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2026
ACG'S FUNCTIONAL GI &
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POSTGRADUATE COURSE
AUGUST 14-16, 2026 | FORT PONTCHARTRAIN A WYNDHAM HOTEL
DETROIT, MICHIGAN
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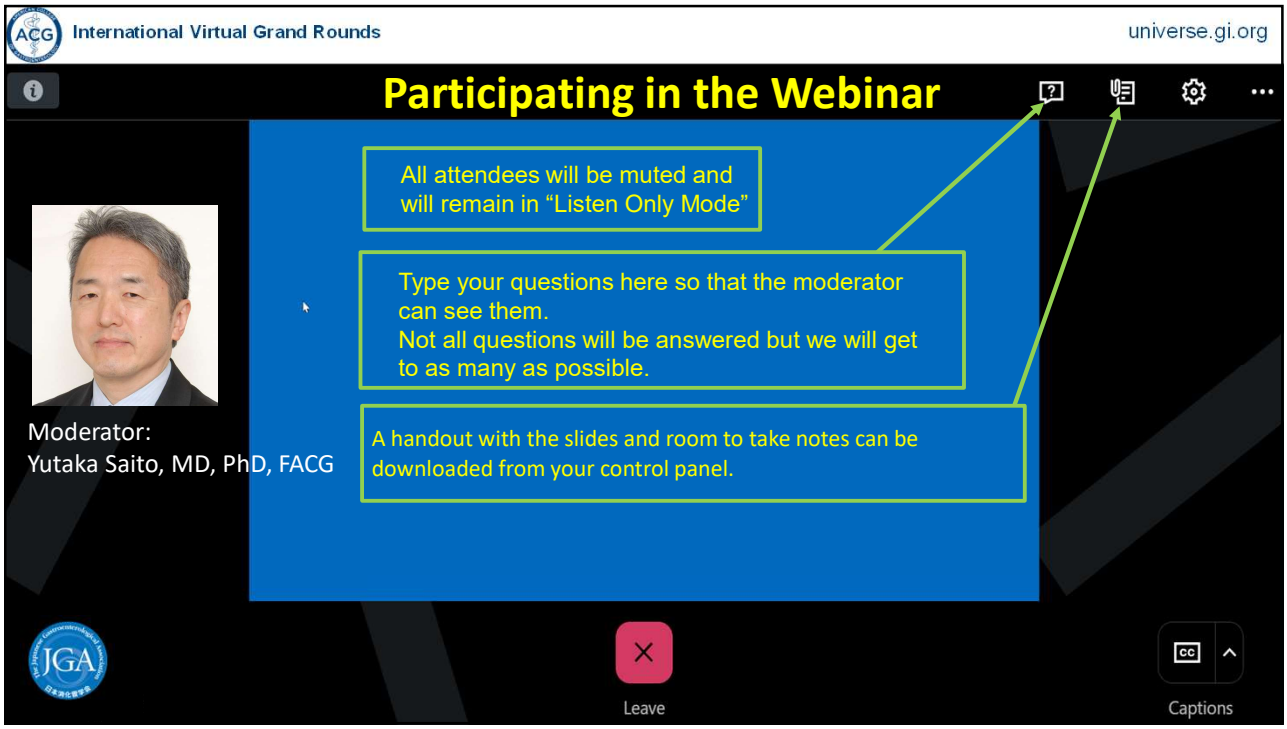
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2026
ACG'S OBESITY AND METABOLIC DISORDERS SCHOOL &
ACG/VGS/MASGNA REGIONAL POSTGRADUATE COURSE
AUGUST 28-30, 2026 | WILLIAMSBURG LODGE, WILLIAMSBURG, VA
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2026
ACG'S OBESITY AND METABOLIC DISORDERS SCHOOL &
SOUTHERN REGIONAL POSTGRADUATE COURSE
DECEMBER 4-6, 2026 | HYATT REGENCY LOUISVILLE LOUISVILLE, KY
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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.
A handout with the slides and room to take notes can be downloaded from your control panel.
Moderator:
Yutaka Saito, MD, PhD, FACG
Leave
Captions

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ACG Virtual Grand Rounds
Join us for upcoming Virtual Grand Rounds!
Week 31 – Thursday, July 30, 2026
Quality Indicators for ERCP – Competencies in Endoscopy
Faculty: Michelle A. Anderson, MD, MSc
Moderator: Douglas G. Adler, MD, FACG
At Noon and 8pm Eastern
International Week 32 – Wednesday, August 5, 2026
ACG International VGR – Week 32 – Wednesday, August 5, 2026: Chronic Liver Disease and Its Complications (e.g. Refractory Ascites, Variceal Bleeding and Sarcopenia)
Faculty: Simona S. Jakab, MD and Lubna Kamani, MRCP, FRCP, FCPS, RCP SCE Gastrocentrology
Moderator: Nazish Butt, MBBS, FCPS
At 10am Eastern
Week 32 – Thursday, August 6, 2026
Clinical Application of the Urgency Numeric Rating Scale (UNRS): Optimizing Patient Assessment and Care
Faculty: Marla C. Dubinsky, MD
Moderator: Jana G. Al Hashash, MD, MSc, FACG
At Noon and 8pm Eastern
Visit gi.org/ACGVGR to Register

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Early Colon Cancer Diagnosis and Treatment

Saowanee Ngamruengphong, MD
Associate Professor
Division of Gastroenterology & Hepatology
Johns Hopkins Medicine



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Learning Objectives

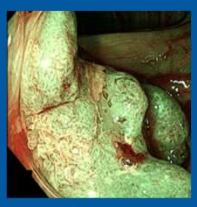
- Describe histopathological criteria for curative endoscopic resection of T1 CRC
- Critically evaluate the role of submucosal invasion depth as an independent risk factor for lymph-node metastasis
- Compare endoscopic resection techniques with respect to specimen quality

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CRC Epidemiology: Why This Matters

- CRC: 3rd most common cancer and 2nd leading cause of cancer death worldwide
- ~1.93 million new cases and ~904,000 deaths per year globally
- In the US: ~158,850 new cases and ~55,230 deaths estimated in 2026 — now #1 cancer killer in adults under 50





50%

Mortality reduction with colonoscopy screening

More screening = more T1 lesions detected -- increasing clinical relevance

The challenge: determining which T1 CRC can be cured endoscopically

Siegel RL et al. Colorectal cancer statistics, 2026. CA Cancer J Clin 2026.
Bray F et al. Global cancer statistics 2022: GLOBOCAN estimates. CA Cancer J Clin 2024/ van Eijck van Heslinga RAH, et al. Gastrointestinal Endoscopy. 2025.

