

## A Novel Approach to One-Lung Ventilation in a Pediatric Patient with a Tracheostomy

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### Introduction

- One-lung ventilation (OLV) poses complications to anesthesiologists caring for pediatric patients secondary to the size of available double lumen endotracheal tubes (DLTs) and bronchial blockers (BBs).
- Patients with tracheostomies requiring OLV present additional complications.

### Case

- A 4 year old female presented for video-assisted thoracoscopic surgery (VATS) and lung biopsy with OLV
- PMH: Prematurity, intrauterine growth retardation, developmental delay, chronic lung disease, subglottic stenosis status post tracheostomy with 3.5 cuffed Shiley tracheostomy tube, aspergillus tracheitis
- Induction: Inhalational via tracheostomy
- Direct laryngoscopy with Wis-Hipple 1.5 was performed and a 4 French Fogarty catheter was passed through the vocal cords under direct visualization.
- A 2.8 mm fiberoptic bronchoscope was advanced via the tracheostomy tube and the Fogarty catheter was advanced until visualized at the carina, followed by placement in the right mainstem bronchus and balloon inflation.
- The patient was placed in the left lateral decubitus position and Fogarty position was verified; lung separation was adequate for surgical exposure.
- At the conclusion of the procedure, the Fogarty balloon was deflated and the catheter removed.
- The right lung was reinflated under direct visualization with the thoracoscope and the patient was transferred to the PICU where the postoperative course was uneventful.

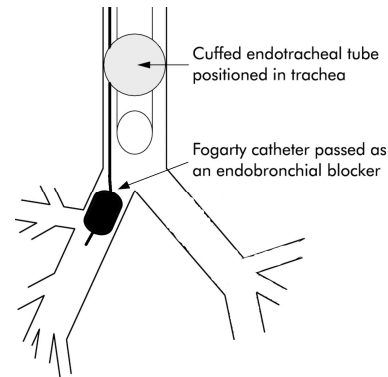


Figure 1: Fogarty catheter seen passing external to ETT into right mainstem bronchus

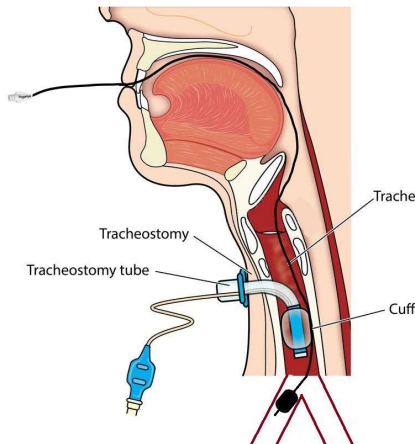


Figure 2: Fogarty catheter seen passing orally, external to tracheostomy tube, into right mainstem bronchus

### Procedural Steps

1. Connect in situ tracheostomy tube to anesthesia ventilator.
2. DL and place Fogarty catheter through vocal cords.
3. Connect fiberoptic adapter to tracheostomy tube and insert fiberoptic scope.
4. Visualize Fogarty catheter at carina and direct Fogarty to desired mainstem bronchus under direct visualization.
5. Inflate balloon.

### Discussion

- Use of a Fogarty catheter as a BB placed orally and passed external to a tracheostomy tube allows for maintenance of the entire lumen of the tracheostomy tube for ventilation.
- Interruptions in ventilation were minimized as the tracheostomy tube was left in place and a fiberoptic adapter was used while positioning the Fogarty, allowing ventilation of the patient to continue throughout manipulation of the airway.
- Another benefit is the ability to resume two-lung ventilation immediately by deflating the Fogarty balloon if the patient does not tolerate OLV.
- The maintenance of the full lumen of the tracheostomy tube for ventilation and minimization of interruptions in ventilation are incredibly useful tools in patients with lung disease and potential difficult lung separation requiring OLV.

### References

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