Participating in the Webinar

All attendees will be muted and will remain in Listen Only Mode.

Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.
How to Receive CME and MOC Points

LIVE VIRTUAL GRAND ROUNDS WEBINAR
ACG will send a link to a CME & MOC evaluation to all attendees on the live webinar.

ABIM Board Certified physicians need to complete their MOC activities by December 31, 2021 in order for the MOC points to count toward any MOC requirements that are due by the end of the year. No MOC credit may be awarded after March 1, 2022 for this activity.

MOC QUESTION
If you plan to claim MOC Points for this activity, you will be asked to: Please list specific changes you will make in your practice as a result of the information you received from this activity.

Include specific strategies or changes that you plan to implement. THESE ANSWERS WILL BE REVIEWED.
ACG Virtual Grand Rounds
Join us for upcoming Virtual Grand Rounds!

Week 18, 2021
Small Bowel Bleeding
Carol E. Semrad, MD, FACG
May 6, 2021 at Noon Eastern

Week 20, 2021
Diagnosis and Management of Pancreatic Cystic Lesions
Somashekar G. Krishna, MD, MPH, FACG
May 13, 2021 at Noon Eastern

Visit gi.org/ACGVGR to Register

Disclosures:

Speaker:
Samir A. Shah, MD, FACG
Dr. Shah, faculty for this educational event, has no relevant financial relationship(s) with ineligible companies to disclose.

Moderator:
Bharati Kochar, MD
Advisory Board to Pfizer, Inc.

*All of the relevant financial relationships listed for these individuals have been mitigated.
Chromoendoscopy in IBD Surveillance: Always, Sometimes or Never?

Samir A. Shah, MD, FACG
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Chief of Gastroenterology, The Miriam Hospital
President-Elect, American College of Gastroenterology
Gastroenterology Associates, Inc
44 West River Street, Providence RI 02904
samir@brown.edu
@DrSamirAShah1

Learning Objectives

- Understand increased risk of CRC in IBD (about 2x)
  - Stratify interval/technique for surveillance based on risk factors
  - HD scope standard of care in 2021
- Describe the indications for chromoendoscopy to detect dysplasia in IBD and be able to apply to your practice
- Know when not to use chromoendoscopy
- Know when to utilize random biopsies in surveillance
- Be Aware of Future Directions: Chemoprevention, AI & Stool DNA
Risk of CRC in IBD is Less Than Previously Reported:

- 48 studies included in the meta-analysis
- Included both population-based (259,266 person-years at risk) and referral center studies (29,799 patient-years at risk)
- Overall cumulative risk at 10, 20 and >20 years is 1%, 3% and 7%
- Rate higher in referral centers and in patients with extensive disease
- Risk is still almost 2x higher in Crohn’s and ulcerative colitis compared with general population

Cumulative risk in IBD patients

- Overall
- Population based
- Referral center

Updated Risk Factors for Dysplasia and Colorectal Cancer in Ulcerative Colitis

- Longer duration of disease, younger age of diagnosis
- Greater extent of colonic involvement, backwash ileitis
- Increased inflammatory activity (endoscopic + histologic)
- Family history of CRC (FDR < 50)
- **Primary Sclerosing Cholangitis**
- Stricture/mass, pseudopolyps, foreshortened or tubular colon
- Prior dysplasia
- Male gender
- Poor compliance with medical Rx


Virtual Grand Rounds

Cancer Surveillance in Colitis

Chemoprevention?

Inflammation
(mucosal healing)

Dysplasia

Cancer

Death

Initiate screening and surveillance

Intervention to prevent further progression: surgery
Surveillance Colonoscopy in IBD

- Retrospective study of 6823 IBD patients
  - 2764 with a recent colonoscopy, 4059 without a recent colonoscopy
  - >3 years follow-up at MGH or BWH in Boston, Massachusetts
- CRC incidence with recent colonoscopy: 1.6% vs 2.7%, OR=0.56 (95%, CI 0.39-0.80)
- If CRC, recent colonoscopy reduced mortality rate, OR=0.34; (95% CI 0.12-0.95)

Conclusion: A recent colonoscopy (within 36 months) is associated with a reduced incidence of CRC in patients with IBD, and lower mortality rates in those diagnosed with CRC


