POLYPECTOMY 2026

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ALBERTA SOCIETY OF ENDOSCOPIC PRACTICE
ASEP

Objectives

- Ways to optimize uncomplicated polypectomy
  - Assessment and characterization
  - Endoscopy or surgery?
- Pro’s and Con’s of different polypectomy techniques
- Essentials of complex polypectomy / EMR
- Injection and Tattooing

Colon Cancer Prevention

- **Removal of adenomatous polyps can prevent CRC**
  - reducing incidence and mortality of CRC by ~ 85-90% and 50%, respectively, in long-term follow up[1,2]
- How do we optimize our success at polyp detection and resection ?
  - High quality colonoscopy
  - Polyp assessment, complete resection*

1.Winawer et al. NEJM 1993. 329:1977-1981
2.Zauber et al. NEJM 2012. 366:687-696

Polyp Detection

Good Prep

- Split or same day preps
- High volume (4L) if bad prep risk factors

Complete examination

- Mucosal exposition
- Position changes
- Adequate withdrawal time
- 2nd look in ascending colon

CADe

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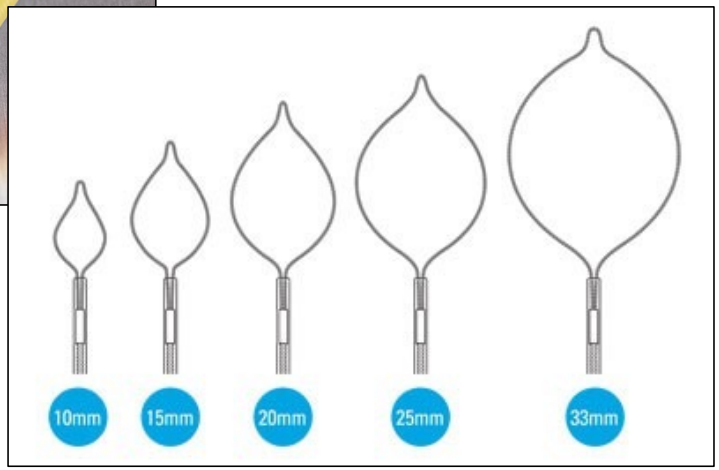
Classification of Polyps

- Endoscopy description is a key quality metric
- Location
  - Estimation of region vs. cm from anal verge
- Size
  - Use measurements (mm) NOT vague descriptors (e.g.. Diminutive, small, large, gigantic…)
- Morphology
  - Sessile, pedunculated, granularity

- Is it amenable to endoscopic resection?

