

Tackling Large Polyps in Everyday Endoscopy

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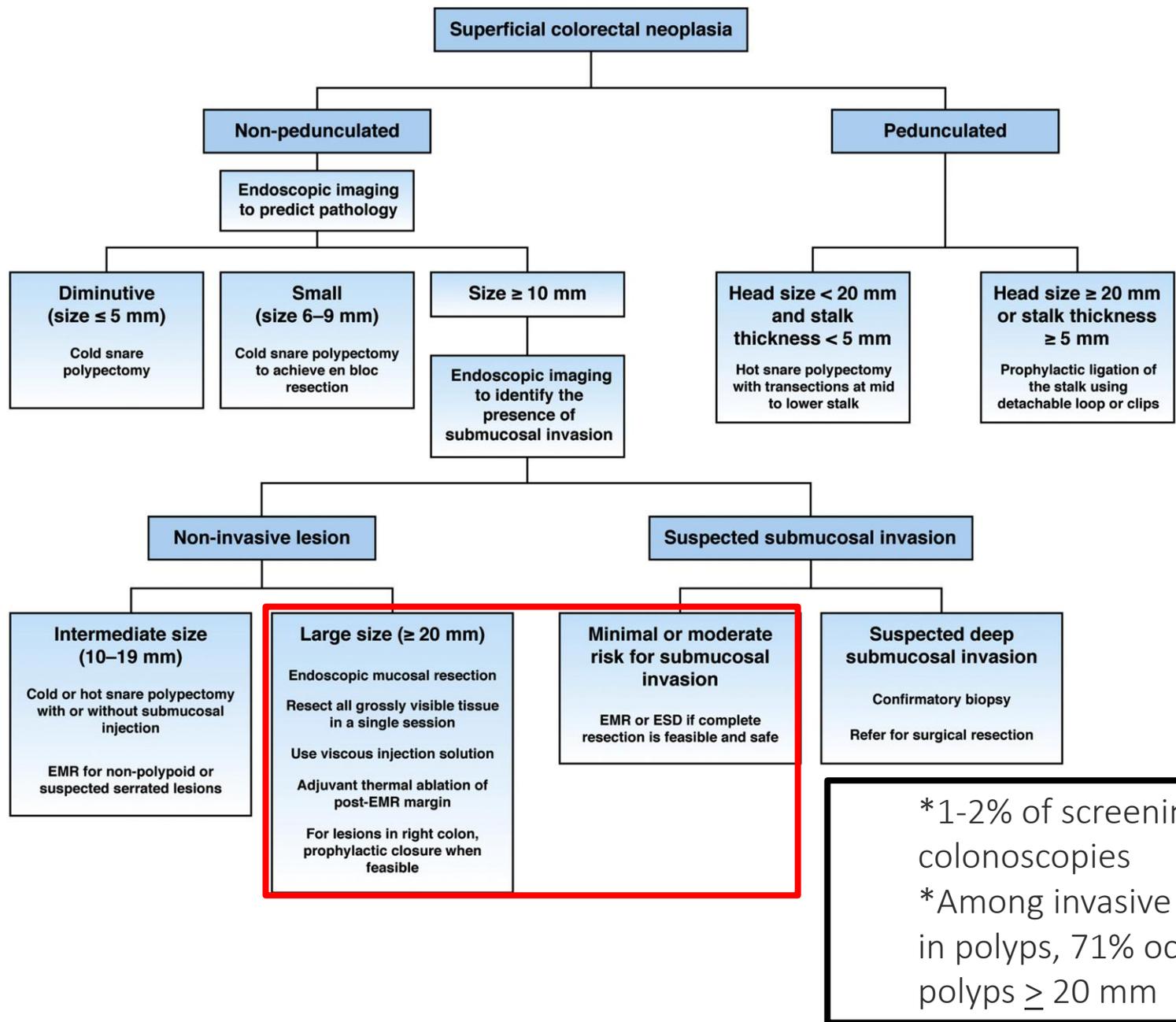


Disclosures

- None

Learning Objectives

- Discuss the basic principles of optical characterization of colorectal polyps and features of deep submucosal invasion
- Provide an overview of principles, goals and candidates for endoscopic mucosal resection (EMR)
- Review best practices in 2026 for resection of large colorectal polyps
- Highlight knowledge gaps and future directions within EMR



