**Obstructive Esophageal Symptoms**

- Include *dysphagia and regurgitation*
- Perform **EGD** first to rule out structural/mechanical esophageal obstruction; obtain biopsies to assess for EOE
- Dysphagia questionnaires correlate poorly to objective findings
- Other core esophageal tests for obstructive symptoms – **high resolution manometry (HRM)**, barium esophagram, functional lumen imaging probe (FLIP)

**Barium Esophagram**

- Can suggest presence of motor disorders, demonstrate anatomy at EGJ
- **Inferior to HRM** in detecting esophageal dysmotility
- Can assess *esophageal bolus transit*
- **Standardized, upright, timed barium esophagram protocol** should be used
  - 8 oz barium administered, evaluating barium height at 1 minute (abnormal when >5 cm) and 5 minutes (abnormal if >2 cm)
  - Administration of 13mm barium tablet should be added to protocol
  - Abnormal passage of tablet suggests obstructive process at EJG

**High Resolution Manometry**

- **Gold standard** for the diagnosis of motility disorders
- **HRM superior to conventional manometry** – more closely spaced sensors on catheter, improved diagnostic yield for achalasia and other motor disorders
- Standard HRM protocol – 10 supine test swallows; addition of provocative maneuvers including multiple rapid swallows (MRS) and rapid drink challenge improves diagnostic yield
  - **MRS** can assess contractive reserve; if low, predicts post-Fundoplication dysphagia
  - **Rapid drink challenge** - free drinking of 100–200 mL of water through a straw as fast as possible

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Perform on PPI or off PPI?
- Typical reflux symptoms and unproven GERD = perform off PPI therapy
  - Prolonged wireless pH monitoring (BRAVO) recommended over 24-hour catheter-based monitoring in this group
- Typical reflux symptoms and proven GERD = perform on PPI therapy
  - pH impedance testing recommended
- Using wireless pH monitoring, extended recording time of 48–96 hours increases the diagnostic yield

Typical symptoms -> heartburn, regurgitation
- Neither symptom assessment (GERD questionnaires) nor response to proton pump inhibitor (PPI) trials are adequate for conclusive diagnosis of GERD
  - Ambulatory reflux monitoring (pH or pH impedance testing) not necessary to confirm abnormal acid exposure if endoscopy shows GERD related complications – high grade esophagitis, Barrett’s, peptic stricture
- PPI trial = specificity of only 54% for a diagnosis of GERD when compared to pH testing
- Best indications for ambulatory reflux monitoring -
  1) Symptomatic patients not responsive to acid suppressive therapy
  2) Patients on whom invasive reflux management is planned
  3) Patients concerned about long-term PPI therapy.
- Chest pain/GERD not responsive to PPI -> consider HRM to eval for esophageal dysmotility (achalasia, spasm, hypercontractility)

Extra-esophageal symptoms in GERD
- Laryngopharyngeal reflux (LPR) and chronic cough increasingly attributed to GERD
- LPR typically diagnosed after laryngoscopy
  - Data suggests that
    1) LPR does not correlate to findings on ambulatory reflux
    2) Does not predict response to PPI therapy
- Up-front ambulatory reflux monitoring off PPI recommended over an empiric PPI trial for extraesophageal reflux symptoms without concurrent typical reflux symptoms

Functional Lumen Imaging Probe (FLIP)
- Measures pressure, cross sectional area, and distensibility in the esophagus
- Correlates well to HRM in detecting major motility disorders
- Can characterize achalasia subtypes by detecting nonocclusive esophageal contractions not observed with HRM
- EGJ distensibility measured using FLIP can diagnose achalasia in patients with clinically suspected achalasia but manometrically normal EGJ relaxation
- Can direct invasive achalasia therapeutics (i.e. POEM, pneumatic dilation), assess intraprocedural response to treatment
- Best used as an adjunct to HRM, still needs further validation

Ambulatory Reflux Monitoring
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ESOPHAGEAL SYMPTOMS

Endoscopy to evaluate for mucosal and mechanical processes

- Reflux suspected
  - Esophageal
    - PPI trial (if not already performed)
  - Extraesophageal
    - REFLUX MONITORING
      - To determine abnormal reflux burden
      - To assess reflux-symptom association

- Obstructive
  - Proven GERD
    - Test on PPI
      - pH impedance
  - Unproven GERD
    - Test off PPI
      - pH impedance, wireless pH, catheter pH

- Atypical
  - Provocative HRM: reflux
    - Multiple rapid swallows (MRS) to determine peristaltic reserve
    - Rapid drink challenge (RDC) to evaluate for outflow obstruction
  - Provocative HRM: obstructive
    - RDC, STM (solid test meal) to evaluate for outflow obstruction
  - Provocative HRM: atypical
    - Postprandial monitoring to diagnose rumination and SGB

High Resolution Manometry, High Resolution Impedance Manometry
To diagnose major motor disorders; to assess peristaltic performance before antireflux surgery; to determine pathophys of reflux; to diagnose rumination and supragastric belching (SGB)

Barium radiography

FLIP

Alternative or complementary approach to diagnosis of motor disorders, follow-up after treatment if major motor disorders