Endoscopy in Inflammatory Bowel Disease

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March 2020
NESGNA

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OBJECTIVES

- Brief overview of inflammatory bowel disease
- Endoscopic findings of UC and Crohn's
- Discuss endoscopic approaches to:
  - Colon cancer surveillance
  - Crohn's related strictures

DISCLOSURES

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I have no financial disclosures.

Brief
IBD 101

*An **enviromentally stimulated**, **immune mediated**, chronic relapsing inflammatory disease of the gastrointestinal tract occurring in **genetically susceptible** individuals*

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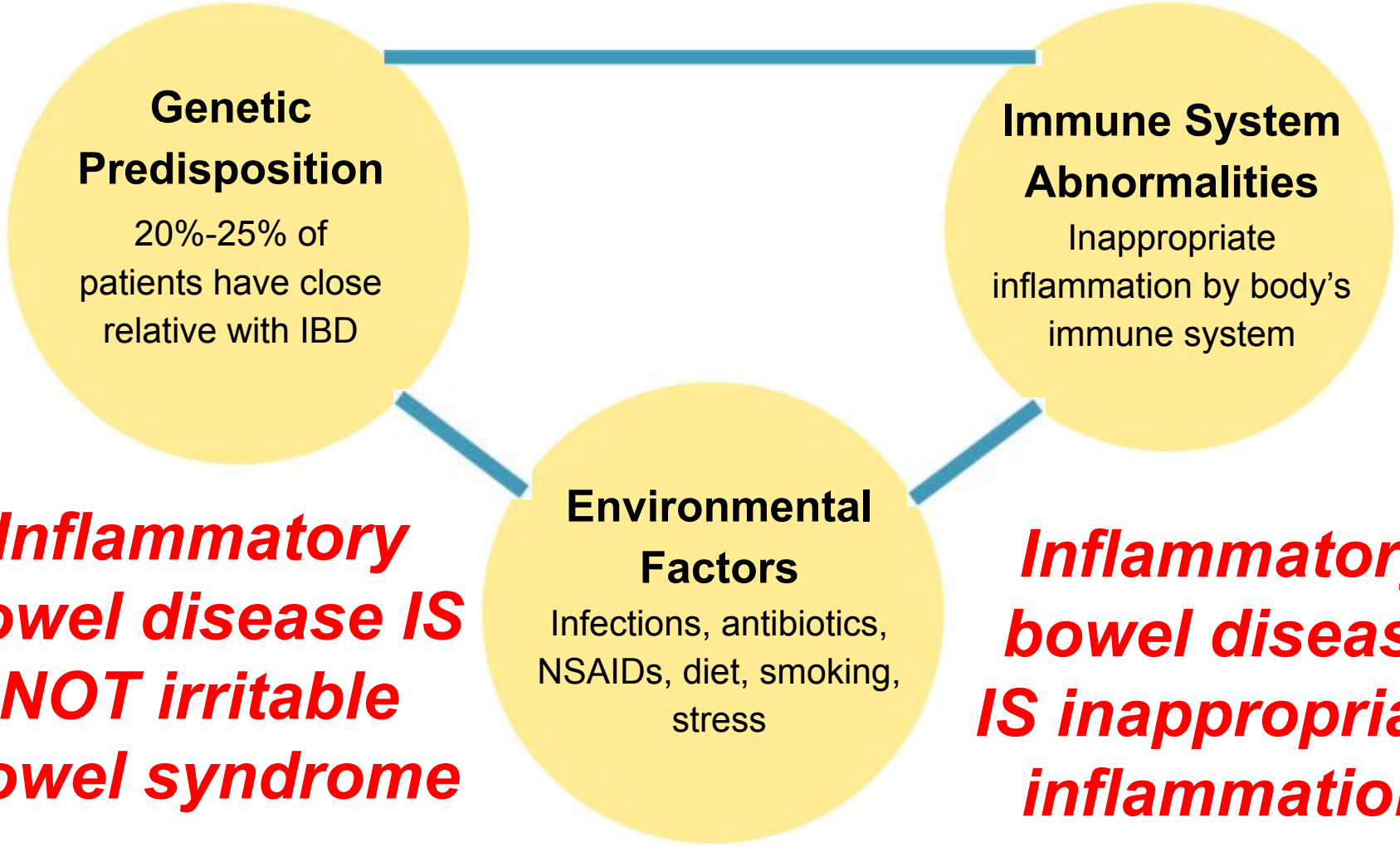

Inflammatory bowel disease IS NOT irritable bowel syndrome

Inflammatory bowel disease IS inappropriate inflammation

Classify UC by anatomical extent

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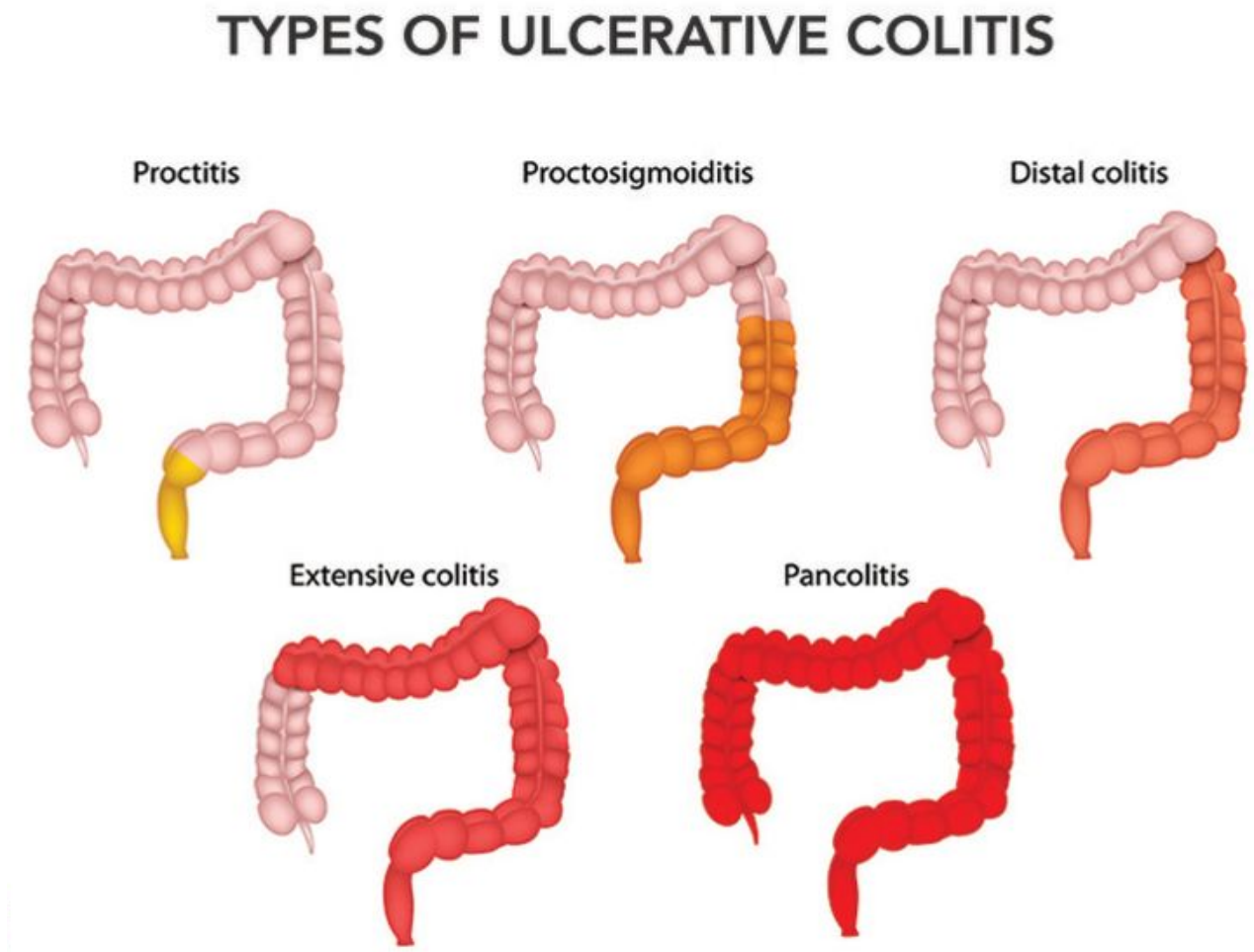

Classify Crohn's Disease by anatomy and phenotype

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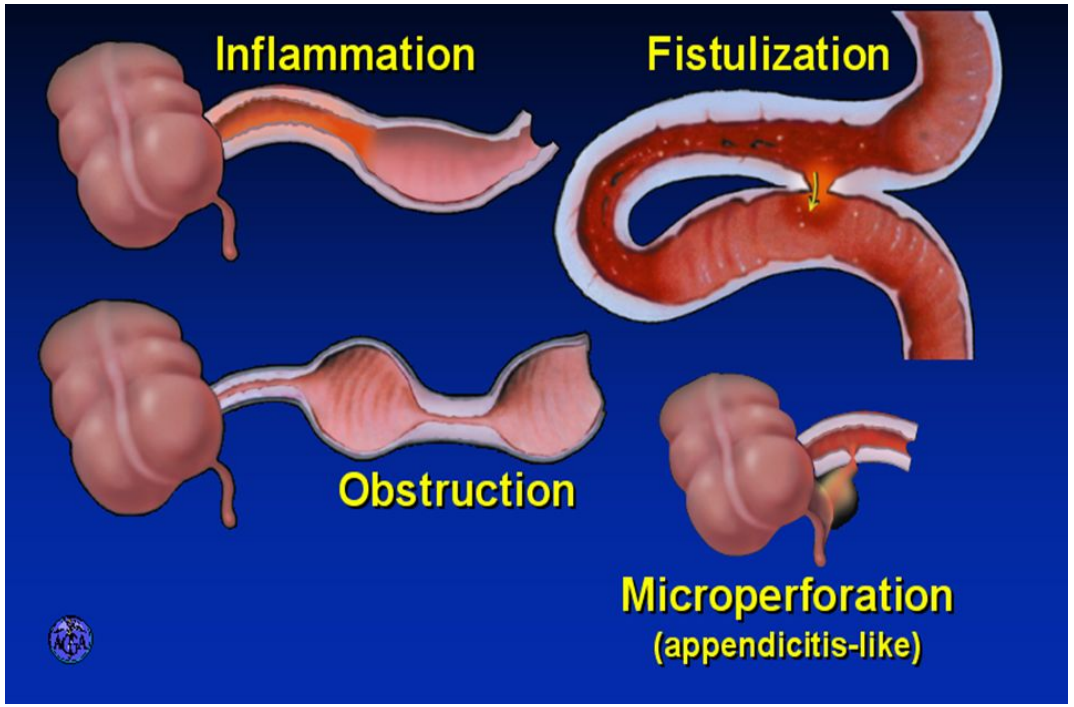
Crohn's Disease (Montreal Classification)

