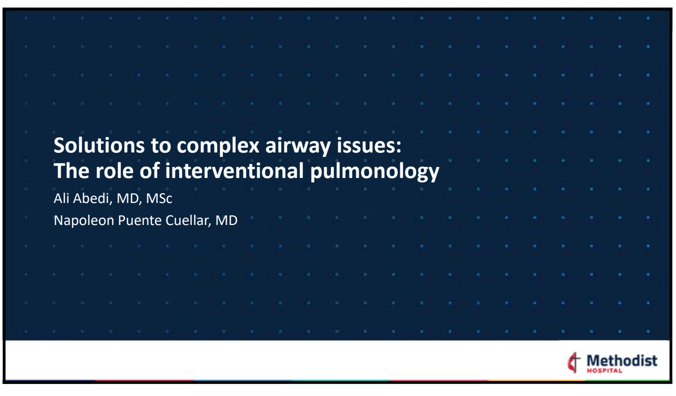

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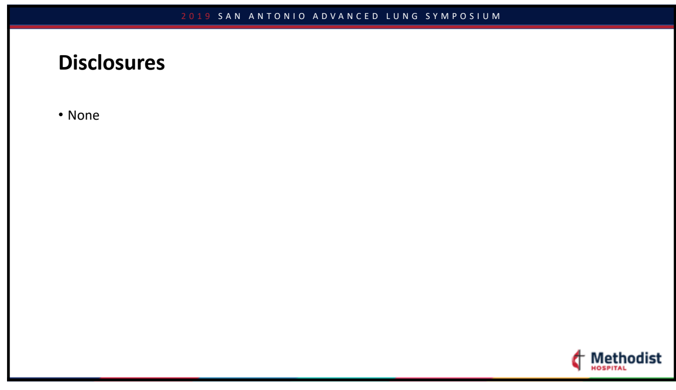

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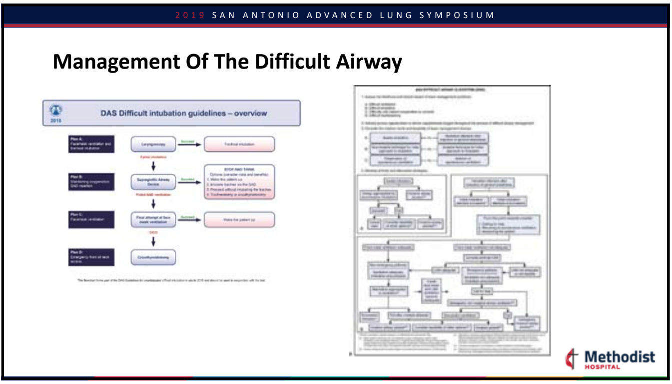

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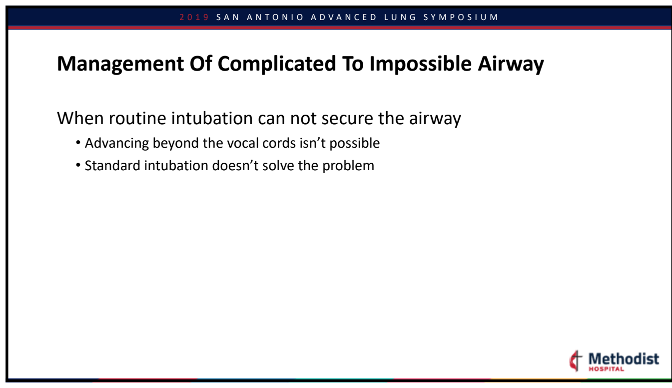

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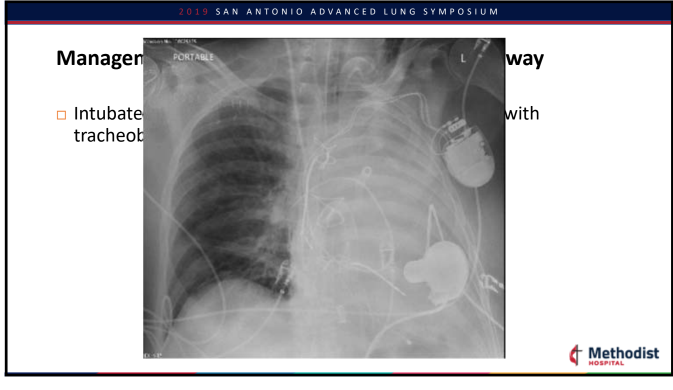

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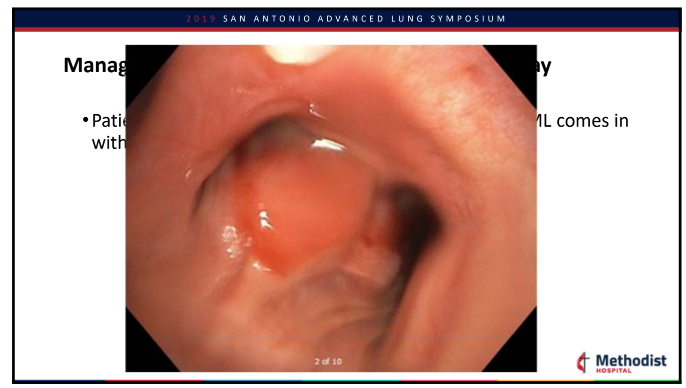

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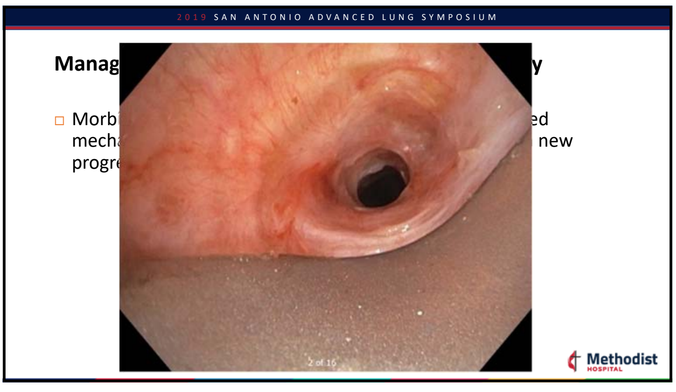

