North Carolina Society of Gastroenterology
2026 Annual Meeting

Advanced Tissue Resection: When to Perform EMR vs ESD

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Joint Providership

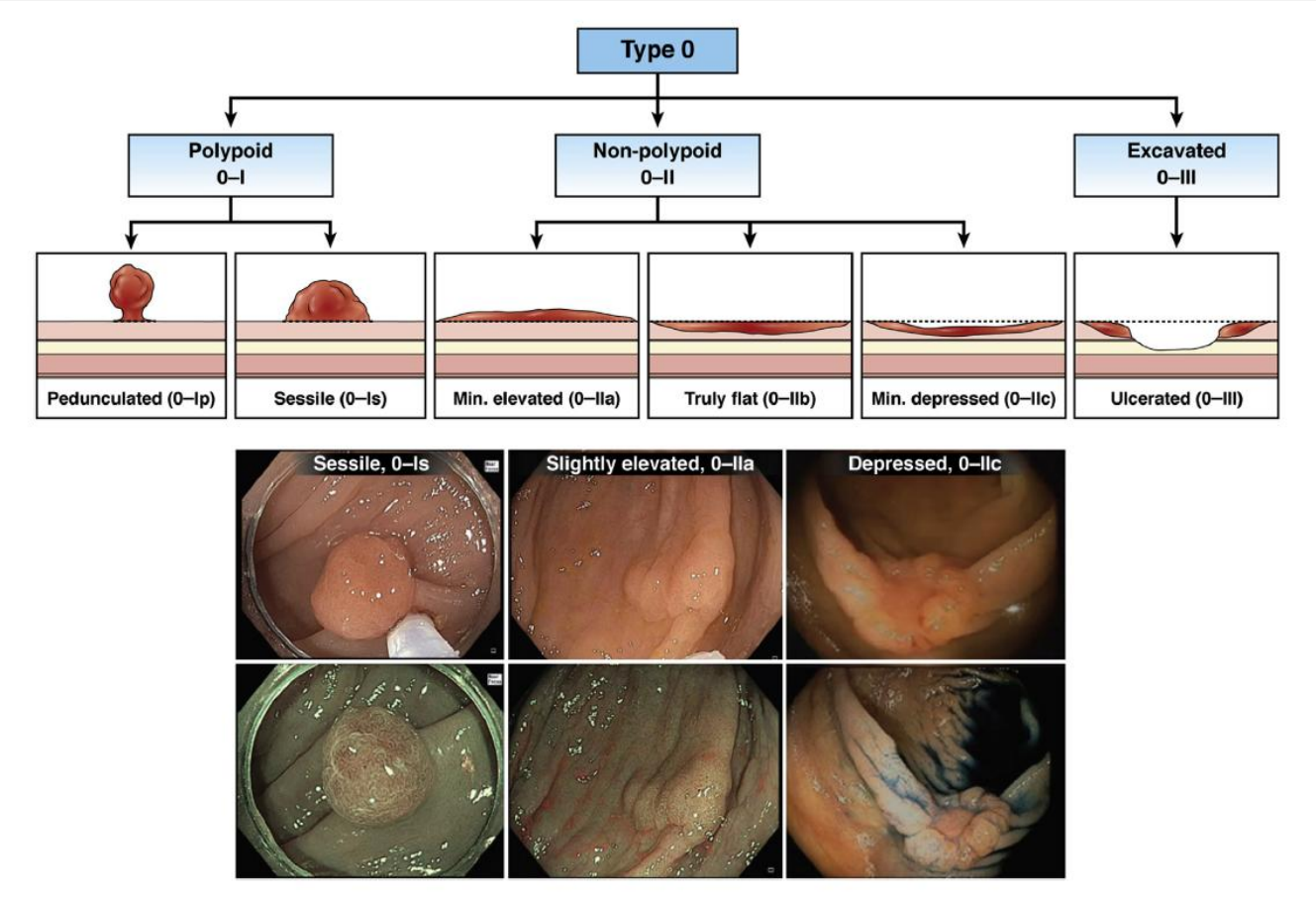
Disclosures:

Consultant to: Olympus, Boston Scientific, Medtronic, FujiFilm, Neptune, Lumendi, EndoRobotics, Erbe, MicroTech.

