative.

Key words: Airway Obstruction; Tracheostomy; Intubation, Intratracheal

Introduction

Patients with difficult airways in respiratory distress are not commonly encountered in routine anaesthetic practice and when they do present it is usually outside normal working hours. Much has been written in the literature to prepare the clinician for such an event.¹ The clinician is encouraged to plan in advance with plans A, B and even C prepared. Tracheostomy under local anaesthesia is frequently cited as the best course of action particularly if the patient is stridorous secondary to a periglottic lesion.² Here the patient remains awake with spontaneous respiration, allowing time for the procedure to take place without loss of the already critical airway. However, we present a case where tracheostomy under local anaesthesia was unsuccessful and awake fibre-optic intubation became a successful plan B.

Case report

An 87-year-old lady presented to the emergency department on a weekend with a one day history of difficulty in breathing. She had no history of fever, sore throat, cough or chest pain. She had undergone a right hemicolectomy a year ago and had a repeat laparotomy for local recurrence six weeks prior to this admission. She was noted to have had a grade I laryngoscopy during her previous anaesthetic and a size 8.0 cuffed endotracheal tube was passed easily.

On this admission, she had marked stridor and was in respiratory distress. Her breath sounds were normal on auscultation. She was breathing at a rate of 22 breaths/minute with a SpO₂ of 95 per cent on FiO₂ of 40 per cent. Chest X-ray (CXR) showed normal lungs. The lower third of the trachea was visible on the CXR and appeared normal (Figure 1). As she could not lie flat, a computed tomography (CT) scan was not performed. Her gas exchange was reasonable with a PaO₂ of 11.4 and PaCO₂ of 5.33 kPa on a FiO₂ of 40 per cent. Heliox (21 per cent oxygen; 79 per cent helium) eased her symptoms marginally, but she was still unable to lie flat.

On examining her neck, the surgeon could not feel any obvious mass but noticed 'firmness' anterior to the trachea. A nasoendoscopy performed in theatre by the surgeon was inconclusive. A decision was made jointly by a consultant anaesthetist and consultant ENT surgeon to insert a tracheostomy tube under local anaesthesia as the patient was maintaining her airway adequately and the cause of the stridor remained undiagnosed. The procedure was attempted with full monitoring and an intravenous cannula in situ. The patient was given 200 mcg glycopyrrolate intravenously, sat up 45 degrees and given a mixture of helium and oxygen (50:50) to breathe. Skin over the upper trachea was infiltrated with 20 ml bupivacaine 0.5 per cent with 1:200 000 epinephrine. After making the incision and separating the muscles, the surgeon was unable to locate the tracheal rings as the thyroid was replaced by a diffuse mass. Needle aspiration was attempted through the mass several times in order to locate the trachea but was unsuccessful. Forty minutes after the start of surgery, the patient appeared to be getting distressed and increasingly uncooperative. A decision was made to proceed with an awake fibre-optic intubation.

Nasal mucosa was sprayed with xylometazoline and a mixture of phenylephrine 0.5 per cent and lidocaine 5 per cent (2.5 mls). One attempt at awake fibre-optic intubation was made by an experienced operator using a 3.1 mm Olympus® LF-DP endoscope with a 5.0-microlaryngoscopy tube (Portex®) mounted. The vocal folds appeared normal (Figure 2). A mass could be seen below the level of the folds encroaching into the subglottic region (Figure 3). The microlaryngoscopy tube was passed with some difficulty, beyond the level of the mass. After confirming the position of the tube, general anaesthesia was induced with sevoflurane. The surgeon dissected 7 cm through the tumour and, with some difficulty, was eventually able to locate the trachea with the help of light from a fibre-optic scope passed via the endotracheal tube. The rest of the procedure was uneventful and a size 7.0 adjustable flange Portex® tracheostomy tube was placed. A CT scan

From the Department of Anaesthesia, Cambridge University Hospitals, Cambridge, UK.
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FIG. 1

Chest X ray shows a normal looking lower trachea.

carried out next day showed an 8 cm mass in the upper thorax extending into the neck. Biopsy of the mass was reported as a diffuse sclerosing large B cell lymphoma.

