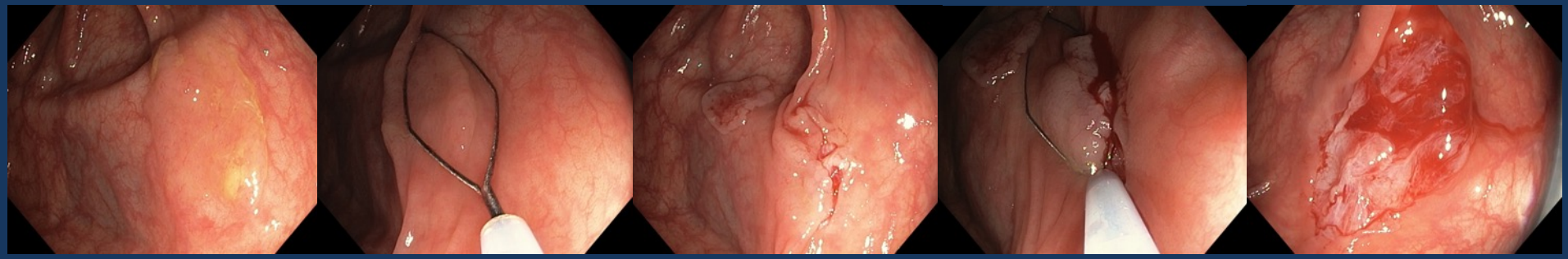


Sessile Serrated Lesions (SSLs):

Detection and Resection

Steven Heitman MD MSc FRCPC
Associate Professor of Medicine
Medical Director – Forzani & MacPhail Colon Cancer Screening Centre
Cumming School of Medicine, University of Calgary

FORZANI & MACPHAIL | COLON CANCER SCREENING CENTRE

UNIVERSITY OF CALGARY
CUMMING SCHOOL OF MEDICINE

Faculty/Presenter Disclosure

- Faculty: Steven Heitman

- Relationship with commercial interests:
  - Speakers Bureau/Honoraria: Pendopharm

Managing Potential Bias

- Relationship did not affect my choices in developing any content

- Relationship is unrelated to the presentation


SSLs

Outline

- Overview and identification of SSLs
- SSLs with dysplasia (SSL-D)
- Resecting SSLs
  - cold snare: day-to-day workhorse

Sessile Serrated Lesions are Important

Classical adenoma-carcinoma sequence *vs*

serrated pathway of colorectal carcinogenesis:

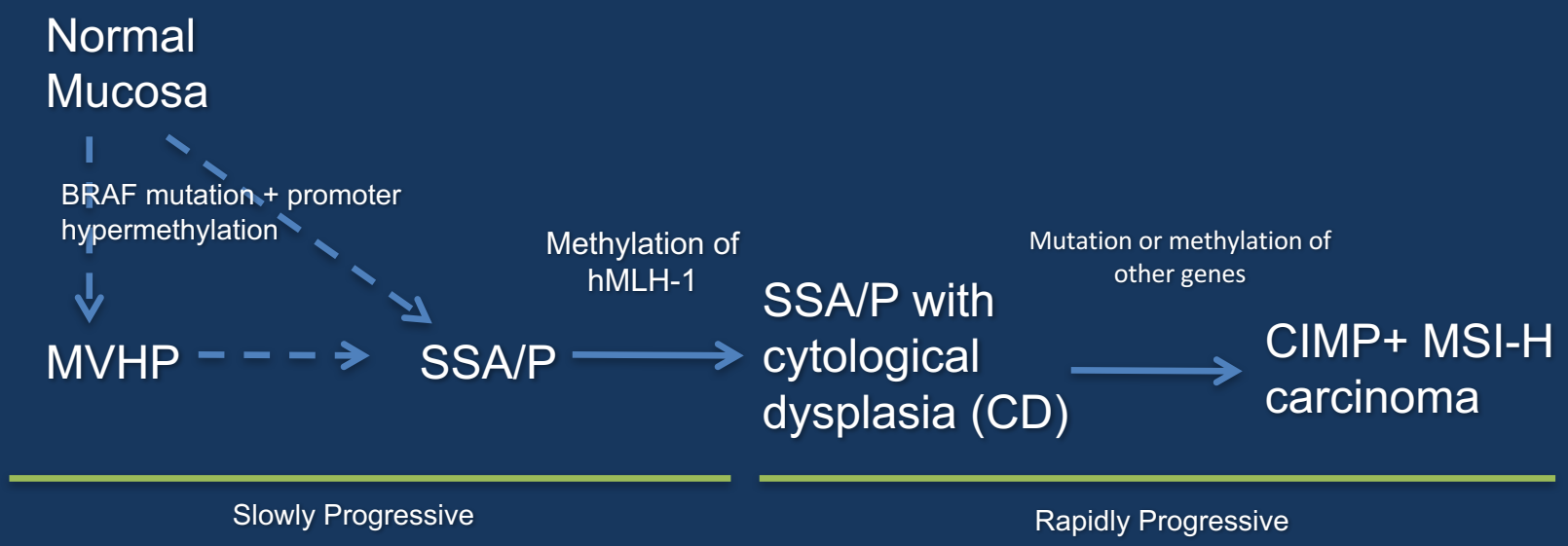
- ~ 15-30% of colorectal cancers arise from SSLs

- Distinct molecular and genetic abnormalities
  - CpG island methylator phenotype (CIMP)
  - Methylation-induced silencing of tumour suppressor gene MLH-1
  - DNA mismatch repair deficiency (MMRD) and MSI

- Interval cancers: like SSLs - disproportionately proximal, share similar molecular/genetic markers = SSLs implicated

Bettington et al. Gut 2017;66: 99-106
Burgess NG, et al. Gut 2016; 65: 437–446
O'Brien MJ, et al. Histopathology 2015; 66: 49–65
Hazewinkel Y, et al. Endoscopy 2014; 46: 219–224

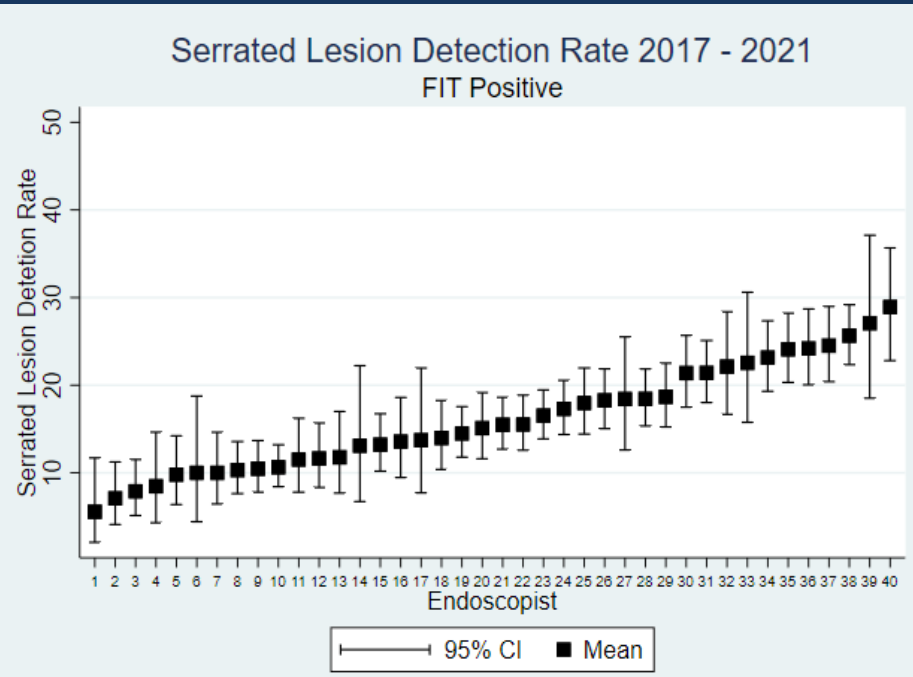
Serrated Pathway of Colorectal Carcinogenesis

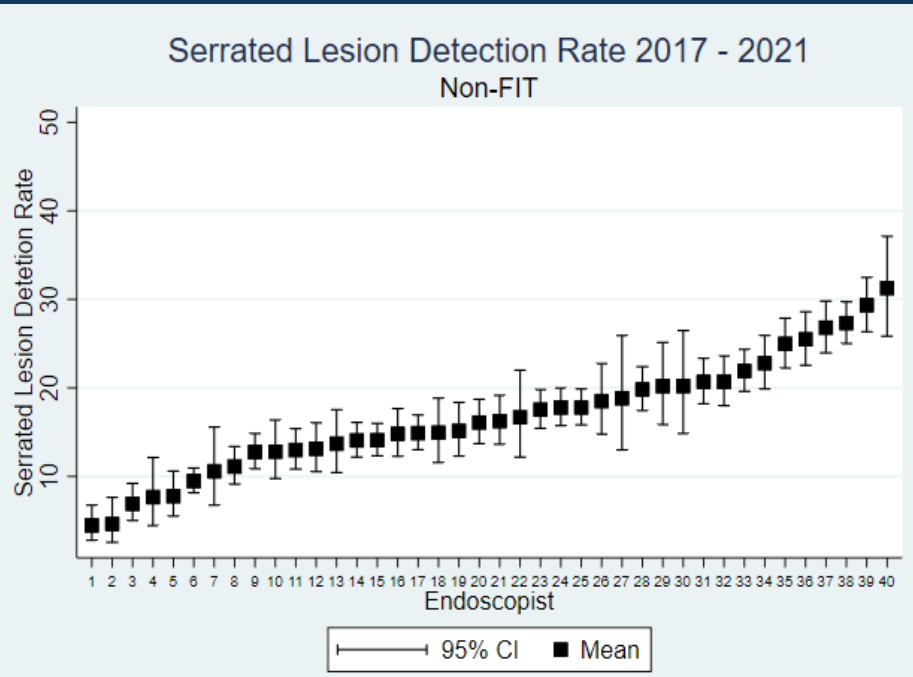


Snover, D.C., Update on the serrated pathway to colorectal carcinoma., Human Pathology 2011; 42 (1) : 1–10

Colonic Chameleons

High variability in detection rates among endoscopists…





Forzani & MacPhail Colon Cancer Screening Centre: unpublished and not for distribution

Incomplete Polyp Resection During Colonoscopy—Results of the Complete Adenoma Resection (CARE) Study