Objectives:

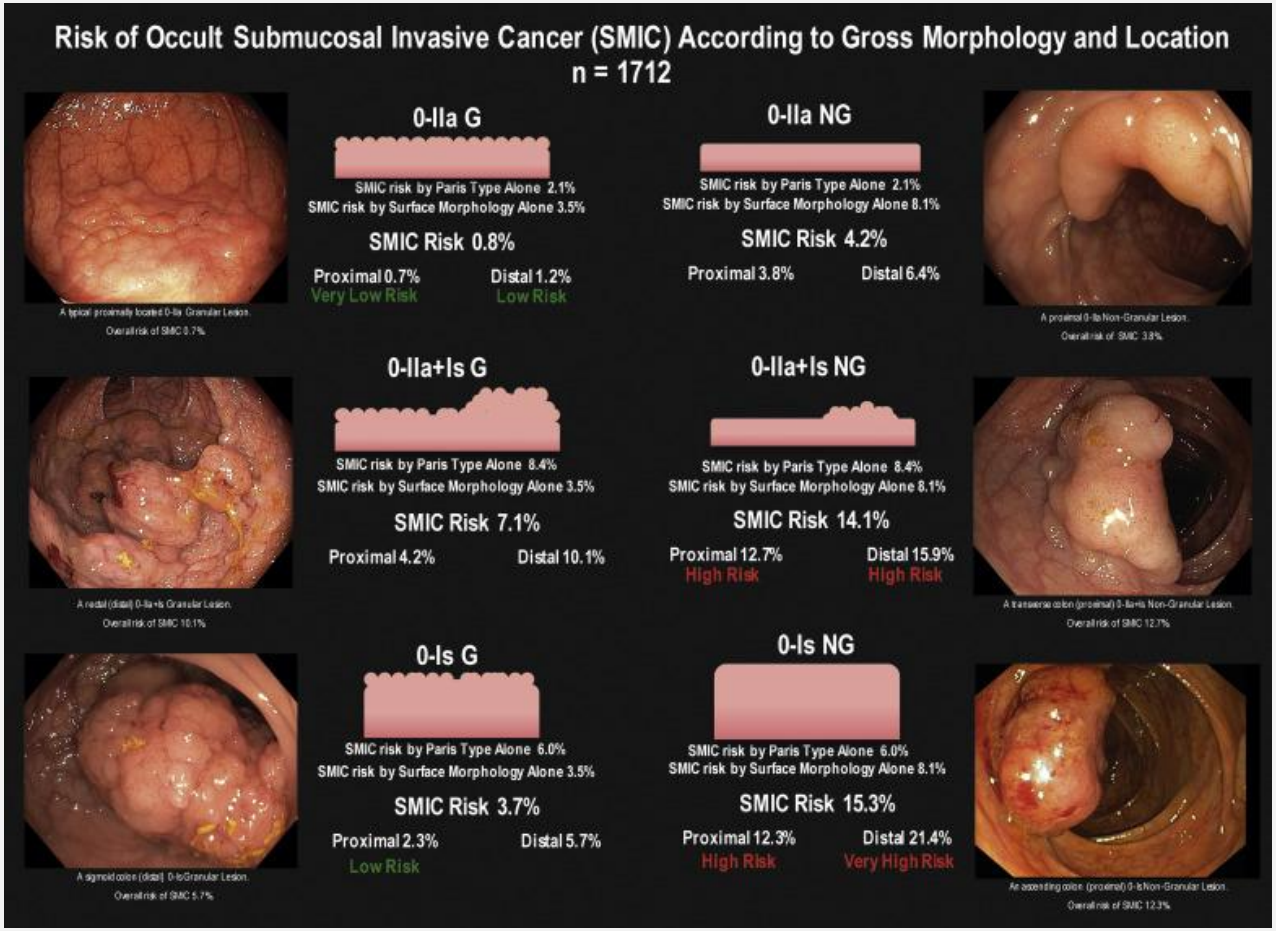
- Understand how to characterize colon polyps to determine the risk of cancer with submucosal invasion.
- Understand which polyps can be resected by EMR and which polyps should be resected by ESD.
- Understand how to prevent local recurrence after endoscopic resection and how to manage local recurrence if it occurs.

