

Anesthesiology
1998; 88:548
© 1998 American Society of Anesthesiologists, Inc.
Lippincott-Raven Publishers

An Unusual Cause of Partial ETT Obstruction

To the Editor:—Shearing of the plastic sheath of the stylet has been reported in the past with a 2.5-mm endotracheal tube (ETT) as a cause of complete ETT obstruction;^{1,2} we report a similar case of partial obstruction with a 3.0-mm ETT.

A 2-week-old infant born at 32 weeks' gestation, weighing 2.02 kg, presented for tracheoesophageal fistula repair. Rigid bronchoscopy before the repair was planned by the surgeon. The infant arrived to the operating room already intubated with a 3.0-mm ETT. Atropine, 0.1 mg, was administered intravenously, and general anesthesia was induced *via* inhalation of halothane and 100% O₂. After the infant was adequately anesthetized, rigid bronchoscopy was attempted unsuccessfully. Saturation fell to the low 50s, and the infant's airway was managed initially by mask. No chest wall movement was noted, and the presumed diagnosis was laryngospasm or bronchospasm. Ketamine, 2 mg, and succinylcholine, 4 mg, was administered intravenously, and intubation was quickly performed with a new styletted 3.0-mm ETT. The stylet was removed with some difficulty, and ventilation was established. The peak pressures needed to ventilate were approximately 50 cm H₂O. Severe bronchospasm was presumed and managed with inhaled albuterol and intravenous epinephrine, 1 µg/kg. The saturation returned to approximately 95–97% on 100% O₂, but the peak pressures needed to ventilate the infant were still high. Suctioning of the 3.0-mm ETT with a 5- to 6-French suction catheter was impossible. Reintubation with another 3.0-mm ETT was quickly performed, and the first ETT was examined. Shearing of the plastic coating of the stylet had occurred in the lumen of the 3.0-mm ETT, causing partial obstruction and increasing the resistance to flow.

Shearing of the plastic coating of the stylet has been reported to occur with 2.5-mm ETTs. The stylets recommended for use with this size ETT are 6-French (2 mm) stylets. These stylets are only 0.5 mm smaller in diameter than the 2.5-mm ETT lumen. This tight fit, a soft pliable coating of the stylet, and a firm grasp of the ETT have been reported to be the causes for shearing of the stylet in a 2.5-mm ETT.²

This case demonstrates that shearing can occur with larger size ETTs (3.0 mm), thus causing partial obstruction of the endotracheal tube. Difficulty in removing a sheathed stylet from an ETT may be the source of shearing for the stylet. In the event that a stylet is difficult to remove, the tip of the stylet should be examined to ensure that it is intact. In this case, ventilation was possible, although suctioning proved to be impossible. In the event that a suction catheter cannot be passed down the lumen of the ETT, the tube should be replaced.

This case demonstrates that shearing can occur even with a loose fit and should be considered as a possible cause of partial ETT obstruction as manifested by increased peak inspiratory pressures.

Mary F. Rabb, M.D.

Assistant Professor of Anesthesiology

Stephen M. Larson, D.M.D.

Professor of Anesthesiology

Jenny R. Greger, M.D.

Chief Resident in Anesthesiology

University of Texas-Houston Health Science Center

6431 Fannin, MSB 5.020

Houston, Texas 77030

References

1. Zmyslowski W, Kam D, Simpson G: An unusual cause of endotracheal tube obstruction. *ANESTHESIOLOGY* 1989; 70:883
2. Cook W, Schultetus R: Obstruction of an endotracheal tube by the plastic coating sheared from a stylet. *ANESTHESIOLOGY* 1985; 62:803–5

(Accepted for publication September 8, 1997.)

Anesthesiology
1998; 88:548–9
© 1998 American Society of Anesthesiologists, Inc.
Lippincott-Raven Publishers

The Obstruction of an Endotracheal Tube by the Plastic Coating Sheared from a Stylet: A Revisit

To the Editor:—Stylets are used to shape pediatric endotracheal tubes (ETTs) to facilitate intubation of the trachea. We report an incident in which there was shearing of the stylet's plastic coating, which led to intraluminal obstruction of the ETT.

General anesthesia was induced in a 1-month-old infant scheduled for bilateral inguinal hernia repair, and the trachea was intubated

easily with a 3.0-mm ID non-cuffed ETT (Mallinckrodt, Argyle, NY) with the aid of a 6-French plastic-coated stylet (Portex, Keene, NH). The stylet was removed with difficulty, and it was immediately noted that the plastic coating over the distal part of the stylet was missing. The ETT was immediately removed, and inspection of the removed ETT showed the sheared plastic coating in the distal portion of the