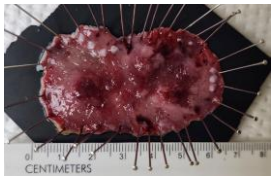
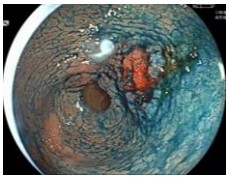
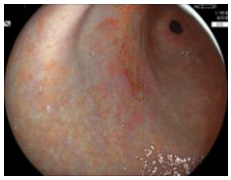
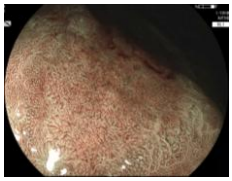
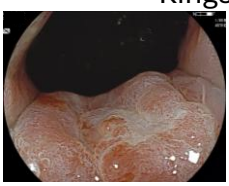
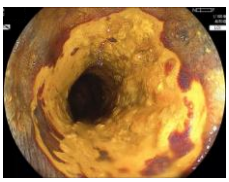
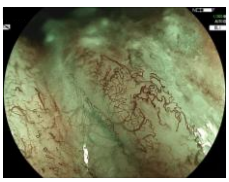
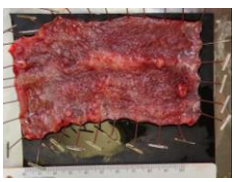






# Optimizing Upper Endoscopy


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

1

## Endo Skills 2026 PRESENTER DISCLOSURE

*Relationships with financial sponsors:*

- Any direct financial relationships, including receipt of honoraria: (Vantage Endoscopy-consultant, Olympus-consultant)
- Membership on advisory boards or speakers' bureaus: None
- Patents for drugs or devices: None
- Other: None

2

# Endo Skills 2026
# Disclosure of Commercial Support

- Endo Skills 2026 is presented by the Alberta Society for Endoscopic Practice (ASEP)
- ASEP: not for profit organization, whose goal is to provide education, resources and collaboration for endoscopists and their teams
- Endo Skills planning is independent from the exhibitors
- ASEP covers expenses and provides small honorarium to speakers and planning committee

3

# Managing Sources Potential Conflict or Bias

- Planning Committee: oversees the program's content, topics and speakers, learning objectives to ensure accuracy and balance.
- Information and recommendations are evidence and/or guidelines-based, and opinions of the independent speakers will be identified as such.
- Program developed in accordance to ethical standards meeting Cert+ guidelines.
- Speakers will declare potential COIs at the beginning of their presentation(s).

4

# Objectives

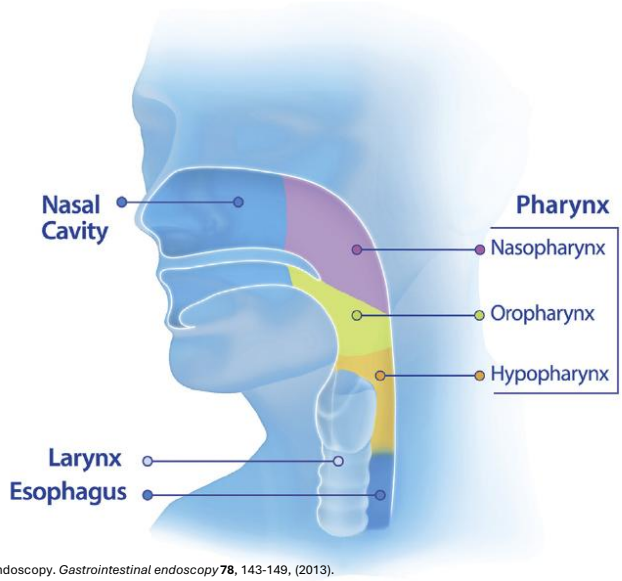
- Recognize the prevalence of missed cancers in the pharynx, esophagus, and stomach.
- Identify high-risk anatomical "blind spots" during routine upper endoscopy.
- Apply practical, evidence-based strategies to improve cancer detection

5

# Luminal Anatomy-The pharynx

- Nasopharynx
- **Oropharynx**
- **Hypopharynx**

**6000 cancers/year**




Emura, F., Baron, T. H. & Gralnek, I. M. The pharynx: examination of an area too often ignored during upper endoscopy. *Gastrointestinal endoscopy* **78**, 143-149, (2013).

6

# Oro/Hypopharyngeal Cancer

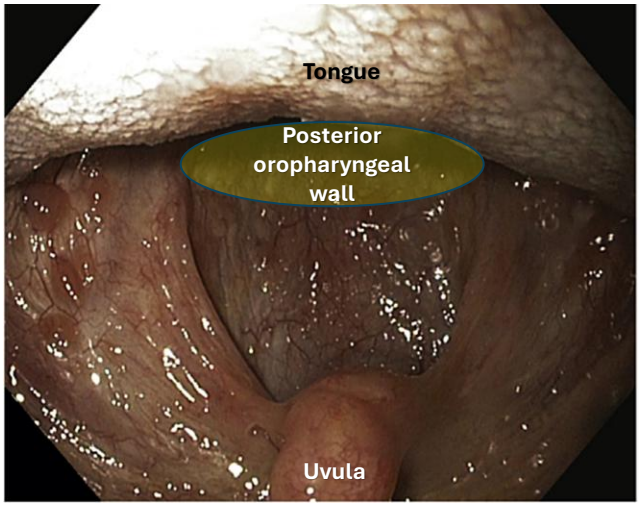
- Risk Factors
  - ETOH
  - Smoking
  - Obesity
  - Low socio-economic status
  - HPV
  - Higher risk ethnicity
    - Asian Americans, Pacific Islanders, American Natives, and Alaska Natives.
  - Esophageal squamous carcinoma

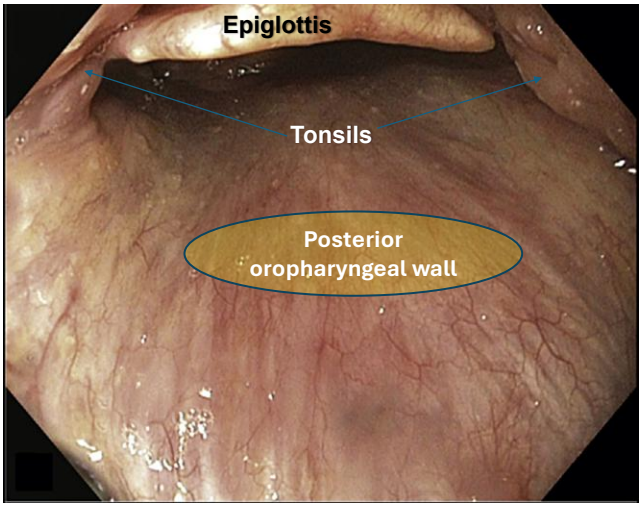
- Late presentation is typical, with ~ 80% of patients having stage III/IV disease at the time of presentation ~30% survival at 5 years

Emura, F., Baron, T. H. & Gralnek, I. M. The pharynx: examination of an area too often ignored during upper endoscopy. *Gastrointestinal endoscopy* **78**, 143-149, (2013).
https://cancer.ca/