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What Is T1 Colorectal Cancer?

- T1 CRC: tumor invades the submucosa but not the muscularis propria
- Classified by Paris system: superficial neoplastic lesions (0-I through 0-III)
- Submucosal layers: sm1 (<1000 um), sm2, sm3 (full thickness)
- T1 CRC may arise in adenomas or de novo -- often detected at colonoscopy
- The threshold where endoscopic resection can be curative in selected patients.

Stage	Invasion Depth
Tis	Mucosa only (no invasion)
T1	**Into submucosa**
T2	Into muscularis propria
T3	Through muscularis propria
T4	Peritoneum / other organs

Endoscopic Classification Review Group, Endoscopy 2005

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East-West Definition Problem: Why Terminology Matters

Feature	Western (WHO / Vienna)	Japanese
Intramucosal lesion, high-grade cytology	High-grade dysplasia; 'carcinoma' reserved for submucosal invasion	Intramucosal carcinoma
Rationale	Colonic mucosa lacks metastatic potential	Cytologic + architectural criteria define malignancy
Result	Same histology may be called 'HGD' in West, 'carcinoma' in Japan	Higher reported 'cancer' counts for identical histology

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Endoscopic Evaluation: Optical Diagnosis

- Morphology (Paris classification, LST classification)
  - ➢ High-Risk Morphology: Paris 0-IIc (depressed), 0-IIa+IIc, bulky 0-Is, non-granular LST (LST-NG).
- Chromoendoscopy, magnifying endoscopy, pit pattern analysis
  - ➢ JNET classification
  - ➢ Kudo Vn pit pattern, NICE Type 3, JNET Type 2B/3 — suggest deep invasion.

Limitations exist: sensitivity/specificity not perfect, interobserver variability

Bisschops et al., Endoscopy 2019 | Sano et al., Dig Endosc 2016

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LSTs and the risk of submucosal invasion

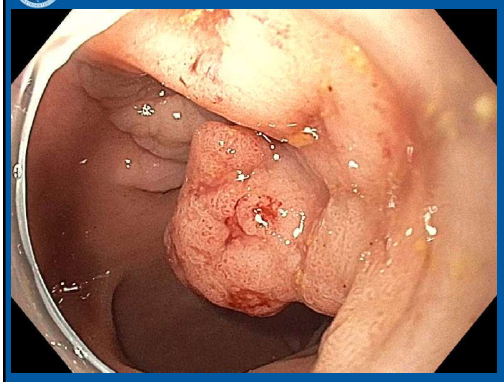
Meta analysis of 48 studies

Bogie et al Endoscopy 2018

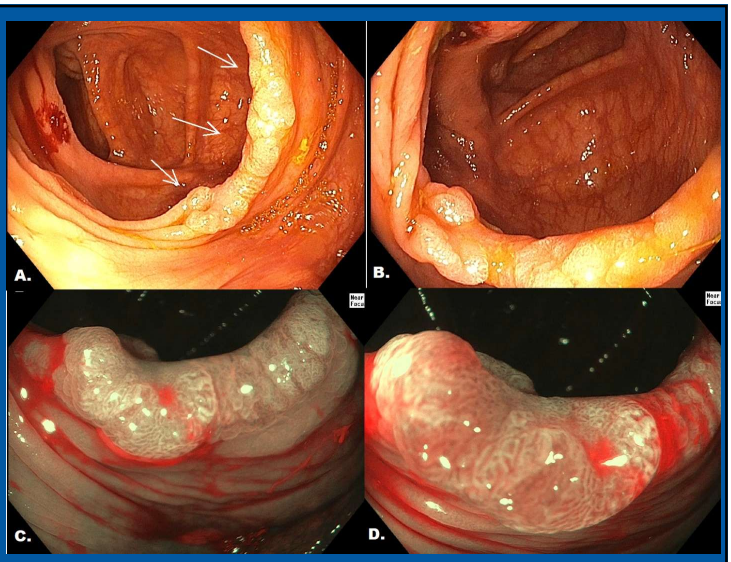
Morphology according to Paris Classification	Risk of SMI
LST-G homogeneous type (0-IIa) 	0.5% (CI 0.1%-1.0%)
LST-G mixed nodular type (0-IIa + Is) 	10.5% (CI 5.9%-15.1%)
LST-NG flat type (0-IIa) 	4.9% (CI 2.1%-7.8%)
LST-NG pseudodepressed type (0-IIa + IIc) 	31.6% (CI 19.8%-43.4%)

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Large LST-G with nodule in the rectosigmoid colon (**mixed nodular type**)



Lesion in Ascending colon

- Depressed lesion (Paris IIc+a)
- **LST non-granular pseudodepressed**

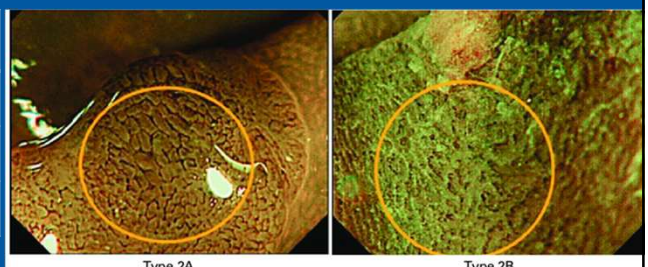
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JNET classification for endoscopic diagnosis of superficial colorectal neoplasms