HEIKO POHL,[1,2] AMITABH SRIVASTAVA,[3] STEVE P. BENSEN,[2] PETER ANDERSON,[2] RICHARD I. ROTHSTEIN,[2] STUART R. GORDON,[2] L. CAMPBELL LEVY,[2] ARIFA TOOR,[2] TODD A. MACKENZIE,[4] THOMAS ROSCH,[5] and DOUGLAS J. ROBERTSON[1,2]

[1]Department of Gastroenterology, VA Medical Center, White River Junction, Vermont; [2]Department of Gastroenterology, Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire; [3]Department of Pathology, Brigham and Women's Hospital, Boston, Massachusetts; [4]Geisel School of Medicine at Dartmouth, Section of Epidemiology and Biostatistics, Department of Community and Family Medicine, Hanover, New Hampshire; and [5]Department of Interdisciplinary Endoscopy, University Hospital Hamburg-Eppendorf, Germany

Gastroenterology 2013;144:74-80

- Incomplete resection is common (10% overall among 346 polyps 5-20 mm)
  - CARE study endoscopists knew they were being observed
- Polypectomy is highly operator dependent: 6.5% - 23% IR rate
- Incomplete resection twice as likely for lesions 10-20mm vs 5-9mm.
- Serrated lesions ~4x more likely to be incompletely resected compared to adenomas
  - 30% overall
  - 48% 10-20mm

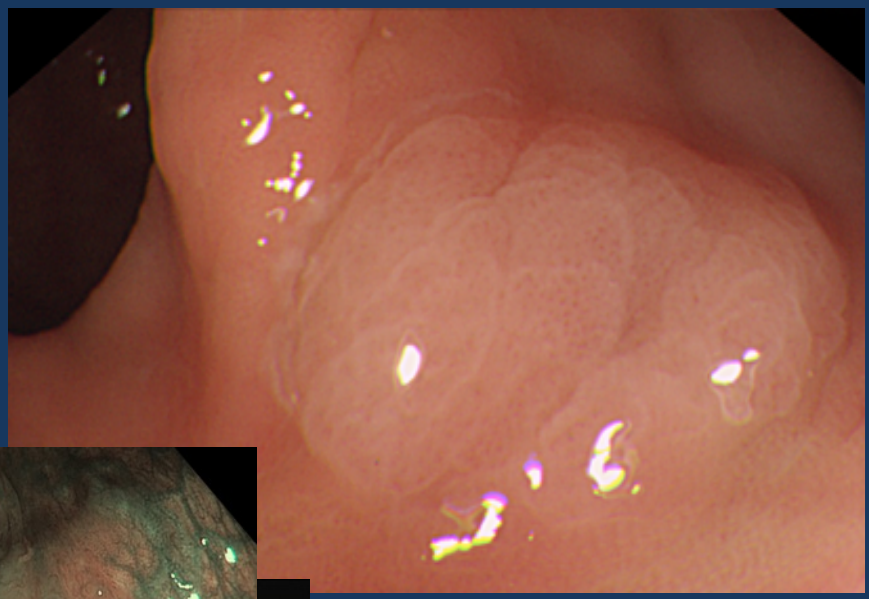
Pse its levoepralese ?

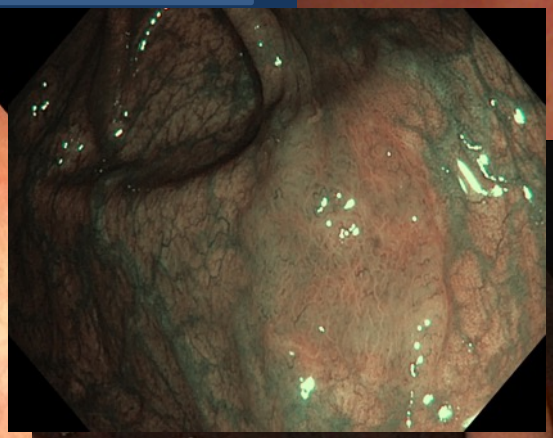
Detection of SSLs

Suspicious endoscopist with a trained eye…

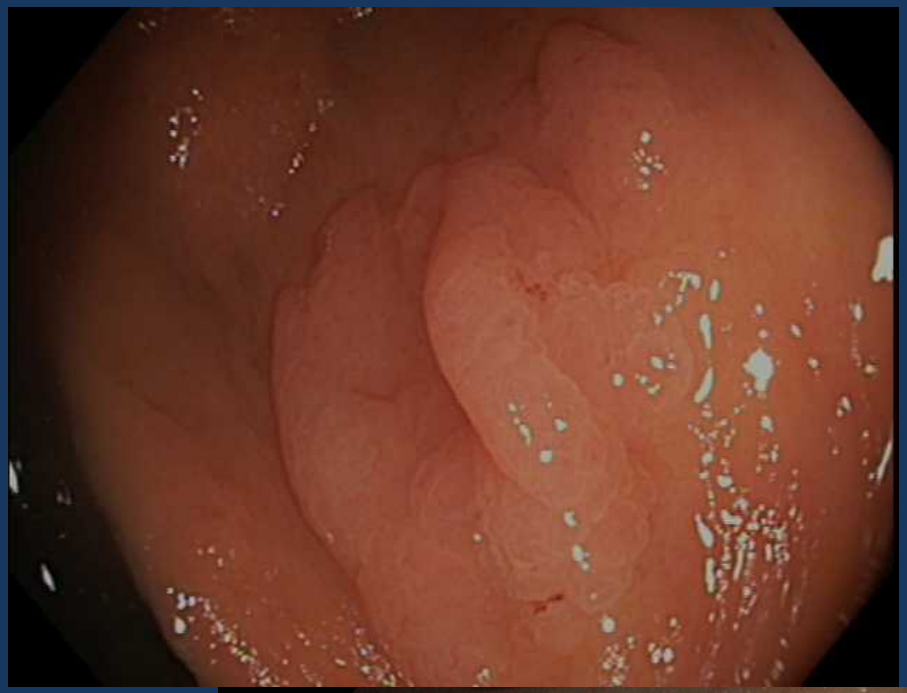
Characteristics of SSLs

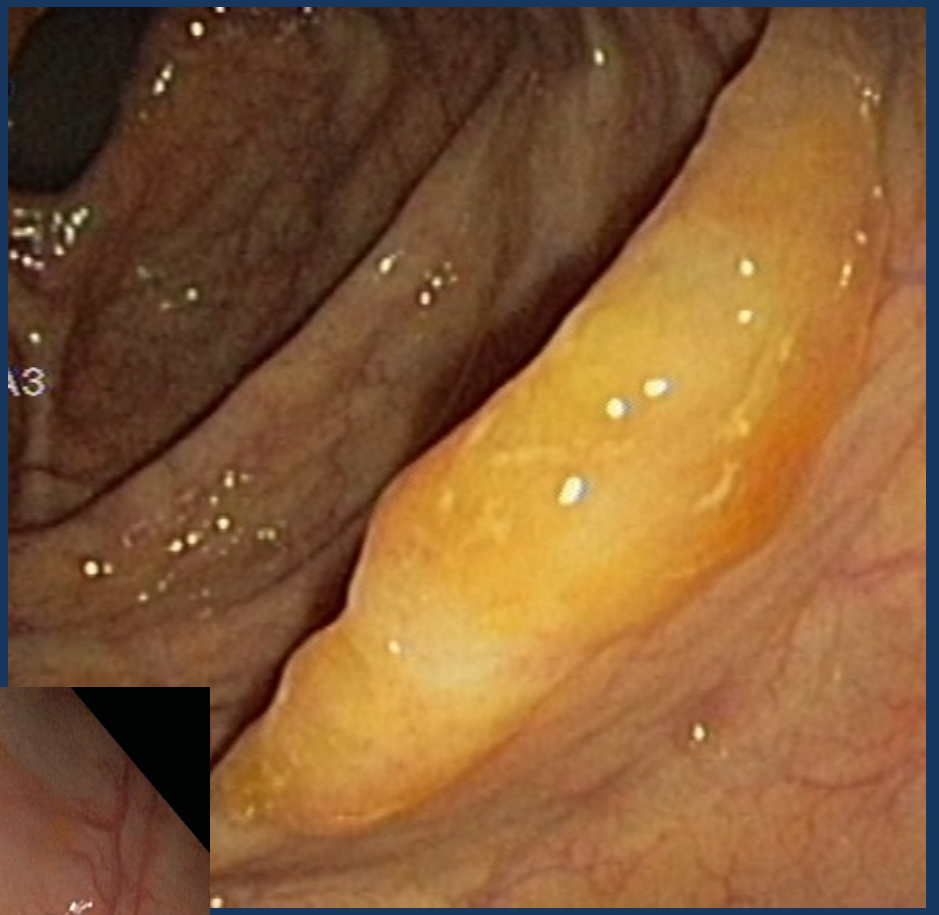
- cloud-like surface
- indistinct borders
- irregular shape
- dark spots inside crypts
- mucous cap
- lacy vessels
- lesion paler than the surrounding mucosa
  (under narrow band imaging)



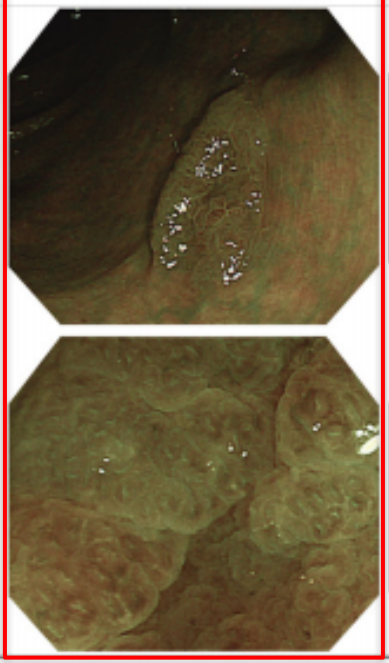
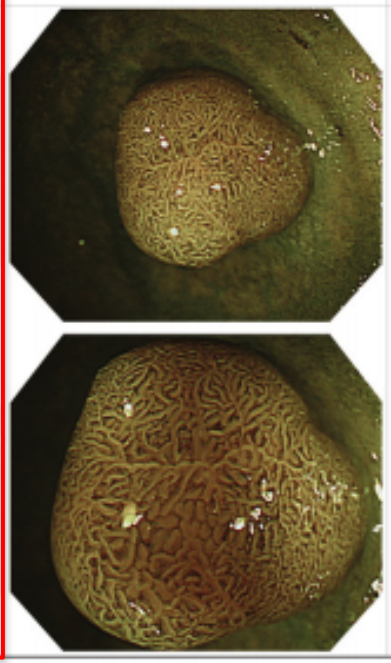
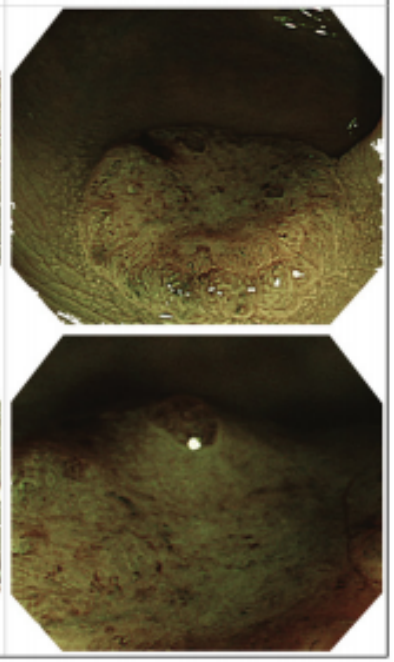