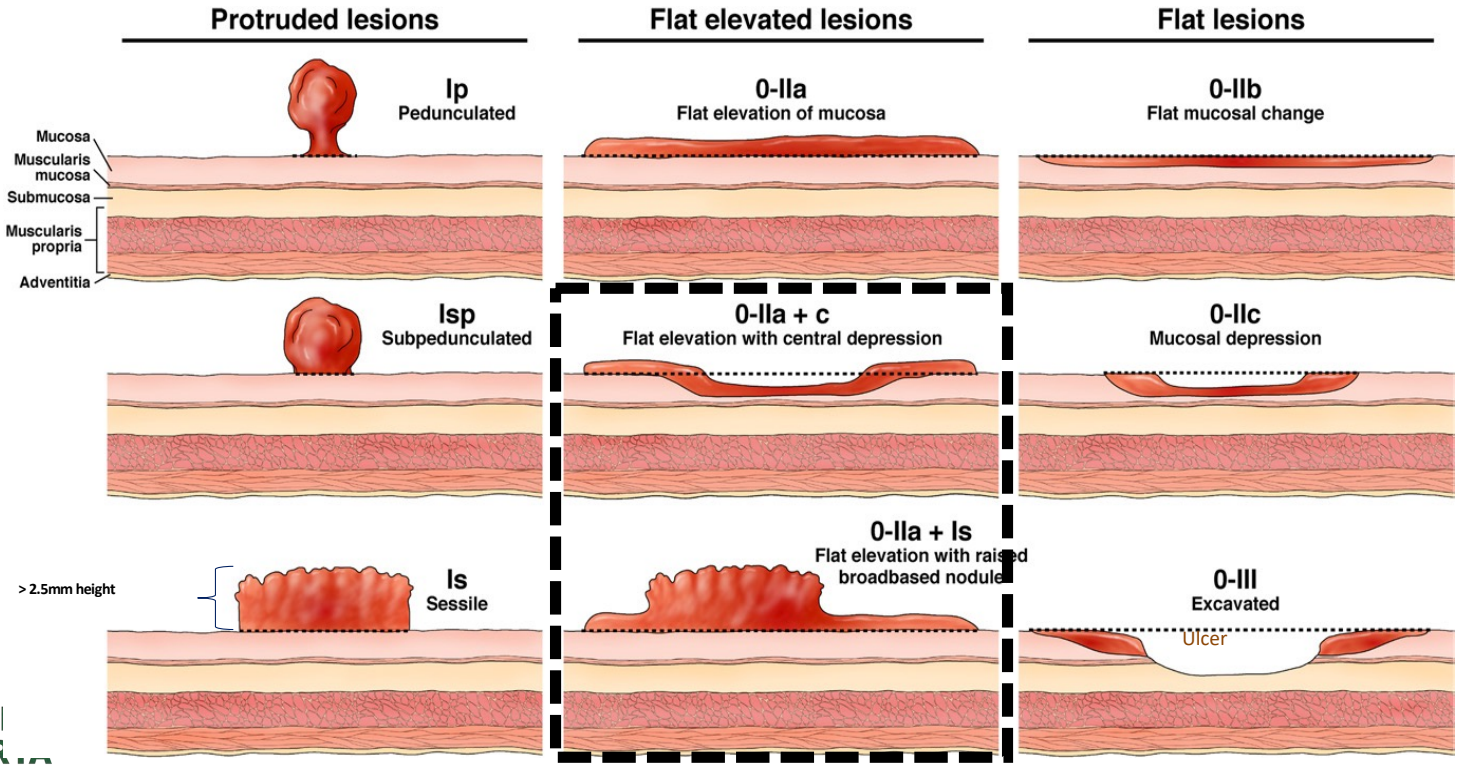
Assessment: Size

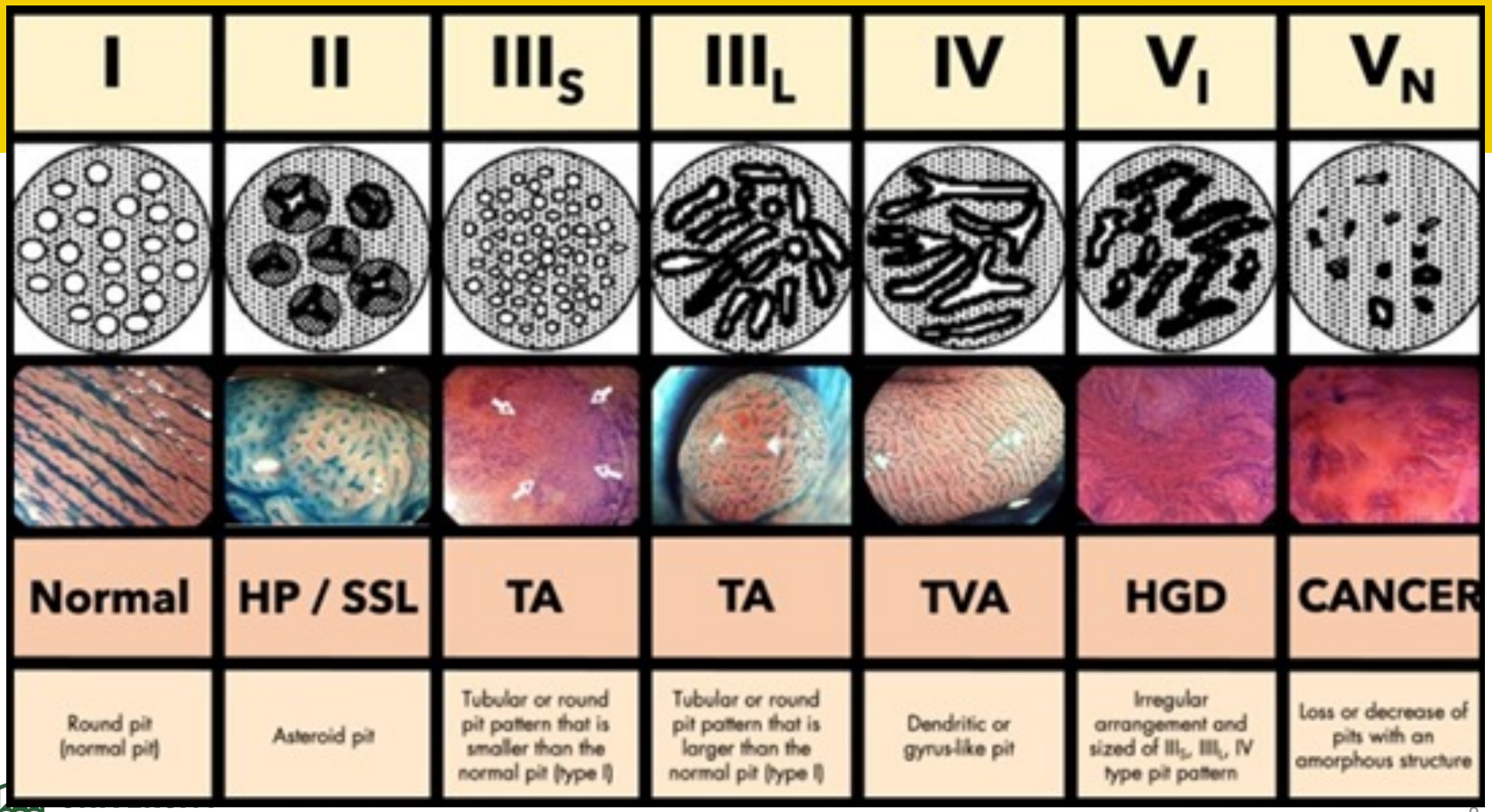
1. Estimate size using:
    a) Standard biopsy forceps:
        i. Closed: 2.5 mm
        ii. Open: 7 mm
    b) Known size of colonic snare



