



Lung Isolation in a Patient with a Difficult Airway Due to Recurrent Mandibular Osteosarcoma

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The Patient

- 22yF with **hx recurrent mandibular osteosarcoma** (s/p multiple resections and radiation)
- Known difficult airway:** multiple previous awake fiberoptic intubations



Here for **R thoroscopic wedge resection** (for RLL nodule suspicious for osteosarcoma metastasis)

Learning Objective

To compare and contrast the risks and benefits of different airway management techniques for procedures requiring single-lung isolation in a patient with a known difficult airway.

Lung Isolation Techniques in Difficult Airways

	Double-Lumen Endotracheal Tube	Single Lumen Endotracheal Tube + Bronchial Blocker
Pro	- Quick and easy to convert between one- and two-lung ventilation - Can use suction catheters, fiberoptic scopes - May require less repositioning	Useful when DLT would be difficult to place, such as restricted mouth opening, limited neck extension, distorted anatomy from previous surgeries or radiation
Con	Rigid, large – hard to place, risk of injury such as lacerations/tears of membranous trachea, bronchus rupture, tension pneumothorax.	- Cannot easily convert between one- and two-lung ventilation - Cannot use suction catheters, fiberoptic scopes - May be more difficult to place

What We Did

- Plan: awake fiberoptic intubation with single-lumen ETT + bronchial blocker
- Premeds: glycopyrrolate, remifentanil infusion, PRN remimazolam bolus, topical lidocaine
- Scope: easily passed tongue into oropharynx
- Deep inspiration: could see tracheal rings
- After entering trachea: anatomy normal
- Placed single-lumen size 7.5 ETT on first attempt, then placed bronchial blocker

Discussion

- For lung isolation: Double-lumen endotracheal tubes (DLTs) offer many advantages, remain the gold standard
- However, DLT's may be impossible to place in patients with difficult airway and may pose risk of serious injury to the airway
- Option of placing single-lumen ETT and then exchanging for DLT poses similar risks to initial DLT placement
- Single-lumen ETT + bronchial blocker can work well for patients with difficult airway

Patient Outcome

- Intubated on first attempt as described!
- Surgery completed, no issues
- Pt extubated in OR to room air
- POD1: discharged to home
- POD23: doing well at office visit, no complaints, no new lung nodules on exam

References

- Collins, S et al. Lung Isolation in the Patient with a Difficult Airway. *Anesthesia & Analgesia* 126(6):p 1968-1978, June 2018.
- McLean, S et al. Airway Exchange Failure and Complications with the Use of the Cook Airway Exchange Catheter. *Anesthesia & Analgesia* 117(6):p 1325-1327, December 2013.
- Thomas, V et al. Tracheal Laceration After the Use of an Airway Exchange Catheter for Double-Lumen Tube Placement. *Journal of Cardiothoracic and Vascular Anesthesia* 21(5):p 718-719, October 2007.
- Bussières, J et al. Bronchial blocker versus left double-lumen endotracheal tube in video-assisted thoracoscopic surgery: a randomized-controlled trial examining time and quality of lung deflation. *Canadian Journal of Anesthesia* 63(7):p 818-827, July 2016.
- Clayton-Smith, A et al. A Comparison of the Efficacy and Adverse Effects of Double-Lumen Endobronchial Tubes and Bronchial Blockers in Thoracic Surgery: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Journal of Cardiothoracic and Vascular Anesthesia* 29(4):p 955-966, August 2015.
- Campos, J et al. Lung isolation in the morbidly obese patient: a comparison of a left-sided double-lumen tracheal tube with the Arndt® wire-guided blocker. *British Journal of Anaesthesia* 109(4):p 630-635, October 2012.

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