Algorithm for the Management of Large Colorectal Lesions

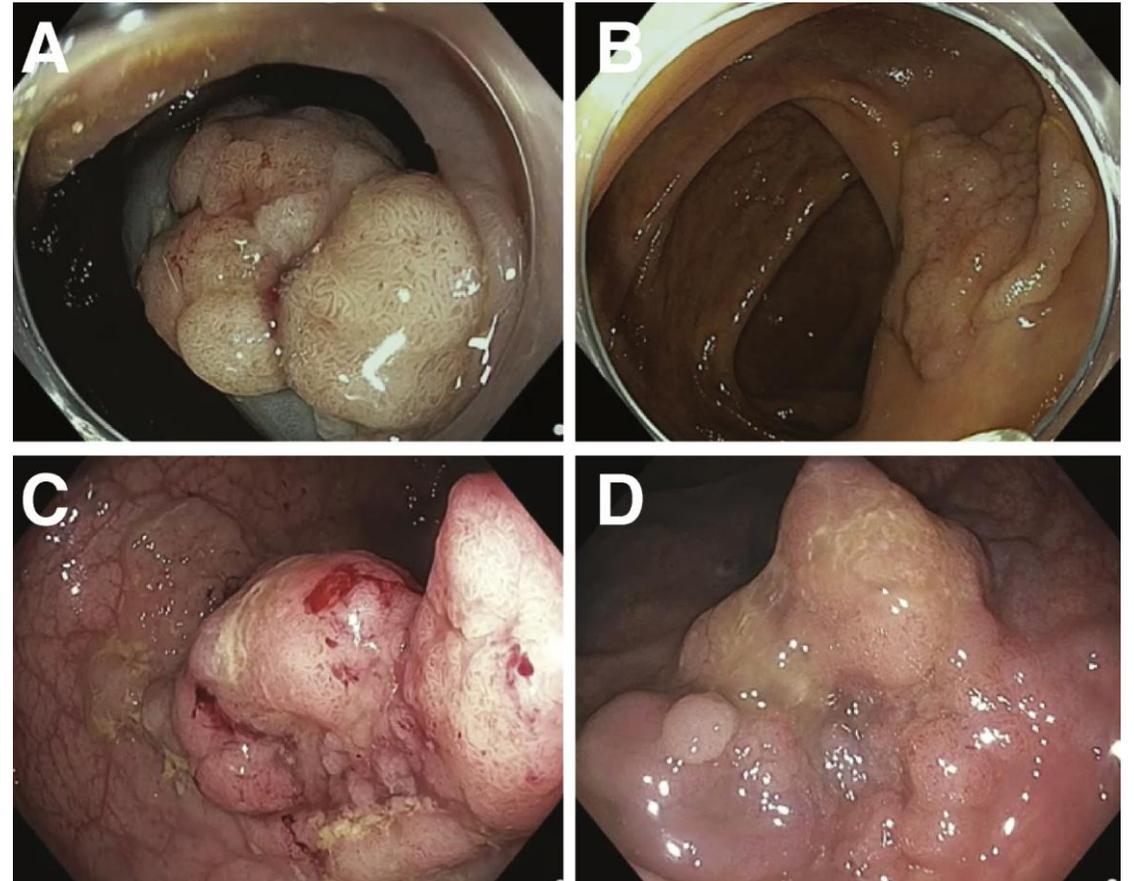
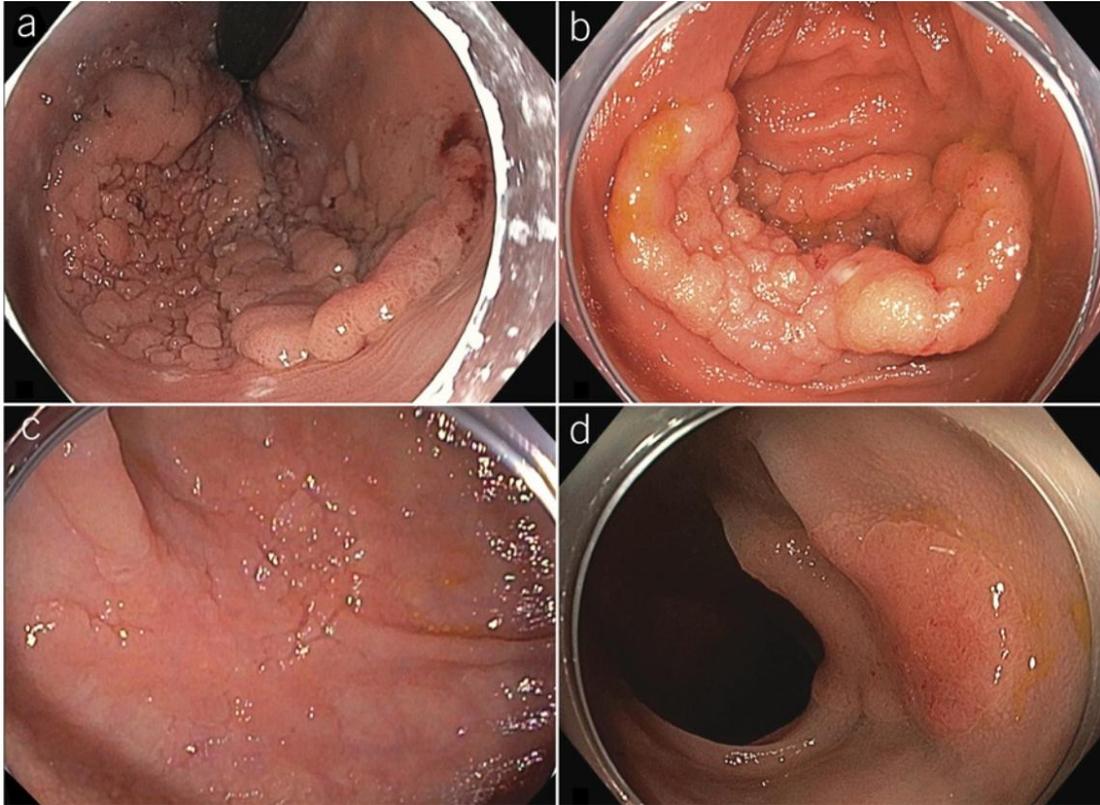
*1-2% of screening colonoscopies
 *Among invasive cancer in polyps, 71% occur in polyps ≥ 20 mm

