

Ped Surgery Tracheoesophageal Fistula/Esophageal Atresia Care Guidelines

Inclusion Criteria:

- short segment TEF/EA with distal fistula
- after operative repair

Immediately Postop

- No insertion of any orogastric or nasogastric tube except by Pediatric Surgery
- Respiratory management
 - CXR upon return to NICU to confirm tube placement (ETT, chest tube)
 - ETT should be maintained at precise depth to prevent trauma to surgical site
 - ETT suctioning should not go beyond the tip of the endotracheal tube to prevent damage to tracheal repair
 - Oral/nasal cavity suctioning only up to the posterior pharynx. NO DEEP SUCTIONING.
 - Extubate only with NICU and surgery attending notification.
 - If re-intubation is required, it should be performed by NICU attending or most experienced provider only due to risk of anastomotic rupture
 - Avoid non-invasive positive pressure ventilation such as CPAP, HFNC $\geq 2L$ due to increased risk of anastomotic leak and mediastinitis for at least 1 week postoperatively (1). If there is distress after extubation, immediate reintubation is strongly recommended over non-invasive positive pressure modalities.
- Chest tube (or Blake drain) management
 - Monitor daily for air leak and spit
 - Maintain to -10 cm H₂O suction until directed to water seal by the surgical attending
 - Daily CXR
 - Pediatric Surgery will remove once oral intake started and no leak seen
- Pain control
 - Scheduled Tylenol (IV or rectal if no anorectal malformation)
 - Minimize narcotics with preference for prn rather than drip dosing, especially after 24-48 hours postop

- Reflux prevention
 - Head of bed elevated to 30 or 45 degrees
 - Frequent shallow oropharyngeal suctioning
 - PPI (not H2B) to minimize risk of anastomotic strictures
- Nutrition management
 - NPO, TPN + IL until cleared for PO
 - Esophagram on POD 5-7 to assess for anastomotic healing and leak
 - Can start oral feeds once cleared by pediatric surgery after esophagram
 - Can start with ad lib feeds, BM preferred
 - If the baby is able, PO trial first, preferably without a feeding tube. Our concern is that a feeding a tube across a tight anastomosis may cause iatrogenic narrowing/obstruction that will impede accurate assessment of oral intake.
 - If baby is unable to take sufficient PO after reasonable trial (more than just 1-2 days), ok to place feeding tube under fluoroscopy.
 - If the baby is still intubated or cannot take PO for other reason when esophagram is obtained, then placing a feeding tube at the time of esophagram under fluoroscopy is a reasonable consideration. This should be discussed on a case by case basis with the surgical attending.
 - Chest tube can be removed once oral feeds are tolerated for 24 hours without concern for leak
 - Dislodged feeding tube (if needed) must be replaced under fluoroscopy until 4 weeks postop. After that, it can be replaced by bedside nurse.
 - No dilation until minimum 4 weeks postop if there is concern for a symptomatic anastomotic stricture
- Antibiotics: Broad spectrum for 24 hours postoperatively unless the patient is being treated for another active infection or sepsis rule-out
- Complete remainder of VACTERL workup as needed
 - Echocardiogram - should have been done preoperatively
 - CXR and KUB to evaluate for vertebral anomalies
 - Renal ultrasound
 - Spine US per “Neonatal Spinal Cord Screening” Guideline
 - Genetics consult only if clinically indicated. VACTERL syndrome alone is not an indication for genetics consult.

Discharge

- PPI Prescription for minimum one year.
- Surgery follow up in 2-4 weeks
- Pediatrician follow up in 1-3 days
- Referral for speech therapy, physical therapy, occupational therapy
- Follow up with other specialists (ENT, Pulmonology, Genetics) as needed

Follow up

- Pediatric Surgery 2-4 weeks postop
- Aerodigestive clinic at 2 months
 - Even if no multidisciplinary problems initially, good to introduce the team and the clinic resources
 - Depending on care needs, can either be followed in pediatric surgery or aerodigestive at 12 months, then yearly
- Esophagram only if symptomatic: feeding and swallowing difficulties, regurgitation and vomiting, mucus or food retention in the proximal pouch, cough, drooling, recurrent respiratory infections, foreign body impaction, and poor weight gain

