



Inflammatory bowel disease in the large intestine

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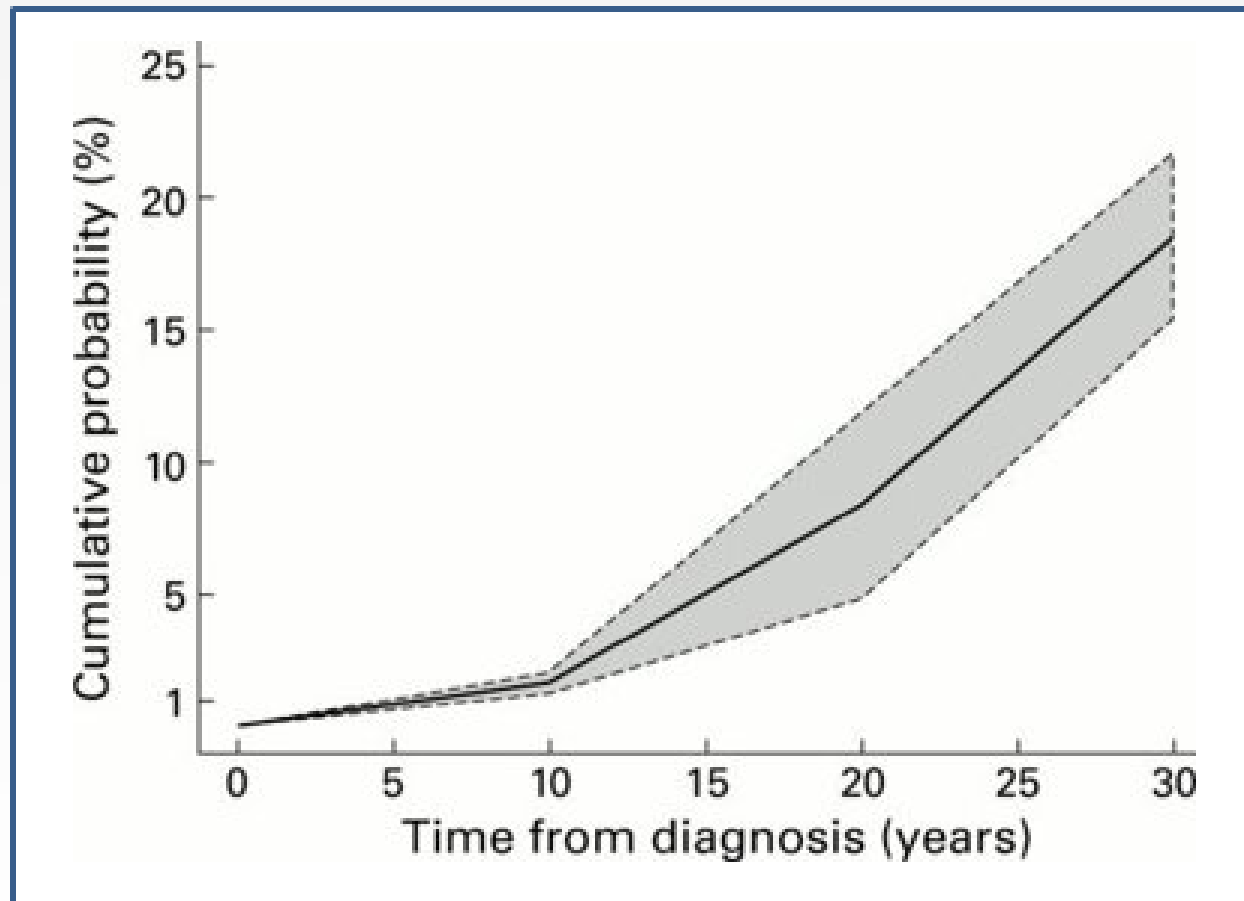
4.3a Inflammatory bowel disease in the large intestine

Tony Axon

United Kingdom



Cumulative risk of developing cancer in ulcerative colitis (meta-analysis)



Eaden et al Gut 2001;48:526-535

GOAL OF SURVEILLANCE

The goal of surveillance for patients with inflammatory bowel disease (IBD) is to detect dysplasia, which is associated with a high risk of colorectal cancer (CRC) and to reduce mortality in those who develop colon cancer

Patient selection and timing

- In all patients with ulcerative colitis and Crohn disease involving one-third of the colon or more, we recommend a screening colonoscopy eight years after disease or symptom onset to initiate surveillance for colorectal neoplasia.
- Initiation of screening is recommended at the time of diagnosis in patients with a history of **primary sclerosing cholangitis**

- Screening can be discussed with patients with a strong **family history of CRC** (ie, first-degree relative diagnosed before age 50) and offered depending on the age and preference of patient

Colorectal cancer (CRC) complicating inflammatory bowel disease (IBD) may appear mass-like, nodular, ulcerated, or plaque-like

Gastroenterol Clin North Am 1997; 26:129.

Inflamm Bowel Dis 2003; 9:351.

Endoscopic description

- Generally accepted that most dysplasia in IBD is endoscopically visible.
- **Morphology** : Polypoid (pedunculated or sessile) or nonpolypoid (slightly elevated, flat, or depressed).
- **Borders** : Distinct or indistinct.
- **Features of submucosal invasion** :(if present)
 - Depressions, overlying ulceration or failure to lift with attempted submucosal injection.

Gastrointest Endosc 2007; 65:998.

Scand J Gastroenterol 2008; 43:817.

