AMSER Case of the Month November 2020

The incidental finding of an upside down stomach

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Patient Presentation

- HPI: 53-year-old female with history of episodic ataxia type 2 presents with longstanding history of nausea, now presenting with worsening nausea and new-onset oropharyngeal dysphagia and mild reflux several times per week for past several months, unresponsive to PPIs.
- PMHx: Episodic Ataxia Type 2, Heart arrhythmia, MVP, Vertigo, Anxiety, Depression
- Surg Hx: 2 previous abdominal hernia repair (1998, 2003), appendectomy (2017)
- Social: Never smoker, 1 glass of wine per month
- Medications: Metoprolol succ 50mg qd, omeprazole 20mg qd prn, Zoloft 50mg qd

Pertinent Labs

- Negative COVID-19
- No other labs ordered

What Imaging Should We Order?

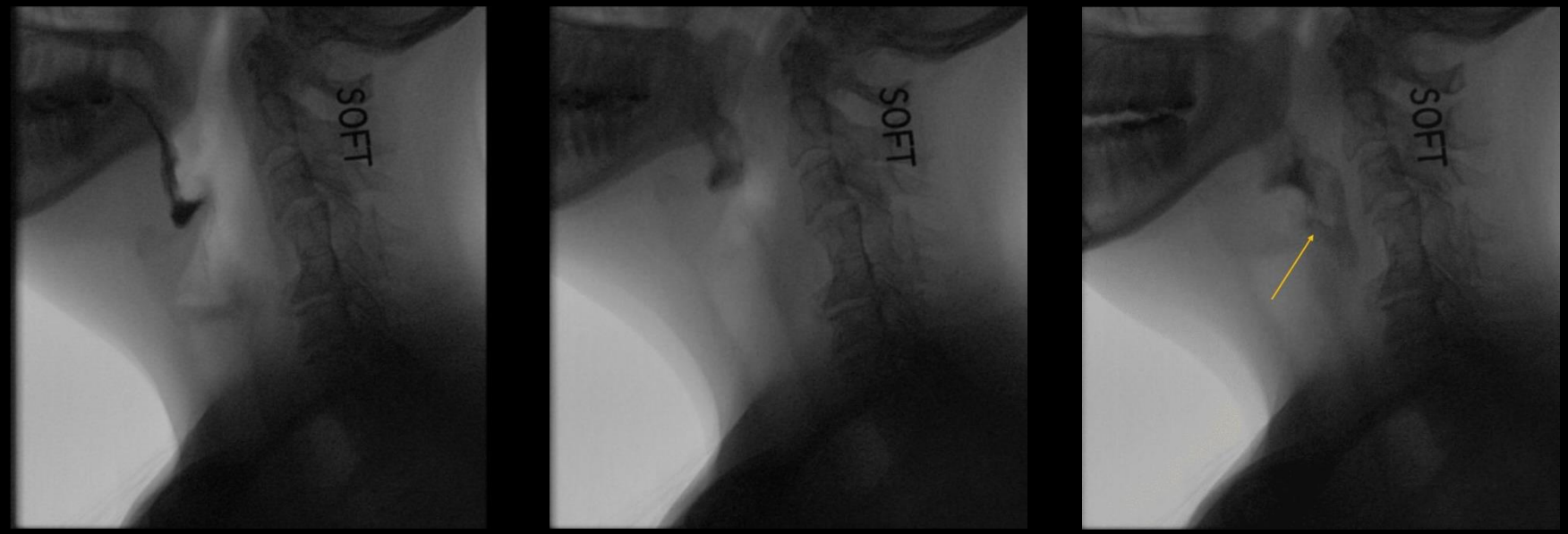
ACR Appropriateness Criteria

Variant 2: **Unexplained oropharyngeal dysphagia. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Fluoroscopy biphasic esophagram	Usually Appropriate	☢☢☢
Fluoroscopy barium swallow modified	May Be Appropriate	☢☢☢
Fluoroscopy single contrast esophagram	May Be Appropriate	☢☢☢
Fluoroscopy pharynx dynamic and static imaging	May Be Appropriate (Disagreement)	☢☢☢
Esophageal transit nuclear medicine scan	May Be Appropriate	☢☢☢
CT neck and chest without IV contrast	Usually Not Appropriate	☢☢☢☢
CT neck and chest with IV contrast	Usually Not Appropriate	☢☢☢☢
CT neck and chest without and with IV contrast	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the neurologist

Findings pt. 1 (unlabeled)



