

2019 GI Fluoroscopy: We Must *OWN* the Esophagus

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In 2016, over 681,000
esophagrams
in the U.S. alone

(along with more than 1.2
million fluoroscopic
swallowing studies.)

THE MOODY BLUES
DAYS OF FUTURE PASSED
The London Festival Orchestra
conducted by Peter Knight

DES



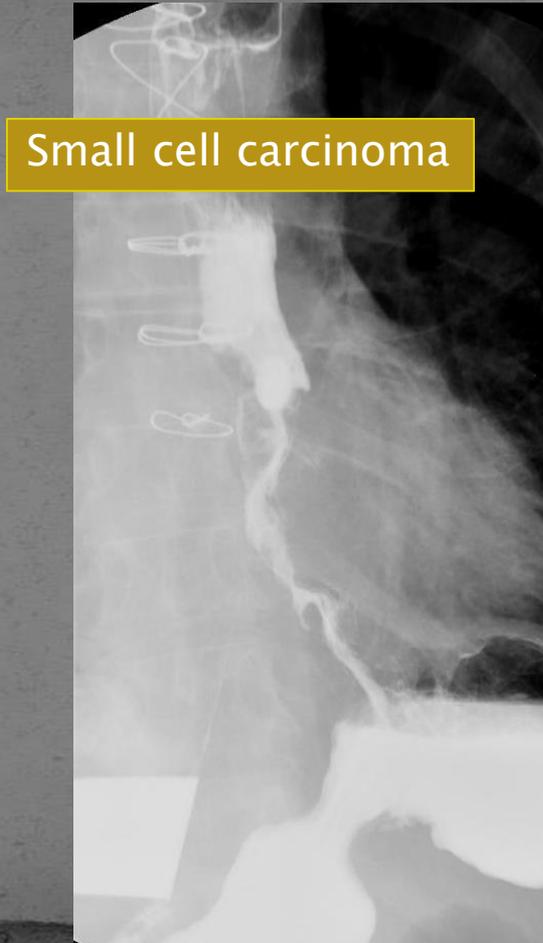
Before you start.....

Take a very brief history:

Any germane surgery or endoscopic procedures, recent or remote?

Dysphagia or odynophagia? With liquids or solids?

Evaluating the unaltered (no surgery) esophagus



A brief "how to" guide (here for sharing)

Double Contrast Views of the Esophagus: *supplies*

Effervescent agent to distend the lumen with gas



High density (238% w/v) barium to coat the mucosa



Note: this implies no endorsement of a specific brand

For solid dysphagia, stand the patient and give barium tablet or 1/2 - 2/3 marshmallow ("swallow it as whole as you can") washed down with thin barium.

Standard Dual Phase Barium Esophagogram outline

PATIENT STANDING

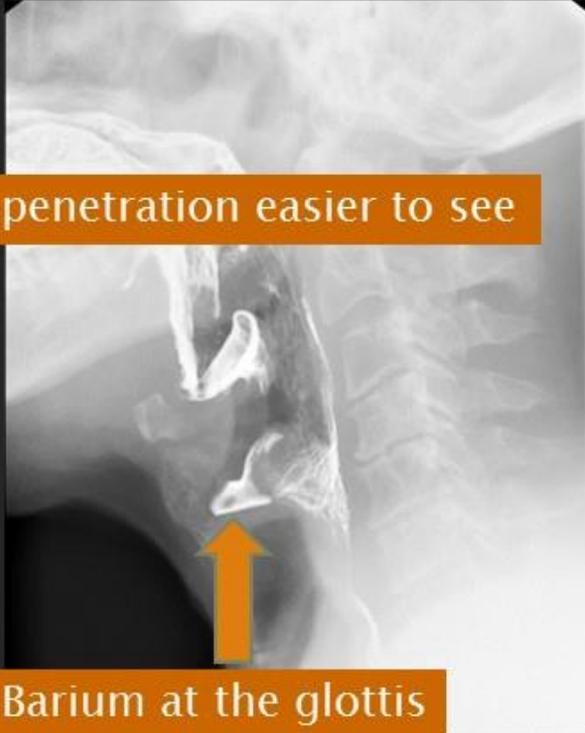
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1. **Thick barium.** Lateral and frontal phonation views of pharynx ("Say the letter E like you're singing it: EEEEEEEEE")
 2. Effervescent crystals and *small* amount of water
 3. Thick barium. Left posterior oblique position. ("One gulp after another.") Take several (about 3-4) air contrast views of the thoracic esophagus and GE junction.
 4. **Thin barium.** Lateral and frontal rapid sequence images or stored fluoro of pharynx and cervical esophagus during a swallow

PATIENT IN PRONE RIGHT ANTERIOR OBLIQUE POSITION

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2. Distended views ("chug it like you love it") of each segment of the barium filled esophagus and GE junction.
3. Reflux check: Patient supine, RPO, right lateral
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Start with a swallow of high density barium
in the *lateral* projection