Hazewinkel et al. GIE 2013;77(6):916-24





NBI International Colorectal Endoscopic (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 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 structure surrounded by brown vessels**	Amorphous or absent surface pattern
Most likely pathology	**Hyperplastic**	**Adenoma*** **	**Deep submucosal invasive cancer**
Examples			

* Can be applied using colonoscopes with or without optical (zoom) magnification

** These structures (regular or irregular) may represent the pits and the epithelium of the crypt opening.

*** Type 2 consists of Vienna classification types 3, 4 and superficial 5 (all adenomas with either low or high grade dysplasia, or with superficial submucosal carcinoma). The presence of high grade dysplasia or superficial submucosal carcinoma may be suggested by an irregular vessel or surface pattern, and is often associated with atypical morphology (e.g., depressed area).

Hayashi et al. *Gastrointest Endosc* 2013

Integrative classification system: WASP

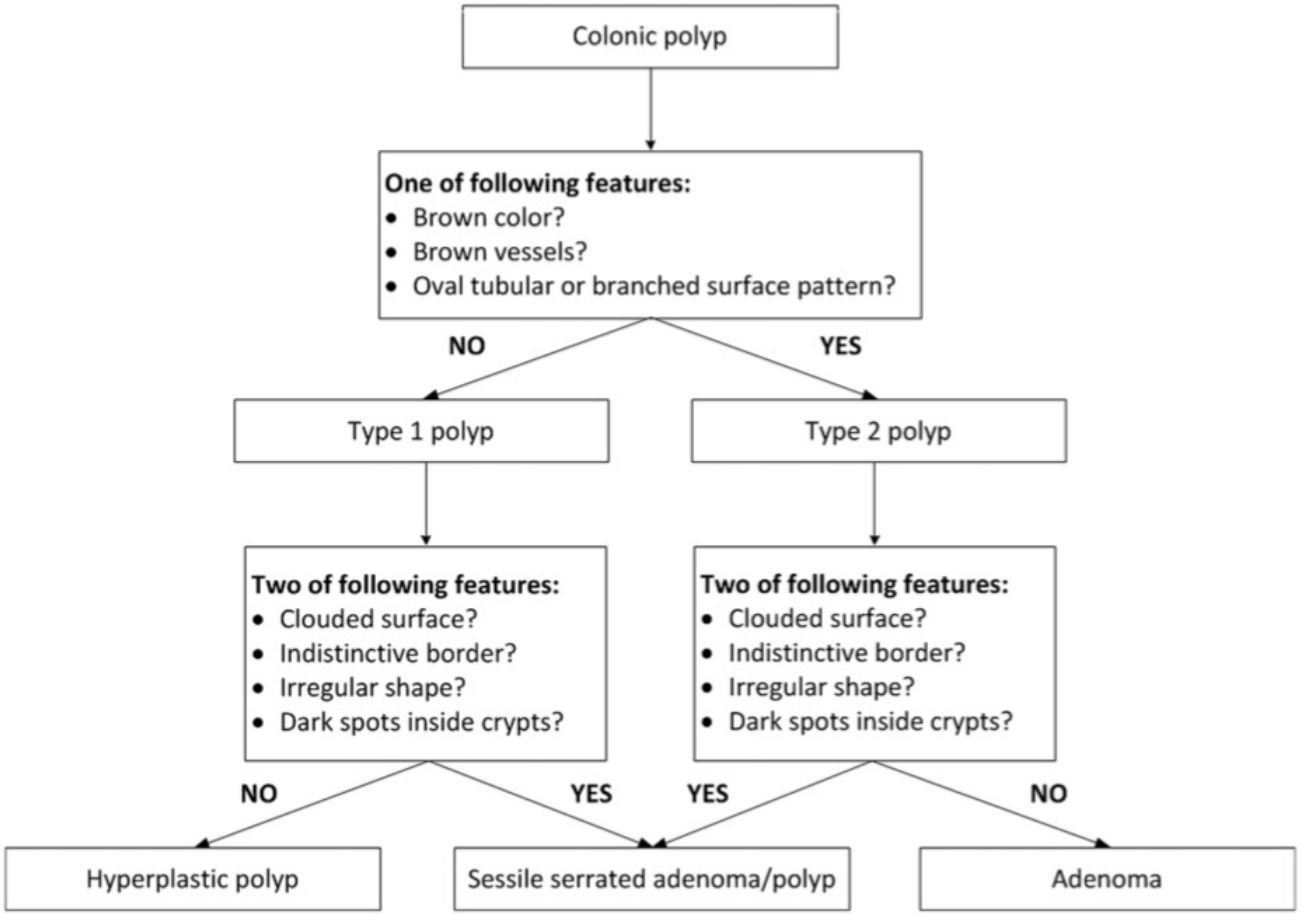
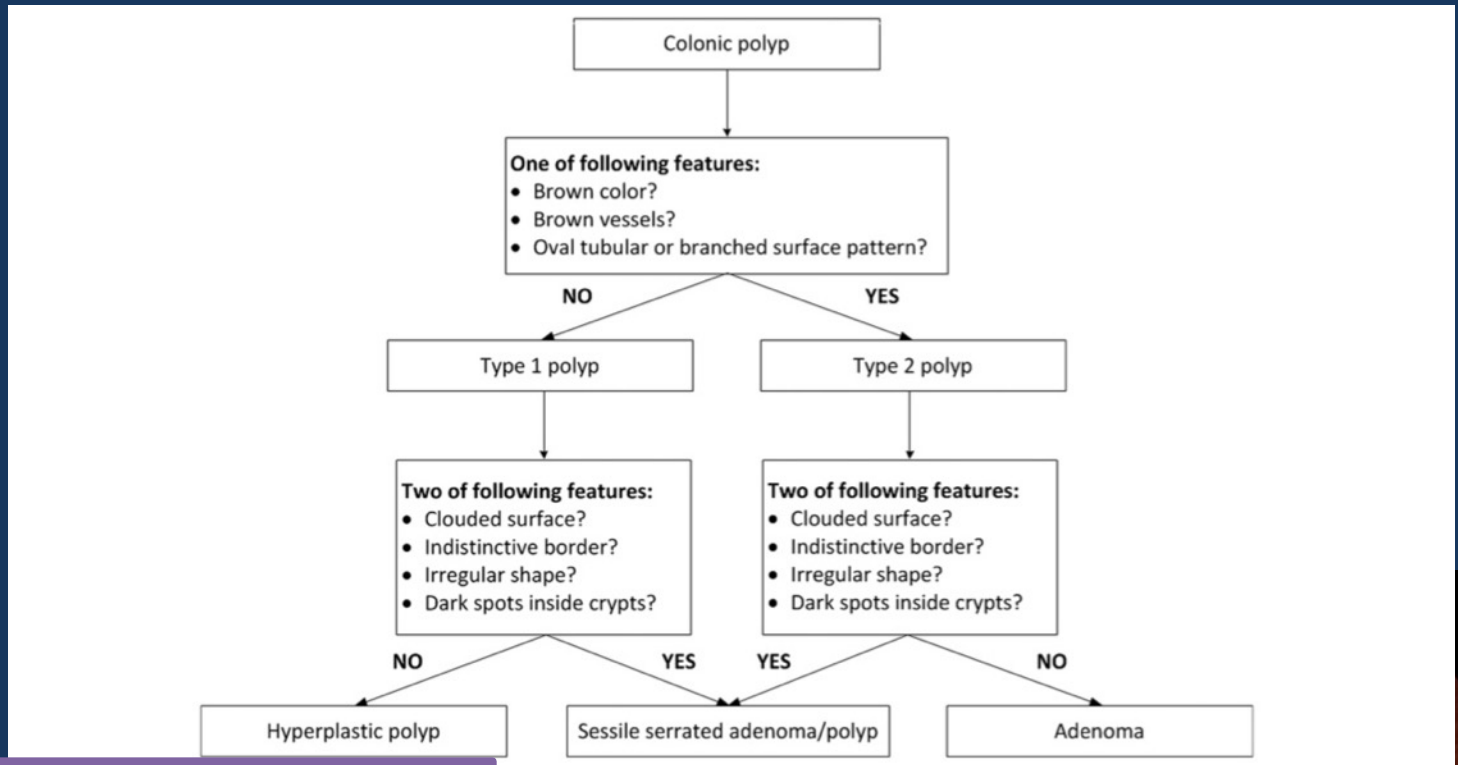


Figure 1 The WASP classification: method for optical diagnosis of hyperplastic polyps, sessile serrated adenomas/polyps and adenomas based on the NICE criteria and the Hazewinkel criteria in a stepwise approach. NICE, NBI International Colorectal Endoscopic; NBI, narrow band imaging; WASP, Workgroup serrAted polypS and Polyposis.