Assessment: Morphology

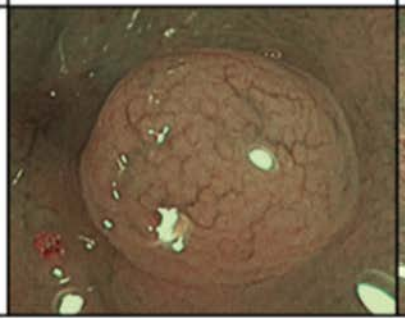
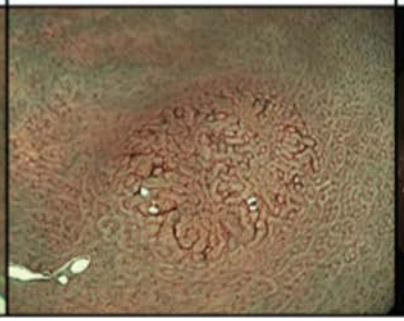
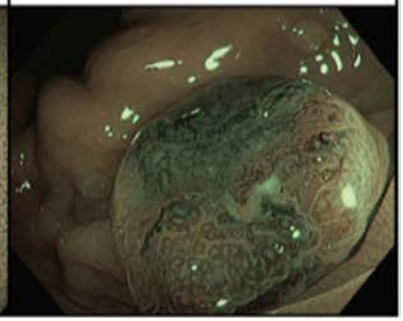
PARIS CLASSIFICATION




I
II
IIIS
IIIL
IV
VI
VN
Normal
HP / SSL
TA
TA
TVA
HGD
CANCER
Round pit (normal pit)
Asteroid pit
Tubular or round pit pattern that is smaller than the normal pit (type I)
Tubular or round pit pattern that is larger than the normal pit (type I)
Dendritic or gyrus-like pit
Irregular arrangement and sized of IIIS, IIIL, IV type pit pattern
Loss or decrease of pits with an amorphous structure

Assessment: Pit Pattern

- 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 and sessile serrated lesions***	Adenoma****	Deep submucosal invasive cancer
			

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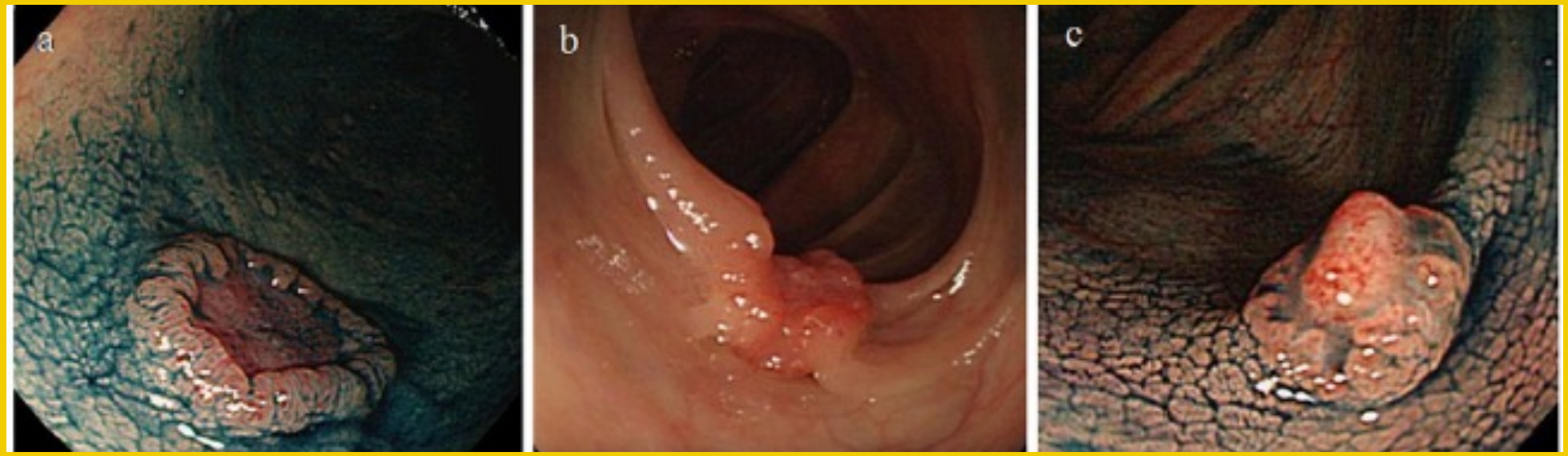
PRACTICAL Assessment