Dysplasia is often missed in IBD

- Study of 55,008 Medicare patients, 15% of IBD patients with a diagnosis of CRC (2001-2005) had undergone surveillance colonoscopy in the previous 3 years
- Compared with non-IBD patients, IBD patients were 3 times more likely (15.5% vs. 5.8%) to have had a colonoscopy within 6 to 36 months before the CRC diagnosis (CD: OR, 3.07; 95% CI, 2.23-4.21; UC: OR, 3.05; 95% CI, 2.44-3.81)
- 62.5% of CD and 38.5% of UC patients with interval CRC had advanced (stage III or IV) CRC at diagnosis

Conclusions: dysplastic lesions may be often missed or unrecognized with standard (old) colonoscopic surveillance techniques

<table>
<thead>
<tr>
<th>Organization</th>
<th>Time Interval</th>
<th>Risk Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSG 2010</td>
<td>Every 5 years</td>
<td>Lower risk</td>
<td>Extensive colitis with no active endoscopic or histologic inflammation or Left-sided colitis or Crohn’s colitis with &lt; 50% involvement</td>
</tr>
<tr>
<td>NICE 2011</td>
<td>Every 3 years</td>
<td>Intermediate risk</td>
<td>Extensive colitis with mild active endoscopic or histologic inflammation or Family history CRC in first degree relative &gt; 50 or Post-inflam polyps</td>
</tr>
<tr>
<td>ECCO 2017</td>
<td>Every Year</td>
<td>Higher risk: PSC</td>
<td>Extensive colitis with moderate to severe active inflammation or Stricture or Dysplasia in past 5 years without surgery or FH CRC in 1st degree relative &lt; 50</td>
</tr>
<tr>
<td>AGA 2010</td>
<td>Every 1-2 years</td>
<td>Lower risk</td>
<td>Extensive or left-sided colitis</td>
</tr>
<tr>
<td></td>
<td>Every 3 years</td>
<td>Intermediate risk</td>
<td>After two negative exam</td>
</tr>
<tr>
<td>ASGE 2015</td>
<td>Every 3 years</td>
<td>Average risk, consider other risk factor</td>
<td>Endoscopically and histologically normal on two or more surveillance colonoscopies</td>
</tr>
<tr>
<td>ACG 2019</td>
<td>Every 1-3 yr. Adjust intervals</td>
<td>Average risk</td>
<td>Based on previous colonoscopies and combined risk factors: Duration of disease, younger age at diagnosis, greater extent of inflammation, first-degree relative with CRC</td>
</tr>
</tbody>
</table>

Clarke WT, Feuerstein JD. *World J Gastroenterol* 2019; 25(30): 4148-4157

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**SCENIC Nomenclature**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible dysplasia</td>
<td>Dysplasia identified on targeted biopsies from a lesion visualized at colonoscopy</td>
</tr>
<tr>
<td>Polyp</td>
<td>Lesion protruding from the mucosa into the lumen ≥ 2.5 mm</td>
</tr>
<tr>
<td>Pedunculated</td>
<td>Lesion attached to the mucosa by a stalk</td>
</tr>
<tr>
<td>sessile</td>
<td>Lesion not attached to the mucosa by a stalk; entire base is contiguous with the mucosa</td>
</tr>
<tr>
<td>Nonpolypoid</td>
<td>Lesion with little (&lt;2.5 mm) or no protrusion above the mucosa</td>
</tr>
<tr>
<td>Superficial elevated</td>
<td>Lesion with protrusion but &lt;2.5 mm above the lumen (less than the height of the closed cup of a biopsy forceps)</td>
</tr>
<tr>
<td>Flat</td>
<td>Lesion without protrusion above the mucosa</td>
</tr>
<tr>
<td>Depressed</td>
<td>Lesion is 1/2% of the total subjective volume of the lesion</td>
</tr>
<tr>
<td>General descriptors</td>
<td>None of the above</td>
</tr>
<tr>
<td>Ulcerated</td>
<td>Ulceration (luminous) appearing base with depth within the lesion</td>
</tr>
<tr>
<td>Distinct border</td>
<td>Lesion’s border is discrete and can be distinguished from surrounding mucosa</td>
</tr>
<tr>
<td>Indistinct border</td>
<td>Lesion’s border is not discrete and cannot be distinguished from surrounding mucosa</td>
</tr>
<tr>
<td>Invisible dysplasia</td>
<td>Dysplasia identified on random (non-targeted) biopsies of colon mucosa without a visible lesion</td>
</tr>
</tbody>
</table>

