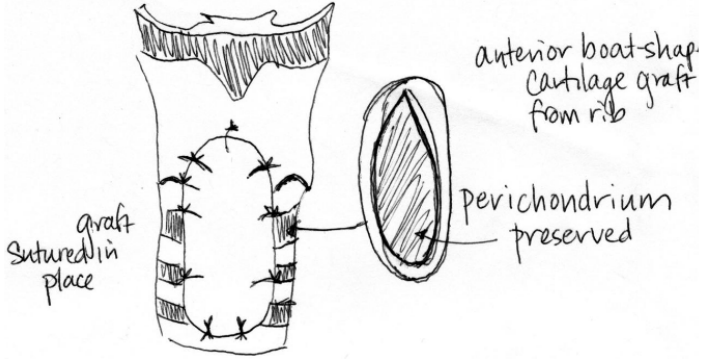


CASE PRIMERS

Pediatric Anesthesia
Fellowship Program

Tufts Medical Center
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CASE:	Laryngotracheal Reconstruction (LTR) [cricotracheal resection (CTR), tracheal resection and reanastomosis (Trach R+R)]
SHORT DESCRIPTION	<p><i>Single staged</i> repair of subglottic and/or tracheal stenosis. Higher success with decannulation and less post- reconstruction procedures needed (vs two stage LTR). Tracheotomy closed at time of operation.</p> <p><i>Two- Staged</i> repair better suited for more severe stenosis. Involves placement of long term stent at time of first stage of repair. Tracheotomy is left in place. Stent is removed in “second” stage at a later time, prior to removal of tracheotomy.</p> <p>LTR options: anterior, posterior, or anterior plus posterior reconstruction (this refers to location of cartilage grafts)</p>  <p>graft sutured in place</p> <p>anterior boat-shape cartilage graft from rib</p> <p>perichondrium preserved</p>



Anterior Graft Healing (2 weeks after LTR)

SURGICAL TIME	3-5 hours
OR TABLE AND POSITION	<p>PLAN A Start 90° with head towards inner core (Rm 16) if the surgeon plans DL Bronch after inhalation induction</p> <p>PLAN B Standard OR table orientation for inhalation induction then rotate 180° after intubation and IV</p> <p>PLAN C OR Table rotated 180° to start if patient already trached and No DLB planned *confirm plan with surgical team</p>
EQUIPMENT SETUP	<p>Airway</p> <ul style="list-style-type: none"> • Standard pediatric intubation setup (read previous anesthetic records/office notes and speak with surgeon to determine degree of stenosis and appropriate ETT size) • Rescue LMA • ETT Suction catheters <p>Discuss with surgeon/attending, as you may need:</p>

	<ul style="list-style-type: none"> • DL/Bronch setup with IV extension capable of connecting to anesthesia circuit and multiple uncuffed ET tubes for sizing • Fiberoptic bronchoscope • Two anesthesia circuits (consider extensions). • One for induction/maintenance to start case (usually through tracheotomy). • The second ready at the head of the bed. The y-piece will be given to the surgeon and prepped in the field. The inspiratory/expiratory limbs will run under/alongside the table, on the patient’s left side. Both limbs of the extra circuit and the extra gas sampling line should be secured to each other and to the OR table with enough slack to reach the ventilator for a quick circuit switch. • Label limbs and gas sampling lines of both circuits clearly with colored tape for easy identification <p>Infusion Pump / Syringe Pump for DL/Bronch and transport sedation</p> <p>Forced Air Warming System</p> <p>+/- Central Line (femoral)</p>
<p>SURGICAL TECHNIQUE (Single stage)</p>	<p>Tracheostomy Present</p> <p>Inhalational induction via trach</p> <p>DLB by surgeon for sizing</p> <p>Microcuff ETT placed via tracheal stoma</p> <p>Rib graft harvest</p> <p>Laryngoplasty</p> <p>ENT may periodically extubate during procedure</p> <p>Possible posterior graft</p> <p>Nasal ETT placed by ENT (circuit change at this stage)</p> <p>Anterior tracheoplasty with graft</p> <p>Flexible bronchoscopy</p> <p>Transport to PICU sedated</p>

