

EMR and ESD of Colonic Lesions

Peter Draganov MD

Professor of Medicine

University of Florida

Gainesville, Florida

Outline

- When to do EMR and when to do ESD?
- Technical tips for EMR

EMR vs ESD vs Surgery

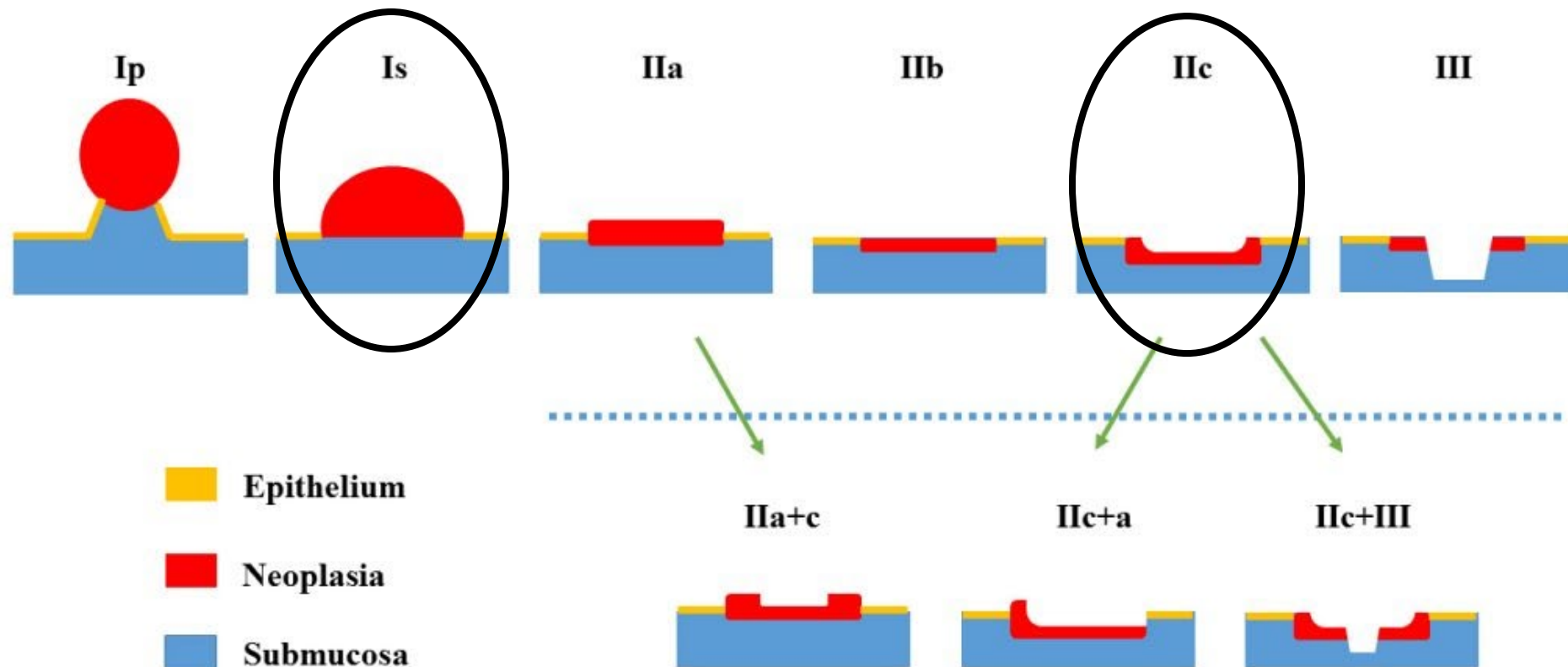
- Biopsy
- Lesion morphology
- Surface pattern
- Lesion location in the colorectum

Biopsy

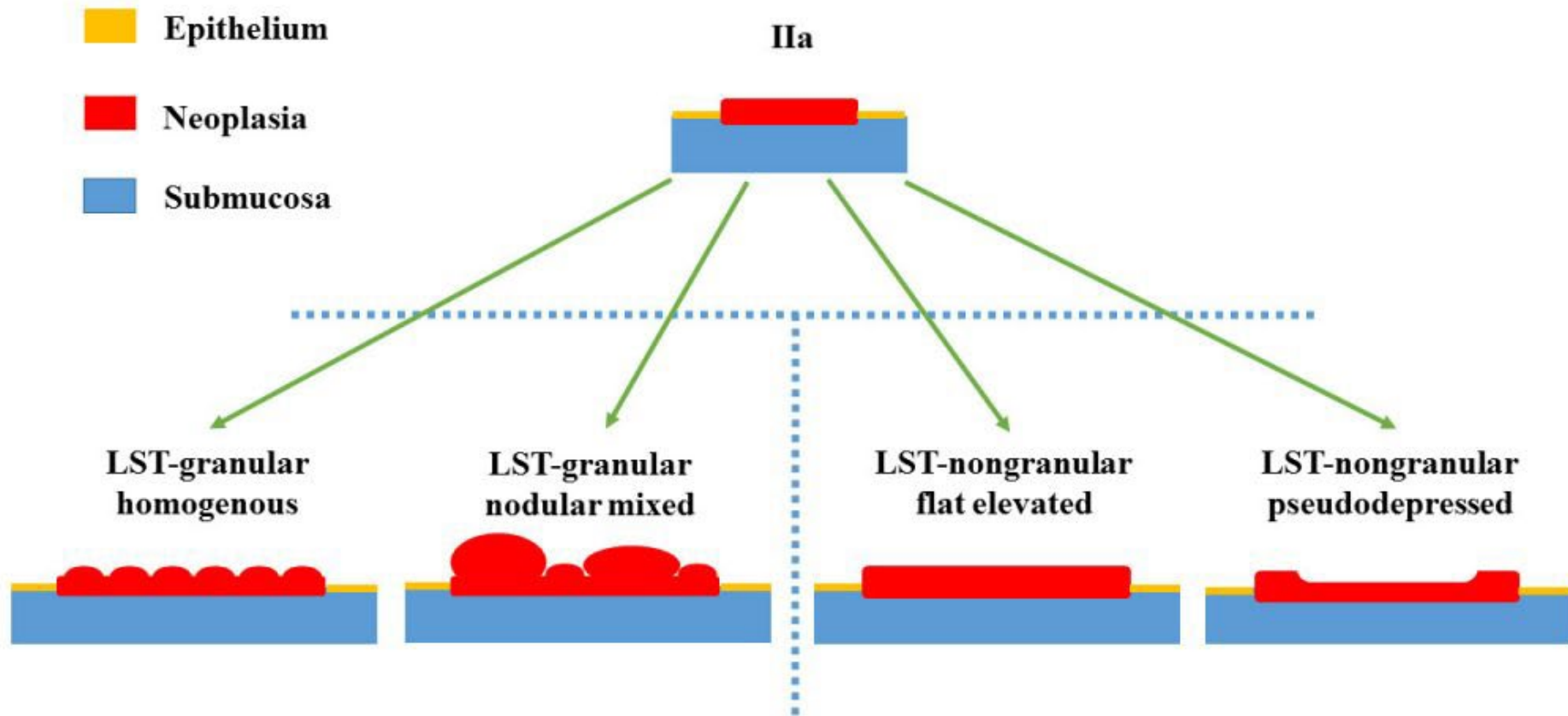
- 160 patients underwent colorectal ESD
- Pre-ESD biopsy was compared to post-ESD histology
- Char review
 - ESD changed histologic diagnosis in 42% (80% upstaged/20% downstaged)
- Independent review by two blinded histologist
 - ESD changed the histologic diagnosis in 47%
 - Upstaged to invasive cancer in 25%
- Interobserver variability higher in biopsy (35%) vs ESD (16%), $p < 0.001$

