Case Report

Failed nasal intubation after successful flexible bronchoscopy: Guide wire to the rescue

Manish Naithani, Alpna Jain
Department of Anesthesiology, Maulana Azad Institute of Dental Sciences, New Delhi, India

Abstract
Flexible fiberoptic bronchoscope-guided awake intubation is the most trusted technique for managing an anticipated difficult airway. Even after successfully negotiating the bronchoscope into the trachea, the possibility remains that the preloaded tracheal tube might prove to be inappropriately large, and may not negotiate the nasal structures. In such a situation, the most obvious solution is to take out the bronchoscope, replace the tracheal tube with a smaller one, and repeat the procedure. Unfortunately, sometimes the second attempt is not as easy as the first, as minor trauma during the earlier attempt causes tissue edema and bleeding, which makes the subsequent bronchoscopic view hazy and difficult. We present the anesthetic management of five cases with temporomandibular joint ankylosis where, after successful, though slightly traumatic, bronchoscope insertion into the trachea, the tube could not be threaded in. We avoided a repeat bronchoscopy by making an innovative change in the plan.

Key words: Flexible fiberoptic bronchoscope, guide wire, intubation, nasal

Introduction
Globally, an anticipated difficult airway is managed most often with flexible fiberoptic bronchoscope (FFB)-guided tracheal intubation. In patients with restricted mouth opening, intubation is done through the nasal route, which is unpredictable in terms of the maximum tube size allowable. During FFB-guided intubation, if the preloaded tube is not able to negotiate the nose, most often, the scope is withdrawn to reload a smaller tube, and the procedure is reattempted. In certain situations, this might be undesirable. We present the anesthetic management of five such cases, where we avoided redoing the procedure by using a J-tipped guide wire.

Case Report
We present the anesthetic management of five cases with temporomandibular joint (TMJ) ankylosis posted for corrective surgery, who presented to our institute over a period of 6 months. All the patients were men in the age group of 18–27 years. Among the patients reported, the maximum mouth opening was 8 mm. All patients had varying degrees of retrosynthesis, and the maximum thyromental distance recorded was three finger-breath. Neck extension was normal in all cases. Nasal patency was judged by keeping a wisp of cotton in front of each nostril, and the nostril with a better air-flow was chosen for intubation. All the patients were asked to fast for 6 h before surgery, and a written, informed consent was taken for awake intubation in view of the difficult airway. In the operation theatre, standard monitors were applied, intravenous (IV) line was established, and premedication, consisting of metoclopramide 0.2 mg/kg, glycopyrrolate 5 mcg/kg, and midazolam 10 mcg/kg, was given IV. Nasal decongestion was done with xylometazoline drops. Local anesthesia of the airway was established with a combination of 10% lidocaine spray, nebulization with 4% lidocaine, and superior laryngeal nerve blocks. A difficult airway cart, and equipment and personnel for rapidly establishing a surgical airway were also kept ready.

All patients were provided conscious sedation with up to 70% nitrous oxide in oxygen, delivered via a nasopharyngeal airway connected to the anesthesia circuit. A jet ventilator, with its dedicated oxygen source, was kept ready to be connected to the working channel of the FFB and provide 100% oxygen, if required.
A 7.5-mm internal diameter (ID) flexometallic endotracheal tube (ETT; LMA Fastrach ETT) was chosen for all the patients. The ETT was loaded onto the FFB, and after the successful negotiation of the FFB into the trachea, it was negotiated via the nostril, through the larynx and into the trachea, and finally positioned in front of the carina. In all patients, the procedure was associated with some degree of mucosal trauma and minor bleeding. On attempting to rail-road the ETT over the FFB, it was realized that, despite adequate lubrication, the ETT could not negotiate the nasal structures. Concerned with the difficulty expected in a repeat attempt at bronchoscopy, a 1-mm-thick, 145-cm-long, metallic J-tipped guide wire was threaded through the working channel of the FFB till the carina [Figure 1], and the FFB was then withdrawn, keeping the guide wire in place. A 6.5-mm ID ETT was then threaded over the guide wire and negotiated successfully through the nasal passage and other airway structures. After the confirmation of the intratracheal tube position with exhaled carbon dioxide, the ETT was fastened, guide wire removed, and induction of anesthesia done. The FFB was used again for visualizing the carina to ensure the precarinal tube position. The rest of the intra- and postoperative periods were uneventful. The patients were monitored for 5 days after the surgery for any airway-related complications and discharged thereafter.