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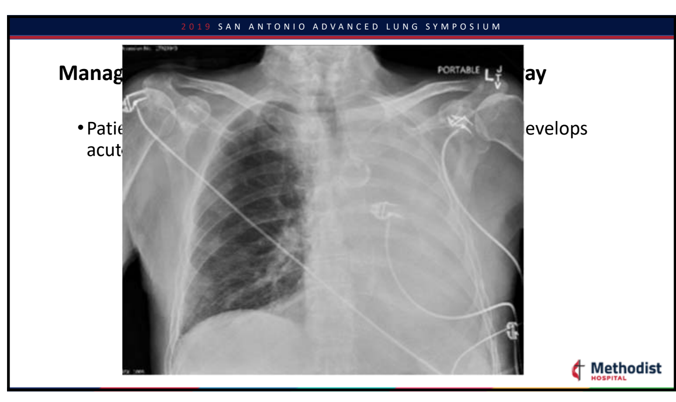

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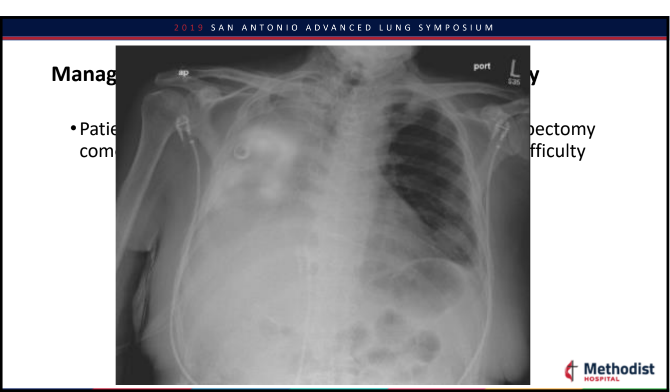

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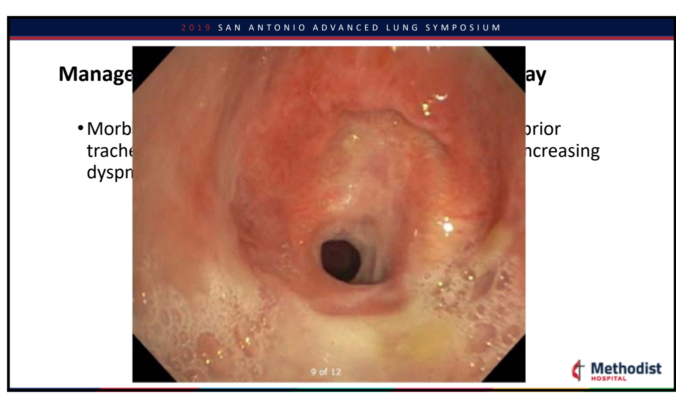

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Management Of Complicated Airway

- Factors that determine optimal management plan
  - Patients overall clinical state and severity of airway compromise
    - How stable or unstable
    - What's the degree of obstruction
    - Does the airway problem explain the symptoms
  - What is our goal and can we achieve it?
    - What's the patients expectations
    - How likely am I to actually help

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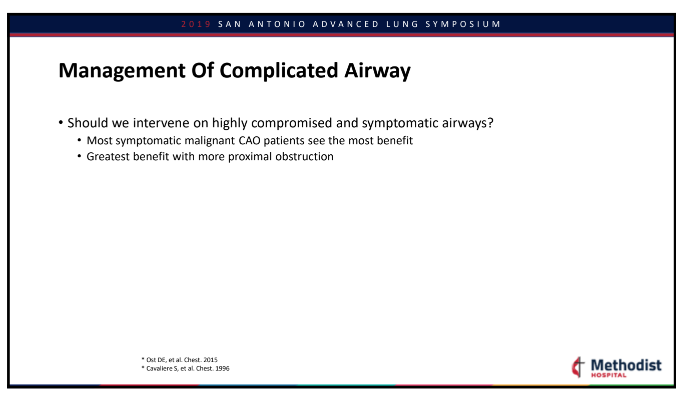

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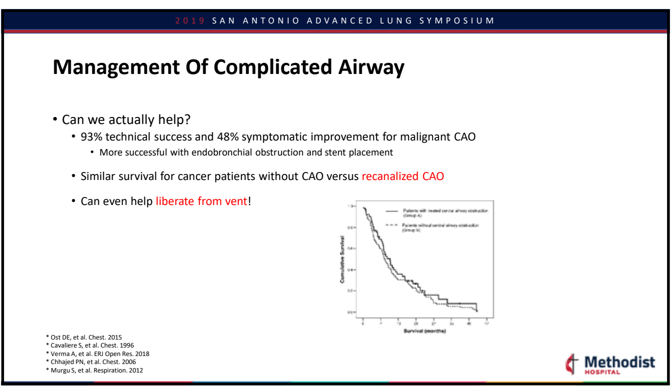

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Management Of Complicated Airway

- Factors that determine optimal management plan
  - Local expertise and resources for airway management
    - Interventional pulmonology program
    - Cardiothoracic surgery and ENT support
    - Anesthesiology support
    - ECMO program
    - Difficult Airway Response Team

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Capability For Advanced Airway Procedures

- Access to an interventional pulmonology program
  - Where is IP needed and where is it practiced
  - Who practices IP

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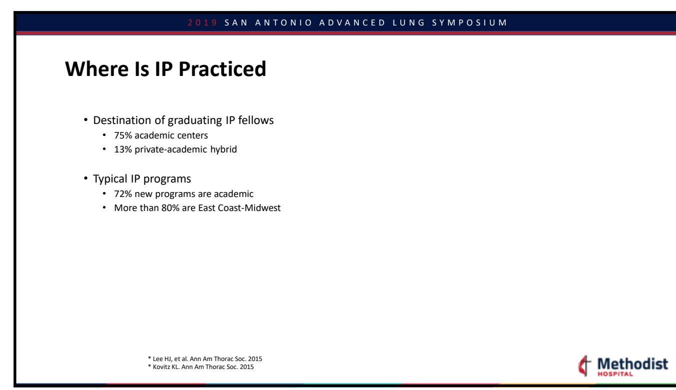