Statement of Best Practices for Endoscopic Removal of Large Colorectal Polyps

*We recommend **EMR as the preferred treatment method** of large (≥ 20 mm) non-pedunculated colorectal lesions. Endoscopic resection can provide complete resection and obviate the higher morbidity, mortality, and cost associated with alternative surgical treatment (Strong recommendation, moderate-quality evidence)

*We recommend an **endoscopist experienced in advanced polypectomy** to manage large (≥ 20 mm) non-pedunculated colorectal lesions (Strong recommendation, low-quality evidence)

No Two Polyps Are Alike!





1. Assess
2. Resect (*if appropriate)
3. Inspect (and treat and prevent)
4. Retrieve

Polyp Classification Schemes



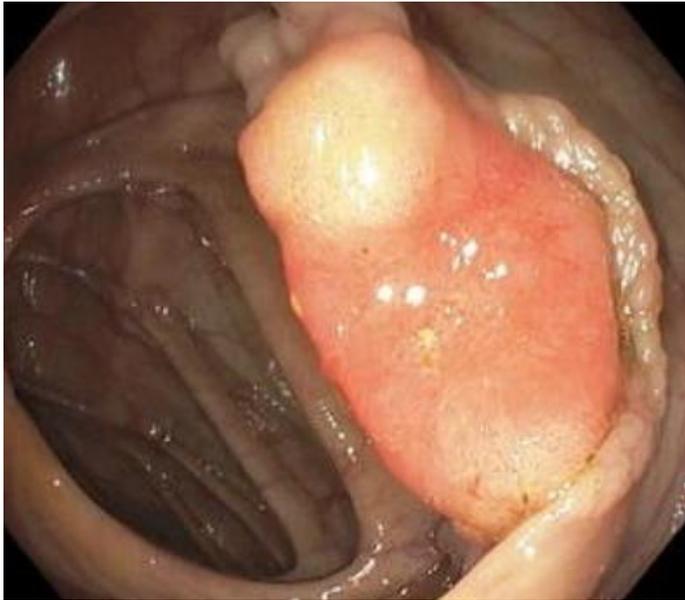
*More important than remembering all the classification schemes is recognizing key features that changes management (e.g., central depression, interrupted surface vessels, etc) and guides correct decision making

NICE Classification

	Type 1	Type 2	Type 3
Color	Same or lighter than background	Browner relative to background (verify color arises from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
Vessels	None, or isolated lacy vessels may be present coursing across the lesion	Brown vessels surrounding white structures**	Has area(s) of disrupted or missing vessels
Surface pattern	Dark or white spots of uniform size, or homogeneous absence of pattern	Oval, tubular, or branched white structures** surrounded by brown vessels	Amorphous or absent surface pattern
Most likely pathology	Hyperplastic and sessile serrated lesions***	Adenoma****	Deep submucosal invasive cancer
			