7

# Luminal Anatomy-The oropharynx

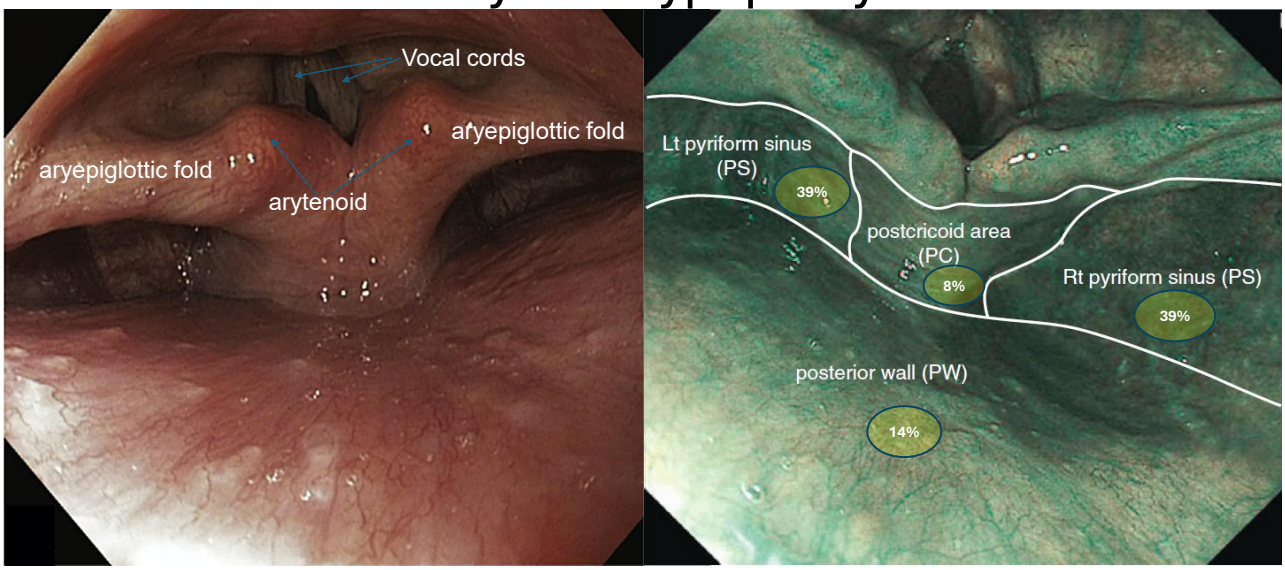



Emura, F., Baron, T. H. & Gralnek, I. M. The pharynx: examination of an area too often ignored during upper endoscopy. *Gastrointestinal endoscopy* **78**, 143-149, (2013).

8

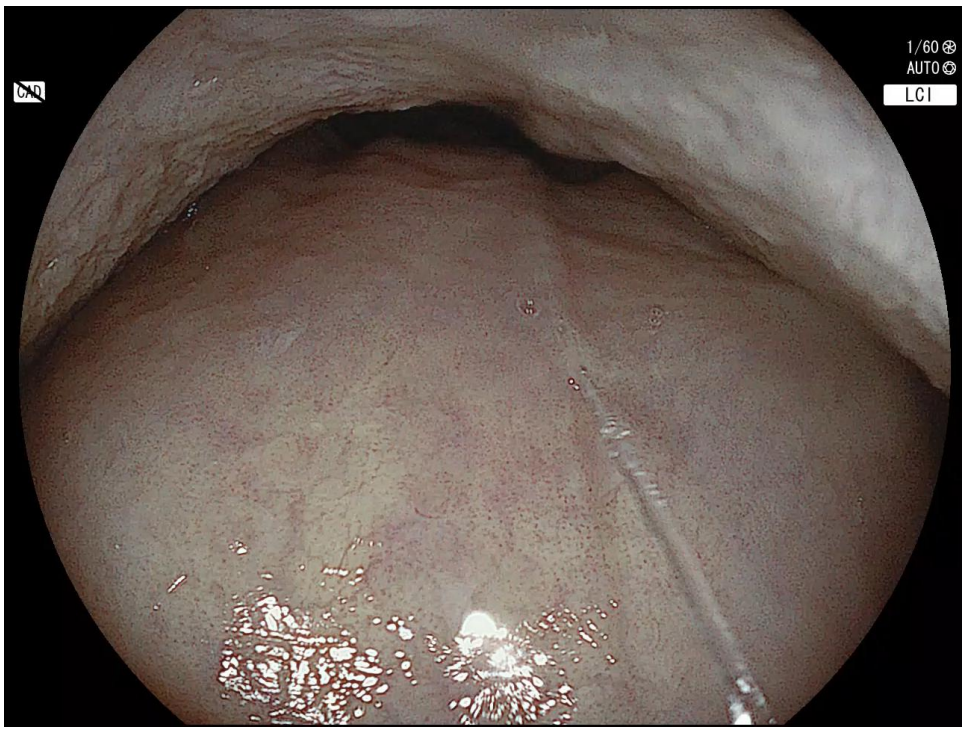
# Luminal Anatomy-The hypopharynx




Emura, F., Baron, T. H. & Gralnek, I. M. The pharynx: examination of an area too often ignored during upper endoscopy. *Gastrointestinal endoscopy* **78**, 143-149, (2013).

9

# The Exam




10

# How common is Pharyngeal Cancer?

**Data from 2022**

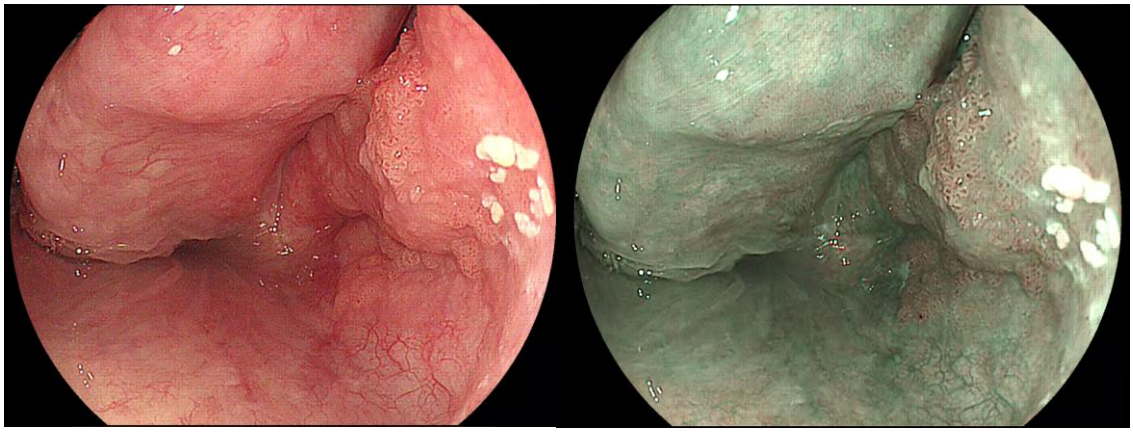
| Site | USA Cases | USA ASR | Canada Cases | Canada ASR | Japan Cases | Japan ASR |
|---|---|---|---|---|---|---|
| Oropharynx | 14,280 | 0.32 | 1,479 | 0.27 | 2,876 | 0.12 |
| Hypopharynx | 2,316 | 0.05 | 240 | 0.04 | 4,646 | 0.19 |