Endoscopically resectable lesions have the following characteristics:

- Distinct margins (when viewed with chromoendoscopy) .
- The lesion appears to be completely removed on visual inspection after endoscopic resection.
- Histologic examination of the resected specimen is consistent with complete removal

nonpolypoid colorectal neoplasms (NP-CRNs)

- The detection of NP-CRN can be more difficult visible using conventional endoscopy.
- NP-CRN in colitic IBD (cIBD) is often present simply as redness or a granular patch of mucosa that may not be readily distinguishable from the surrounding inflamed mucosa.



Random biopsy

Because it is often difficult to identify NP-CRN in cIBD using white light endoscopy.

An alternative to random biopsy is to enhance the appearance of NP-CRN by using image-enhanced endoscopy and, in turn, to target the biopsy on areas that appear abnormal.

Image Enhanced Endoscopy

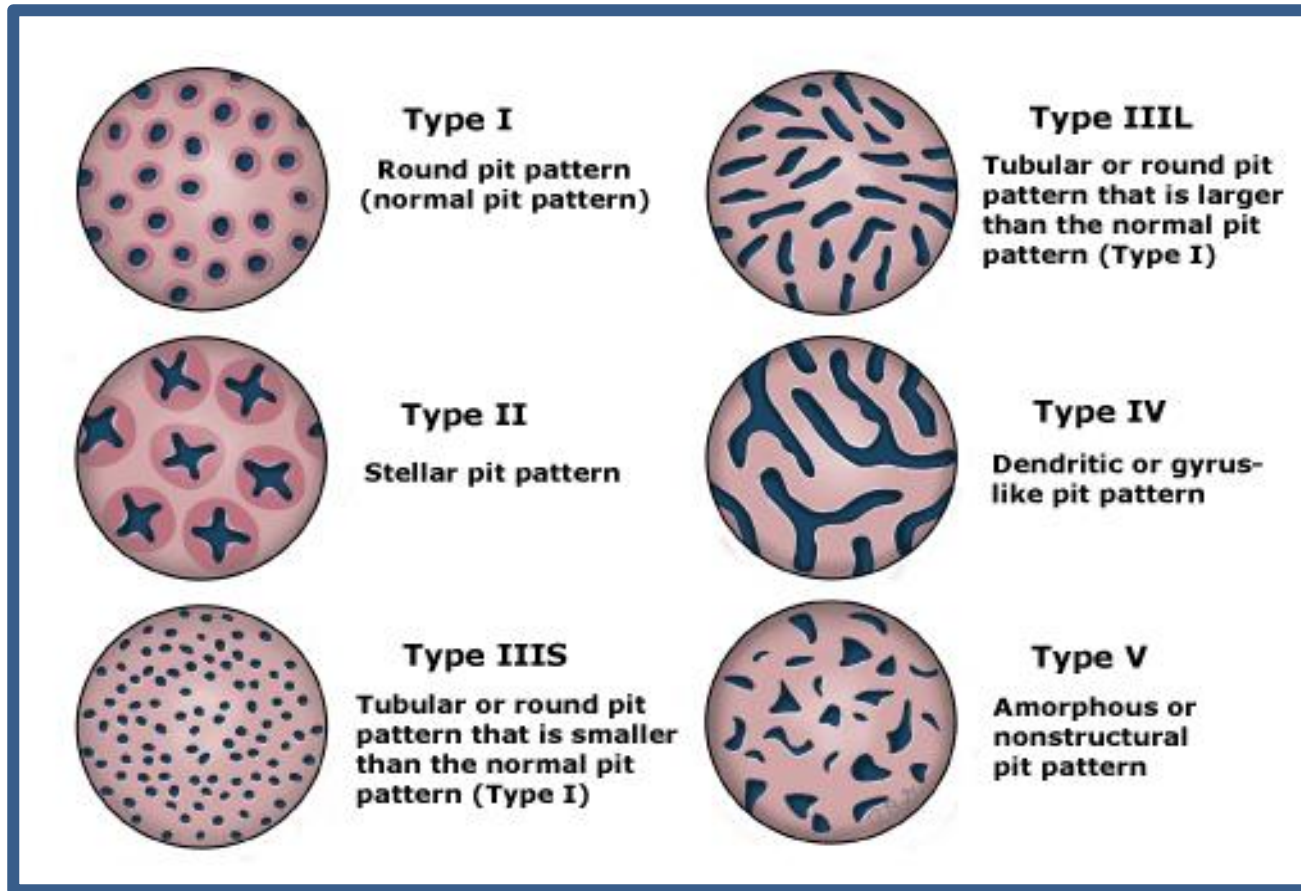
IEE

- Designed to visualize small vessels and minute mucosal patterns.
- Chromoendoscopy
- Magnifying endoscopy
- EQUIPMENT-BASED IEE: narrow band imaging (NBI); blue laser image BLI; autofluorescence imaging (AFI); i-scan

METHODS FOR SURVEILLANCE

- Most society guidelines advocate for high-definition endoscopy with surface chromoendoscopy (Advanced Imaging Technology or Magnifying endoscopy) ,as the strategy that optimizes dysplasia detection

