TRACHEAL RESECTION SURGERY:

Tips, Tricks & Limitations

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TRACHEAL SURGERY

• Careful radiologic evaluation
  • Tomograms
  • Spiral CT
  • Virtual bronchoscopy
  • MRI
  • Barium swallow
  • Fluoroscopy
Tips

SECURE AIRWAY

- Heliox
- Elevation
- Diuresis
- Steroids
- Nebulizers
- Tracheostomy – through pathology
TRACHEAL RESECTION - CAUTION

- Steroids
- Ventilator
- Radiation
- Prior resection
- Proximal extent
- Inflammation
ANESTHESIA

• Inhalation gases
• TIVA (total intravenous anesthesia)
• Cross field ventilation
• High frequency
• Cardiopulmonary bypass
Incisions for repair of postintubation tracheal lesions.

Collar incision is basic. For low lesions the upper sternal incision is added. Laryngeal release is performed through a short incision overlying the hyoid bone.
ANASTOMOTIC COVERAGE

• Divided thyroid
• Mobilized sternohyoid – sternothyroid
  – Buttress
  – Vascularity
  – Separates from skin
  – Interpose between anastomosis and innominate artery
EXTENT OF RESECTION

Stretching of neutral trachea  15 – 35%
   Ferguson DJ
   Surgery 1950

Mobilization  2.5 to 5 cm
   Michaelson E
   JTCVS 1961

Flexion/Extension of Neck  -  2.6 cm
   Harris RS
   Thorax 1959

Anastomotic tension  -  1700 gm
   Cantrell JR
   JTCVS 1961
“Half of the adult trachea could be resected and reconstructed with full mobilization”

- R hilar dissection/division inferior pulmonary ligament
- Division L main bronchus
- Freeing pulmonary vessels from pericardium
- Dissection pretracheal plane
- Neck flexion

Grillo HC
JCTVS 1964
FACTORS AFFECTING EXTENT RESECTION

- Age
- Body habitus
- Previous surgery/radiation
- Location pathology
ANASTOMOTIC COMPLICATIONS –

<table>
<thead>
<tr>
<th>RISK FACTORS</th>
<th>ODDS RATIO</th>
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<tbody>
<tr>
<td>Diabetes</td>
<td>3.32</td>
</tr>
<tr>
<td>Reoperation</td>
<td>3.03</td>
</tr>
<tr>
<td>&lt;17 Years</td>
<td>2.26</td>
</tr>
<tr>
<td>Resection &gt; 4 cm</td>
<td>2.01</td>
</tr>
<tr>
<td>Preoperative tracheostomy</td>
<td>1.79</td>
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LARYNGEAL RELEASE

Thyrohyoid release

Dedo/Fishman
Ann Otol Rhinol
1969

Suprahyoid release

Montgomery W
Arch Otolaryng
1994
POSTOPERATIVE AIRWAY MANAGEMENT

• Spontaneous ventilation
• Extubate in OR
• Inadequate
  – Intubate small uncuffed tube
  – Protecting trachesotomy
    • 2 cm below anastomosis
    • Muscle buttress
POSTOPERATIVE STRIDOR

Edema – 24 – 72 hours
- Voice rest
- Heliox
- Diuresis
- Elevate HOB
- Steroids
  - 10 mg decadron x 1
  - 4 mg decadron IV q 6º x 3 doses

Structural problem
- CT Scan
- Bronchoscopy
- Explore
  - Tracheostomy
  - T-tube
ANASTOMOTIC PROBLEMS

URGENT

Open incision
Flexible bronchoscopy/endotracheal tube
Tracheostomy or t-tube
MANAGEMENT
SUBCUTANEOUS AIR

URGENT OR

SEMIURGENT CT OR

Intubate flex bronch/endotracheal tube
Explore
  Repair – suction
  Muscle buttress
  Tracheostomy
  T-tube
DISCHARGE

- Bronchoscopy
- Concern delay discharge
- Hyperbaric oxygen therapy
DELAYED STRIDOR

- CT Scan
- Bronchoscopy dilation
- T-tube / tracheostomy
- Stent?
- Reoperate –
  - Be patient
IDIOPATHIC LARYNGOTRACHEAL STENOISIS (ILTS)

Rare, inflammatory process of unknown etiology that results in cicatricial stenosis of the subglottis and upper trachea
Rigid Bronchoscopy
Operative Procedure
Operative Procedure: Tracheal Incision
Exposure of TE Fistula
Esophageal Repair/Buttress

Grillo HC 2004. Surgery of Trachea and Bronchi, p 574
Tracheal Repair over T-Tube

Grillo HC 2004, Surgery of Trachea and Bronchi, p 755
## Results

<table>
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<tr>
<th></th>
<th>No.</th>
<th>%</th>
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<tr>
<td>Good</td>
<td>440</td>
<td>88</td>
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<tr>
<td>Satisfactory</td>
<td>31</td>
<td>6</td>
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<td>Failure</td>
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<td>4</td>
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<td>Death</td>
<td>12</td>
<td>2</td>
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Long-term outcomes

- No further intervention 95%
- Dilatation or removal of granulation tissue 5%
- Tracheostomy or T-tube 0%
FATE OF TEF N = 36

32 / 36 Successful closure
3 / 4 Recurrent TEF successful
1 Failure (XRT – multiple ops)

35 / 36 Success