

# Difficult Intubations with Double Lumen Tubes

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## Introduction

A 45-year-old ASA 2 woman presented for a robotic left diaphragmatic plication. In 2022, she experienced a motor vehicle accident, leading to a cervical fusion procedure. Throughout the year, the patient developed worsening dyspnea, and imaging studies showed an elevated left hemidiaphragm. Patient does not present with any other significant medical history. Her medical record noted that she was a difficult intubation from previous procedures. She exhibited very limited range of motion due to her cervical fusion, reduced thyromental distance, and Mallampati III score. In her previous procedures, intubation required three attempts, with success achieved through fiberoptic intubation. Patient refused an awake fiberoptic intubation because she was always induced in past procedures and wished for the same approach.

## Learning Objectives

- ▶ Outline the ASA difficult airway algorithm guidelines
- ▶ Discuss double-lumen endotracheal tube placement
- ▶ Review adjunct airway devices utilized for difficult airways

## Background

- ▶ A double-lumen endotracheal tube (DLT) is a bifurcated tube with a tracheal and bronchial lumen and commonly used for one lung ventilation. A left double-lumen tube is commonly used, irrespective of the operative side. (Butterworth et al, 2022)
- ▶ **LEMON scale evaluation for difficult intubations** (Butterworth et al, 2022)
  - ▶ L: Look Externally – poor dentition, edentulous, and obesity
  - ▶ E: Evaluate – 3-3-2 rule
  - ▶ M: Mallampati Score
  - ▶ O: Obstruction – abscess, tumor, and swelling
  - ▶ N: Neck Mobility

### Left-Sided DLT Placement Verification (Butterworth et al, 2022)

Inflate tracheal cuff (5-10 mL). Check for bilateral breath sounds.

Inflate bronchial cuff (1-2 mL) and clamp tracheal lumen.

Check for unilateral left breath sounds.

- Tube should be advanced if right sided breath sounds are indicated.
- Unilateral right sided breath sounds indicate right bronchus entry
- Absence of both right and left breath sounds indicate tube is too far

Unclamp tracheal lumen and clamp bronchial lumen.

Check for unilateral right sided breath sounds

- Absence indicate tube is not far enough and bronchial cuff may be occluded.

## Case Description

### Intubation

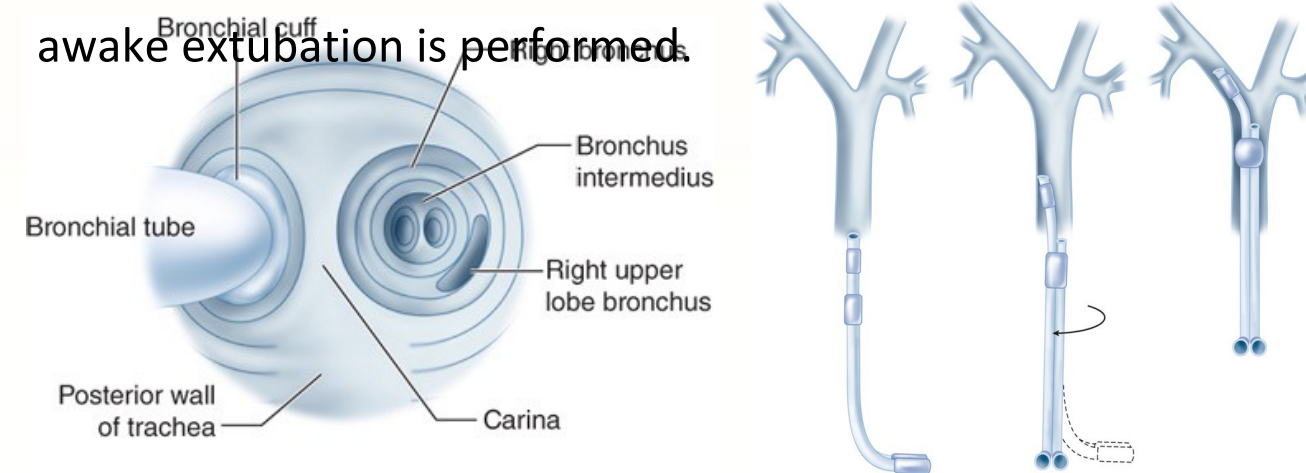
Following a smooth induction of the patient, bag-mask ventilation was performed and shown to be adequate. The first intubation attempt using a Glidescope with a single lumen endotracheal tube produced a grade III view and was unsuccessful. The attending anesthesiologist attempted a second intubation with a Glidescope but also fails. A senior attending is called for assistance as patient continues to be bag masked ventilated with an oral airway between attempts. The senior anesthesiologist turns to the flexible fiberoptic bronchoscope, but after several minutes of attempts, a clear view could not be established. A size 4 laryngeal mask airway (LMA) is inserted to assist with ventilation, and an Aintree intubation catheter is utilized to switch the LMA with a single lumen tube, leading to a successful intubation. Throughout these intubation attempts, additional Decadron is given to reduce swelling.