**ASR (Age-Standardized Rate) incidence per 100,000**

Ferlay, J., Ervik, M., Lam, F., Laversanne, M., Colombet, M., Mery, L., Piñeros, M., Znaor, A., Soerjomataram, I., & Bray, F. (2024). Global Cancer Observatory: Cancer Today. GLOBOCAN 2022 (Version 1.1). International Agency for Research on Cancer, Lyon, France. https://gco.iarc.who.int/today

11

# Missed oro/hypopharyngeal cancers



12

# Missed oro/hypopharyngeal cancers

**316** lesions that were diagnosed though biopsy specimens obtain by EGD from January 2019-November 2020

- ✓ 48 lesions diagnosed at another center
- ✓ 28 lesions were residual or recurrent lesions after treatment

240 lesions included in analysis

**85 (35%) missed cancers**
- 56 site not recorded on prior EGD
- 29 site recorded and could be seen on photo documentation

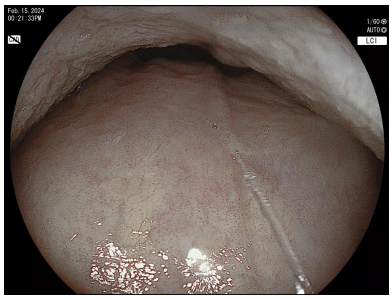
155 non-missed cancer
- 14 site of lesion recorded, but lesion not visible in images
- 15 lesion detected and Bx, but Bx negative for cancer
- 21 lesion detected, no Bx, endoscopic exam non-cancer
- 105 lesion no prior EGD or EGD>15months ago

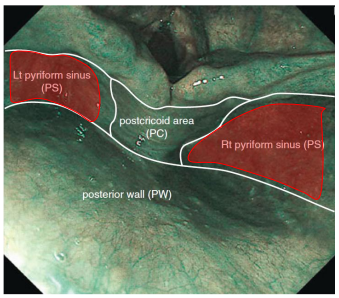
Nakajo, K. *et al.* The characteristics of missed pharyngeal and laryngeal cancers at gastrointestinal endoscopy. *Jpn J Clin Oncol* **52**, 575-582, doi:10.1093/jjco/hyac036 (2022).

13

# Missed oro/hypopharyngeal cancers

- Results:
  - 240 cancers analyzed, **85 (35%) were missed**
  - Risk factors for missed cancers:
    - smaller tumors, location in anterior epiglottis and pyriform sinus.






Nakajo, K. *et al.* The characteristics of missed pharyngeal and laryngeal cancers at gastrointestinal endoscopy. *Jpn J Clin Oncol* **52**, 575-582, doi:10.1093/jjco/hyac036 (2022).

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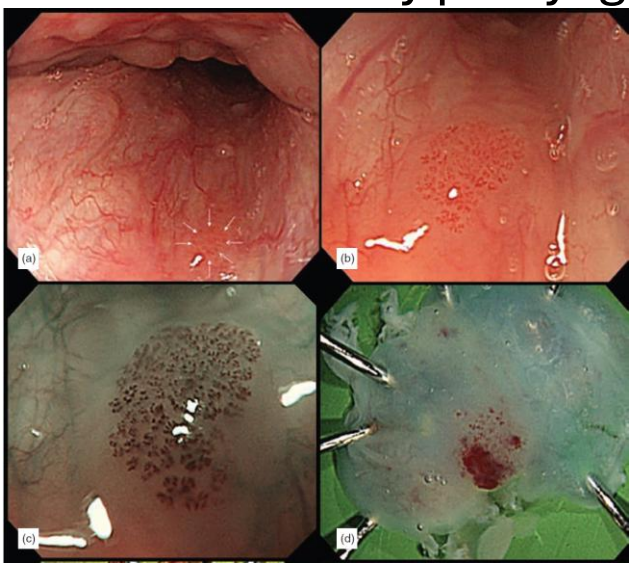
# Missed oro/hypopharyngeal cancers

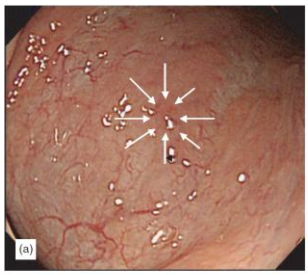
- Aim:
  - Investigate the anecdotal observation of frequent missed oro/hypopharyngeal cancers during EGD.
- Methods:
  - Retrospective multicenter study from 1991-1994
  - Patients diagnosed with oro/hypopharyngeal carcinoma
  - Cancers identified within 15 months after a negative EGD
- Results:
  - Out of 53 patients with oro/hypopharyngeal cancer, 12 had an EGD within 15 months.
    - **10 (85%) were reported as normal**

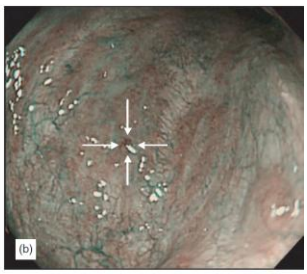
Fenton, J. E. *et al.* Hypopharyngeal tumours may be missed on flexible oesophagogastroscopy. *Bmj* **311**, 623-624, (1995).

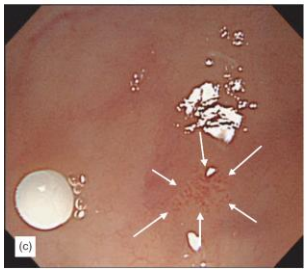
15

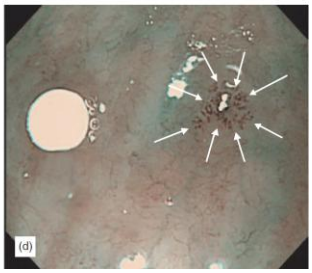
# What do early pharyngeal cancer look like?



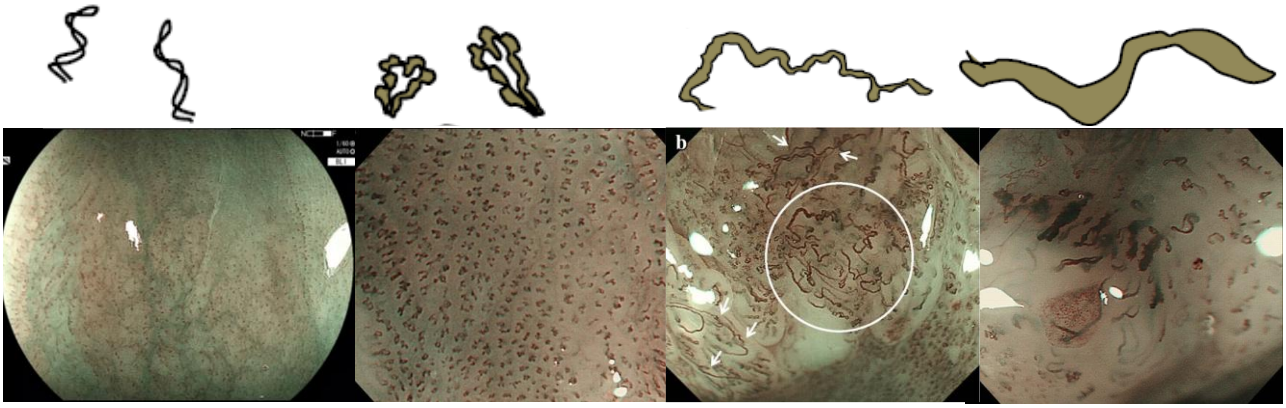




Bechara, R. & Inoue, H. in *Comprehensive Atlas of High-Resolution Endoscopy and Narrowband Imaging* 39-59 (John Wiley & Sons, Ltd, 2017).