*Nice type 3 →
94% accuracy
for deep SMI

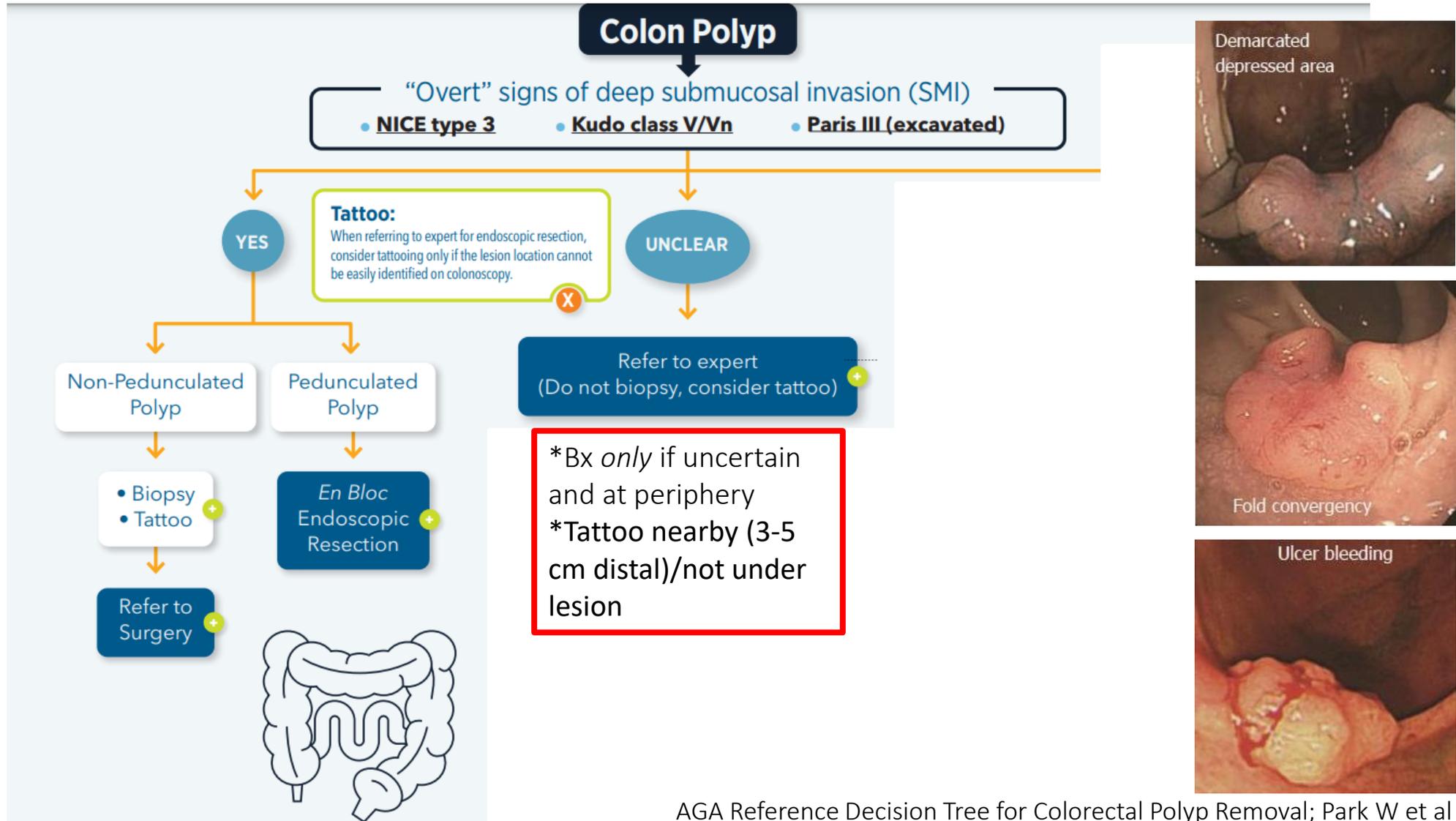
Kudo Classification



Type	Schematic	Endoscopic	Description	Suggested Pathology
I			Round pits.	Non-neoplastic.
II			Stellar or papillary pits.	Non-neoplastic.
III _s			Small tubular or round pits that are smaller than the normal pit	Neoplastic.
III _l			Tubular or roundish pits that are larger than the normal pits.	Neoplastic.
IV			Branch-like or gyrus-like pits.	Neoplastic.
V _i			Irregularly arranged pits with type III _s , III _l , IV type pit patterns.	Neoplastic (invasive).
V _{ii}			Non-structural pits.	Neoplastic (massive submucosal invasive).