Discussion

The overall incidence of a difficult airway is 1–3%.[1] FFB-guided nasal intubation under local anesthesia, with the patient breathing spontaneously, is the most commonly performed procedure for airway management in patients with difficult airway, especially those with restricted mouth opening. In the nasal cavity, the widest space for tube passage is along the inferior meatus but this is sometimes encroached upon by a hypertrophied turbinate or deviated nasal septum. During winter months, rhinorrhea is common and subsequent mucosal edema narrows the lumen. This prevents the passage of a nasal tube, which is otherwise appropriate for age. In case the nasal passage is found to be narrow during fiberoptic-guided intubation, the whole assembly has to be withdrawn to reload a smaller ETT. This is undesirable as even minimal trauma during the first intubation attempt causes mucosal bleeding when the mucosa is edematous. This creates difficulty in visualizing through the FFB subsequently.

We used a 145-cm-long, 1-mm-thick, metallic J-tipped guide wire to assist in rail-roading of the ETT after being positioned in the trachea via the working channel of the FFB. The length is crucial and has to be at least 30 cm more than the length of the FFB (suction port to tip) to prevent the misplacement of the guide wire [Figure 2]. Likewise, the small gauge ensured smooth passage through the working channel.

Guide wires have played a variety of roles for assisting in tracheal intubation. These have been used extensively as essential part of retrograde intubation techniques.[2] They have also been inserted in an anterograde fashion through laryngeal mask airways for subsequent endotracheal intubation,[3,4] and also through ETT for changing from oral to nasal route,[5] and for changing the type of ETT. Rodriguez et al. used a guide wire via the working channel of the FFB for rail-roading of the ETT in a case of Treacher–Collins syndrome.[6] Scherlitz et al. have reported two cases with a difficult airway, where they left a guide wire in the trachea for assisting in rapid reintubation in the immediate postoperative period, if required.[7]

In all our cases, because of the limited mouth opening, the use of supraglottic devices was ruled out. We chose guide wire-aided intubation ahead of blind or light-guided nasal intubation, as we had experience of this technique in patients with a normal airway. If we had failed, we could have gone back to the original plan of attempting an FFB-guided intubation,
or could have rapidly established a surgical airway. A 7.5-mm ID LMA Fastrach ETT was chosen for all the patients.\textsuperscript{[8]} We feel that the uniquely beveled tip of the LMA Fastrach ETT has a lesser tendency to impinge on the turbinates or the arytenoids, and hence requires adjusting maneuvers less often, apart from causing less trauma. An airway exchange catheter can also be used to reinforce the guide wire before rail-roading the tube to minimize displacement.

References

1. Caplan RA, Benumof JL, Berry FA. Practice guidelines for management of the difficult airway: A report by the American Society of Anesthesiologists Task Force for the Management of the Difficult Airway. Anesthesiology 1993;78:597-602.
2. Gupta B, McDonald JS, Brooks JH, Mendenhall J. Oral fiberoptic intubation over a retrograde guidewire. Anesth Analg 1989;68:517-9.
3. Nitahara K, Watanabe R, Katori K, Yamasato M, Matsunaga M, Dan K. Intubation of a child with a difficult airway using a laryngeal mask airway and a guidewire and jet stylet. Anesthesiology 1999;91:330-1.
4. John B, Linga-Nathan P, Mendonca C. Tracheal intubation through a single use laryngeal mask airway using a guidewire technique. Can J Anaesth 2007;54:775-6.
5. Sharma R, Kumar A, Panda A. Using a central venous pressure guidewire and suction catheter to facilitate oral to nasal tracheal tube change in a child with a difficult airway. Anesth Analg 2009;108:1716-7.
6. Rodriguez Conesa AM, Etxaniz Alvarez A, Rey Calvete AM, Perez Gill J, Nieto Mournote CM. Use of a metal guide in the working channel of a fiberoptic scope to insert a tracheal tube in an infant with Treacher Collins syndrome and choanal atresia. Rev Esp Anestesiol Reanim 2010;57:115-8.
7. Scherlitz A, Peters J. A guidewire as a reintubation aid. Translaryngeal fiberoptic insertion of a guidewire into the trachea to assist fiberoptic reintubation in patients difficult to intubate. Anesthesia 1994;43:618-20.
8. Chandler M, Crawley BE. Rationalization of the selection of tracheal tubes. Br J Anaesth 1986;58:111-6.

How to cite this article: Naithani M, Jain A. Failed nasal intubation after successful flexible bronchoscopy: Guide wire to the rescue. J Anaesth Clin Pharmacol 2011;27:306-7.

Source of Support: Nil, Conflict of Interest: None declared.