16

# Japanese Esophageal Society IPCL Classification

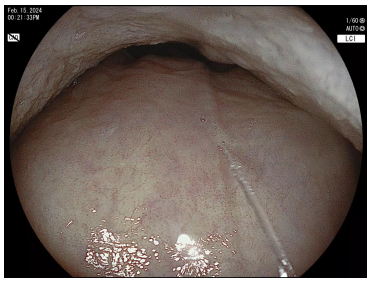
| | Cancer | | |
|---|---|---|---|
| A (Normal vessel) | B1 (thickened loop vessel) | B2 (non-loop vessel) | B3 (tumor vessels) |



Oyama, T. *and* Inoue, H. *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).

17

# Pharyngeal Exam Tips

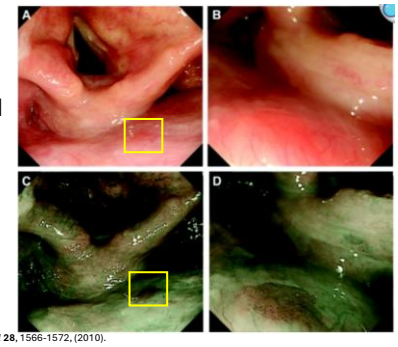


## 1. Don't Rush

- Dedicate **30 seconds** to the pharynx

## 2. Turn on NBI/BLI/LCI

- Landmark RCT in 2010 of 320 patients, NBI detected superficial pharyngeal cancer far more effectively than WLI **(100% vs 8%).**



Muto, M. *et al.* Early detection of superficial squamous cell carcinoma in the head and neck region and esophagus by narrow band imaging: a multicenter randomized controlled trial. *J Clin Oncol* **28**, 1566-1572, (2010).
Pimentel-Nunes, P. *et al.* Endoscopic submucosal dissection for superficial gastrointestinal lesions: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2022. *Endoscopy* **54**, 591-622, (2022).
Beg, S. *et al.* Quality standards in upper gastrointestinal endoscopy: a position statement of the British Society of Gastroenterology (BSG) and Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS). *Gut* **66**, 1886-1899, (2017).
Kitagawa, Y. *et al.* Esophageal cancer practice guidelines 2022 edited by the Japan esophageal society: part 1. *Esophagus* **20**, 343-372, (2023).
Othman, M. O., Lee, J. H. & Wang, K. Clinical Practice Update on the Utility of Endoscopic Submucosal Dissection in T1b Esophageal Cancer: Expert Review. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association* **17**, 2161-2166, (2019).

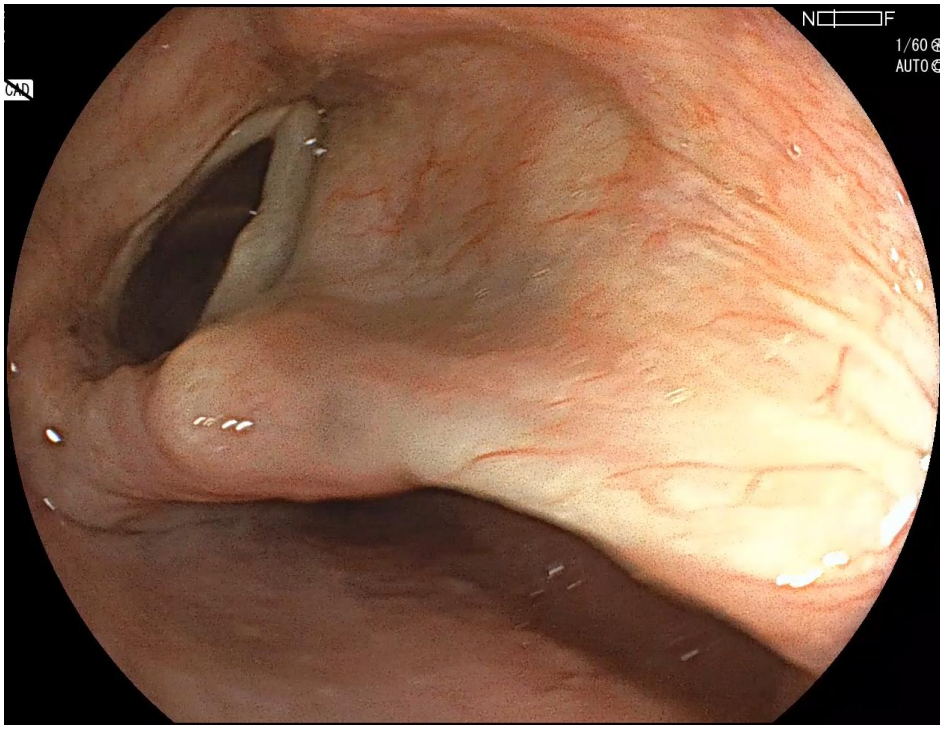
18

# Case HP1

80yo man with prior definitive chemorads for esophageal SCC 2020.

3 EGDs in past 3 years.

This year's EGD demonstrated recurrent squamous HGD→? ESD

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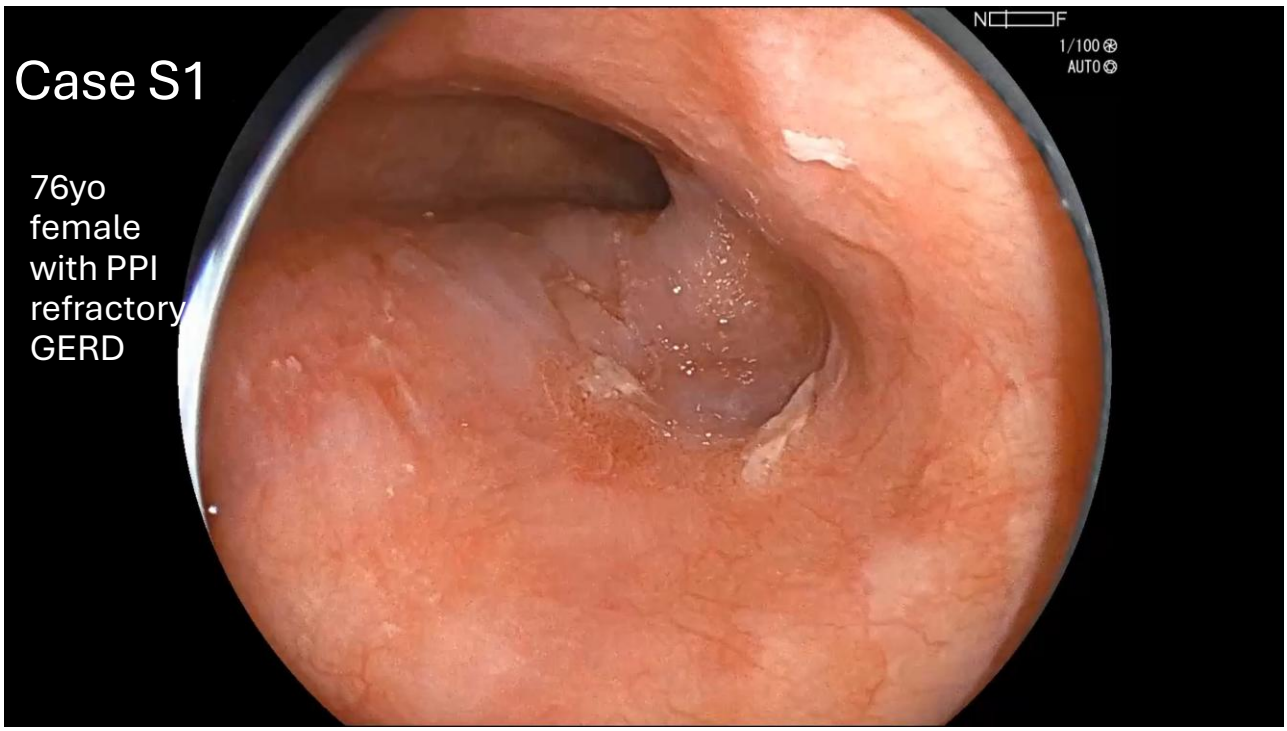
# Case S1