PARIS CLASSIFICATION



Kaltenbach et al. GIE 2020;91:486-519.

RISK OF SUBMUCOSAL INVASIVE CANCER

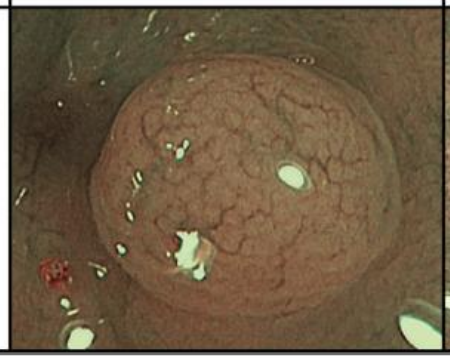
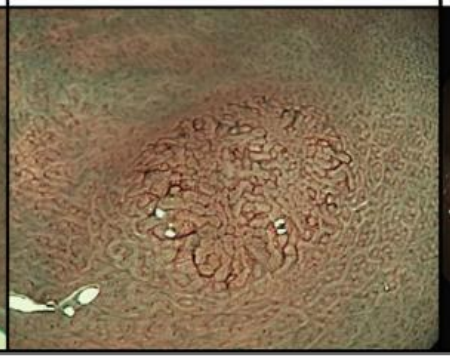
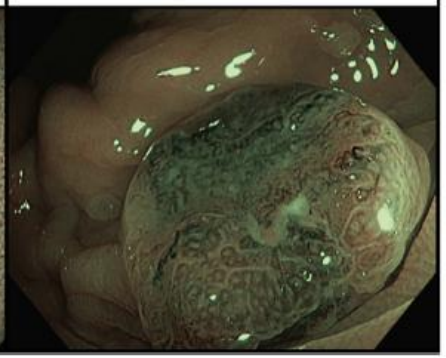


Risk of SMIC

- LST-G mixed
  - <20 mm – 7.1%
  - >30 mm – 38%
- LST-NG with pseudo-depression:
  - <20 mm – 12.5%
  - >30 mm – 83.3%
- LST, Paris 0-IIc (depressed):
  - 27-35.9%

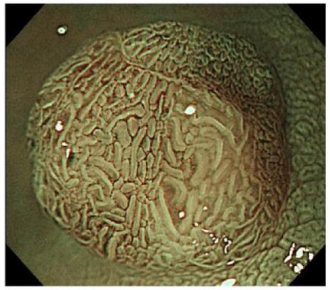
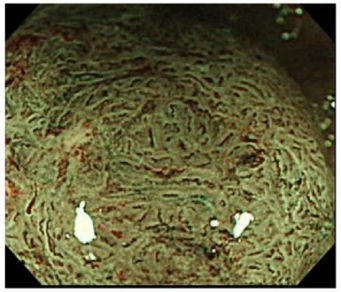
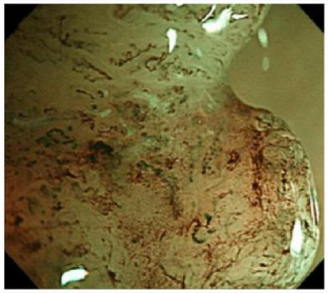
Burgess et al. Gastro 2017:153:732-42.
Facciorusso et al. World J Gastro 2015;21:5149-57.

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
			

Kaltenbach et al. GIE 2020;91:486-519.