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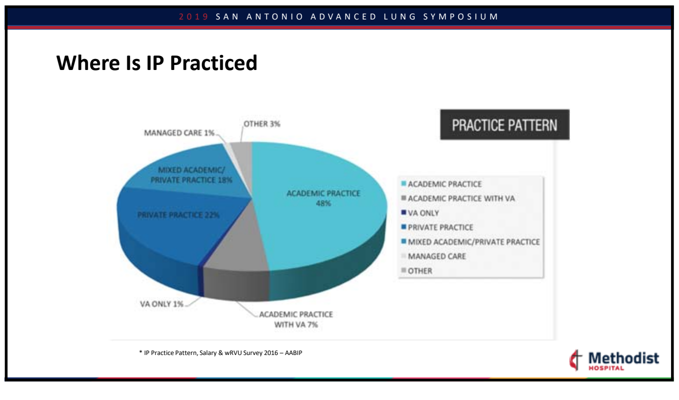

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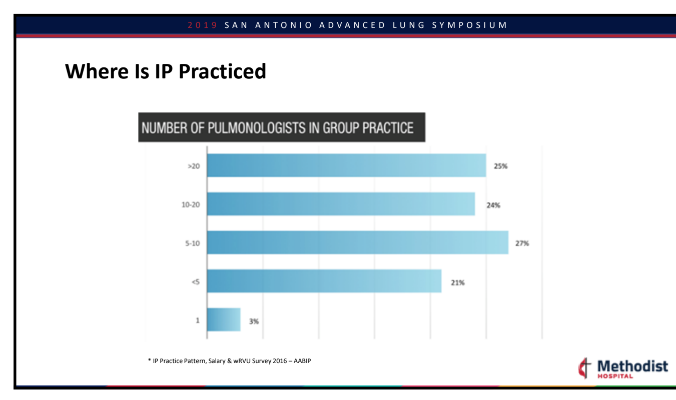

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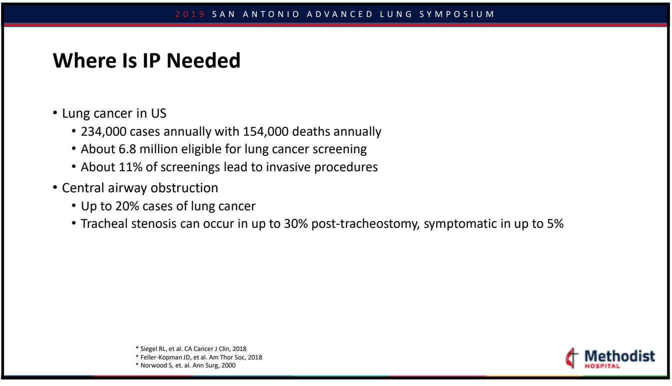

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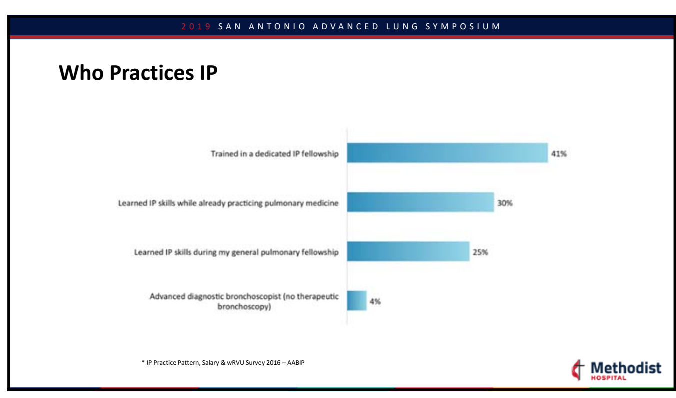

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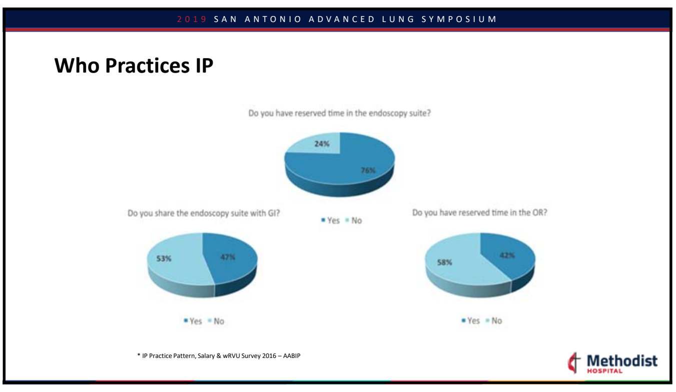

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Benefits Of IP In Private Practice

- Filling gaps in delivery of care
  - Comprehensive management approach for thoracic malignancies
  - Timely and efficient care for growing patient population
- Supporting critical care service line
  - Tracheostomy and its complications
  - Managing the difficult to impossible airway

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ECMO Support For Complex Airway Management

- Stabilizing complex airway can be dangerous even with advanced airway capabilities
  - Patients typically critically ill, with other comorbidities (ASA III-IV)
  - Unable to lie supine
  - Induction and paralysis can lead to complete loss of airway
- ECMO as support for the complicated airway management
  - Clinically stabilizing the patient with critical airway
  - Peri-procedural support

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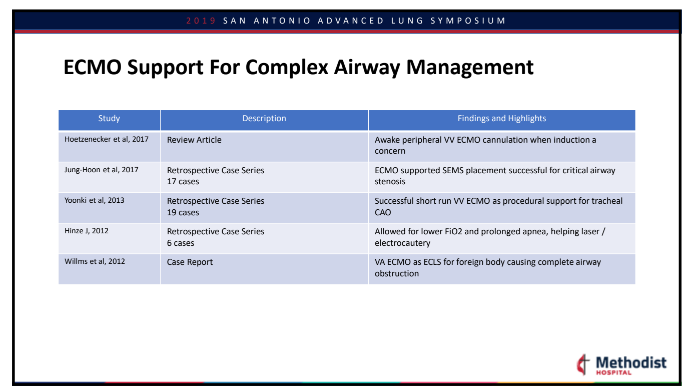
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ECMO Support For Complex Airway Management

