

An unusual cause of airway obstruction!

Sir,

Difficulty in ventilation after endotracheal intubation can be patient or equipment related. Manufacturing defects in airway equipment can lead to life-threatening complications if not promptly recognised and rectified. We report an unusual cause of airway obstruction.

A two-year-old child weighing 15 kg with gross distension of abdomen due to intussusception was posted for exploratory laparotomy. After securing venous access and non-invasive monitoring, IV glycopyrolate 0.004 mg/kg and fentanyl 2 µg/kg were administered. Modified rapid sequence induction was carried out with thiopentone 5 mg/kg and succinylcholine 1.5 mg/kg. The trachea was intubated under vision with new uncuffed polyvinyl chloride endotracheal tube (ETT) internal diameter 4.5 (Sterimed Medical Devices (P) Ltd., Bahadurgarh, Haryana, India, lot No. 12LP16). Endotracheal placement was confirmed by capnography and bilateral equal, clear breath sounds. The patient was ventilated using Jackson Rees modification of Ayre's T piece. Increased resistance to ventilation was noted. The circuit was free of kinks or obstruction. The increased resistance was attributed to cephalad displacement of diaphragm due to distended intestine. However, resistance to manual ventilation did not decrease following incision and decompression of abdomen. At this point, an attempt was made to pass

an infant feeding tube 8 FG (Polymed, Poly Medicure Ltd., Rajasthan, India) through the ETT for suctioning. However, it could not be negotiated through the universal 15mm connector. On inspection, the connector was found to be blocked nearly 50% by a thin membranous diaphragm [Figure 1]. Replacement of the connector led to marked reduction in resistance and improvement in ventilation. The rest of the case proceeded uneventfully. After extubation, the ETT was inspected and was not found to have any other obstruction. The incident was informed to the hospital equipment purchase committee.

Though rare, manufacturing defects in ETTs can be hazardous, especially, in a child as airway diameter is small. In addition, it is difficult to differentiate between a distorted capnograph due to obstruction from normal variant in children. Obstruction because of plastic membrane in the connector of cut resterilized, ETT has been reported.^[1] Deformed connector,^[2] plastic meniscus in ETT lumen^[3] and kinking^[4] have been observed as a cause of obstruction while using new pre-packed ETTs. In view of multiple reports, administrators and societies of Anaesthesiologists must insist for strict quality control from manufacturers. These incidents have led to practice of examination of ETTs before intubation. However, this usually involves looking at the external surface, tip, Murphy's eye and obvious obstruction through transparent tube. Less obtrusive defects can be easily missed. Membrane in opti-port right angle connector of double lumen tube is also mentioned.^[5] Our case signifies importance of visual inspection through the lumen of the ETT with connector from proximal to distal end prior to intubation to prevent untoward complications. In case of high airway pressures, one should check for patient related

problems, ETT obstruction and breathing circuit malfunction. If ruled out, one should not forget to look for rare causes like defective connector.

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Figure 1: Distal (endotracheal) end of the defective endotracheal tube connector. Red pointed arrow is indicating a thin membranous diaphragm