JNET CLASSIFICATION

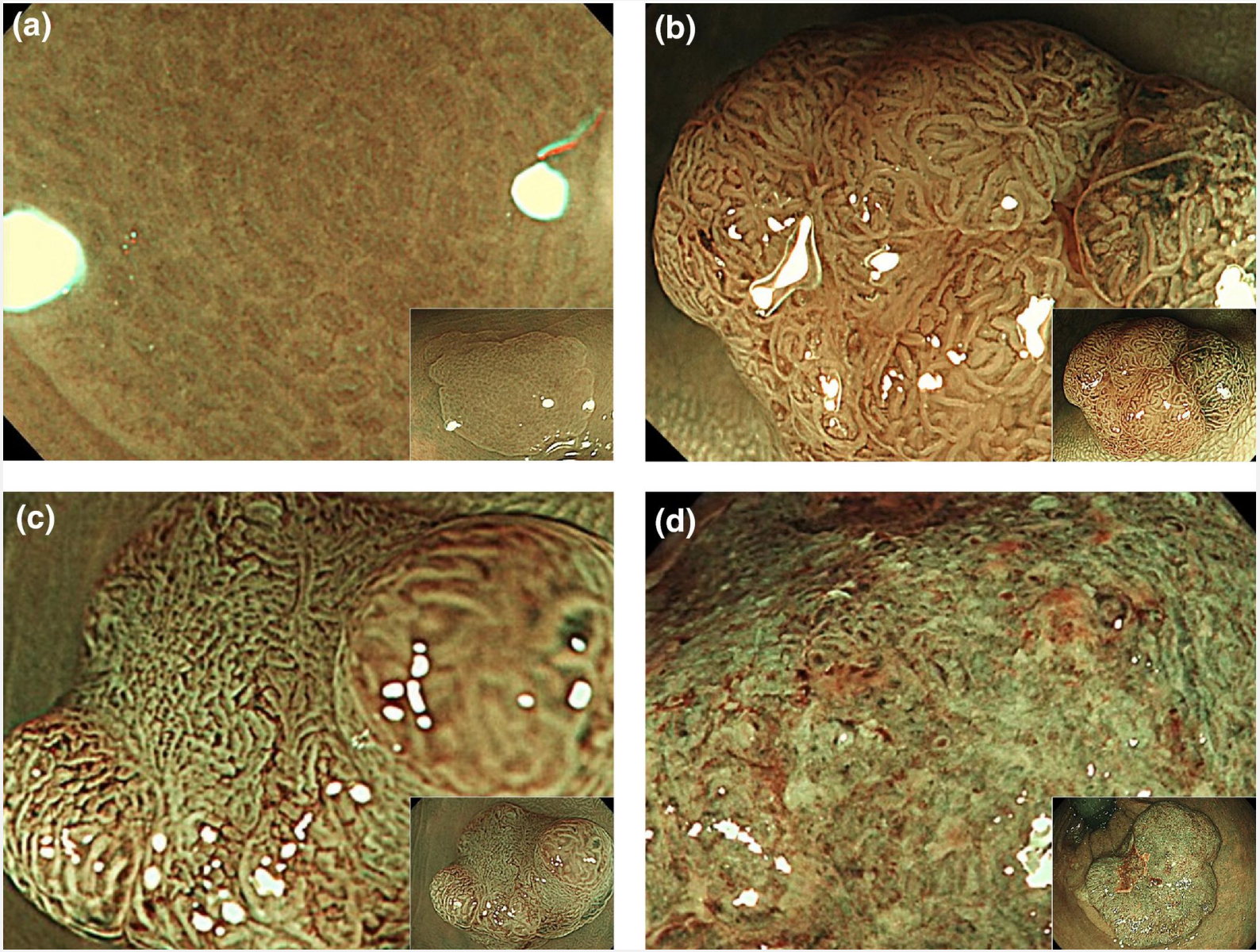
	Type 1	Type 2A	Type 2B	Type 3
Vessel pattern	・Invisible※1	・Regular caliber ・Regular distribution (meshed/spiral pattern)※2	・Variable caliber ・Irregular distribution	・Loose vessel areas ・Interruption of thick vessels
Surface pattern	・Regular dark or white spots ・Similar to surrounding normal mucosa	・Regular (tubular/branched/papillary)	・Irregular or obscure	・Amorphous areas
Most likely histology	Hyperplastic polyp/ Sessile serrated polyp	Low grade intramucosal neoplasia	High grade intramucosal neoplasia/ Shallow submucosal invasive cancer※3	Deep submucosal invasive cancer
Endoscopic image				

*1. If visible, the caliber in the lesion is similar to surrounding normal mucosa.

*2. Microvessels are often distributed in a punctate pattern and well-ordered reticular or spiral vessels may not be observed in depressed lesions.