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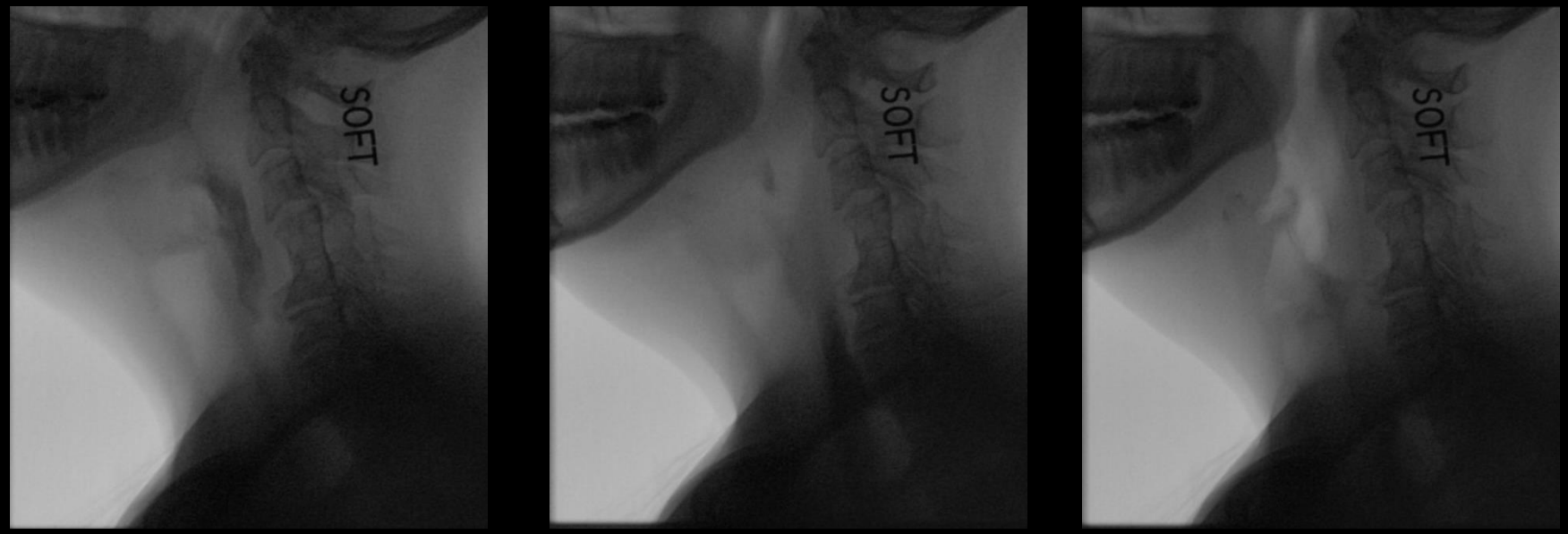

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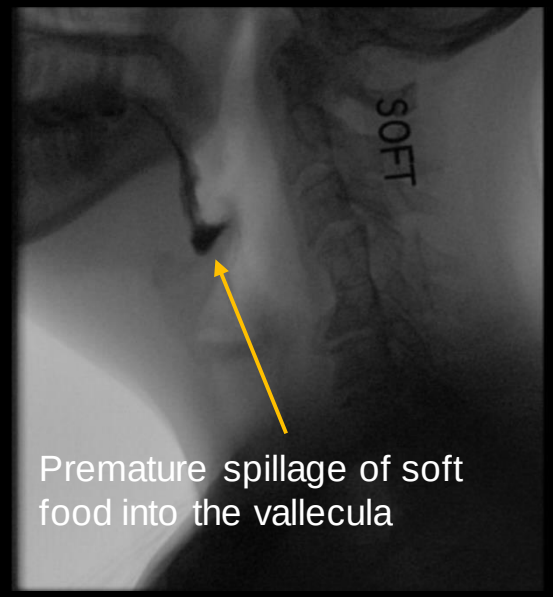