JNET Type 2B in predicting HGN and shallow submucosal invasive cancer vs others

	Sensitivity	Specificity	PPV	NPV	Accuracy
Expert	40%	95%	30%	97%	93%
Nonexpert	46%	95%	18%	99%	94%
Combined	42%	95%	26%	98%	93%



Type 2A	Type 2B
Low grade neoplasm	High grade neoplasm or cancer with superficial submucosal invasion
Regular caliber vessels with a regular distribution (meshed or spiral pattern)	Irregular vessel distribution
Regular surface pattern (tubular/branched/papillary)	Irregular or obscure surface pattern

Kobayashi United European Gastroenterol J . 2019

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JNET classification for endoscopic diagnosis of superficial colorectal neoplasms

JNET classification	n, (%)	HP/SSP	LGD	HGD	SM-superficial	SM-deep
Type 1	75 (100)	73 (97)	2 (3)			
Type 2A	428 (100)	6 (1)	373 (87)	46 (11)	3 (1)	
Type 2B	268 (100)		116 (43)	93 (35)	31 (12)	28 (10)
Type 3	48 (100)			1 (2)	3 (6)	44 (92)
Total	819	79	491	140	37	72

Sumimoto et al. Gastrointest Endosc . 2017

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NBI and Virtual Chromoendoscopy

Meta-analysis: NBI/Virtual Chromoendoscopy for Submucosal Invasive Cancer

Diagnosis	Sensitivity	Specificity
Submucosal Invasive Cancer	85%	94%
Deep Submucosal Invasion	77%	98%

- High specificity (94-98%) -- a positive diagnosis of deep invasion is usually reliable
- Lower sensitivity (77-85%) -- some deep invasions may be missed optically
- Magnifying chromoendoscopy + NBI together improve diagnostic accuracy

Backes et al., Am J Gastroenterol 2017;112:54-64

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Limitations of Optical Diagnosis

- Optical diagnosis has sensitivity limitations -- not all deep invasions detected
- Risk of submucosal invasive cancer rises steeply with lesion size: 9.2% for 20-30 mm, 16.5% for >30 mm [Ref. 8]
- Interobserver variability in JNET classification, especially Type 2B vs. 3
- A negative optical assessment does not exclude submucosal invasion
- Histopathology of the resected specimen remains the gold standard
- Technique must secure sufficient submucosal tissue for reliable histology

Bogie et al., Endoscopy 2018;50:263-282 | Shahidi et al., Therap Adv Gastroenterol 2020

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Specimen Quality: The Foundation of Accurate Risk Stratification

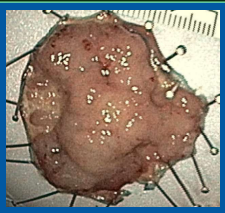
Poor Specimen

- **Fragmented / piecemeal**
- Cannot ink resection margins
- Cannot measure submucosal depth
- Thermal artifacts at deep margin
- Histopathology unreliable



High-Quality Specimen

- **En bloc, one-piece resection**
- Lateral and vertical margins inkable
- Submucosal layer measurable
- Minimal thermal artifacts
- Reliable R0/R1 assessment



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ESD vs EMR for Large Colorectal LSTs

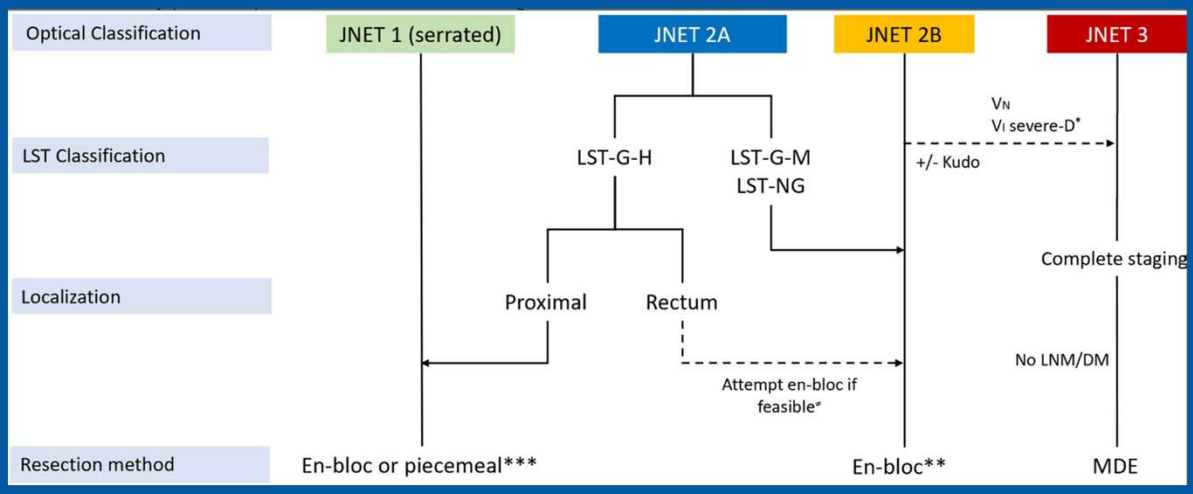
JNET 2B
Paris 0-IIc
LST G-M, LST NG → En bloc

Rectosigmoid w/o high-risk features → En bloc if feasible

Other low-risk lesions → Piecemeal or En bloc

**ESD if EMR is difficult, submucosal fibrosis, chronic inflammation

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Djinbachian R et al. International consensus on the management of large (≥20 mm) colorectal laterally spreading tumors: World Endoscopy Organization Delphi study. Dig Endosc. 2024

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Local Resection Techniques for Treatment of Early T1 CRC

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Local resection techniques for T1 CRC

Endoscopic Resection Techniques

- Endoscopic Mucosal Resection (EMR)
- Endoscopic Submucosal Dissection (ESD)
- Endoscopic Full-Thickness Resection (eFTR)
- Endoscopic Intermuscular Dissection (EID)

Transanal Resection

- Transanal Minimally Invasive Surgery (TAMIS)
- Transanal Endoscopic Microsurgery (TEM)

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What Makes an Ideal T1 CRC Endoscopic Resection?