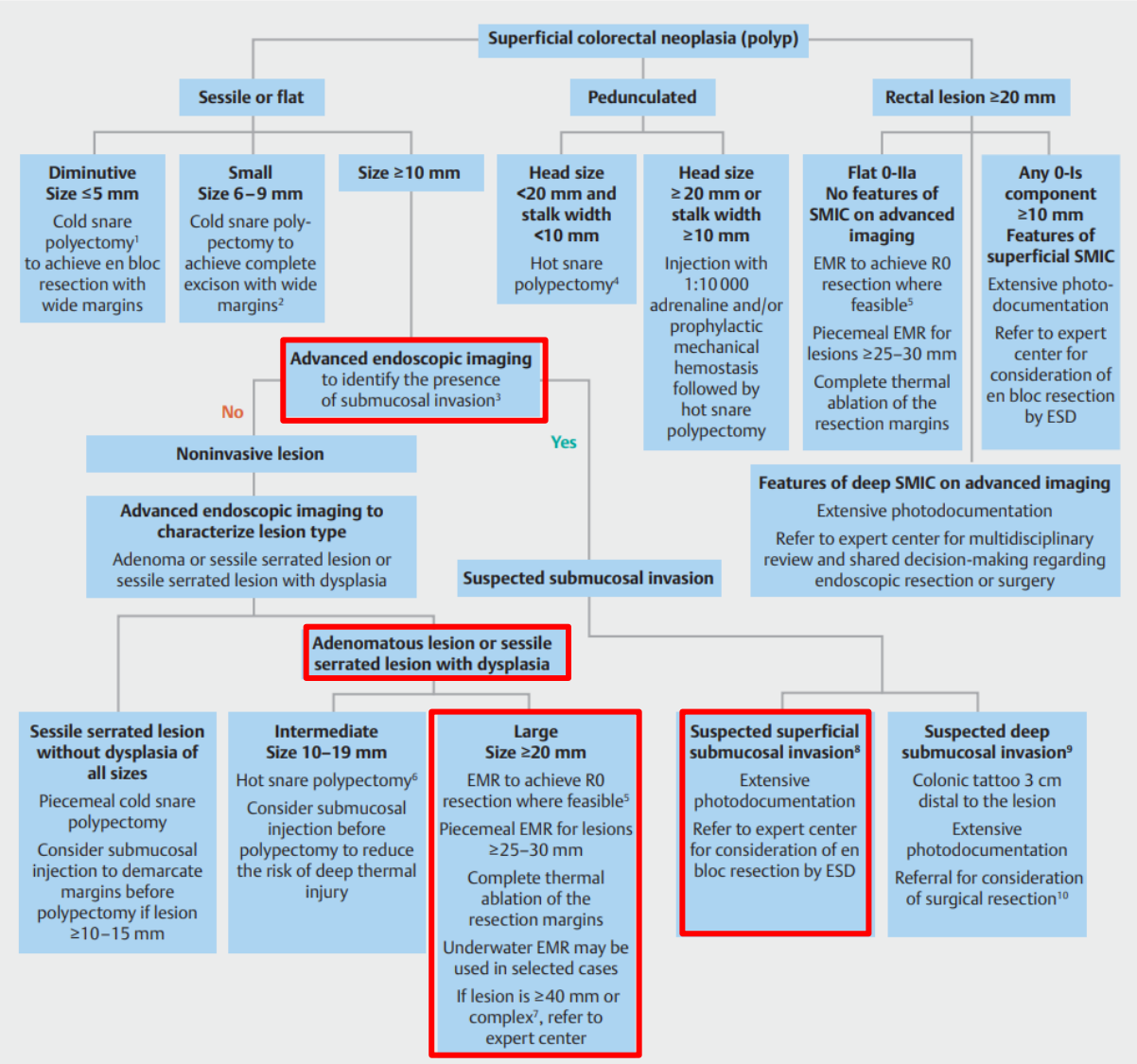
*3. Deep submucosal invasive cancer may be included.

Sano et al. Digestive Endoscopy 2018;30:543-545.



Sano et al. Digestive Endoscopy 2018;30:543-545.

ESGE GUIDELINES (2024)



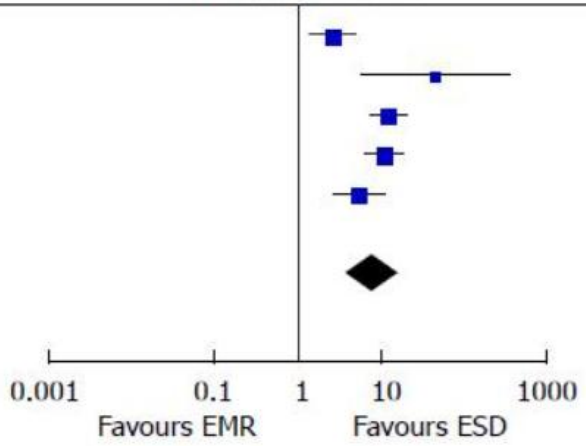
Ferlitsch et al. Endoscopy 2024;56:516-545.