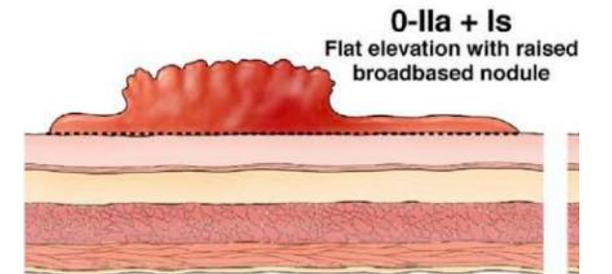
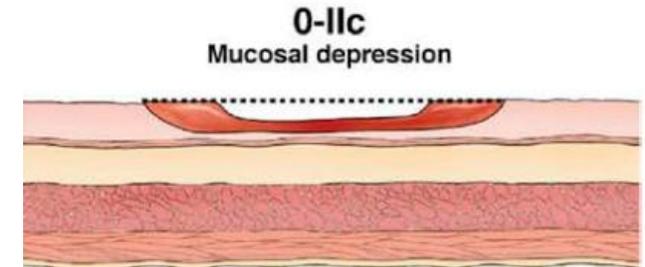
*Kudo class V →
93% accuracy for
deep SMI

Deep Submucosal Invasion (≥ 1 mm)



Resect or Not Resect?

- 1. Is this endoscopically resectable?
 - Are there “high-risk” features of submucosal invasion?
 - Does the polyp have unfavorable features (i.e., “difficult polyp”)?
- 2. Is this endoscopically resectable by me, today?
 - Do I have the expertise?
 - Do I have the time and energy, tools, and staff?
 - Has the patient been properly informed of the EMR risks?



Let's Get Ready for EMR!

- Evolving landscape of techniques
 - 🔥 Hot EMR
 - ❄️ Cold EMR
 - 🌊 Underwater EMR
- Competing clinical tradeoffs
 - Bleeding risks + overall safety
 - Recurrence risk



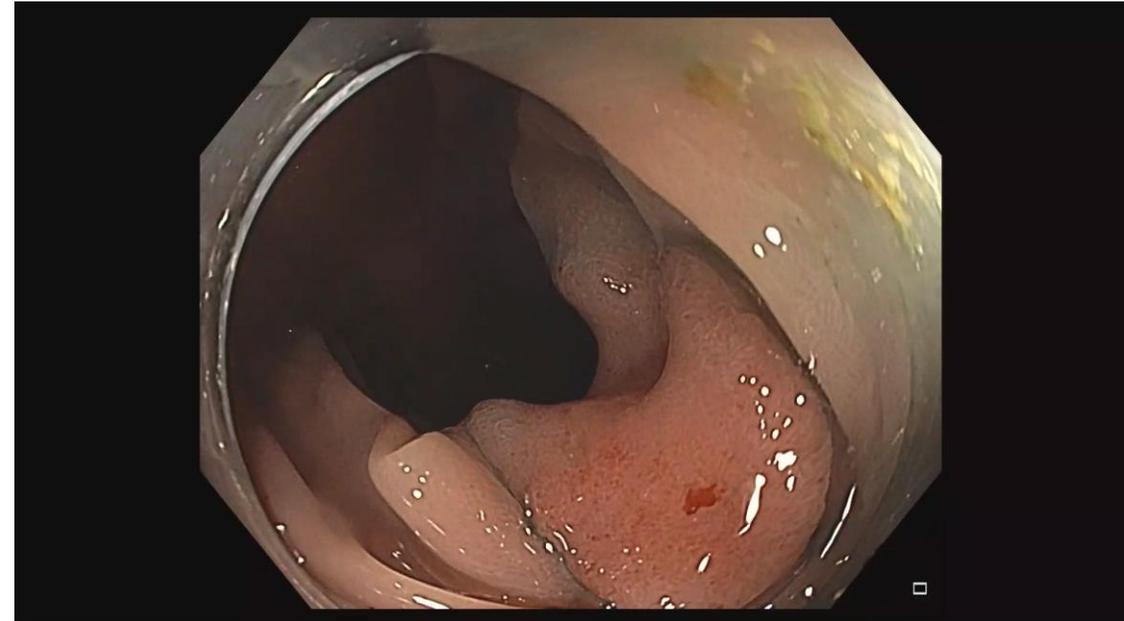
***Goal →** snare resection of **all** visible tissue in a single session and in the safest and minimum number of pieces

Cold Snare EMR “Revolution” Plagued by Higher Recurrence Rates

Characteristic	Hot EMR (h-EMR)	Cold EMR (c-EMR)	Underwater EMR (u-EMR)
Mechanism	Submucosal injection + electrocautery snare resection	Submucosal injection + cold snare resection (no electrocautery)	Saline immersion + snare resection without submucosal injection
En Bloc Resection Rate	18.4% (20-40 mm polyps)	Low, poorly reported	33.3% (20-40 mm polyps)
Recurrence Rate	13.4% (20-29 mm polyps)* [data pre-margin marking/ablation]	18.6% (20-29 mm polyps)	3.4% (20-30 mm polyps)
Major Adverse Events	4.7-7.9%	1.0-2.1%	2.8%
Delayed Bleeding	2.3-4.4%	1.0-1.5%	Similar to h-EMR
Perforation	1.2-3.9%	0-0.2%	0.7-2.0%