- En bloc (one-piece) resection -- enables accurate margin assessment
- Well-defined, inkable lateral margins -- confirms horizontal R0
- Maximum quantity of submucosal tissue -- enables sm depth measurement
- Minimal thermal artifacts at the deep (vertical) margin -- prevents false positives
- Low fragmentation risk -- avoid piecemeal when cancer is suspected
- Post-resection: thorough histopathological assessment of all five criteria

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ESD for *suspected* T1 CRC: Western experience

ESD for 1.202 suspected T1CRCs

5 European ESD expert centers *In the Netherlands, Belgium & Portugal*





Classification of 1.202 T1 CRCs based on pre-resection optical diagnosis in academic center prior to ESD

Suspected superficial SMIC N = 1.063

Suspected deep SMIC N = 139

Histology:
- pT1 CRC found in 18% of suspected superficial SMICs and in 75% of suspected deep SMICs
- ~40% of pT1 CRCs found in the superficial SMIC subgroup showed pT1Sm2-3 invasion.

Vertical margin R0 rate per subgroup and stratified for pT1CRC after ESD:

	Suspected superficial SMIC	Suspected deep SMIC
pT1Sm1	82/89 (92%)	22/24 (92%)
pT1Sm2-3	60/79 (76%)	34/61 (56%)

ESD should be restricted to polyps with suspected superficial SMIC. For local excision of suspected deep SMICs, other local techniques may be preferred.

van Eijck van Heslinga RAH, et al. Gastrointestinal Endoscopy. 2025.

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EFTR with over-the-scope device

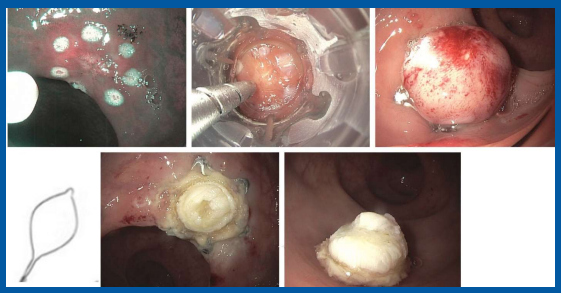
FTRD (Full Thickness Resection Device)





Over-the-scope Clips





Al-Bawardy B, et al. Gastrointest Endosc. 2017

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Colonic EFTR for a colorectal T1carcinoma using FTRD



Source: Dr B. Bastiaansen

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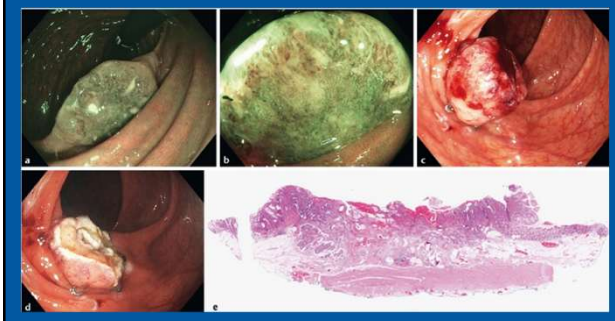
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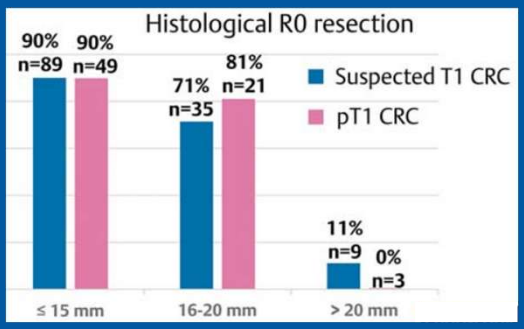
EFTR with over-the-scope device for *suspected* T1 CRC

- Retrospective multi-center cohort study
- 136 suspected T1 CRC (75 pT1 CRCs)

Technical success: 88%

Histological R0 resection: 80%





Didden P, et al. Endoscopy. 2022.

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Parameter	EMR	ESD	EFTR
En-bloc Rate	Lower (difficult >20mm)	>90% (size independent)	83–88% (size independent)
R0 Rate	Lower	85% for s-SMIC 55% for d-SMIC	90% for T1 CRCs ≤ 15 mm; 71% for 16-20 mm
Best For	Small, clearly superficial Pedunculated polyp	Suspected superficial T1, large lesions	Non-lifting, scar, suspected deep SMI <2cm
Limitation	Piecemeal common → poor staging	Technical demand, learning curve	Size limit < 2cm, technical complexity
Note	Piecemeal of T1 CRC = adjuvant surgery often needed	Preferred for suspected T1	Dutch/US registries support for selected T1

van Eijck van Heslinga RAH, et al. Gastrointestinal Endoscopy. 2025.
Meier B, et al. American Journal of Gastroenterology. 2020.
Didden P, et al. Endoscopy. 2022.
Zwager LW, et al Endoscopy. 2022.

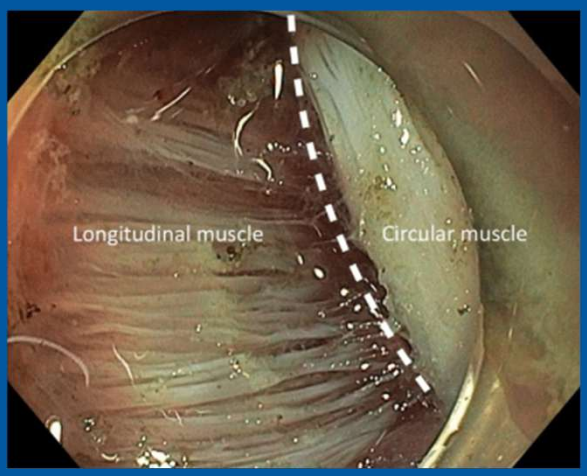
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Endoscopic Intermuscular Dissection (EID)

for Suspected Deep Submucosal Invasive Rectal Cancer





Tribonias G. et al. Techniques in Coloproctology. 2023

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EID Technique: Principles and Rationale