Updated Active Surveillance Algorithm

- Start at 8 years (except PSC)
- Assess individual risks
- GI Pathologist, confirm with 2nd
- Screening and surveillance colonoscopies
  - HD + VCE or dye CE
  - Random biopsies in high risk
    - PSC, previous dysplasia, pseudopolyps, tubular colon

Random biopsy (If no chromo done and LGD, consider chromoendoscopy)

Dysplasia

Endoscopic appearance

Invisible

Visible

Grade?

High

Low

Multifocal?

Yes

No

Colectomy

Complete endoscopic resection

Colectomy vs. Active surveill follow-up

Active Surveillance Colonoscopy ≥6 months and follow-up

Standard Resection EMR

ESD (refer!)


American College of Gastroenterology
### Post SCENIC Studies

<table>
<thead>
<tr>
<th>Author/year</th>
<th>Study Period</th>
<th>Study Design</th>
<th>Cohort</th>
<th>Dysplastic Lesions</th>
<th>Bottom Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choi UK, 2015</td>
<td>2002-2012</td>
<td>Retrospective</td>
<td>Surveillance</td>
<td>267</td>
<td>CE Superior</td>
</tr>
<tr>
<td>Mooiweer Dutch, 2015</td>
<td>2000-2013</td>
<td>Retrospective</td>
<td>Surveillance</td>
<td>401</td>
<td>CE no difference</td>
</tr>
<tr>
<td>Marion US, 2015</td>
<td>2005-2011</td>
<td>Retrospective</td>
<td>Longitudinal</td>
<td>44</td>
<td>CE Superior</td>
</tr>
<tr>
<td>Gasia Canada, 2016</td>
<td>2011-2013</td>
<td>Retrospective</td>
<td>Surveillance</td>
<td>74</td>
<td>CE no difference</td>
</tr>
<tr>
<td>Rubin US, 2016</td>
<td>2008-2015</td>
<td>Retrospective</td>
<td>Dysplasia</td>
<td>40 new</td>
<td>CE Superior</td>
</tr>
<tr>
<td>Deepak US, 2016</td>
<td>2006-2013</td>
<td>Retrospective</td>
<td>Dysplasia</td>
<td>60 new</td>
<td>CE Superior</td>
</tr>
<tr>
<td>Carballa Spain 2016</td>
<td>2012-2014</td>
<td>Prospective,</td>
<td>Surveillance;</td>
<td>94</td>
<td>CE superior</td>
</tr>
<tr>
<td></td>
<td>Multicenter “real world”</td>
<td>350 IBD</td>
<td>WLE→CE IC 41.5% SD</td>
<td>1 Ca; 5HGD</td>
<td>Miss rate 40/94 in WLE</td>
</tr>
</tbody>
</table>

---

### Fate of Dysplasia at Colectomy

**Ullman, 2003 Gastroenterology**

- Dysplasia found with 10-20 random bx Low definition, White light
- Colectomy performed
- 7/46 (15%) had synchronous CRC
- 53% of the flat LGD by random bx → HGD or CRC over 5 years
- Specificity: 15 +53= 68%

**Marion, 2016 CGH**

- Dysplasia found with Chromo
- Colectomy performed
- 0/10 (0%) had synchronous CRC
- Unknown if any of the LGD detected by Chromo would progress to HGD or CRC
- Specificity 0% so far

Dysplasia found by Chromoendoscopy is not the same as dysplasia found in earlier times by random biopsy and standard definition

Chromo / HD: Greater sensitivity for lower specificity

Marion JF, et al. CGH 2016;14:713-719

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American College of Gastroenterology
Chromoendoscopy Superior in Long Term Surveillance

