

Retained tracheostomy tube brush tip manifesting as recurrent respiratory tract infection

Madam,

Various types of bronchial brush may be used during bronchoscopy to collect samples for both microbiological diagnosis and cleaning tracheobronchial secretions.\(^1\)\(^2\) Inadvertent breakage of this brush during any intervention or cleaning tracheostomy tube (TT) may go unnoticed. While most cases of airway foreign body (FB) are diagnosed readily from a clinical history of acute respiratory distress, some cases remain indolent and present later. We report a case in which a patient presented with recurrent respiratory tract infections following inadvertent breakage of bronchial tube brush tip during an antecedent intervention.

A 62-year-old male (60 kg, 170 cm) presented to our hospital with a history of recurrent cough and purulent sputum not responding to conservative management. He was operated for carcinoma supraglottic region two years ago followed by elective tracheostomy. The patient was on regular follow-up for prolonged postoperative tracheostomy and radiotherapy. On examination of the respiratory system, there was decreased air entry over the middle and lower zones of the right lung...
along with rhonchi and fine crepitations. The patient was afebrile. His blood investigations were within normal limits except for eosinophilia with leukocytosis (total count 16500/cu.mm and absolute eosinophil count was 15500/cu.mm). Chest radiograph PA and lateral view revealed a radiopaque, obliquely placed cylinder like (unknown) FB in the right lower zone [Figure 1]. The finding was later confirmed with a computerized tomography scan of thorax. Retrieval of the FB was planned under general anesthesia. In the operating room, the patient was administered with 0.2 mg glycopyrrolate (IM) 30 mins before the procedure. Standard monitoring devices were attached. Oropharynx was sprayed with 10% lignocaine spray. Patient was preoxygenated (5 mins) and induction of anesthesia was accomplished with fentanyl 75 mcg (IV) and propofol 50 mg followed by initiation of dexmedetomidine infusion at 0.5 µg/kg/hour. A 6-mm rigid bronchoscope was introduced orally by the intensivist. Ventilation was maintained with side port of the rigid bronchoscope. The FB was visualized, grasped with rigid forceps, and gradually retrieved through the rigid bronchoscope. The FB was identified to be a tracheobronchial brush tip which was used previously to clean tracheobronchial secretions through tracheostomy tube [Figure 2]. The procedure lasted around 20 minutes. Postoperative chest radiograph showed absence of the FB. The patient was discharged the next day of the procedure with the advice to continue antibiotics for 7 days.

Iatrogenic introduction of FB in the airway is uncommon in adults but not rare. A study by Roach et al. had reported a case of retrieval of bronchial brush tip through a flexible fiberoptic bronchoscope. Suratt et al. had reported breakage of four brushes during fiberoptic bronchoscopy after reviewing a series of 48,000 procedures. One brush was left in place for 18 months without complications. Another brush was removed during an exploratory thoracotomy which was performed to further evaluate a mass lesion. Thus, symptoms can range from asymptomatic phase to severe respiratory distress which may even require thoracotomy for FB retrieval. We recommend careful inspection of bronchial brush before and after every cleaning which reduces the chance of iatrogenically introducing a FB during tracheostomy tube cleaning by health care workers. An intensivist should be vigilant of this potential complication of bronchial brush in a critical care setting.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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There are no conflicts of interest.

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**References**

1. Matsuda M, Horai T, Nakamura S, Nishio H, Sakuma T, Ikegami H, et al. Bronchial brushing and bronchial biopsy: Comparison of...
diagnostic accuracy and cell typing reliability in lung cancer. Thorax 1986;41:475-8.
2. Choudhury M, Singh S, Agarwal S. Efficacy of bronchial brush cytology and bronchial washings in diagnosis of non-neoplastic and neoplastic bronchopulmonary lesions. Turk Patoloji Derg 2012;28:142-6.
3. Roach JM, Ripple G, Dillard TA. Inadvertent loss of bronchoscopy instruments in the tracheobronchial tree. Chest 1992;101:568-9.
4. Suratt PM, Smiddy JF, Gruber B. Deaths and complications associated with fiberoptic bronchoscopy. Chest 1976;69:747-51.

Difficult and failed airway in small neonates: Lightwand revisited

Madam,

Difficult airway in neonates is a challenging task for every anesthesiologist and neonatologist. This is even more onerous in syndromic neonates. Moreover, this becomes complicated due to limited availability of difficult airway management devices for placing a small size endotracheal tube (ETT).

Determination of correct ETT size in neonates is based on the patient’s age and weight. An ETT with ID 2.5 and 3 mm may be required in preterm neonates with weight 1000 and 1000–2500 g, respectively. A common feature in patients with syndromes is micrognathia (e.g. Pierre Robin syndrome). Micrognathia increases the difficulty in laryngoscopy with a disproportionately large tongue for the mandible, thus increasing the difficulty to visualize glottis.

Flexible bronchoscope (FB) is often considered as the first choice in anticipated difficult airway management, but the smaller size of FB required for neonates is not readily available in all centers. Ultra-thin FBs are available only for ETT size 3.0 mm ID and above.

As low birth weight neonates often require ETT size 2.5 mm (ID), FB is not an option. The Frova intubating introducer is another useful adjunct for difficult airway management in neonates and infants, but the pediatric size (8 Fr) allows placement of a 3.0-mm ID ETT and above size. The pediatric versions of fiberoptic stylets (Shikani Optical Stylets, United States and Brambrink Karl Storz, Germany) accepts ETT s of size 2.5 ID, but they are expensive and not readily available.

Neonatal lightwand has proved to be a suitable alternative to FB for difficult and failed pediatric airway.

The use of lightwand has been declined due to the availability of video-laryngoscope and FB over the years. Different types of lighted stylets or lightwands are available for use in pediatric patients and neonates which can load ETT s as small as 2.0–4.0 mm. Trachlight is one of the advanced lightwand devices which can load a 2.5-mm ID size ETT. Lightwand relies on the principle of transillumination to guide endotracheal intubation. The presence of a well-defined glow in the neck indicates tracheal placement and absence of a glow indicates esophageal placement. Lightwand is unique in that it is effective in the traumatic and failed airway, where the usage of FB and fiberoptic stylets fails due to blood and secretions. Repeated attempts in a failed intubation cause the airway to bleed and increase secretions with edema. Lightwand also enables intubation with minimal spinal cord motion in unstable spinal cord syndromes (e.g. Klippel-Feil syndrome).

Lightwand aids in nasotracheal intubation even without mouth opening. It can also be used in synergy with other airway devices such as the classic laryngeal mask airway.