76yo female with PPI refractory GERD

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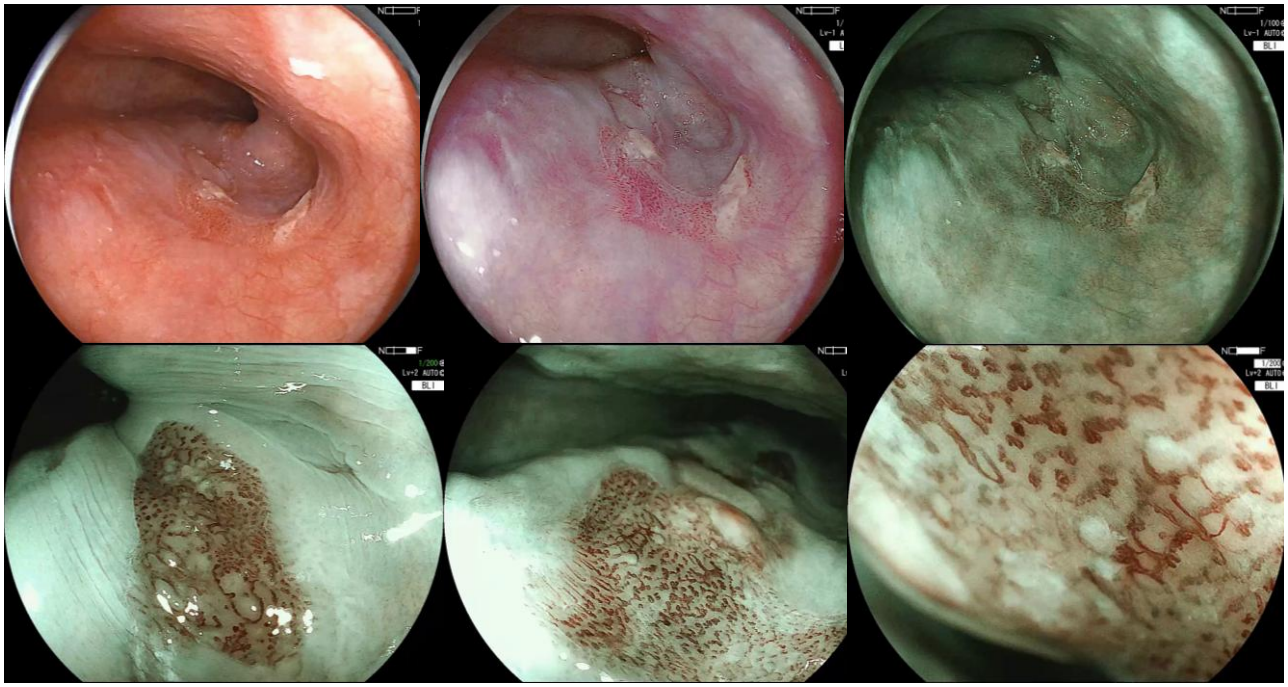

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# Esophageal Exam tips (squamous)

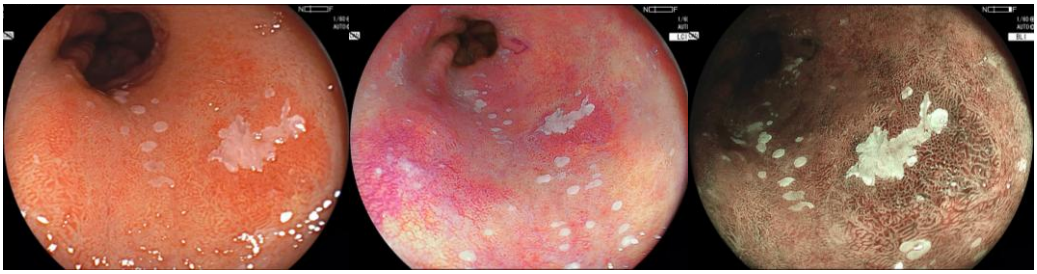
1. Turn on ***NBI/BLI/LCI***
   - Landmark RCT (Muto et al.) showed WLE sensitivity at 55% vs. NBI at 97%.

2. You can also use Lugol's (1%)
   - Highest sensitivity (87-100%) suboptimal specificity (37-82%)

Mori, M. et al. Lugol staining pattern and histology of esophageal lesions. Am J Gastroenterol 88, 701-705 (1993).
Mansour, N. M. & Anandasabapathy, S. Lugol's Chromoendoscopy in the Screening of Esophageal Squamous Cell Carcinoma: Time to Take a Closer Look? Clinical Gastroenterology and Hepatology 16, 1562-1563, (2018).
Ishihara, R. et al. Quantitative analysis of the color change after iodine staining for diagnosing esophageal high-grade intraepithelial neoplasia and invasive cancer. Gastrointestinal endoscopy 69, 213-218, (2009).

26

# Missed Esophageal (Barretts) Cancers



- Systematic review & meta-analysis of 52 studies (n=145,726 patients)
- Miss Rate
  - 26% overall

Sawas, T. *et al.* Magnitude and Time-Trend Analysis of Postendoscopy Esophageal Adenocarcinoma: A Systematic Review and Meta-analysis. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association* **20**, e31-e50, (2022).

