



# Updates in Treatment of Barrett's Esophagus

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# Disclosures

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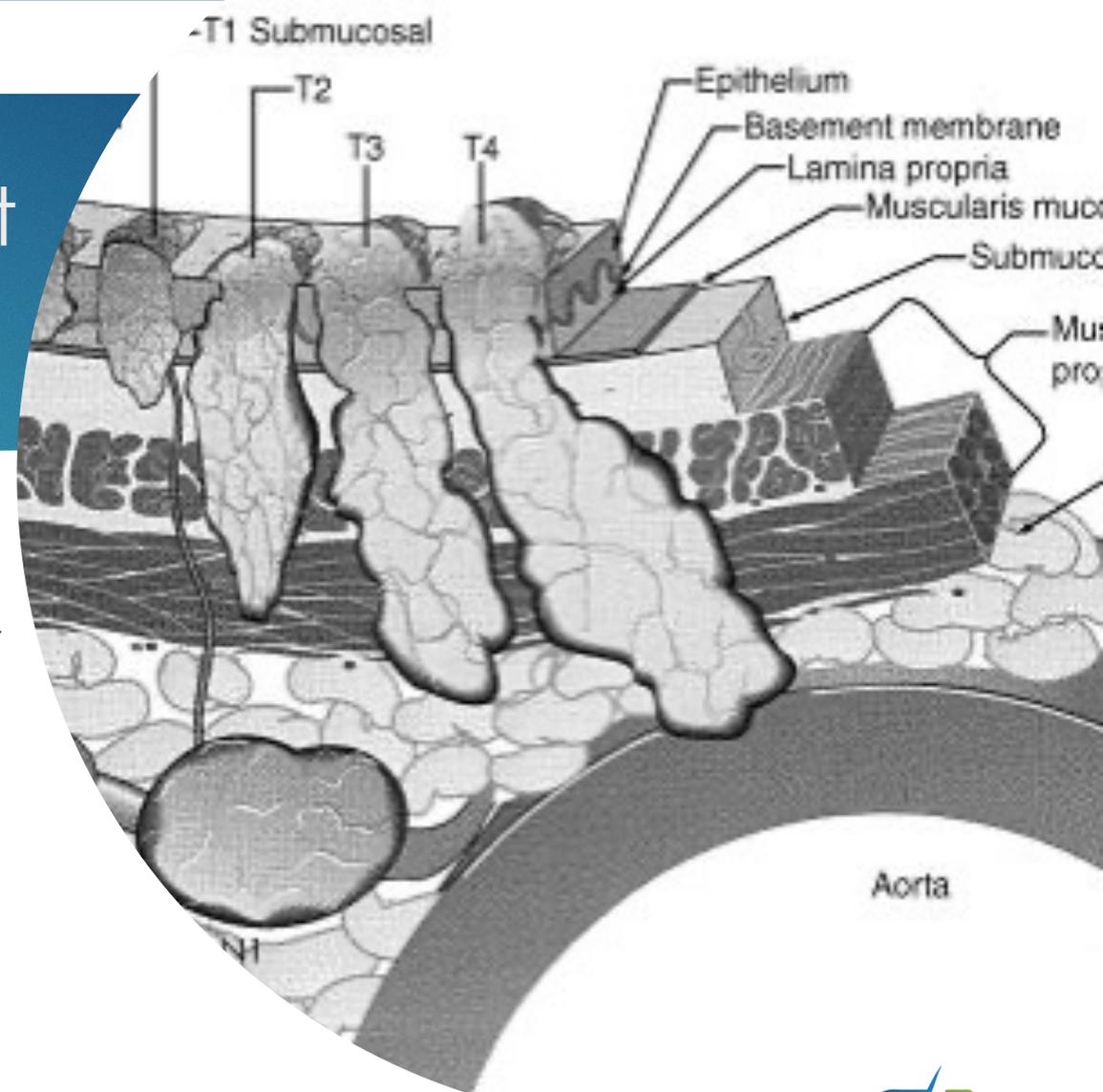
# What Is Barrett's Esophagus (BE)?

- ▶ Intestinal Metaplasia (IM) of the distal esophagus
  - ▶ Likely secondary to acid reflux
- ▶ 1.6% of general population
  - ▶ 7-10% of patients with GERD
  - ▶ Male:female = 2:1
- ▶ Diagnosis: endoscopic finding + histology showing IM/goblet cells



# Why Should We Care About Barrett's Esophagus?

- ▶ Risk of progression to **adenocarcinoma**
  - ▶ Now adenocarcinoma > squamous cell cancer
  - ▶ 30-fold greater risk of cancer
    - ▶ Absolute risk low (0.1-0.4%/yr)
- ▶ BE → Low grade dysplasia → High grade dysplasia → CA
- ▶ Esophageal adenoCA 5 yr survival rate < 15%
  - ▶ *Curable if caught early (T1)*
  - ▶ *Better off preventing it by identifying dysplasia and treating it*



# Screening?

## ACG guidelines 2022

5. We suggest a single screening endoscopy in patients with chronic GERD symptoms and 3 or more additional risk factors for BE, including male sex, age >50 yr, White race, tobacco smoking, obesity, and family history of BE or EAC in a first-degree relative

6. We suggest that a swallowable, nonendoscopic capsule device combined with a biomarker is an acceptable alternative to endoscopy for screening for BE

7. We suggest against repeat screening in patients who have undergone an initial negative screening examination by endoscopy

# Barrett's Surveillance – Who Needs It and Why?

In patients with nondysplastic BE, we suggest performing surveillance endoscopy compared with no surveillance.

*To identify and treat dysplasia and prevent cancer*

**TABLE 2. Endoscopic management strategies for Barrett's esophagus**

| <b>Histology</b> | <b>Intervention options</b>   |
|------------------|---|
| NDBE             | Consider no surveillance.<br>If surveillance is elected, perform EGD every 3 to 5 years with 4-quadrant biopsies every 2 cm.<br>Consider endoscopic ablation in select cases.   |
| IGD              | Clarify presence and grade of dysplasia with expert GI pathologist.<br>Increase antisecretory therapy to eliminate esophageal inflammation.<br>Repeat EGD and biopsy to clarify dysplasia status.   |
| LGD              | Confirm with expert GI pathologist.<br>Repeat EGD in 6 months to confirm LGD.<br>Surveillance EGD every year, 4-quadrant biopsies every 1 to 2 cm.<br>Consider endoscopic resection or ablation.  |
| HGD              | Confirm with expert GI pathologist.<br>Consider surveillance EGD every 3 months in select patients, 4-quadrant biopsies every 1 cm.<br>Consider endoscopic resection or RFA ablation.<br>Consider EUS for local staging and lymphadenopathy.<br>Consider surgical consultation. |