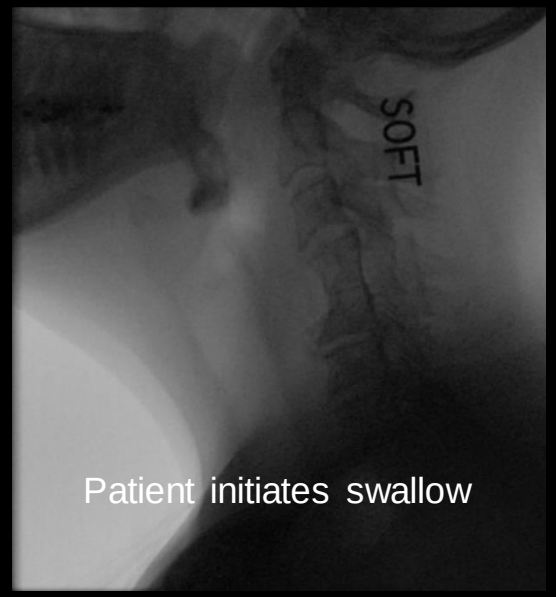

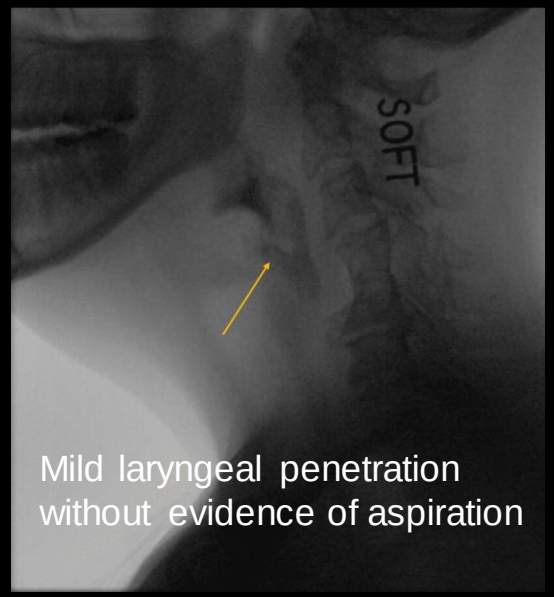

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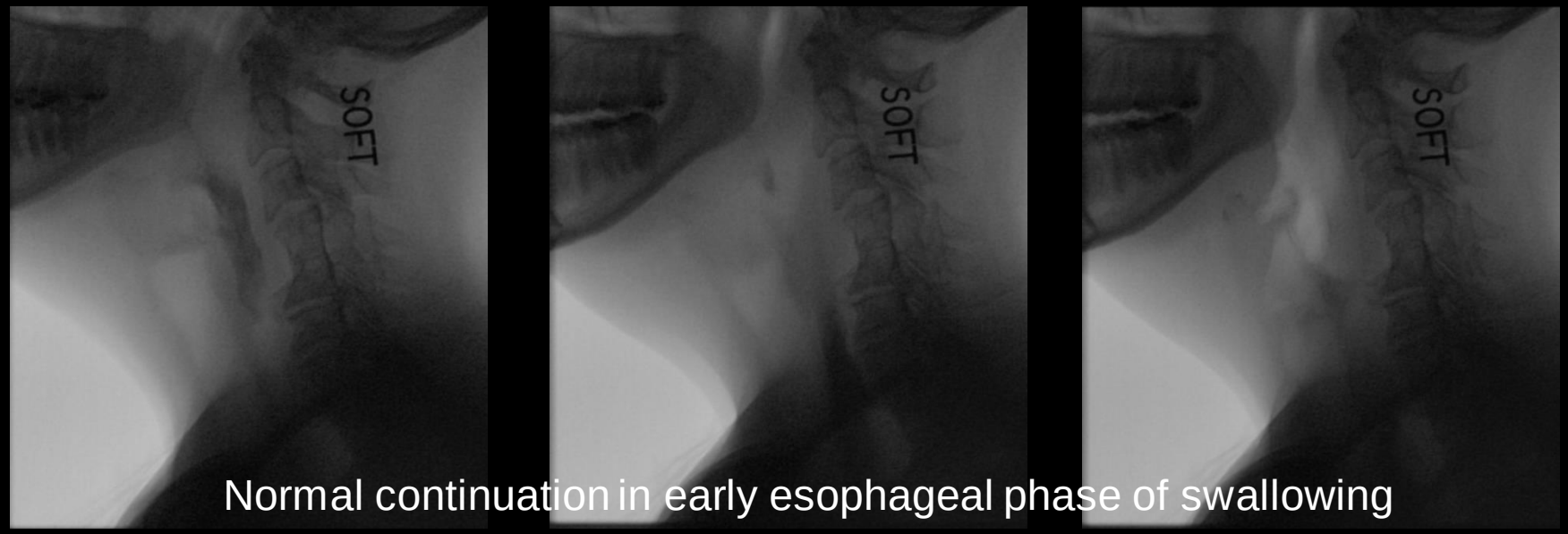
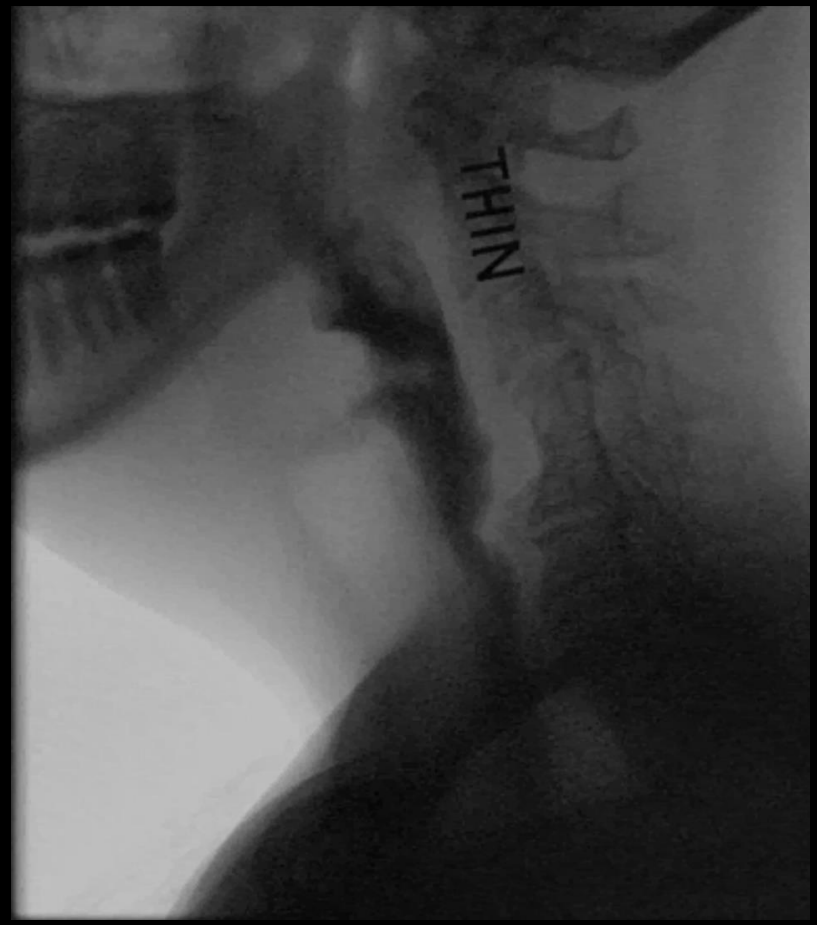
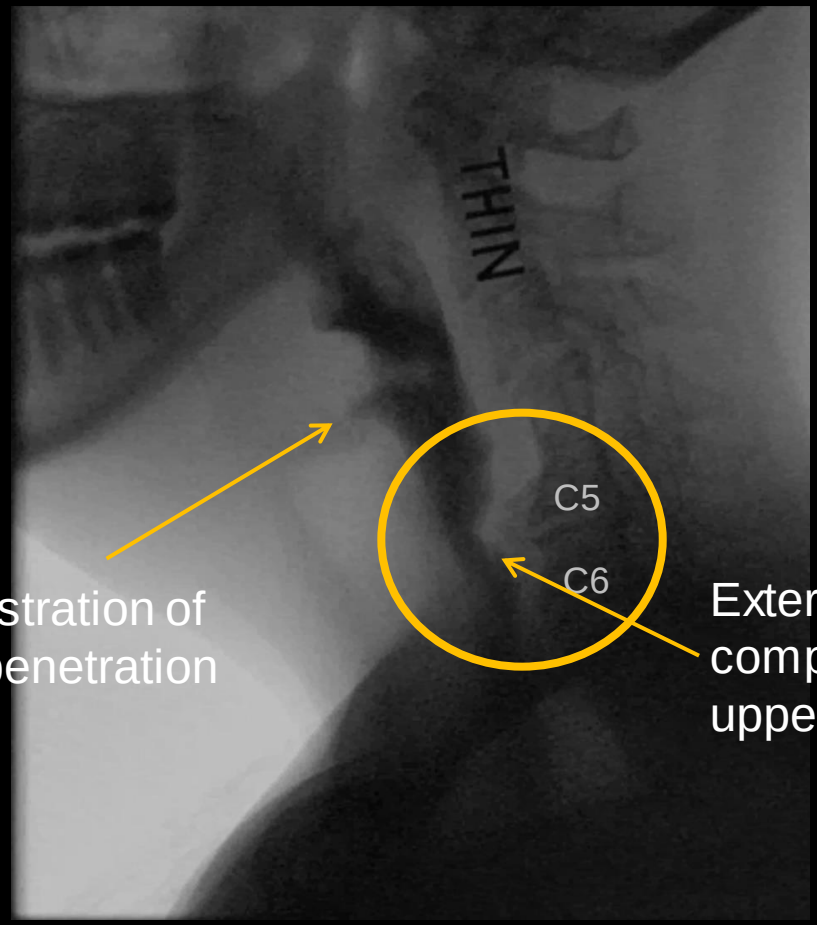


