



A Modified Strategy for One-Lung Ventilation in a Patient with Tracheal Bronchus and Difficult Airway

Dear Editor,

Tracheal bronchus is a congenital anomaly in which the right upper lobe bronchus originates from the lateral tracheal wall. This anatomic variant, which occurs in approximately 1 of 250 patients at bronchoscopy, may complicate one-lung ventilation (OLV) during thoracic surgery with a bronchial blocker.¹ Previous studies have described the challenges for OLV in patients with tracheal bronchus but successfully delivered strategies to navigate them.^{2,3} Moon *et al.*² used an Arndt endobronchial blocker for right-sided OLV in the left lower lobe lung mass resection, and Lee *et al.*³ used double-lumen tubes (DLTs) for left-sided OLV in three patients undergoing esophagectomy or right upper lobe lobectomy.

Here, we encountered unanticipated difficult airway in a 67-year-old woman (ASA II; height of 166 cm and weight of 63 kg) with a tracheal bronchus undergoing video-assisted thoracoscopic surgery for right lower lobe lung mass resection. The preoperative computed tomography scan of the chest revealed a tracheal bronchus [Figure 1a]. After anesthetic induction, we attempted to intubate a 35 Fr left-sided DLT (Mallinckrodt™, Covidien, Ireland) using GlideScope® video laryngoscope for several attempts but were unsuccessful⁴ because of the abnormally high position of the glottic opening in this patient. Following the immediate discussion with surgeons, we used a bronchial blocker (Coopdech Endobronchial Blocker Tube, Daiken Medical Corp., Osaka, Japan) for left-sided OLV. However, the right upper lobe was still inflated during surgery, and so, we adjusted the tidal volume to obtain an acceptable surgical field [Figure 1b]. The surgery was performed smoothly, without any complication. The patient's hemodynamics was stable, and pulse oximetry saturation showed 100%, with 100% FiO₂ throughout. Several

days after surgery, the patient was discharged without any sequelae.

Careful preoperative assessment of tracheobronchial anatomy is instrumental in choosing an appropriate method of OLV and preventing potential complications, despite the low incidence of tracheal bronchus. When a tracheal bronchus is found, DLT insertion is recommended instead of blocker insertion to achieve OLV completely.³ Conversely, a bronchial blocker may have advantages over the conventional DLT in achieving OLV in patients with a tracheal bronchus and difficult airway,^{2,5} even in the right lower lobe lung mass resection due to less interference by a ventilated right upper lobe. If the right upper lobe is the operation site, an alternative modality is exchanging the single lumen for a left DLT using an airway exchange catheter for OLV, yet this procedure is not without risks, including laryngeal trauma, tracheobronchial trauma, pneumothorax, lung laceration, esophageal perforation, and dislodgement of the endotracheal tube.⁶ Accordingly, we did not use a tube exchanger at that time. In addition, nonintubated video-assisted thoracoscopic surgery with laryngeal mask airway⁷ may be an alternative technique for patients with a tracheal bronchus and difficult intubation under careful preoperative evaluation.

Acknowledgment

We thank the patient for signing the informed consent for publication.

Declaration of patient consent

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

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Conflicts of interest

There are no conflicts of interest.

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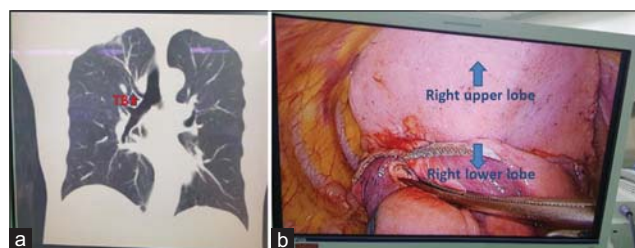


Figure 1: (a) The preoperative computed tomography scan of the chest revealed a right upper lobe tracheal bronchus (TB). (b) The right upper lobe was still inflated during surgery under left-sided one-lung ventilation

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