

Best management of ultra-small tracheobronchial foreign bodies in neonates

Tin Jasinovic^a, Andrew Thamboo^a, Horacio Osiovič^b, Louis Scheepers^c, Ashley Robinson^d, Jeffrey P. Ludemann^{a,*}

^aDivision of Otolaryngology, British Columbia's Children's Hospital, Vancouver, Canada

^bNeonatology, British Columbia's Children's Hospital, Vancouver, Canada

^cAnaesthesia, British Columbia's Children's Hospital, Vancouver, Canada

^dRadiology, British Columbia's Children's Hospital, Vancouver, Canada

ARTICLE INFO

Article history:

Received 25 September 2012

Received in revised form 1 December 2012

Accepted 4 December 2012

Available online 3 January 2013

Keywords:

Ultra-small
Iatrogenic
Tracheal
Bronchial
Foreign body
Neonate

ABSTRACT

Objectives: To develop (1) a practical and comprehensive algorithm of instruments and techniques available to treat neonates with tracheobronchial foreign bodies, based on the patient's subglottic diameter and (2) primary and secondary prevention strategies for neonatal tracheobronchial foreign bodies.

Methods: (1) Analysis of the case of a severely premature infant who presented with the incidental radiological finding of a 2 cm suction catheter tip, which, over a two week period, had migrated between her main bronchi; the foreign body was removed with a previously unreported combination of instruments: a 3 French (F) flexible urological forceps through the side port of a 2.5 mm rigid bronchoscope. (2) In vitro testing of typical foreign bodies and readily available endoscopic instruments.

Results: We have developed a practical and comprehensive algorithm for the treatment of neonates with tracheobronchial foreign bodies, as well as primary and secondary prevention strategies.

Conclusions: The treatment algorithm and prevention strategies may reduce morbidity and mortality from neonatal tracheobronchial foreign bodies.

© 2012 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

We present a case of a preterm infant with a tracheobronchial foreign body (TFB). Review of the literature reveals that although several novel therapies for neonatal TFBs have been described, no previous document has systematically reviewed the modern instrumentarium for neonatal TFB removal [1–13]. We have determined which instruments are currently available to treat neonates, depending on airway diameter. We wish to make this information readily available to surgical teams. We also advocate for prevention of neonatal TFBs and their complications.

2. Methods

2.1. Case report

A 33 day old, 29.5-week gestation infant was transferred from a regional hospital to the British Columbia's Children's Hospital

(BCCH) neonatal intensive care unit (NICU), in preparation for ligation of a patent ductus arteriosus (PDA). The patient had previously failed extubation on 29th day of life and had been re-intubated with a 3.0 endotracheal tube (ETT) [outer diameter (OD) = 4.2 mm]. Review of previous and current chest radiographs revealed that, for at least 12 days, a TFB that had been migrating within the patient's main bronchi (Figs. 1–4). Flexible endoscopy through the ETT confirmed the presence of a 2 cm suction catheter fragment (SCF) in the left main bronchus, without granulation. The patient was stable, without pneumonia or pneumothorax. Since PDA ligation had been scheduled for the next morning, plans were made for TFB extraction just prior to the cardiac procedure.

Twelve hours later, under general anaesthesia with spontaneous respiration in the operating room, the 3.0 ETT tube was removed and a 2.5 cm × 20 cm rigid Storz ventilating bronchoscope (OD = 4.0 mm) with a 0° rod-lens telescope was easily introduced. The SCF was clearly seen. The telescope was removed; but the initial attempt to grasp the object, with a non-optical rigid forceps, was unsuccessful due to limited visualization. Before a second attempt, an experienced OR Nurse[†] suggested passing a 3 F flexible Urological cup forceps (Storz 27071ZJ) through the side port of the rigid bronchoscope, then replacing the extra-thin telescope (Storz 10017AA). This proved successful: under telescopic visualization, the tip of the SCF was gently disengaged from

* Corresponding author at: Otolaryngology Clinic, BC Children's Hospital, 4480 Oak Street, Vancouver, British Columbia, Vancouver, Canada V6H 3V5. Tel.: +1 604 875 2113; fax: +1 604 875 2498.

E-mail address: jludemann@cw.bc.ca (J.P. Ludemann).

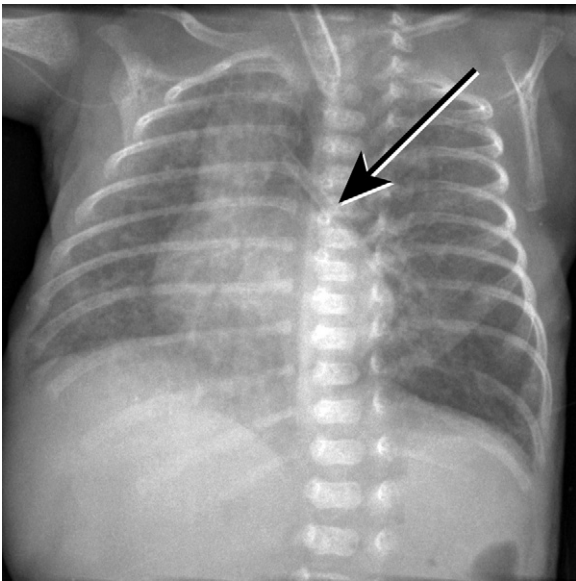


Fig. 1. AP chest radiograph showing FB (SCF) in left main bronchus (LMB).

the mucosa, grasped with the cup forceps and removed with the bronchoscope as one unit, without difficulty. Subsequent bronchoscopy revealed no mucosa injury or residual TFB. The patient maintained normal oxygen saturations, was re-intubated with 3.0 ETT, and underwent successful PDA ligation. The SCF was 5 French (F) and 2 cm long (Figs. 5 and 6).