**Rate of cancer progression**

0.05-0.25%/yr

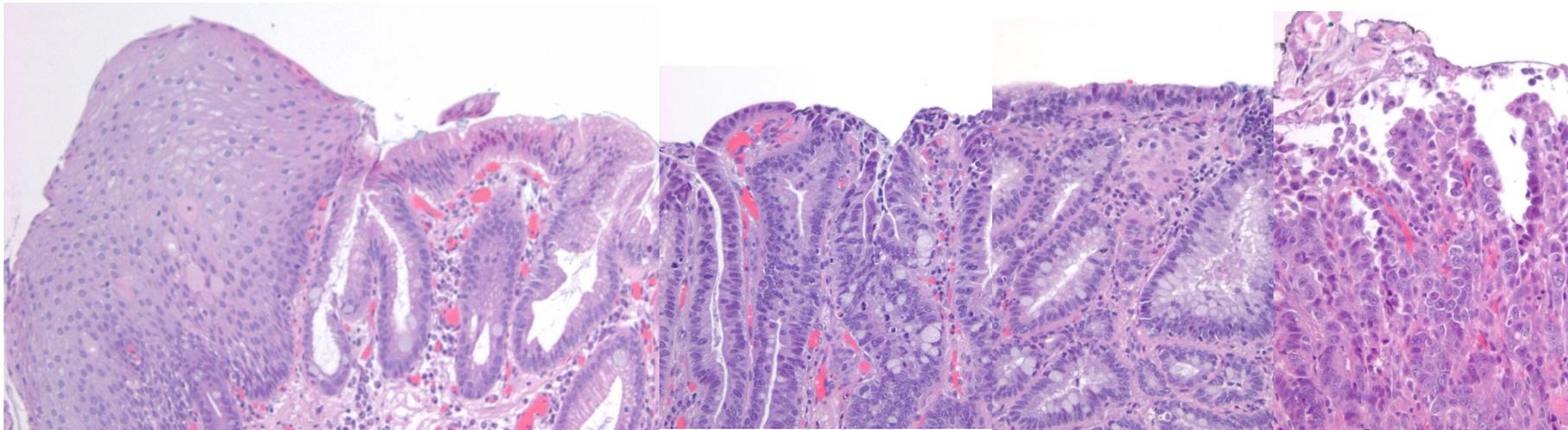
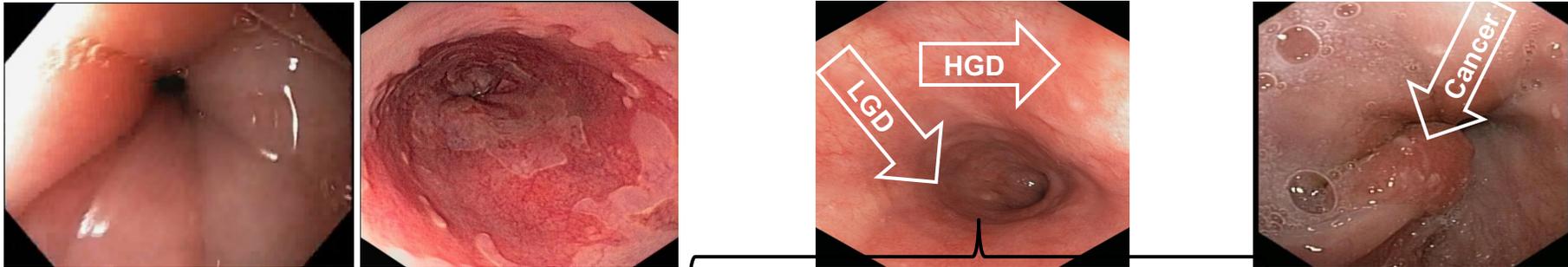
0.2-1%/yr

0.5-2%/yr

4-8%/yr

*NDBE*, Nondysplastic Barrett's esophagus; *IGD*, indeterminate for dysplasia; *LGD*, low-grade dysplasia; *HGD*, high-grade dysplasia; *RFA*, radiofrequency ablation.

# May Be Difficult to Detect HGD/Early CA on White Light Endoscopy



Squamous 10x

Barretts 10x

Low grade dysplasia (LGD) 20x

High grade dysplasia (HGD) 20x

Cancer 20X

In patients with BE undergoing surveillance, we recommend using chromoendoscopy, including virtual chromoendoscopy and Seattle protocol biopsy sampling, compared with white-light endoscopy with Seattle protocol biopsy sampling.

From ASGE guidelines 2019

In patients with known or suspected BE, we suggest using WATS-3D in addition to Seattle protocol biopsy sampling compared with white-light endoscopy with Seattle protocol biopsy sampling.

10. We suggest endoscopic surveillance be performed in patients with BE at intervals dictated by the degree of dysplasia noted on previous biopsies

From ACG guidelines 2022

11. We recommend that length of BE segment be considered when assigning surveillance intervals with longer intervals reserved for those with BE segments of <3 cm

Surveillance to identify dysplasia/cancer

Seattle protocol

- ▶ 4 quadrant biopsies every 2 cm

Targeting focal lesions

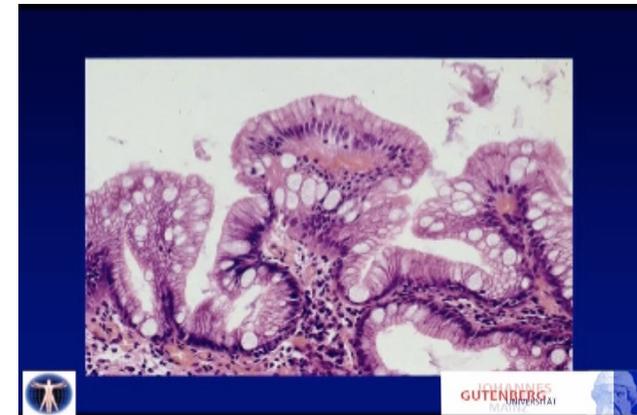
- ▶ Chromoendoscopy
- ▶ Red flag ID

Wide-area transepithelial sampling

- ▶ Broaden area of sampling
- ▶ No recommendation in 2022 ACG guidelines

# Chromoendoscopy

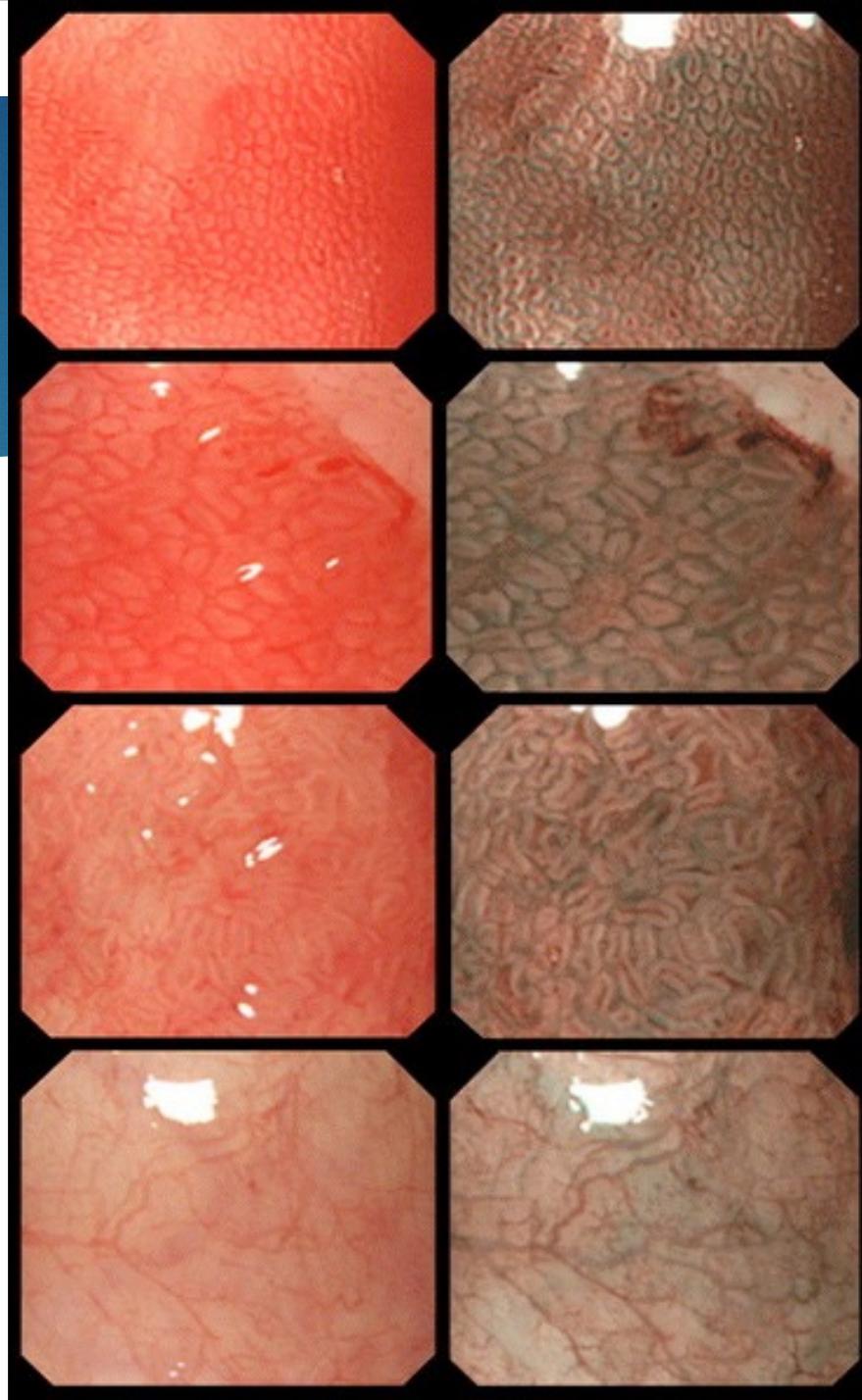
- ▶ May function as both red flag and focal exam tool
- ▶ Aqueous iodine (1.5-3%)
- ▶ Acetic acid
- ▶ Indigotindisulfonate
- ▶ Methylene Blue (Barrett's without dysplasia)
- ▶ No significant difference in detection of dysplasia in meta-analysis



Kiesslich, R. (Jan 15 2004). Esophagus - Chromoendoscopy of Barrett's Epithelium. *The DAVE Project*. Retrieved Mar, 28, 2010, from [http://daveproject.org/viewfilms.cfm?film\\_id=90](http://daveproject.org/viewfilms.cfm?film_id=90).