Marion JF, et al. Clinical Gastroenterology and Hepatology 2016;14:713-719

LGD on random bx with WLE → Chromo

- MAYO Clinic, retrospective 1/2006-8/2013
- 95 cases, 78 with UC, 18yr mean duration of disease
- Dysplasia in 55 at index WLE with targeted bx of 72 lesions
- 1st CE, 50 with dysplastic lesions including 34 not seen with WLE. 43 lesions were amenable to endoscopic removal
  14 underwent surgery: 2 CRC, 3 HGD
- 44 pts with multiple CE, 20 had 34 lesions of which 26 were new (34+26=60 new)

- University of Chicago 2008-2015: 37pts, 62 dysplastic lesions
- Chromo HD, MB: 26/62 seen (40%)
- 12 additional lesions on 1st chromo in 9 pts: 9LGD, 1HGD, 2CRCs
- 28 additional lesions over next 7.5 months (1-72 range) in 37 scopes, 5 sent for surgery (12+28=40 new)

Take home message:
If you find LGD on RB with WLE → Chromoendoscopy

Deepak et al. http://dx.doi.org/10.1016/j.gie.2015.09.021
Chromoendoscopy vs. SD and HD White-light endoscopy

- **RCT**
  - Chromo (n=249) vs. SDWLE (n=248)
    - RR 2.12 [1.15-3.91]
  - Chromo (n=245) vs. HDWLE (n=248)
    - RR 1.36 [0.84-2.18]
  - **Combined chromo (n=494) vs. WLE (n=496)**
    - RR 1.50 [1.08-2.10]
- **Non-RCT**
  - Chromo (n=58) vs. SDWLE (n=141)
    - RR 6.85 [2.79-16.81]
  - Chromo (n=113) vs. HDWLE (n=257)
    - RR 2.57 [1.41-4.68]
  - **Combined chromo (n=171) vs. WLE (n=398)**
    - RR 3.48 [2.11-5.73]


---

**Spanish Multicenter CE**

- Multicenter 6/2012-2014, 350 IBD: “real world” study
- WLE followed by CE (0.4% IC)
- 41.5% SD, 58.5% HD
- 94 dysplastic (1 Ca, 5 HGD, 88 LGD); 503 non-dysplastic
- Dysplasia miss rate 40/94 (57.4% incremental yield with CE); dysplasia yield: 51.5% SD, 52.3 % HD.
- Expert 18.5% vs. Nonexpert 13.1% dysplasia detection
- No significant learning curve observed
- Conclusion: anyone can do CE and it works! CE better than HD=SD

Chromoendoscopy vs. Narrow Band Imaging

Older NBI Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th># of patients</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dekker 2007</td>
<td>Tandem, SD scope</td>
<td>42 pts</td>
<td>No difference</td>
</tr>
<tr>
<td>Van den Broek 2011</td>
<td>Tandem, HD scopes</td>
<td>48 pts</td>
<td>No difference</td>
</tr>
<tr>
<td>Ignjatovic 2012</td>
<td>Parallel group, HD scopes</td>
<td>112 pts</td>
<td>No difference. 1/2707 RB</td>
</tr>
</tbody>
</table>

Newer Chromo vs NBI

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th># of patients</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisschops 2018</td>
<td>Belgian Multicenter CE (MB) vs NBI Targeted biopsies</td>
<td>131 pts</td>
<td>No difference. 7 minutes shorter with NBI</td>
</tr>
<tr>
<td>Iacucci 2018</td>
<td>Canadian Single Center RCT HD vs CE vs VCE (iSCAN) Targeted biopsies</td>
<td>270 pts</td>
<td>No difference one MD, highly experienced IC and MB</td>
</tr>
<tr>
<td>Yang 2019</td>
<td>Korean Multicenter RCT CE (IC)-T vs WLE -R</td>
<td>210 pts</td>
<td>No difference for CAD Trend for CE all dysplasia</td>
</tr>
</tbody>
</table>


Should we still do random biopsies?