Submucosal Lifting Agents

- Do I need to lift?
 - Changes shape of polyp for snare capture
 - Assists with difficult margin assessment
- Use of a viscous injection solution > normal saline (conditional recommendation, moderate-quality evidence)
 - Methylene blue solution → 1 cc methylene blue into 500 cc NS bag
 - Hydroxyethyl starch
- Proprietary submucosal agents
 - Pre-prepared with longer submucosal lift
 - Cost considerations



Hot Snare vs. Underwater EMR



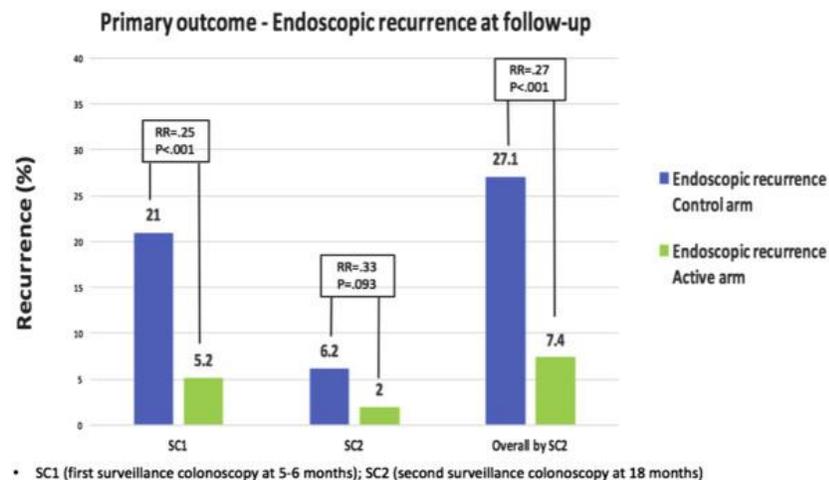
- Role of injection to delineate, alter shape and create safe space between cautery and MP
- En bloc feasible with less immediate oozing



- Lumen distended with saline rather than gas and no injection used
- Greater en bloc resections with larger lesions
- Similar to decreased procedural times

Post-Resection Tip #1: Thermal Ablation of Mucosal Defect Margins Reduces Recurrence

- Multicenter RCT of 390 patients with LSTs > 20 mm referred for EMR
- Thermal ablation (STSC) of post-EMR defect margin resulted in a 4-fold reduction (21% → 5.2%, $p < 0.01$) in adenoma recurrence at 1st surveillance colonoscopy



Klein et al, Gastro 2019; Sindhu et al, Gastro 2021; 2020 Recommendations by the US Multi-Society Task Force on Colorectal Cancer

Post-Resection Tip #2: Clip Closure for Polyps ≥ 2 cm in Right Colon

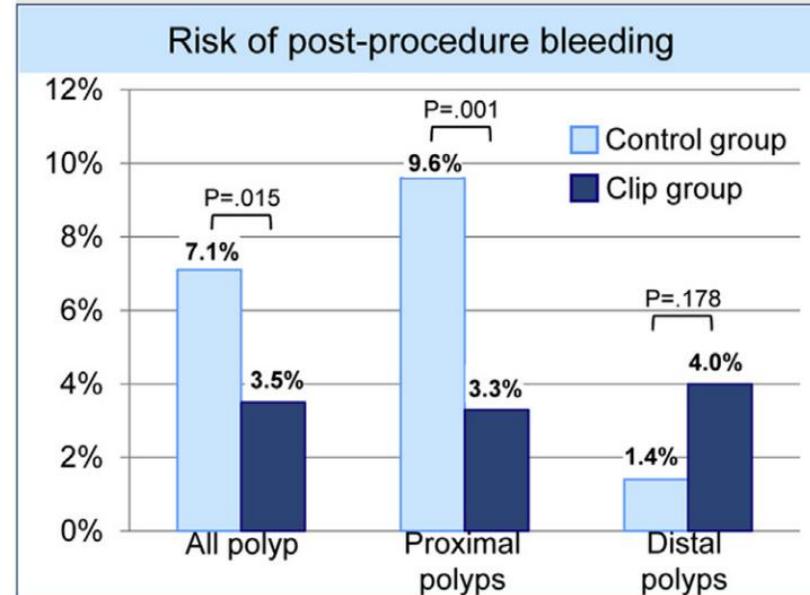
Clip Closure For Bleeding Prevention



Post-procedure bleeding occurs in 5-10% after endoscopic mucosal resection (EMR) of large colorectal polyps.