COLON ESD VS. EMR – *EN BLOC* RESECTION

Study or subgroup	ESD Events	ESD Total	EMR Events	EMR Total	Weight	Odds ratio IV, random, 95%CI
Kim YJ 2013	93	115	56	91	22.5%	2.64 [1.41, 4.95]
Kobayashi N 2012	27	28	21	56	8.0%	45.00 [5.69, 355.89]
Lee EJ 2012	291	314	105	209	24.1%	12.53 [7.57, 20.74]
Saito Y 2010	122	145	74	228	23.8%	11.04 [6.53, 18.66]
Tajika M 2011	71	85	50	104	21.7%	5.48 [2.75, 10.92]
Total (95%CI)		687		688	100.0%	7.94 [3.96, 15.91]
Total events	604		306			

Heterogeneity: Tau² = 0.46; χ^2 = 20.27, df = 4 (P = 0.0004); I^2 = 80%

Test for overall effect: Z = 5.84 (P < 0.00001)



Wang et al. World J Gastro 2014;20:8282-8287.

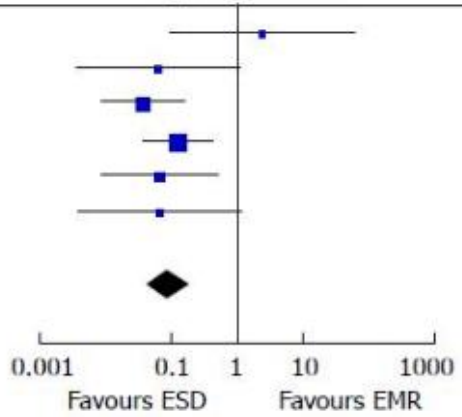
COLON ESD VS. EMR – LOCAL RECURRENCE

- Local recurrence rate (polyps >20 mm):
  - EMR – 14.8% [11.0-18.5%]
  - EMR with some margin ablation – 16.5% [15.2-17.8%]
  - EMR with complete margin ablation – 3.3% [2.2-4.5%]
  - ESD – 2.4% [0-5.7%]

	ESD		EMR			Odds ratio
Study or subgroup	Events	Total	Events	Total	Weight	IV, fixed, 95%CI
Kim YJ 2013	1	115	0	91	5.5%	2.40 [0.10, 59.55]
Kobayashi N 2012	0	28	12	56	6.9%	0.06 [0.00, 1.10]
Lee EJ 2012	2	257	31	177	27.3%	0.04 [0.01, 0.16]
Saito Y 2010	3	145	33	228	39.5%	0.12 [0.04, 0.42]
Tajika M 2011	1	84	16	104	13.7%	0.07 [0.01, 0.51]
Terasaki M 2011	0	83	14	176	7.1%	0.07 [0.00, 1.14]
Total (95%CI)		712		832	100.0%	0.09 [0.04, 0.19]
Total events	7		106			

