

Rare cause of intraoperative endotracheal cuff deflation

Dear Editor,

Manufacturing defects in endotracheal tubes (ETTs) can lead to cuff leaks, inadequate ventilation, hypoxemia, and risk of aspiration.^[1] These defects may go unnoticed during preuse check of tube before intubating^[2] and may lead to difficulty in tube exchange during head and neck surgeries or prone positioning. We report a case of trivial leak that went unnoticed until the intraoperative phase with a source of leak being only established after tube exchange.

A 39-year-old female (43 kg), undergoing gastric pull-up surgery, was intubated with a 7.5-mm ID cuffed ETT (Portex®, Smiths Medical, Minneapolis, MN, USA) and a pilot balloon was filled with 4 ml of air at which there was no cuff leak. After around 30 min, a leak was visible on the ventilator with 150 ml of difference between the inspired and expired air. On inspection of the pilot balloon, it was found to be deflated. It was again filled with air resulting in correction of leak. As neck incision had been made with the face covered under the drapes with no leak, we decided to continue with the surgery. Thereafter, every 45–60 min, the tube developed a leak that was managed by filling air repeatedly. A syringe was attached at the valve to rule out valve incompetency, but it did not prevent leak and tube was exchanged. The surgery lasted for 5 h and the patient was extubated uneventfully. The tube was dipped in water and cuff did not show any bubbling. Then, the pilot balloon and valve were immersed in water, which showed slight bubbling at the junction of pilot balloon and valve assembly [Figure 1]. The leak was mild and clearly appreciable only when the tube cuff was pressurized by hand. These types of leaks were found in other cases in the same operating room complex as well implying a faulty manufacturing defect in the batch of ETT s.

Manufacturing defects in tube can lead to leaks present in the valve, pilot balloon, junction of cuff inflation line and ETT shaft, lumen of tube and the cuff.^[3,4] Minute leaks may not be visible and missed during inspection of tube before intubating. These leaks can be hazardous in cases of head and neck surgery and difficult airway. Various methods of minimizing the leak have been described and include throat packing, injecting the cuff inflation line with lignocaine, continuous inflation, and blocking the one-way valve (in case of valve incompetency).^[5] These methods are not foolproof and act as temporary measures. If a leak is detected, a plan must be formulated depending upon the surgery, airway, and amount of leak. Manufacturing defects must be reported to the manufacturer and stores department. The tubes of same batch must be inspected thoroughly as they may have the same defect

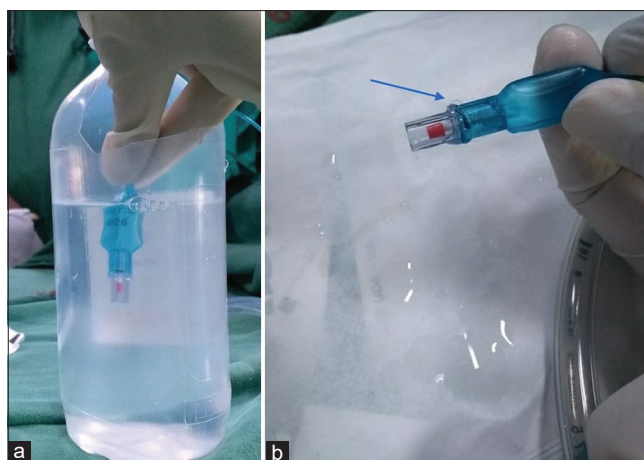


Figure 1: Site of leak in endotracheal tube. (a) Immersion in water showed bubbling. (b) Application of water showed bubble at junction of pilot balloon and one-way valve

and leak. If a trivial leak is present, it should always be looked for after extubating and immersing the tube in water. Intense vigilance toward monitoring difference in inspired and expired tidal volume can aid in detection of such minuscule defects.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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