









Banff Endoscopy Skills Conference



Kingston Health

Sciences Centre

Robert Bechara MD FRCPC Gastroenterology and Advanced Therapeutic Endoscopy Kingston Health Sciences Centre











Faculty/Presenter Disclosure

- Presenter: Robert Bechara
- Relationships that may introduce potential bias and/or conflict of interest:
 - Grants/Research Support: Pentax
 - Speakers Bureau/Honoraria: Olympus
 - Consulting Fees: Olympus
 - Other:

Objectives

- Review the benefits of using image enhanced endoscopy to improve diagnostic yield in gastroscopy
- Outline key principles and landmark recognition in performing a high quality gastroscopy

Outline

- Pharynx
 - Landmarks, mucosa and tips for endoscopic exam
- Esophagus
 - Landmarks, tips for endoscopic exam
- Stomach
 - Landmarks, mucosa (see gastric polyps talk), tips for endoscopic exam
- Duodenum

Luminal Anatomy-The pharynx:

- Nasophaynx
- Oropharynx
- Hypopharynx



Inoue H. et al. Ultra-high Magnification Endoscopic Observation of Carcinoma in situ of the Esophagus. Digestive Endoscopy 9, 16-18, (1997).

Arima H. Magnified observation of esophageal mucosa. Gastroenterological Endoscopy. 1998;40:1125-37

Oyama, T. et al. Prediction of the invasion depth of superficial squamous cell carcinoma based on microvessel morphology: magnifying endoscopic classification of the Japan Esophageal Society. Esophagus: 14, 105-112, (2017).

Squamous Neoplasia (Pharynx + Esophagus) Image Enhanced Endoscopy

Detection

- Multi-center prospective RCT of 320 patients.
 - Diagnostic accuracy of ESCC with NBI vs. WLE: 90.2% vs 55.3%

- Meta-analysis of 18 studies with >1900 patients.
 - NBI had improved specificity (per lesion analysis) compared with Lugols 65% vs. 37%



Muto M, Saito Y, Ohmori T, et al. Multicenter Prospective Randomized Controlled Study On the Detection and Diagnosis of Superficial Squamous Cell Carcinoma By Back-to-Back Endoscopic Examination of NBI and White Light Observation. Gastrointestinal Endoscopy 2007;65:AB110 Morita FH, Bernardo WM, Ide E, et al. Narrow band imaging versus lugol chromoendoscopy to diagnose squamous cell carcinoma of the esophagus: a systematic review and meta-analysis. BMC Cancer 2017;17:54.

Importance of a thorough exam



- The hypopharynx accounts for ~85% of early oropharyngeal and hypopharyngeal cancers.
- 63% of previously unknown head and neck 1° cancers originated in the hypopharynx.



Ugumori, T., Muto, M., Hayashi, R., Hayashi, T. & Kishimoto, S. Prospective study of early detection of pharyngeal superficial carcinoma with the NBI laryngoscope. *Head & neck* **31**, 189-194, (2009). Fujii, S., Yamazaki, M., Muto, M. & Ochiai, A. Microvascular irregularities are associated with composition of squamous epithelial lesions and correlate with subepithelial invasion of superficial-type pharyngeal squamous cell carcinoma. *Histopathology* **56**, 510-522, (2010).

Luminal Anatomy-The hypopharynx



67yo man with ETOH cirrhosis presenting for screening EGD.



54 yo man with prior squamous carcinoma removed via ESD in the esophagus.



