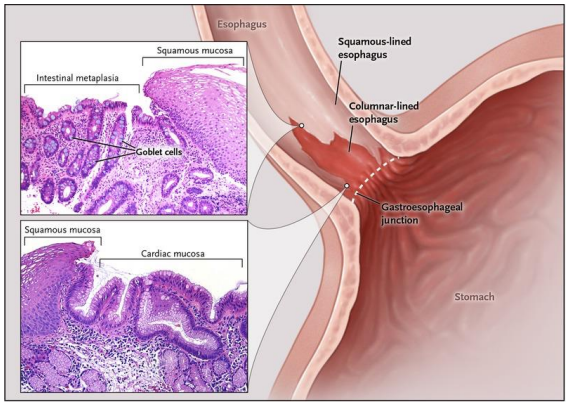
Barrett's Esophagus

Anatomy, Etiology & Epidemiology

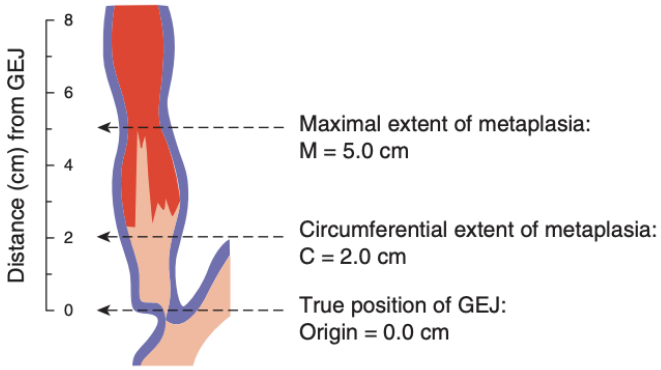
- Barrett's Esophagus (BE) occurs in the distal esophagus when stratified squamous epithelium is replaced by metaplastic, mucus-secreting columnar epithelium.
- It results from chronic gastroesophageal reflux (GER) and is considered a premalignant lesion though the exact origin of the cells that give rise to metaplasia are unknown.
- Barrett's Esophagus occurs in approximately 5% of adults and is more 2-3 times more common in white men. Other predisposing factors include obesity, tobacco smoking and familial predilection.
- Barrett's Esophagus is the highest identified risk for development of esophageal adenocarcinoma (EAC). Though a rare malignancy, it is often diagnosed at a late stage and mortality from EAC is high with an overall 5-year survival under 25%.
- However, the risk of EAC in patients with non-dysplastic BE is less than 0.3% and 95% cases of EAC arise de novo, meaning they are not identified during BE surveillance.
    - Spechler SJ, Souza RF. Barrett's esophagus. N Engl J Med. 2014 Aug 28;371(9):836-45. PMID: 25162890.
    - Seer.cancer.gov/statfacts/html/esoph.html

Presentation & Diagnosis

- Barrett's Esophagus itself causes no symptoms though some patients (up to 60%) may have typical or atypical symptoms of GER (e.g. pyrosis, regurgitation, cough, dysphagia).
- Diagnosis of BE is made through biopsies of the gastroesophageal junction (GEJ) during flexible or rigid esophagoscopy. In BE, columnar mucosa extends above the GEJ and histologically demonstrates intestinal metaplasia with goblet cells. It appears endoscopically as coarse salmon-colored gastric mucosa extending upward beyond the proximal extent of the gastric folds into the pale, glossy squamous mucosa of the esophagus:



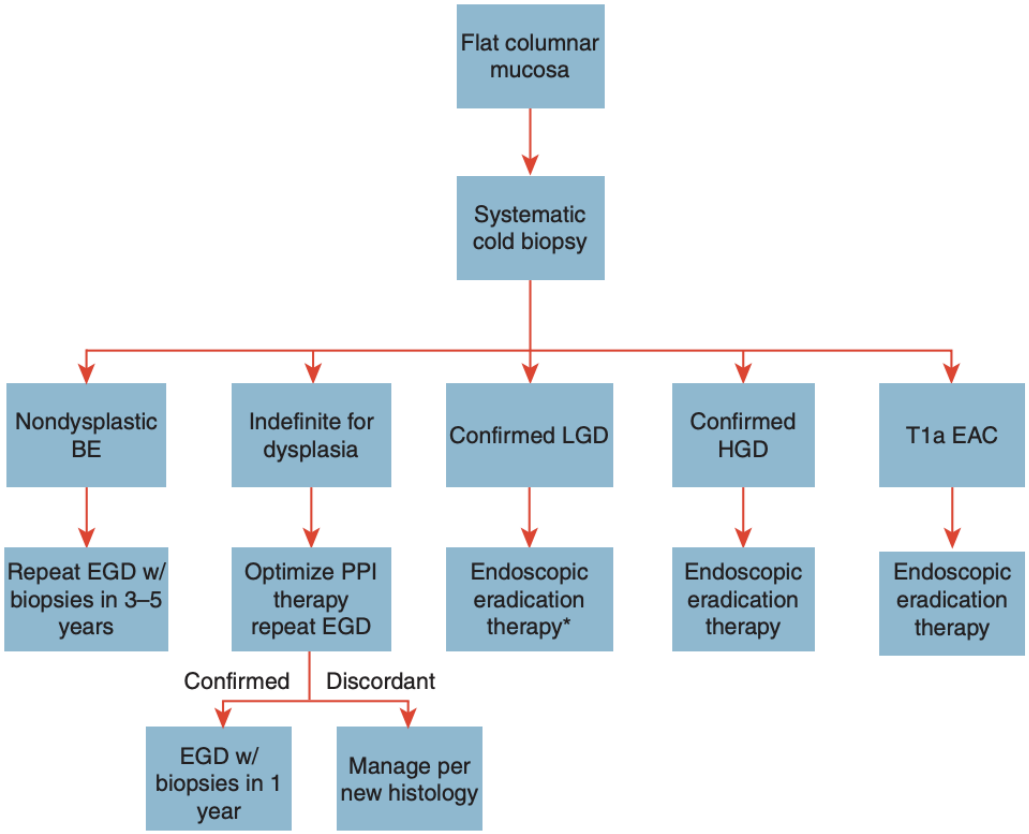
- Endoscopic findings are sometimes described using the Prague Classification system:



- Histologic samples are graded on degree of dysplasia, or histologic changes representing DNA abnormalities (none, low or severe). Though commonly used to risk-stratify patients, dysplasia is an imperfect marker for malignant potential due to sampling error and its subjective criteria.
- Although not supported by high quality evidence, most societies support endoscopic BE screening in patients with GER symptoms and at least one risk factor for EAC (e.g. age, gender, race, BMI, tobacco status)
    - Katzka DA, Fitzgerald RC. Time to Challenge Current Strategies for Detection of Barrett's Esophagus and Esophageal Adenocarcinoma. Dig Dis Sci. 2020 Jan;65(1):18-21. PubMed PMID: 31754994.

Management & Surveillance

- Patients with non-dysplastic BE are managed with surveillance and comprehensive GER therapy including lifestyle changes, diet modifications and medication (proton pump inhibitors are the preferred agent).
- Anti-reflux surgery has not been recommended for treatment of BE or prevention of progression to EAC.
- For BE with low-grade dysplasia, minimally invasive options (radiofrequency ablation) may be considered in addition to surveillance and GER management.
- The rate at which BE with high grade dysplasia progresses to EAC varies but is sufficiently high to warrant intervention.
- Procedural interventions include radiofrequency or photochemical ablation, endoscopic mucosal resection and esophagectomy.
- Routine surveillance of BE is advised to detect early dysplasia or EAC but may not confer a survival from EAC. Lead and length time bias may result in improved survival in EAC diagnosed during BE screening. Such biases may exaggerate benefits of surveillance. Furthermore, downsides of BE surveillance including procedural risks, cost, resource expenditure and patient stress.



- Shaheen, Nicholas J MD, MPH, FACG1; Falk, Gary W MD, MS, FACG2; Iyer, Prasad G MD, MSc, FACG3; Gerson, Lauren B MD, MSc, FACG4 ACG Clinical Guideline: Diagnosis and Management of Barrett's Esophagus, American Journal of Gastroenterology: January 2016 - Volume 111 - Issue 1 - p 30-50 doi: 10.1038/ajg.2015.322
- Kastelein F, Spaander MC, Steyerberg EW, et al. Proton pump inhibitors reduce the risk of neoplastic progression in patients with Barrett's esophagus. Clin Gastroenterol Hepatol 2013;11:382-388
- Corley DA, Mehtani K, Quesenberry C, Zhao W, de Boer J, Weiss NS. Impact of endoscopic surveillance on mortality from Barrett's esophagus-associated esophageal adenocarcinomas. Gastroenterology 2013;145:312-319
- Shaheen NJ, Weinberg DS, Denberg TD, Chou R, Qaseem A, Shekelle P. Upper endoscopy for gastroesophageal reflux disease: best practice advice from the clinical guidelines committee of the American College of Physicians. Ann Intern Med 2012;157:808-816