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th># pts / # bx</th>
<th>Yield</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>van den Broek</td>
<td>2011</td>
<td>167pts / 11,722 bx in 466 scopes</td>
<td>5 neoplasia in 4 patients RB (1/2,344)</td>
<td>retrospective, surveillance 85% T, 9.1% Both, 5.7% R</td>
</tr>
<tr>
<td>Rutter</td>
<td>2011</td>
<td></td>
<td>1/1266</td>
<td></td>
</tr>
<tr>
<td>Navaneethan</td>
<td>2013</td>
<td>71 pts / 267 colon / 3975 bx</td>
<td>16pt (8 RB, 5 both, 3 T)</td>
<td>UC and PSC Median 12 bx per pt</td>
</tr>
<tr>
<td>SCENIC</td>
<td>2015</td>
<td>1,635pts / 48,522 bx</td>
<td>45 (0.093% -&gt; 1/1000)</td>
<td>10% RB, 90% T</td>
</tr>
<tr>
<td>Watanabe</td>
<td>2016</td>
<td>246 pts</td>
<td>24/114 T (11.4%, 1/14 bx)</td>
<td>Vast majority HD Chromo allowed at discretion</td>
</tr>
<tr>
<td>D Moussata</td>
<td>2017</td>
<td>1000 pts / 31,865 bx</td>
<td>24/107 T (9.8%, 1/1250 bx)</td>
<td></td>
</tr>
<tr>
<td>Alexandersson</td>
<td>2020</td>
<td>263 IBD / 9760 bx</td>
<td>1/500 bx, 12.8% per pt</td>
<td>20% RB, 80% T (HD and SD)</td>
</tr>
</tbody>
</table>

van den Broek Am J Gastroenterol 2011
Rutter MD. J Gastroenterol. 2011;46
SCENIC Gastroenterology 2015;148:639-651

Watanabe. Gastroenterology 2016;151:112211130
D Moussata GUT 2017
Alexandersson. CGH 2020;18:210112107

American College of Gastroenterology
Random Biopsies and Chromo?

- What is the yield of adding random bx in addition to targeted bx with CE?
- 1000 IBD pts (505 CD, 495 UC), 1000 scopes, 140 dysplastic sites total in 94 patients (multiple sites, variable scopes)
- 82 pts with targeted bx/resection of dysplastic lesions; 7/82 with additional lesions with random bx; 12 patients dysplasia only with random bx
- 140 neoplastic sites in 94 patients (112 targeted: 80%, 28 random: 20%)
- Risk factors: personal hx of neoplasia, tubular appearing colon and PSC

Take Home Message: Consider random biopsies in patients with risk factors

D Moussata et al. GUT 2017. DOI:10.1136/gutjnl-2016-311892

Random Biopsies and HD Scopes

- 300 IBD patients with dysplasia with HD scope at BWH/MGH 2011-2019
- 203 UC, 97 CD, 442 scopes, 24.5 yr mean disease duration, 7.2% PSC
- 362 scopes (82%) visible, 52 (12%) random only, 28 (6%) both
- PSC, visible inflammation, longer duration of disease RF for dysplasia RB
- RB (21%), RB+VD (21%) vs VD (5%) need for surgery, p<0.001
- 15% vs 7% vs 1% subsequent development of CRC, p<0.0001

Hu, Burke, Kochar, Ananthakrishnan. Inflammatory Bowel Diseases, 19 August 2020
doi: 10.1093/ibd/izaa205
Latest Chromoendoscopy: Sweden

- Single center prospective RCT in Sweden from March 2011 to April 2016
- 305->263 patients with longstanding UC or Crohn’s colitis: Random biopsies (>32) + targeted
- Indigo Carmine 0.3-0.5%, spray catheter, 25 endoscopists, all familiar with chromo

<table>
<thead>
<tr>
<th>All HD Olympus</th>
<th>HD-CE (152) vs HD-WLE(153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pts dysplastic lesions</td>
<td>17 vs 7</td>
</tr>
<tr>
<td>Visible dysplastic lesions</td>
<td>24 vs 7</td>
</tr>
<tr>
<td>Pts all dysplasia</td>
<td>21 vs 9</td>
</tr>
<tr>
<td>Random bx dysplasia</td>
<td>6 vs 3</td>
</tr>
</tbody>
</table>

- 3/9 (33%) with dysplasia on random biopsy had PSC; 54/305 (18%) with PSC in study
- 20% of dysplasia found only with random biopsy
- 7 minutes longer with CE
- Conclusion: CE should be done even with HD scopes

Alexandersson et al. Clinical Gastroenterology and Hepatology 2020;18:2101-2107
https://doi.org/10.1016/j.cgh.2020.04.049

