Esophagram: Single or Double Contrast Barium Protocol

PURPOSE / CLINICAL INDICATION:

- Disease suspected in the hypopharynx and esophagus or if the patient refers symptoms to the throat, neck, or chest
- Evaluate for esophageal mucosal irregularity, narrowing, or filling defect
- Evaluate for esophageal motility issues, hiatal hernia, and gastroesophageal reflux
- History and Symptoms of: Dysphagia, Odynophagia, Atypical chest pain, Varices, Neoplasm

SPECIAL CONSIDERATIONS / CONTRAINDICATIONS:

- Perform as single contrast (no air contrast) if:
  - High grade esophageal obstruction due to suspected or known neoplasm or achalasia
  - Patient is extremely nausea/vomiting that he/she cannot tolerate air contrast
  - Debilitated patient

	ORDERABLE NAME:	EPIC BUTTON NAME:	NOTES:
UTSW			
PHHS	XR Esophagram	Esophagram	

EQUIPMENT / SUPPLIES / CONTRAST:

- Cup and straw
- Barium Sulfate oral contrast suspension
- 1 packet of the effervescent granules (aka fizzies), additional packet may be needed.
- Small measure of water (to wash down effervescent granules)
- Barium tablet, optional

PATIENT PREPARATION:

- Review for contrast allergy
- Patient should be NPO at least 2 hours prior to for this exam
  - For outpatient evaluation, prefer NPO at least 4 hours prior to the exam
- Review prior endoscopy and radiological exam results

PROCEDURE IN BRIEF:

- Start with patient upright
  - Frontal and lateral imaging of the hypopharynx and cervical esophagus (if indicated)
    - To evaluate for laryngeal penetration/aspiration, diverticulum, cervical web, and other etiologies of cervical dysphagia
  - LPO imaging of the cervical and thoracic esophagus (with air contrast if applicable)
    - To evaluate caliber, filling defects, and mucosal abnormalities
- Move patient to prone RAO position
  - Re-image cervical and thoracic esophagus
    - To evaluate for dysmotility, hiatal hernia, reflux, and confirm abnormalities seen in upright imaging

COMPLETE PROCEDURE TECHNIQUE:

- Perform the study with the patient upright (or as nearly upright as possible)
- Explain the procedure to patient.
  - You will count “1,2,3” out loud.
  - For each swallow, you will have the patient swallow barium on the count of “3”, but you will begin rapid sequence filming on the count of “2”.
- Record the hypopharynx and cervical esophagus in both lateral and AP projections with digital images set at 3 frames per second (if indicated)

- Lateral Cervical Esophagus Projection (if applicable):
  - Aspiration of barium into the airway is much easier to detect in the lateral view.
  - Set the digital camera for 3 frames per second.
  - Have the patient take a mouthful of barium.
  - Have patient swallow on the count of "3" and watch this first bolus of barium from cervical esophagus to GE junction, quickly rule out laryngeal penetration, tracheal aspiration, leakage into the mediastinum, and esophageal obstruction.
    - Don't take images on this first sequence.
  - Focus on the hypopharynx
    - Make sure to include the mouth and also to the level of upper thoracic spine – likely T1 to T2
  - Have the patient take a mouthful of barium. Verify the patient is in a true lateral position. Have the patient swallow the barium on the count of "3". Begin imaging at 3 frames/second on the count of "2" and stop when you see on the monitor that the bolus has passed beyond your field of view.
- AP Cervical Esophagus Projection:
  - Repeat the rapid sequence filming with patient in AP projection. Make sure the patient's chin is elevated enough that the valleculae are not hidden by the mandible.

- LPO Cervical/Thoracic Esophagus Upright Phase:
  - Patient stands upright (If patient is incapable of standing, elevate head of table as much as is safely possible or have the patient sit in a chair)
  - Rotate the patient into left posterior oblique (LPO) position.
    - Give 1 packet of the effervescent granules and instruct the patient not to burp.
      - Review special considerations above for times this is not warranted
    - Place cup of barium in patient's left hand and ask him to drink it rapidly with straw.
  - Fluoroscopically scan esophagus while patient swallows.
    - Make sure to include esophagus from clavicles to gastric cardia during maximal distention.
    - Have 3 to 4 pictures of the lower esophagus (at least 2 showing the GE junction) and have at least 2 pictures of the upper and mid esophagus.
  - Rotate the patient to the right posterior oblique (RPO) position if abnormalities are seen.
- Prone Cervical/Thoracic Esophagus Phase:
  - Patient lies prone in right anterior oblique (RAO) position (lie slightly on the right hip) on exam table and holds the barium cup with the left hand.
  - Have the patient drink barium through a straw.
    - Have patient take a single swallow of barium.
    - Evaluate esophageal motility by following the tail of the barium column from the pharynx to the stomach.
  - Have patient drink several swallows continuously and take pictures
    - At least 2 pictures of the upper and mid esophagus, 1 picture of the lower esophagus and 1 picture of the patent GE junction in normal study, additional images in different projections if abnormalities seen
  - As the barium bolus approaches the distal esophagus, have the patient perform a Valsalva maneuver to evaluate for possible Schatzki rings, stenosis, and hiatal hernia

- To evaluate for possible gastroesophageal reflux:
  - Have the patient roll supine (so contrast will be in the fundal/cardia region). Then have the patient roll to the right lateral decubitus position.
  - Observe fluoroscopically and document if reflux occurs.
  - Other stress maneuvers may be considered: Valsalva, straight leg raise, turn 360 on table, coughing when patient is in supine or LPO positions.
- Optional: Patient may be given a barium tablet to swallow with water in the upright AP position to evaluate for dysphagia or stricture.

IMAGE DOCUMENTATION:

- Optional: Scout fluoroscopic image save of patient pointing to the region of interest/symptoms
- Hypopharynx and cervical esophagus (if indicated)
  - True lateral
  - True AP frontal
- Upright (LPO) cervical/thoracic esophagus:
  - Upper and mid esophagus
  - Lower esophagus (at least 2 showing patent GE junction)
  - Turn patient to RPO for additional images if (+) abnormalities
- Prone (RAO to the exam table) cervical/thoracic esophagus:
  - Upper and mid esophagus
  - Lower esophagus (at least 1 showing patent GE junction)
  - Additional images if (+) abnormalities. Document possible reflux and motility irregularities.
- Optional: Upright AP with barium tablet (consider using fluoroscopic saves)

ADDITIONAL WORKFLOW STEPS:

- If patient aspirates oral contrast in the initial evaluation of the cervical esophagus, consider termination of the exam, notify the patient and clinician, and recommend further evaluation with speech pathologist monitored modified barium swallow exam.

REFERENCES:

- General Fluoroscopy Considerations
- Procedure Contrast Grid
- ACR Practice Parameter for the Performance of Esophagrams and upper Gastrointestinal Examinations in Adults, amended 2014

Last Edit Date:	6/30/2015	Last Review Date:	6/30/2015