### Nondysplastic BE ( $\times 115$ )

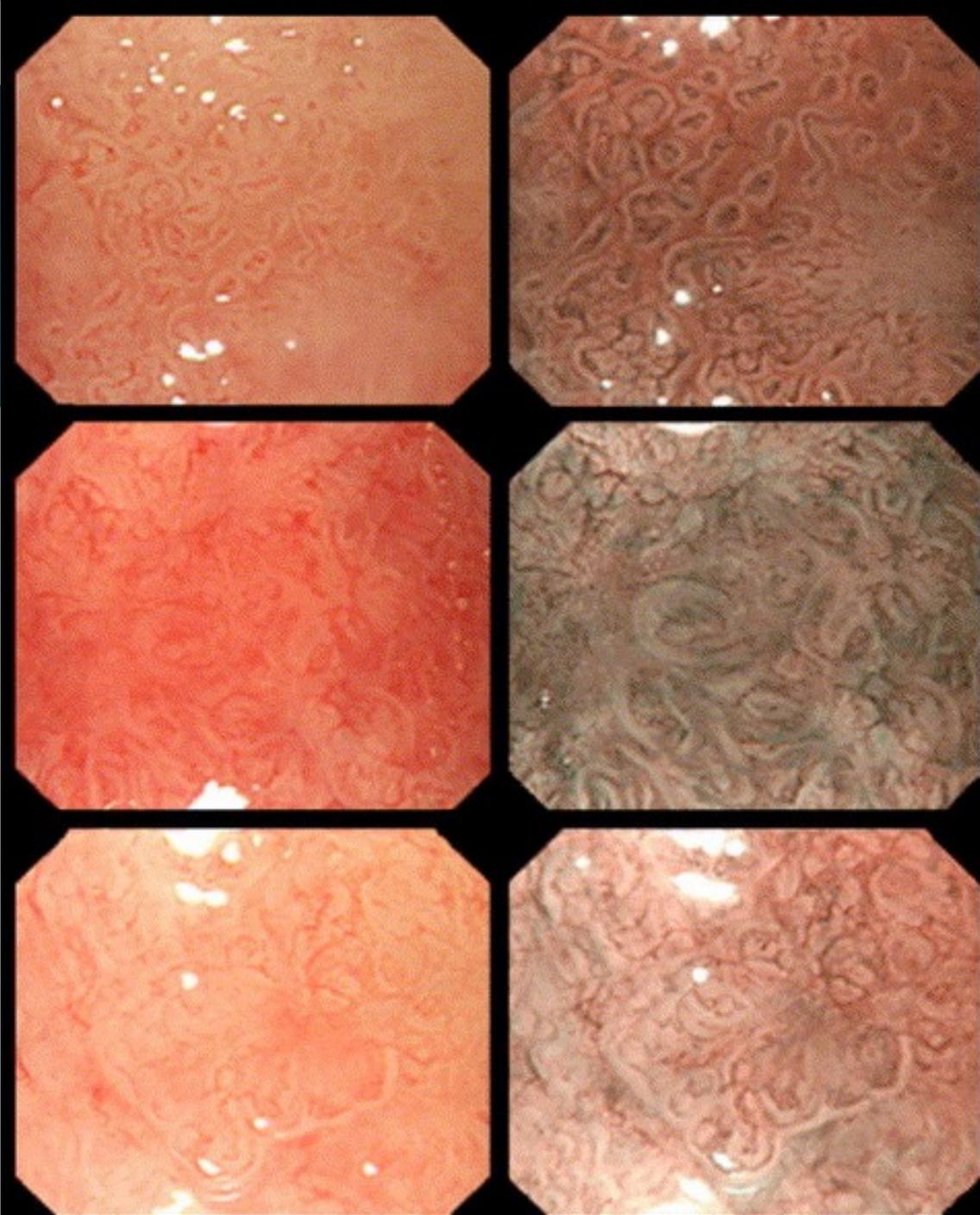
- Magnified high-res WLE (*left*)
- NBI (*right*)
- Upper 3: **regular villous/gyrus-forming** mucosal patterns with regular vascular patterns; villi are of various sizes and shapes but regular in all areas with blood vessels situated between the mucosal ridges
- Lower image: flat-type mucosa without pits or villi; vasculature shows regular, normal-appearing long branching vessels



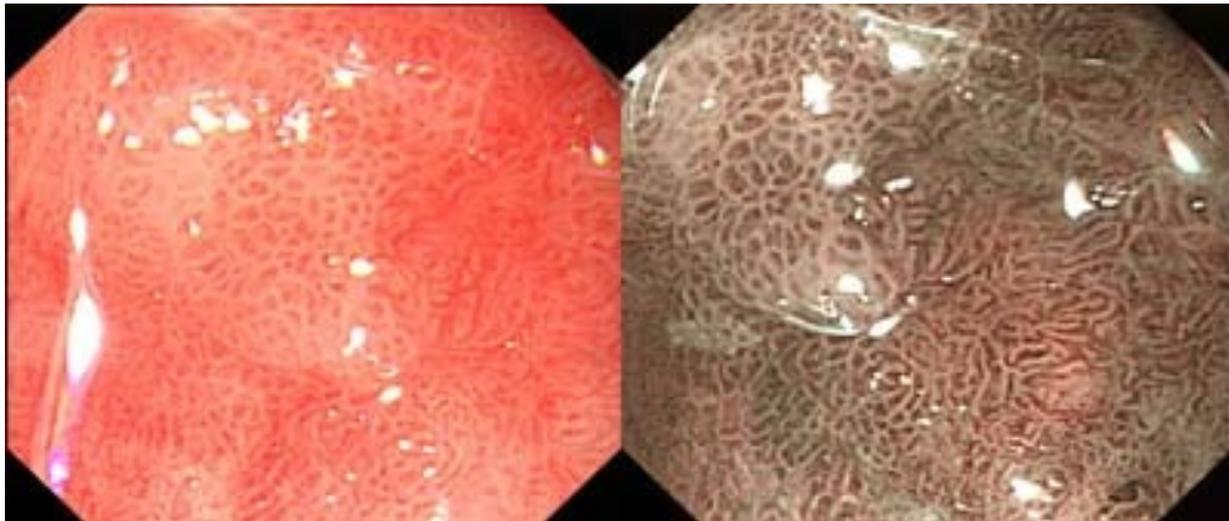
## HGIN in BE (× 115)

- ▶ Magnified high-resolution WLE (*left*)
- ▶ NBI (*right*)
- ▶ **Irregular/disrupted mucosal patterns, with irregular vascular patterns** with remnants of villous/gyrus-forming mucosal patterns.

From "Detection and classification of the mucosal and vascular patterns (mucosal morphology) in Barrett's esophagus by using narrow band imaging" Mohammed A. Kara, MD, PhD, Mohamed Ennahachi, BSc, Paul Fockens, MD, PhD, Fiebo J. W. ten Kate, MD, PhD, Jacques J. G. H. M. Bergman, MD, PhD. *Gastrointestinal Endoscopy* - Volume 64, Issue 2 (August 2006).