Normal continuation in early esophageal phase of swallowing

Findings pt. 2 (unlabeled)



Findings pt. 2 (labeled)



Re-demonstration of laryngeal penetration

External posterior compression of the upper esophagus

ACR Appropriateness Criteria

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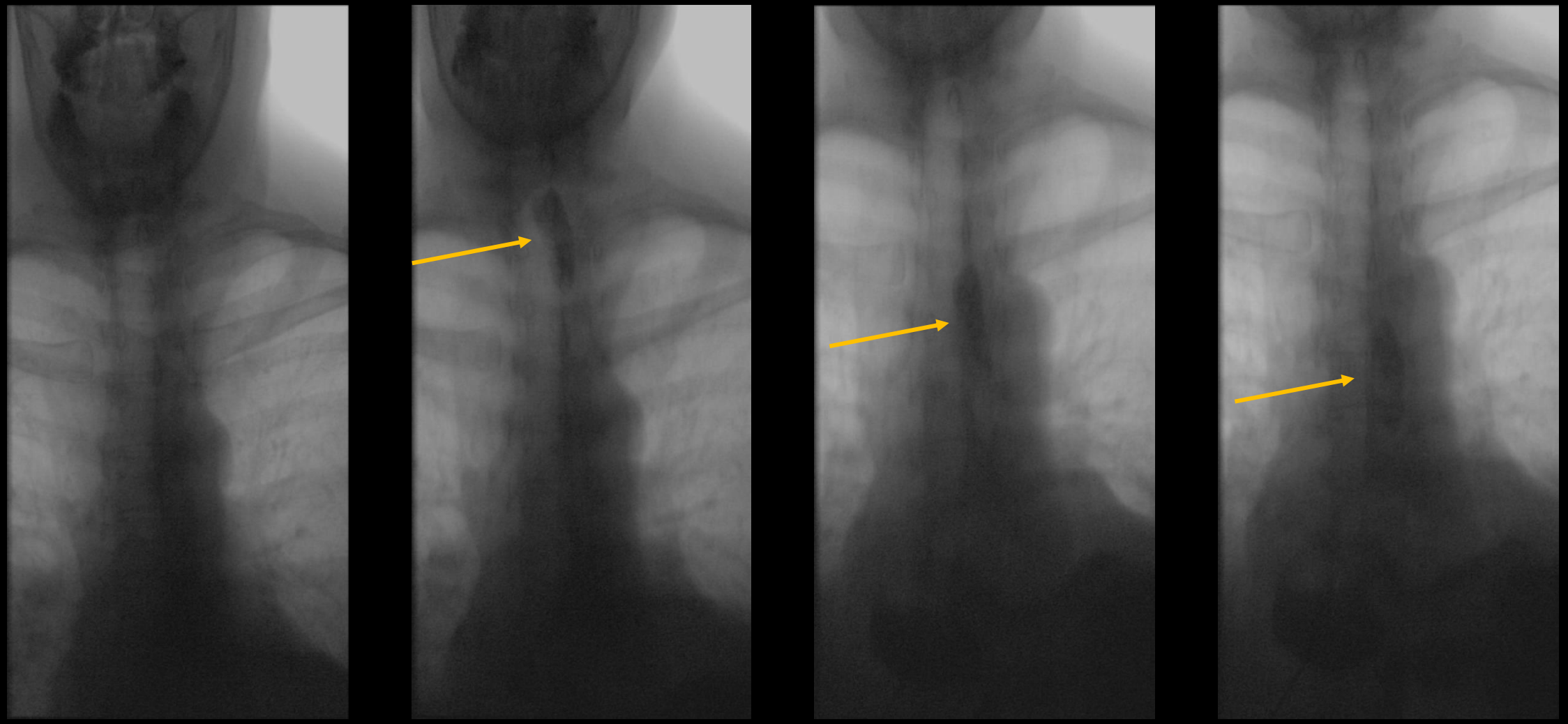
An esophageal follow thru was requested by the ordering neurologist but not formally ordered.