Study	Description	Findings and Highlights
Hoetzenecker et al, 2017	Review Article	Awake peripheral VV ECMO cannulation when induction a concern
Jung-Hoon et al, 2017	Retrospective Case Series 17 cases	ECMO supported SEMS placement successful for critical airway stenosis
Yoonki et al, 2013	Retrospective Case Series 19 cases	Successful short run VV ECMO as procedural support for tracheal CAO
Hinze J, 2012	Retrospective Case Series 6 cases	Allowed for lower FiO2 and prolonged apnea, helping laser / electrocautery
Willms et al, 2012	Case Report	VA ECMO as ECLS for foreign body causing complete airway obstruction

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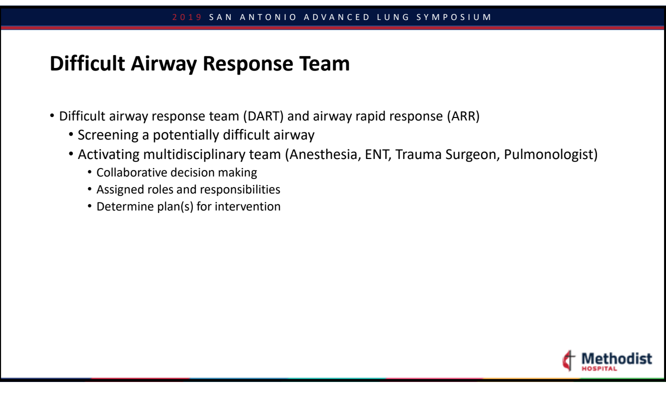

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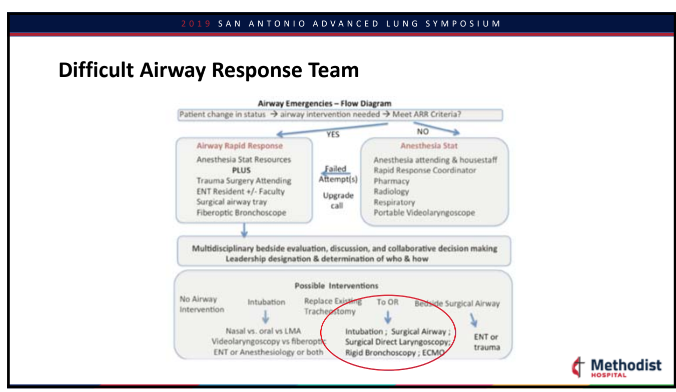

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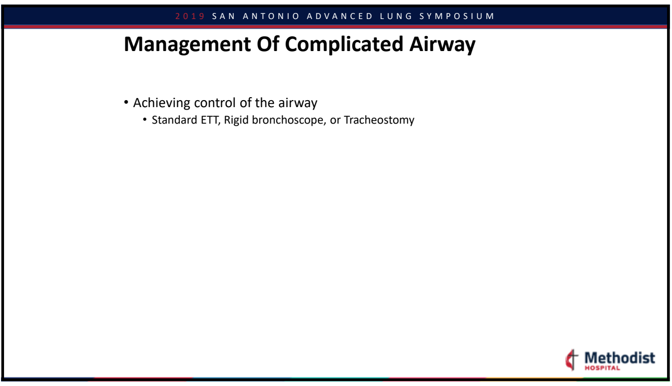

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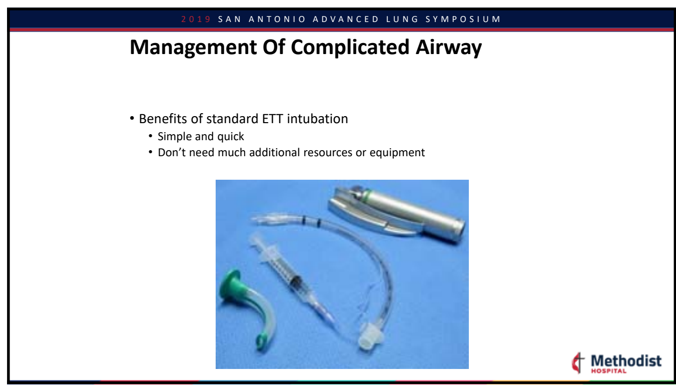

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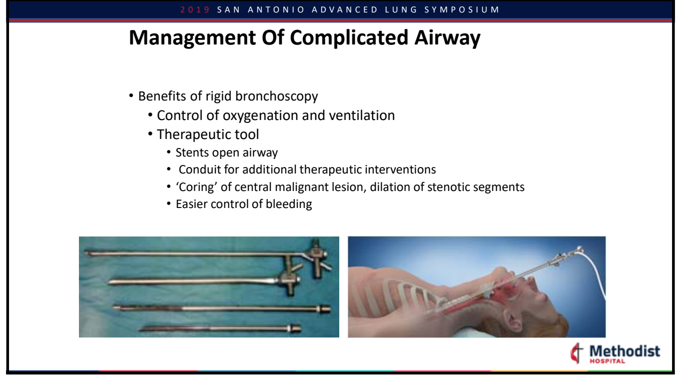

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Management Of Complicated Airway

- No surprises
  - Have well organized plan before approaching airway
  - Be aware of any technical limitations
  - Be aware of any complicating patient factors
- Anticipate problems
  - What is plan B, and C, and D…
  - How far are we willing and able to escalate support?
  - Who else needs to be aware and ready?