Feature	ESD	EID (Intermuscular)
Dissection Plane	Submucosa	Between inner circular & outer longitudinal MP
Deep Margin in D-SMIC	Often positive (VM-R0 ~55%)	High negative deep margin (includes inner MP)
Histologic Assessment	Limited deep submucosa	Complete submucosa + inner circular muscle
Rectal Wall Integrity	Preserved	Preserved (outer MP + serosa intact)
Suitability for Completion TME	Good	Excellent (no transmural defect)
Best Indication	Superficial T1 or large adenomas	Suspected deep submucosal invasive rectal cancer (sm2–sm3)

Hochberger J et al. J Clin Med 2025; Moons LMG et al. Endoscopy 2022; Ninomiya T et al. Dig Dis Sci 2026

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EID Clinical Outcomes

Moons et al.
Endoscopy 2022 (n=67)

First prospective cohort – suspected D-SMIC
- Technical success: 96%
- R0 resection: 81%
- Curative resection: 45%
- Adverse events: 12% (all minor, 0 perforations)
- Median size: 25 mm

van der Schee et al.
Gut 2025 (n=188)

3-year multicenter follow-up
- En bloc: 94.1% | R0: 82.5%
- 53% confirmed D-SMIC (target population)
- 31% ≥pT2 (understaged pre-procedure)
- Zero distant recurrences
- Zero cancer-specific deaths

Critical Finding:
All locoregional recurrences were successfully salvaged.
For low- and intermediate-risk D-SMIC, EID + surveillance avoided radical surgery in 75–95% of patients while maintaining oncologic safety at 3 years.

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Risk of LNM in Early T1 CRC

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Five Criteria for Curative Endoscopic Resection

Criterion	Curative Resection Criteria (Low-Risk T1 CRC)	Risk if Absent (High-risk T1 CRC)
Resection Margins	Horizontal & vertical clear (R0)	Critical
Lymphovascular Invasion	Absent (L0, V0)	High
Histological Grade	Low or moderate (G1/G2)	High if G3/G4
Tumor Cell Budding	Low (Bd)	High if Bd2/3
Submucosal Depth	< 1000 um from muscularis mucosae	Debated

Metter et al., Cancers 2023 | JGES 2015 | Lugli et al. (ITBCC), Mod Pathol 2017

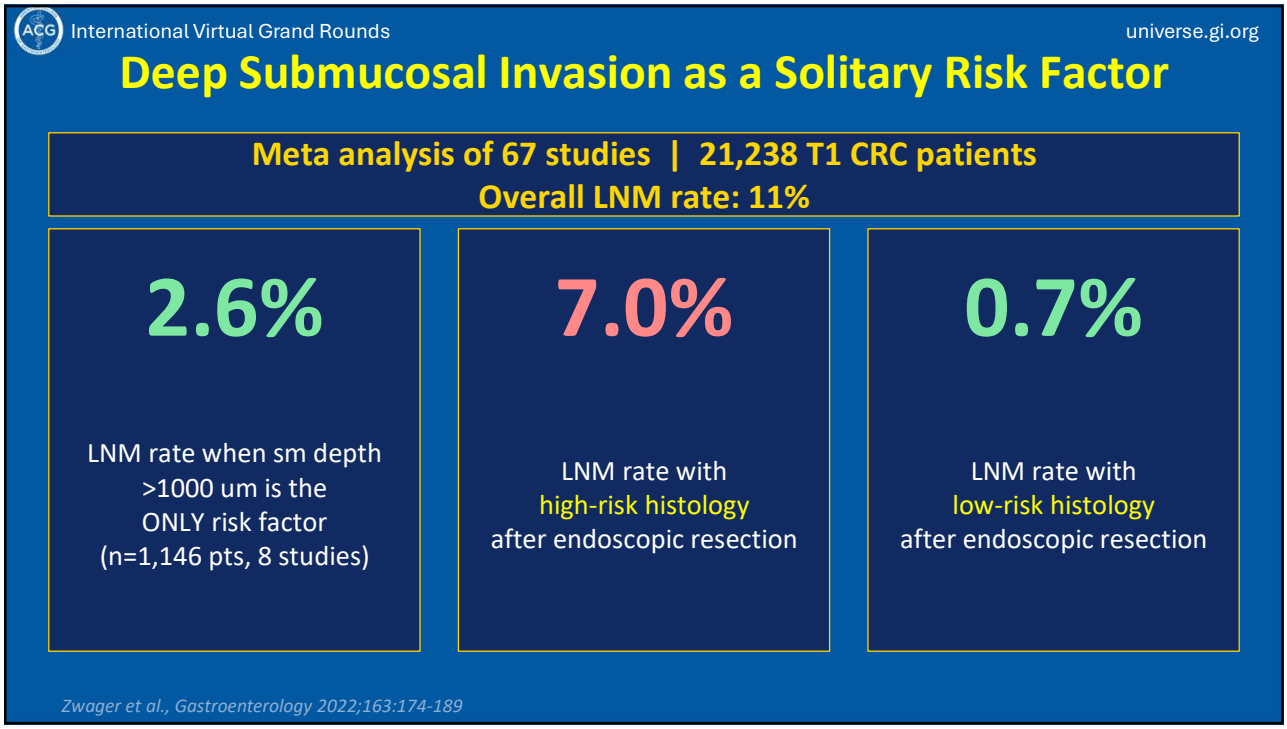
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Deep Submucosal Invasion as a Solitary Risk Factor