Latest Chromoendoscopy: China

- Chinese multicenter, prospective RCT, 11 centers, all HD scopes, experienced endoscopists
- Longstanding (≥6yr) UC, March 2012-December 2013, CET:WLR:WLT
- Mean follow-up 55 months, 0.1% MB catheter, Olympus and FUJI, no VCE
- 122 pts, 447 scopes; 34 dysplastic lesions in 29 scopes in 21pts
- % Colonoscopy with dysplasia
  - CE+T: 9.7%
  - WLE+R: 8.1%
  - WLE+T: 1.9%

Wan et al. Gastroenterology Report, 2020, 1–8
doi: 10.1093/gastro/goaa028
Risk Stratification of Dysplasia in Colitis
Guide Follow-up and Colectomy Recommendations

Patient/disease-related factors:
- PSC
- Family history of CRC
- Duration, Extent
- Degree of inflammation over time and on last exam
- Stricture
- Pseudopolyps
- Male v Female

Dysplasia-related factors:
- GRADE:
  - IND vs. LGD vs. HGD
  - GI pathologist, confirmed by 2nd independent
- MORPHOLOGY:
  - Visible: Flat vs. Polypoid
  - Border, ulceration
  - Invisible
- FIELD EFFECT/SYNCHRONICITY:
  - Unifocal vs. multifocal
- LONGITUDINAL FOLLOW-UP?
  - Dysplasia on a single exam vs. metachronous lesions on serial exams

Chromoendoscopy: Which Dye?

- Indigo carmine (0.03%-0.4%)
  - Contrast stain neither reacts or is absorbed by the colonic mucosa
  - Pools in mucosal grooves allowing better definition of small or flat lesions as well as alterations in mucosal architecture
  - Can be washed off the mucosa

- Methylene blue (0.01-0.2%)
  - Vital dye taken up by colonic mucosa within 1-2 minutes staining non-inflamed mucosa but is poorly taken up by dysplastic tissue or inflamed mucosa

- No published studies comparing indigo carmine to methylene blue in patients with IBD. Other dyes: FD&C#2 Blue (similar to IC)

What I Do: Chromo for all IBD Surveillance:

- In our AEC: 0.1% IC (food coloring grade)
  - Mixed that morning of in 500 cc H2O.
  - Clean further on way in - must be excellent prep (BBPS=9)
  - Flusher starting in the cecum, panchoendoscopy by section. Suction pools carefully
  - No significant inflammation. Targeted biopsies only. I book 45 min (usually 30-45) If PSC, previous dysplasia, pseudopolyps, tubular colon → Random bx >32
- 0.01% MB in hospital (One 10ml vial of 50mg/10ml MB in 500 cc sterile water)
  - Otherwise same protocol
  - If IC available, Soetikno protocol
  - 1 hour booking in hospital
- Wear scrubs and old sneakers (otherwise your clothes will be stained blue!)
- Don’t use chromo if significant inflammation or poor prep!
- No harm with chromo: takes about 15-20 cases to gain competence

Mix to 0.1% in AEC

Mix to 0.1% in the Hospital

American College of Gastroenterology
Chromoendoscopy in private practice

- Single physician experience 2005-8/2012
- 184 scopes; 118 pts, mean age 51.4 years

Chromo - IC (64 scopes)   WLE (120 scopes)
38.8 minutes   20.5 minutes
42.0 bx (13 jars)   34.8 bx (10 jars)
157 polyps (2.45/scope)   87 polyps (0.725/scope)
25/64 (39.1%) dys polyps   8/120 (6.9%) dys polyps

(p<0.001)

*flat dysplasia on one random biopsy: doing well, no colectomy, annual colonoscopy with chromo since (yield of random bx roughly 1 in 6000)

Alsamman M, Jatsukar N, Reinert S, Resnick M, Shah SA. PG 2018
Adenoma found in a sea of pseudopolyps

Sessile polypoid lesion at HF
Seen with chromo with indistinct border on right in patient with longstanding Crohn's colitis. Bx around LGD--> surgery, ileosigmoid Anastomosis. LGD on path in resected colon
83 yo with pancolitis 50 years, FH of CRC, LGD on RB with HD WLE:
Chromo with 0.4% IC: Flat adenoma in area of RB, removed and two
additional SSA seen (one pictured in right panel), both removed.
Able to avoid colectomy.

