

CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 96 year old woman came to see her internist because of shoulder and foot pain, and in the course of the visit stated she had difficulty swallowing, with the feeling that food was getting “hung up in the upper chest.”

Which imaging study is most appropriate for this patient?

- (a) ultrasound of the neck
- (b) upper gastrointestinal examination with barium
- (c) computed tomography of the neck
- (d) videofluoroscopy with a speech pathologist in attendance

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

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Answer: (d), videofluoroscopy with a speech pathologist in attendance, is the correct answer. Videofluoroscopy is the study of choice for complaints of oropharyngeal dysphagia, or difficulty initiating a swallow, choking, and/or an abnormal sensation in the throat or neck.

Ultrasound of the neck may be used for evaluation of the thyroid (in which case it is usually simply called “thyroid ultrasound”), of the carotid arteries (in which case it is usually simply called carotid ultrasound), or (rarely) of the other soft tissues of the neck (for example, the lymph nodes). Ultrasound is not the study of choice to evaluate swallowing difficulties of any sort, and (a) is incorrect. Although once a mainstay of evaluation for evaluation of abdominal pain, the upper gastrointestinal exams are now rarely performed (having been largely supplanted by endoscopy), and (b) is incorrect. Computed tomography of the soft tissues of the neck may be used to evaluate palpable masses which are *not* located in the thyroid gland (see RQW #18), but is *not* the study of choice for evaluation of swallowing difficulties, and (c) is incorrect.