Ijspeert JEG et al. Gut 2016, 65(6), 963-970

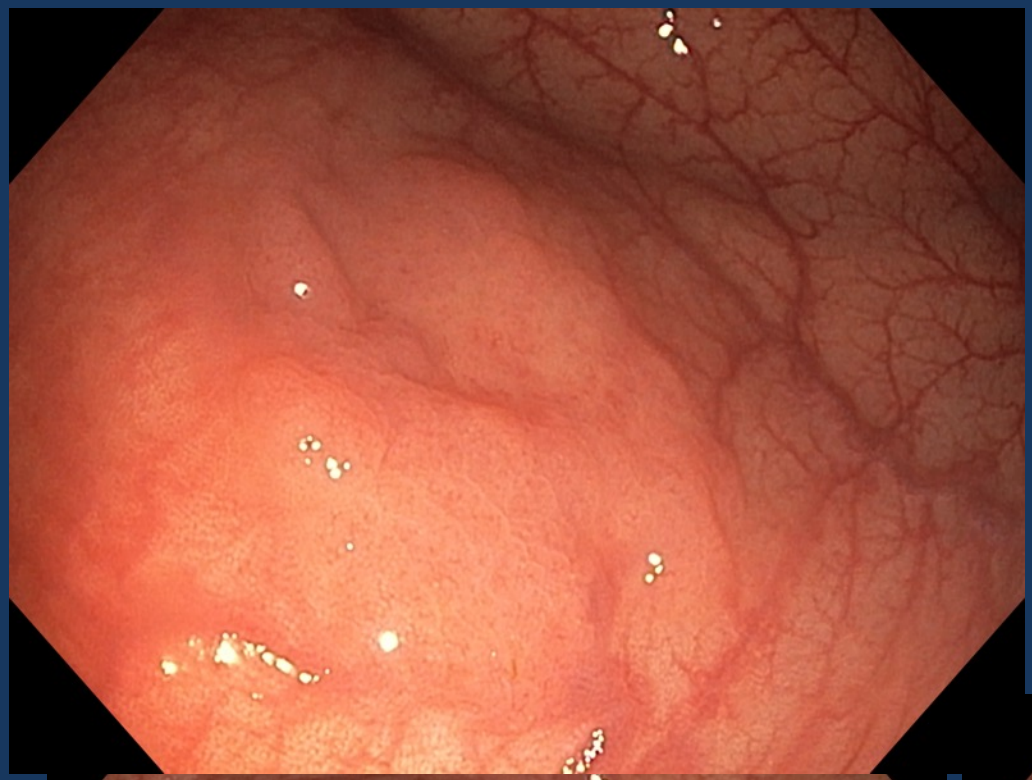
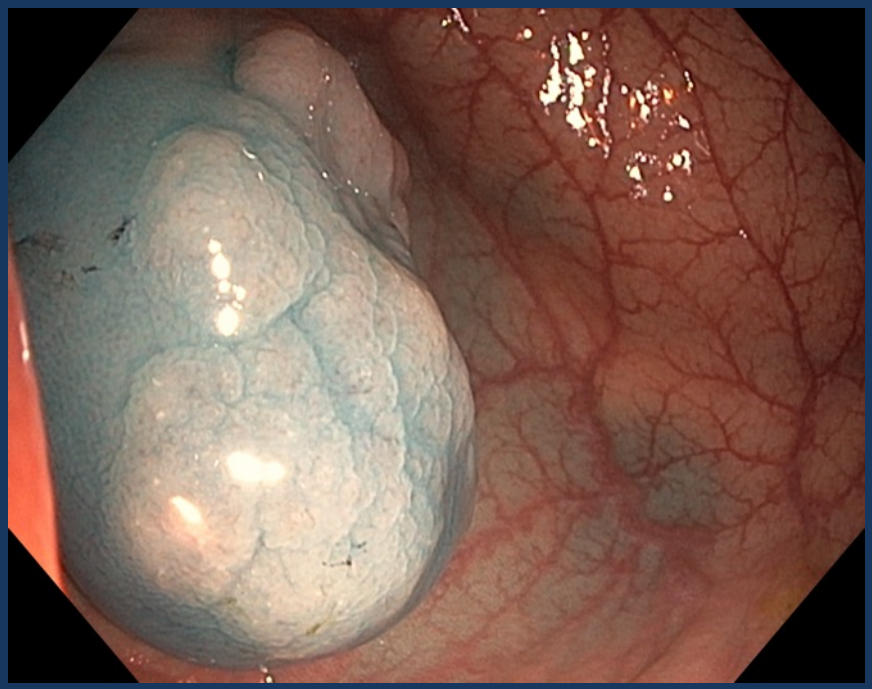
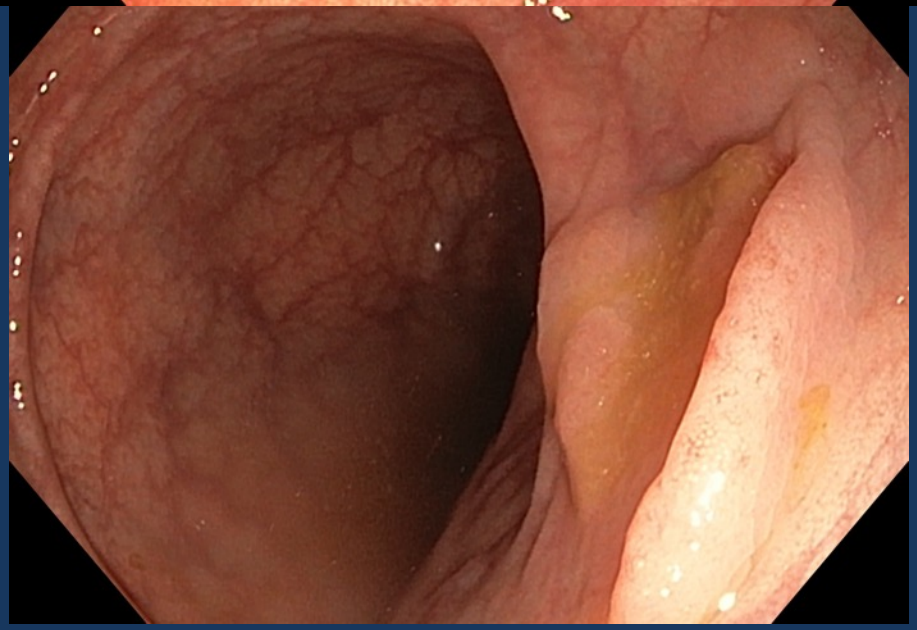
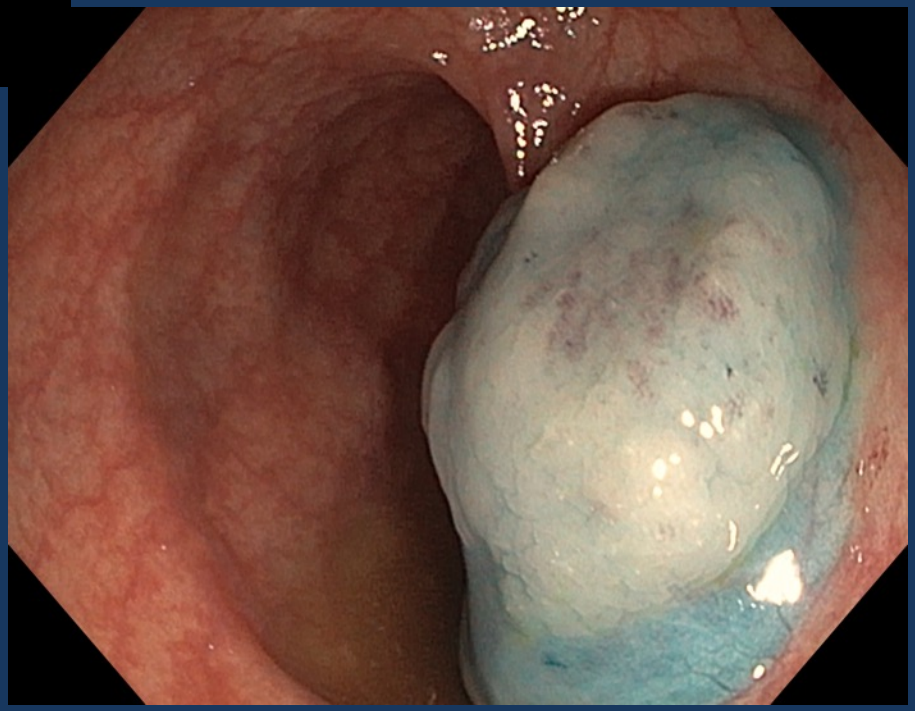


tical diagnosis of hyperplastic polyps, sessile serrated adenomas/polyps and adenomas based on stepwise approach. NICE, NBI International Colorectal Endoscopic; NBI, narrow band imaging;