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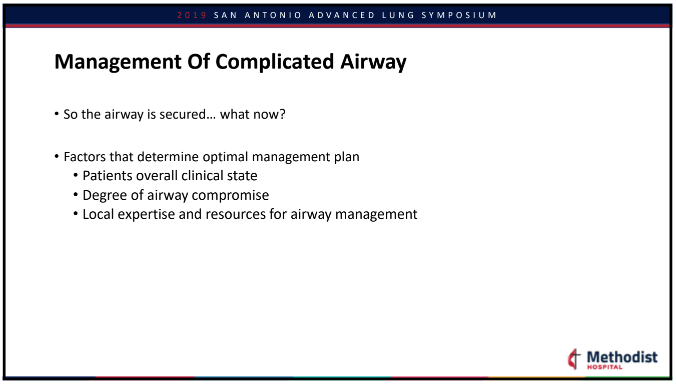

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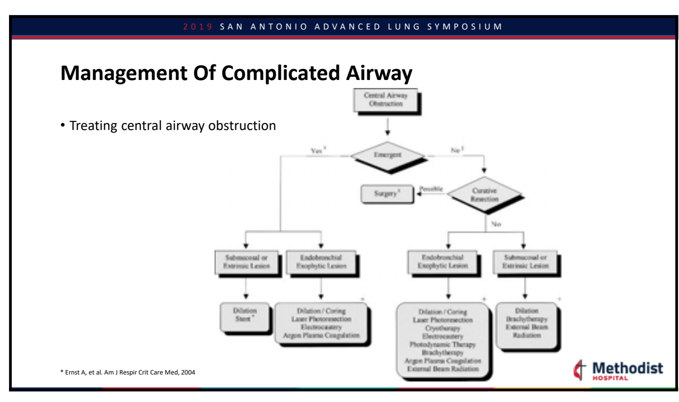

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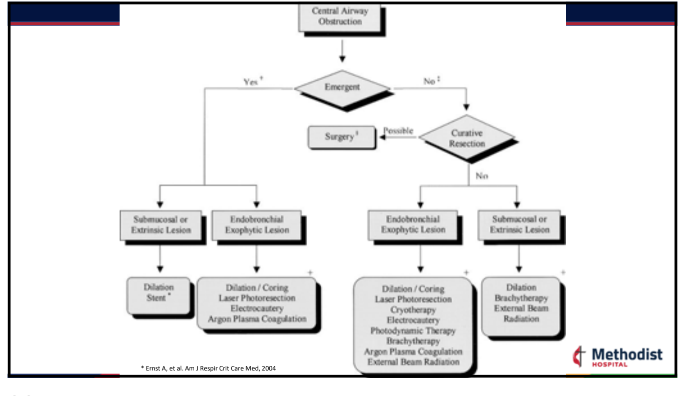

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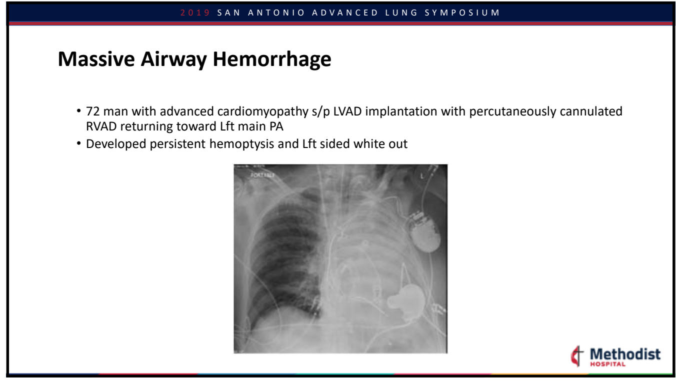

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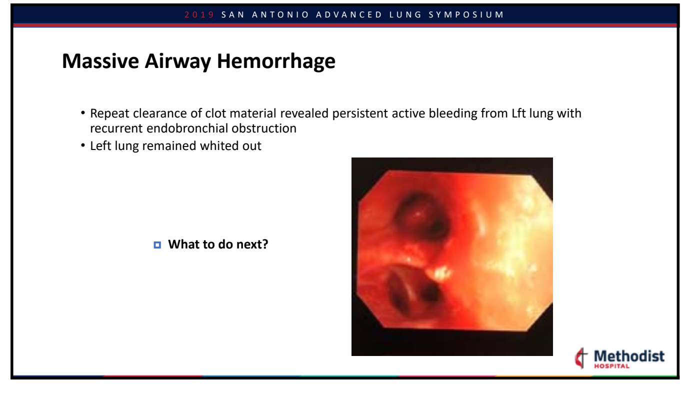

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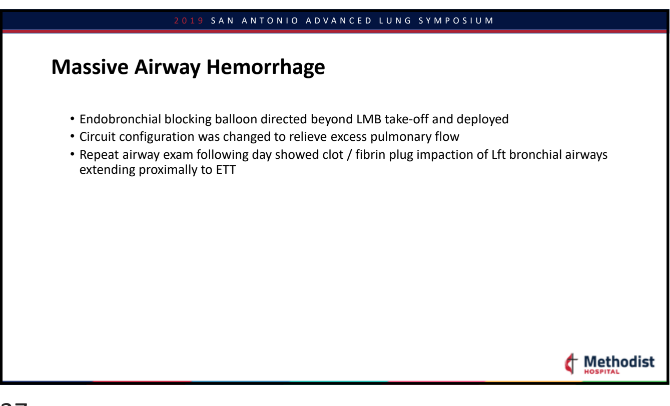

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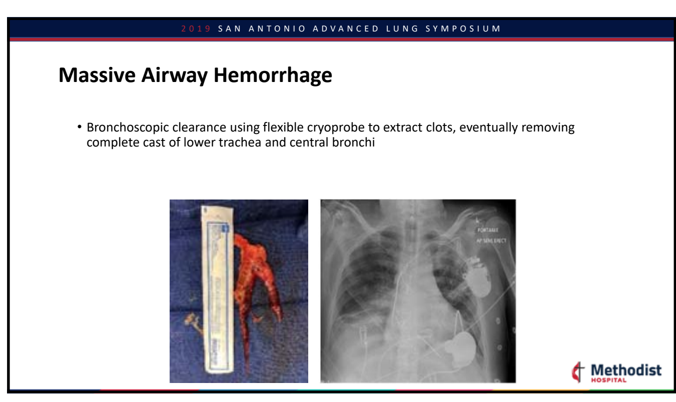

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Central Airway Extrinsic Compression

- 61 woman with SCLC Dx 4 months prior, growing from beyond RLL segmental airways proximally into BI, as well as mediastinal LAD
- Started on chemotherapy

