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 cause 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

(Accepted for publication September 8, 1997.)

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
CORRESPONDENCE

tube at the point where it had been shaped to assist in the intubation. The patient was ventilated easily with a face mask, followed by intubation without the aid of the stylet, and the surgical procedure was performed without further incident.

A similar incident involving a 2.5-mm ETT was reported previously, and it was suggested that plastic ETT connectors would obviate the shearing problem. Our incident occurred with a 4-mm ETT, despite the use of a plastic ETT connector. The point of maximum stress and shearing was where the tube was shaped, not at the ETT connector.

If the use of a stylet is necessary, we recommend that the plastic covering of the stylet be removed, the tip of the metal stylet be seated completely inside the ETT to prevent damage to the airway, and that the stylet be bent at the proximal rim of the ETT connector to prevent migration of the stylet distally. If the plastic covered stylet is used, we suggest that the stylet be inspected for its integrity immediately after its withdrawal and that no attempt be made to ventilate through the ETT if shearing has occurred to avoid displacement of the foreign body into the lower airway.

Mukul Bhargava, M.D.
Assistant Professor of Clinical Anesthesiology
Surya N.M. Pothula, M.D.
Assistant Professor of Clinical Anesthesiology
Suhasini Joshi, M.D.
Assistant Professor of Clinical Anesthesiology
New York Medical College
Valhalla, New York 10595

Reference


(Accepted for publication October 14, 1997.)

Laser Pointer As a Teaching Tool in Operating Rooms

To the Editor — The practice of anesthesia requires the performance of many invasive procedures under sterile conditions, e.g., the cannulation of a central vein and the placement of caudal stimulating catheters. In a teaching institution, a trainee learns to accomplish these procedures under the supervision and guidance of the attending physicians. Identification of the correct entry point and the direction of the needle advancement are of pivotal importance for completing these procedures. Verbal communication sometimes may not adequately provide the guidance. A pair of sterile gloves and sometimes a thorough hand scrub and gown and sterile gown may be required for the attending anesthesiologist to enter the sterile field and help to identify the correct needle entry point, although this is not always feasible, or sometimes, possible.

We have found that a pen-size laser pointer can help save time and expenses. From a safe distance, the correct entry point in the sterile field and the path of the needle can be precisely pinpointed and prescribed with a laser pointer.

During general anesthesia, care should be taken not to shine the laser light directly into patients' eyes.

Gabor B. Racz, M.D.
Y. James Kao, Ph.D., M.D.
Department of Anesthesiology
Texas Tech University Health Science Center
Lubbock, Texas

(Accepted for publication September 8, 1997.)

An Anesthetic Curiosity in New York (1875–1900): A Noted Surgeon Returns to “Open Drop” Chloroform

To the Editor — Ether was the main anesthetic in the American Northeast during the second half of the nineteenth century. Chloroform enjoyed a few months of popularity in Boston in 1848 but was quickly discarded after several deaths were reported on both sides of the Atlantic. The American preference for ether rested on its safety, chauvinistic pride, and the influence of Boston and Philadel-

phia on American medical practice.1,2 The European objection to ether's slow action was overcome in the United States by the practice of "pushing" or "forcing" ether to hurry the induction. Like Snow,3 most European surgeons judged ether to be safer than chloroform but were seduced by the latter's potency and resulting fast and smooth action.1,3 They believed that vaporizers delivering low concentra-