

American Pediatric Surgical Association

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# Standardized Toolbox of Education for Pediatric Surgery

## Esophageal Atresias and Tracheo Esophageal Fistulas

APSA Committee of Education  
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# Esophageal atresia Tracheo-esophageal fistula

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# History

- **Brief HPI**
  - Newborn child normal vaginal delivery
  - Prenatal Ultrasound unremarkable
  - Now 3 hours old with difficulty feeding

# History

- **What other points of the history do you want to know?**

- **Characterization of Symptoms:** spitting and coughing of attempted breast feeds
- **Temporal sequence:** immediate with beginning of feeding
- **Alleviating / Exacerbating factors:** appears fine while not feeding
- **Associated signs/symptoms:** otherwise normal appearing child
- **Pertinent PMH:** vaginal delivery
- **ROS;** unremarkable prenatal US
- **MEDS:** none
- **Relevant Family Hx:** none
- **Relevant Social Hx:** none

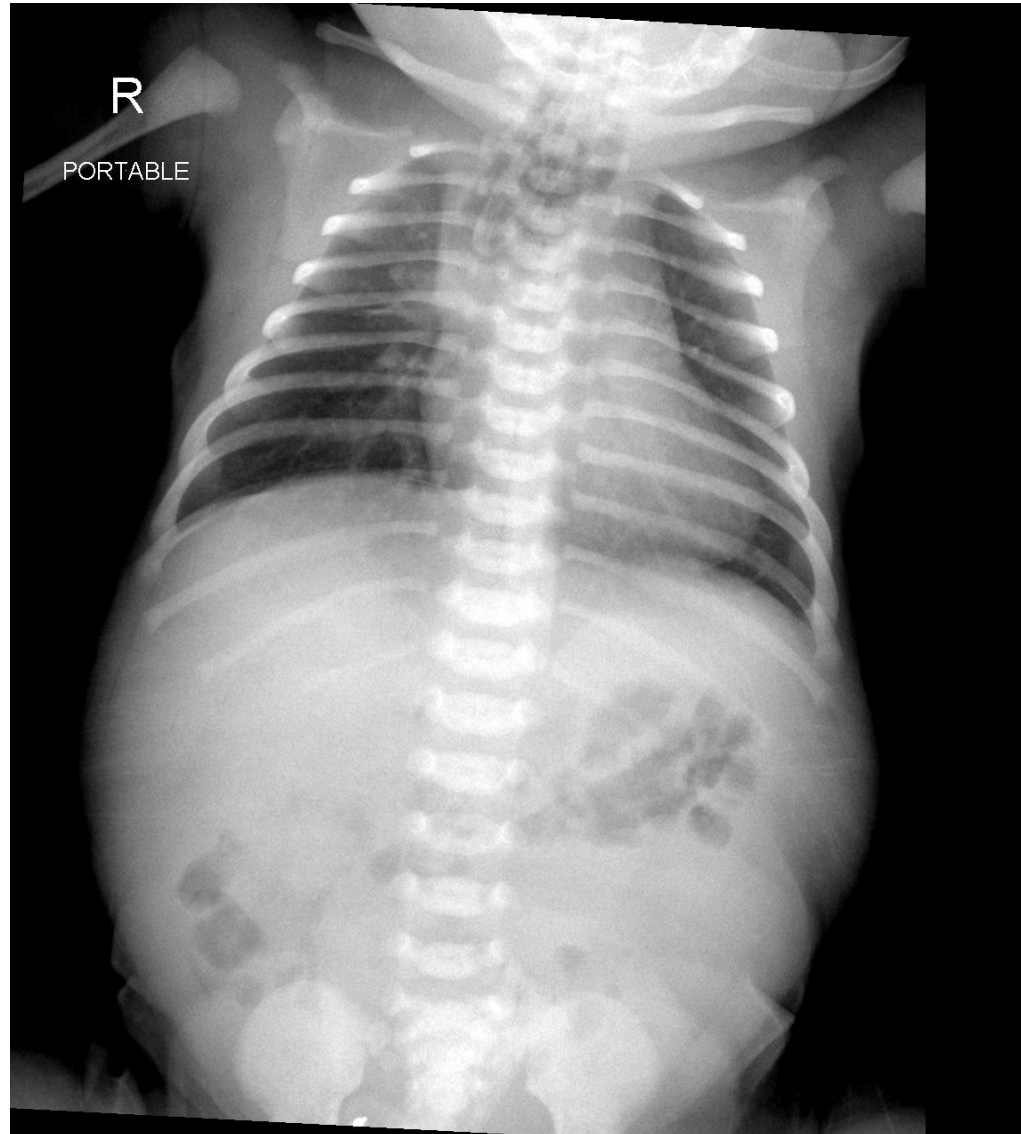
# Physical Exam

- **What specifically would you look for?**
  - Vital Signs: HR 124bpm; RR 39/min; O2Sat: 97%RA
  - Appearance: Well appearing,
  - Relevant Exam findings for a problem focused assessment: mild abdominal distension

# Studies (Labs, Imaging)

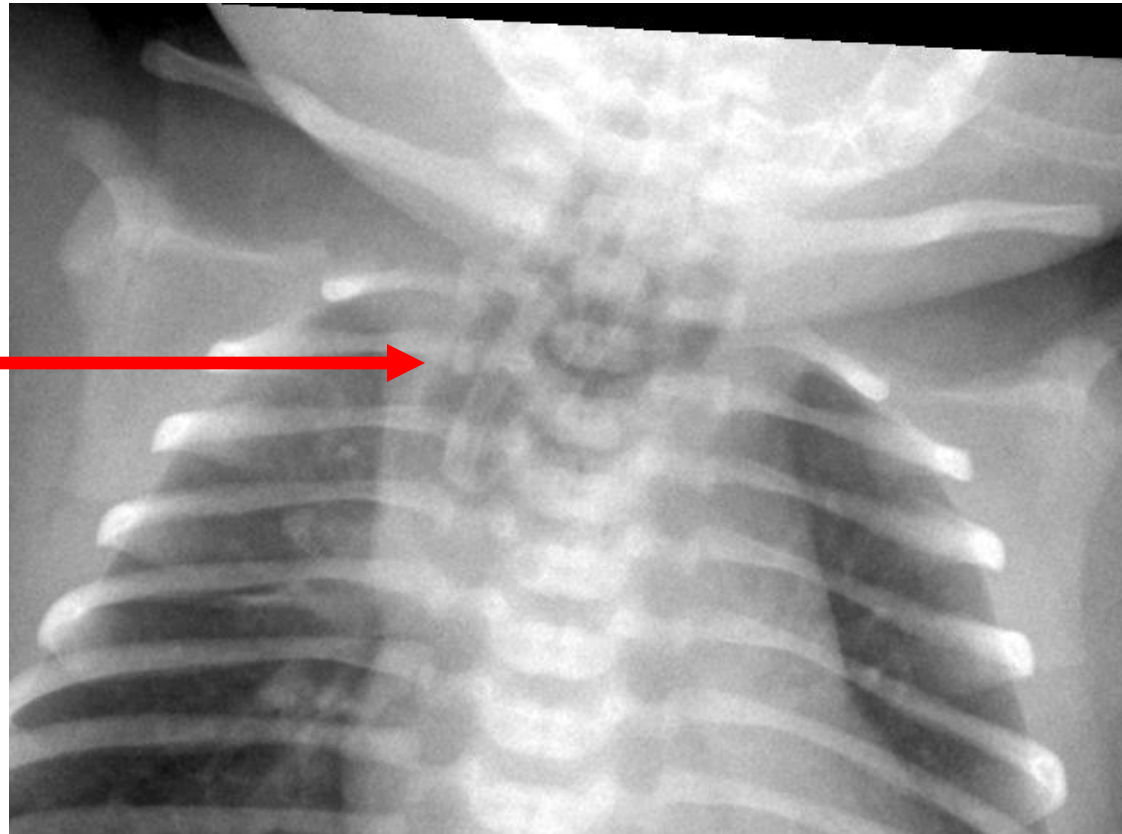
- **What labs needed?** None/standard labs
- **What Imaging Needed?**
  - Chest and Abdominal Radiograph, after placement of NG tube