# Early Adenocarcinoma



## Mucosal Lesions: Classification

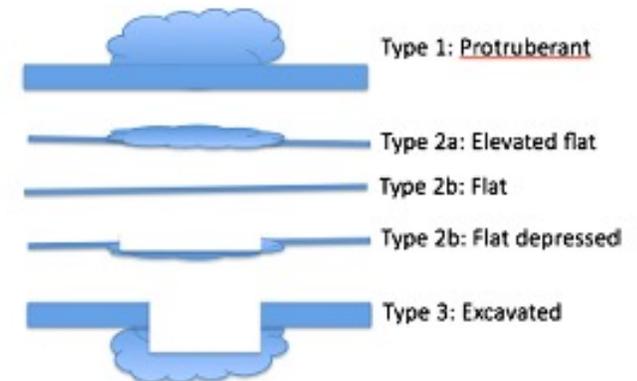
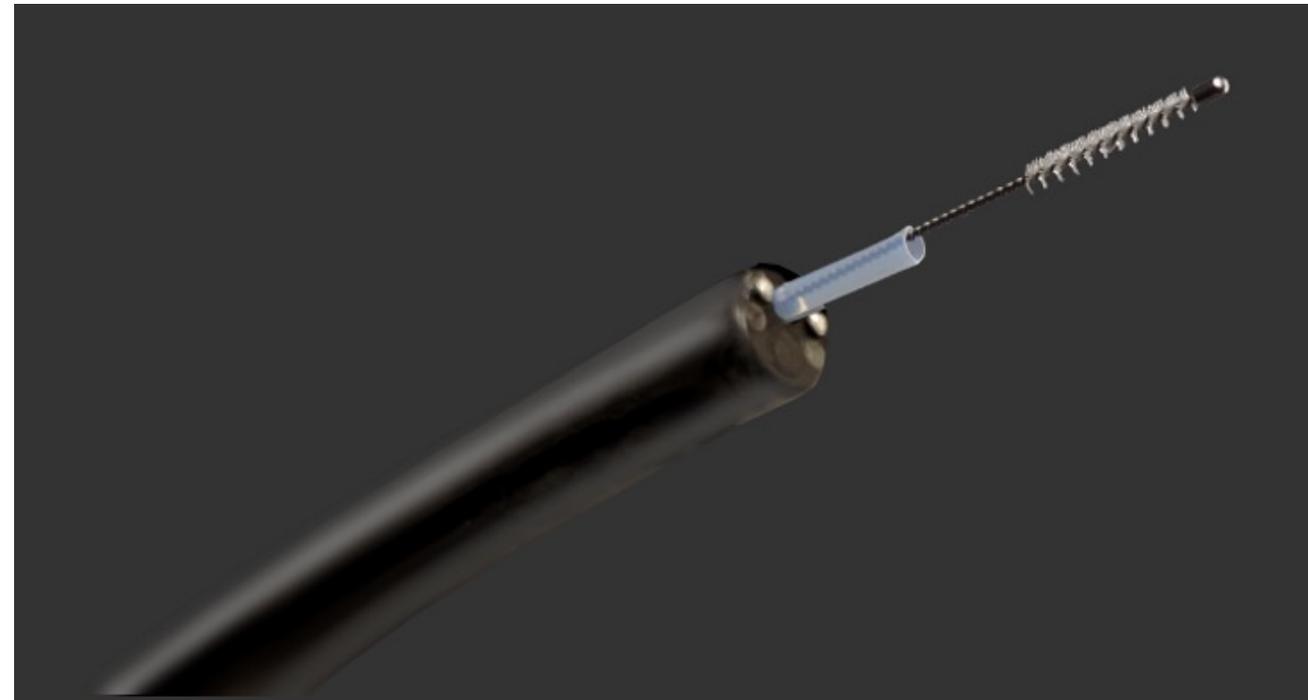
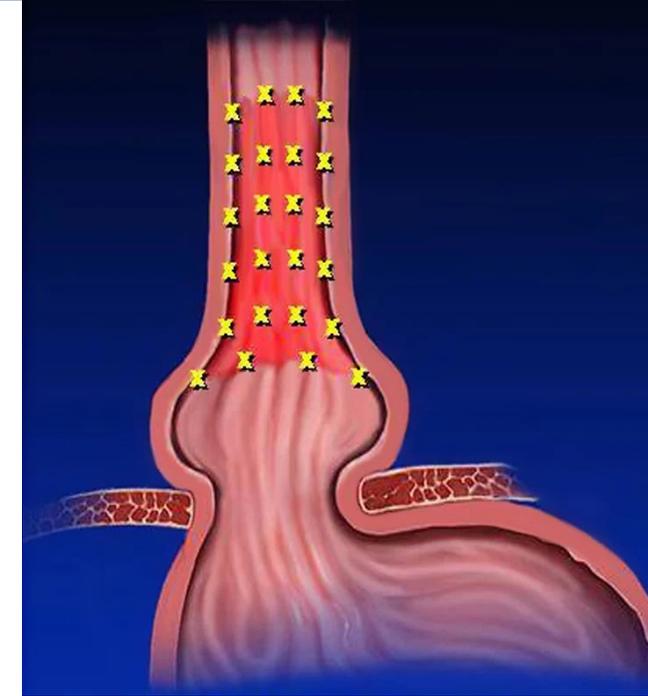
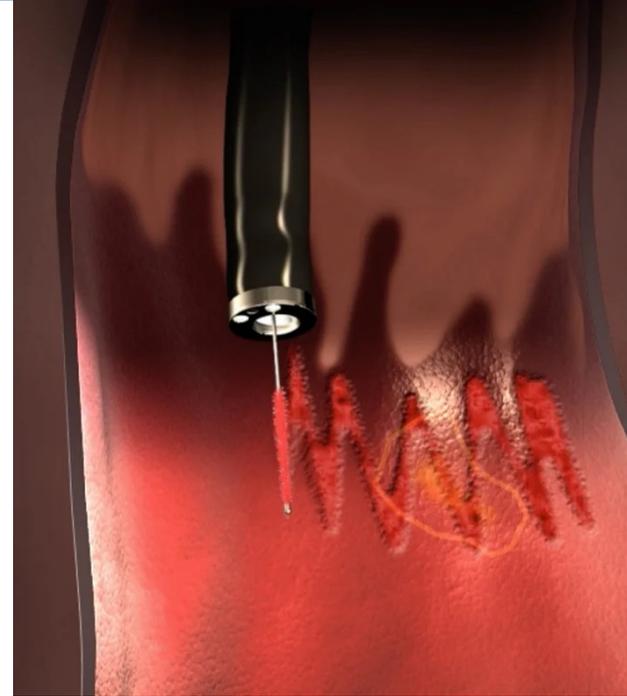


Fig. 3. Classification of lesions. The most common lesions found in Barrett's esophagus are types 2a and 2b, being slightly elevated or flat.