- Terminal ileum (L1)
- Colon (L2)
- Ileocolonic (L3)
- Upper GI (L4)
- Perianal (P)



Crohn's Phenotype

- Inflammatory (non-stricturing, non-fistulizing)
- Stricturing (Fibrostenosing)
- Fistulizing (Penetrating)

Gut 2006;55

?Differences Between Crohn's & UC?
(what most doctors learned in school)

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Crohn's Disease

- Affect any part of GI tract
- Discontinuous areas of inflammation
- Noncaseating granulomas
- Rectal sparing
- Transmural inflammation with fistula and abscess

Ulcerative Colitis

- Limited to colon
- Continuous area of inflammation
- No granulomas
- No rectal sparing
- Mucosal inflammation

Two disease labels on a wide spectrum of inflammatory bowel disease.

IBD Diagnosis - Putting Together the Pieces

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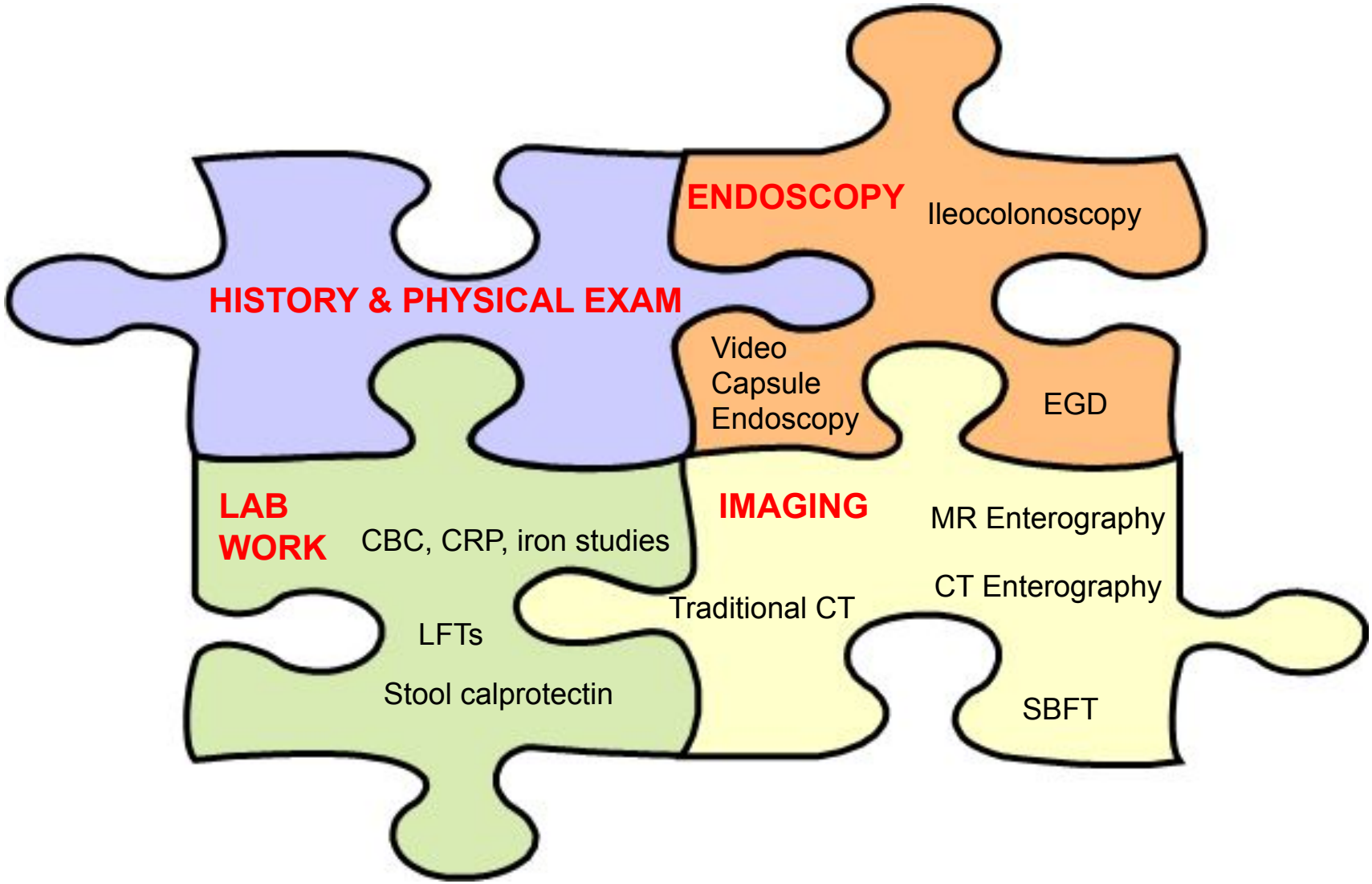

Goals of Comprehensive IBD Care

Psychologist
Pediatric to Adult Transition

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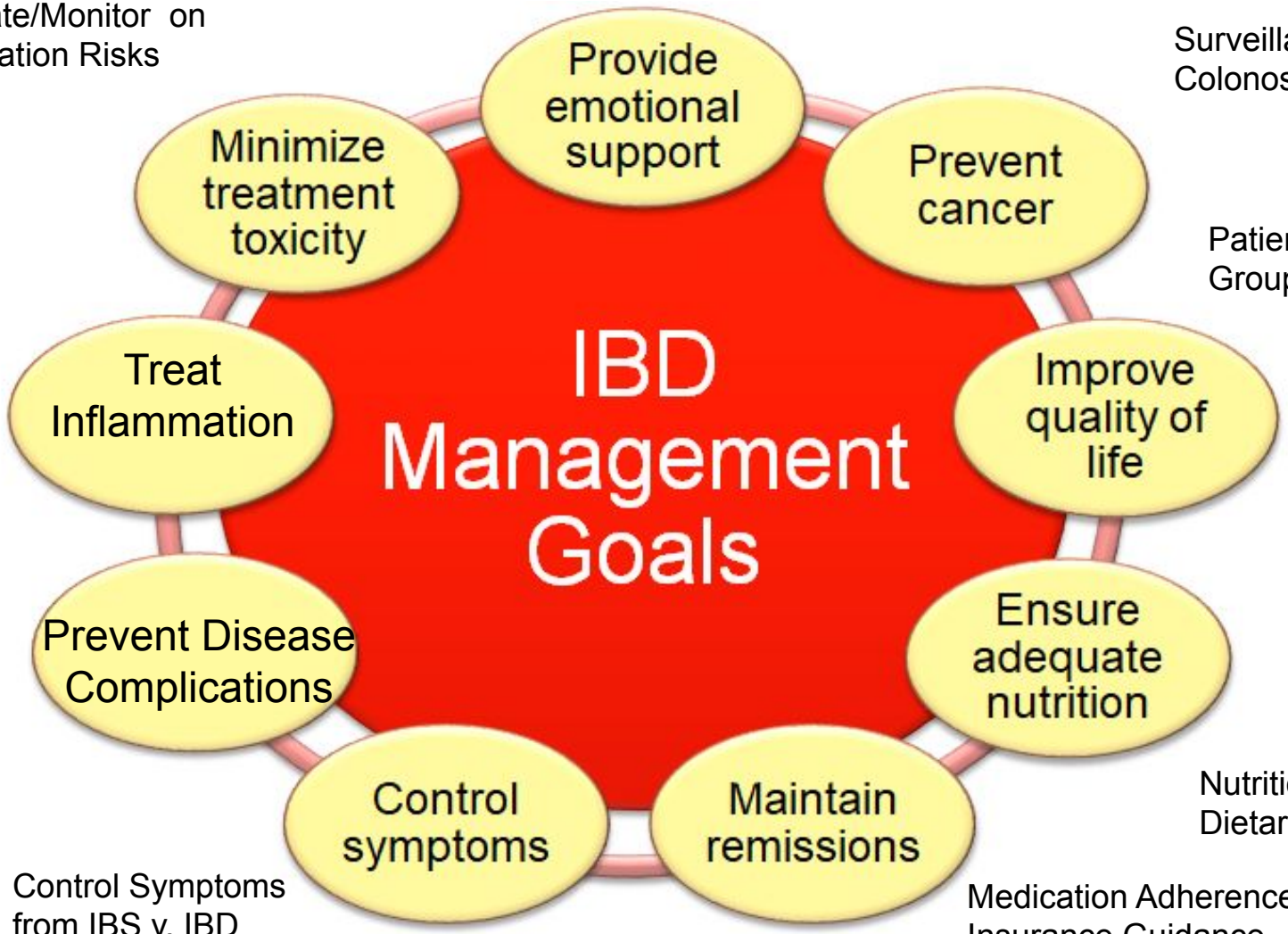