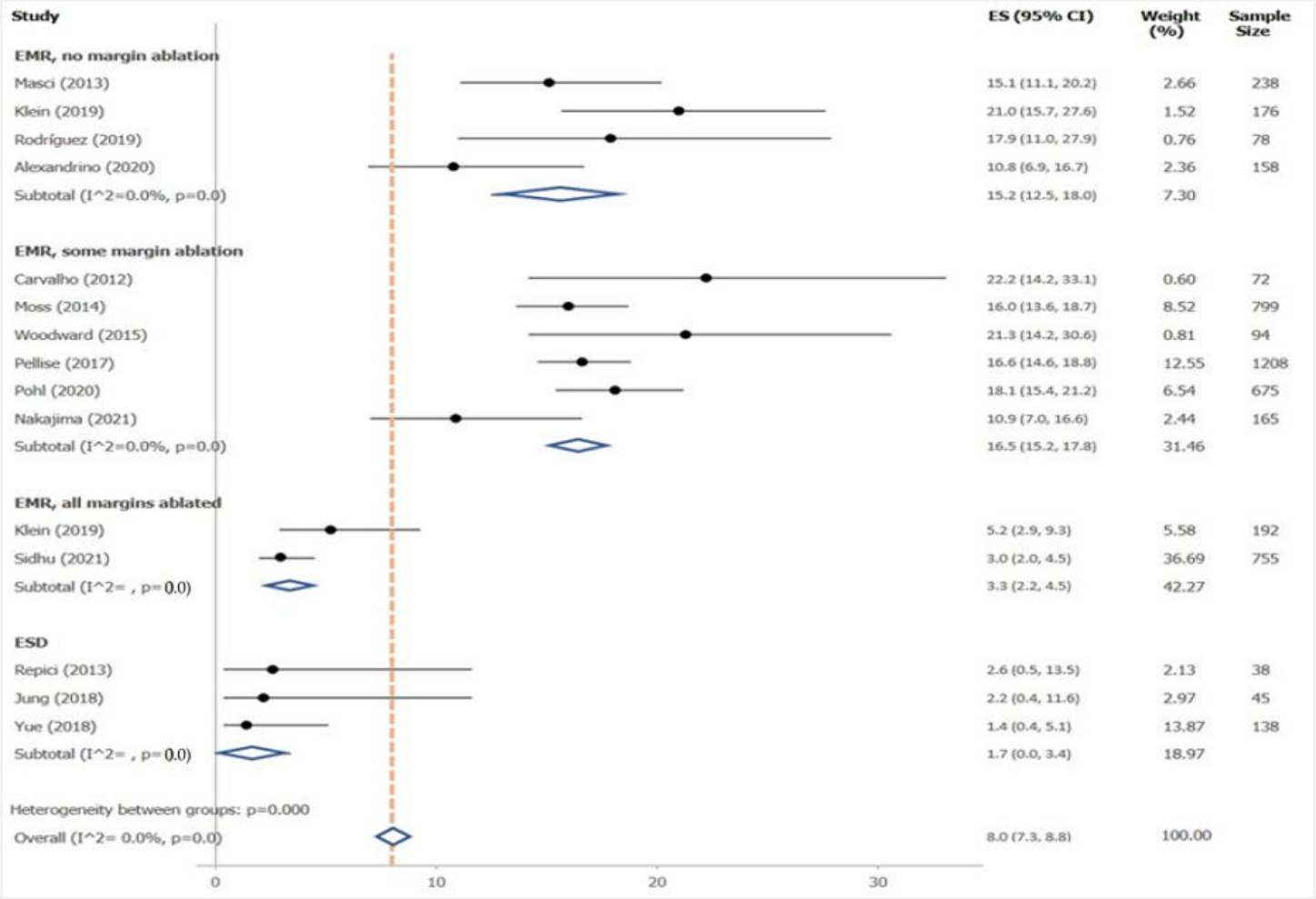
Heterogeneity: $\chi^2 = 5.94$, df = 5 ($P = 0.31$); $I^2 = 16\%$

Test for overall effect: $Z = 6.31$ ($P < 0.00001$)



Rotermund et al. World J Gastro 2022;28:4007-4018.
Wang et al. World J Gastro 2014;20:8282-8287.

ABLATION OF MARGINS AFTER PIECEMEAL RESECTION



Rotermund et al, World J Gastroenterol 2022; 28:2009-2018

INDICATIONS FOR COLON ESD

En bloc resection for lesions at risk for submucosally invasive cancer:
- Type V Kudo pit pattern
- Depressed component (Paris 0–IIc)
- Complex morphology (0–Is or 0–IIa+Is)
- Rectosigmoid location
- Nongranular LST (adenomas), ≥20 mm in size
- Granular LST (adenomas), ≥30 mm in size