2.2. Review of the literature

TFBs are much less common during the first 6 months of life compared the second 6 months of life and beyond [1]. Most neonatal TFBs are iatrogenic: SCF [2–5] or intubation stylet fragments (ISF); i.e. plastic coatings sheared from stylets [6–8]. Fragments of pacifiers [9,10], syringe caps [11], food [12] and broken glass [13] have been less commonly reported as neonatal TFBs. Pneumothorax may occur preoperatively in neonates with TFBs and raise clinical suspicion [3,4].

In the literature, most descriptions of the instruments used for visualization and extraction of neonatal TFBs appear insufficiently

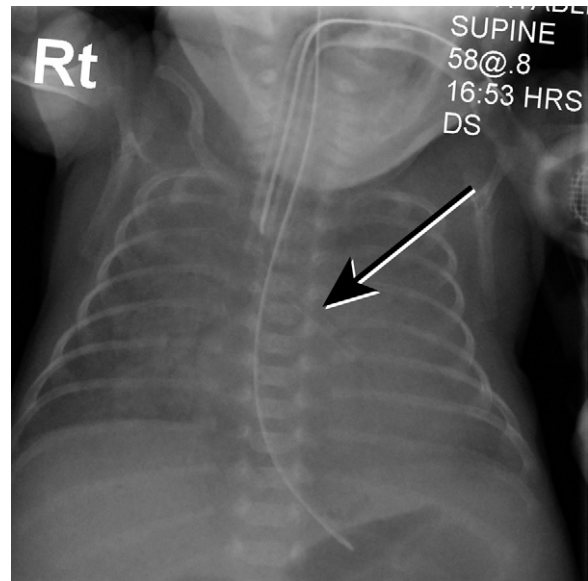


Fig. 3. SCF back in LMB (3 days later).

detailed for practical application and/or without discussion of alternatives [1–6]. In one case report [4], a “semi-rigid grasper” was used via “rigid bronchoscopy” to successfully remove a SCF from a severely premature neonate (further information regarding the instruments and the size of the patient’s airway was not published). In another case, after removing a 2.5 ETT (outer diameter 3.5 mm), an Otolaryngologist successfully used an “intubating laryngoscope” and a “curved hemostat forceps” to remove a SCF from the proximal trachea of a severely premature infant, who was in cardiopulmonary arrest in the NICU [2]. The authors wrote “technique must precede technology,” without addressing the fact that use of a curved hemostat forceps should be reserved for the very rare instance that (1) the TFB is visible with an intubating laryngoscope and (2) the patient’s respiratory status does not allow sufficient time to obtain and set up additional therapeutic technology.

Several other extraction techniques have been described. In one case report, after removal of a 2.5 ETT, “an optical forceps”

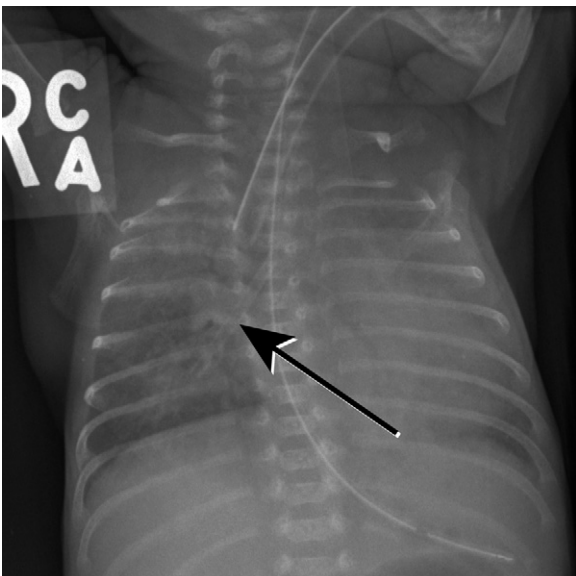


Fig. 2. SCF has migrated into RMB (one week later).

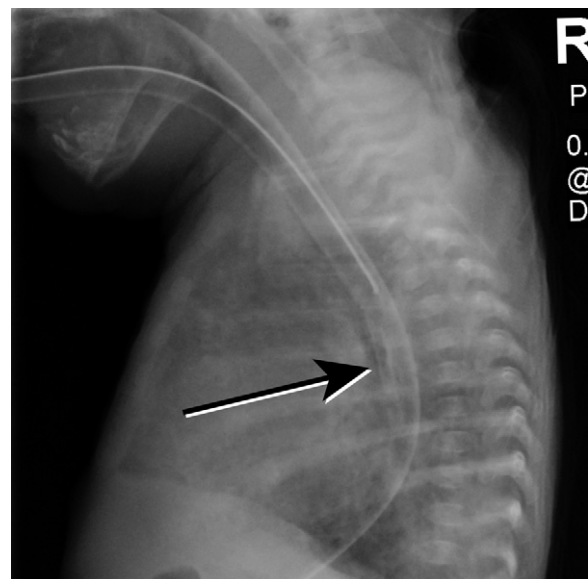


Fig. 4. Lateral chest radiograph showing that the SCF is endobronchial (anterior to the nasogastric tube).

Download English Version:

<https://daneshyari.com/en/article/6213662>

Download Persian Version:

<https://daneshyari.com/article/6213662>

[Daneshyari.com](https://daneshyari.com)