- A. Non-neoplastic (A)
- B. M1-M2(B1)
- C. M3-Sm1 (B2)
- D. Sm2- (B3)





- A. Non-neoplastic (A)
- B. M1-M2(B1)
- C. M3-Sm1 (B2)
- D. Sm2- (B3)





My Approach: Pharyngeal exam

- Suction any secretions. Identify landmarks
- Macroscopic examination
 - White light
 - Image enhanced endoscopy (NBI/BLI/OE-1)
- Microscopic exam of specific lesions
 - White light, image enhanced endoscopy
 - Compare to adjacent normal mucosa
- +/- Supplemental
 - Lugols (2.5%): ONLY if intubated





Esophagus

Luminal Anatomy-Esophagus

• Upper Esophageal sphincter and cervical esophagus~14-20cm







Luminal Anatomy-Esophagus



Identification of Landmarks-Spine

Importance of Thorough Exam

• Miss rate of esophageal carcinoma (squamous or adenocarcinoma) 6-25%

Rodriguez de Santiago, E. *et al.* Rate of missed oesophageal cancer at routine endoscopy and survival outcomes: A multicentric cohort study. *United European Gastroenterol J* **7**, 189-198, (2019). Visrodia, K. *et al.* Magnitude of Missed Esophageal Adenocarcinoma After Barrett's Esophagus Diagnosis: A Systematic Review and Meta-analysis. *Gastroenterology* **150**, 599-607.e597, (2016).

66yo female, 40-pack year smoker.

Endoscopy for chronic cough ?Reflux

Reddish mucosa at ~27cm





- A. Non-neoplastic (A)
- B. M1-M2(B1)
- C. M3-Sm1 (B2)
- D. Sm2-(B3)







53yo man with known long segment Barrett's. Surveillance EGD Trachea 12 o'clock Fluid 9 o'clock Spine 6 o'clock Lesser Curve Greater Curve 9 o'clock 3 o'clock



- A. Non-neoplastic
- B. LGD
- C. HGD-Sm1
- D. Deeply invasive



- A. Non-neoplastic
- B. LGD
- C. HGD-Sm1
- D. Deeply invasive







Tips for Barrett's Exam



- Spend at least 1 min/cm of Barrett's examining → improved detection of HGD/EAC ~6x
- Pay close attention to proximal segment/right wall → Higher incidence of HGD/EAC ~6x
- Use acetic acid (1.5-3%) → increases yield detection HGD/EAC ~15x vs random Bx

Use NBI(BLI/OE1) → improved detection of HGD/EAC

Gupta, N. *et al.* Longer inspection time is associated with increased detection of high-grade dysplasia and esophageal adenocarcinoma in Barrett's esophagus. *Gastrointestinal endoscopy* **76**, 531-538, (2012). Pech, O. *et al.* Prospective evaluation of the macroscopic types and location of early Barrett's neoplasia in 380 lesions. *Endoscopy* **39**, 588-593, (2007). Enestvedt, B. K. *et al.* Location, location, location: does early cancer in Barrett's esophagus have a preference? *Gastrointestinal endoscopy* **78**, 462-467, (2013). Kandiah, K. *et al.* International development and validation of a classification system for the identification of Barrett's neoplasia using acetic acid chromoendoscopy: the Portsmouth acetic acid classification. *Gut* **67**, 2085, (2018). Song J, Zhang J, Wang J, et al. Meta-analysis of the effects of endoscopy with narrow band imaging in detecting dysplasia in Barrett's esophagus. Dis Esophagus 2015;28:560-6. Sharma, P. *et al.* Standard endoscopy with random biopsies versus narrow band imaging targeted biopsies in Barrett's oesophagus: a prospective, international, randomised controlled trial. *Gut* **62**, 15-21, (2013).



My Approach: Esophageal Exam

- **Clean** the esophagus and identify landmarks
- Macroscopic examination
 - White light
 - Image enhanced endoscopy (NBI/BLI/OE-1) for squamous
 - Image enhanced endoscopy all modalities for Barretts
- Microscopic exam of specific lesions
 - White light, image enhanced endoscopy
 - Compare to adjacent normal mucosa
- +/- Supplemental
 - Squamous Lugols 2.5%: Repeat Macro/Micro
 - Barrett's Acetic Acid 1.5%: Repeat Macro/Micro





Gastric Examination



Importance of a Thorough Exam

- There is a ~25% miss rate of early gastric cancers
 - In high risk patients can be up to 75%!(Japan/Korea)



Menon, S. & Trudgill, N. How commonly is upper gastrointestinal cancer missed at endoscopy? A meta-analysis. *Endoscopy international open* **2**, E46-50(2014). Shimodate, Y. *et al.* Gastric superficial neoplasia: high miss rate but slow progression. *Endoscopy international open* **5**, E722-e726 (2017).

