

Successful management of difficult airway in children with the use of adult fibreoptic bronchoscope

INTRODUCTION

Airway management in children has always been challenging. Various airway devices are used for successful airway management. Fibre optic bronchoscopy is considered as a standard technique in an anticipated difficult airway. Intubating laryngeal mask airway (ILMA), bullard laryngoscope, lighted stylet, glidescope and video laryngoscope are all used to aid intubation. Adult fibreoptic bronchoscope as an aid to intubation in children has been used. We describe successful management of difficult airway in children, using adult fibreoptic bronchoscope as an aid to tracheal intubation.

CASE REPORTS

Case 1

This was a case of a 10-year-old female child, a known case of Treacher-Collin's syndrome (TCS), scheduled for pinna reconstruction. Her airway examination revealed retrognathia, reduced thyromental distance, adequate mouth opening, crowded and protruding upper incisors suggestive of difficult airway. Plan of anaesthesia was inhalational induction with sevoflurane and intubation under deep plane of anaesthesia with a modified technique using adult fibreoptic bronchoscope. All the essential equipment needed for difficult airway management including emergency tracheostomy was kept ready. The child was induced with sevoflurane in oxygen. She was premedicated with injection glycopyrrolate 0.2 mg intravenously. Adequate ventilation with bag and the mask was confirmed. A check laryngoscopy revealed a Cormack Lehane grade 4. Initial attempt to visualise the cords through a fibreoptic bronchoscope failed. A size 2.5 laryngeal mask airway (LMA) was placed and the patient was ventilated successfully. Continuing with the LMA was not considered as the duration of surgery was long and wanted to have a secure airway. An attempt to pass a bougie through the LMA failed. Attempt to intubate the trachea with cuffed 5.0 mm portex endotracheal tube (ETT)

through the LMA also failed. As paediatric fibreoptic bronchoscope was not available, the adult fibre optic bronchoscope (FOB) was passed through the LMA and the glottic opening was visualised. An angiographic catheter was passed through the side port of the bronchoscope [Figure 1a] and advanced beyond the vocal cords under vision. The FOB was withdrawn while stabilising the catheter. The ETT 5.0 mm was railroaded over the catheter and passed through the LMA into the trachea [Figure 1b]. The ETT was pushed as far as possible and LMA was withdrawn slowly. Once the ETT came in to view, it was stabilised to prevent extubation during removal of LMA [Figure 1c]. The tube placement was confirmed by capnography. The surgery lasted for 6 h. The trachea was extubated once child was fully awake. Child presented 2 months later for reconstruction of the other ear and airway was managed in the similar way successfully.

Case 2

An 8-year-old boy with unstable C2-C3 subluxation was scheduled for C2-C3 posterior fusion. As restriction of the cervical spine movement was desirable, fibreoptic aided intubation was planned. We employed the same technique described above. In this patient fibreoptic scope was passed through the vocal cords and a stiff guide-wire was passed through the side port of the scope and the FOB was withdrawn stabilising the guide-wire. A 5.5 mm cuffed flexometallic reinforced tube was railroaded over the guide-wire and trachea intubated. The tube placement was confirmed by capnography. Surgery

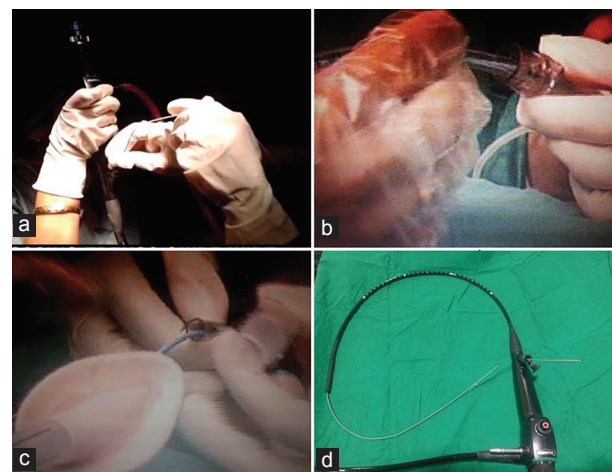


Figure 1: (a) Angiographic catheter passed through the side port of the fibreoptic scope, (b) endotracheal tube passed through the laryngeal mask airway (LMA), (c) LMA withdrawn and endotracheal tube stabilized, (d) guide-wire of sufficient length

was uneventful and child extubated following the procedure.

DISCUSSION

The greatest challenge faced by the anaesthesiologist in patient with TCS is the airway management. There are several reports that the airway becomes progressively more difficult as the age of the patient advances.^[1] Goel, *et al.*,^[2] have used conventional laryngoscopy with backwards upwards rightwards pressure manoeuvre to intubate. Intubating aides such as lightwand, glidescope, intubating LMA have been used.^[1,3] Kovac^[4] has demonstrated the use of Augustine stylet in a patient with TCS. Gharbaghian,^[5] reported the use of ILMA for intubation. However, ILMA is not available in a smaller size. Muraika, *et al.*,^[6] have performed successful fiberoptic intubation through LMA in paediatric patient. We restrained from using LMA in the second case as there are reports of movement at C2-C3 spine during LMA insertion and placement.^[7]

Both our patients were cases of anticipated difficult airway. In the first case we passed the FOB through the LMA and then the angiographic catheter through the side port of the scope and in the second case fiberoptic scope was directly inserted and a stiff long guide-wire was inserted through the side port. Heard, *et al.*,^[8] had described similar technique of intubation using LMA as a conduit for fiberoptic scope. We used a stiff and 130 cm long guide-wire to ensure that FOB could be withdrawn without losing the guide within the scope [Figure 1d]. This technique can be safely employed in the management of difficult airway in children.

CONCLUSION

Use of adult fiberoptic bronchoscope in paediatric airway management has been described. This can be adopted safely as an alternative in paediatric patients to access airway in constraint situations.

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