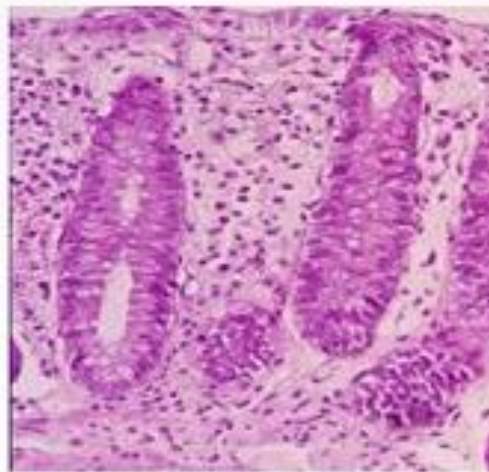
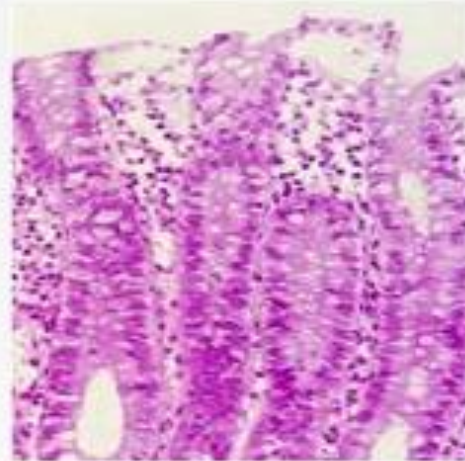
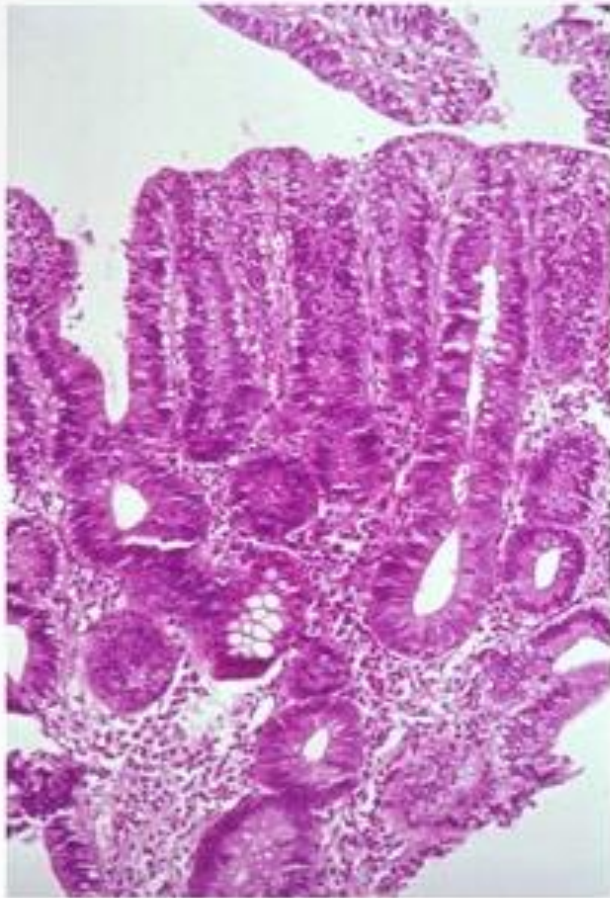
Kudo pit pattern classification



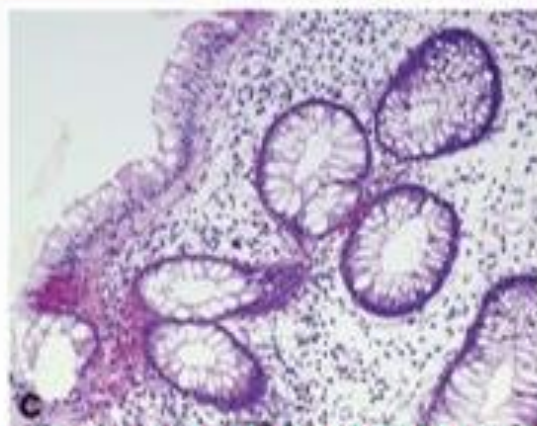
Dysplasia

- Dysplastic epithelium is one of the most important biomarkers for malignancy and provides the rationale for surveillance
- Dysplasia is a precursor to IBD-associated colorectal cancer.
- dysplasia in IBD can be found at distant sites from the cancer

Dysplasia

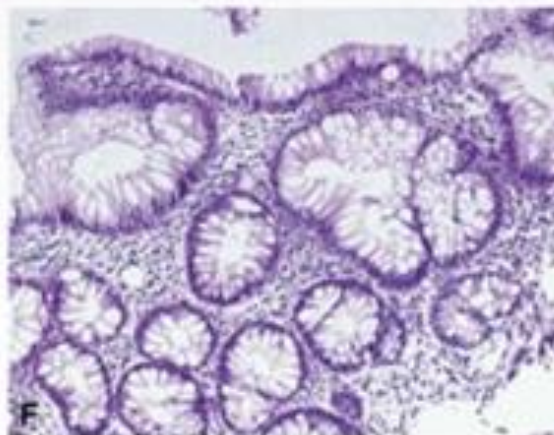
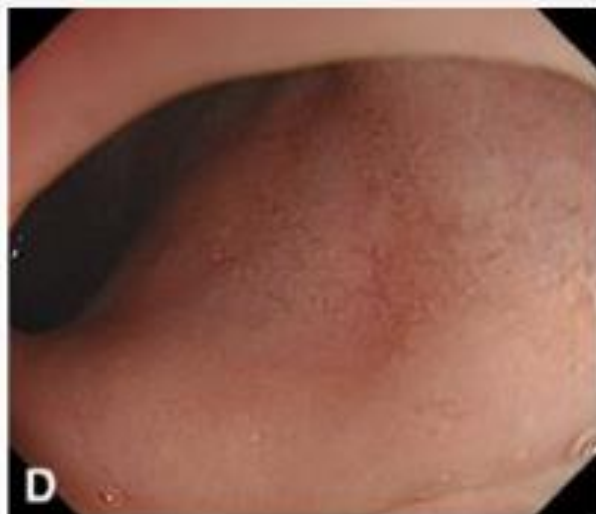