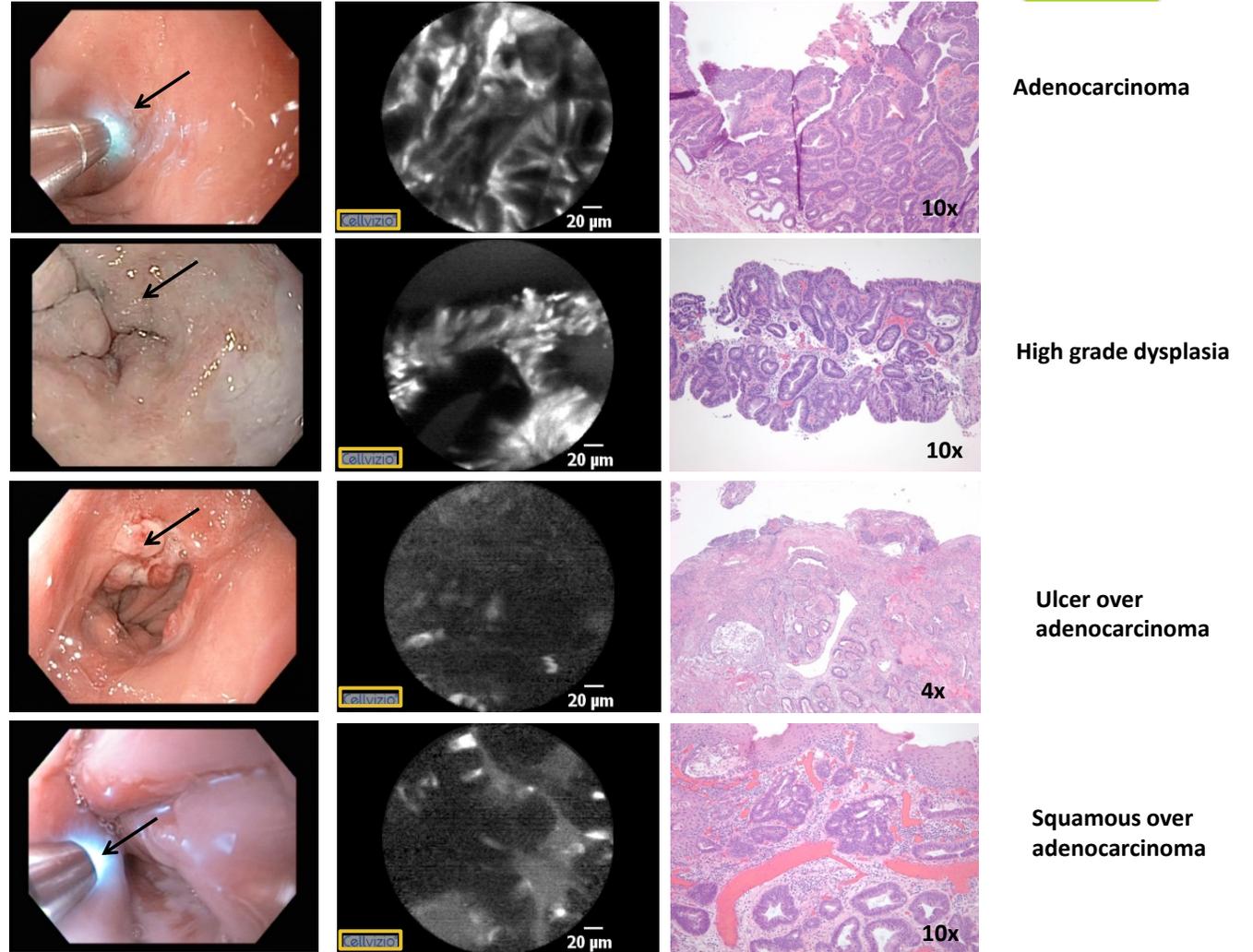
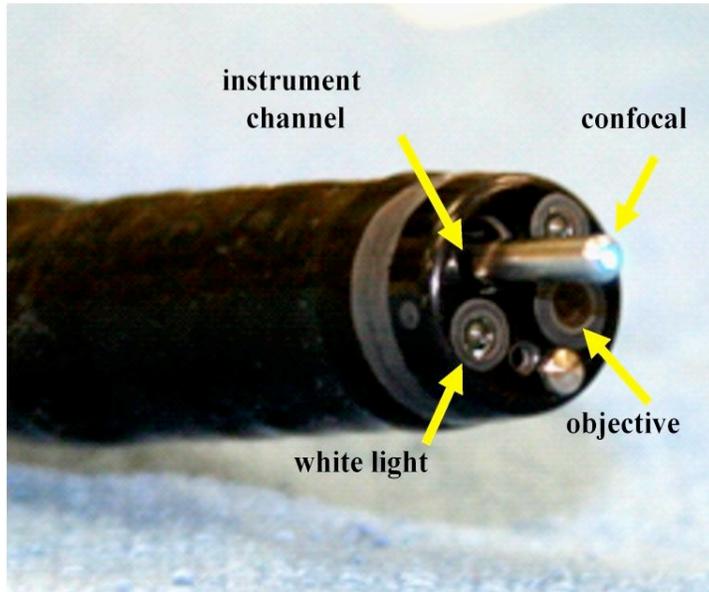
# Wide Area Transepithelial Sampling

- ▶ Systematic review by ASGE 2019:
- ▶ 6 studies, 6271 patients with BE
- ▶ Relative increase in dysplasia detection in NDBE was 48% (95% CI, 34%-60%%)
- ▶ In patients with h/o dysplasia
  - ▶ Relative increase in dysplasia detection using WATS was 47% (95% CI, 32%-61%)
  - ▶ Relative increase in LGD detection was 21% (95% CI, 24%-40%)
- ▶ For studies reporting all patients with or without a history of dysplasia, relative increase in dysplasia detection was 52% (95% CI, 21%-82%)



# Cancer hidden under normal tissue evades detection with ASY\*-FITC

## Confocal Endomicroscopy



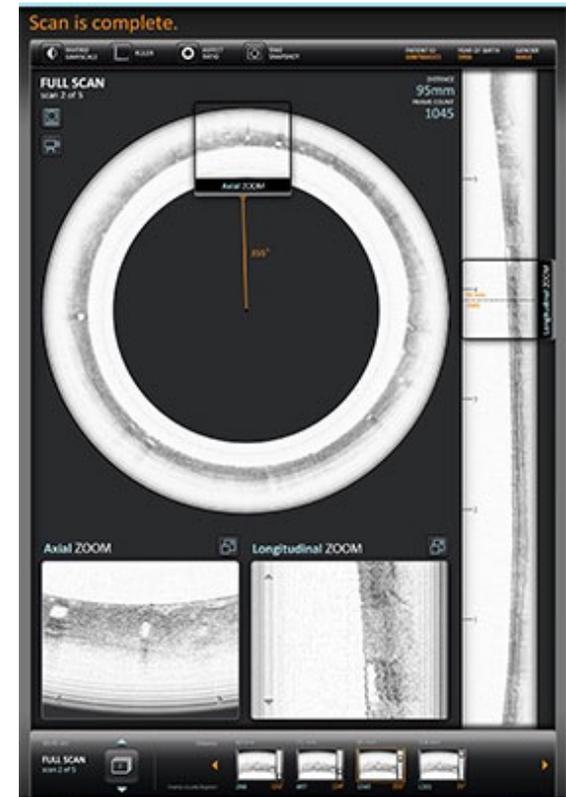
In patients with BE undergoing surveillance, we suggest against routine use of confocal laser endomicroscopy compared with white-light endoscopy with Seattle protocol biopsy sampling.

# Volumetric Laser Endomicroscopy (VLE)

May be able to quickly localize dysplasia

May be able to localize buried Barrett's post-therapy

In patients with BE undergoing surveillance, there is insufficient evidence to recommend for or against routine of VLE.



# How to Manage Dysplasia/IMC

## ACG Guidelines 2022

17. We recommend endoscopic eradication therapy in patients with BE with HGD or IMC

18. We suggest endoscopic eradication therapy in patients with BE with LGD to reduce the risk of progression to HGD or EAC vs close endoscopic surveillance

19. We suggest initial endoscopic resection of any visible lesions before the application of ablative therapy in patients with BE undergoing endoscopic eradication therapy.