Lesion Morphology

Paris Classifications



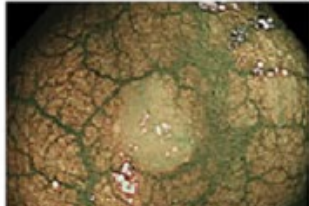
LST Classification



Surface Pattern

NBI International Colorectal Endoscopic Classification

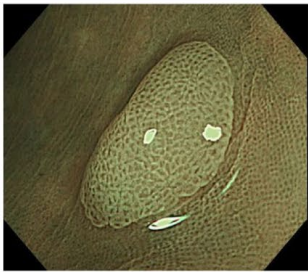
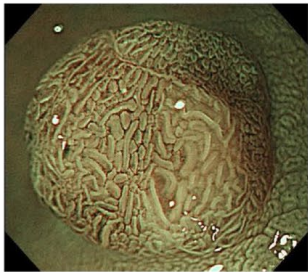
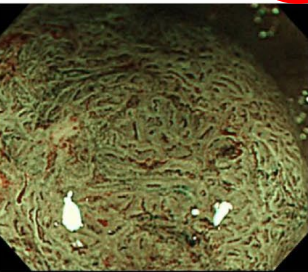
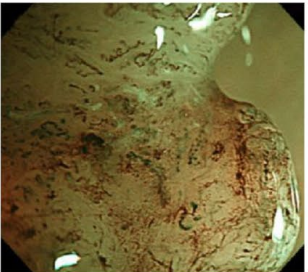
NICE

	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 & sessile serrated polyp (SSP) ***	Adenoma****	Deep submucosal invasive cancer
Endoscopic image			

***Type 2 consist of Vienna classification types 3, 4 and superficial 5 (all adenomas with either low or high grad dysplasia or with superficial submucosal carcinoma)

Japan NBI Expert Team Classification

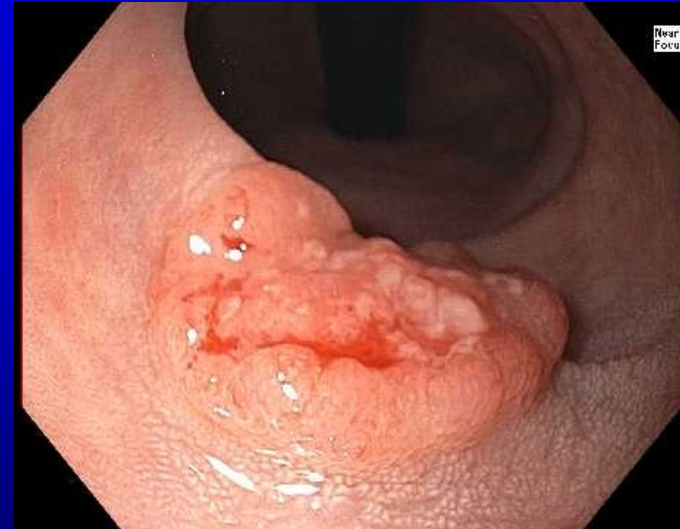
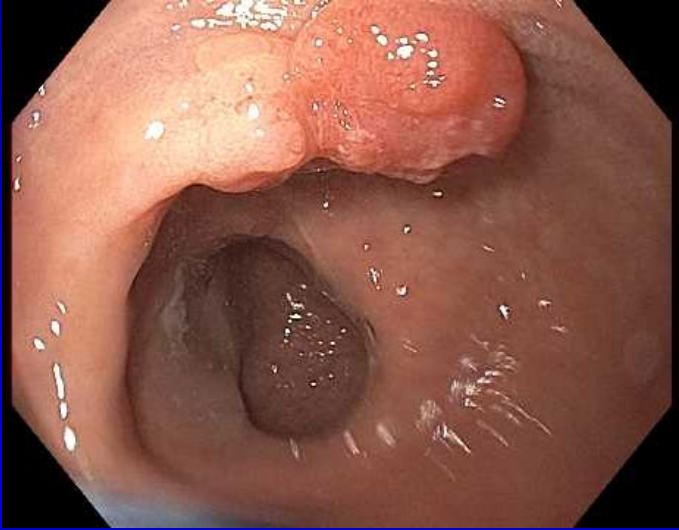
JNET