And Now… IBD and Endoscopy

Diagnosing IBD by Colonoscopy – It's In the Details…

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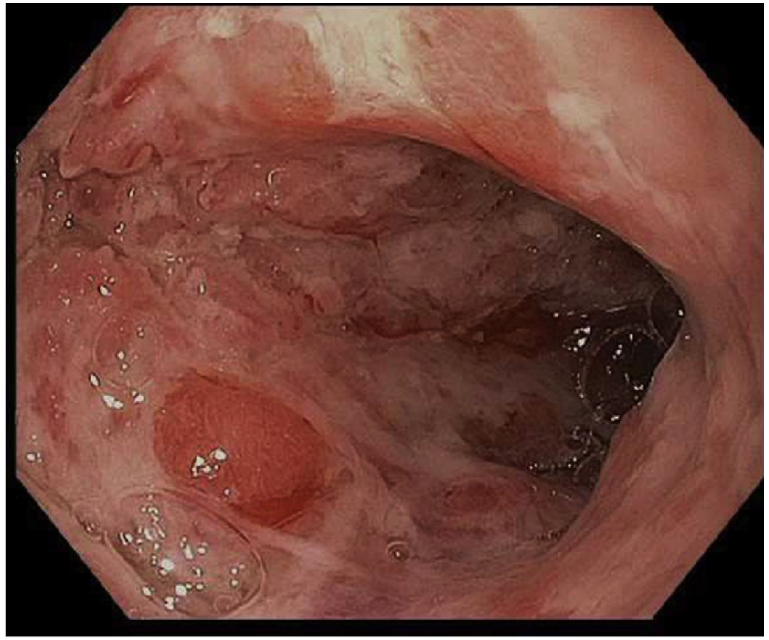
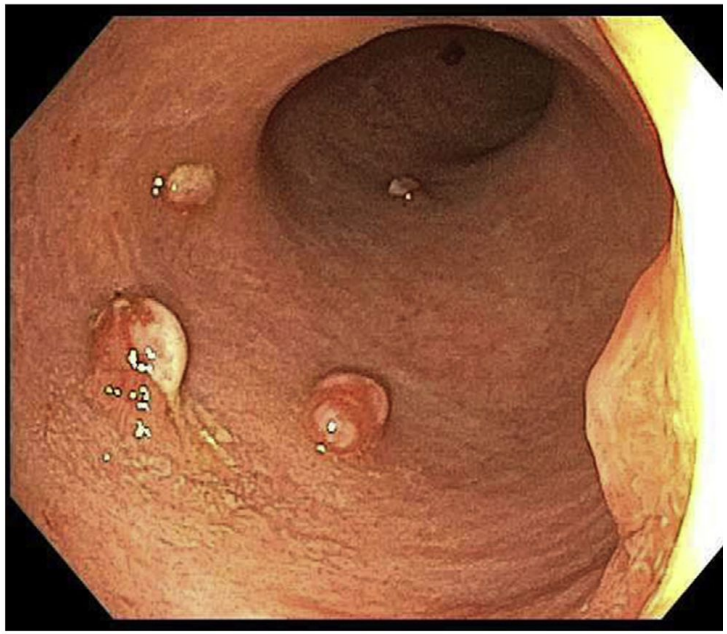
- Perianal examination
  - Skin tags, fistula, abscess, fissures, anal stenosis
- Determine anatomical extent/distribution
  - Ileum intubation
  - Rectum assessment
  - Colonic involvement
- Determine inflammation severity and complications
  - Mild, moderate, severe
  - Dysplasia
  - Strictures
  - Response to therapy, mucosal healing
- Obtain tissue for histopathology

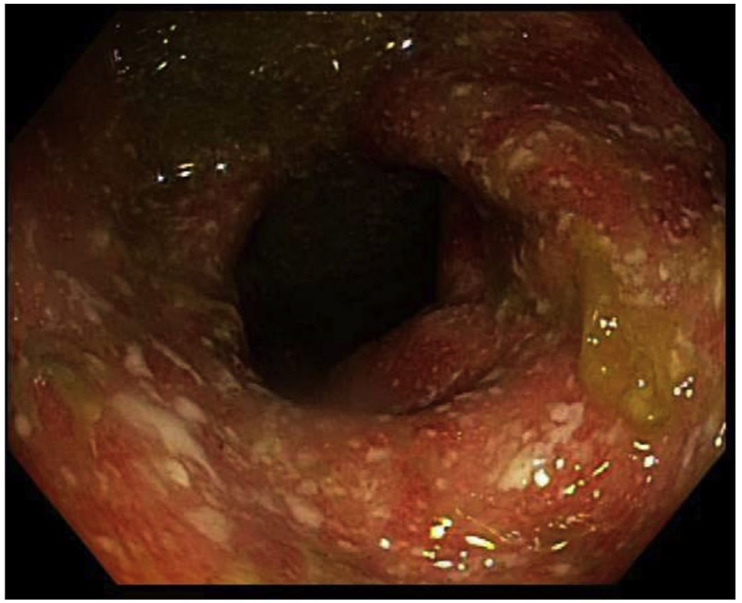
UC vs Crohn's – Endoscopic Findings *Try* to Differentiate



Severe Crohn colitis with cobblestoning.



Inflammatory pseudopolyps in UC.



Severe UC with superficial ulceration, edema, and mucosal friability.

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Dysplasia

Precancerous changes in cells

Not invasive (carcinoma) changes

Inflammation – Dysplasia – Carcinoma Sequence

The aim is early detection of dysplasia, to prevent or reduce mortality from colorectal cancer.

Increased Colon Cancer Risk (in UC)

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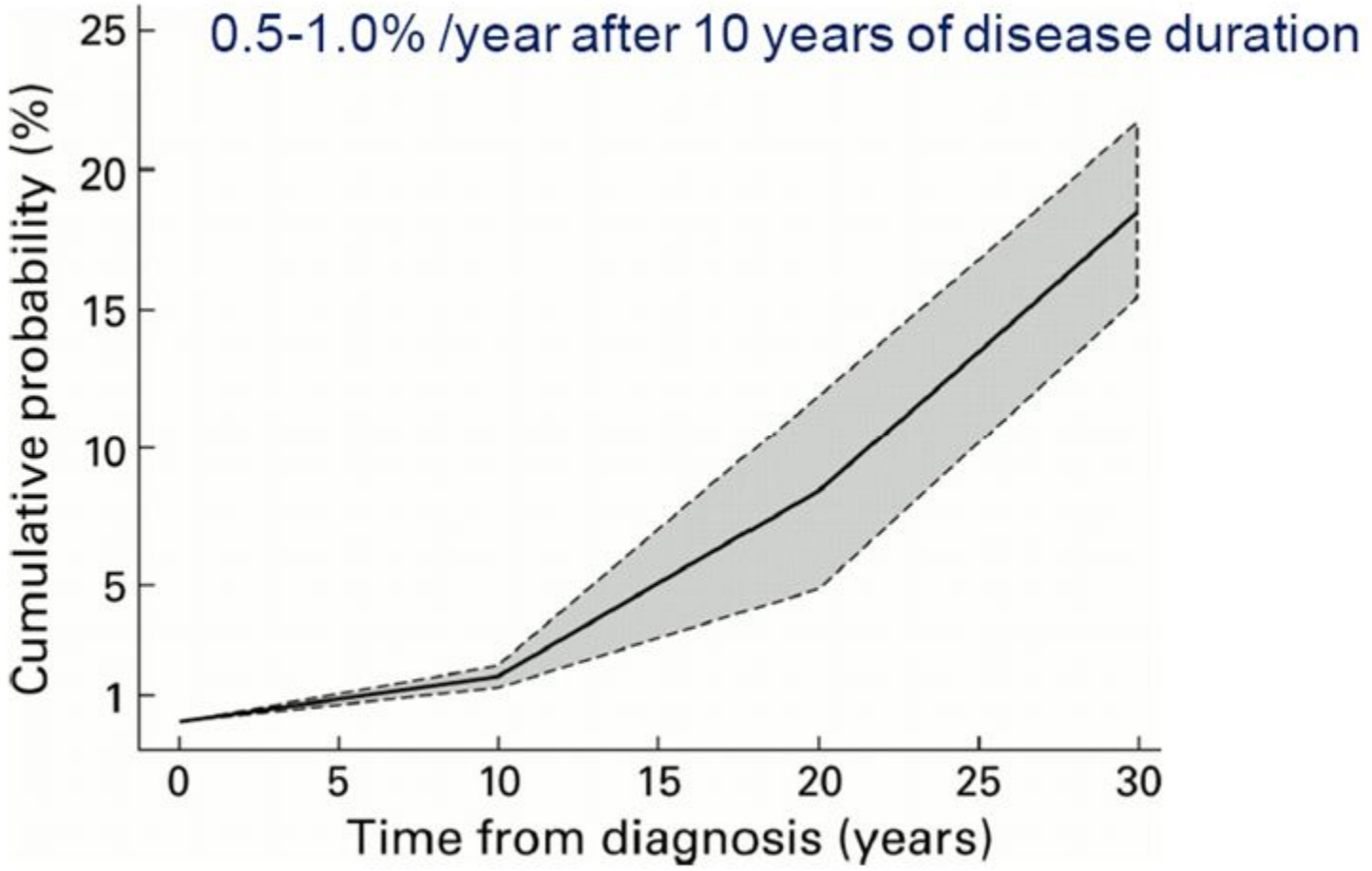

Eaden et al., Gut

Meta-analysis aimed to determine risk of colorectal cancer in patients with UC

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Seminal meta-analysis 54,478 UC patients, 116 studies

- Overall CRC prevalence of 3.7%
- Cumulative incidence of developing CRC
  - 2% by 10 years
  - 8% by 20 years
  - 18% by 30 years

Gut 2001;48:526–35.