Another Chromoendoscopy Case

- 76 yo female with pancolitis > 20 years in clinical and endoscopic
remission on mesalamine with indefinite for dysplasia on random bx at
15 cm with HD WLE (Olympus). Referred for Chromoendoscopy
- Chromoendoscopy + random biopsies: no dysplasia on random
biopsies, 8 adenomatous polyps seen only with Chromoendoscopy
One More Chromoendoscopy Case

- 79-year-old with left sided colitis since 1990; few adenomatous on previous scopes.
- 11/2017 surveillance HD WLE colon with multiple bx with indefinite for dysplasia on random biopsy at 20 cm.
- Referred for Chromo: lesion visible at 18cm and better defined with chromo saline elevated and removed \(\rightarrow\) SSA with normal bx’s around site.

Pit Pattern Classification (Kudo)

The typical crypt architecture of types I-V are indicated (A). (B) Examples of type I (left) and type IV (right) lesions before and after chromoendoscopy.

Kiesslich, R et al. Gut 2004;53:165-167
Why Chromoendoscopy?

- Increases yield of important findings
- No increased risk
- Safe, easy to learn and perform
- Takes more time*: but isn’t your patient worth it? Don’t you take your time on screening colons for high ADR?
- Potential for cost saving (less frequent scopes, no need for random biopsies) Important in the MACRA/MIPS era!
- Should be standard for surveillance in IBD (in my opinion). Negative chromocolonoscopy associated with good long term colectomy free survival
- Long term data needed re: CRC rates and mortality

*Increased time is negligible if stop random biopsies and use flusher rather than spray catheter
Chemoprevention

- 5-ASA
- Some data on Ursodeoxycholic Acid: PSC-IBD (low dose)
- Emerging data on Statins
  - 47% ↓ CRC (95% CI: 26-62%)
  - 94% ↓ IBD-CRC (n=55) (95% CI: 45-99%)
- MOA: Atorvastatin induces apoptosis in CRC cells, slows colon tumor xenograft growth in mice

Chemoprevention

5-ASA: studies mixed but meta-analysis suggests benefit

<table>
<thead>
<tr>
<th>Study ID</th>
<th>Odds Ratio (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population-based</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pritzker (1994)</td>
<td>0.36 (0.20, 0.68)</td>
<td>10.32</td>
</tr>
<tr>
<td>Moody (1995)</td>
<td>0.50 (0.32, 0.80)</td>
<td>3.71</td>
</tr>
<tr>
<td>Lin (2010)</td>
<td>0.77 (0.59, 1.00)</td>
<td>7.62</td>
</tr>
<tr>
<td>Subtotal (I^2 = 82.0%, p &lt; 0.01)**</td>
<td>0.23 (0.10, 0.50)</td>
<td>18.64</td>
</tr>
<tr>
<td>Clinical-based</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lashner (1997)</td>
<td>0.93 (0.40, 2.18)</td>
<td>7.38</td>
</tr>
<tr>
<td>Budkin (2003)</td>
<td>0.47 (0.22, 1.10)</td>
<td>8.37</td>
</tr>
<tr>
<td>Lindberg (2001)</td>
<td>0.64 (0.34, 1.27)</td>
<td>5.95</td>
</tr>
<tr>
<td>Rutten (2004)</td>
<td>2.31 (0.82, 6.40)</td>
<td>3.98</td>
</tr>
<tr>
<td>Smith (2006)</td>
<td>0.16 (0.03, 1.10)</td>
<td>1.67</td>
</tr>
<tr>
<td>Velazquez (2006)</td>
<td>0.52 (0.34, 0.81)</td>
<td>13.56</td>
</tr>
<tr>
<td>Gaudio (2007)</td>
<td>0.61 (0.30, 1.22)</td>
<td>9.22</td>
</tr>
<tr>
<td>Tillman (2008)</td>
<td>0.49 (0.14, 1.55)</td>
<td>4.17</td>
</tr>
<tr>
<td>Corbet (2010)</td>
<td>0.62 (0.30, 0.94)</td>
<td>10.73</td>
</tr>
<tr>
<td>Sloan (2011)</td>
<td>0.20 (0.03, 1.30)</td>
<td>3.44</td>
</tr>
<tr>
<td>Gong (2012)</td>
<td>0.28 (0.13, 0.60)</td>
<td>8.27</td>
</tr>
<tr>
<td>Rahm (2013)</td>
<td>0.60 (0.30, 0.98)</td>
<td>1.72</td>
</tr>
<tr>
<td>Zhang (2015)</td>
<td>0.17 (0.02, 1.72)</td>
<td>1.56</td>
</tr>
<tr>
<td>Subtotal (I^2 = 90.0%, p &lt; 0.01)**</td>
<td>0.90 (0.20, 3.60)</td>
<td>3.33</td>
</tr>
<tr>
<td>Overall (I^2 = 94.1%, p &lt; 0.01)**</td>
<td>0.46 (0.34, 0.61)</td>
<td>106.00</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis.