Incidental Findings (unlabeled)



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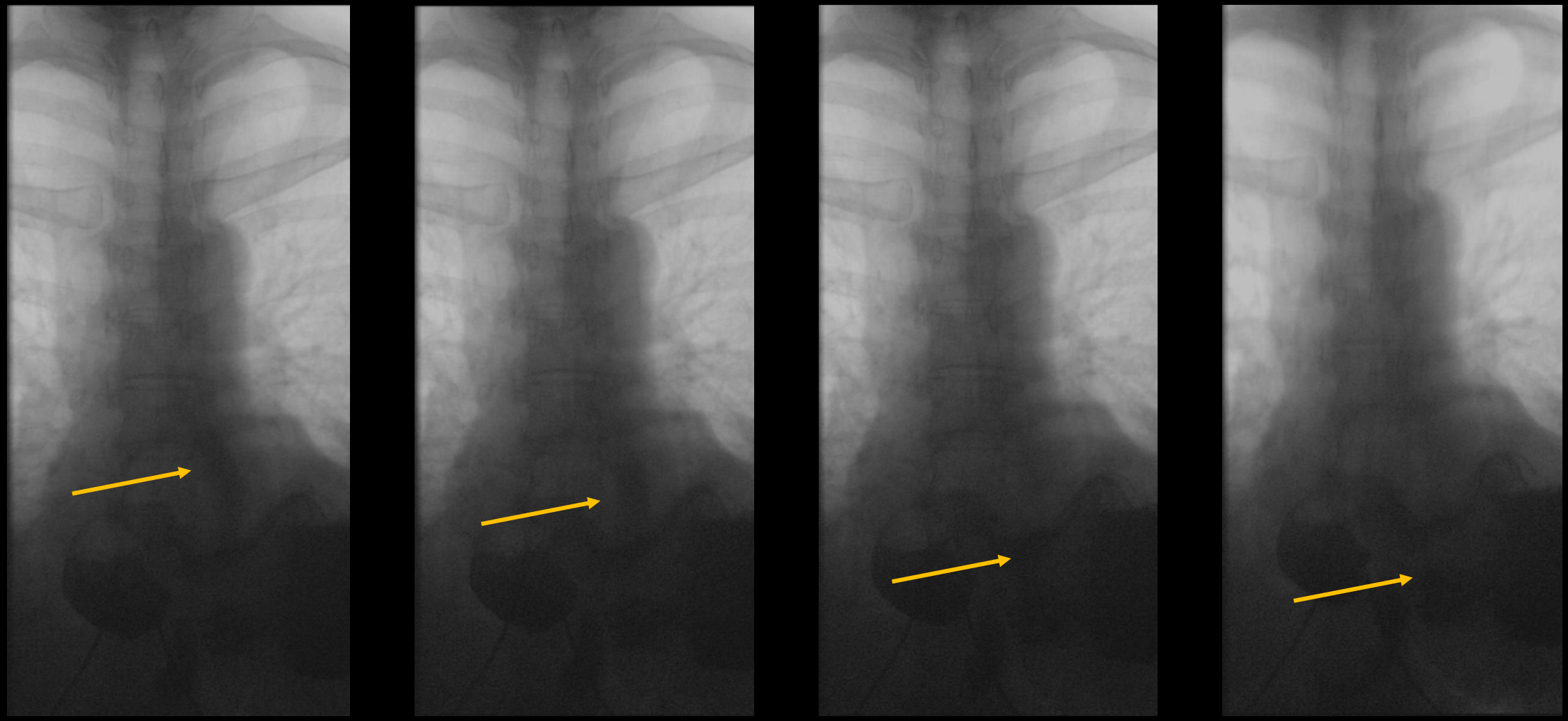