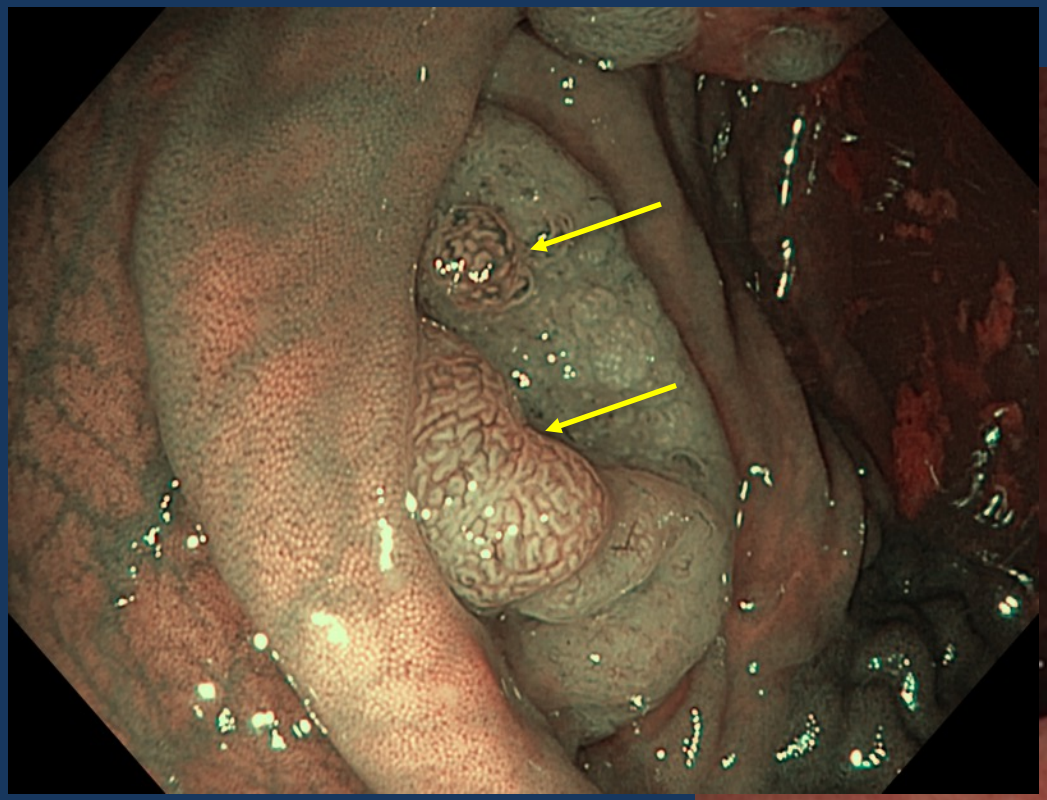
WASP Classification

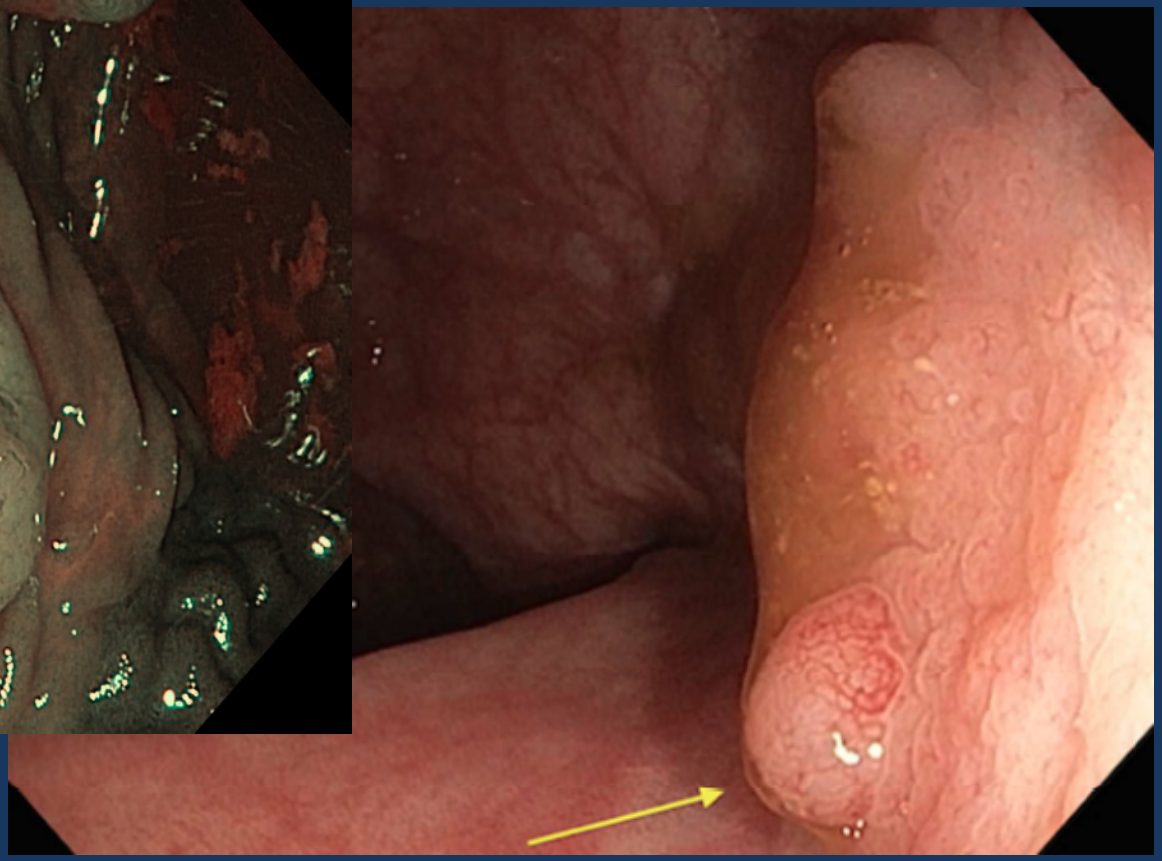
Type I

- ✓ Cloudy Surface
- ✓ Indistinct Border
- ✓ Irregular Shape
- \- Dark spots inside crypts


ATTENTION
PLEASE!

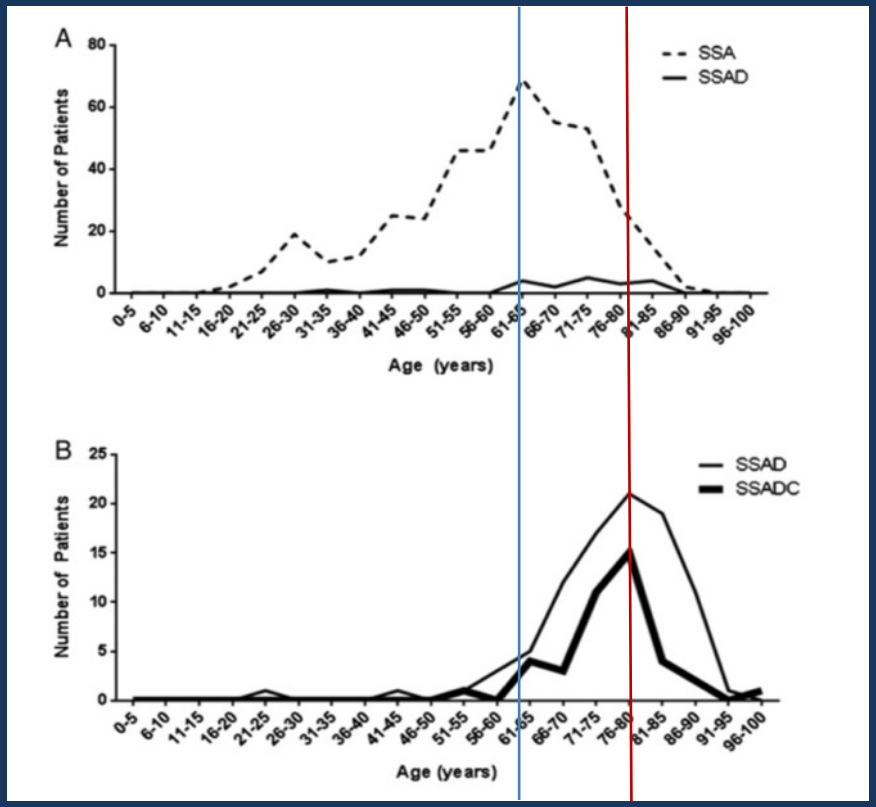




These are NOT small tubular adenomas!

Dysplasia within sessile serrated lesions: significance and detection

- SSLs have a long dwell time (~17 years) prior to developing dysplasia
  - SSLs with dysplasia (SSL-D) are usually found in older patients
  - the age of patients with SSL-D closely matches the age of individuals with serrated pathway colorectal cancer (CRC)



Bettington M, et al. Gut. 2017;66(1):97-106

Clinical significance of SSL-D

- Mistaken identify: SSL-D mistaken for a harmless adenoma

- Once specific molecular changes (hyper-methylation of MLH1) occur SSL-D progress rapidly to CRC

- Resection of dysplastic portion alone:

  = high risk lesion with potential for rapid transformation left behind

  Post Colonoscopy Colorectal Cancer (PCCRC)/Interval Cancer

Burgess NG, Tutticci NJ, Pellise M, Bourke MJ. Gastrointest Endosc. 2014 Aug;80(2):307–10.


T2 N1 Serrated pathway cancer at the site of previous “adenoma” resection

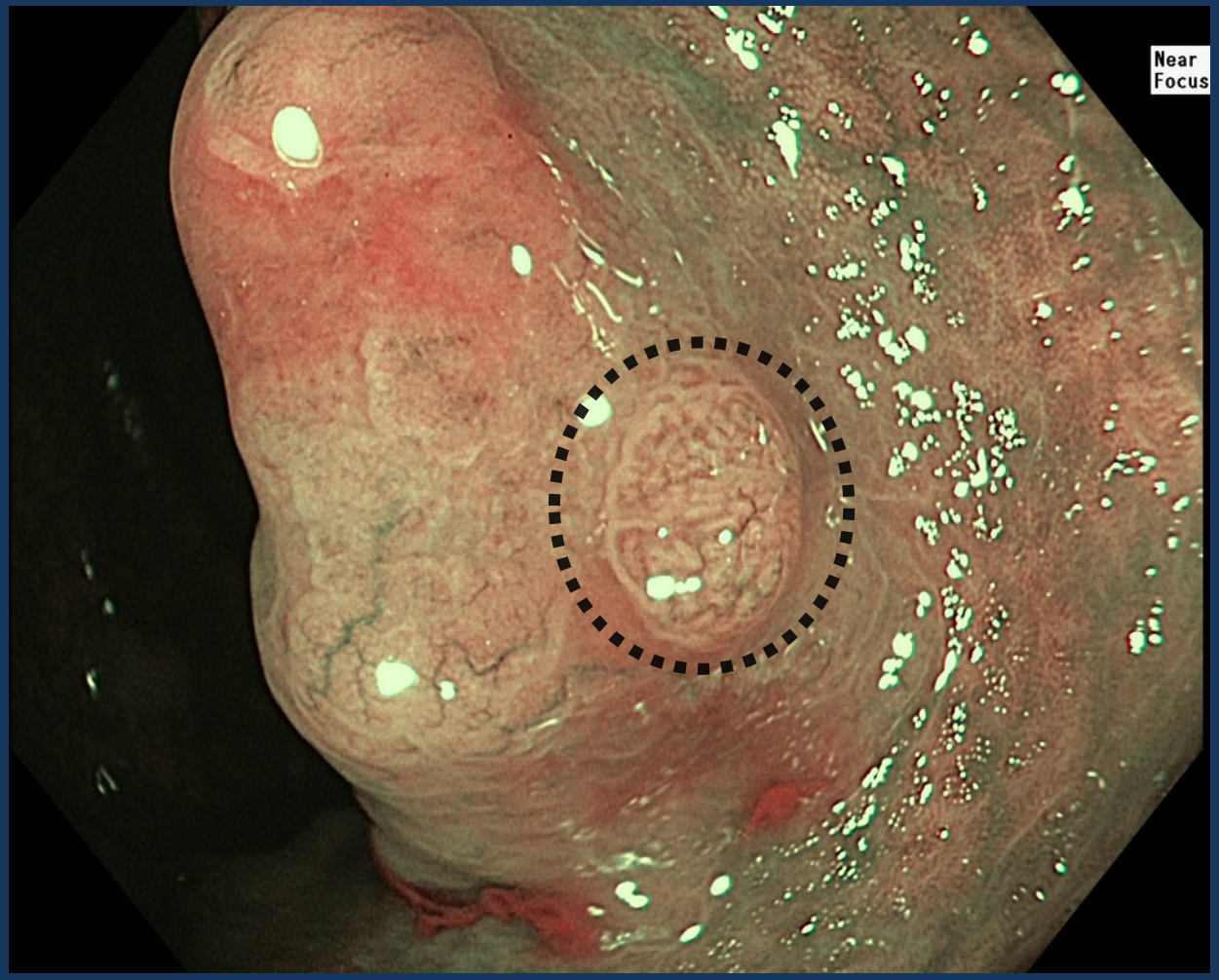
SSL-D?