Relative Risk of CRC Based on Extent of UC

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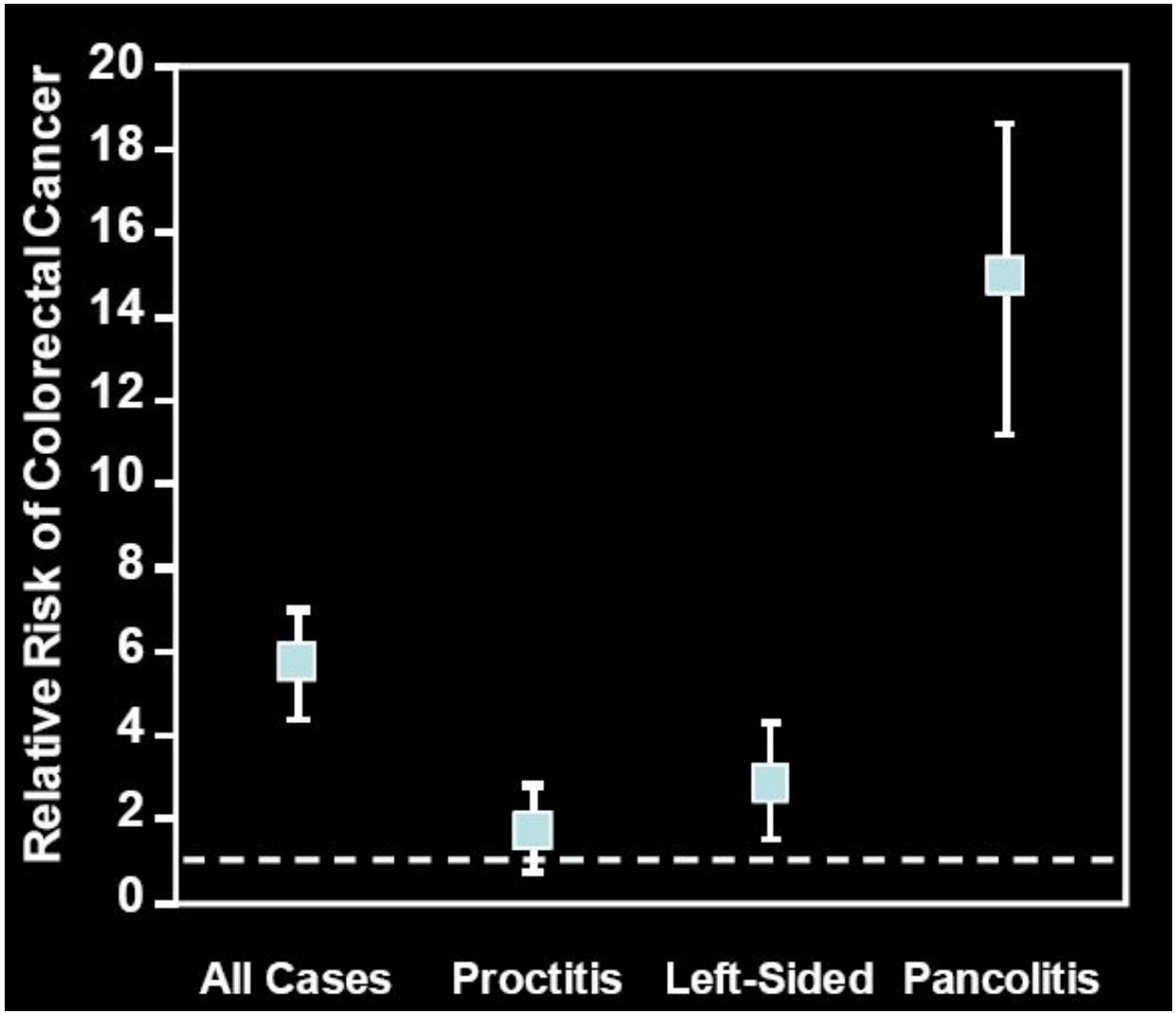

Ekbom, NEJM, 1990

Risk Stratify Colon Cancer Risk

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<u>Factors increasing risk of colorectal cancer</u>

- Duration, severity, and extent of IBD
- Family history of CRC
- Primary sclerosing cholangitis
- Younger age at UC diagnosis
- **Presence of dysplasia of any grade**
  - **indefinite, low, or high dysplasia**

Colonic strictures, maybe
Inflammatory polyps, maybe

- Ideally, surveillance performed w/ clinical remission
  - Active colitis can impair visibility of subtle lesions
  - Decrease accuracy of histology
- Good (*meaning great*) bowel prep

The Technique & The Controversy

White Light Endoscopy (high def)

vs.

Chromoendoscopy

Finding Dysplasia – The Random Biopsy WLE Technique

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- Biopsy or remove visible lesions
- 4 random biopsies every 10 cm
  - Randomly samples <0.1% of mucosa
  - GOAL - Detect flat endoscopically *invisible* lesions
  - Finds dysplasia in ~2.6% of IBD patients
  - Laborious, expensive, low diagnostic yield

Finding Dysplasia – Chromoendoscopy & Targeted Biopsies

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- Chromoendoscopy – enhanced visualization with dye to better ***identify lumps and bumps***
  - Methylene blue – stains normal mucosa
  - Indigo-carmine - Non-absorptive blue contrast agent
- Targeted biopsies increases dysplasia detection 4.5-fold
- All 'abnormal' lesions should be removed or biopsied

- **Recommended by SCENIC Guidelines** - Surveillance for Colorectal Endoscopic Neoplasia Detection and Management in Inflammatory Bowel Disease Patients

Finding Dysplasia – Chromoendoscopy Limitations and Utilization

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- Highly variable adoption
- Longer procedure time (~11 min longer than WLE)
- Training and Experience
  - Spraying dye
  - Identifying suspicious mucosal patterns
  - Identifying lumps and bumps
  - Determining if lesions *endoscopically resectable*

Finding Dysplasia – Characterizing Visible Dysplasia Lesions

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Describing Lesions

- Polypoid or nonpolypoid
- Flat or depressed
- Borders
  - Distinct or indistinct
- ***Endoscopically resectable or not***

Term	Definition
Visible dysplasia	Dysplasia identified on targeted biopsies from a lesion visualised at colonoscopy
Polypoid	Lesion protruding from the mucosa into the lumen ≥2.5 mm
Pedunculated	Lesion attached to the mucosa by a stalk
Sessile	Lesion not attached to the mucosa by a stalk: entire base is contiguous with the mucosa
Non-polypoid	Lesion with little (<2.5 mm) or no protrusion above the mucosa
Superficial elevated	Lesion with protrusion but <2.5 mm above the lumen (<height of the closed cup of a biopsy forceps)
Flat	Lesion without protrusion above the mucosa
Depressed	Lesion with at least a portion depressed below the level of the mucosa
General descriptors	
Ulcerated	Ulceration (fibrinous-appearing base with depth) within the lesion
Border	
Distinct border	Lesion's border is discrete and can be distinguished from surrounding mucosa
Indistinct border	Lesion's border is not discrete and cannot be distinguished from surrounding mucosa
Invisible dysplasia	Dysplasia identified on random (non-targeted) biopsies of colon mucosa without a visible lesion

A Clear Lesion…High Grade Dysplasia Lesion in UC

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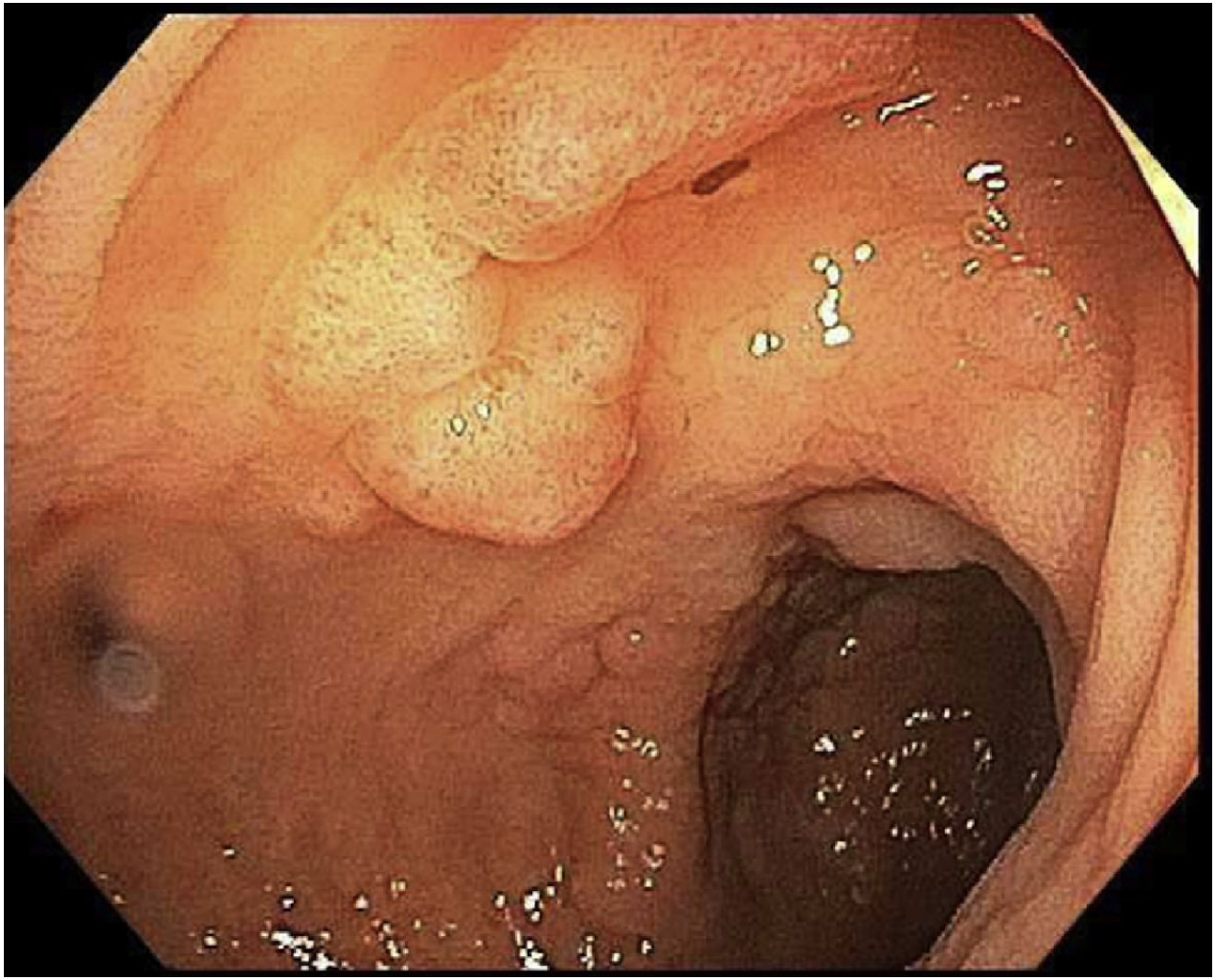