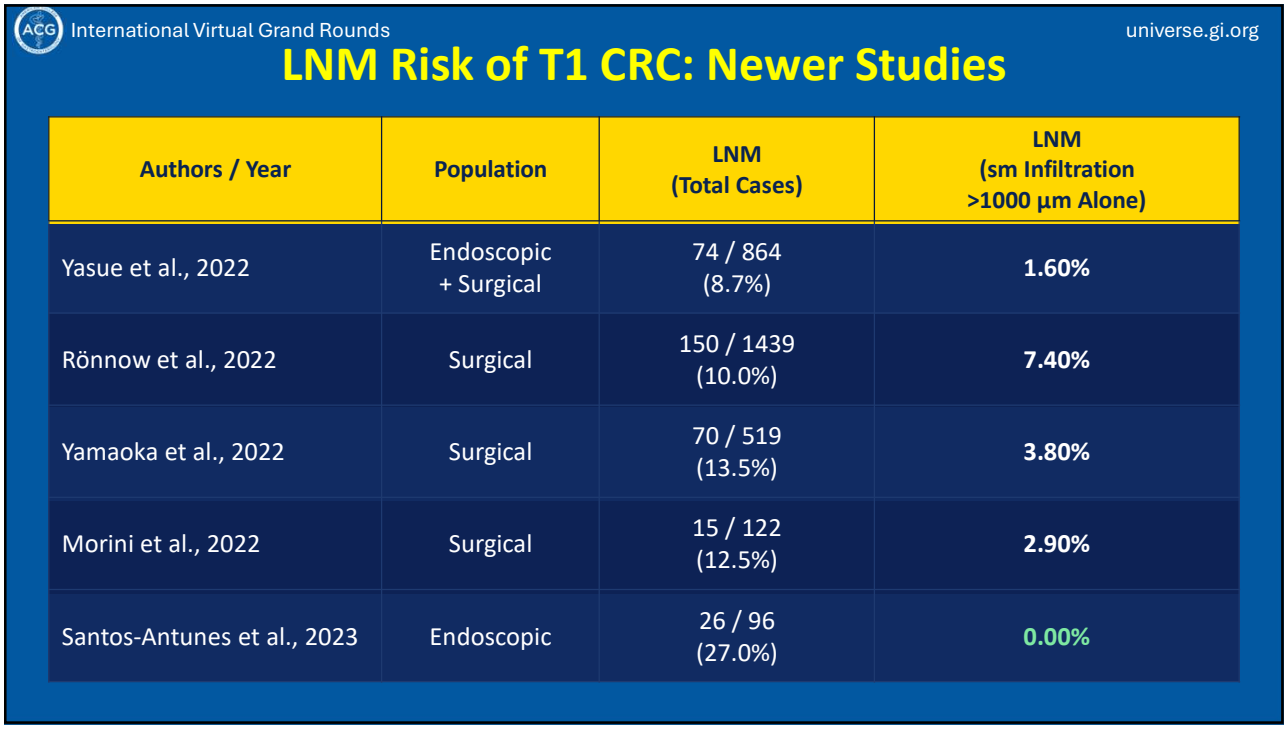
Traditional teaching: sm depth >1000 µm = high risk = refer to surgery

- This rule is now being challenged by large meta-analysis data

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Deep Submucosal Invasion as a Solitary Risk Factor
Meta analysis of 67 studies | 21,238 T1 CRC patients
Overall LNM rate: 11%
2.6%
LNM rate when sm depth >1000 um is the ONLY risk factor (n=1,146 pts, 8 studies)
7.0%
LNM rate with high-risk histology after endoscopic resection
0.7%
LNM rate with low-risk histology after endoscopic resection
Zwager et al., Gastroenterology 2022;163:174-189

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LNM Risk of T1 CRC: Newer Studies
Authors / Year
Population
LNM (Total Cases)
LNM (sm Infiltration >1000 µm Alone)
Yasue et al., 2022
Endoscopic + Surgical
74 / 864 (8.7%)
1.60%
Rönnow et al., 2022
Surgical
150 / 1439 (10.0%)
7.40%
Yamaoka et al., 2022
Surgical
70 / 519 (13.5%)
3.80%
Morini et al., 2022
Surgical
15 / 122 (12.5%)
2.90%
Santos-Antunes et al., 2023
Endoscopic
26 / 96 (27.0%)
0.00%

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The Surgical Overtreatment Problem in Early CRC

Non-Curative Endoscopic Resection → **Secondary Surgery (100% of patients)** → **>80% -- NO Lymph Node Metastasis**; **7.3 – 15.5% -- LNM Confirmed**

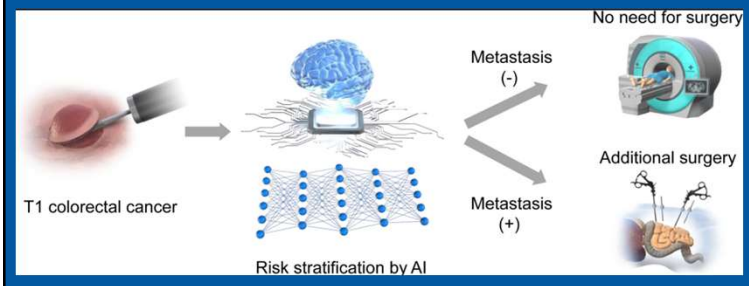
✗	!	→
Unnecessary Colectomy / LAR	**Surgical Risk With No Gain**	**Need: Better Risk Tools**
No oncological benefit for >80% of patients	Anastomotic leak, LARS, stoma, sexual dysfunction	Identify the true 7-15% who need the OR

Backes et al., Gastroenterology 2018;154:1647-59 | Benizri et al., Int J Colorectal Dis 2012;27:1473-78

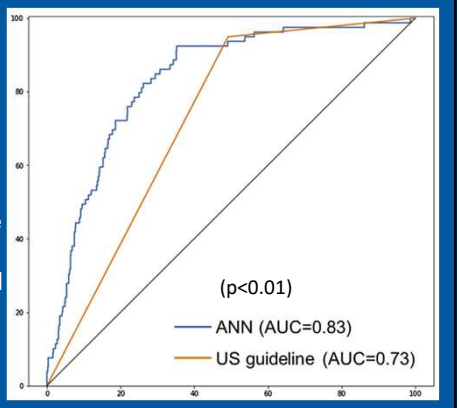
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AI in Predicting Metastasis of T1 Colorectal Cancer