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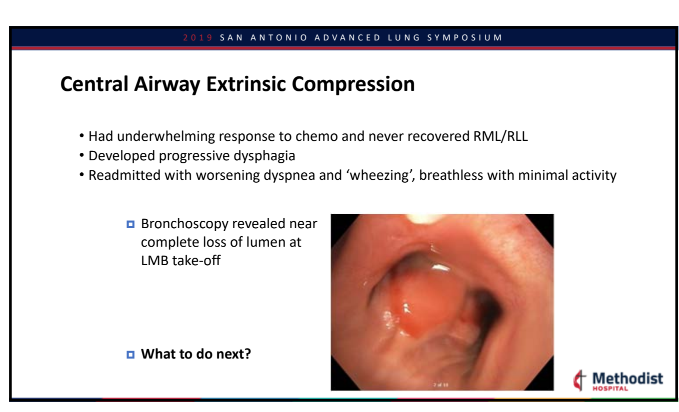

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Central Airway Extrinsic Compression

- Airway support with rigid bronchoscopy and jet ventilation
- Dilation of LMB take-off with 8-10mm CRE endobronchial balloon
- Insertion of 10x40mm fully covered self expanding metallic stent (SEMS)

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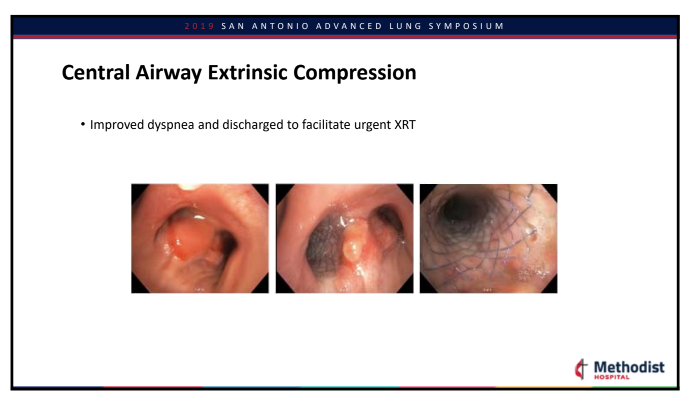

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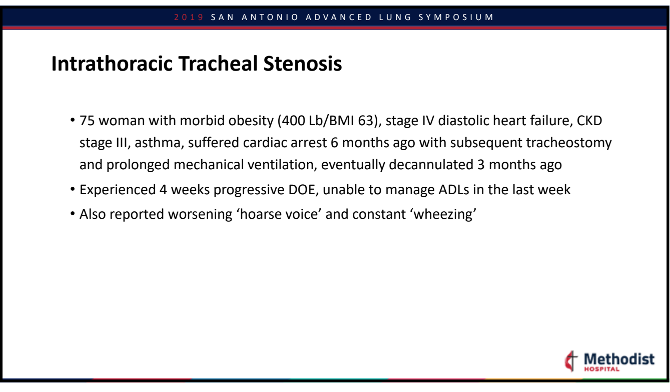

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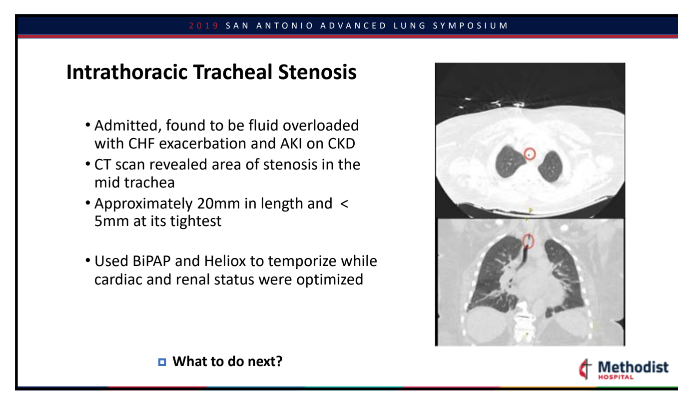

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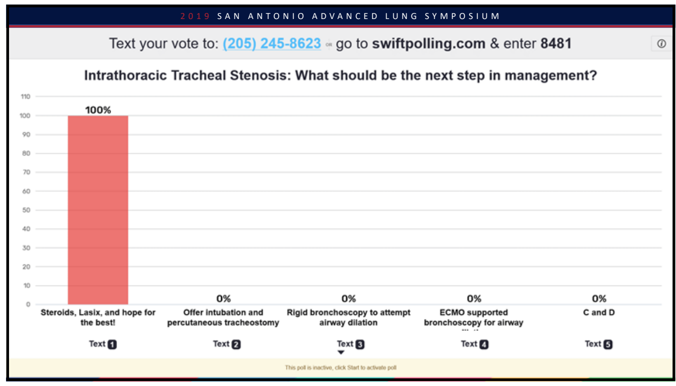

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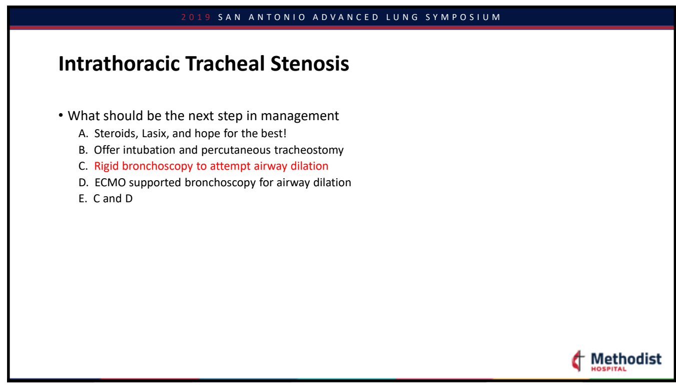

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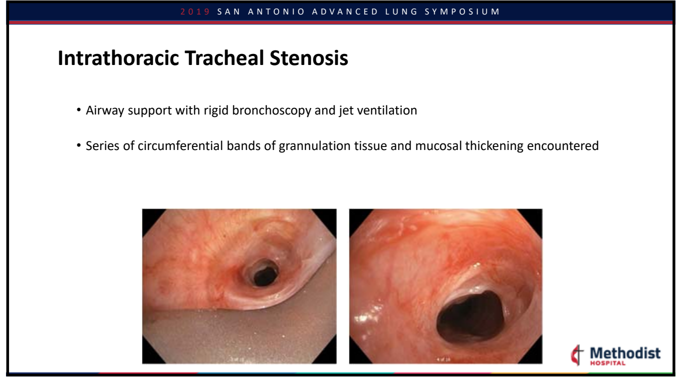