UC “honeycomb” pattern



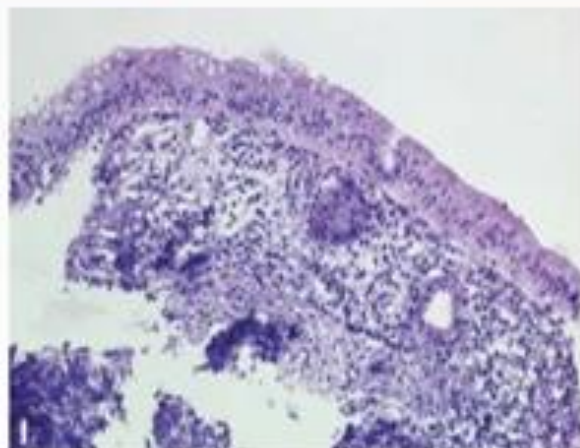
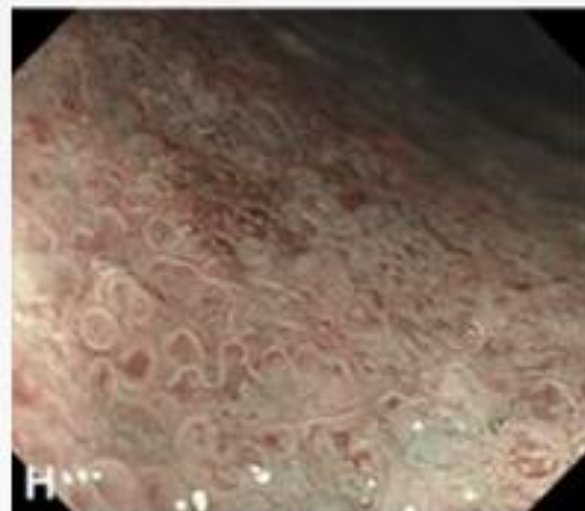
Matsumoto et al GIE 2007 66: 957-965

UC “villous” pattern



Matsumoto et al GIE 2007
66: 957-965

UC “tortuous” pattern



Matsumoto et al GIE
2007 66: 957-965

Frequency of the different patterns

TABLE 2. Correlation of determination between conventional and NBI colonoscopy

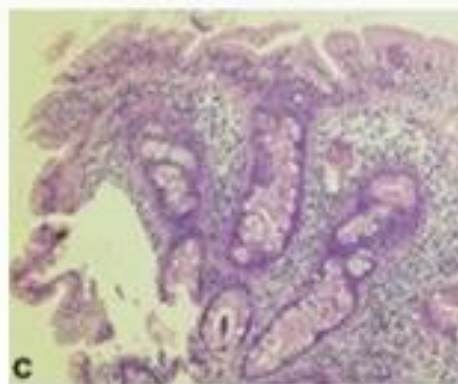
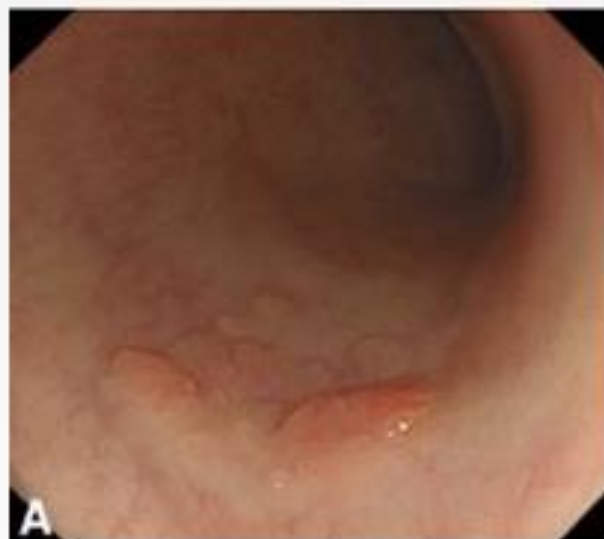
Gross configuration under conventional colonoscopy	NBI colonoscopy			Total
	Honeycomb like	Villous	Tortuous	
Protruding lesion	9 (45%)	9 (45%)	2 (10%)	20 (100%)
Flat mucosa	152 (55%)	76 (28%)	48 (17%)	276 (100%)
Total	161 (54%)	85 (29%)	50 (17%)	296 (100%)

Figures in parentheses refer to percent in the groups classified by gross configuration.