	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				

*3 Deep submucosal invasive cancer may be included

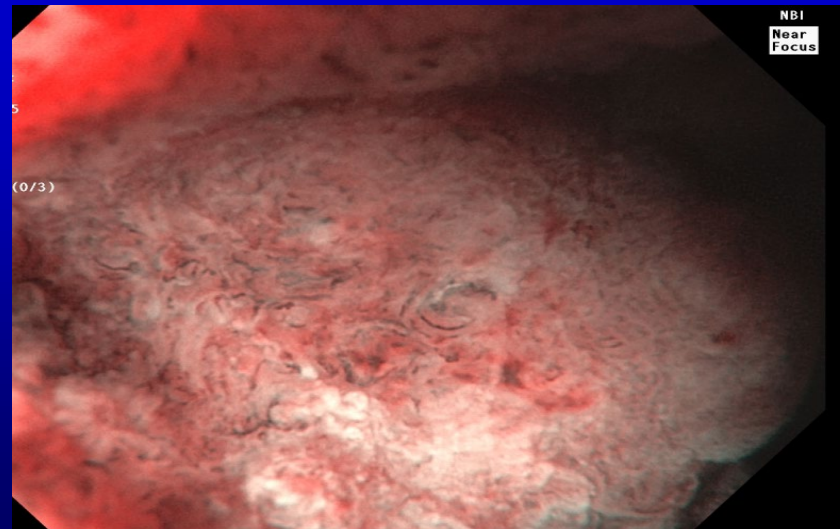
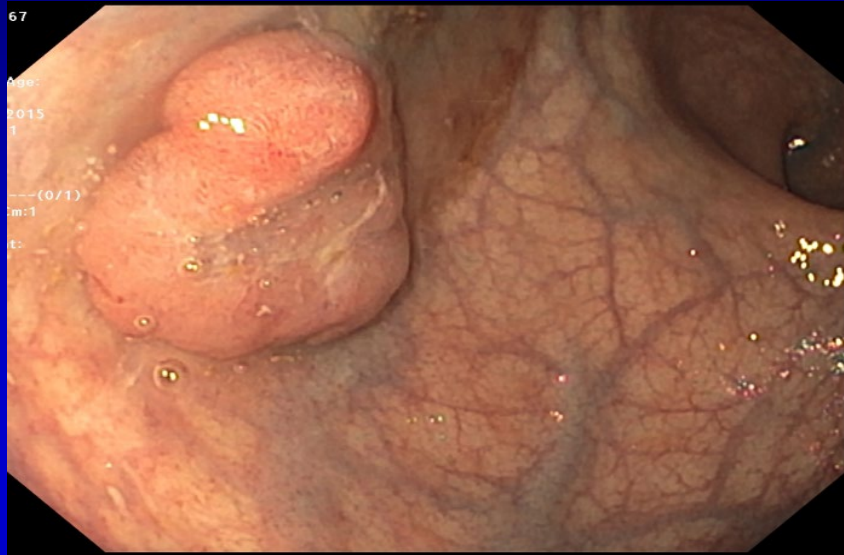
Surface patterns

- Invasive cancer
 - Amorphous areas (no vessels)
 - Thick tortuous vessels
 - Demarcation line
- Intramucosal lesion with HGD or superficially invasive Ca
 - Distorted pattern
- Intramucosal lesion with LGD
 - Preserved pattern