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Displaying the Dysplasia - A Lesion by White-light vs Chromoendoscopy

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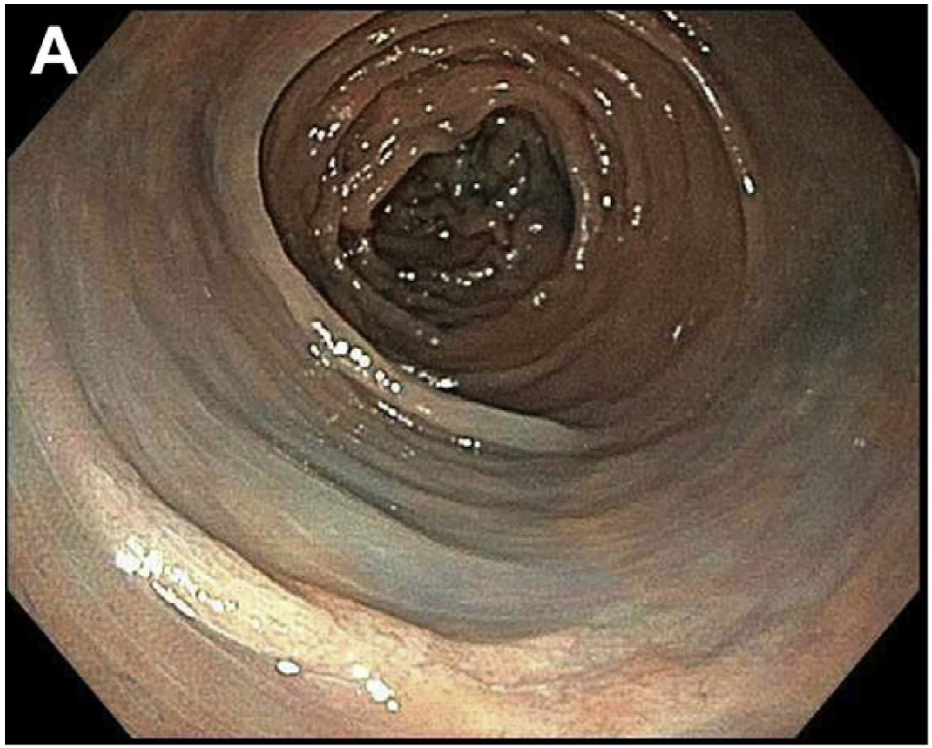

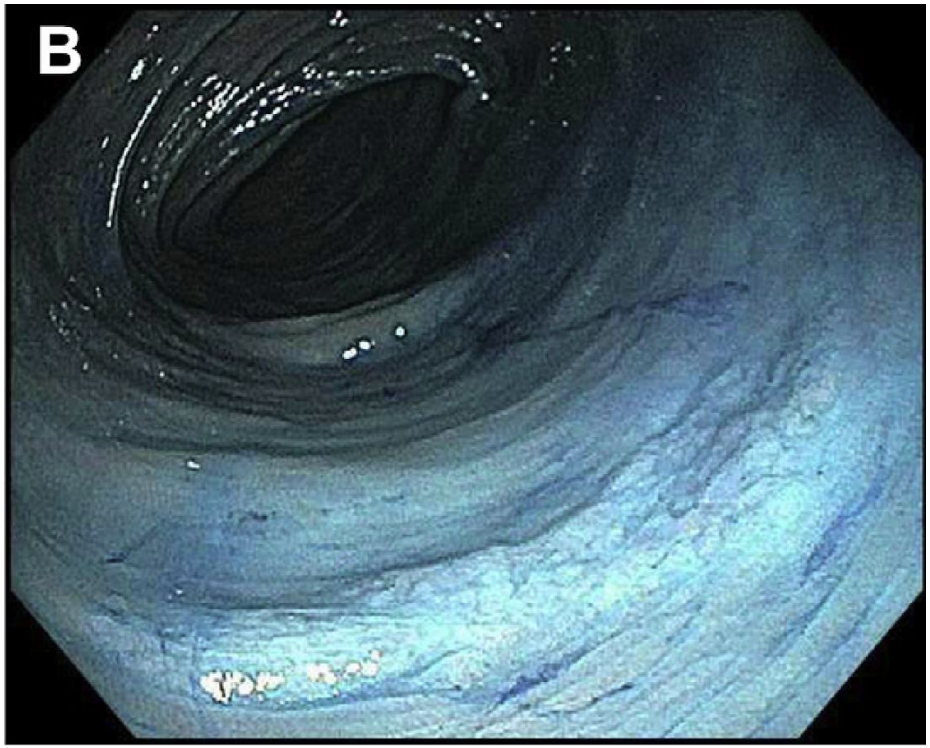

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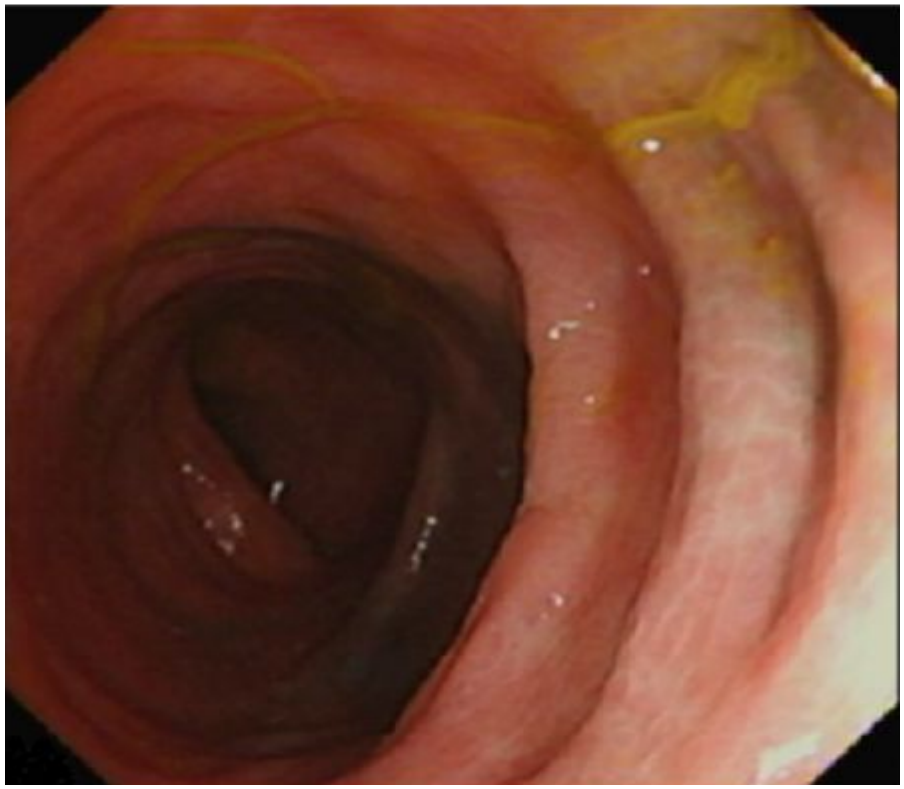

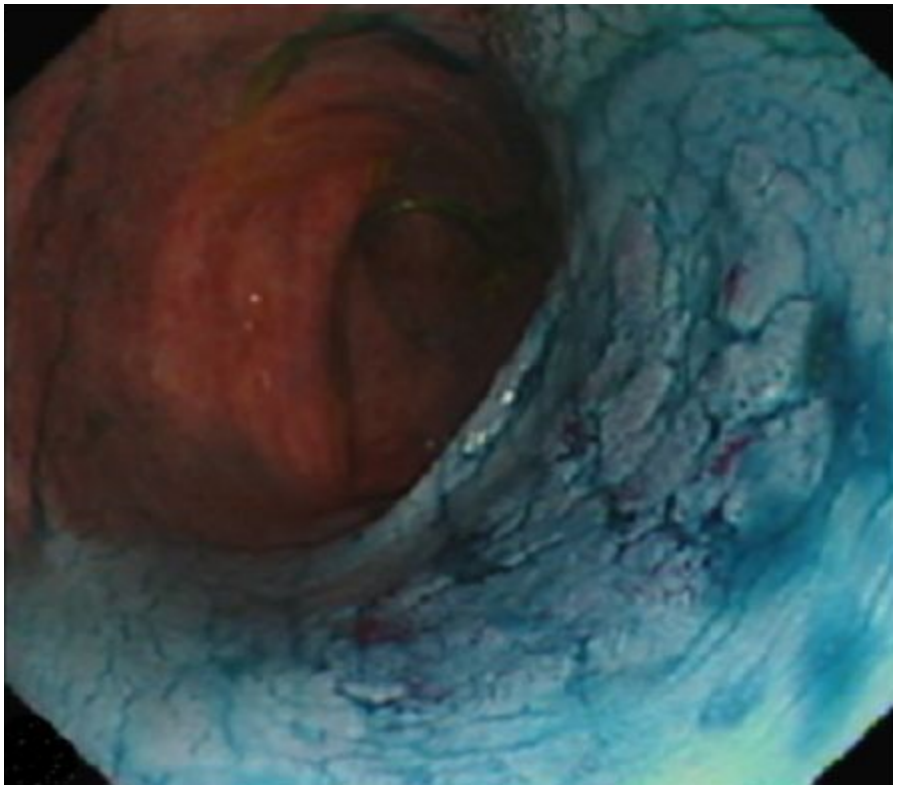

Flat, Non-polypod, Distinct Borders, Endoscopically Resectable Lesion

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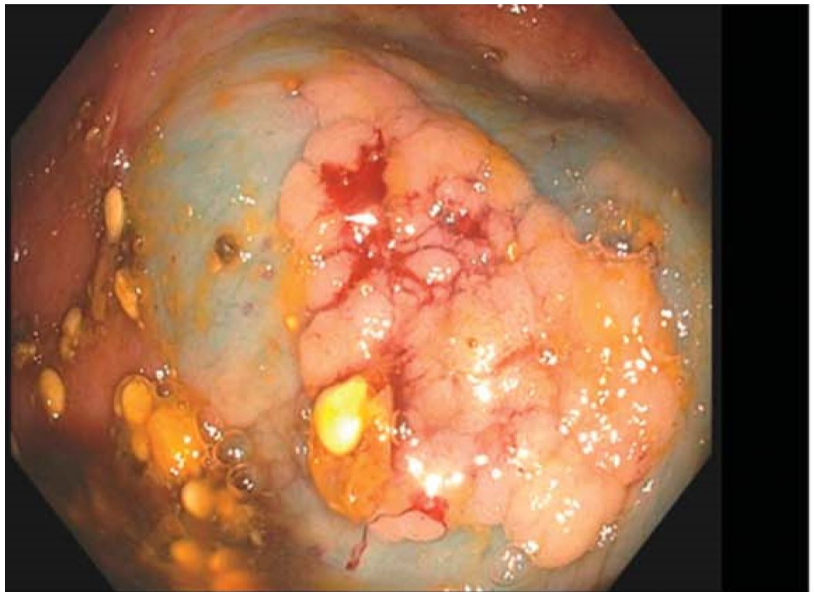