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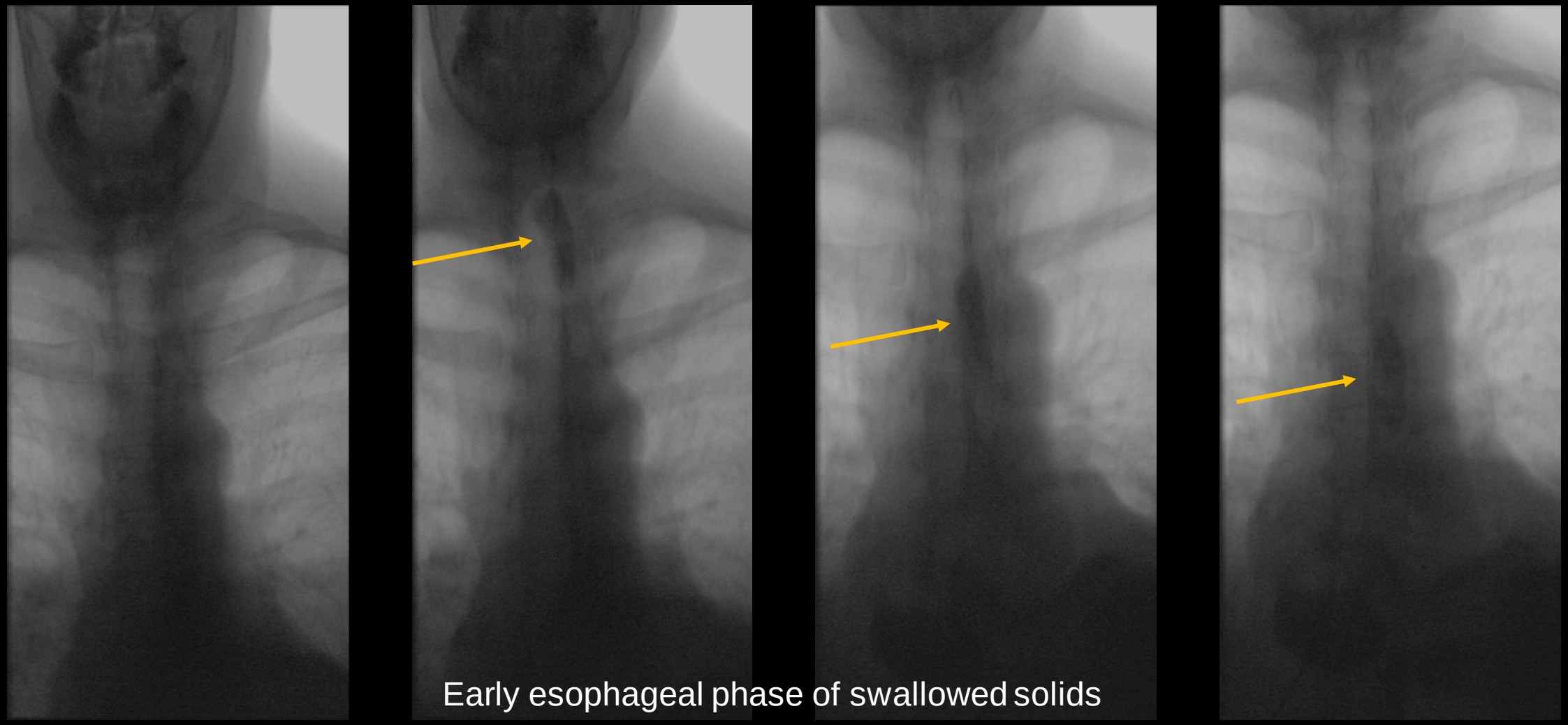
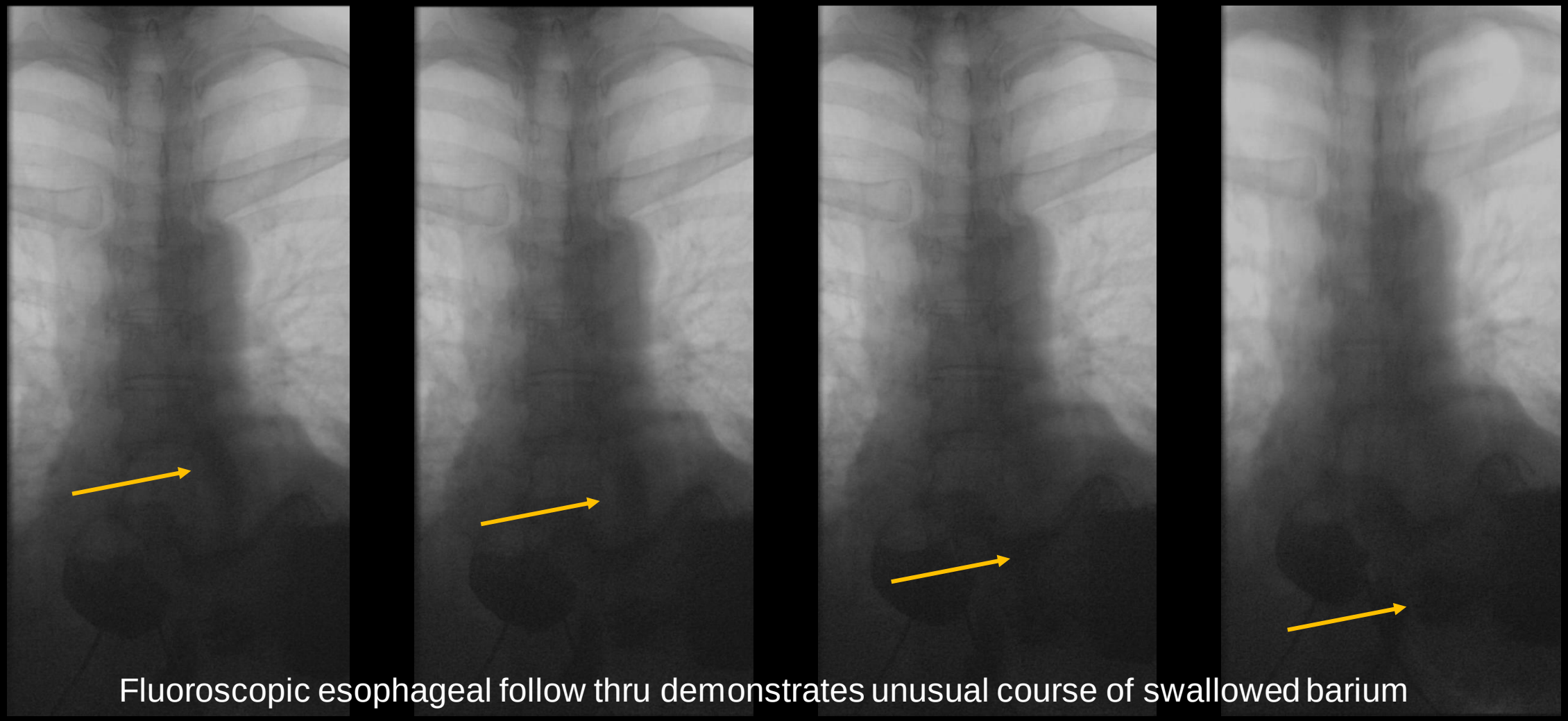