- Demarcated areas with adenomatous pit pattern (Kudo III/IV; NICE II) amongst the serrated tissue (usually at periphery)

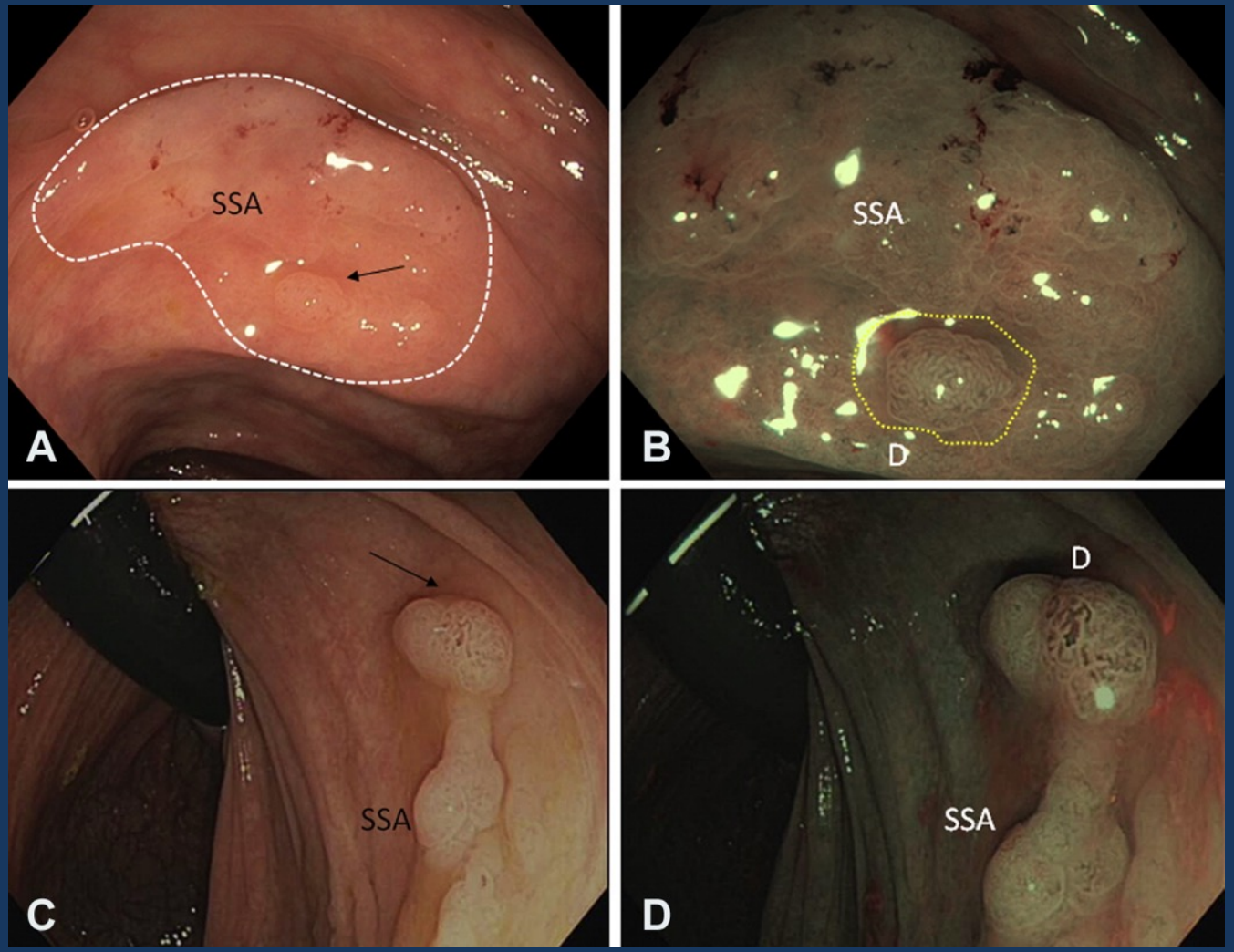
Tate DJ et al Gastrointest Endosc. 2018 Jan;87(1):222–2

SSP-D?

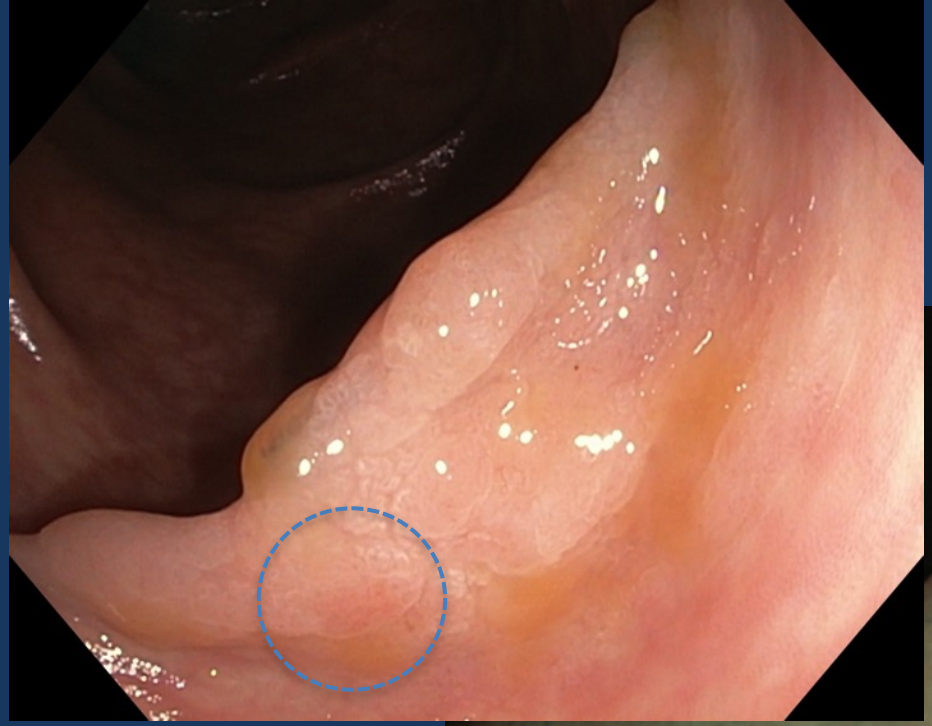
- If detected = SSP-D

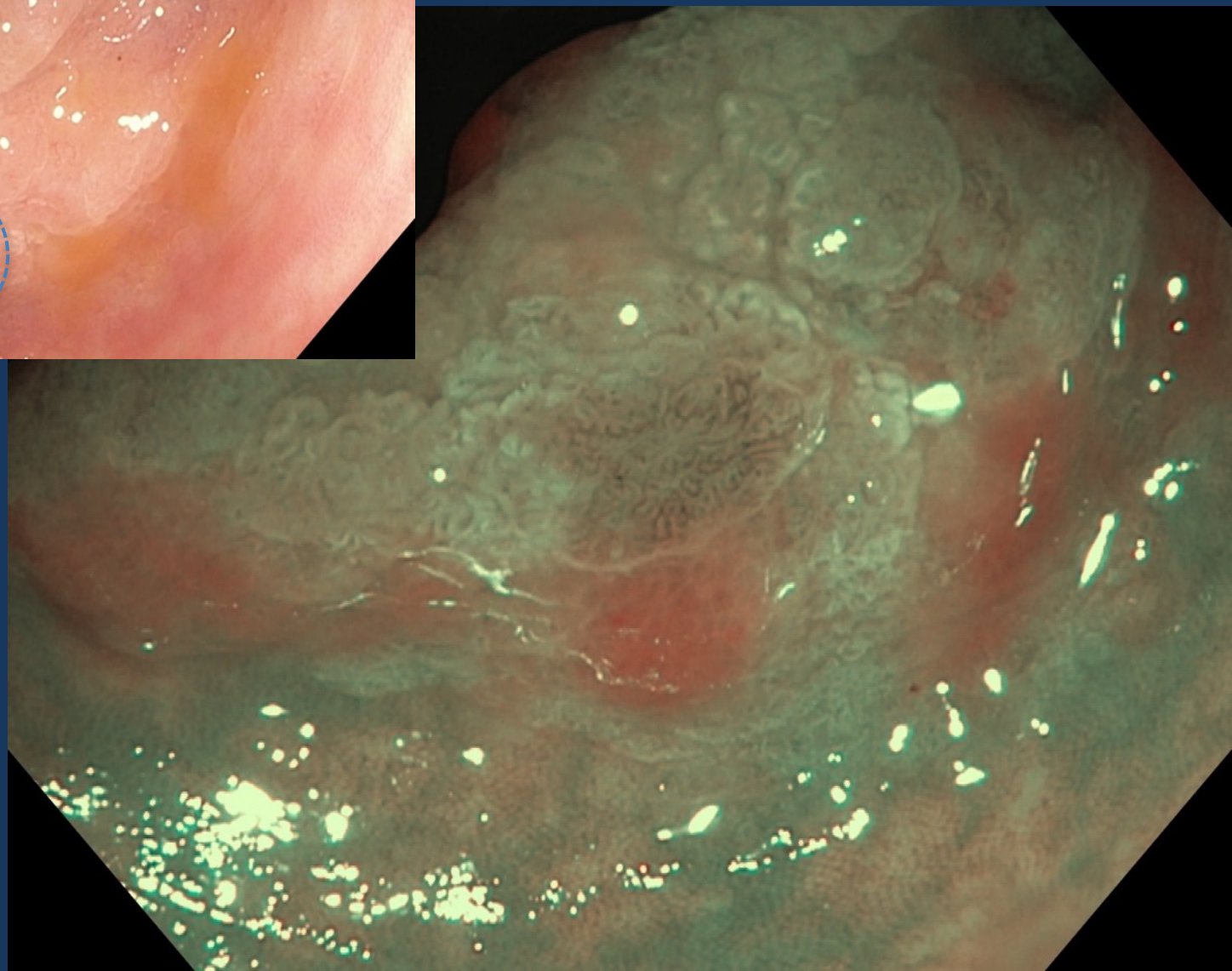


Tate DJ et al. Gastrointest Endosc. 2018 Jan;87(1):222–2



Nanda KS Bourke MJ et al. Caught in the act: endoscopic characterization of sessile serrated adenomas with dysplasia GIE 2014;79(5):864-870