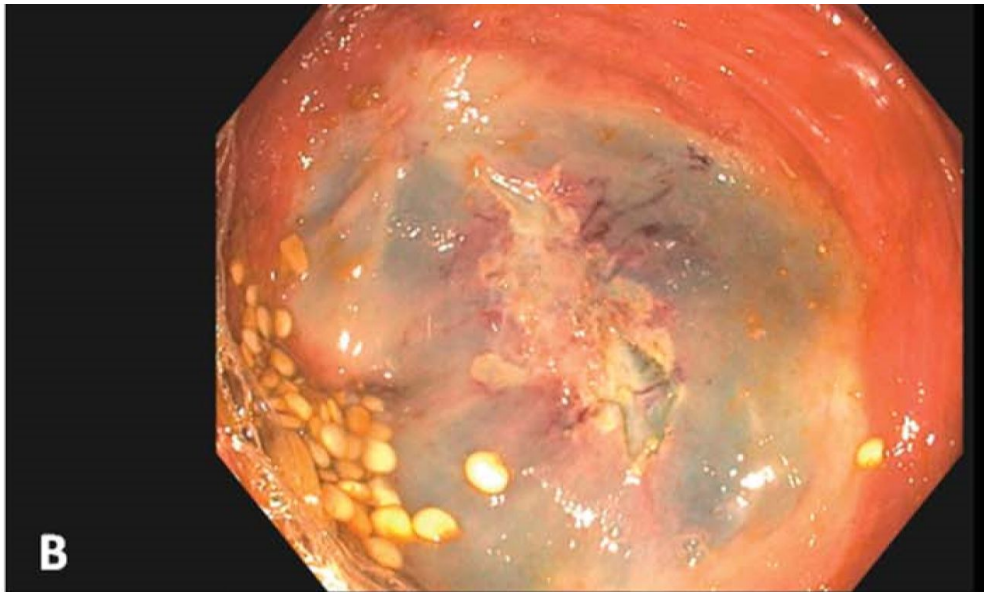

Inflamm Bowel Dis 2016;22:1184–1197

Finding Dysplasia –
?Colectomy with invisible LGD?

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1) Referral to experienced IBD endoscopist for repeat endoscopy
2) If dysplasia *still* invisible, risk stratify to decide on colectomy
   - Disease activity
   - Risk factors for CRC
   - ?Close endoscopic surveillance (q6 monthly-yearly) vs colectomy

No studies comparing surveillance colonoscopy and colectomy for endoscopically invisible dysplasia

Pooled data from studies over mean follow-up of 15–50 months

- CRC developed in 7 out of 122 patients with LGD (6%, range 3%–9%)

Finding Dysplasia – Colectomy for invisible HGD

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- Traditionally, **colectomy advised for invisible HGD**
- ? high rates of synchronous or metachronous cancer
- ? repeat colonoscopy by expert endoscopist
  - Using high-definition chromoendoscopy
  - Determine if lesion endoscopically visible and possibly resectable

Endoscopic Therapy of Luminal Strictures in Crohn's Disease

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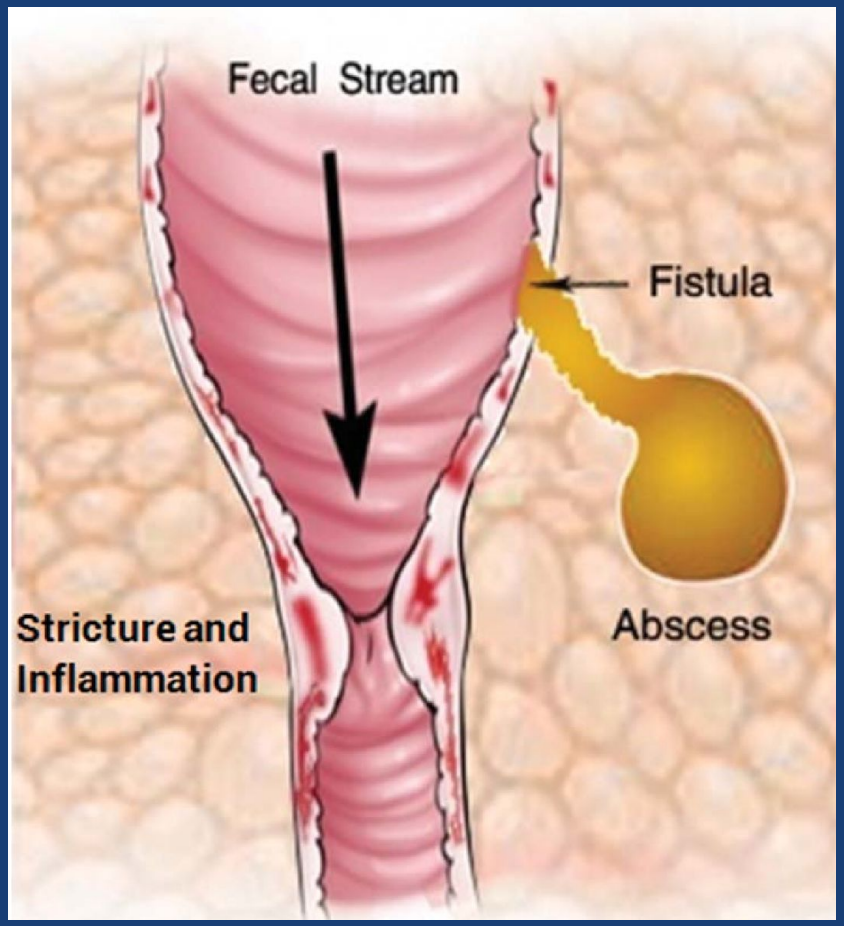
Intestinal strictures

- *Inflammatory*
- *Fibrostenotic*
- *Mixed type*

May be associated with fistula

To Dilate or Not…



Inflamm Bowel Dis 2015;21:2222–2240

Crohn's Strictures – Choosing the Right Lesion to Dilate

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Strictures Amenable to Dilation	Strictures *Less* Amenable to Dilation
• Predominantly **fibrotic** stricture • **Short stricture (<4 cm)** • Benign stricture • **Straight bowel lumen** • Stricture far from fistula opening	• Predominantly inflammatory stricture • Long stricture (>4 cm) • Malignant stricture • Angulated stricture • Multiple strictures • Stricture associated with abscess • Stricture at fistula opening

Crohn's Strictures – Choosing the Right Lesion to Dilate

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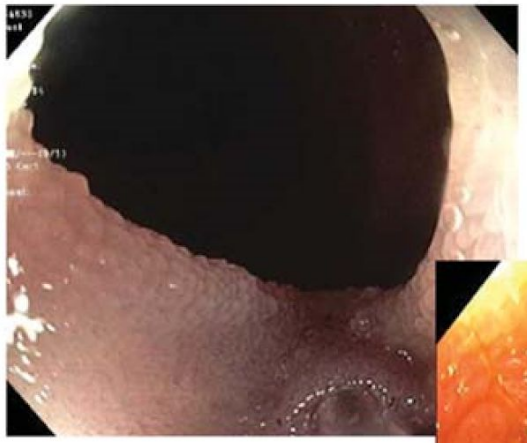
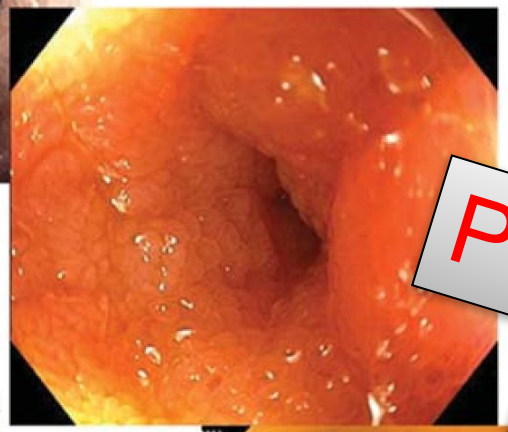