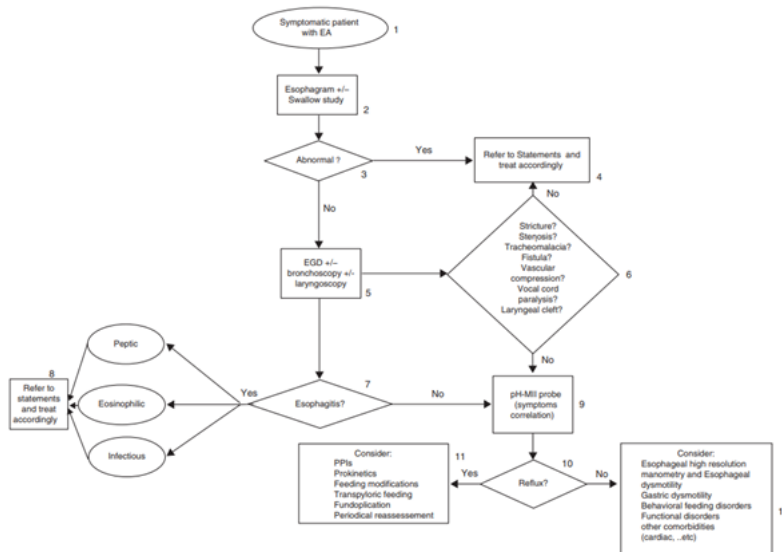
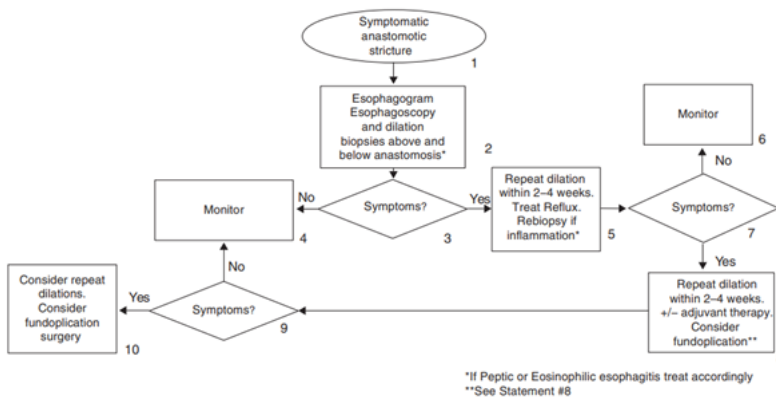


FIGURE 2. Algorithm for the evaluation and treatment of a symptomatic patient after surgical correction of an esophageal atresia.

- Anastomotic strictures: treat only if symptomatic



*If Peptic or Eosinophilic esophagitis treat accordingly
**See Statement #8

FIGURE 3. Algorithm for the evaluation and treatment of a symptomatic patient with an anastomotic stricture.

Long term monitoring

- Continue PPI for 1 year before evaluating for reflux (see algorithm below)
- EGD: 3 during childhood
 - 1. after stopping PPI
 - 2. Before 10 years old
 - 3. Before transitioning to adulthood

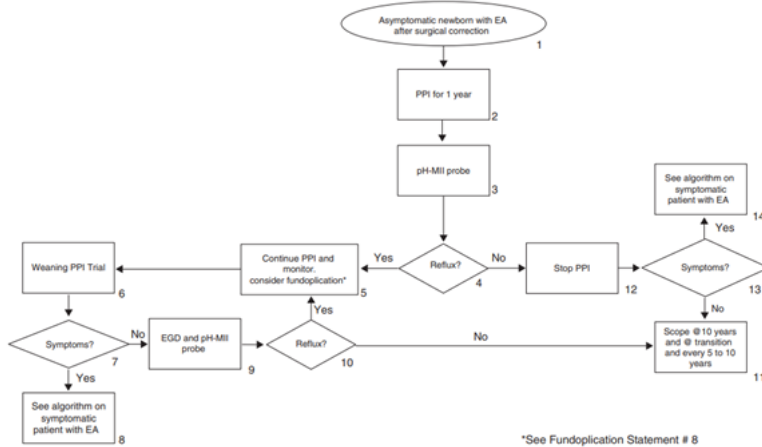


FIGURE 1. Algorithm for the evaluation and treatment of an asymptomatic newborn after surgical correction of an esophageal atresia. EA = esophageal atresia; EGD = esogastroduodenoscopy; pH-MII = pH-impedance; PPI = proton pump inhibitor.


References

Bence CM, Rymeski B, Gadepalli S, et al. Clinical outcomes following implementation of a management bundle for esophageal atresia with distal tracheoesophageal fistula. *J Pediatr Surg.* 2021;56(1):47-54. doi:10.1016/j.jpedsurg.2020.09.049

Dingemann C, Eaton S, Aksnes G, Bagolan P, Cross KM, De Coppi P, Fruithof J, Gamba P, Husby S, Koivusalo A, Rasmussen L, Sfeir R, Slater G, Svensson JF, Van der Zee DC, Wessel LM, Widenmann-Grolig A, Wijnen R, Ure BM. ERNICA Consensus Conference on the Management of Patients with Esophageal Atresia and Tracheoesophageal Fistula: Diagnostics, Preoperative, Operative, and Postoperative Management. *Eur J Pediatr Surg.* 2020 Aug;30(4):326-336. doi: 10.1055/s-0039-1693116. Epub 2019 Jul 2. PMID: 31266084.

Dingemann C, Eaton S, Aksnes G, Bagolan P, Cross KM, De Coppi P, Fruithof J, Gamba P, Husby S, Koivusalo A, Rasmussen L, Sfeir R, Slater G, Svensson JF, Van der Zee DC, Wessel LM, Widenmann-Grolig A, Wijnen R, Ure BM. ERNICA Consensus Conference on the Management of Patients with Esophageal Atresia and Tracheoesophageal Fistula: Follow-up and Framework. *Eur J Pediatr Surg.* 2020 Dec;30(6):475-482. doi: 10.1055/s-0039-3400284. Epub 2019 Nov 27. PMID: 31777030.

Krishnan U, Mousa H, Dall'Oglio L, Homaira N, Rosen R, Faure C, Gottrand F. ESPGHAN-NASPGHAN Guidelines for the Evaluation and Treatment of Gastrointestinal and Nutritional Complications in Children With Esophageal Atresia-



Tracheoesophageal Fistula. J Pediatr Gastroenterol Nutr. 2016 Nov;63(5):550-570. doi: 10.1097/MPG.0000000000001401. PMID: 27579697.

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