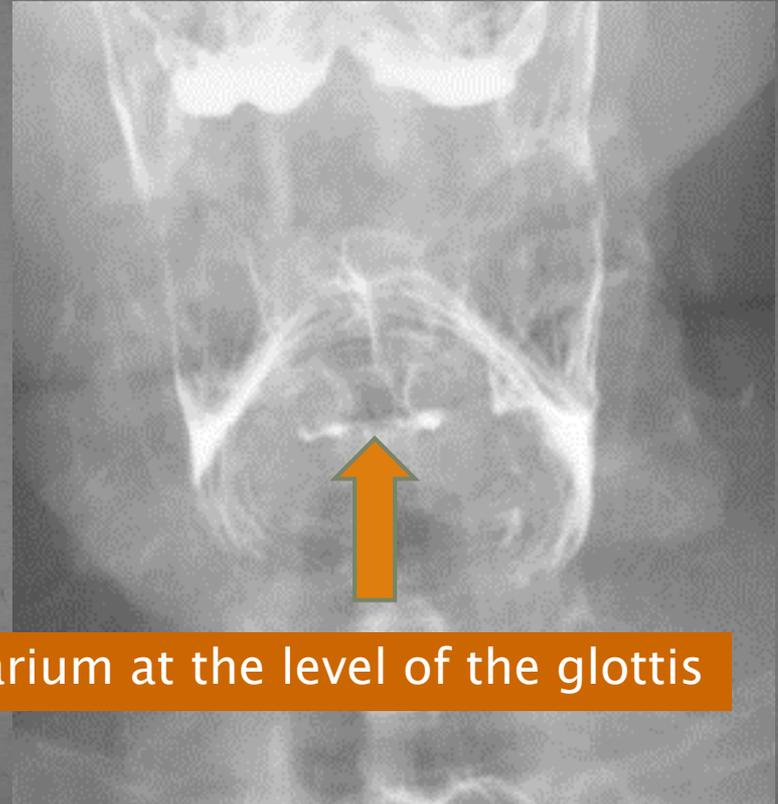
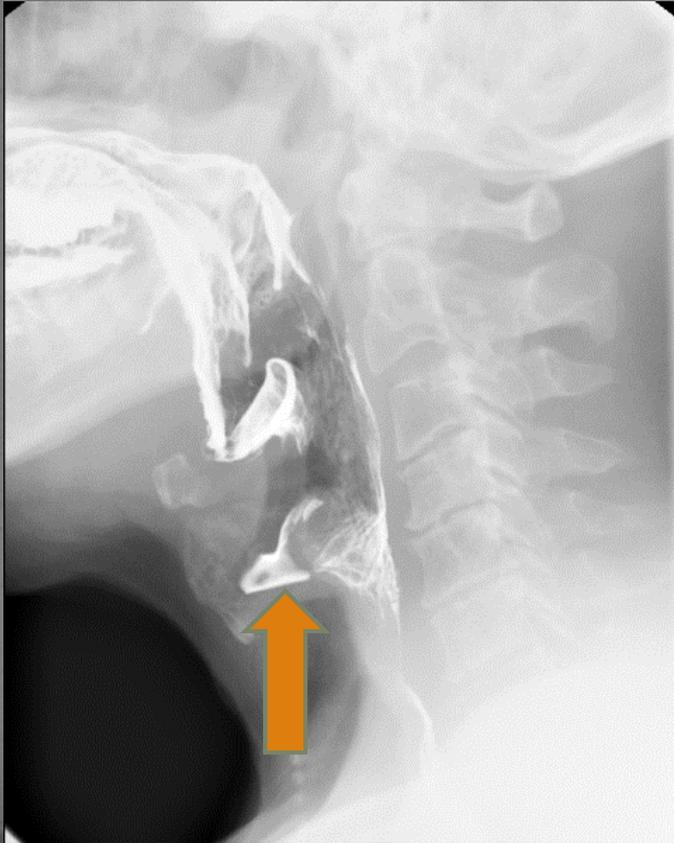
Laryngeal penetration easier to see



Barium at the glottis

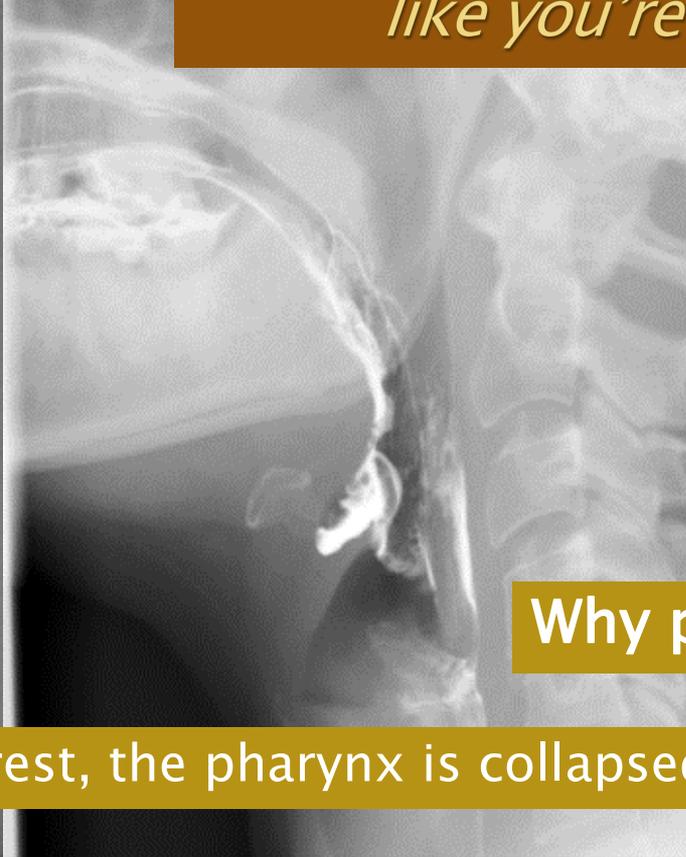


Learn to recognize the endolaryngeal structures
on the *frontal* view as well.



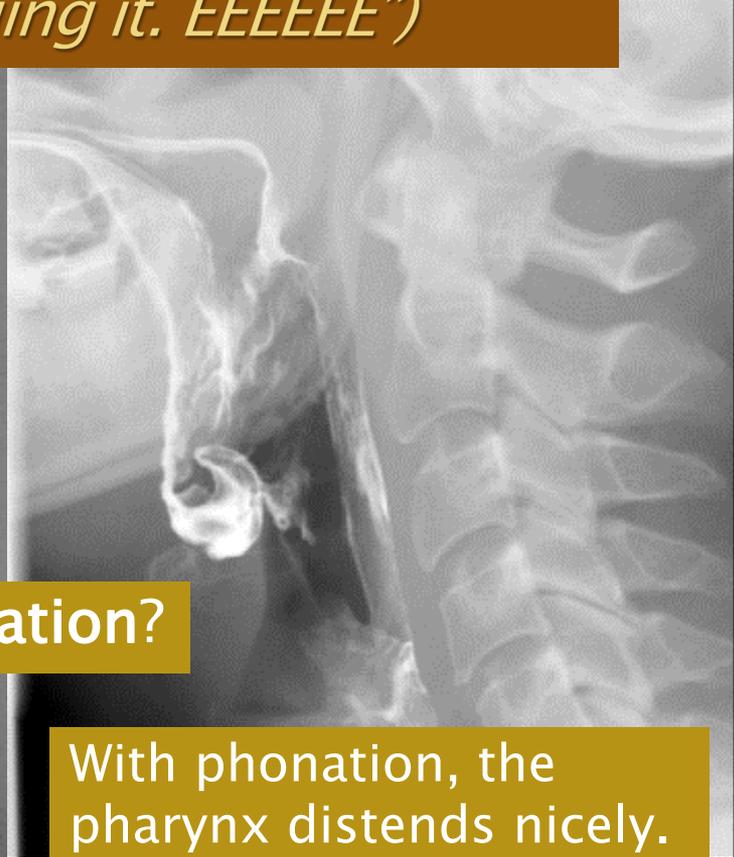
Barium at the level of the glottis

“Take a small sip of barium, swallow, then say the letter ‘E’ like you’re singing it. EEEEEEE”



Why phonation?