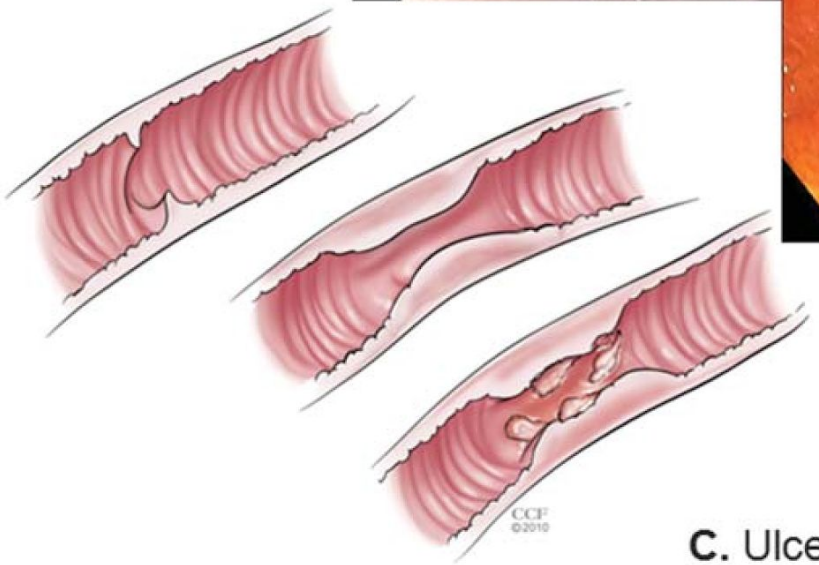
A. Web-like

Yes

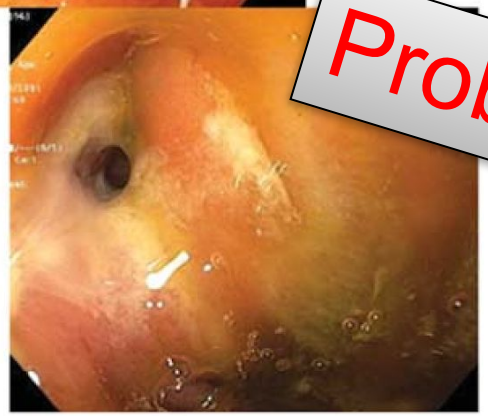


B. Spindle-like

Probably Not



C. Ulcerated



Probably Not

Inflamm Bowel Dis 2015;21:2222–2240

Crohn's Strictures Endoscopic Therapy
The Team Needs to be Prepared

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- **Review imaging, understand "road map"**
- **Understand surgically altered anatomy**
- **Sedation with monitored anesthesia care (MAC)**
- **Equipment**
  - **Choice of scope**
  - **Carbon dioxide insufflation**
  - **Fluoroscopy (and radiology tech)**
  - **Guidewires**
  - **TTS radial expansion balloons – 5.5 cm and 8 cm options**
  - **Endoclips if hemostasis needed**
  - **Needle-knife and Doppler ultrasound**

Perforation Risk with Endoscopic Balloon Dilation

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- Overall perforation risk 2% - 10%
- Consider possible risk factors
  - Active mucosal inflammation
  - Corticosteroid use
  - Anastomotic strictures

Crohn's Strictures – Endoscopic Balloon Dilation

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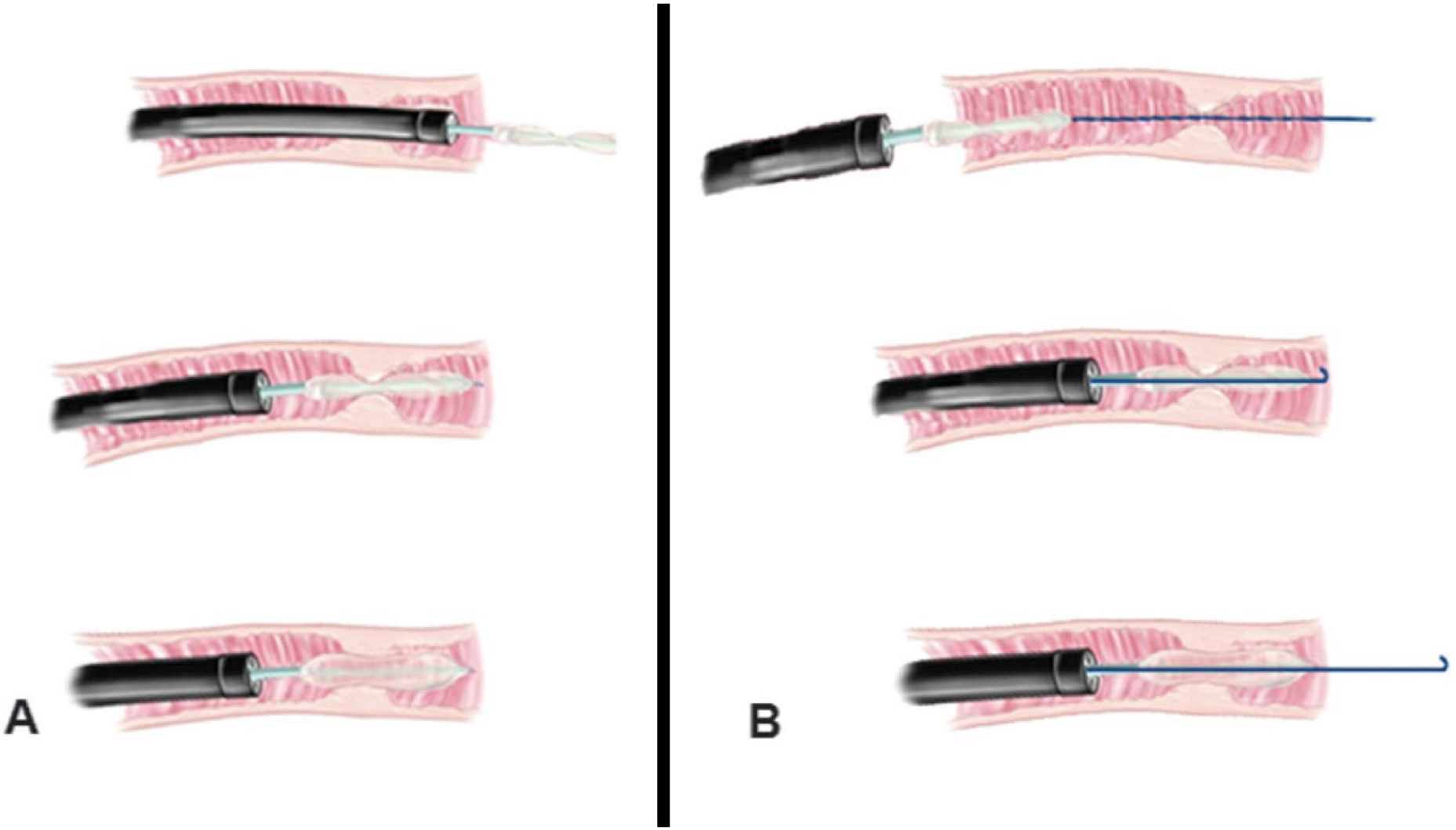

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Endoscopic Balloon Dilation – Watching Thru The Balloon

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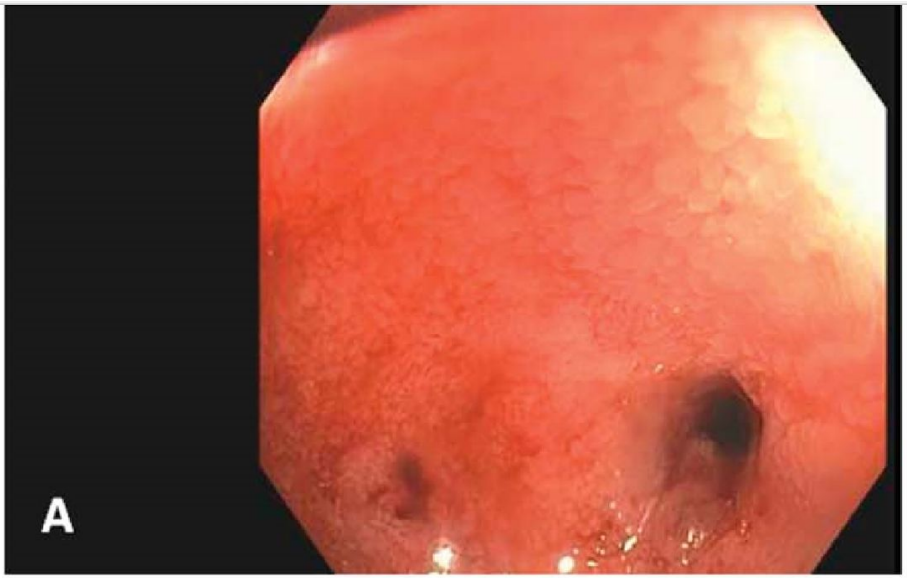

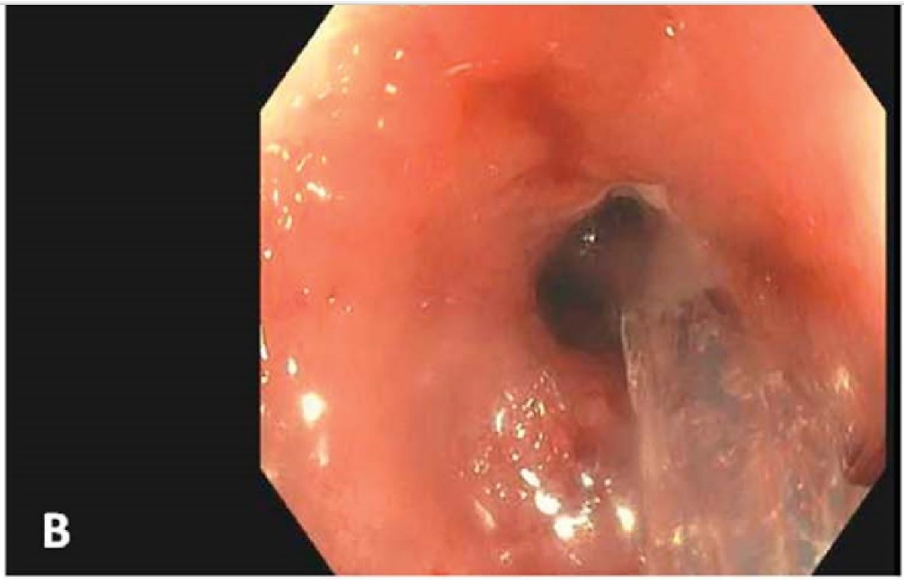

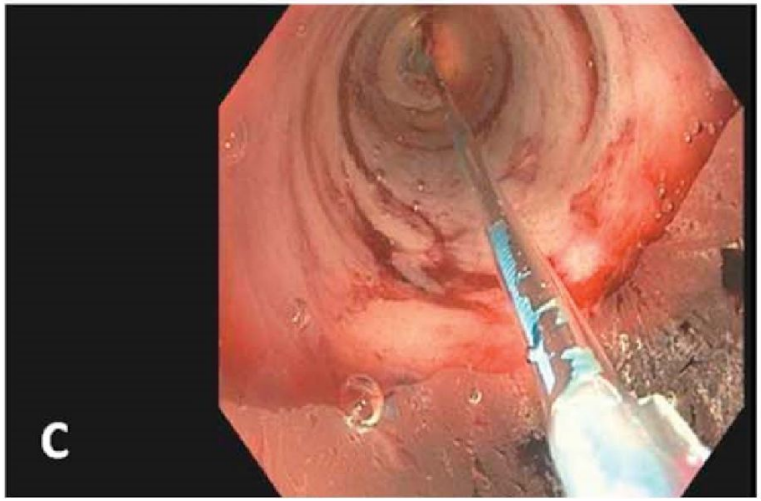

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Crohn's Strictures – Endoscopic Dilation & Stricturotomy