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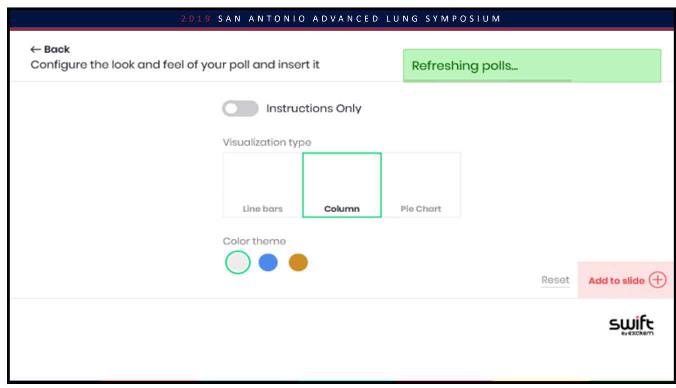

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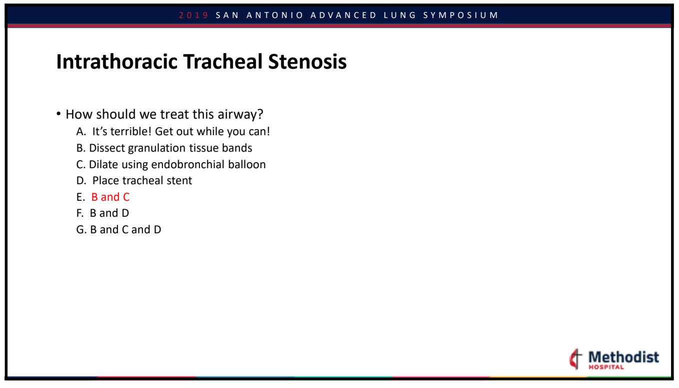

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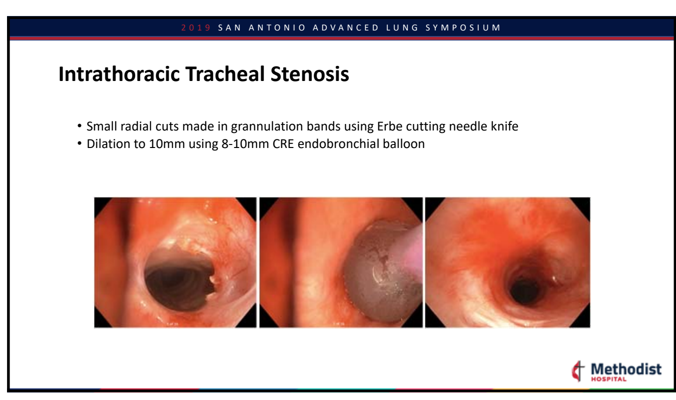

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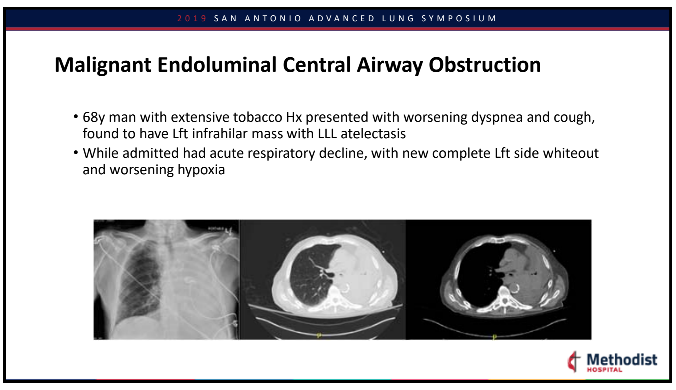

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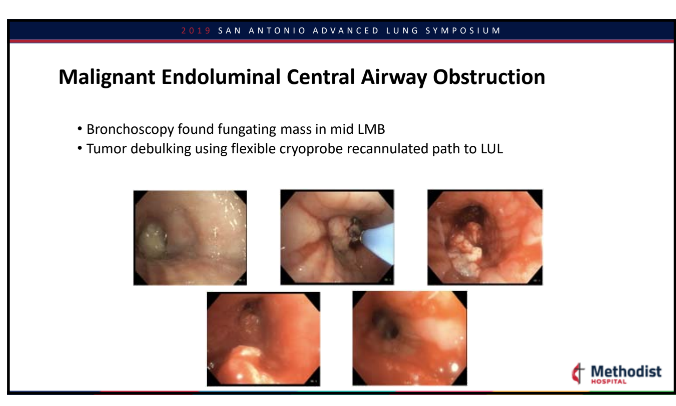

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Malignant Endoluminal Central Airway Obstruction

- Airway patency maintained with 10x40mm partially covered SEMS

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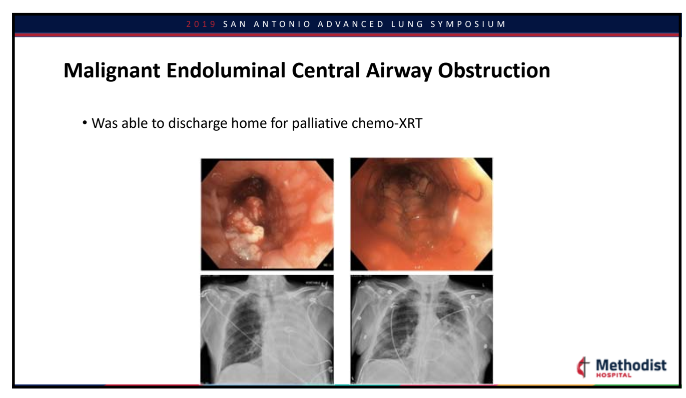