20. We suggest that patients with BE undergoing endoscopic eradication therapy be treated in high-volume centers

21. We recommend an endoscopic surveillance program in patients with BE who have completed successful endoscopic eradication therapy

# How to Manage Dysplasia and Intramucosal Cancer

- ▶ Is it nodular?
  - ▶ Resect it
  - ▶ Don't RFA!
- ▶ Is it flat?
  - ▶ Ablate it if no concerning features for invasion
- ▶ Is it depressed?
  - ▶ Is it invasive cancer??
  - ▶ Favor resection if feasible
- ▶ Worried about biopsy understaging?
  - ▶ Resect focal suspicious lesions
  - ▶ No role for EUS absent known cancer
- ▶ Low grade
  - ▶ May still be a role for surveillance every 6-12 months

## Mucosal Lesions: Classification

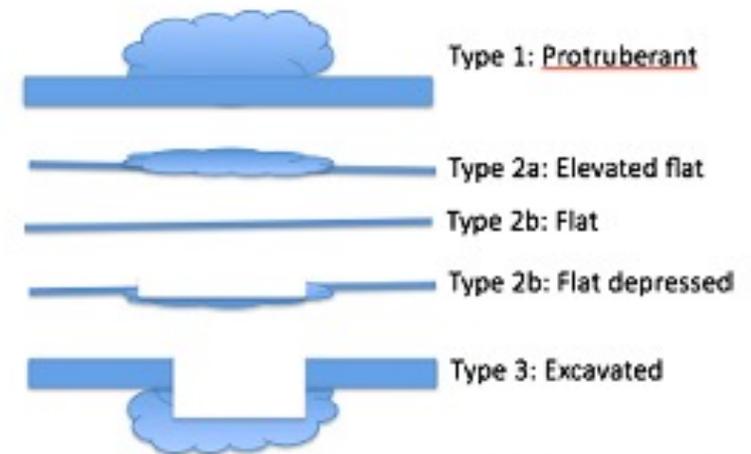
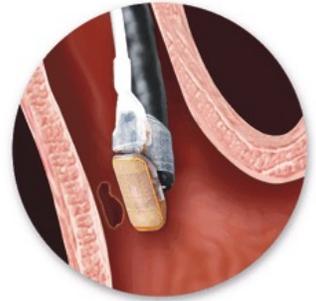
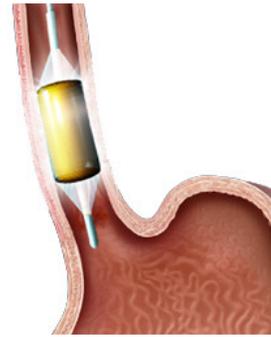


Fig. 3. Classification of lesions. The most common lesions found in Barrett's esophagus are types 2a and 2b, being slightly elevated or flat.

# Radiofrequency Ablation

- ▶ Alternating contacts – bipolar cautery
- ▶ Spacing of contacts and energy supplied ensures limited depth of burn
  - ▶ 1000 microns, down through muscularis mucosa but not into submucosa
- ▶ Easy to use and safe
  - ▶ low rates of bleeding, perforation, stricture
- ▶ Excellent response/remission
- ▶ But no tissue to examine
  - ▶ inadequate for cancer, DO NOT USE in nodular lesions
- ▶ Chest pain common



# Patient With 8 cm LGD

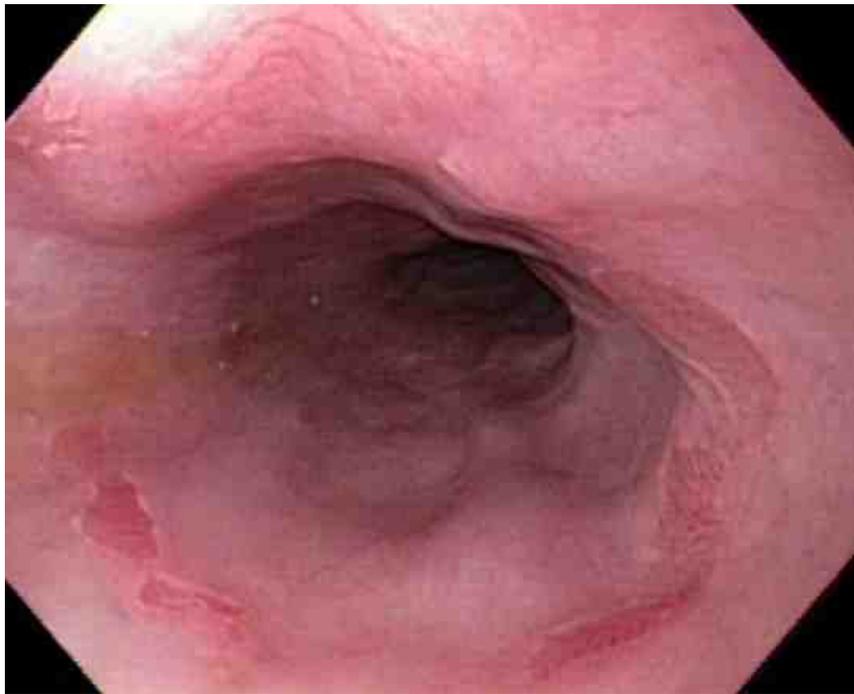




RFA ablation

▶ Before and after 4 cm balloon ablation

# After 1<sup>st</sup> Ablation

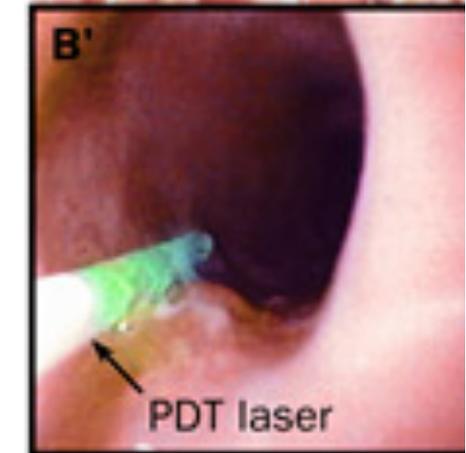
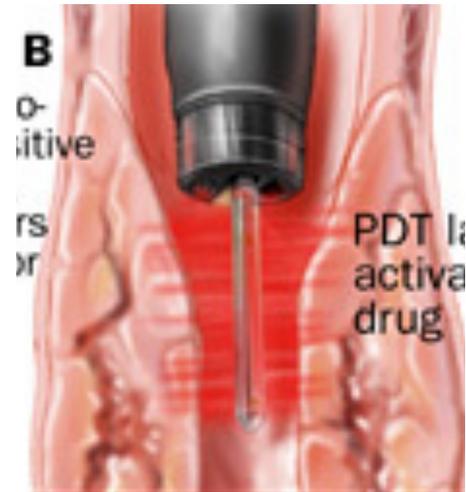
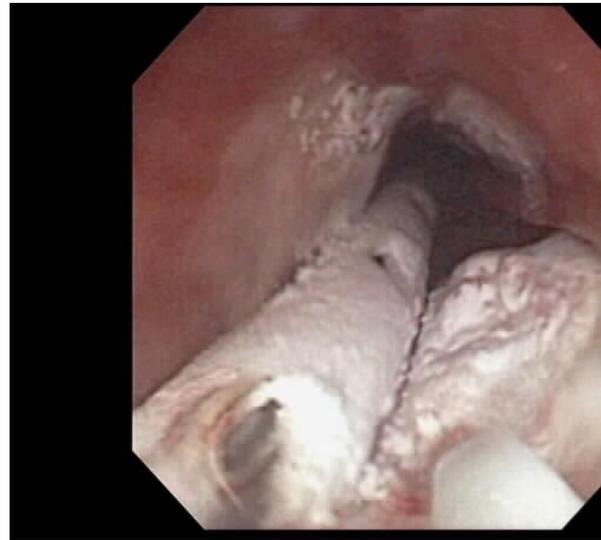