Optimal Polypectomy Method

- Time effective
- Cost effective
- Safe
- Permits complete lesion resection
  - minimizing recurrence/residual polyp
- Accurate histopathological assessment

Burgess and Bourke. *Dig Endosc* 2016

Cold Snare Polypectomy (CSP)

- CSP recommended for both diminutive (≤ 5mm) and small (6-9mm) lesions
  - High rates of complete resection
  - Very favourable safety profile

USMSTF Clinical Practice Guideline: Kaltenbach et al. *Gastroenterology* 2020;158:1095-1129

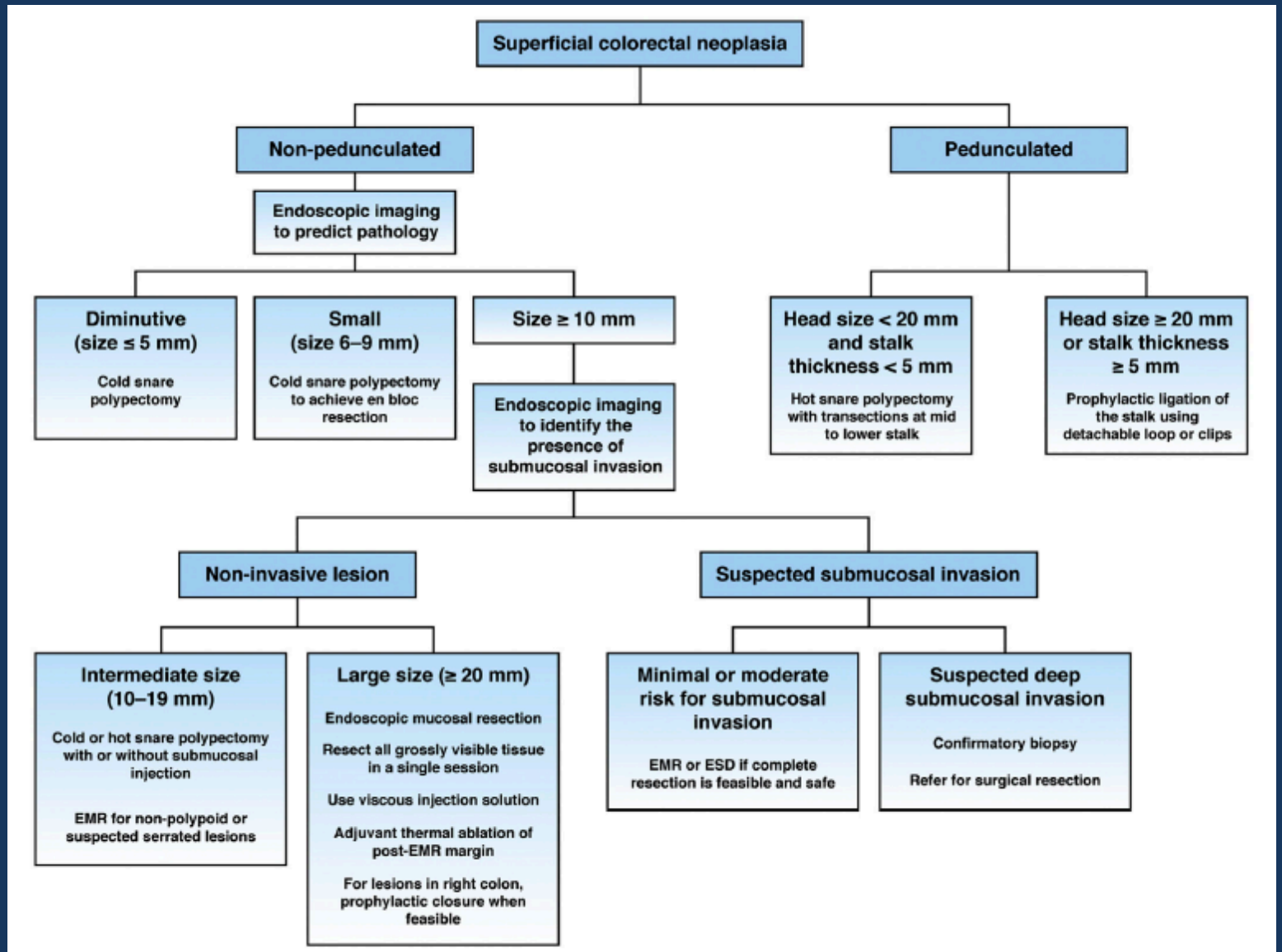


Figure 5. Algorithm for the management of colorectal lesions.

USMSTF Clinical Practice Guideline: Kaltenbach et al. *Gastroenterology* 2020;158:1095-1129

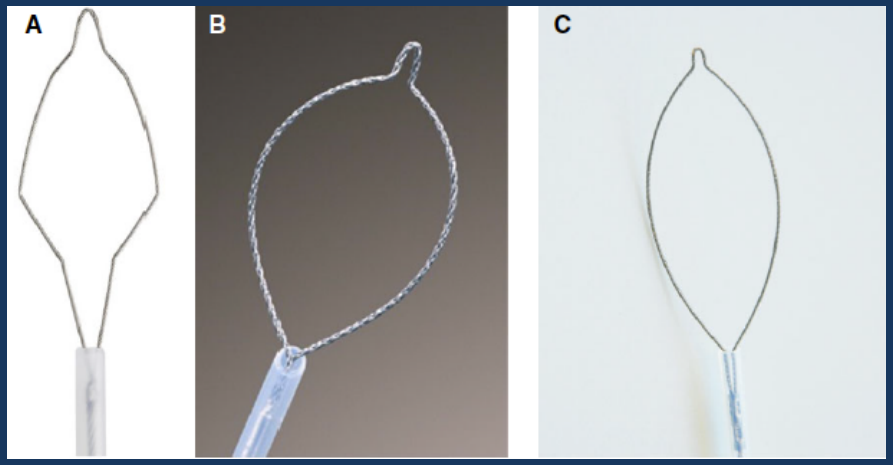
CSP Technique

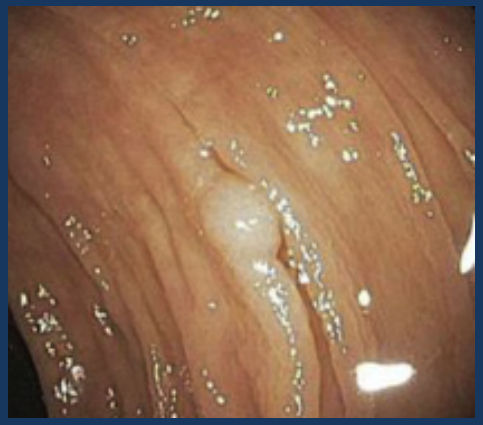
- Polyp positioned at 6 o'clock position (ideally)
- Snare opened and positioned over the polyp
- Gentle suction to reduce colonic distention
- Tip of endoscope deflected down - 'sink-in of the snare'
- Closure ensnaring 2-3mm or normal mucosa around polyp
- Polyp retrieval
- Expansion of defect using water irrigation