	<p>No Tracheostomy Present</p> <p>Induce anesthesia</p> <p>DLB with nasal intubation by ENT (small caliber ETT due to subglottic stenosis)</p> <p>Graft harvest (Rib or Thyroid cartilage)</p> <p>Laryngoplasty with creation of temporary tracheotomy</p> <p>ETT placed in tracheotomy. Nasal ETT removed (first circuit change)</p> <p>Possible posterior graft</p> <p>ENT may periodically extubate during procedure.</p> <p>Age-appropriate nasal ETT placed by ENT after laryngoplasty (second nasal intubation, second circuit change)</p> <p>Anterior tracheoplasty with graft</p> <p>Flexible bronchoscopy</p> <p>Transport to PICU</p>
PATIENT POSITION	Supine; arms tucked at side for larger patients
EXPECTED EBL	50-100 cc
ANTIBIOTICS / REDOSING	<p>Zosyn</p> <p>2-9 months: 80mg (piperacillin component)/kg</p> <p>>9 months and <40kg: 100mg (piperacillin component)/kg</p> <p>(Confirm pre-op)</p>
ANESTHETIC TECHNIQUE	<p>Induction</p> <p>IV vs Inhalation Induction</p> <p>Discuss goals and sequence of events prior to entering OR</p> <p>Spontaneous respiration may be required prior to intubation</p> <p>Patient may have a tracheostomy, or one may be planned</p> <p>May require DL/Bronch for dilation/sizing prior to intubation</p> <p>Secure ETT properly (often by surgery)</p>

	<p>Nothing else in the mouth – alternative site (rectal) for temp monitoring.</p> <p>Maintenance Volatile +/- propofol infusion Narcotic - consider fentanyl infusion Paralytic</p> <p>Throughout the case, there will be points when the surgical team changes the route of ventilation (as highlighted in the surgical section). During these times, the anesthesia provider will need to ensure that the appropriate circuit (including gas sampling line) is attached to the anesthesia machine. The anesthesiologist may be asked to extubate under the drapes. Closed loop communication is VITAL.</p> <p>Emergence/Disposition <i>Adults are often extubated</i>, but the majority of pediatric patients will remain intubated for days in the PICU. Discuss plans for sedation/paralytic/pain control during and after transport.</p>
MONITORING	Standard ASA monitors. +- A line, Central Line
ACCESS	2 IVs, possible central line that does not interfere with surgical field (Consider Femoral vs PICC). ENT places Dobhoff in nose.
FLUID AND BLOOD REQUIREMENTS	Maintenance with crystalloid and 4/2/1 rule Replace losses (NPO + blood loss + 4-6cc/kg/hr for moderate tissue exposure/trauma) Foley Catheter and urine output to guide therapy
PITFALLS	<p>Airway Make sure you are clear on the plan and sequence of events during induction/intubation and resection. Use closed loop communication to avoid confusion. The</p>

	<p>airway may look normal, but be ready for difficulty ventilating. Many patients have bronchopulmonary dysplasia/chronic lung disease, so be prepared for copious secretions and bronchospasm. Monitor peak pressures, tidal volume and ETCO2. Be ready to suction or replace a tube if necessary (a small amount of secretions can compromise a narrow ETT). Have albuterol / Epinephrine ready. Use low FiO2 while working around open trachea.</p> <p>Planning for transport</p> <p>For CTR and Trach R+R cases, the surgeon may require a specific degree of neck flexion during transport and recovery. Over-extension can lead to tracheal dehiscence, so ask questions and redose paralytic. When calling for PICU sign out, make sure they have their preferred sedation ready to start upon arrival.</p>
ADDITIONAL NOTES:	<p>PICU Course</p> <p>Anterior Graft: 2-4 days intubated post-op</p> <p>Any Posterior Graft: 5-7 days intubated post-op</p>
	<p>Last Edited 01/24/2017 by A Kalra</p>