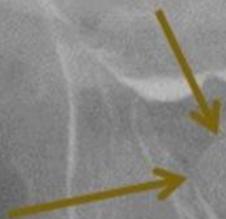
At rest, the pharynx is collapsed.



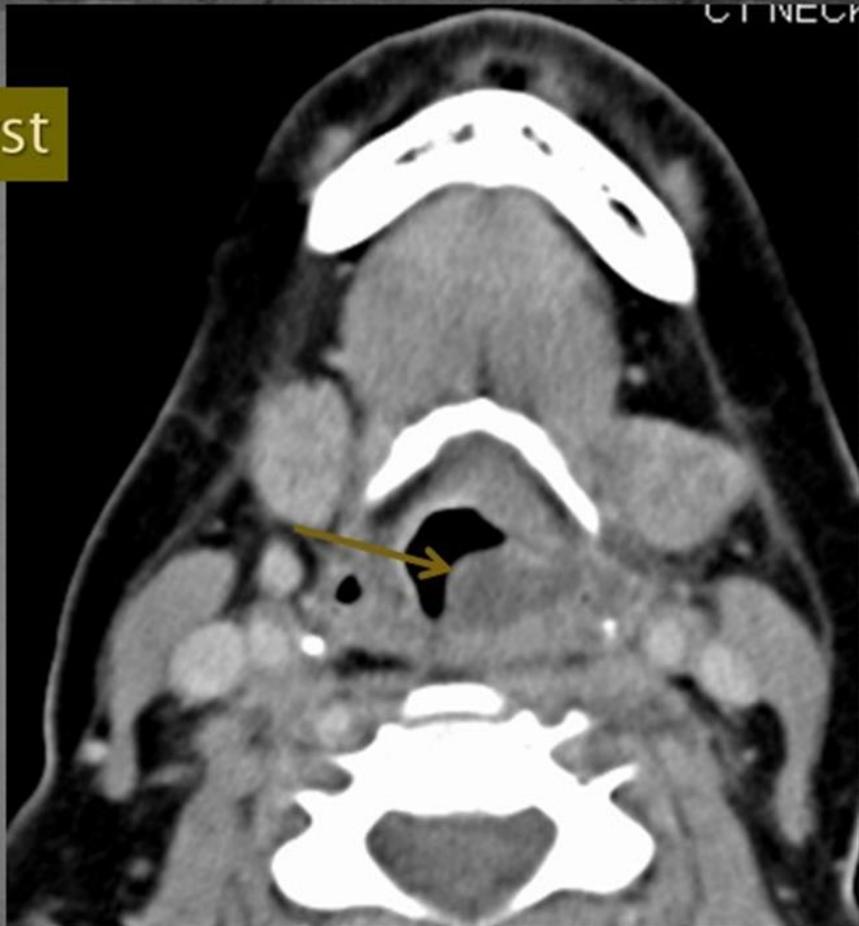
With phonation, the pharynx distends nicely.

SUS 3F/S

Aryepiglottic fold retention cyst



CT NECK



Double Contrast Views of the Esophagus

Crystals should be swallowed with a small amount of water:



“Wash the powder down with the water. Swallow fast and try not to burp.”

Double Contrast Views of the Esophagus

Rapid, sequential swallows of barium are the key to simultaneous gaseous distension and mucosal coating:

“One swallow after another. Drink it like you love it.”

Good: followed directions



Bad: a “sipper”



Double Contrast Views of the Esophagus

Left posterior oblique positioning minimizes overlap with the spine.

(“Turn halfway to your left.”)

Note the esophagus rotated lateral to the vertebral bodies.