# Focal Touch Up and Resolution of Visible BE



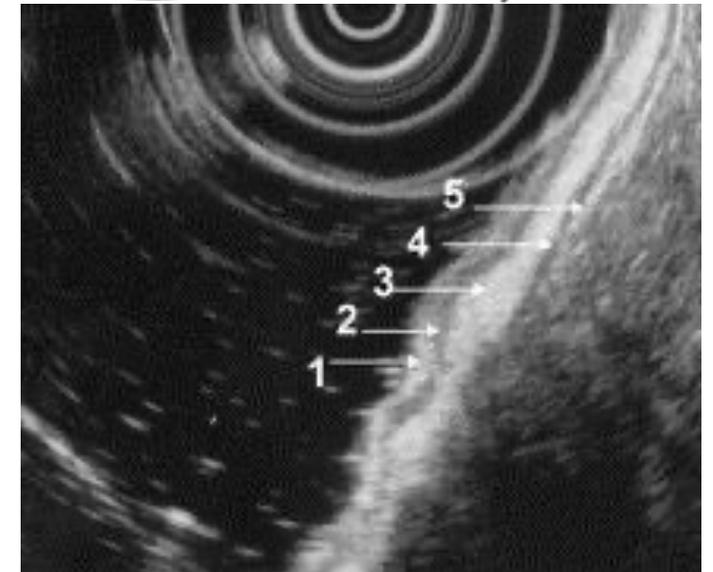
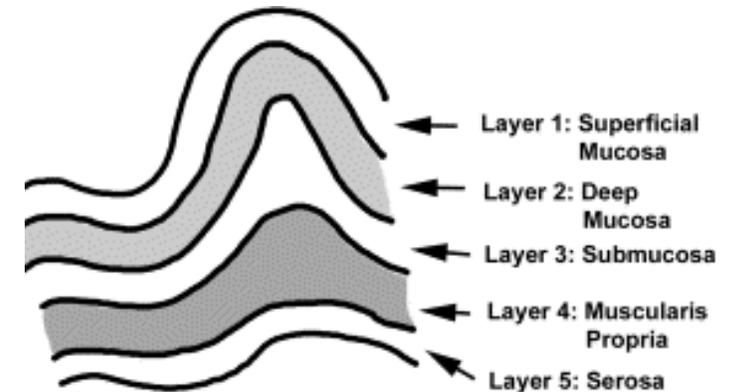
# Other Ablative Methods

- ▶ Cryoablation
- ▶ PDT



# Resection

- ▶ Endoscopic mucosal resection (EMR)
  - ▶ Cap or band
- ▶ Endoscopic submucosal dissection (ESD)
  - ▶ Size of lesion > 15 mm
  - ▶ Available expertise
- ▶ Surgery
  - ▶ Cancer with high risk features
    - ▶ Poor differentiation
    - ▶ LV invasion
    - ▶ Submucosal invasion
    - ▶ Positive deep margin on endoscopic resection

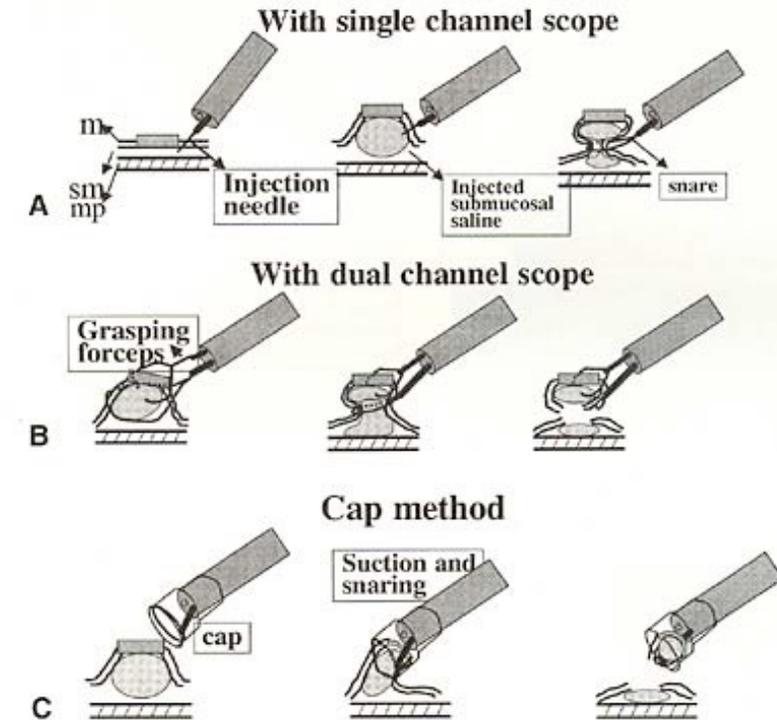


# Endoscopic Mucosal Resection (EMR)

- ▶ Cut below mucosa and through submucosa
- ▶ Relatively quick and easy to learn band EMR
- ▶ Risks relatively low
  - ▶ Perforation < 1%
  - ▶ Bleeding 2-5%, <1% delayed
  - ▶ Stricture 25%, higher if >50% circumference
- ▶ But risk of incomplete resection/positive lateral margin for larger lesions
  - ▶ Wide margins
  - ▶ Leave no bands of mucosa between resections

Norman E. Marcon, Umar Beejay & Shou-jiang Tang. Chapter 03, In *Upper Endoscopy, Advanced Digestive Endoscopy e-books*. GastroHep.com.