Matsumoto et al GIE 2007 66: 957-965

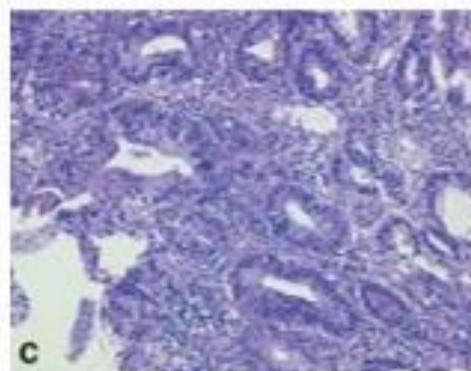


Low grade dysplasia



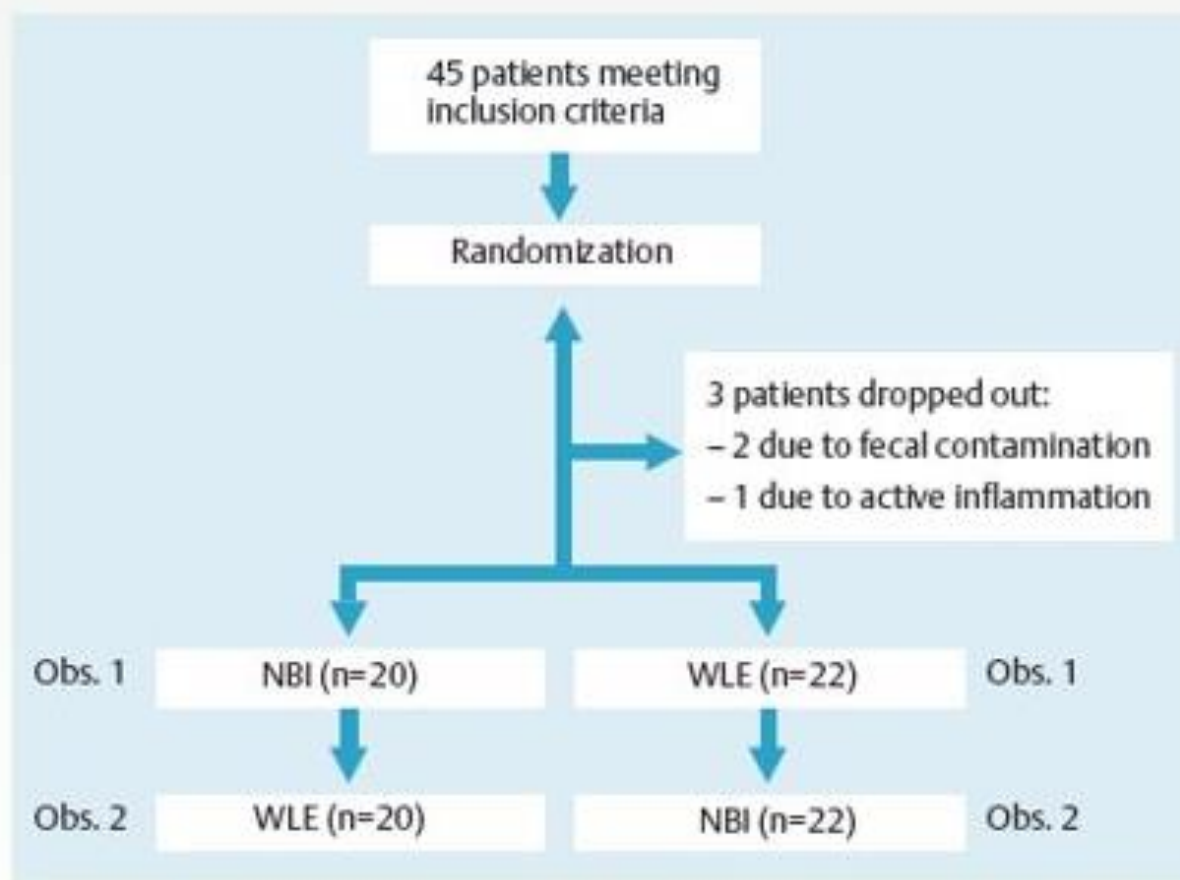
Matsumoto et al GIE 2007
66: 957-965

High grade dysplasia



Matsumoto et al GIE 2007 66:
957-965

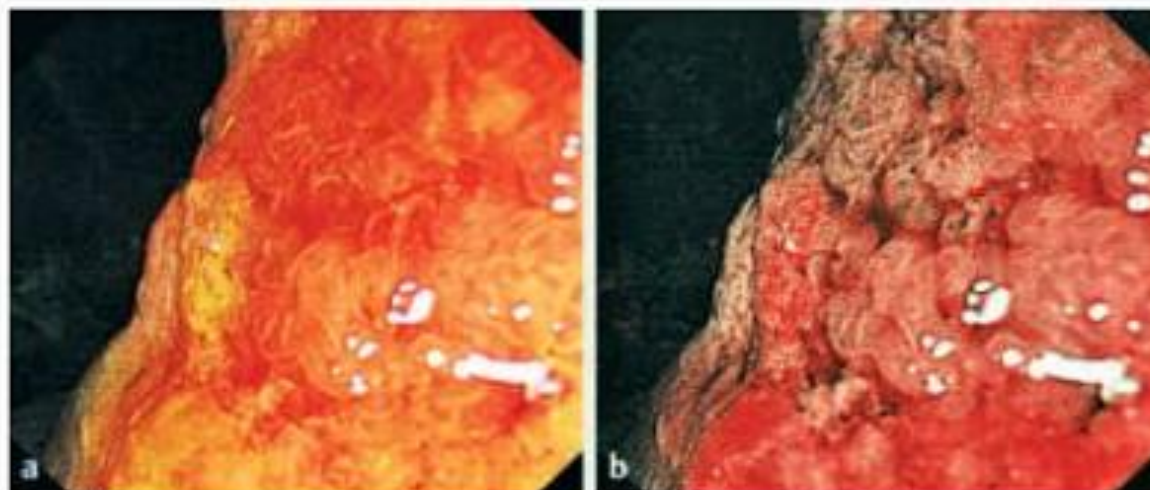
NBI versus white light in UC surveillance