Pitfall: Streaming

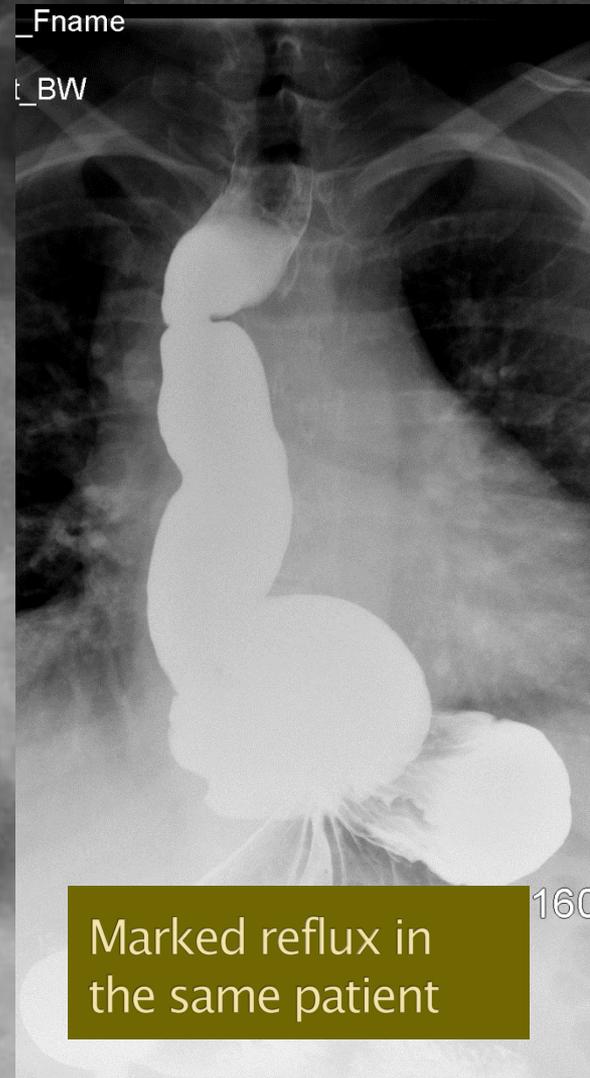
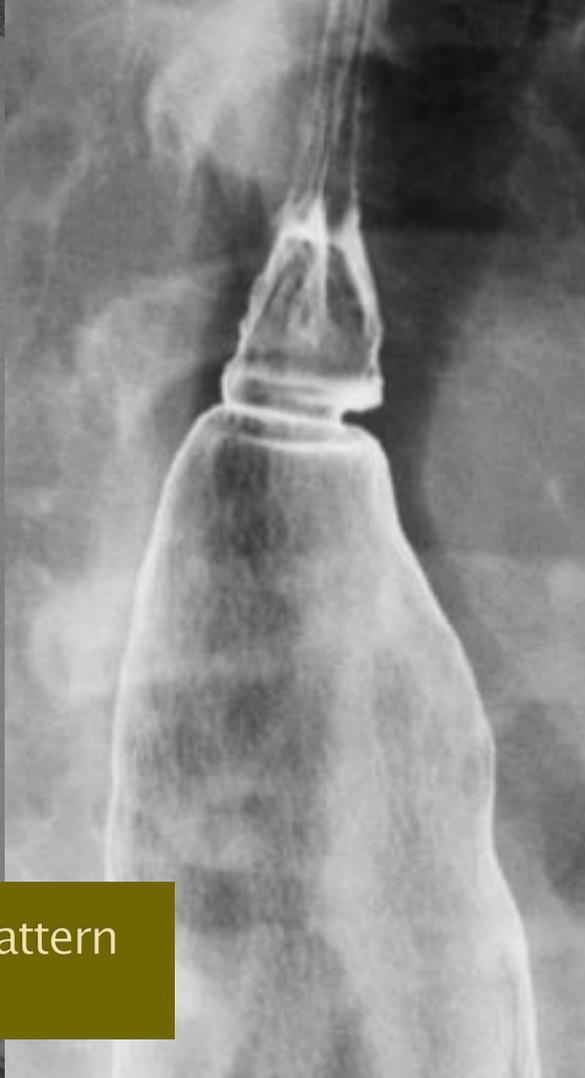
Cascading rivulet of barium partly obscures the mucosa
(slow to single swallows if the esophagus becomes too full of barium)



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What the double contrast views can show you

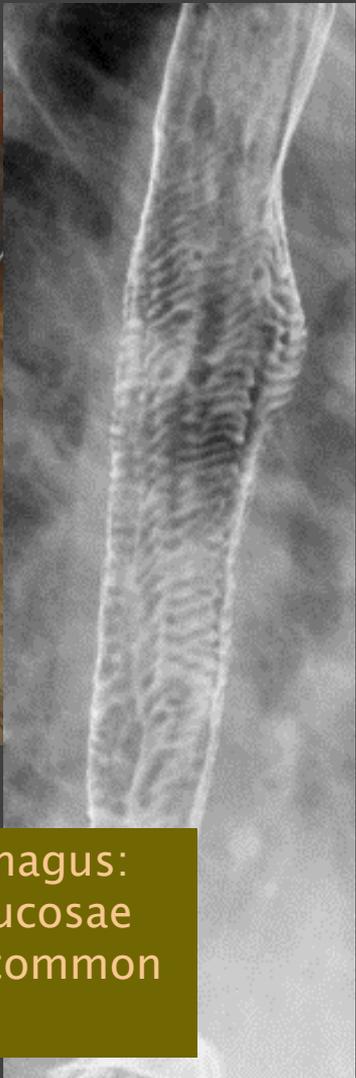
The reticular mucosal pattern
of Barrett esophagus