11,001 IBD patients Boston area from 1998-2010, CRC diagnosis validated
1376 pts (12.5%) on statins vs 9,625 not
Controlled for age, gender, smoking, PSC, CRP, ESR, surveillance colonoscopy within 3 yr
Statin use associated with **58% reduction** in IBD-CRC (95% CI: 38-72%)
  - 2% of statin users developed CRC
  - 3% of non-statin users developed CRC

Meta-analysis presented at ACG 2020
  - 15,342 pts from 5 studies: 60% (CI, 0.19-0.86, P = .019) reduction in IBD-CRC
  - 11,459,306 pts from 52 studies: 20% (CI 0.73-0.88, P< 0.001) reduction of CRC
Single center study 642 IBD, 57 statin exposed, 585 not exposed: no effect (Mt. Sinai, NYC, cohort study from 1/2005-12/2016)

Singh K, et al. ACG 2020

90.1% accuracy for determining endoscopic remission in comparison with experts

92.9% accuracy for predicting histologic remission without need of mucosal biopsy

FUTURE DIRECTIONS: Stool DNA

- 404 patients enrolled
- 6 ileal Crohn’s only
- 42 missing colonoscopy
- 18 low ZDHHC1

6 LGD with stool collected after colonoscopy

248 UC
82 CD
2 IND

291 IBD controls
29 LGD
12 CRC + HGD

Kisiel, et al. Clinical Gastroenterology and Hepatology 2019 17914-921.e5DOI: (10.1016/j.cgh.2018.05.004)

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FUTURE DIRECTIONS: Stool DNA

A

- ZDHHC1 corrected logistic score

Control
LGD <1cm
LGD ≥1cm
HGD+ CRC

10% 21% 30% 92%

B

Sensitivity

HGD+CRC
0.91 (0.77-1.00)
LGD ≥1 cm+HGD+CRC
0.81 (0.69-0.93)
LGD ≥1 cm
0.69 (0.50-0.89)

1-Specificity

Kisiel et al. Clinical Gastroenterology and Hepatology 2019 17914-921.e5DOI: (10.1016/j.cgh.2018.05.004)
Learning Objectives

- Understand increased risk of CRC in IBD (about 2x)
  - Stratify interval/technique for surveillance based on risk factors
  - HD scope standard of care in 2021
- Describe the indications for chromoendoscopy to detect dysplasia in IBD and be able to apply to your practice
- Know when not to use chromoendoscopy
- Know when to utilize random biopsies in surveillance

- Be Aware of Future Directions: Chemoprevention, AI & Stool DNA

Summary of IBD CRC Surveillance

- Random biopsies
- IC or MB or virtual
- PSC, Extensive disease Inflammation, FH CRC
- Great prep, use Paris classification
  - Completely remove visible lesions
- 20% yield in 3 recent studies
- High Risk: PSC, previous dysplasia, tubular colon, multiple pseudopolyps
- Chromoendoscopy + T
- Risk Stratify Initial 8 years (except PSC) Follow-up interval
- HD Scope
- Future: AI, Stool DNA, chemoprevention

American College of Gastroenterology
Questions?

Speaker: Samir A. Shah, MD, FACG
Moderator: Bharati Kochar, MD

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ACG Functional GI Health and Nutrition Circle  ACG Women in GI Circle

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