Importance of a Thorough Exam

• GEJ-Forward and retroflexed views



Luminal Anatomy-Stomach





Where are lesions most commonly missed?

• Distal third of the stomach (Distal body-Proximal antrum) ~85%





Gong, E. J. *et al.* Characteristics of Missed Simultaneous Gastric Lesions Based on Double-Check Analysis of the Endoscopic Image. *Clin Endosc* **50**, 261-269, (2017). Kim, S. J. & Choi, C. W. Common Locations of Gastric Cancer: Review of Research from the Endoscopic Submucosal Dissection Era. *J Korean Med Sci* **34**, e231, (2019).

Tips for Gastric Exam

Systematic screening protocol (SSP)

Yao, K. The endoscopic diagnosis of early gastric cancer. Ann Gastroenterol 26, 11-22 (2013).

Zhang, Q. et al. Training in early gastric cancer diagnosis improves the detection rate of early gastric cancer: an observational study in China. Medicine (Baltimore) 94, e384, (2015).

Curtin, B. F. et al. 94 – Systematic Screening Protocol for the Stomach is Superior to Standard Endoscopy for the Detection of Early Malignancy in Hereditary Gastric Cancer Syndrome Patients. Gastroenterology 156, S-22, (2019).

Tips for Gastric Exam

- Cleaning
 - The addition of mucolytic (N-acetylcysteine) and defoaming agents (simethicone) result in superior mucosal views.
 - Optimal timing for pre-procedure mucolytic + defoaming agents is 10-30min
- Examination time
 - Spend <u>at least 7 minutes</u> examining the UGI tract
 - Endoscopists with mean EGD examination times <a>27minutes identified 3-fold more gastric neoplastic lesions than endoscopists that spent <7min

Monrroy, H. *et al.* Use of N-acetylcysteine plus simethicone to improve mucosal visibility during upper GI endoscopy: a double-blind, RCT. *Gastrointestinal endoscopy* **87**, 986-993, (2018). Chen, H. *et al.* Pre-medication to improve esophagogastroduodenoscopic visibility: a meta-analysis and systemic review. *Hepatogastroenterology* **61**, 1642-1648 (2014). Teh, J. L. *et al.* Longer examination time improves detection of gastric cancer during diagnostic upper gastrointestinal endoscopy. *Clinical gastroenterology and hepatology:* **13**, 480-487.e482, (2015).



My Approach: Gastric exam

• **Clean** the stomach and identify landmarks

• Macroscopic examination

- White light SSP
- Image enhanced endoscopy (LCI, OE-2), SSP
- Microscopic exam of specific areas
 - White light, image enhanced endoscopy (NBI/BLI/OE-1)

• +/- Supplemental

• Indigo Carmine: Repeat Macro/Micro

Summary

- Pharyngeal and Esophageal squamous neoplasia
 - NBI/BLI/OE-1 are the preferred modes for detection
- Identify Esophageal/Gastric landmarks
- Barrett's Neoplasia
 - Acetic acid and NBI are useful for improving detection of HGD/EAC
 - Spend at least 1min/cm Barrett's and pay attention to proximal area and right hemisphere
- Gastric Neoplasia
 - Use defoaming agent and mucolytic to achieve clear views
 - Spend at least 7 minutes on EGD exam maximize detection of neoplasia
 - Systematic examination of the stomach to improve detection of neoplasia

Thank you!