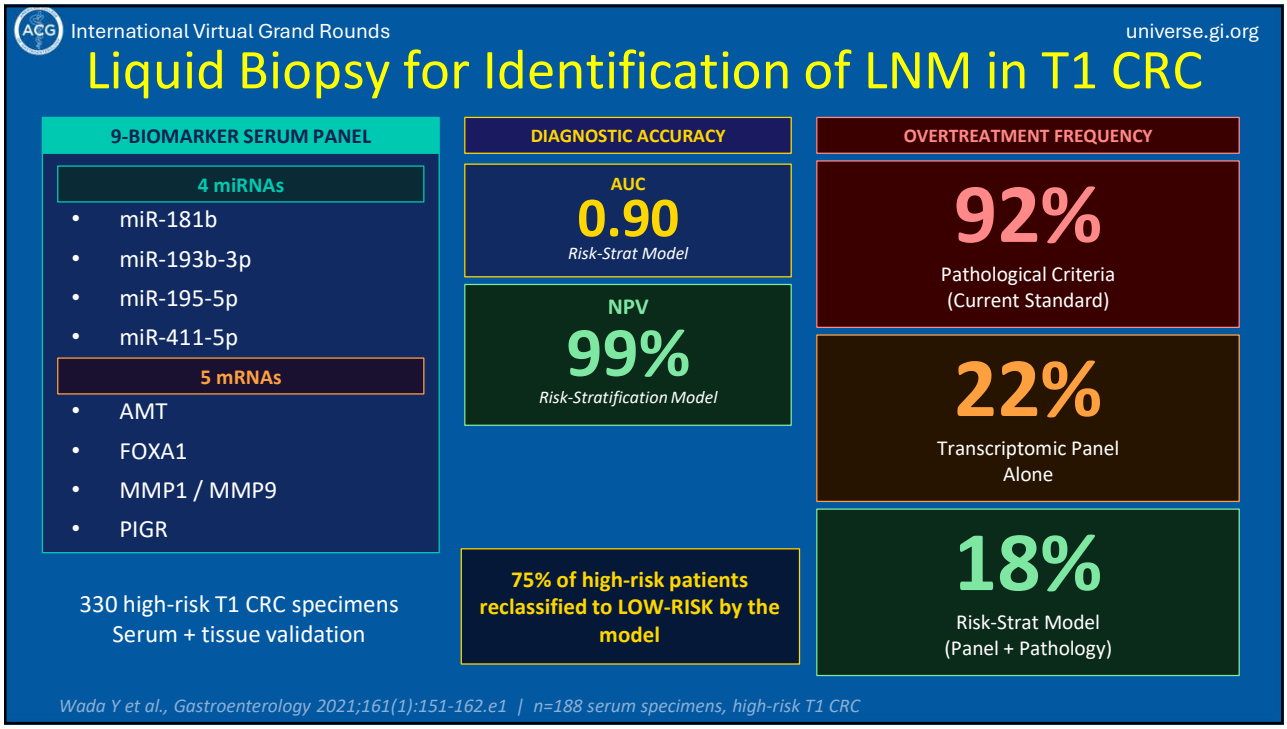
Training cohort: 3134 patients
Validation cohort: 939 patients



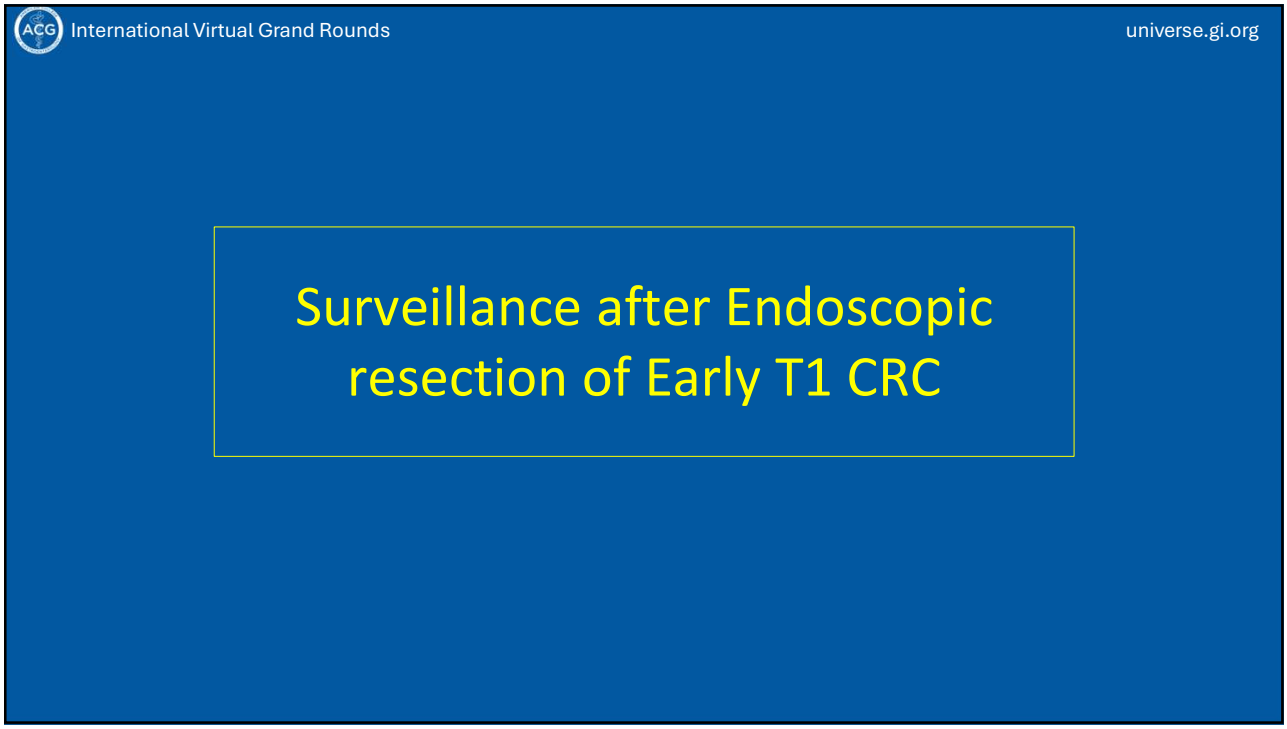
Artificial neural network (ANN) model using clinicopathologic variables outperformed current US guidelines in identifying patients with T1 CRCs with LNM