Marked reflux in
the same patient

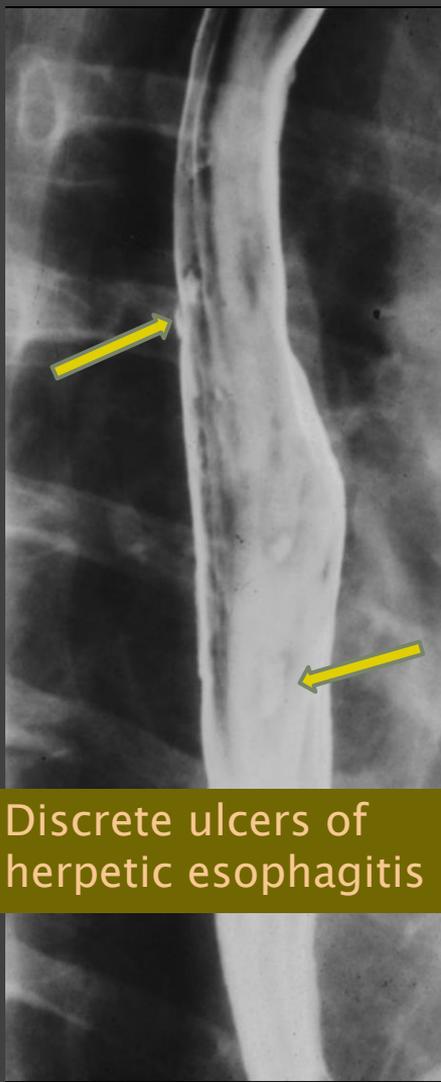


“Feline “ esophagus:
muscularis mucosae
contractions common
with reflux

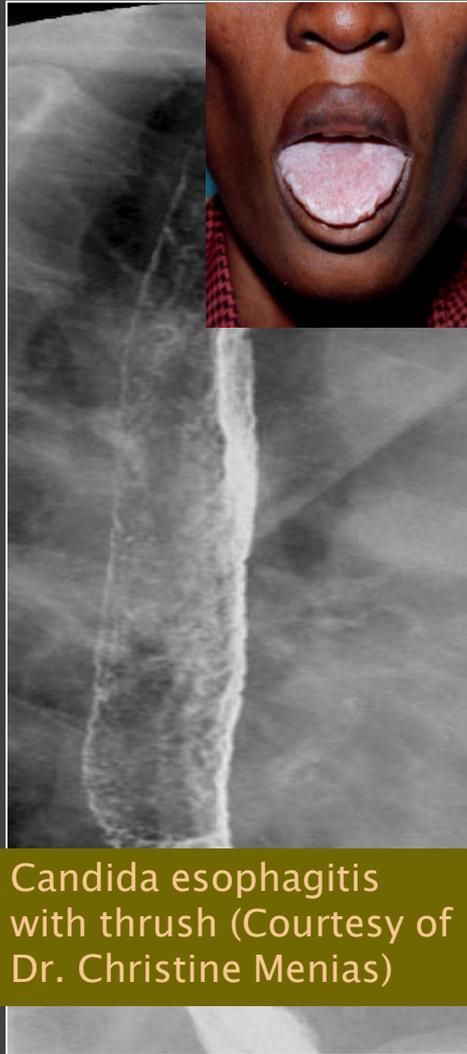


The “stacked rings” of
eosinophilic esophagitis

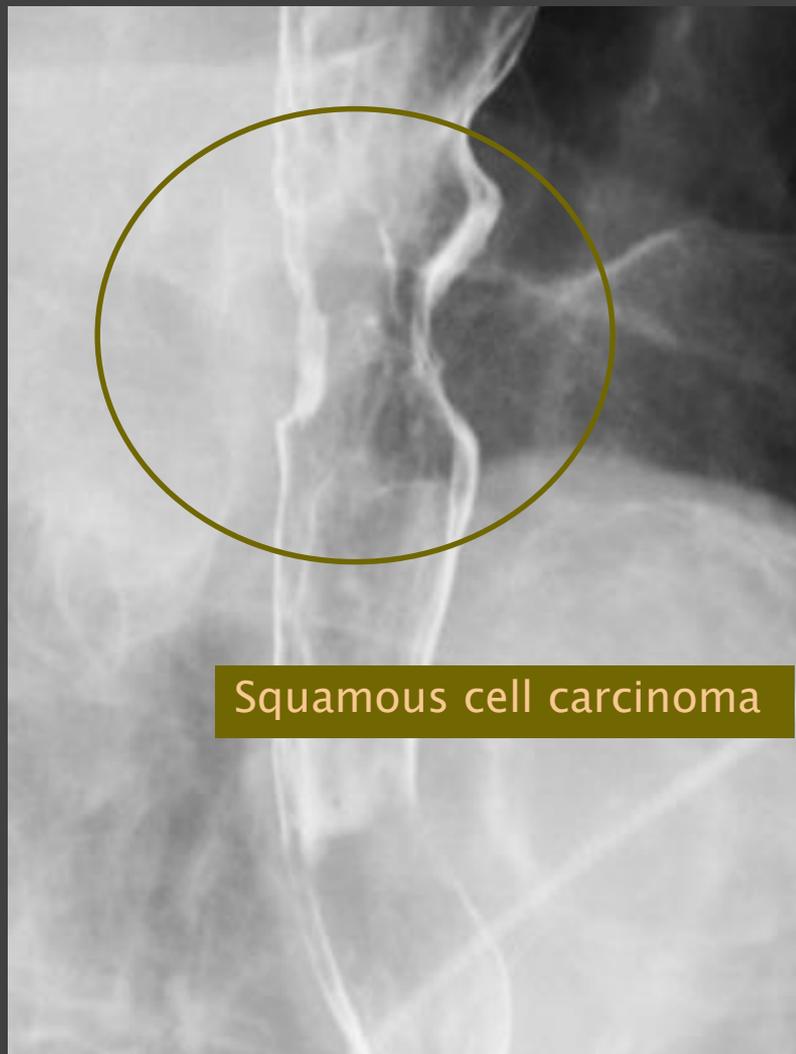




Discrete ulcers of herpetic esophagitis



Candida esophagitis with thrush (Courtesy of Dr. Christine Menias)

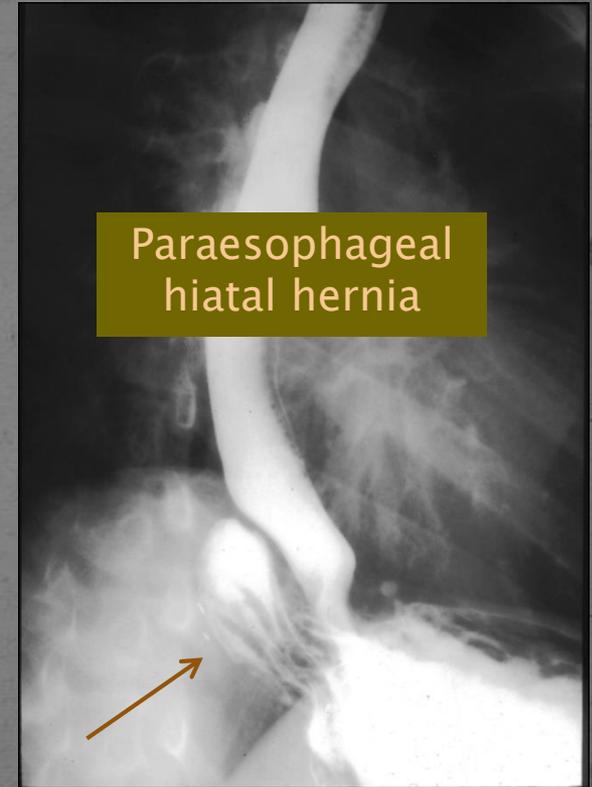


Squamous cell carcinoma

The Single Contrast Views



Ectopic gastric mucosa
("inlet patch")



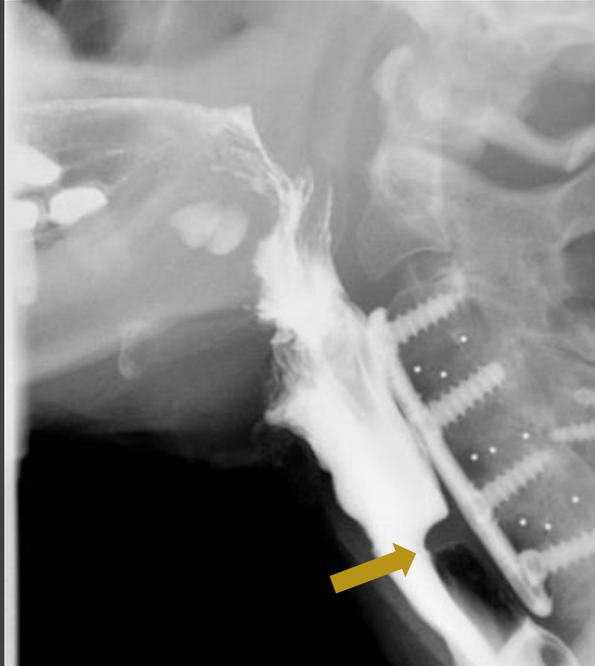
Paraesophageal
hiatal hernia

Note: this implies no endorsement of a specific brand



In addition to documenting laryngeal penetration/aspiration, note whether it occurs before, during, or after swallowing.