Discussion

Airway emergencies are stressful and require considerable expertise to manage. The problems are compounded when the patient presents to the emergency department for the first time, as the investigations available are limited. Often the anaesthetist and the surgeon will have to rely on their clinical acumen to plan the airway management. Hence it is very important to involve senior anaesthetists and ENT surgeons as early as possible.³

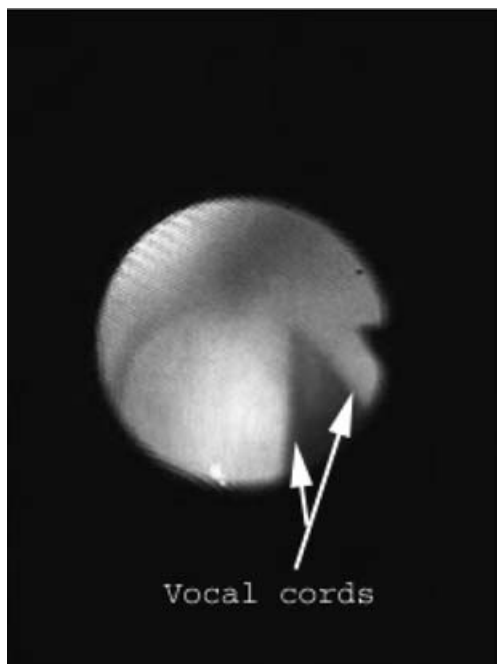


FIG. 2

Vocal folds appear normal on fibre-optic bronchoscopy.

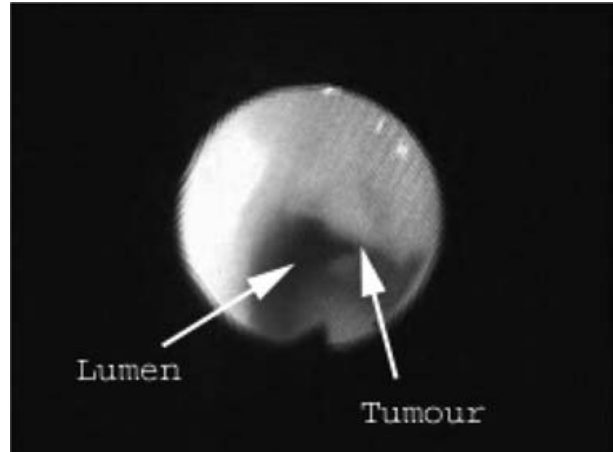


FIG. 3

A mass is seen compressing the trachea in the subglottic region.

Mason *et al.* have eloquently described the management of patients with stridor secondary to upper airway pathology.² They advocate tracheostomy under local anaesthesia in patients with severe stridor, large tumour or distortion of larynx. In less stridulous patients and where the laryngeal anatomy is less distorted, they suggest an inhalation induction may be a better option. However, the chosen option may not always work and the team must be able to assess the situation quickly and change plans. To quote Mason with regard to the difficult airway – ‘Difficulties are not always predictable and whichever technique is used a plan B must be agreed in advance. Much of anaesthesia consists of taking precautions against complications that rarely happen. Sometimes they do.’⁴

In our patient we decided tracheostomy under local anaesthesia was a safer plan A over other supraglottic routes. We felt this was the best option because we were unsure of the aetiology of the acute onset of stridor and although she had respiratory distress, she was not in extremis. A tracheostomy under local anaesthesia is not very pleasant, but it is much easier to do when the patient is relatively more stable than in a peri-arrest situation. However, as this case illustrates, even with an experienced surgeon success may not always be achieved with a local tracheostomy due to unexpected difficulties. Percutaneous cricothyroidotomy is increasingly being encouraged as a safe alternative to tracheostomy, with the proviso that there is an outlet for expiration.⁵ There have been several reports of successful use of transtracheal catheters in upper airway obstruction.^{5,6}

- Patients presenting with acute onset of stridor for the first time are challenging to manage and require early involvement of a senior surgeon and anaesthetist
- Local anaesthetic tracheostomy may be the best option in certain circumstances but may not always be successful
- Although awake fibre-optic intubation is considered to be a relative contraindication in periglottic lesions, in experienced hands it is a reasonable alternative

Occasionally these techniques may also be unsuccessful, as demonstrated by this case. If it is decided to approach

the airway by a supraglottic route, then we have the options of an inhalation induction or an awake fibre-optic intubation. Both these techniques are not without risks. An awake fibre-optic intubation can be potentially very difficult in an agitated patient with a distorted anatomy. Moreover there are several reports of airflow obstruction following the use of local anaesthetic for the procedure.^{7,8} The patient may become more distressed because the scope may reduce the diameter of the airway that is already narrow. Alternatively, inhalation induction can also be associated with loss of airway due to loss of muscle tone following general anaesthesia.^{4,6} We used the fibre-optic scope initially to identify the pathology but since the folds were easily visible, we decided to proceed with the intubation. Like everything in medicine, there is more than one way of dealing with a problem. Others may have used inhalation induction in this case. Whatever technique one chooses, it is important that they are comfortable with it. Fibre-optic intubation has been considered to be a relative contraindication in this setting because of the problems alluded to earlier. However, in experienced hands it can be an effective plan B.

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Author for correspondence:

Dr H L Smith,
Consultant Anaesthetist,
Box 93, Dept of Anaesthesia,
Cambridge University Hospitals,
Hills Road, Cambridge,
CB2 2QQ, UK.

Fax: +44 (0)1223 217223

E-mail: helen.smith@addenbrookes.nhs.uk

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