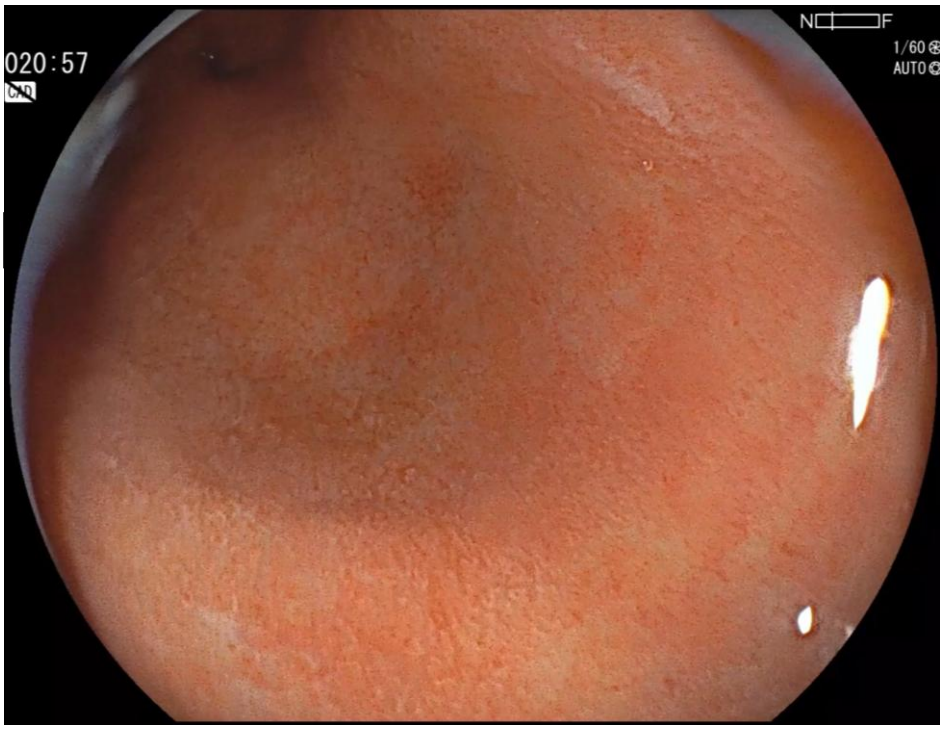
27

# Case B1

74yo lady with C10M11.

Two EGDs in the past 2 years for indefinite dysplasia.

Referred for assessment.

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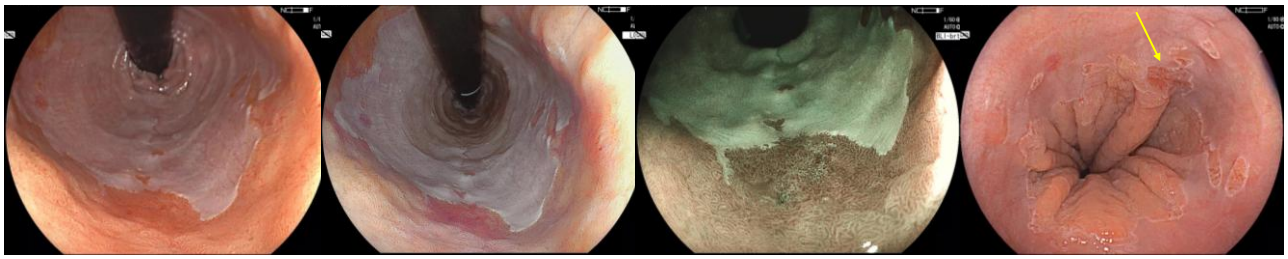
# Esophageal Exam tips (Barrett's)

- Acetic acid (1.5-3%)→ ↑detection of HGD/EAC ~15x vs random Bx
- NBI/BLI→ ↑ detection of HGD/EAC by 34%
- LCI→ 2x higher color contrast of Barrett's neoplasia

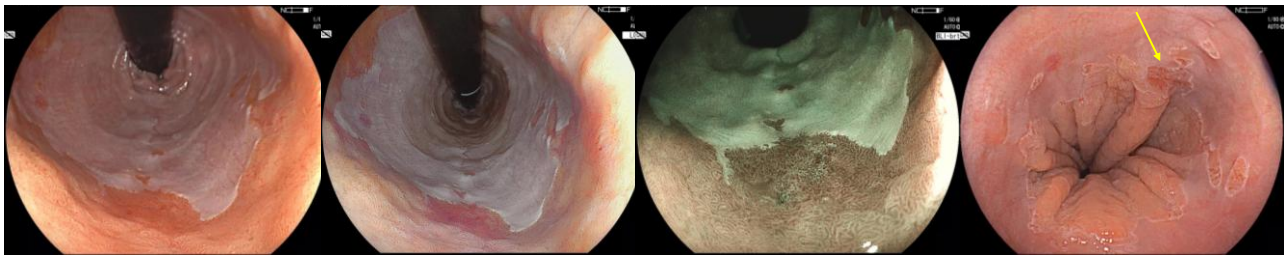


Thosani, N. *et al.* ASGE Technology Committee systematic review and meta-analysis assessing the ASGE Preservation and Incorporation of Valuable Endoscopic Innovations thresholds for adopting real-time imaging-assisted endoscopic targeted biopsy during endoscopic surveillance of Barrett's esophagus. *Gastrointestinal endoscopy* **83**, 684-698.e687, (2016).
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).
Hajelssedig, O. E. et al. Diagnostic accuracy of NBI with targeted biopsies compared with standard endoscopy with random biopsies in patients with Barrett's esophagus: A systematic review and meta-analysis. J Gastroenterol Hepatol 36, 2659-2671, (2021).
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).
Ono S, Kawada K, Dohi O, Kitamura S, Koike T, Hori S, Kanzaki H, Murao T, Yagi N, Sasaki F, Hashiguchi K, Oka S, Katada K, Shimoda R, Mizukami K, Suehiro M, Takeuchi T, Katsuki S, Tsuda M, Naito Y, Kawano T, Haruma K, Ishikawa H, Mori K, Kato M; LCI-FIND Trial Group. Linked Color Imaging Focused on Neoplasm Detection in the Upper Gastrointestinal Tract : A Randomized Trial. Ann Intern Med. 2021 Jan;174(1):18-24. doi: 10.7326/M19-2561. Epub 2020 Oct 20. PMID: 33076693.

30

# Esophageal Exam tips (Barrett's)

- Spend *at least* 1 min/cm examining Barrett's →↑detection of HGD/EAC ~4x
- Beware proximal segment/right wall→ Higher incidence of HGD/EAC ~6x(60-70% in 12-3 o'clock quadrant)



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).
Hajelssedig, O. E. et al. Diagnostic accuracy of NBI with targeted biopsies compared with standard endoscopy with random biopsies in patients with Barrett's esophagus: A systematic review and meta-analysis. J Gastroenterol Hepatol 36, 2659-2671, (2021).
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).
Ono S, Kawada K, Dohi O, Kitamura S, Koike T, Hori S, Kanzaki H, Murao T, Yagi N, Sasaki F, Hashiguchi K, Oka S, Katada K, Shimoda R, Mizukami K, Suehiro M, Takeuchi T, Katsuki S, Tsuda M, Naito Y, Kawano T, Haruma K, Ishikawa H, Mori K, Kato M; LCI-FIND Trial Group. Linked Color Imaging Focused on Neoplasm Detection in the Upper Gastrointestinal Tract : A Randomized Trial. Ann Intern Med. 2021 Jan;174(1):18-24.. Epub 2020 Oct 20. PMID: 33076693.