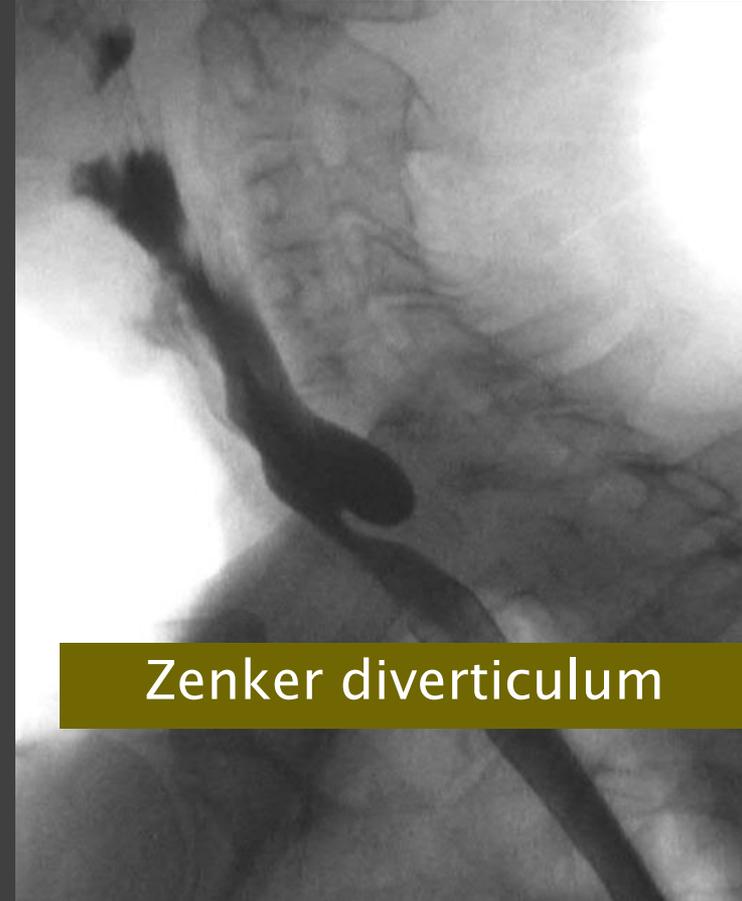
More to see than just aspiration



Cricopharyngeal “bar”



Killian–Jamieson
diverticula



Zenker diverticulum

And still more!



Lichen planus strictures



Branchial cleft
sinus tract

The Prone RAO Oblique View

- “Stress test” for peristalsis
- Assesses distensibility
- Another look at the esophagogastric junction

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Single swallows

Observe peristalsis during three to five individual swallows.

“Take a mouthful and swallow just once.”

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Motility Issues

Remember: repetitive swallows
disrupt primary peristalsis.

So single swallows first

Multiple swallows

Repetitive swallows test distensibility of the lumen, and provide another check of mucosal contour.

“One swallow after another. Drink it like you love it. Iced tea on a hot summer day.”

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But Don't Get Fooled!



2 11:34

3F/S



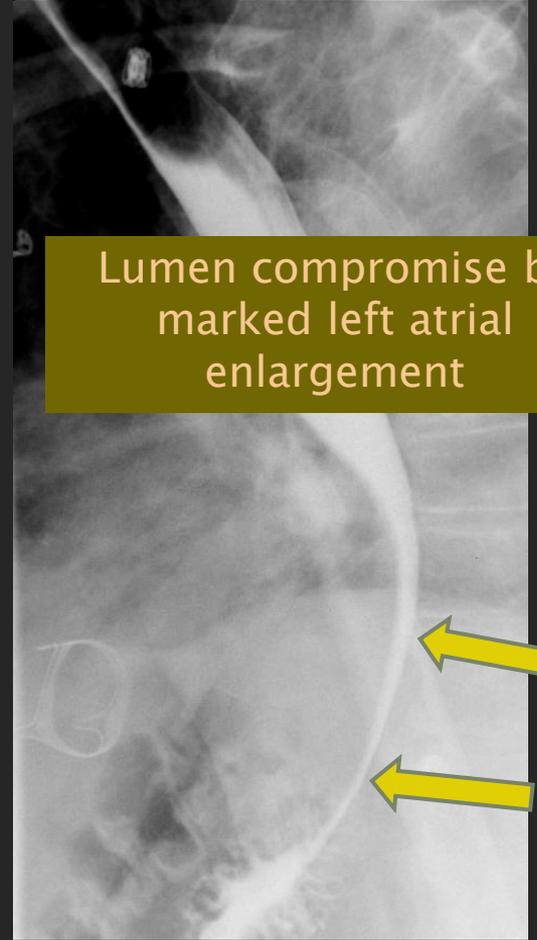
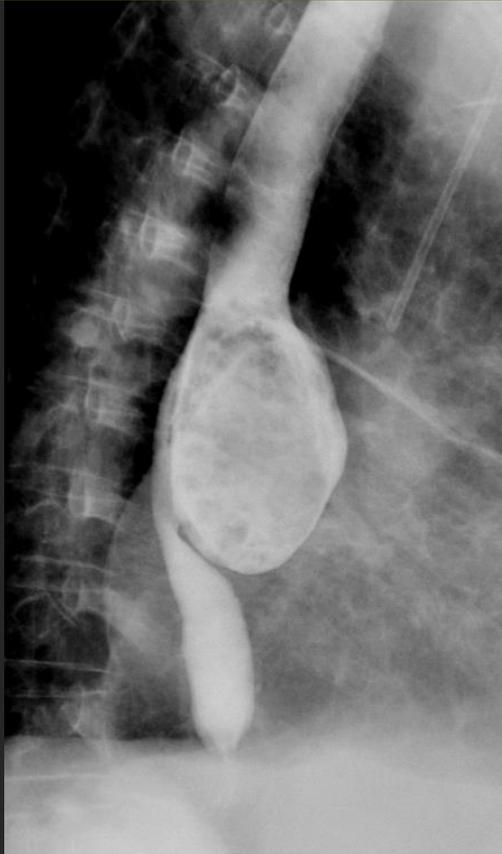
Scirrhous infiltrative neoplasm
mimicking achalasia