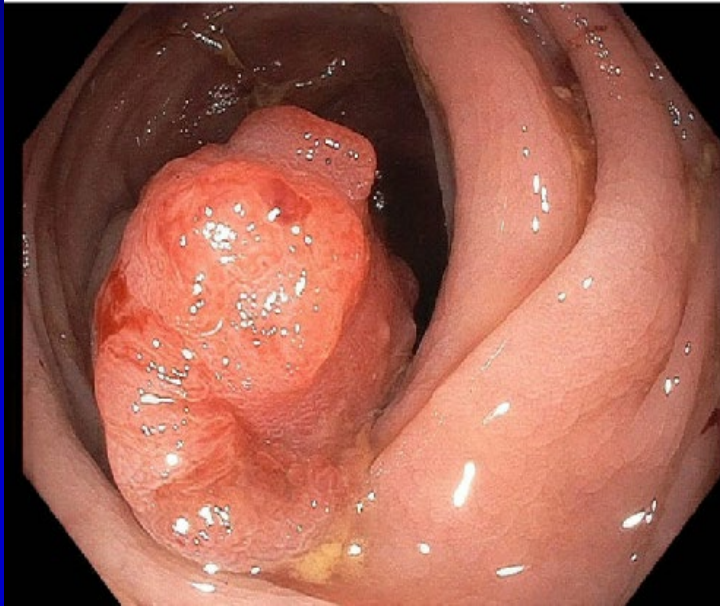
Rectal lesion is



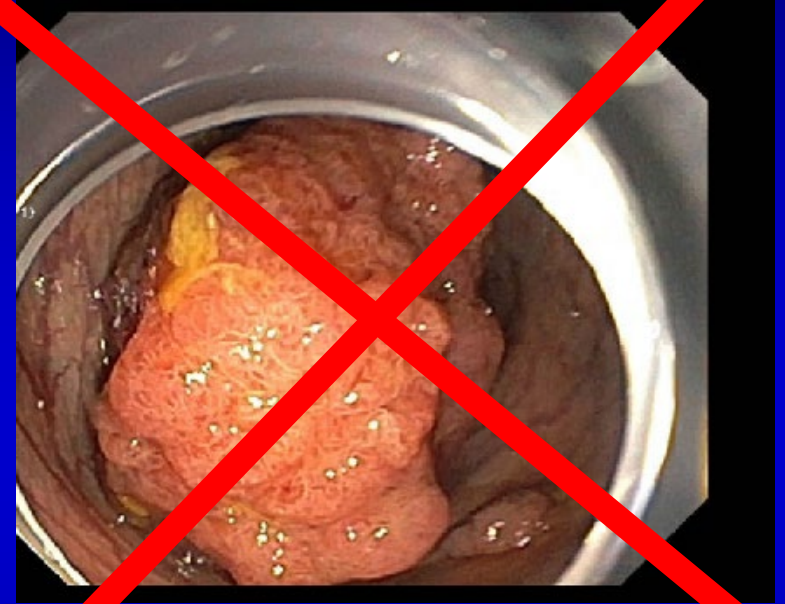
Identifying submucosal invasion



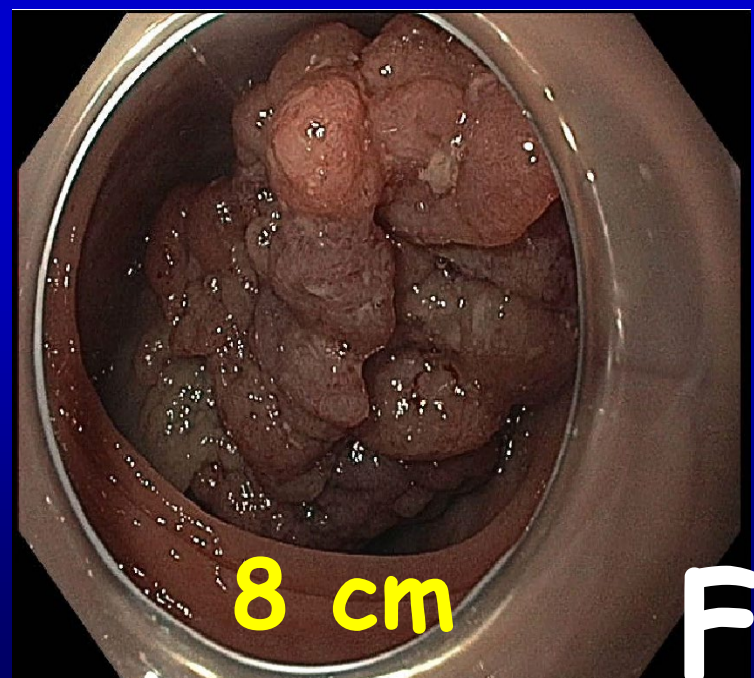
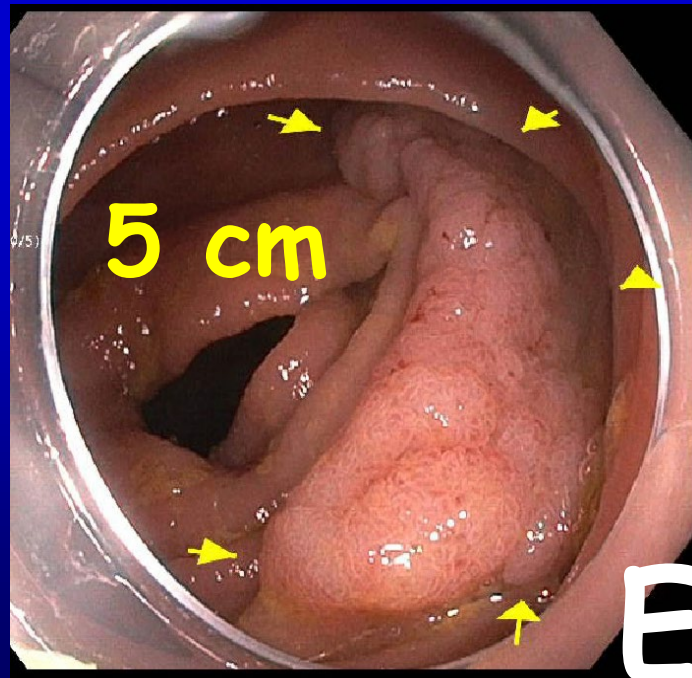
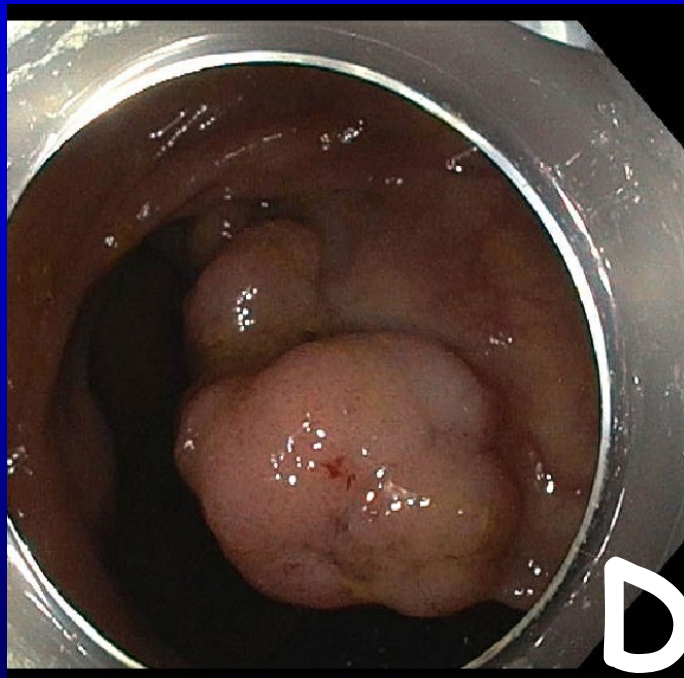
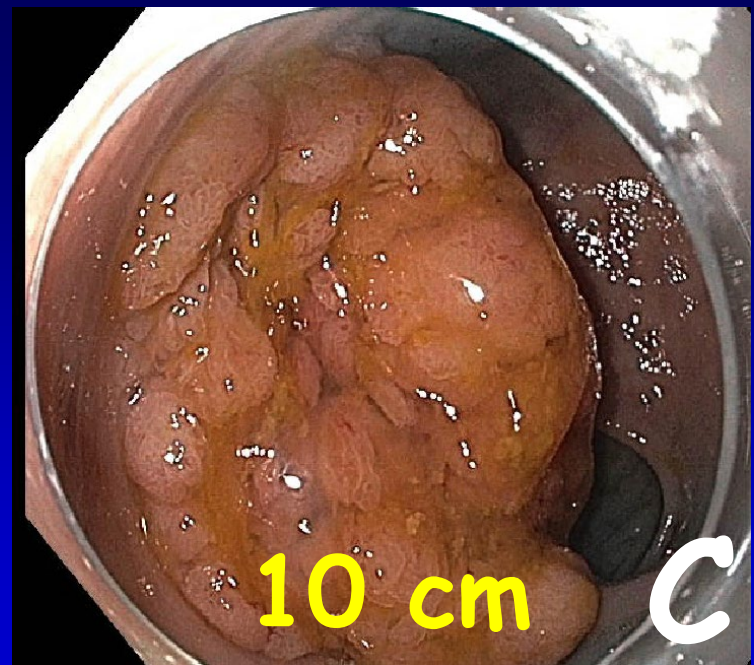
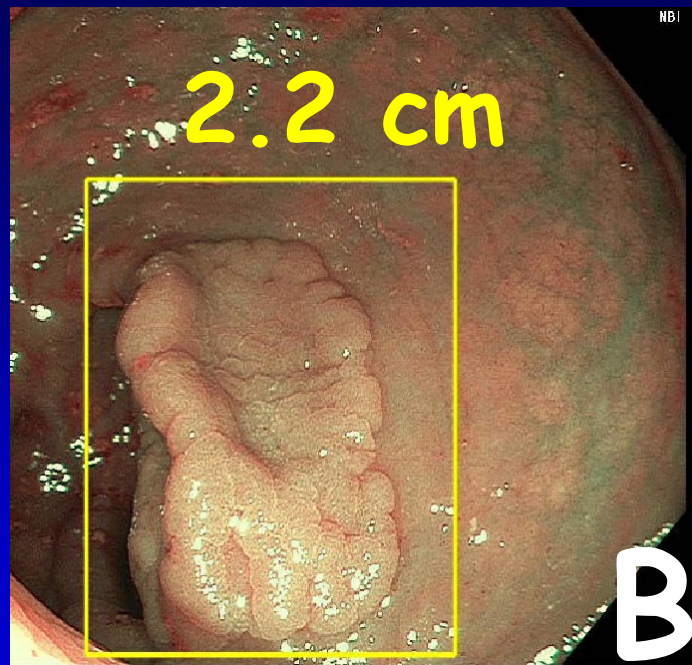
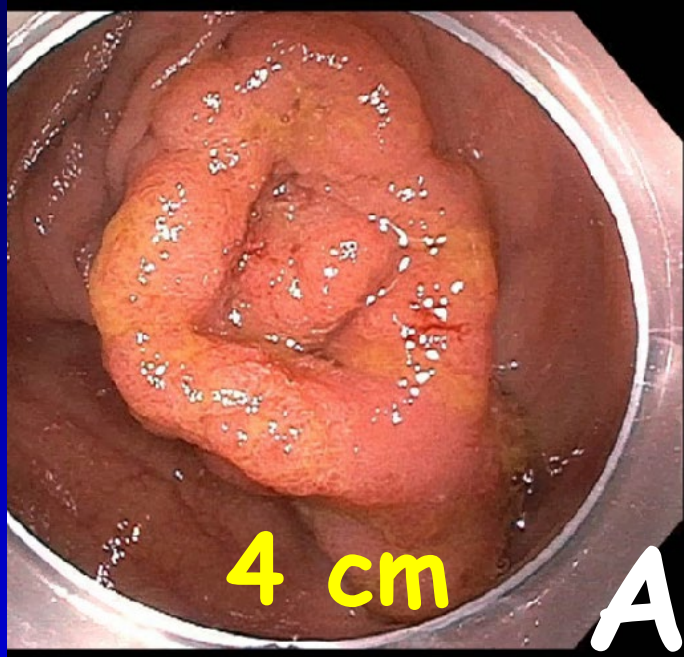
TVA
HGD