## Endoscopic mucosal resection (EMR)



# Band-EMR

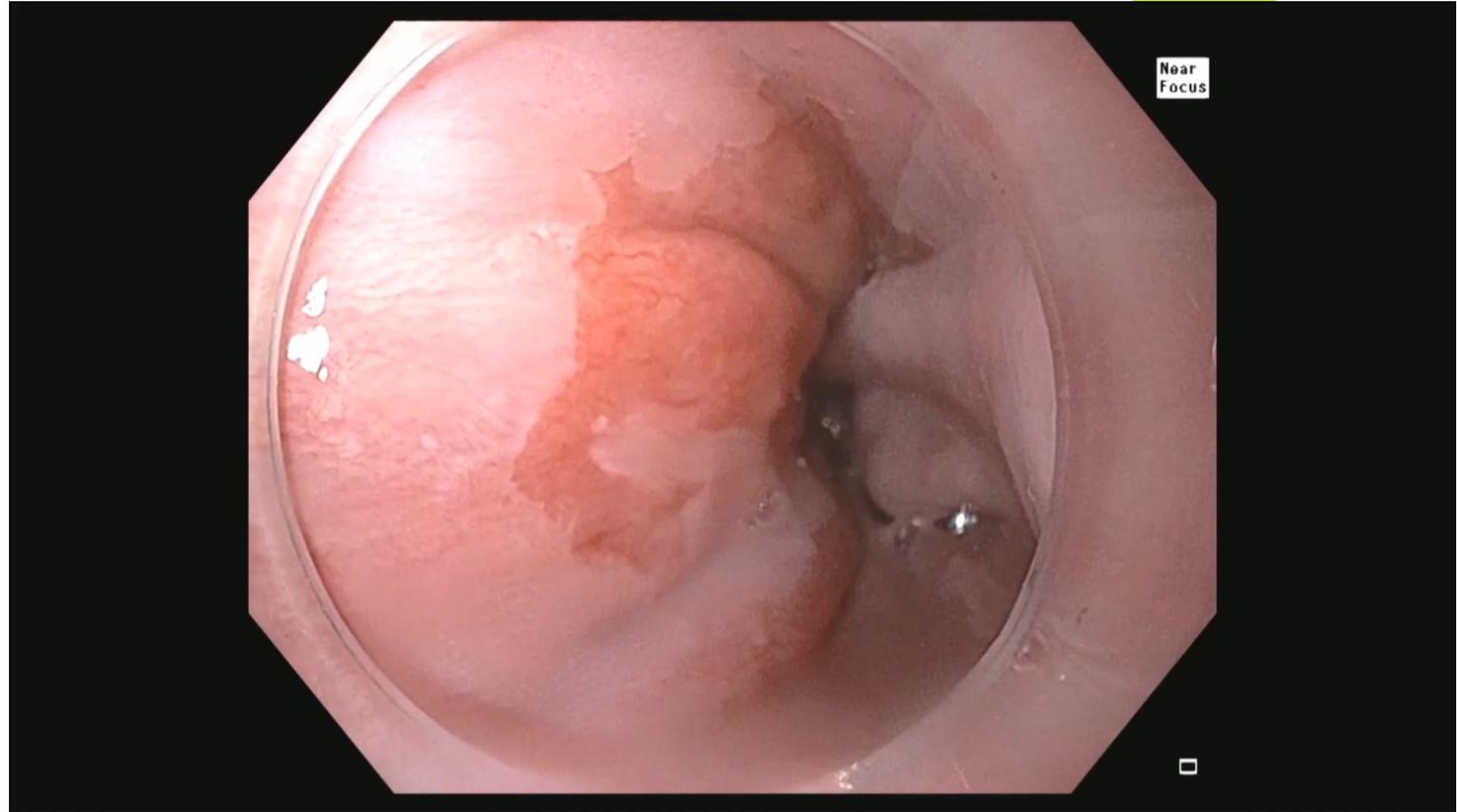




# Endoscopic Submucosal Dissection

ESGE GUIDELINES > 15 MM LESION

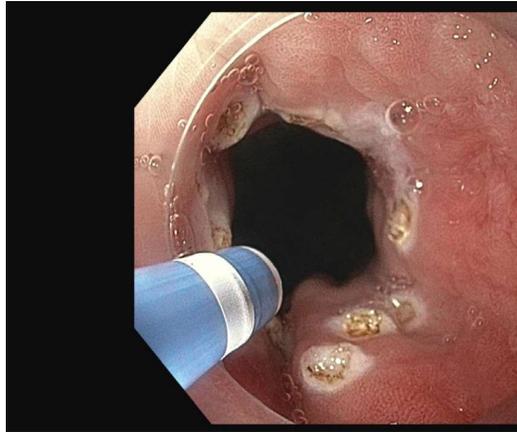
# ESD GEJ Cancer



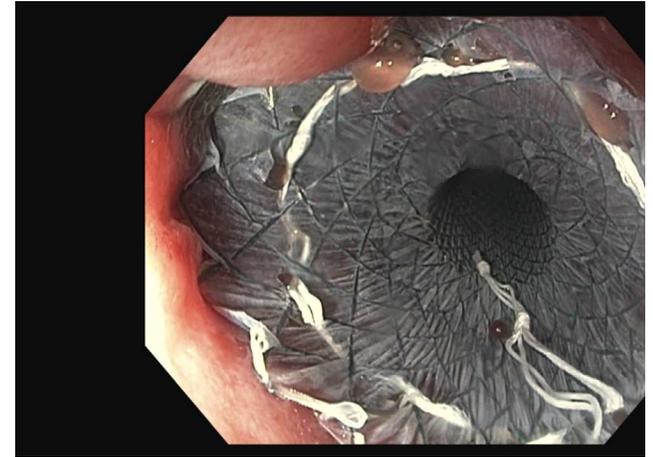
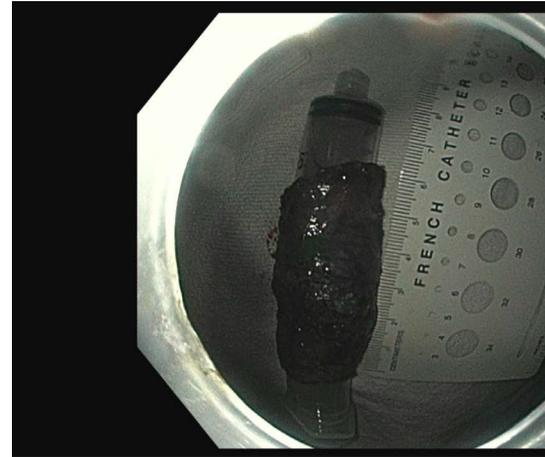
**Adenocarcinoma, moderately-differentiated, arising in a background of Barrett's esophagus, tumor 1.4 cm. Carcinoma focally invades the submucosa. No LV invasion. Resection margins are uninvolved by carcinoma or dysplasia.**

Pathologic Stage (pTNM, AJCC 8th Edition): pT1b pNX

# Fully Circumferential ESD



# 13 cm Circumferential ESD – 4.6x3.6x0.7cm, Margins Neg

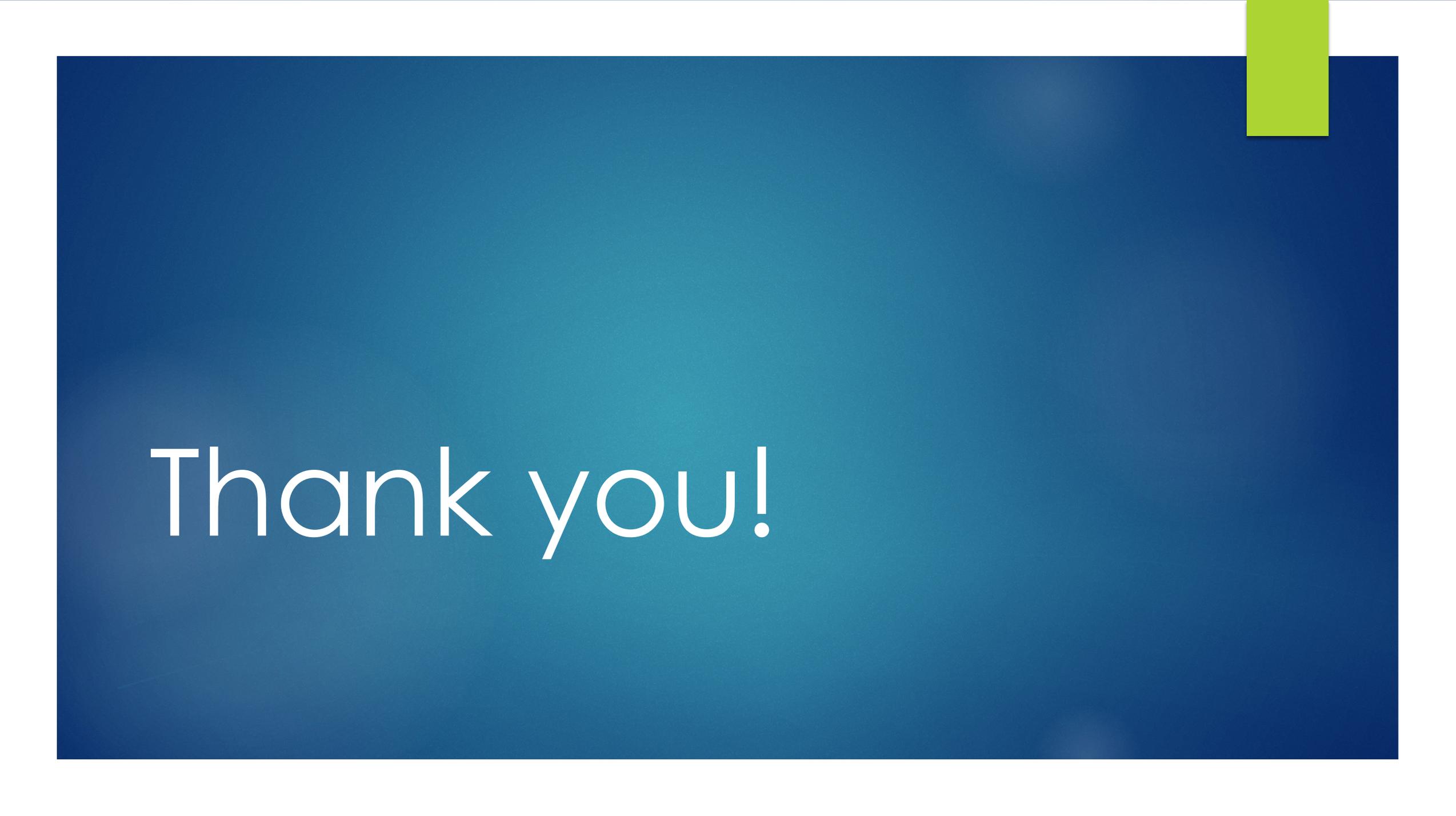


# Summary Recommendations

- ▶ Spend time with careful endoscopic exam to best identify dysplasia early
  - ▶ Use available tools to highlight suspicious areas (chromoendoscopy, dye or computer-based)
  - ▶ Use a cap
  - ▶ Consider wide area transepithelial sampling to increase yield of dysplasia identification
- ▶ Once dysplasia is identified then treat dysplasia based on presence or absence of nodularity and suspicion for early cancer otherwise
  - ▶ Resect *anything nodular* or any suspicious focal lesion
  - ▶ Ablate only flat BE without suspicious lesions, including remaining BE after focal resection
    - ▶ **DO NOT RFA A NODULE**

# Summary

- ▶ EMR/ESD is a safe and effective alternative to surgery in *HGD* and *intramucosal (T1a) cancer without high-risk features*
- ▶ Consider ESD for lesions > 15 mm
- ▶ ***Know when to refer to an expert center***



Thank you!