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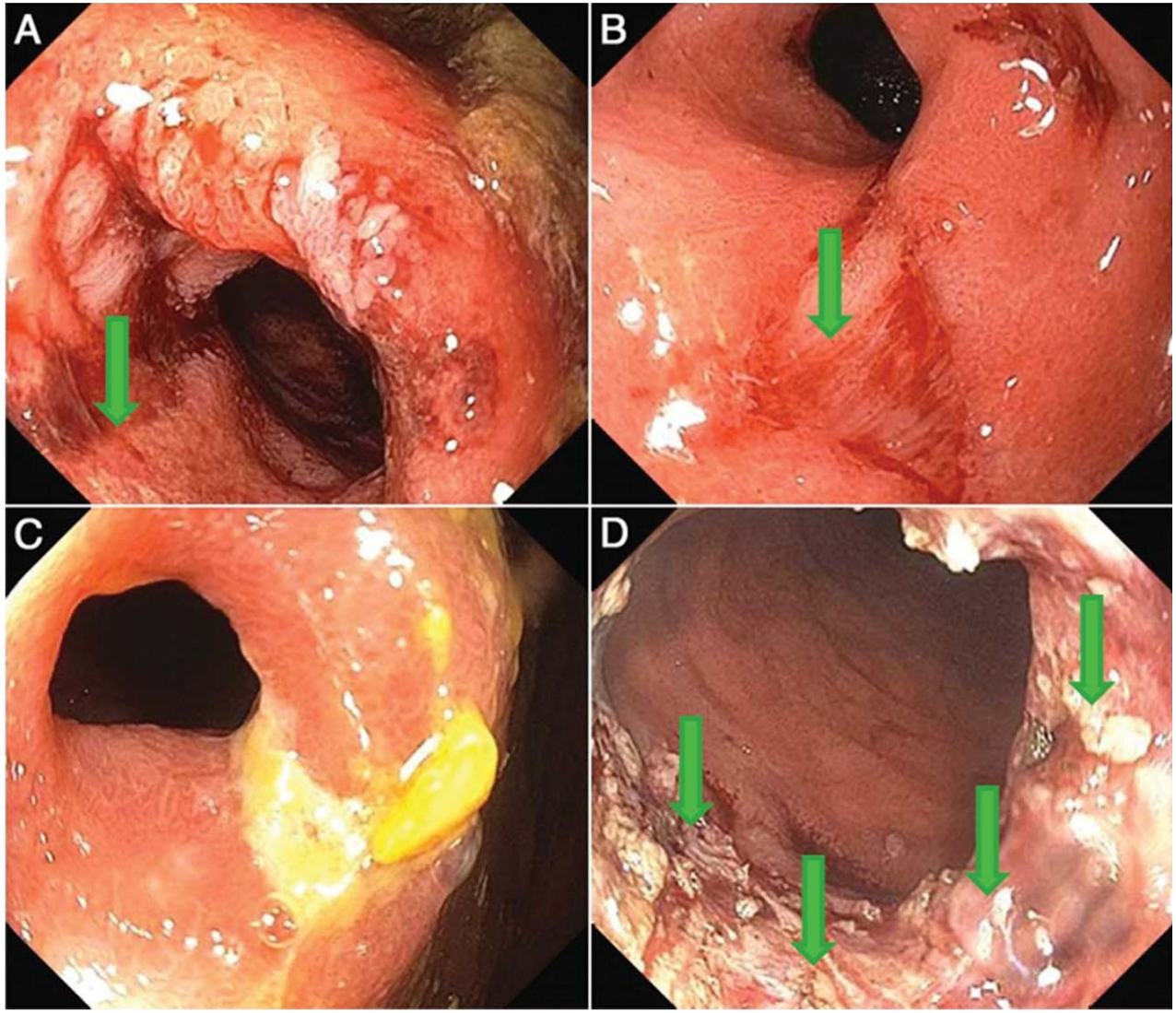

A & B – Balloon Dilation

C & D – Before and After Needle-knife Stricturotomy

Inflamm Bowel Dis 2015;21:2222–2240

Balloon Dilation of Angulated Ileocolonic Anastomotic Stricture

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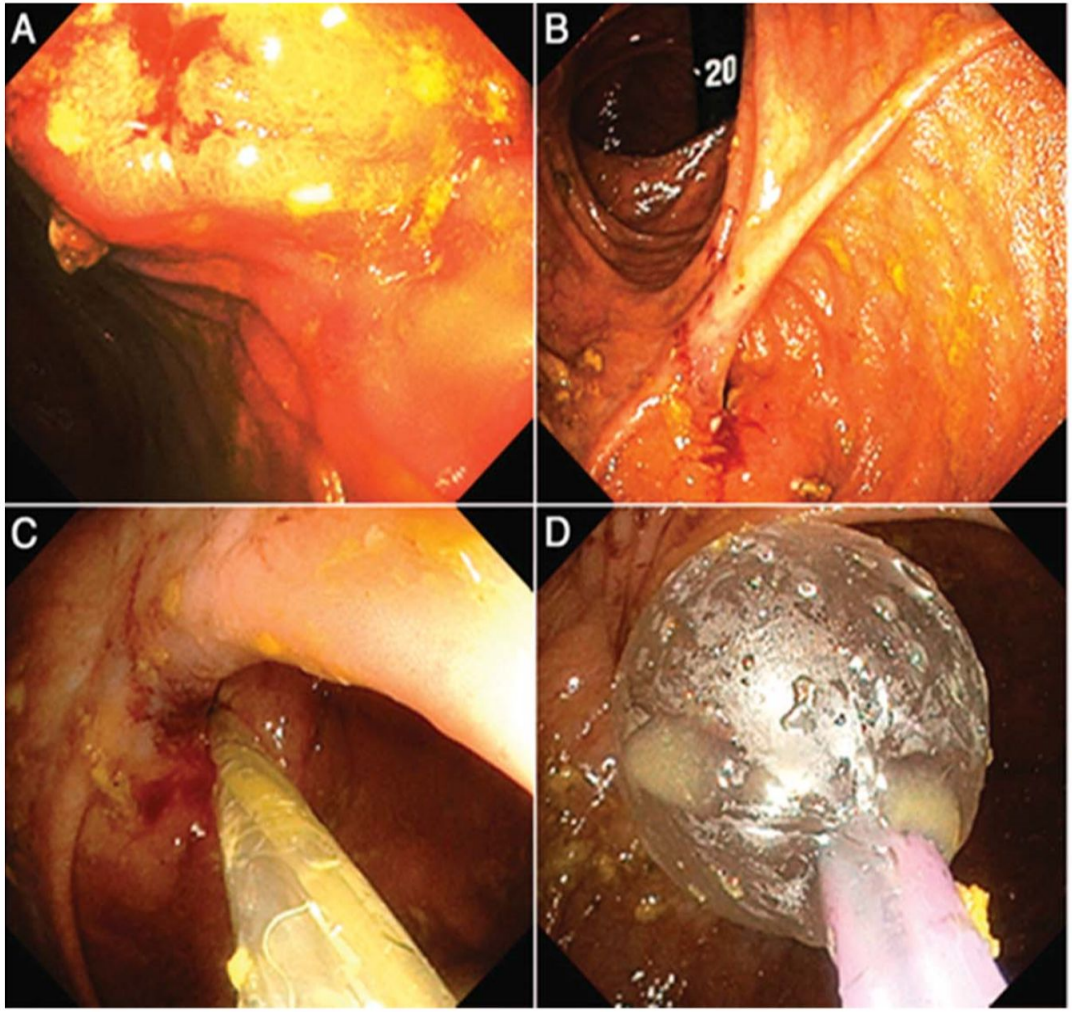

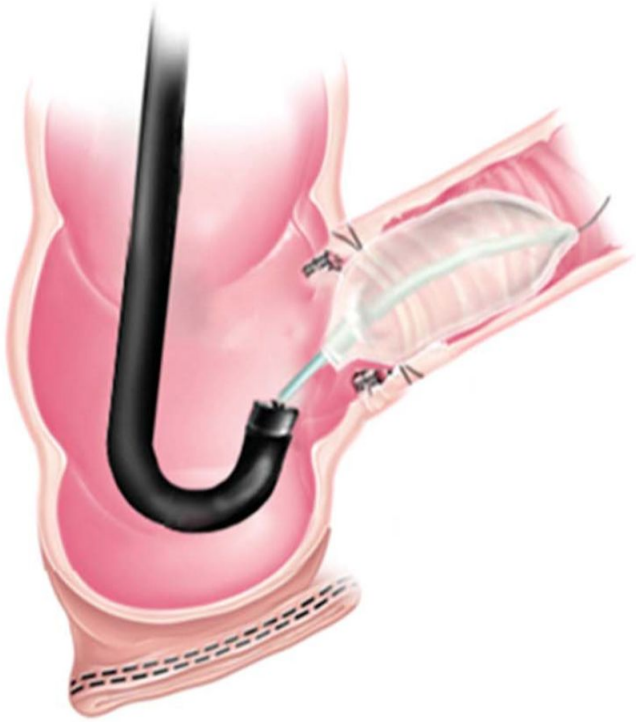

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Inflamm Bowel Dis 2015;21:2222–2240

SUMMARY

- Endoscopy as a tool to diagnose and differentiate types of inflammatory bowel disease
- Endoscopy techniques to detect dysplasia
  - White-light, high definition colonoscopy
  - Chromoendoscopy
- Endoscopy to remove dysplasia lesions
- Endoscopy to treat Crohn's-related luminal strictures
  - Risk stratify
  - Prepare
  - Know your tools, know your patient, know your lesion

THANK YOU!