Invasive
adeno Ca



TVA HGD



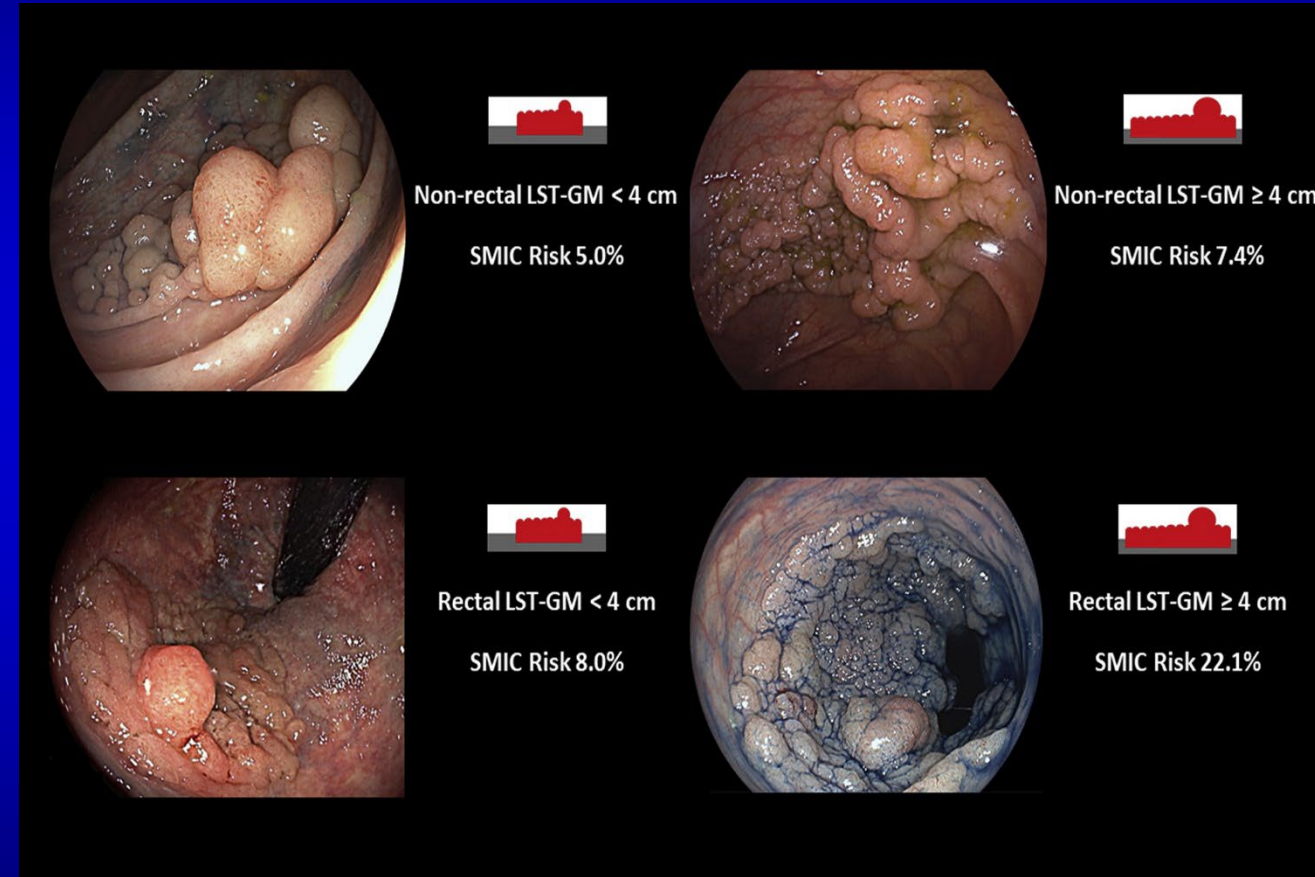
Big lesion $\neq$ Cancer

Lesion Location

Rectal lesions have higher propensity to harbor
covert cancer

What Are the Covert Predictors of Submucosal Invasion?