Dekker et al Endoscopy 2007 39: 216-224

Two examples of dysplasia in Ulcerative colitis

High grade dysplasia



Low grade dysplasia



Dekker et al
Endoscopy 2007
39: 216-224

Results

	NBI colo- noscopy	Conven- tional WLE	<i>P</i> value
Per-patient analysis			
Patients with suspicious lesions, n (%)	17 (40%)	13 (31%)	0.344
Patients with true-positive lesions, n (%)	8 (19%)	7 (17%)	0.705
Patients with false-positive lesions, n (%)	9 (21%)	6 (14%)	0.581
Per-lesion analysis			
Suspicious lesions, n	52	28	0.026
True-positive lesions, n	9	12	0.672
False-positive lesions, n	43	16	0.015

Dekker et al Endoscopy 2007 39: 216-224

NBI versus white light in UC surveillance: Conclusions

- The sensitivity is the same
- There were more false positives in the NBI group
- It is too early to stop taking random biopsies in surveillance colonoscopy

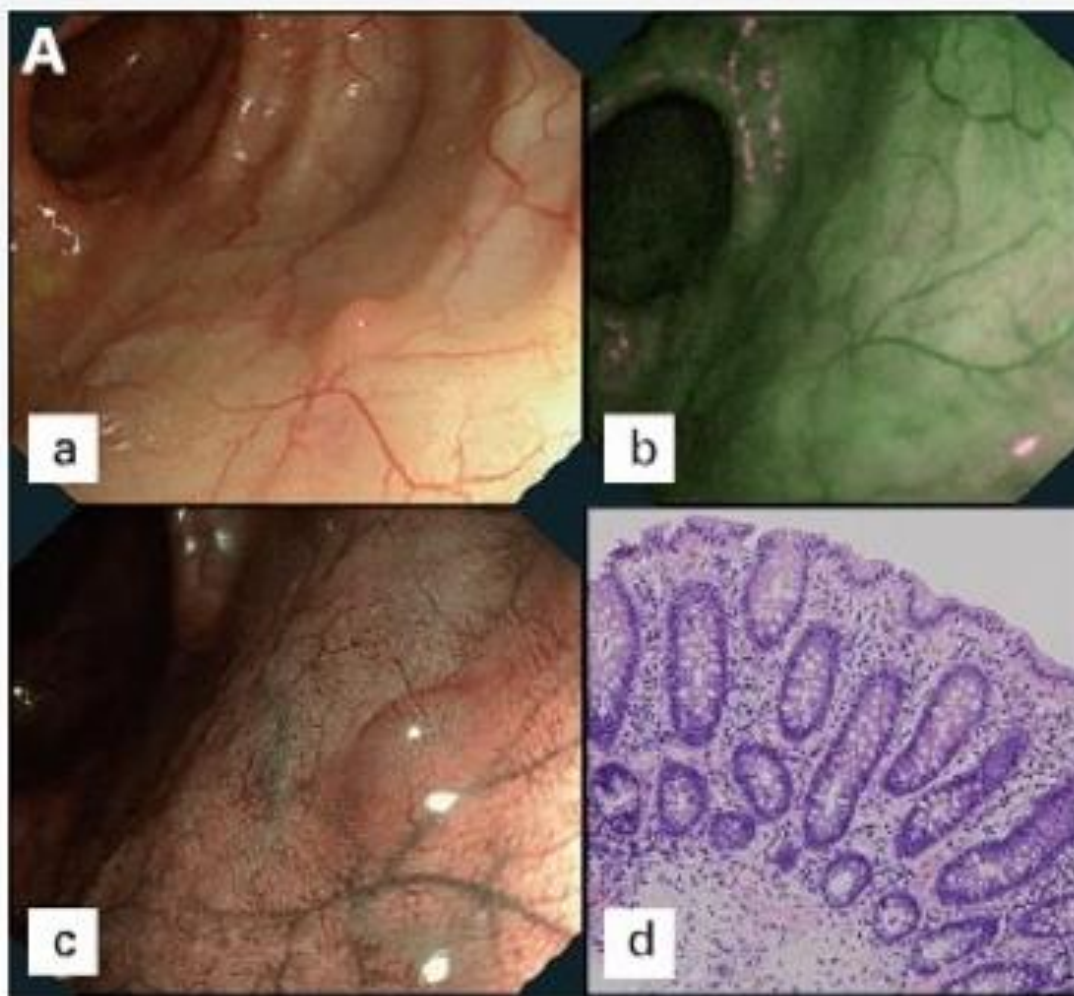
Dekker et al Endoscopy 2007 39: 216-224



Endoscopic tri-modal imaging (ETMI)

Endoscopic tri-modal imaging (ETMI) incorporates white light endoscopy (WLE), autofluorescence imaging (AFI) and narrow-band imaging (NBI).

