Use of Fiberoptic Bronchoscopy to Reposition an Endotracheal Tube Intraoperatively

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The fiberoptic bronchoscope has been used in the performance of difficult endotracheal intubations.1,2,3 To our knowledge, this instrument has not been used to diagnose or reposition a malpositioned endotracheal tube during anesthesia. The following report describes use of the FOB in repositioning an endotracheal tube in a situation where blind repositioning was fraught with hazard.

REPORT OF A CASE

A 48-year-old white man was scheduled for removal of a tumor from the left eighth cranial nerve. He was premedicated with 200 mg pentobarbital orally, and after preoxygenation, anesthesia was induced with thiopental, enflurane, nitrous oxide, and oxygen. Following administration of suxamethonium a no. 36 French armored endotracheal tube was placed in the trachea with moderate difficulty on the second attempt. The chest appeared to rise symmetrically, and equal bilateral breath sounds were heard anteriorly. The endotracheal tube cuff could be palpated in the sternal notch. Anesthesia was maintained with 67 percent N2O, 2 percent enflurane, and 31 percent oxygen. The patient was turned to the right semiprone position and the head placed in tongs. His face was now 30 degrees from the prone position. We instituted mechanical ventilation with 1,000 ml tidal volume, 30 cm H2O peak airway pressure, and a rate of 20 breaths/min to reduce intracranial pressure. One and a half hours after induction of anesthesia and an hour after commencing the surgical procedure, arterial blood-gas values were PaO2 45 torr, PaCO2 34.5 torr, and pH 7.33. Inspired oxygen concentration (FIO2) was 0.33. Re-examination of the chest revealed decreased breath sounds over the left chest, where breath sounds should have been the loudest during mechanical ventilation in the semiprone position. Tidal volume decreased to 500 ml despite a rise in peak airway pressure to 60 cm H2O. The endotracheal tube was withdrawn 2 cm with no change in breath sounds, tidal volume, or airway pressure. Because the head was 30 degrees from prone, we feared that further withdrawal of the endotracheal tube, if it were not too deep in the airway, might cause it to be withdrawn into the pharynx. Reintubation would be difficult because of the patient’s position and would probably necessitate turning him supine. To confirm the position of the endotracheal tube in the airway, a fiberoptic bronchoscope was introduced through the endotracheal tube. The tip of the endotracheal tube was found to be in the right lower-lobe bronchus. Under direct vision the endotracheal tube was withdrawn 7.5 cm until the tip lay 2 cm above the carina. Breath sounds and compliance improved. The PaO2 during ventilation with 33 percent oxygen increased from 45 to 100 torr and the PaCO2 decreased from 35 to 23 torr following withdrawal of the endotracheal tube to the correct position. The remainder of the ten-hour surgical procedure to remove an extensive epidermoid tumor was uneventful. Postoperative recovery was unremarkable.

DISCUSSION

The use of the fiberoptic bronchoscope in this situation was of benefit in that the endotracheal tube could be withdrawn the required distance, rapidly and safely, under direct vision, minimizing the likelihood of extubating the trachea. Even if extubation had occurred, the endotracheal tube could have been quickly reinserted over the fiberoptic bronchoscope without interrupting the operation. The small diameter (5.5 mm) of this instrument permits endoscopy without interfering with ventilation,* and its flexibility permits a clear field of vision with the patient’s head in any position.

REFERENCES


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