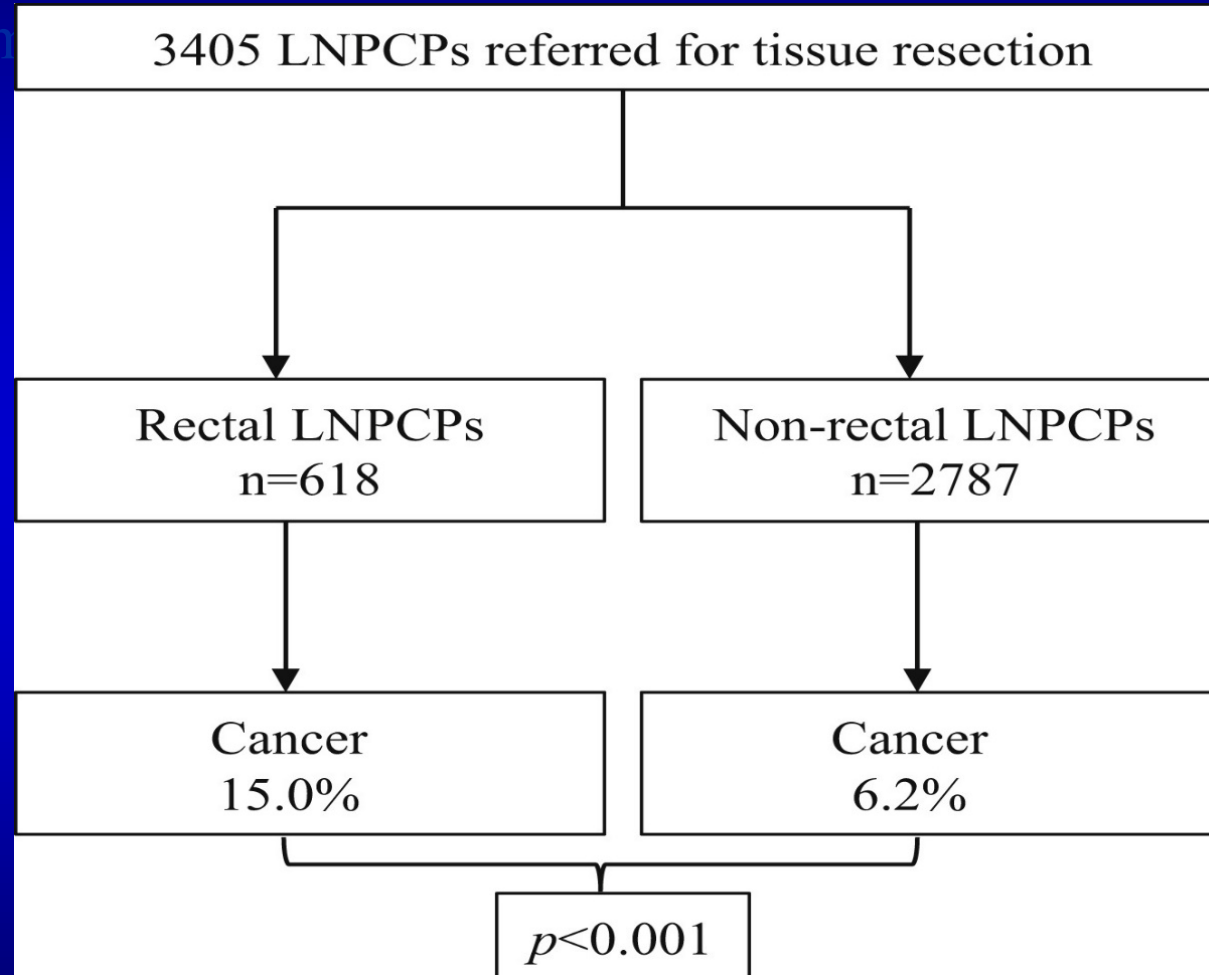
- 693 patients with LSTs without signs of invasion (EMR - 74%, ESD - 26%)
- Submucosal invasive cancer – 10%
- Predictors of covert invasion
 - Increasing lesion size
 - Rectal location
- Conclusion: LSTs > 4 cm and rectal location are high risk and should be treated by en-bloc resection



The Rectum is a High-risk Location

- 3405 large (>20 mm)