Kudo S-E, et al. Artificial intelligence system to determine risk of T1 colorectal cancer metastasis to lymph node. Gastroenterology. 2021

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Liquid Biopsy for Identification of LNM in T1 CRC
9-BIOMARKER SERUM PANEL
4 miRNAs
• miR-181b
• miR-193b-3p
• miR-195-5p
• miR-411-5p
5 mRNAs
• AMT
• FOXA1
• MMP1 / MMP9
• PIGR
330 high-risk T1 CRC specimens
Serum + tissue validation
DIAGNOSTIC ACCURACY
AUC
0.90
Risk-Strat Model
NPV
99%
Risk-Stratification Model
75% of high-risk patients reclassified to LOW-RISK by the model
OVERTREATMENT FREQUENCY
92%
Pathological Criteria
(Current Standard)
22%
Transcriptomic Panel
Alone
18%
Risk-Strat Model
(Panel + Pathology)
Wada Y et al., Gastroenterology 2021;161(1):151-162.e1 | n=188 serum specimens, high-risk T1 CRC

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Surveillance after Endoscopic resection of Early T1 CRC

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Long-Term Results After Curative ESD

Multicenter prospective study (n=383 T1 CRC after ESD):
Low-risk curative group: ZERO recurrences and ZERO disease-specific deaths.
Suggests intensive surveillance may not be necessary after truly curative ESD.

High-Risk Group Findings (Surgery vs Follow-up)

- Local recurrence higher with follow-up only (6.8% vs 0% with surgery)
- Distant recurrence similar (2.7% vs 1.9%)
- 5-year disease-specific survival nearly identical (98.4% vs 98.5%)
- In selected high-risk patients who are poor surgical candidates, follow-up may be reasonable.

Hamada T et al. Clinical Gastroenterology and Hepatology 2026

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Recurrence After Endoscopic Resection of T1 CRC

Meta-analysis: 71 studies | >5,000 patients

3.3%
Pooled cumulative recurrence rate

1.9%
Local recurrence rate

0.7%
Recurrence rate: low-risk lesions

7.0%
Recurrence rate: high-risk lesions

CRC-related mortality in patients who recurred: 41%

Dang et al., Clin Gastroenterol Hepatol 2022;20:e298-e314

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Surveillance After Endoscopic Resection of T1 CRC

- Recurrence rate overall: 3.3% (local 1.9%, metastatic 1.6%)
- CRC-related mortality if recurrence occurs: 41% -- surveillance is critical
- Low-risk resections: 0.7% recurrence -- less intensive follow-up acceptable
- High-risk or noncurative resections managed endoscopically: close colonoscopic surveillance
- Recommend CEA, CT thorax/abdomen/pelvis at defined intervals per local guidelines
- Multidisciplinary tumor board discussion for all noncurative cases

Dang et al., Clin Gastroenterol Hepatol 2022 | Arthursson et al., Endoscopy 2022

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Gastroenterology

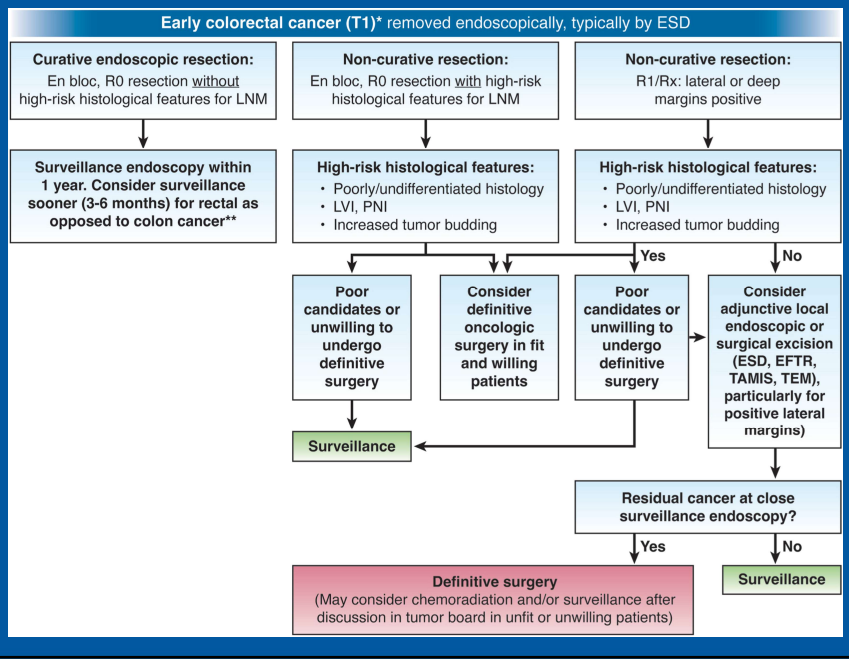
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AGA Clinical Practice Update on Endoscopic Resection for Early Colorectal Cancer: Commentary

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Key Takeaways

1. sm depth >1000 um alone is NOT an independent predictor of LNM (LNM rate: 2.6%)
2. The TRUE independent risk factors: lymphovascular invasion, poor grade, high budding
3. Specimen quality is everything -- technique determines whether histopathology is reliable
4. 85-89% of patients referred to surgery after noncurative resection have NO LNM -- we are overtreating
5. Novel tools (nomograms, AI, biomarkers) can substantially reduce surgical overtreatment
6. Select resection technique to maximize submucosal tissue quality and quantity

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Questions



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