

Pediatric Flexible Bronchoscopy Library

[Home](#) ▶ [Pediatric Flexible Bronchoscopy Library](#) ▶ Tracheoesophageal Fistula

Tracheoesophageal Fistula

Author

Joseph Piccione, D.O., M.S.
Children's Hospital of Philadelphia, University of Pennsylvania School of Medicine

Clinical Vignette

A 4-year-old girl was referred for evaluation at a multidisciplinary aerodigestive program for dysphagia associated with chronic cough and recurrent bronchitis/pneumonia. She was born full term with isolated esophageal atresia and underwent repair on day of life two. She required endotracheal intubation with mechanical ventilation for only 4 days and was discharged to home without supplemental oxygen. Over the next four years, she had chronic cough, chest congestion, recurrent wheezing, and dysphagia with aspiration of thin liquids identified on video fluoroscopic swallow study. Her symptoms persisted despite dietary modifications and avoidance of thin liquids. She was treated with antibiotics for lower respiratory infections approximately 6 times but had radiographic evidence of pneumonia only during two of those illnesses. Her response to bronchodilators was variable and her symptoms did not improve with systemic steroids. Triple endoscopy was recommended (see video).



VIDEO PLACEMENT

Teaching Points

1. Small tracheoesophageal fistulae (TEF) can be difficult to detect even on direct inspection of the airway (this one was missed during microlaryngoscopy with rigid bronchoscopy and not detected on video fluoroscopic swallow study).
2. Careful insufflation of supplemental oxygen through the working channel of the flexible bronchoscope can aid in detection of TEF.
3. Triple endoscopy enhances the ability to identify TEF, particularly when utilized with small quantities of dilute methylene blue dye.

Editorial

This case illustrates several important concepts. 1) *always be suspicious* of multiple abnormalities and examine the entire airways carefully. 2) "H-type" TEF's are usually subtle, and can be very challenging to identify. Gentle insufflation of oxygen (1-2 lpm) through the suction channel of the flexible bronchoscope can distend the soft tissue and enable visualization of otherwise occult fistulas. One could also/instead probe with a catheter or guidewire passed through the suction channel, being careful not to *create* a fistula by perforating the posterior tracheal wall. The use of methylene blue dye (injected into the esophagus) is neat when it works, but is more difficult in practice than in theory – spillover through the glottis can easily occur, thus obscuring any view of the fistula, and if the fistula is small, there may be no flow during this evaluation. A simpler technique is to intubate the esophagus with a cuffed endotracheal tube, positioning the inflated cuff as close to the upper margin of the cricopharyngeus as possible, and then inflating the esophagus with oxygen and observing for bubbles coming through the fistula from the now distended esophagus. 3) The history of having had a "normal" bronchoscopy does not exclude the possibility of the next bronchoscopy discovering significant pathology. If in doubt, *look again, very carefully*.

Robert E. Wood, PhD, MD
Emeritus Professor, Pediatrics and Otolaryngology
Division of Pulmonary Medicine
Cincinnati Children's Hospital