typically



The Rectum is a High-risk Location

Any lesion in the
rectum > 20 mm



ESD

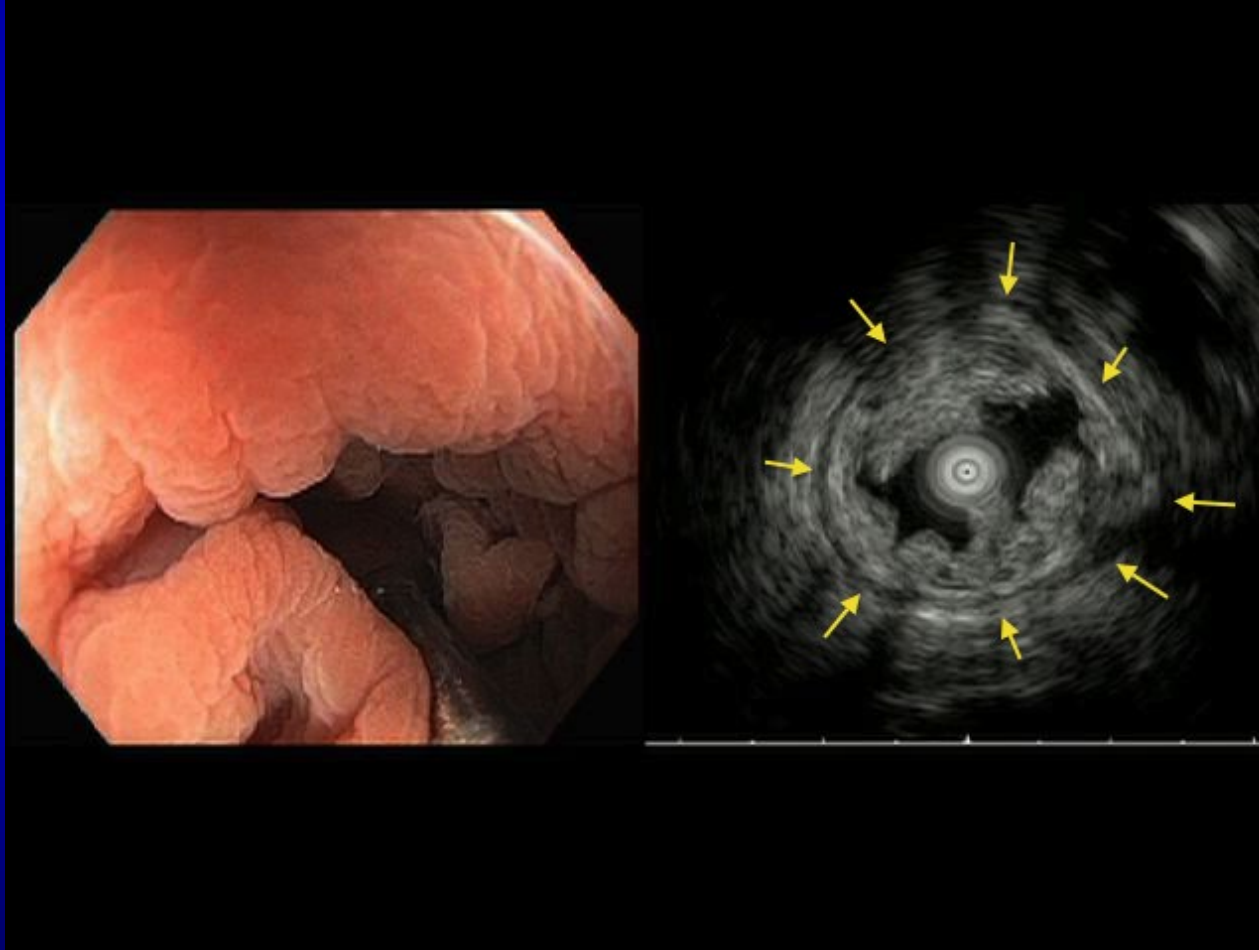
Things to Avoid

- Injecting tattoo ink at the base of the lesion
- Getting aggressive biopsies
 - Rate of severe fibrosis 20% (biopsy) vs 11% (no biopsy)
Fukunagada S. GIE 2019;89(3):470
- Getting partial snare resection to get large tissue sample
- Starting polypectomy/EMR and not able to complete
- Sending patients to surgery

Polyp Removal Techniques

- Simple polypectomy
 - Cold
 - Hot
- Inject and snare EMR
 - Cold
 - Hot
- Underwater EMR
- Snare tip anchor (tip in) EMR
- Avulsion technique
- Cap EMR
- FTRD
- ESD

Underwater EMR



Spadaccini M. GIE 2018 PMID: 30862352

Underwater EMR



Recent RCT

- Underwater (n=61) vs conventional EMR (n=59)
- Lesions from 10 to 40 mm
- Recurrence at 6 mo sufficiently lower in Underwater group (2% vs 15%)
- The lower recurrence rate for underwater EMR was only seen for lesions >20 mm

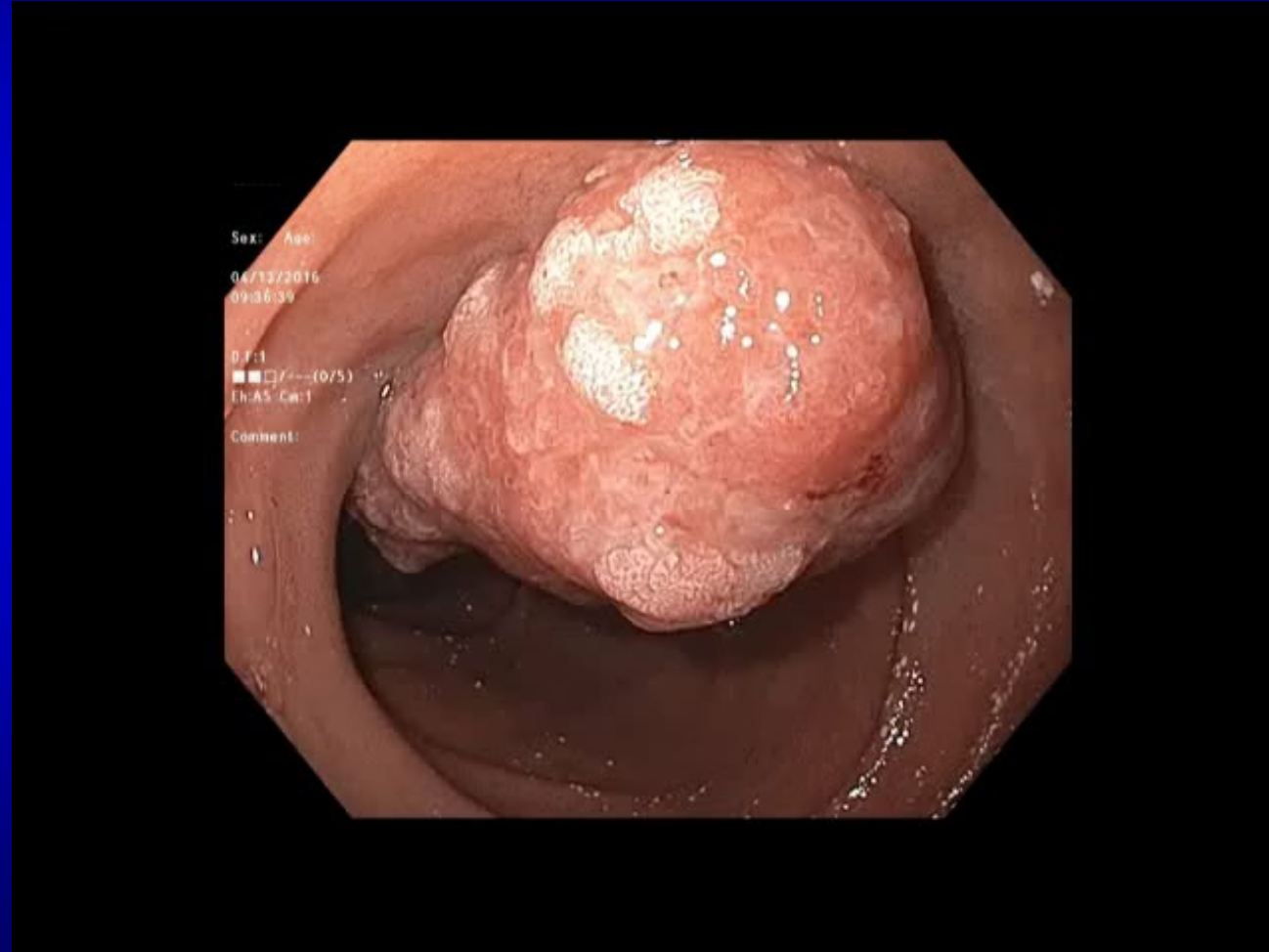
Tip

- Consider working in retroflexion

Consider working in retroflexion



Use of Cap and Coag grasper for Brisk Bleeding



Tip

- In case of bleeding
 - Use cap
 - Flood the cap with water to identify the bleeder
 - Use coagulating forceps with Soft Cag current