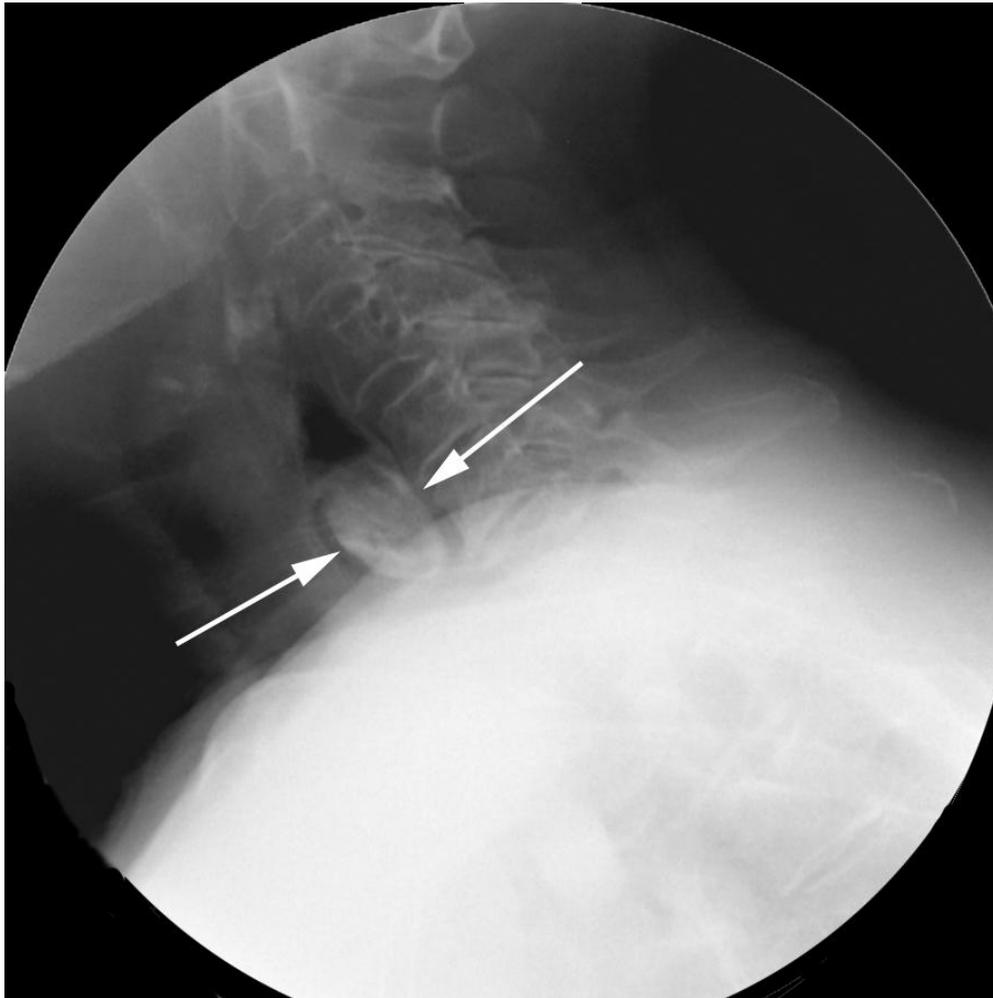
IMAGING STUDY AND QUESTIONS



Imaging questions:

- 1) What type of study is shown in the figures?
- 2) Are there any abnormalities?
- 3) What is the most likely diagnosis?
- 4) What is the next step in management?

IMAGING STUDY QUESTIONS AND ANSWERS



Imaging questions:

- 1) What type of study is shown in the figures? Lateral spot film from a videofluoroscopy study.
- 2) Are there any abnormalities? Yes; there is a Zenker's diverticulum (between the arrows)
- 3) What is the most likely diagnosis? Zenker's diverticulum.
- 4) What is the next step in management? Consider surgical consultation for repair. Speech pathology consultation for coaching in swallowing techniques prior to or in lieu of surgery.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP
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Because of the patient's advanced age and delicate condition, it was elected to forego surgery for the Zenker's diverticulum. The Zenker's diverticulum did explain the patient's symptoms of difficulty swallowing and "spitting up" which occurred after swallowing, and the videofluoroscopic exam was essential to exclude penetration (passage of material below the epiglottis into the supraglottic larynx) or aspiration (passage of material into the subglottic larynx) as causes of difficulty in swallowing. The speech pathologist instructed the patient to take sips of a carbonated beverage to help "clear out" the Zenker's diverticulum when it became problematic, and the patient found this helpful.

SUMMARY

Presenting symptom: Difficulty swallowing (dysphagia) may be divided into oropharyngeal dysphagia and esophageal dysphagia. Oropharyngeal dysphagia occurs in the oropharynx and is frequently accompanied by difficulty swallowing, choking, or an abnormal sensation in the throat. Esophageal dysphagia occurs in the (usually distal) esophagus, and is frequently accompanied by an abnormal sensation or pain which typically starts several seconds after swallowing and feels like it is coming from the lower chest.

Imaging work-up: Videofluoroscopy is the study of choice for evaluation of oropharyngeal dysphagia, and consists of videofluoroscopic (“real time” recording of the swallowing process) while the patient swallows a variety of substances impregnated with barium. Typical substances include water with barium, nectar thickness material with barium, apple sauce with barium, meat with barium, bread with barium, and a graham cracker with barium. The patient may also be given a barium tablet of known size for swallowing. The exam is designed to evaluate for proximal swallowing abnormalities, particularly penetration or aspiration. The examination may also detect (as in this case) Zenker’s diverticulum or even oropharyngeal tumors. For patients with esophageal dysphagia, the usual initial diagnostic study is endoscopic evaluation of the esophagus.

Establishing the diagnosis: Zenker’s diverticulum is actually a pseudodiverticulum of the esophageal mucosa through Killian’s triangle (between the inferior constrictor of the pharynx and the cricopharyngeus muscle along the posterior pharyngeal wall). The diagnosis of Zenker’s diverticulum may be based on classic radiographic findings, as was done in this case.

Take-home message: Videofluoroscopy is the study of choice for oropharyngeal dysphagia.

FURTHER READING

Lembo AJ. Diagnosis and treatment of oropharyngeal dysphagia. UpToDate, accessed 7/6/09.

Mulder CJJ, van Weyenberg SJB. Zenker’s diverticulum. UpToDate, accessed 4/22/11.

Renfrew, DL. “First step” imaging of gastrointestinal symptoms. Chapter 7 of *Symptom Based Radiology*, Symptom Based Radiology Publishing, Sturgeon Bay, WI, 2010, available for no charge at www.symptombasedradiology.com.