



## Endotracheal Tube Cuff Inflation Failure

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### Short Communication

We report an uncommon cause of Endo Tracheal (ET) tube cuff inflation failure due to kinking of the pilot balloon tubing from the bite block.

A 65-year-old male admitted to the intensive care unit for acute respiratory distress syndrome required intubation. Two anesthesia residents were notified, assessed the patient, and proceeded with intubation. A rapid sequence induction was performed using 12 mg etomidate followed by 100 mg succinylcholine. Cricoid pressure was held throughout the procedure. Direct laryngoscopy was performed by the first year categorical anesthesia resident revealing a Cormack and Lehane grade I view. An 8.0 cuffed endotracheal tube (Mallinckrodt Intermediate Hi-Lo, Mallinckrodt Inc., St. Louis, MO) was placed through the vocal cords under direct visualization. While the nurse searched for a clean syringe to inflate the pilot balloon, the respiratory therapist placed the bite block (Universal Bite Block, B&B Medical Technologies, Vista, CA) and an oral ET tube fastener (Anchor Fast, Hollister Inc., Libertyville, IL).

Bag ventilation commenced and a large leak was heard. When inflation of the pilot balloon was attempted, high resistance was met without any air inflating the balloon. Both the respiratory therapist and anesthesia resident attempted without success to inflate the pilot balloon. Adequate tidal volumes could not be achieved with the air leak and re-intubation was necessary. A different 8.0 cuffed Mallinckrodt endotracheal tube was placed and successful inflation of the balloon was achieved.

Analysis of the first endotracheal tube revealed that the pilot balloon tubing had been kinked on itself and held in place by the bite block (Figure 1 and 2). This kinking of the tubing would not

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Figure 1: Endotracheal tube with bite block in place.



Figure 2: Zoomed in picture showing the endotracheal tube cuff tubing kinked inside the bite block.

allow any air into the balloon. The larger the ET tube, the tighter the bite block fits around the tube. The bite block can be rotated and the vision of the pilot balloon tubing lost. By placing the bite block on and covering the balloon inflation tubing, the tubing got kinked and secured by the bite block not allowing air in or out.

Endotracheal tube cuff deflation failure has been reported due to ties compressing the pilot balloon tubing [1], kinking of the balloon tubing [2], and by malfunction of the inflating valve or inadvertent detachment of the inflating port from endotracheal tube [3]. The ET cuff inflation failure is most often due to ripped/torn cuff, malfunction of the pilot balloon apparatus, or even asymmetric cuff manufacturing defect [4]. Endotracheal intubation is performed routinely in and outside the operating room. Vigilance is important even after successful intubation especially when securing and protecting the ET tube. Vigilance is also required when placing the bite block, assessing that the ET cuff tubing is not secured in the bite block.

## References

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