Coagulating Forceps and Caps



Tip anchor technique (aka Tip-in)

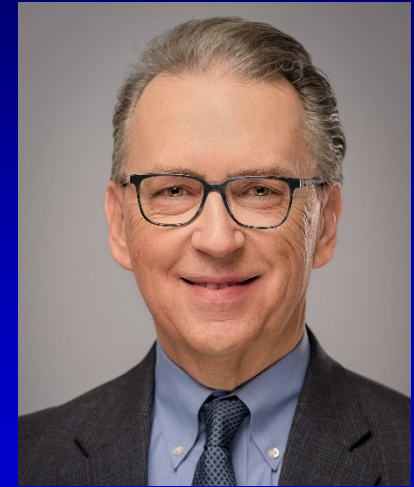


Tip-in RCT

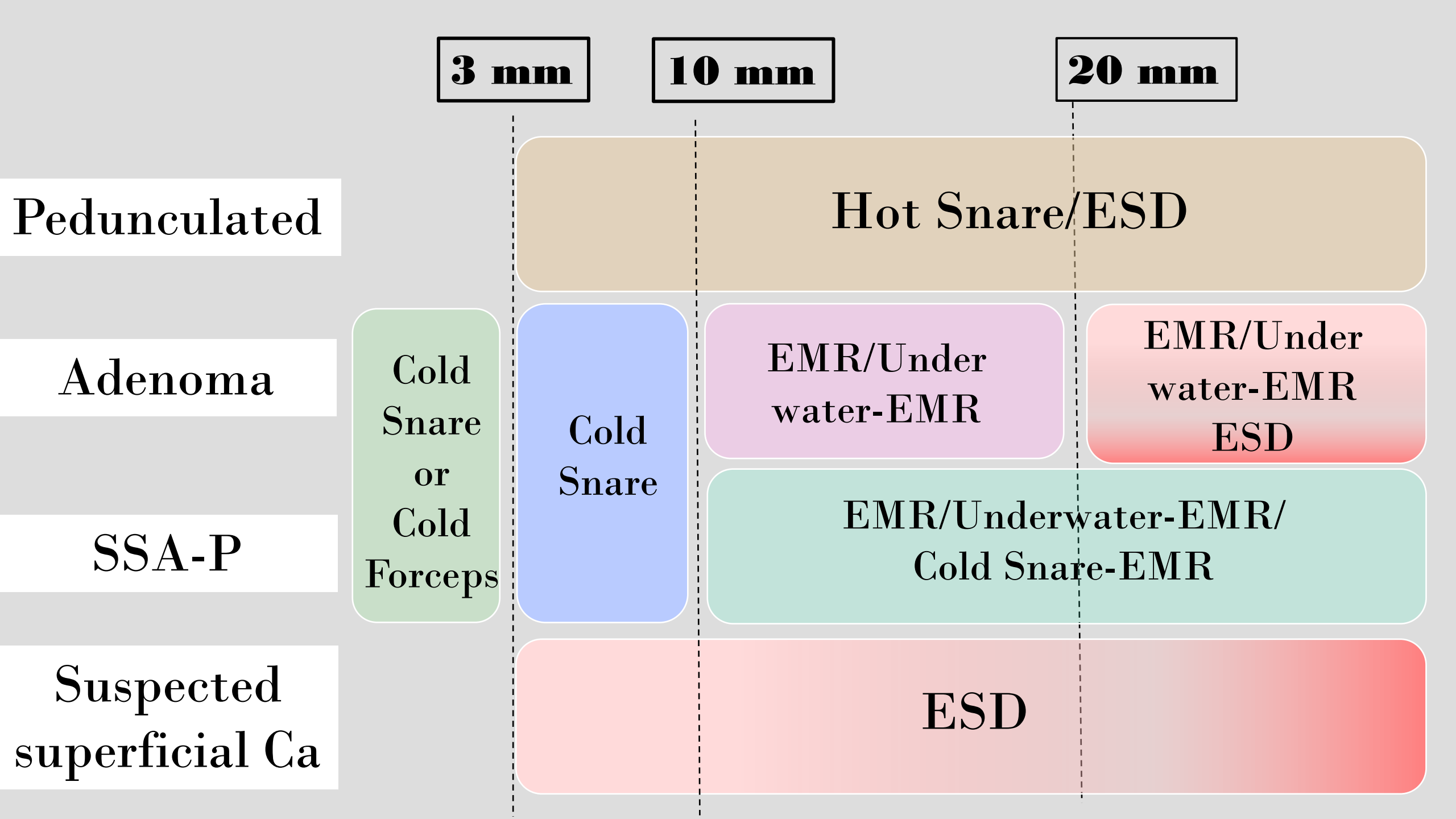
- Standard EMR vs Tip-in EMR
- 82 non-polypoid lesion size 15 to 25 mm
- En-block resection for Tip-in 90% vs Standard 73%
- No difference in procedure time or complications

Ablation may not be the ultimate solution

- Retrospective comparison
- Ablation vs no ablation after EMR of polyps ≥ 40 mm
- All procedure performed by Doug Rex



	<u>No treatment</u>	<u>Ablation</u>	
	n=68	n=133	
Recurrence	35%	9%	$p < 0.001$



3 mm

10 mm

20 mm

Pedunculated

Adenoma

SSA-P

**Suspected
superficial Ca**

Hot Snare/ESD

**Cold
Snare
or
Cold
Forceps**

**Cold
Snare**

**EMR/Under
water-EMR**

**EMR/Under
water-EMR
ESD**

**EMR/Underwater-EMR/
Cold Snare-EMR**

ESD

Conclusions

- Send to surgery only patient with biopsy proven invasive cancer
- Endoscopic resection is the primary modality for management of intramucosal carcinoma and carcinoma in situ
- Refer the patient to center with high level endoscopic resection expertise if there is diagnostic uncertainty
- Use a cap and have hemostatic forceps available
- Full armamentarium of techniques should allow endoscopic removal of the vast majority of benign and early cancer lesions