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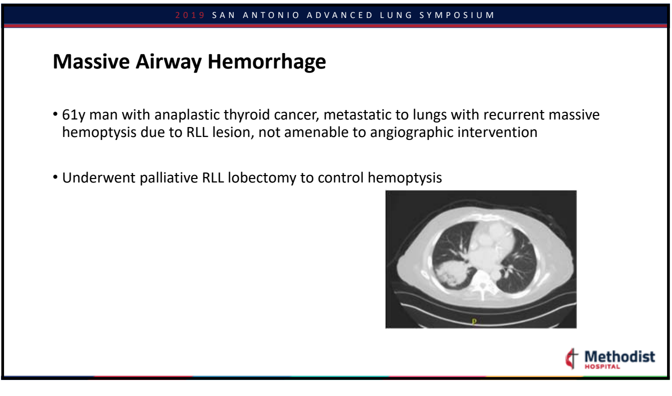

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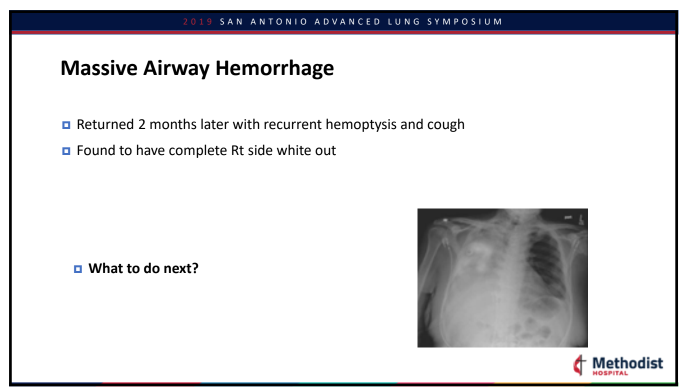

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Massive Airway Hemorrhage

- Taken for bronchoscopy with standard ETT for airway support
- Large adherent clot / fibrin plug found in BI also occluding RUL airways
- Extracted using flexible cryoprobe

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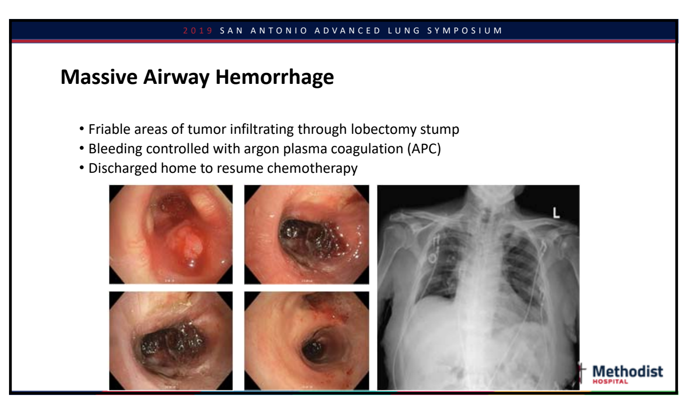

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Subglottic Tracheal Stenosis

- 48y obese man with multiple medical issues and 2 prior tracheostomies, last decannulated 2 months before presenting with DOE and stridor
- Bronchoscopy revealed 5mm tracheal stenosis above 1st tracheal ring
- His INR was still slightly > 2 so intervention postponed 1-2 days
- Evening before procedure had clinical decline and respir failure with severe hypercapnea pCO2 > 90, pH < 7.2
- Too unstable to transport to bronchoscopy suite
- No immediate OR or ICU availability

What to do next?

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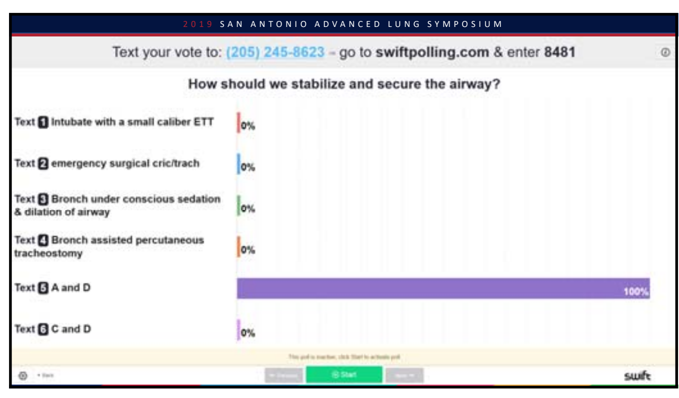

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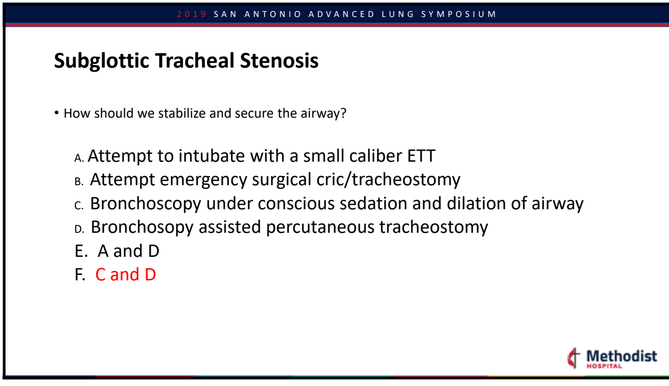

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Subglottic Tracheal Stenosis

- LMA placed to control airway above stenosis, now < 3mm
- Patient was well oxygenated
- Endobronchial dilation balloon catheter used to open airway to ~ 8mm
- Airway now stabilized to allow ventilation, and visualization for urgent percutaneous tracheostomy

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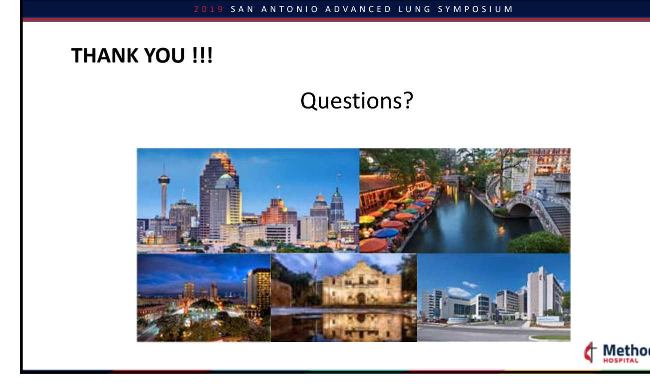

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