

Unusual Cause of Ventilator Malfunction: Misplacement of Nasogastric Tube

Sir,

A 70-year-old diabetic and hypertensive male patient with carcinoma of stomach was posted for radical gastrectomy under general anesthesia. The patient was intubated under direct laryngoscopy. Air entry was bilaterally equal. The patient was treated with mechanical ventilation (Drager Fabius workstation) on volume-controlled mode. Ventilator was working fine. Surgeon wanted nasogastric tube (NGT) for surgery. 16-G NGT was inserted through the right nostril and confirmed by insufflations of air and auscultating on the epigastric area. Surgery was started. Resident attached suction to NGT for decompression but forgot to disconnect. After some time, ventilator was showing alarms of negative pressure and leak. The patient was not ventilating. There was no end-tidal CO₂ (ETCO₂) curve on monitor. Ventilator bellow was not filling, then we switch to manual ventilation with increasing oxygen flow, but reservoir bag was not filling. We suspected leak in circuit. We started ventilation with Magill circuit, but bag of Magill circuit was not filling even with oxygen flush. There were no ETCO₂ curve and saturation was dropping to 90%. Finally, we attached Ambu bag and ventilation was made possible with Ambu bag. After taking the patient on Ambu, we checked whole circuit and ventilator, but there were no leaks. Finally, we noticed that suction was still attached to NGT. We disconnect suction from NGT and attached closed circuit. ETCO₂ curve started appearing. We checked position of NGT under Direct laryngoscopic vision (DLV). NGT was in the trachea. It was removed and reinserted in the esophagus under DLV with the help of Magill forceps. The proper positioning was confirmed with aspiration of gastric secretions. Surgery continued and the patient was extubated uneventfully after surgery.

NGT placement in a patient under general anesthesia with an endotracheal tube (ETT) in place can pose a challenge to the anesthesiologist. Most common sites of resistance for passage of NGT are the arytenoid cartilages and piriform sinuses.^[1] Deflation of the cuff of the ETT, application of pressure at lateral border of the thyrohyoid, or pulling the cricoid cartilage can help in insertion of NGT in intubated patients.^[2,3]

Many techniques for safe placement of NGT in intubated patients have been described using a guide wire (angiogram/Rusch stylet) over which NGT, stiffening the NGT before insertion.^[4] Some authors suggested retrograde approach through the open stomach by surgeon.^[5]

Although placement of NGT is commonly done procedure, it is associated many life-threatening complications such as

pharyngeal injury, laryngeal injury, esophageal perforation, gastric fistula, gastric perforation, pneumothorax, fractured tip, unsuccessful attempts, indeterminate position, tracheal malposition, bronchial malposition, pulmonary malposition, knotting around ETT, self-knotting through supraglottic device, and NGT syndrome.^[6,7] In our case, accidental displacement of NGT into the trachea caused the ventilator malfunctioning, bellows to deflate leading to a leak.

There are various methods to confirm correct position of NGT like insufflation of air by a syringe and auscultating over epigastrium, aspiration of gastric secretions, checking the aspirate for acidic pH (<5.5), submergence (submerging the open end of the NGT in water and observing for bubbles synchronous with expiratory respiration), capnography, electromagnetic device, radiological investigations such as C-arm machine and ultrasonography. Capnography is an effective method for differentiating respiratory and gastric tube placement in adults.^[8]

Placement of NGT is commonly done procedure in operation theater and Intensive Care Unit, but it is not always benign. Ventilator malfunctioning sometime may be due to incorrectly placed NGT in trachea. In our case, incorrectly place NGT and suction attached to it get unnoticed which lead to ventilator malfunction. We should confirm the correct placement of NGT with the combinations of method rather than single test before doing any intervention with NGT.

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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Letter to Editor


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