A cook airway exchange catheter was then inserted into the size 7.0 single lumen endotracheal tube to exchange for a size 35 French double lumen endotracheal tube. Correct placement was then confirmed using the fiberoptic bronchoscope.

### Extubation

Initial management plan was to keep her intubated and transfer her to the intensive care unit due to swelling from intubation attempts. However, after performing an adequate leak test, attending anesthesiologist decides extubation is possible.

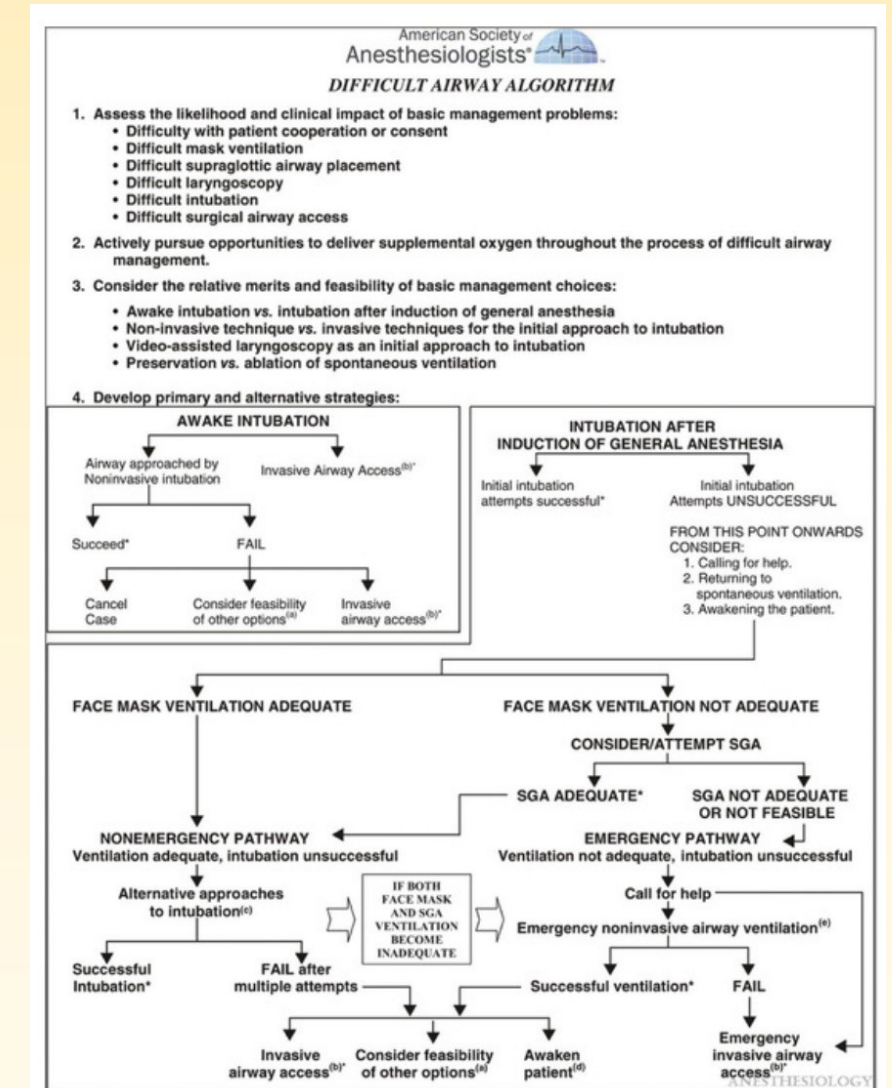
Additional Decadron is given, and patient is suctioned well. An awake extubation is performed.



Chapter 25 Anesthesia for Thoracic Surgery, Butterworth IV JF, Mackey DC, Wasnick JD. *Morgan & Mikhail's Clinical Anesthesiology*. 6e; 2018. Available at: <https://accessanesthesiology.mhmedical.com/content.aspx?bookid=2444&sectionid=193560771>

## Discussion

### ASA Difficult Airway Algorithm



- ▶ Airway devices for difficult airways include laryngeal mask airways, fiberoptic bronchoscopes, video laryngoscopes, Aintree intubation catheters, gum elastic bougies, and cook airway catheters.
- ▶ Given the documented difficulty of her airway in her medical record, the difficult airway cart and fiberoptic scope was prepared in advance.

### Conclusion

- ▶ Since this patient had a suspected difficult airway, it was ideal to initially establish a safe airway first with a single lumen tube. A DLT may have been more difficult to place and worsen view.
- ▶ An awake fiberoptic bronchoscope intubation would have been a possible option, but patient had refused.
- ▶ For any future procedures, it would be ideal if the patient strictly undergoes awake intubations.

## References

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