Tri-modal imaging in UC surveillance



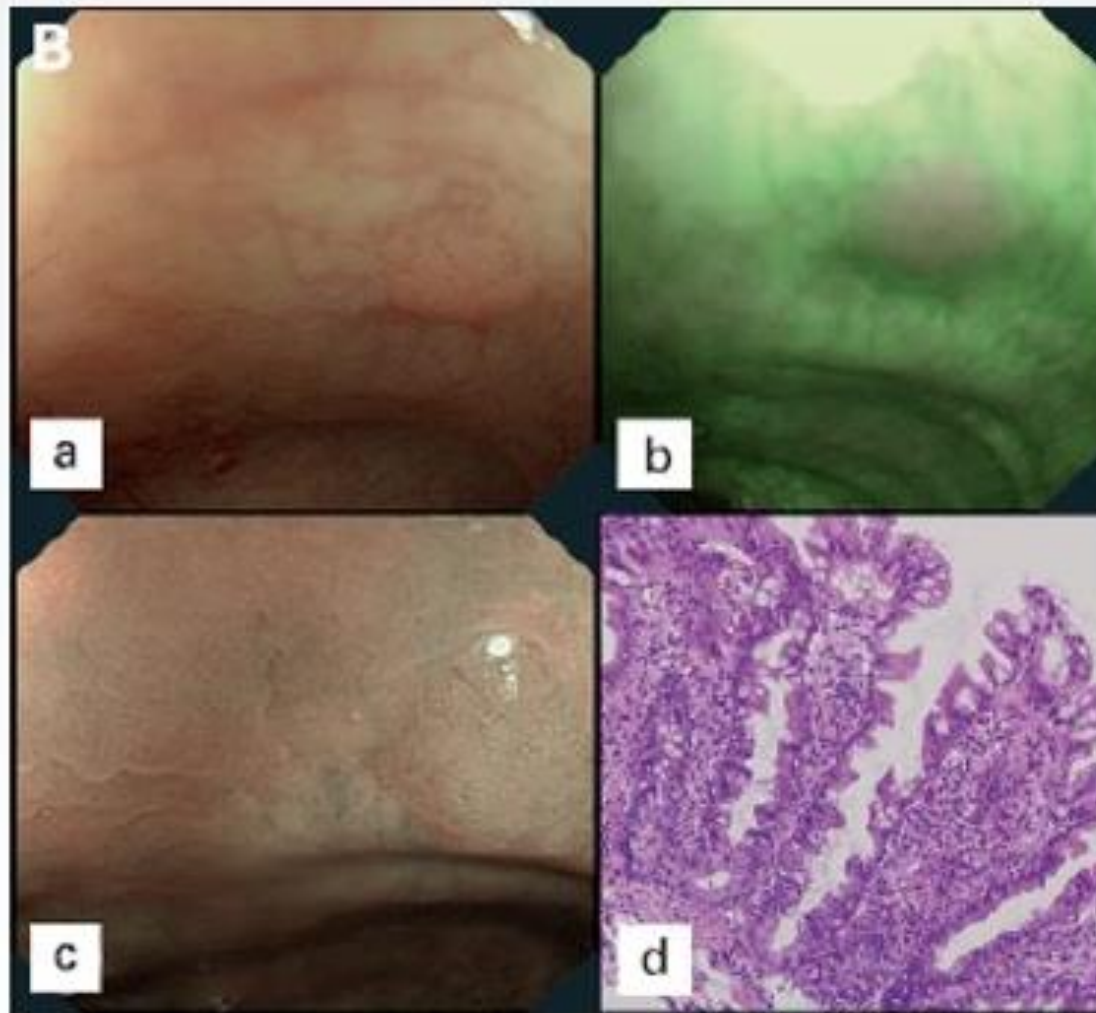
Normal green
autofluorescence

Kudo
type I

Normal histology

Van den Broek et al Gut
57 1083-1089

Tri-modal imaging in UC surveillance



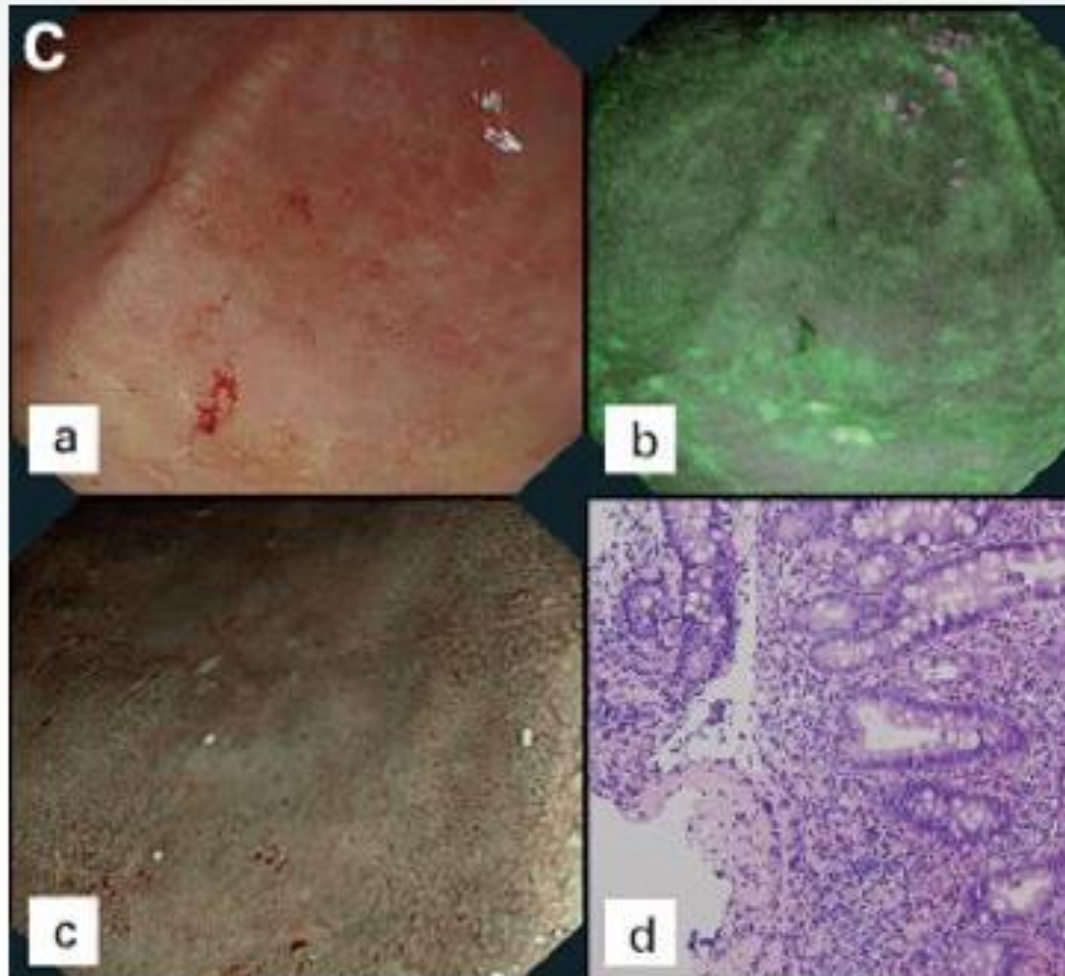
False
positive

Kudo
type I

Hyperplastic

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1089

Tri-modal imaging in UC surveillance



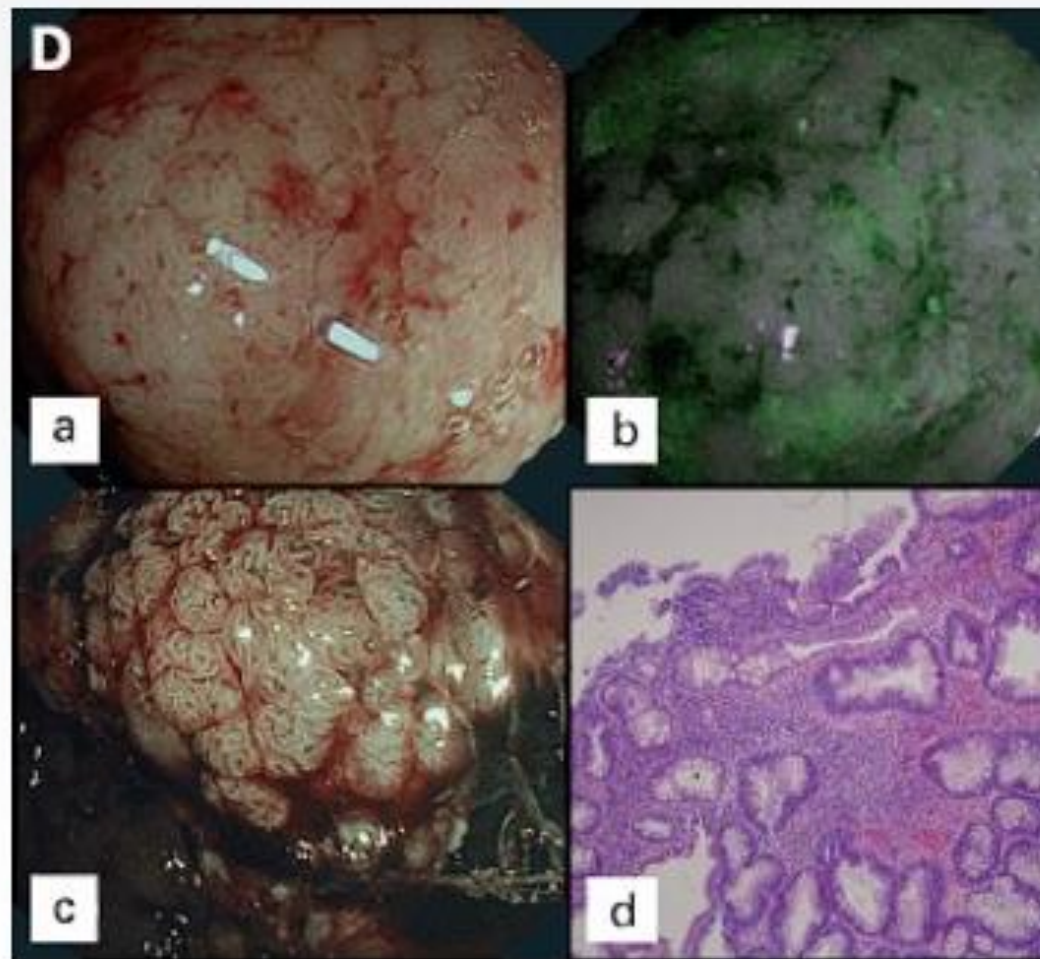
False positive

Inflamed

Van den Broek et al
Gut 57 1083-1089

Kudo
type IIIb

Tri-modal imaging in UC surveillance



True positive

Kudo
type IV

Low grade
dysplasia

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Conclusion

- Autofluorescence improves the detection of dysplasia
- The NBI appearances are moderately accurate
- AFL with NBI provides better accuracy
- Random biopsies would not have been of any benefit in this study

Van den Broek et al Gut 57 1083-1089



CONCLUSION

- The value of endoscopy in the management strategy of IBD is increasing.
- Advanced endoscopic imaging technologies have almost revolutionized the role of endoscopy in IBD.
- Dye CE is recognized as the gold standard tool for dysplasia surveillance in long-standing IBD.
- Dye-less CE approaches play a crucial role in the assessment of mucosal inflammation extent and severity in IBD.



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