Early esophageal phase of swallowed solids

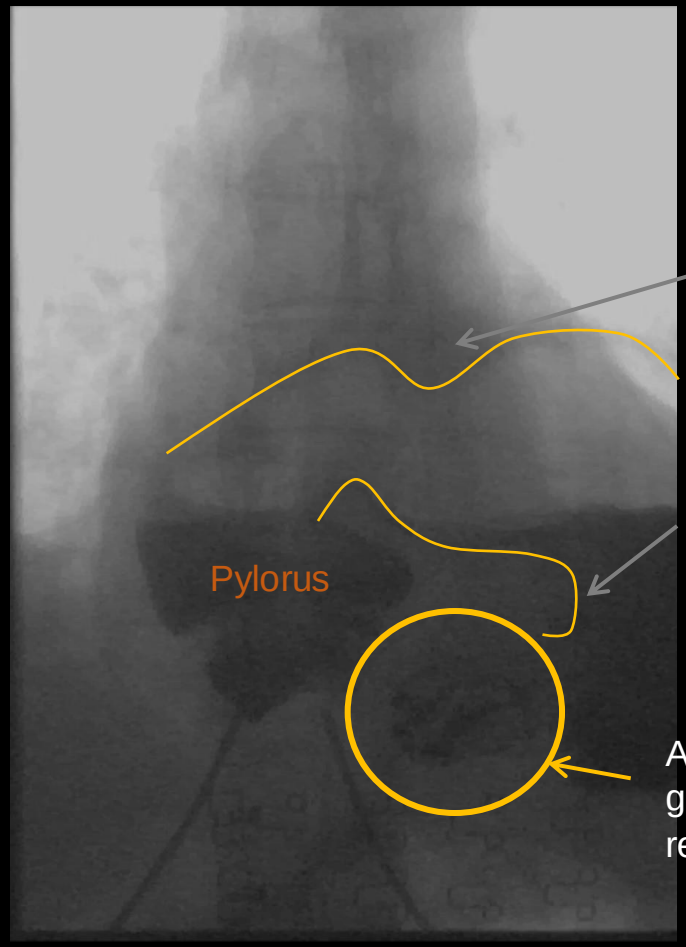
Incidental Findings (labeled)



Fluoroscopic esophageal follow thru demonstrates unusual course of swallowed barium

Incidental Findings (unlabeled)

Incidental Findings (labeled)

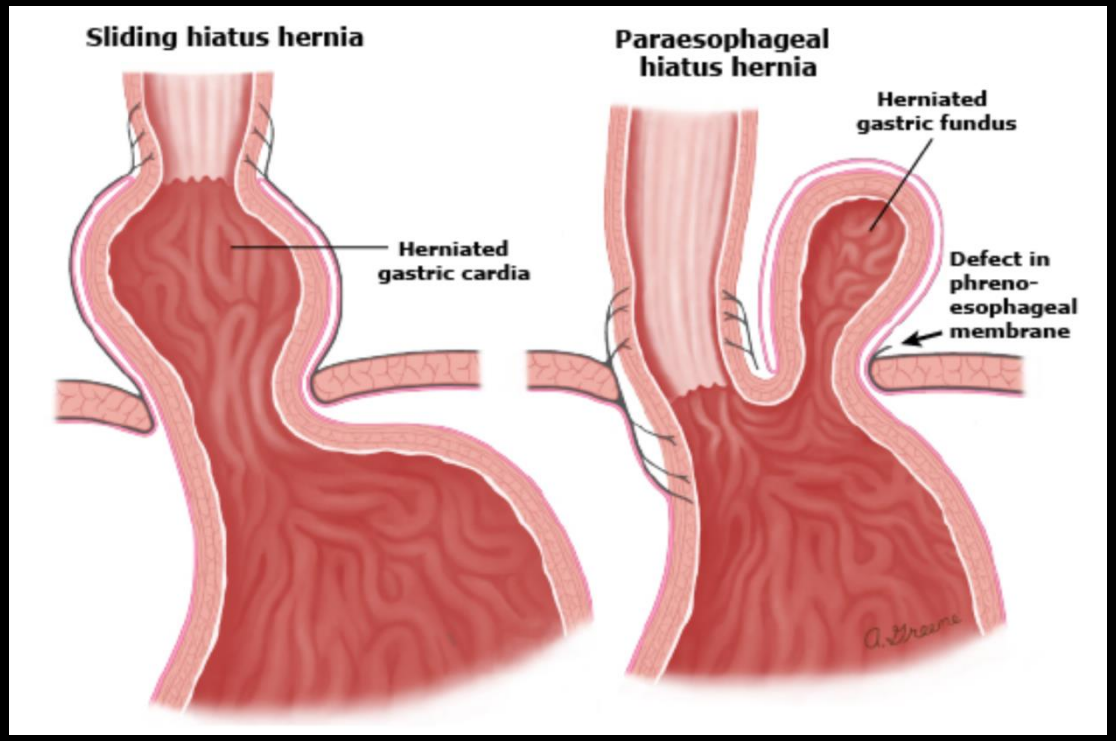


Final Dx:

Large hiatal hernia with upside down stomach (gastric volvulus)