Uraoka et al. *Dig Endosc* 2014
Hewitt DG. *Gastroenterol Clin N Am* 2013

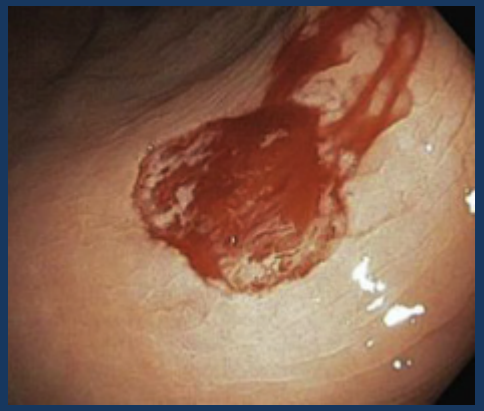
CSP Snare Selection

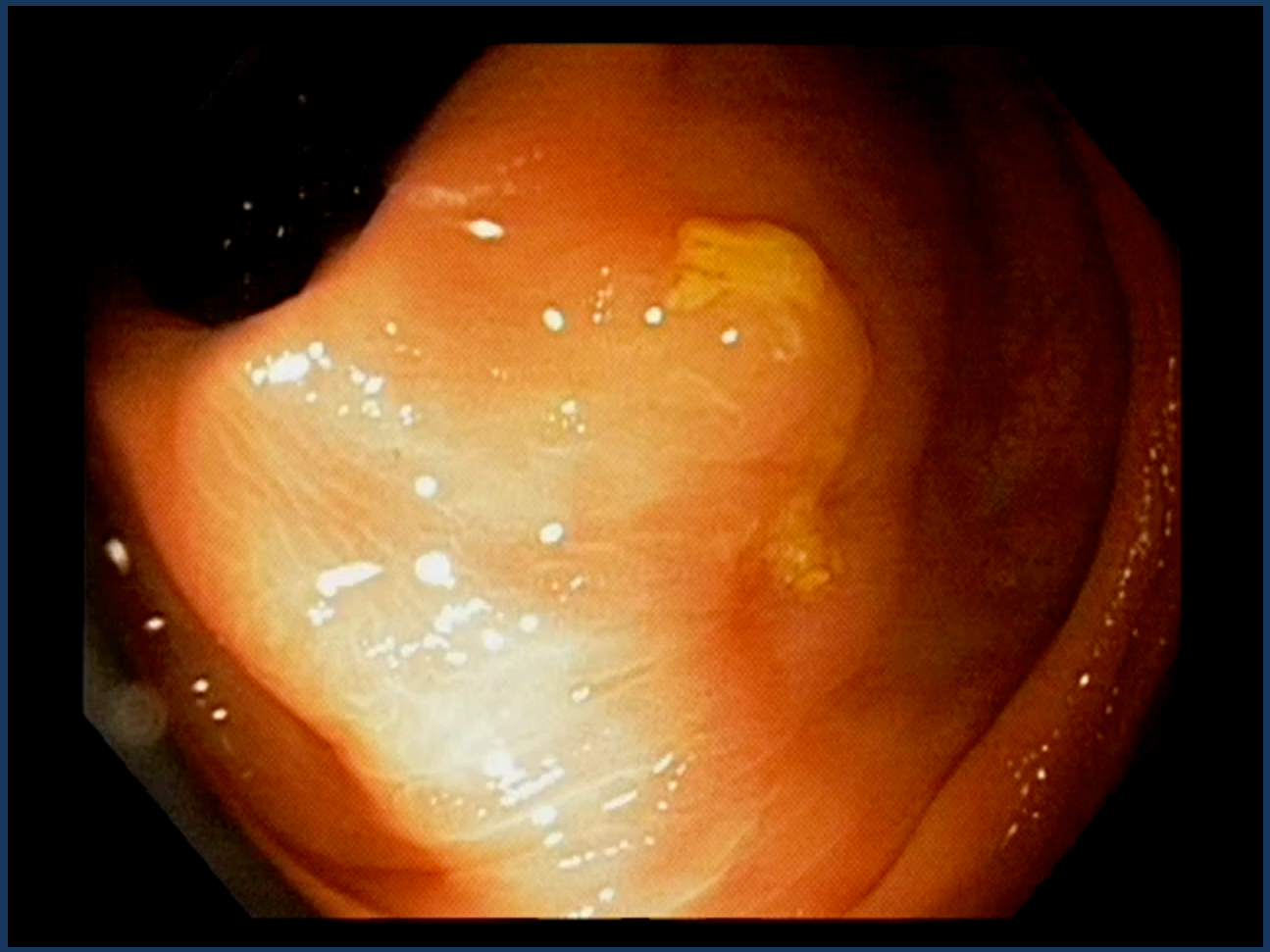
- Choice of snare?
  - Small size (≤ 15 mm)
  - Stiff
  - Thin wire (0.3 mm)









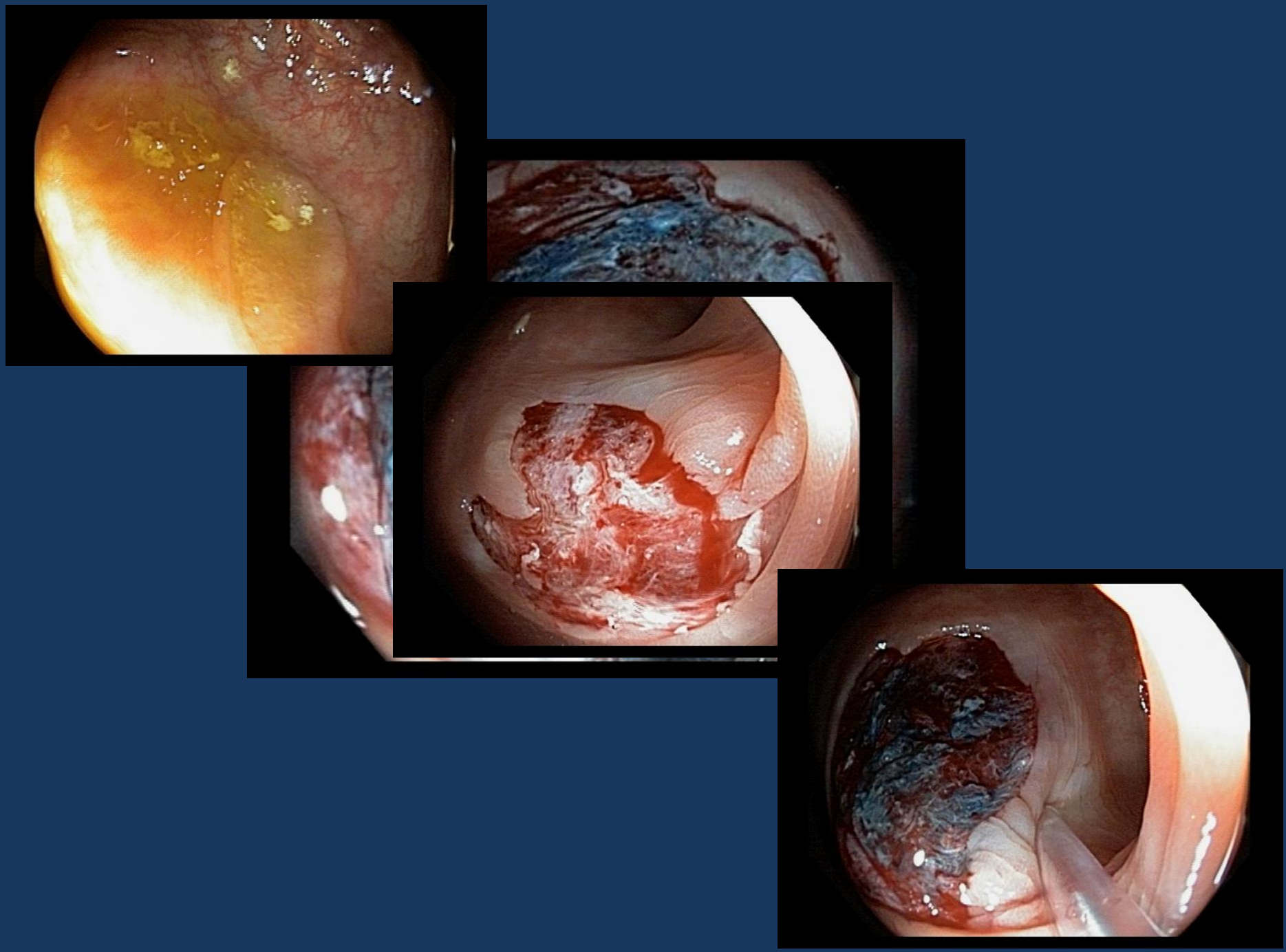


What About Post-CSB Bleeding?

- Do
- Im
  ow
  …
- De

…approaching 0%; << 1%

Kawamura et al. Gut 2018
Yamashina et al. Endosc Int Open 2017



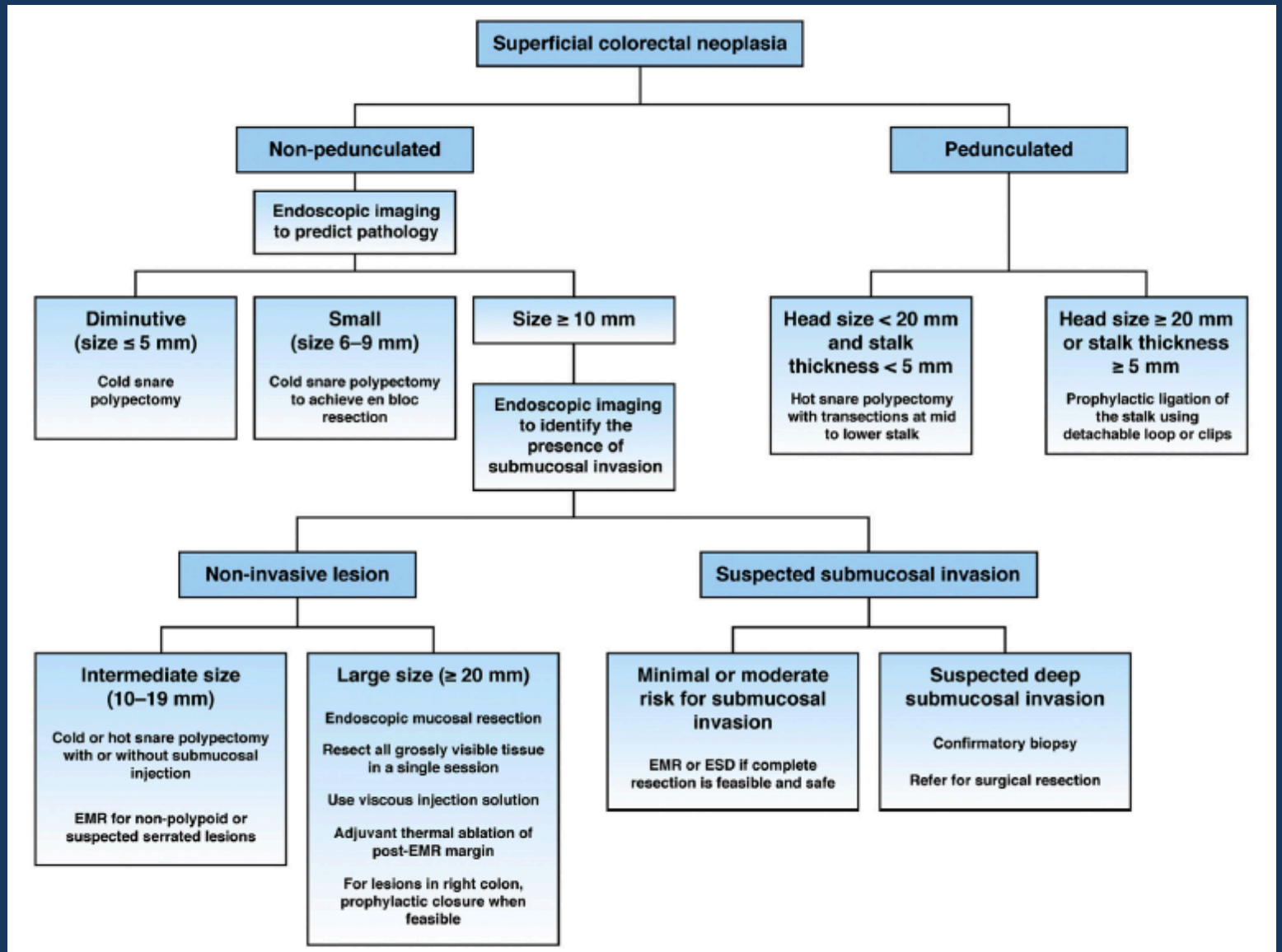


Figure 5. Algorithm for the management of colorectal lesions.

USMSTF Clinical Practice Guideline: Kaltenbach et al. *Gastroenterology* 2020;158:1095-1129

Take home messages

- Train your eyes and be a suspicious endoscopist
- Beware of the dysplastic SSL (SSL-D)
- Become expert in CSP
  - extremely safe and effective
  - ideal for SSLs (*EMR for SSL-D)
  - > 95% of our day-to-day work

Questions?

Resecting large SSLs