Also nicely depicted on single contrast



Aberrant subclavian artery
("dysphagia lusoria")

Esophageal diverticulum

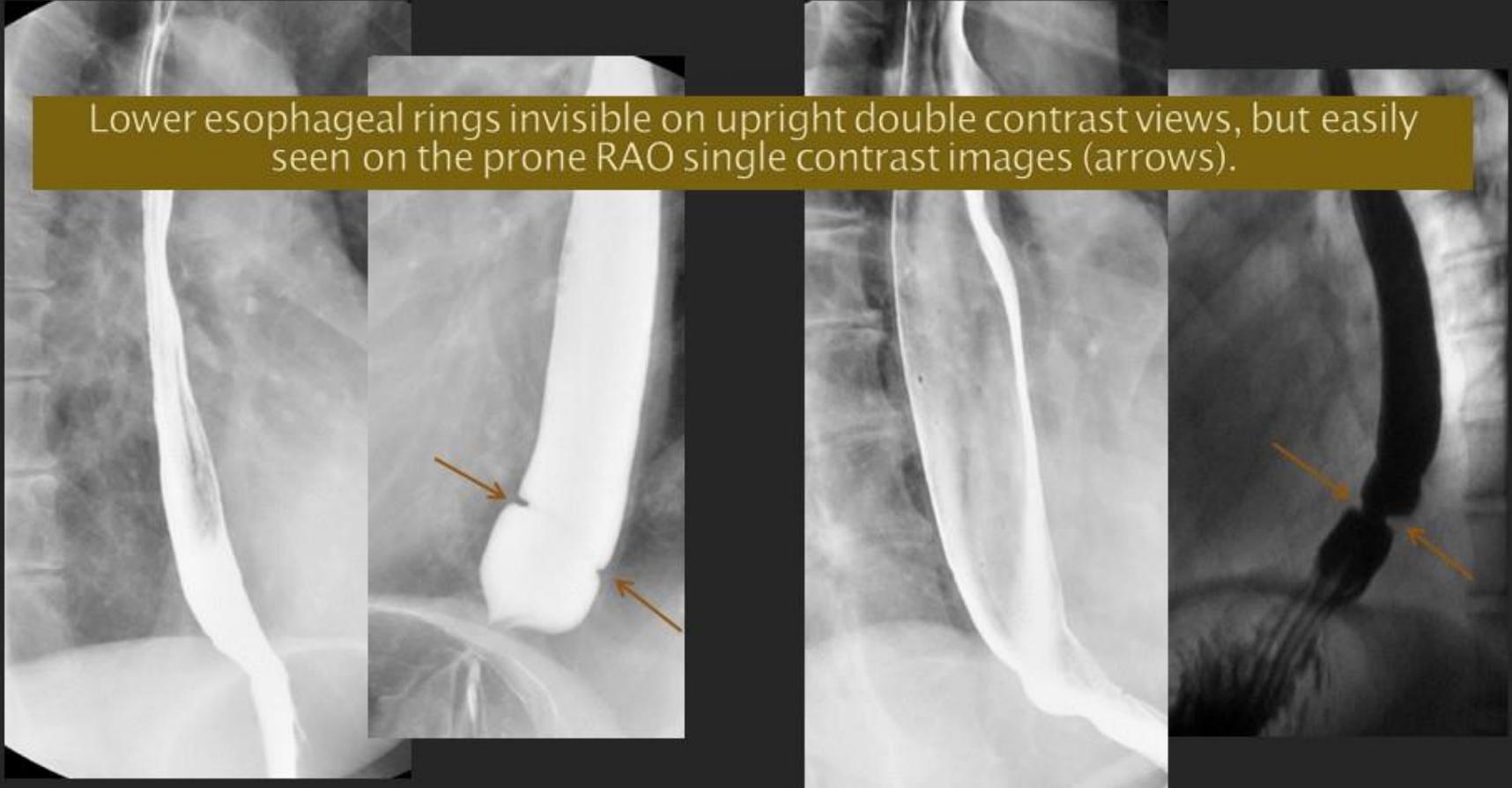


Lumen compromise by
marked left atrial
enlargement

Where the Prone Single
Contrast Views are
Particularly Helpful:

And single contrast views make you Lord of the Rings!

Lower esophageal rings invisible on upright double contrast views, but easily seen on the prone RAO single contrast images (arrows).



Checking for Reflux

How “provocative”
should your
provocative
maneuvers be?

Trendelenburg?

Cough?

Valsalva?

Water siphon test?

Unfortunately, no
consensus

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To see if things get stuck:



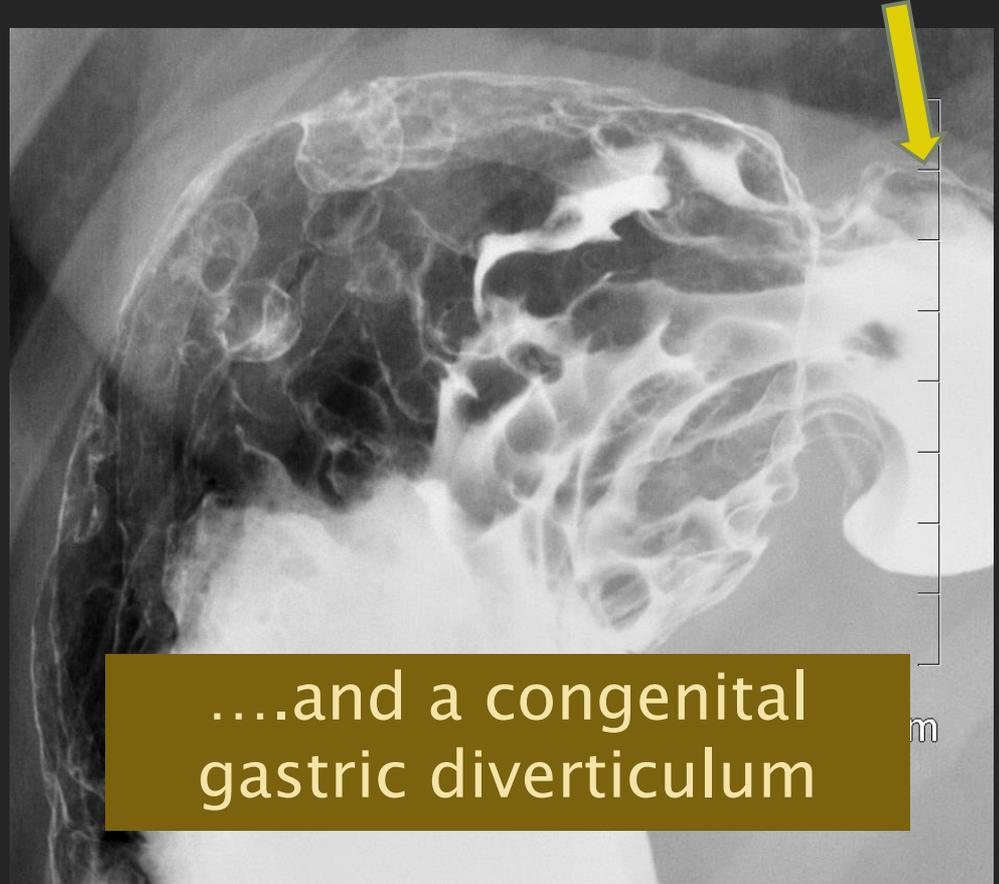
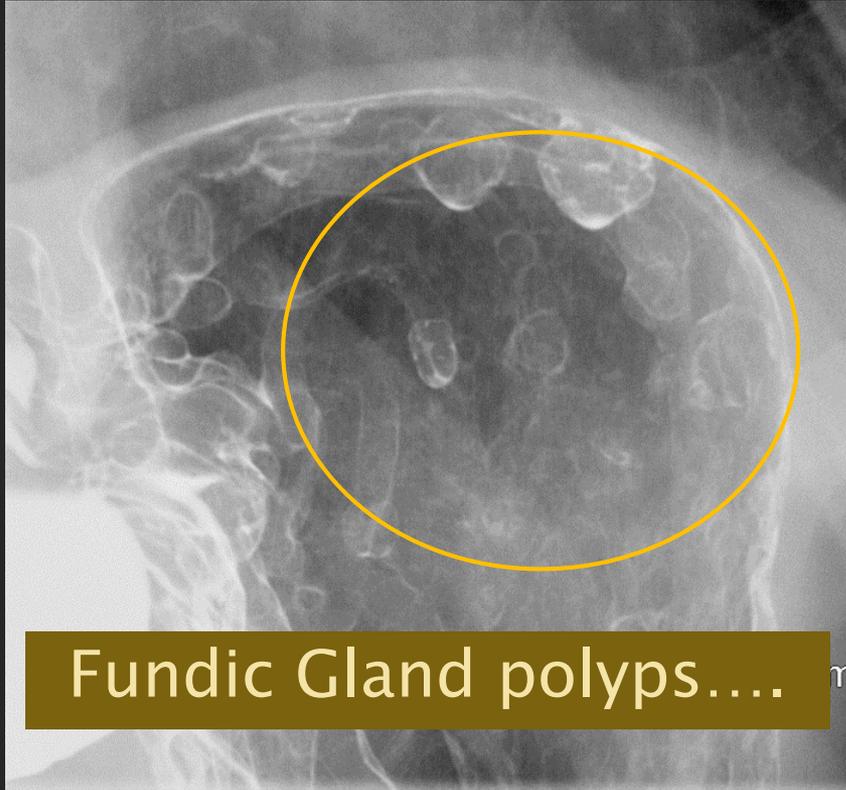
13mm barium tablet lodged
at distal esophageal ring



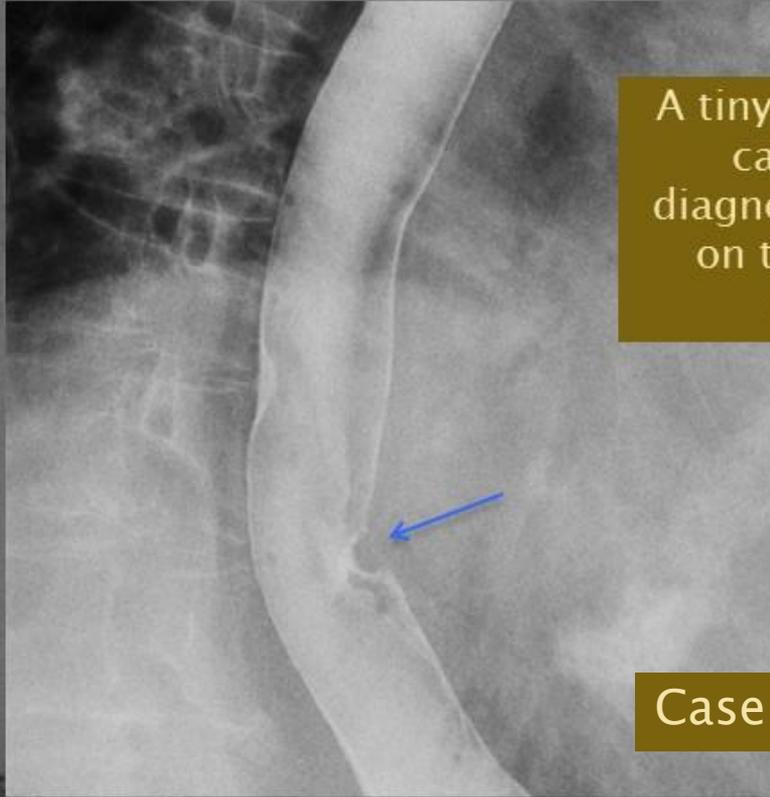
1/4th marshmallow impacted at
distal ring/stricture sites



Final thought: *don't* forget the gastric cardia.



It *CAN* be done:



A tiny esophageal carcinoma diagnosed initially on the barium study.



Case courtesy of Dr. Christine Menias

A mini “recipe card”, handy for the fluoro suite (feel free to copy)

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References

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