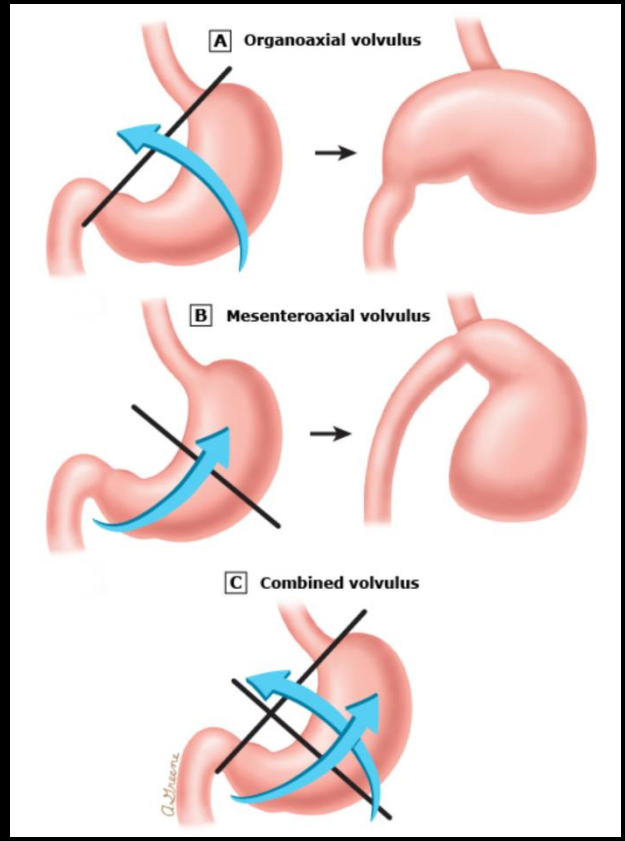
Case Discussion

- Epidemiology: Approx. 95% of hiatal hernias are of the sliding type while 5% are paraesophageal.
- Pathophysiology: Paraesophageal hernias are associated with laxity of the gastrocolic and/or gastrosplenic liagments allowing for herniation of abdominal contents through the diaphgragm.
- Clinical Features:
  - Dysphagia
  - Postprandial pain
  - Bleeding/ulceration
  - Respiratory distress due to mediastinal fullness and lung compression



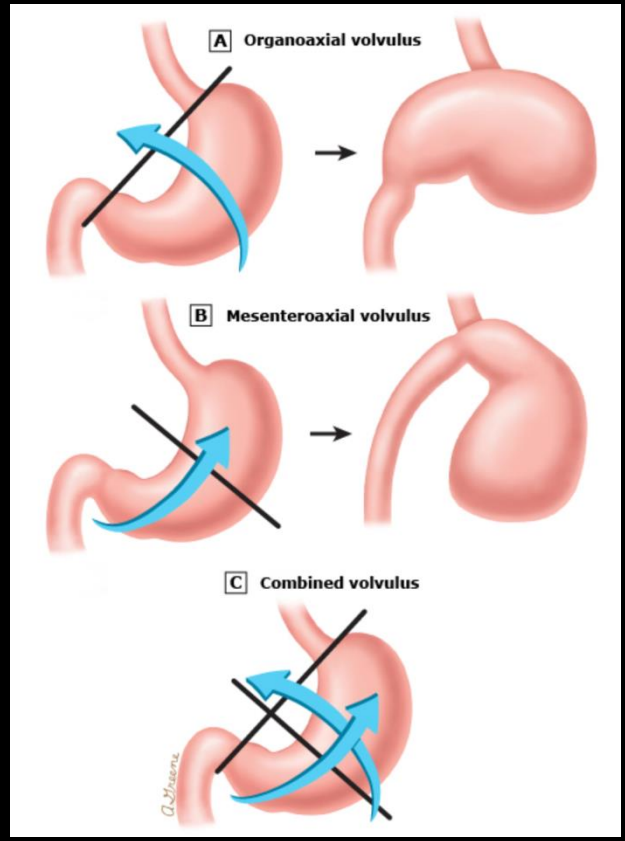
Case Discussion

- Large or complete paraesophageal hernia raises concern for **gastric volvulus**
  - Other risk factors include: Age (>50), diaphragmatic abnormalities, phrenic nerve paralysis, kyphoscoliosis, gastric/splenic abnormalities
- Gastric volvulus characterized by rotation about the long (**organoaxial**) or short (**mesenteroaxial**) axis.
- Symptoms vary depending on the degree of rotation.
  - Severe if >180 degree rotation causes complete gastric outlet obstruction and potentially strangulation, ischemia/necrosis, and abdominal sepsis.



Case Discussion

- Primary vs. secondary gastric volvulus:
  - Primary = abnormality of the gastric ligament(s)
  - Secondary = due to other abnormality (diaphragmatic, splenic, phrenic n., etc)
- Acute vs. chronic gastric volvulus:
  - Acute = severe symptoms of pain, vomiting, and inability to pass an NG tube (Borchardt's triad)
    - Associated with high mortality if untreated
  - Chronic = vague, mild, or subclinical symptoms of abdominal discomfort, bloating, **nausea**, vomiting, **dysphagia**, **reflux**, early satiety, chronic anemia (due to ulceration and low-level bleeding)
- Treatment = Surgical



Case Discussion

- The ACR appropriateness criteria states that it may be appropriate to order a MBS in cases of **oropharyngeal dysphagia**.
- Although the ordering physician requested an esophageal follow thru, a **formal order for a single/biphasic esophagram** is more appropriate to perform proper sequences and obtain optimal images.
- The limited esophageal follow thru in our case revealed an usual appearance of the stomach suggested a large/complete paraesophageal hiatal hernia with organoaxial volvulus, likely chronic in nature, resulting in an **upside down stomach**.

Case Discussion

- The patient had minimal complaints of GERD. Because of the incidental hernia finding, a formal **GI consultation is warranted** for further characterization of the hernia, likely to involve a formal esophagram as well as upper endoscopy.
- DDx: Paraesophageal hernia with chronic gastric volvulus vs. external compression, esophagitis, esophageal motility disorder, other.
- Management:
  - Symptomatic: Surgical repair
  - Asymptomatic: Controversial – prophylactic surgical correction for fear of incanceration/strangulation vs. conservative management.

References:

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Weston, Allan P. "Hiatal hernia with Cameron ulcers and erosions." *Gastrointestinal endoscopy clinics of North America* 6.4 (1996): 671-679.

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