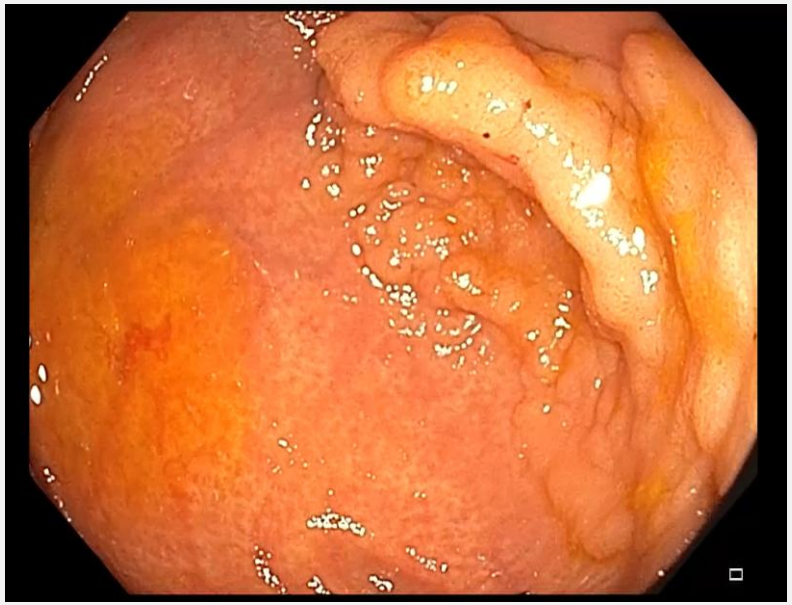
Residual or recurrent colorectal adenomas

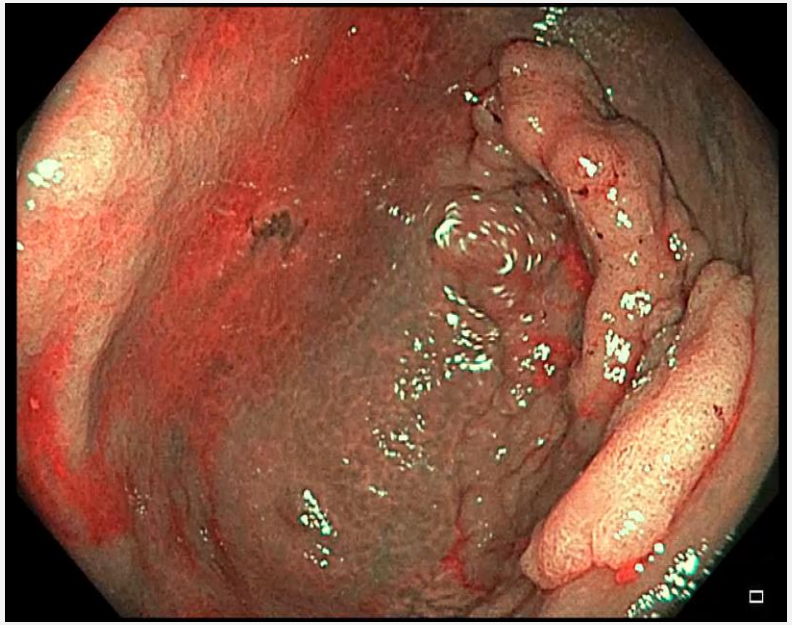
Draganov et al. AGA CPU: ESD. Clin Gastro Hepatol 2019;17:16-25

CME/MOC Question:

A 30 mm polyp characterized as Paris IIa + Is (laterally spreading tumor granular mixed type) with a majority surface pattern consistent with JNET 2A but a focus that is consistent with JNET 2B is identified in the cecum. What is the best approach:

A. Attempt at *en bloc* EMR, and complete by piecemeal EMR if *en bloc* resection is not successful, followed by margin ablation.
B. Piecemeal EMR followed by margin ablation.
C. ESD
D. Referral to surgery





CME/MOC Answer

C. ESD

- The lesion morphology (30 cm LST granular mixed) is associated with a high probability of harboring a submucosally invasive cancer (~38%).
- In addition, the focal JNET 2B mucosal morphology is associated with dysplasia and superficial submucosal invasive cancer.
- These lesions should be removed *en bloc*. Piecemeal EMR should not be performed. *En bloc* EMR should not be attempted due to the size of the lesion because of the low likelihood of actually achieving en bloc resection and the high risk of perforation.
- The patient should not be referred to surgery since there is no evidence of deep submucosal invasion (JNET 3) and the lesion can be removed by an organ-preserving procedure (ESD).

Joint Providership

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