In this multi-center randomized trial, clip closure of the EMR mucosal defect significantly reduced post-procedure bleeding. The effect appeared to be restricted to large polyp in the proximal colon.

RCT: 919 patients with ≥ 20 mm non-pedunculated colorectal polyps



Gastroenterology

*Same study found no difference in clinical outcomes for EndoCut vs. Coag currents

Post-Resection Tip #3: Intensive Surveillance After Piecemeal EMR

- Follow-up colonoscopy at 6 months → 1 year → 3 years (Strong recommendation, moderate-quality evidence)
- Careful examination with enhanced imaging and targeted biopsies (conditional recommendation, moderate-quality evidence).
- If suspected local recurrence, perform endoscopic resection therapy (conditional recommendation, low-quality evidence)



Best Practices for Performing High-Quality EMR in 2026

- Know when to tackle a polyp, when to bring back and when to refer
- Avoid tattooing into the polyp base, aggressive biopsies and partial resections
- Use a distal attachment cap, and choose an appropriate endoscope and snare based on the polyp
- Inspection pre- and post-resection is critical → take your time
- Continue to fine-tune your EMR practice as techniques evolve

Summary

- Most large polyps can be adequately removed endoscopically with goal of complete resection
- Recognize “high-risk” endoscopic features (e.g, central depression, interrupted surface vessels, etc.) as these are keys to identifying cancer risk
- Skills in ablative techniques and clip closure are essential for performing EMR
- As EMR techniques continue to evolve, it remains imperative to continue honing and fine-tuning your practice



Thank You

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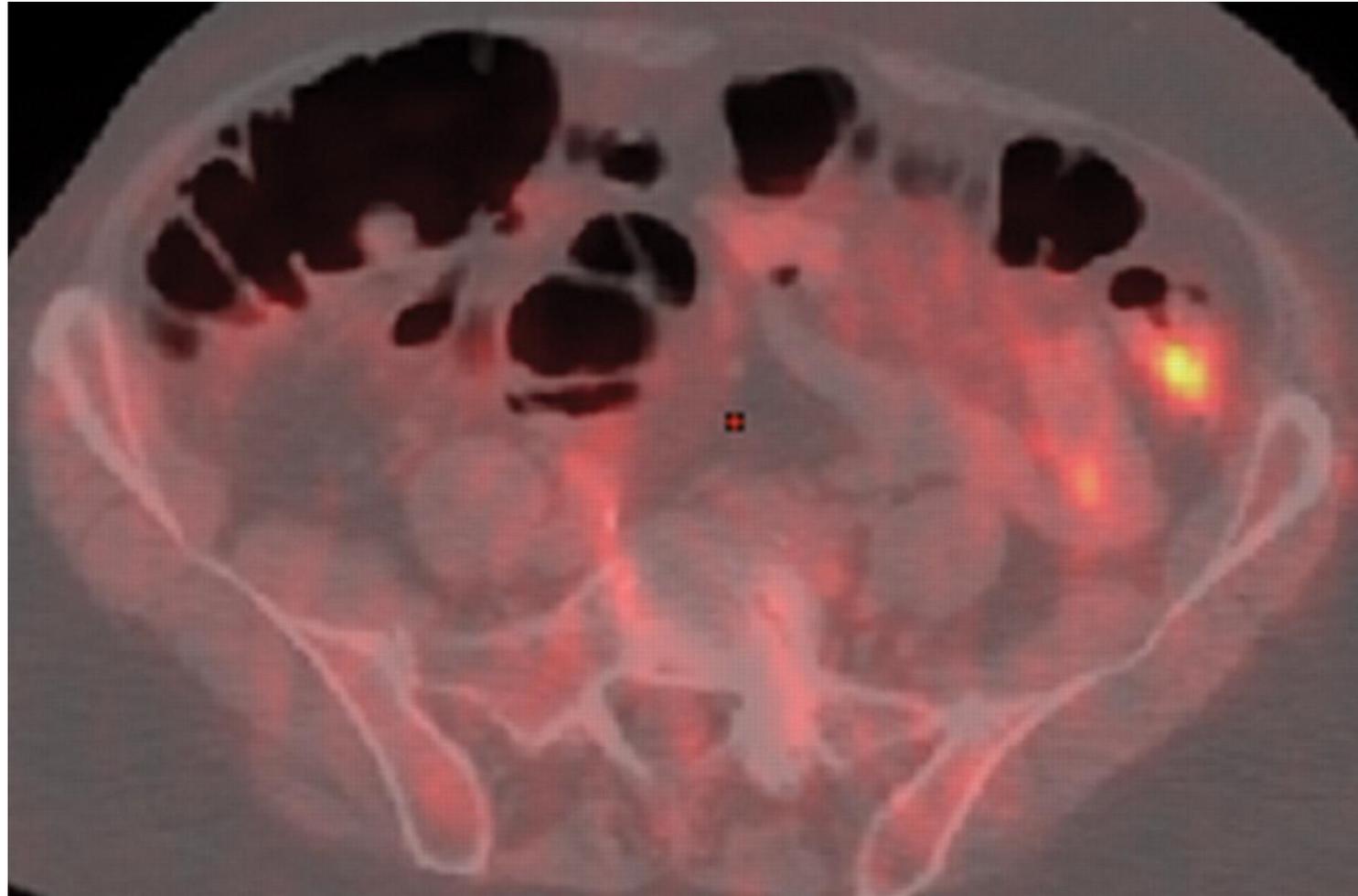
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Paris Classification for Laterally Spreading Tumors



