

Sounds Impossible, but It's Knot

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Orogastric tube placement during anesthesia is common. Rarely, serious complications occur, including tracheal or bronchial placement and pneumothorax, esophageal perforation, intravascular placement and hemorrhage, and entanglement with other equipment including endotracheal tubes.¹ Anesthesia providers need to be cognizant of these complications in order to ensure rapid detection and correction of incorrectly placed or entangled orogastric tubes. The orogastric tube shown was blindly inserted after anesthetic induction and endotracheal intubation, and gastric fluid was suctioned. Upon attempted removal, it was found to be knotted around the endotracheal tube. Potential signs of orogastric tube entanglement include high inserted length (greater than 50 to 60 cm in an adult), poor drainage of gastric contents, synchronous movement of the endotracheal tube with orogastric tube movement, and high peak airway pressures and flow-volume loops consistent with fixed upper airway obstruction due to endotracheal tube constriction. Risk factors for orogastric and endotracheal tube entanglement may include blind orogastric tube placement, multiple placement attempts, repeated decreases and increases in the depth of insertion, and surgical movement of the orogastric or endotracheal tube. Minimizing placement attempts, length inserted, indwelling time, and intraoperative manipulation may decrease the incidence of orogastric tube entanglement. Visualization of esophageal placement using direct laryngoscopy or fiberoptic bronchoscopy, or guided orogastric tube placement using lengthwise split endotracheal tubes or commercially available tube guides, also may reduce the risk of entanglement.^{2,3} If entanglement occurs,

successful disentanglement has been documented using McGill forceps under direct visualization. Alternatively, entangled orogastric and endotracheal tubes may require removal as a unit followed by reintubation.

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Competing Interests

The authors declare no competing interests.

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References

1. Long M, Machan M, Tollinche L: Intraoperative gastric tube intubation: A summary of case studies and review of the literature. *Open J Anesthesiol* 2017; 7:43–62
2. Fakhari S, Bilehjani E, Negargar S, Mirinazhad M, Azarfarin R: Split endotracheal tube as a guide tube for gastric tube insertion in anesthetized patients: A randomized clinical trial. *J Cardiovasc Thorac Res* 2009; 1:17–22
3. Alflen C, Kriege M, Schmidtman I, Noppens RR, Piepho T: Orogastric tube insertion using the new gastric tube guide: First experiences from a manikin study. *BMC Anesthesiol* 2017; 17:54

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