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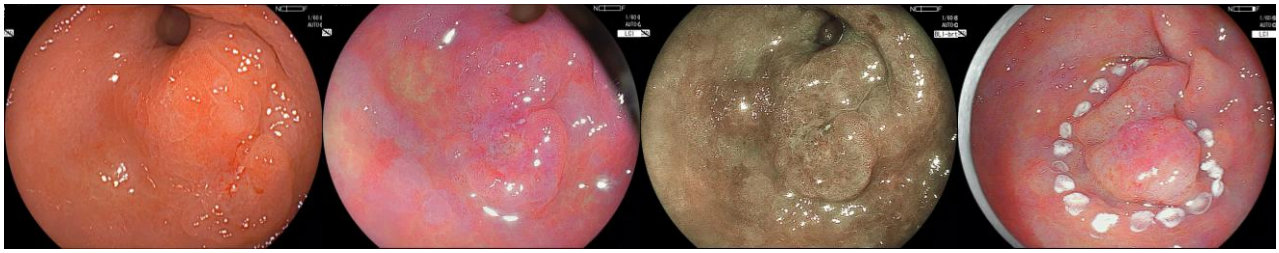
# Missed Gastric Cancers



- Systematic review & meta-analysis of 22 studies (n=69 061 patients)
- Miss Rate of
  - **9.4%** overall
  - **23.3%** for synchronous lesions
- Risk factors for missed lesions:
  - Younger age(<55yo), female sex, atrophy, gastric ulcer, gastric adenoma

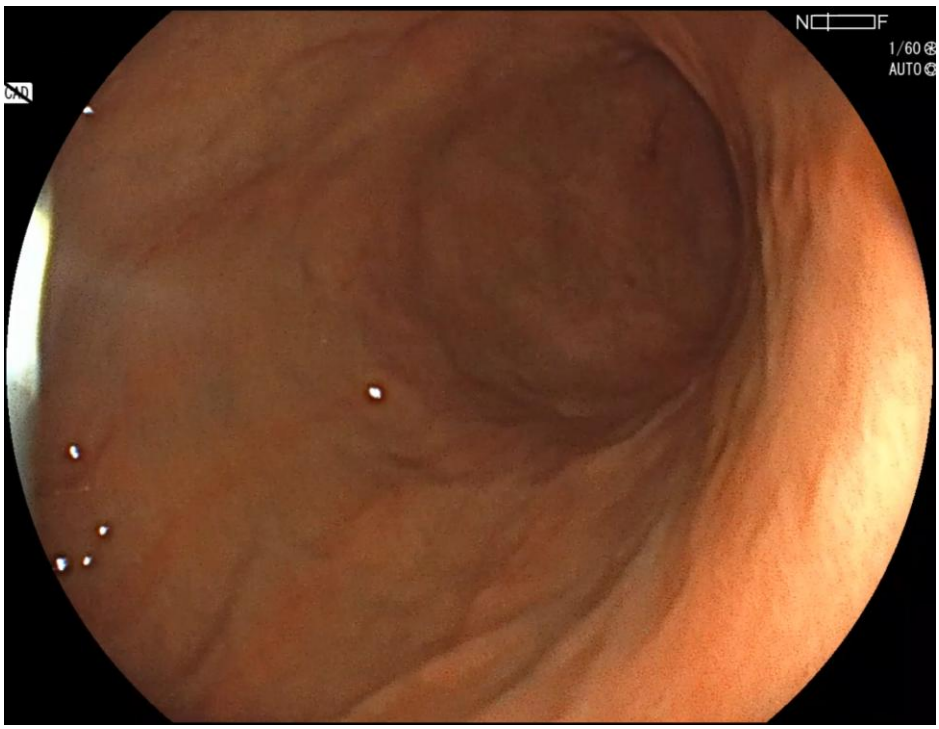
Pimenta-Melo, A. R., Monteiro-Soares, M., Libânio, D. & Dinis-Ribeiro, M. Missing rate for gastric cancer during upper gastrointestinal endoscopy: a systematic review and meta-analysis. *European journal of gastroenterology & hepatology* 28, 1041-1049, (2016).

32

# Case G1

89yo lady with cricopharyngeal spasm with EGD and dilation 4 months ago. Now with recurrent symptoms.

Sent for dilation

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# Gastric Exam Tips

- Premedication
- ≥7-minute exam
- Use Image Enhanced Endoscopy
- Systematic Screening Protocol

Chiu PWY, Uedo N, Singh R, et al. An Asian Consensus on Standards of Diagnostic Upper Endoscopy for Early Neoplasia: Asian Novel Bio-Imaging and Intervention Group and Asian ESD Group Perspective. *Gut.* 2019;68(10):1863–1872.
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Nagula S, Parasa S, Laine L, Shah SC. AGA Clinical Practice Update on High-Quality Upper Endoscopy: Expert Review. *Clin Gastroenterol Hepatol.* 2024;22(6):1232-1244.
Lee JI, Kim JS, Kim BW, Huh CW. *Taking More Gastroscopy Images Increases the Detection Rate of Clinically Significant Gastric Lesions: Validation of a Systematic Screening Protocol for the Stomach.* Korean J Helicobacter Up Gastrointest Res. 2020;20(3):225–233.
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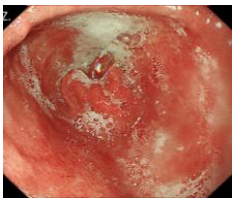
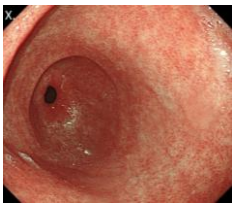
# Gastric Exam Tips



- **Premedication**
  - Use of simethicone+/-mucolytic pre-drink to improve visualization
    - **100-200mg simethicone + 50-100ml of water** given 20-60min prior to EGD
    - 13 RCTs demonstrating improved mucosal visualization without any adverse events



- **Take your time**
  - At least **7 min** examination time of routine EGD
    - **3.4×** more likely to detect neoplastic lesions(cancer/dysplasia)
    - Detected **14.0%** high-risk lesions vs **6.1%**

Teh, J. L. *et al.* Longer examination time improves detection of gastric cancer during diagnostic upper gastrointestinal endoscopy. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association* **13**, 480-487.e482, (201
Burke, E., Harkins, P., Moriarty, F. & Ahmed, I. Does Premedication with Mucolytic Agents Improve Mucosal Visualization during esophagogastroduodenoscopy: A Systematic Review & Meta-Analysis. *Surg Res Pract* 2021, 1570121, (2021)

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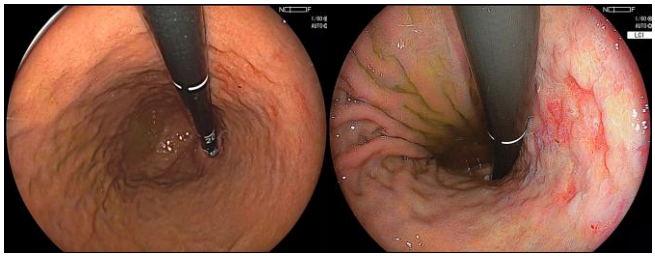
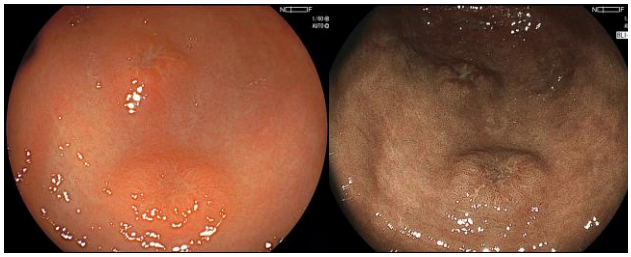
# Gastric Exam Tips

- **Use of image enhanced endoscopy**
  - RCTs show that IEE modalities outperform WLE for Gastric neoplasia
    - **LCI** vs WLE, **8.0% vs 4.3%** detection rate, p<0.001.
    - **BLI-Brt** vs WLE, **93.1%** vs **50.0%,** p=0.001.
    - **NBI-3G** vs WLE, **7.3%** vs WLI **5.6%**.