Endo-Oncologists and Achieving R0 Resections



ASSESSMENT OF SKILL

Rate the skill with which technical elements are performed, not whether you agree with the intervention or the device used (assuming reasonable choice of interventions or devices).

- 1 Inadequate skill - Does not achieve tasks, standards not met, errors frequently uncorrected
 - 2 Suboptimal skill - Achieves some of the tasks, some standards not yet met, some errors uncorrected
 - 3 Adequate skill (competent) - Achieves tasks, adequate and safe technique and strategy, no uncorrected errors
 - 4 Expert skill (aspirational)- Achieves all tasks with expertise
- n/a not applicable or not accessible

1. Assess	POSITIONING AND STABILITY: Achieves stable working position and optimal distance from lesion, or clearly attempts to do so; readjusts if needed. Demonstrates fine tip control and purposeful movements.				
	1	2	3	4	n/a
	LESION ASSESSMENT: Surveys entire lesion. Suspicious areas (e.g. nodules, depression) are interrogated with close-up views using image enhanced endoscopy.				
2. Resect	1	2	3	4	n/a
	SUBMUCOSAL INJECTION: Demonstrates adequate submucosal injection technique. Uses effective dynamic technique. Performs sequential injection for large lesions. Uses injection to optimize access/visualization.				
	RESECTION: Efficiently achieves complete resection with the appropriate approach and technique resulting in a clean base and a clear margin. Specifically, positions snare evenly and securely around target area that includes a normal margin or overlaps with prior resection base.				
3. Inspect (and treat and prevent)	1	2	3	4	n/a
	POST RESECTION: Meticulously examines the resection margin and base using close-up views. Accurately targets and removes residual tissue using mechanical removal (e.g. avulsion) as the preferred method.				
	SPECIAL SKILLS, IF PERFORMED:				
	MARGIN ABLATION: Contiguously ablates margin without untreated 'skip' areas.				
	1	2	3	4	n/a
	TREATMENT OF BLEEDING/DEEP MURAL INJURY: Identifies and addresses intra-procedural bleeding or deep mural injury accurately and efficiently. Achieves hemostasis or endoscopic closure as needed.				
	1	2	3	4	n/a
CLOSURE OF THE RESECTION DEFECT: If closure of the resection defect is indicated and feasible, the defect is closed effectively with minimal or no remaining visible submucosa (typically achieved for lesions <3cm in size).					
1	2	3	4	n/a	
GLOBAL ASSESSMENT: Please provide your overall impression of the endoscopist's skill level to perform an EMR in the colon (based on the provided video sequence and independent of the above rating scale).					
1 = Novice skill: Will infrequently allow independent completion of EMR					
2 = Intermediate skill: Will occasionally allow independent completion of EMR					
3 = Competent skill: Will consistently allow independent completion of most EMR cases; typically < 3 cm, easy access					
4 = Expert skill: Will allow completion of complex cases; typically ≥ 3 cm, challenging access					
1	2	3	4		

Colonic EMR Skills Assessment Tool (CESAT)

Tailor Snare Selection to Polyp

- Stiff 15- or 20-mm round snares with a braided wire preferred for en bloc and piecemeal EMR
 - Lower impedance → smooth, even cutting
- Small thin wire snares (0.3-mm monofilament) may enable better tissue capture in poorly lifting lesions
 - Higher impedance → sharper, faster cut