# Study Results



# Study Results

NG tube  
coiled





# Case Discussion

- **Diagnosis**

- Esophageal Atresia With Tracheo Esophageal Fistula

- **Plans**

- Pre-op: Cardiac Echo
- Consent: for rigid bronchoscopy and right thoracotomy EA/TEF repair
- Operative: 1: bronchoscopy
- 2: ligation of TE Fistula
- 3: esophageal anastomosis

# Interval steps before / instead of surgery

- **Timing of surgery can be quite emergent, as with every breath air is diverted into the stomach which can lead to severe distension and respiratory compromise**

# Operation

- **Operative Steps:**
  - Confirmation of diagnosis via bronchoscopy, opportunity to occlude fistula with balloon catheter,
  - Right Thoracotomy to close/divide fistula
  - Mobilization of proximal/distal Esophagus and tension free anastomosis
  - Same can be done thoracoscopically

# Complications

- **Peri-operative:**
  - Air leak at tracheal repair site
  - Anastomotic leak of esophagus
  - Anastomotic stricture of esophagus
- **Long Term**
  - Gastroesophageal Reflux w/wo stricture formation
  - Tracheomalacia

# Complications

- **Intraoperative:**
  - A long gap atresia, (more than 2 vertebral bodies) may require a different type of repair, or interposition of a piece of intestines

# Post-operative Management

- **Routine milestones for post op care**
  - Assessment of patency of esophagus with esophagram, (post op day 5-7)
  - Oral feeds
  - Gastroesophageal Reflux prophylaxis for 1 year

# Gross's Anatomical Classification

- **Type A:**
  - Esophageal atresia **without** tracheoesophageal fistula. **8%**
- **Type B:**
  - Esophageal atresia with **proximal** tracheoesophageal fistula. **<1%**
- **Type C:**
  - Esophageal atresia with **distal** tracheoesophageal fistula. **87%**
- **Type D:**
  - Esophageal atresia with **proximal and distal fistula**. **1%**
- **Type E:**
  - Tracheoesophageal **fistula without atresia**. **4%**

# VACTERL Complex of Associated Anomalies

- **V**ertebral
- **A**norectal
- **C**ardiac
- **T**racheo **E**sophageal Fistula
- **R**enal
- **L**imb Anomalies



# Questions

- 1) Newborn with flat abdomen, and gasless appearance on abdominal X-ray.

Which type of atresia?

- A
- B
- C
- D
- E

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Which type of atresia?
  - A
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  - C
  - D
  - E

**Answer: A or B**

# Questions

**2) Postoperative day 30 at home, patient after type C EA/TEF repair starts to take very long time to finish her bottle. Why?**

- A delayed presentation of mediastinitis
- B undiagnosed cardiac anomaly
- C anastomotic stricture of esophagus
- D recurrent tracheoesophageal fistula

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**3: Which Type of Esophageal Atresia or Tracheoesophageal fistula is most difficult to diagnose/presents the latest??**

- A
- B
- C
- D
- E

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- A
- B
- C
- D
- E (H-type fistula without atresia)

# Final Discussion/Review

- **Top 5 take home points for disease**
- 1.) 1:3-4000 births, no risk factors
- 2.) distal TE fistula Type C is most common
  - 87% proximal atresia with distal fistula
- 3.) Respiratory distress can create emergency
- 4.) Often associated with tracheomalacia
  - Seal like barking cough
- 5.) VACTERL associated anomalies

# Acknowledgement Slide

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**The preceding educational materials were  
made available through the  
American Pediatric Surgical Association**

**In order to improve our educational materials  
we welcome your comments/ suggestions:**

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