Gao, J. *et al.* Linked Color Imaging Can Improve Detection Rate of Early Gastric Cancer in a High-Risk Population: A Multi-Center Randomized Controlled Clinical Trial. *Dig Dis Sci* 66, 1212-1219, (2021).
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Kadota, T. *et al.* Comparison of Effective Imaging Modalities for Detecting Gastric Neoplasms: A Randomized 3-Arm Phase II Trial. *Am J Gastroenterol* 119, 2010-2018, (2024).

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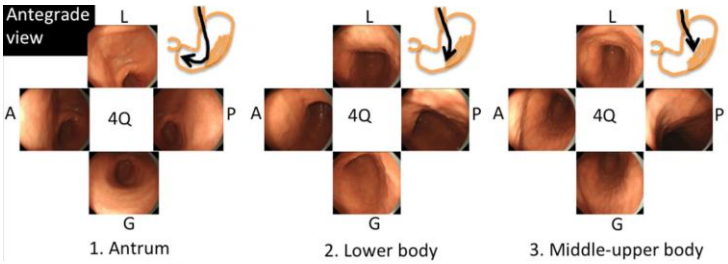
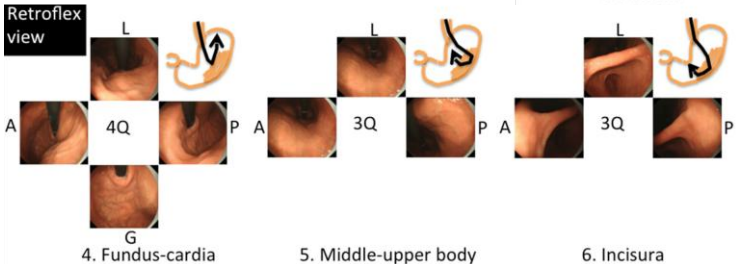
# Gastric Exam Tips

**Systematic Screening Protocol**

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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. *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).Lee, J. I., Kim, J. S., Kim, B.-W. & Huh, C. W. Taking More Gastroscopy Images Increases the Detection Rate of Clinically Significant Gastric Lesions: Validation of a Systematic Screening Protocol for the Stomach. *Korean J Helicobacter Up Gastrointest Res* **20**, 225-232, (2020).

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# Photo-documentation in EGD

- **Japan 2013**
  - ≥ 22 landmark images plus targeted pathology images
- **World Endoscopy Organization 2020**
  - ≥28 landmark images plus targeted pathology images
- **European Society of Gastrointestinal Endoscopy 2025**
  - ≥10 landmark images plus targeted pathology images
- **American Society of Gastrointestinal Endoscopy 2025**
  - ≥7 landmark images plus targeted pathology images

Yao, K. Systematic screening protocol for the stomach to detect early gastric cancer. Digestive Endoscopy 25, 1–10 (2013).
Emura F, Sharma P, Arantes V et al. Principles and practice to facilitate complete photodocumentation of the upper gastrointestinal tract: World Endoscopy Organization position statement. Dig Endosc 2020; 32: 168–179
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# Photo-documentation in EGD

**Clinical outcomes**

- Across observational studies, systematic photodocumentation protocols are associated with higher neoplastic/high-risk lesion detection

- **Quality surrogate**
  - Documents mucosal cleaning and exam completeness
  - “Shows what you saw” - accountability and reproducibility

**Standard of care**

- Core quality metric endorsed by ESGE · ASGE · ACG · AGA · WEO

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# Summary

- **All Upper Endoscopy**
  - Pre-drink →100-200mg simethicone + water ~30min prior to EGD
  - Spend 30s doing a pharyngeal exam with NBI/BLI/LCI
  - Spend~7 min for *routine* exam
- **Esophageal Exam**
  - Use NBI/BLI/LCI
  - Adjuncts
    - 1.5-3% Acetic Acid for ALL Barretts and spend at least 1min/cm of Barretts
- **Gastric**
  - Systematic Exam
  - Use BLI, LCI, NBI-3G

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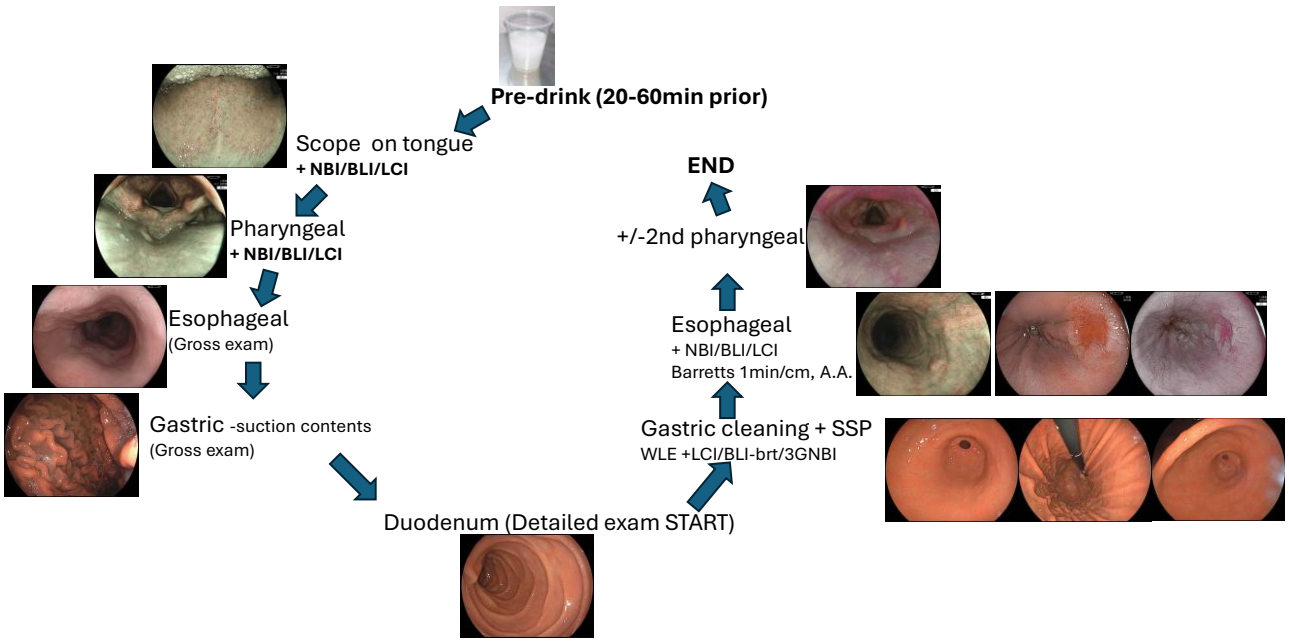
# Approach to Upper GI Examination

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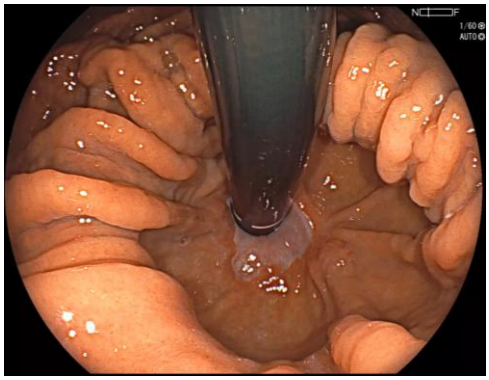
# Questions?



Robert.Bechara@kingstonhsc.ca

@RobertBechara

www.youtube.com/c/rbendoscopy

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