High-risk Stigmata

- Deep depression
- Fold convergence
- Irregular bottom of depression surface
- White spots (“chicken skin”)
- Redness
- Expansion
- Firm consistency
- Loss of lobulation
- Thick stalk



Deep Depression

Fold Convergency

Irregular Base

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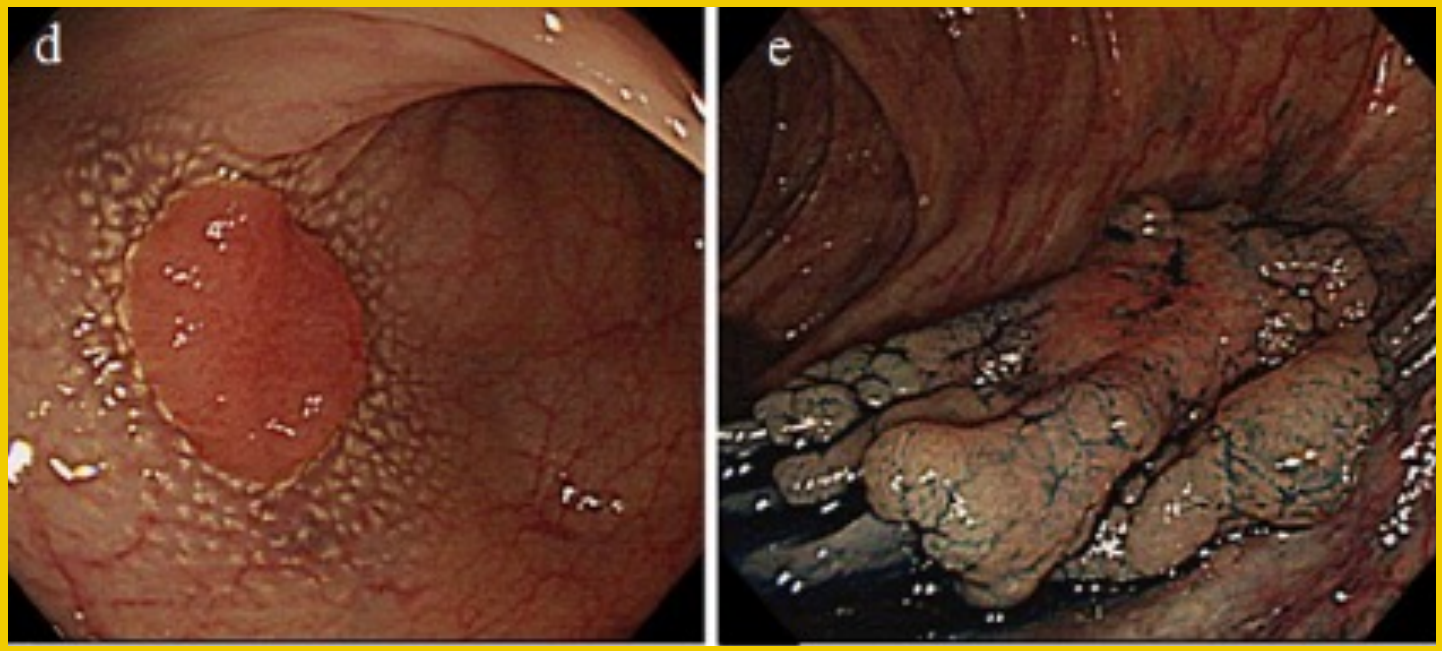

Chicken Skin Appearance

Erythema

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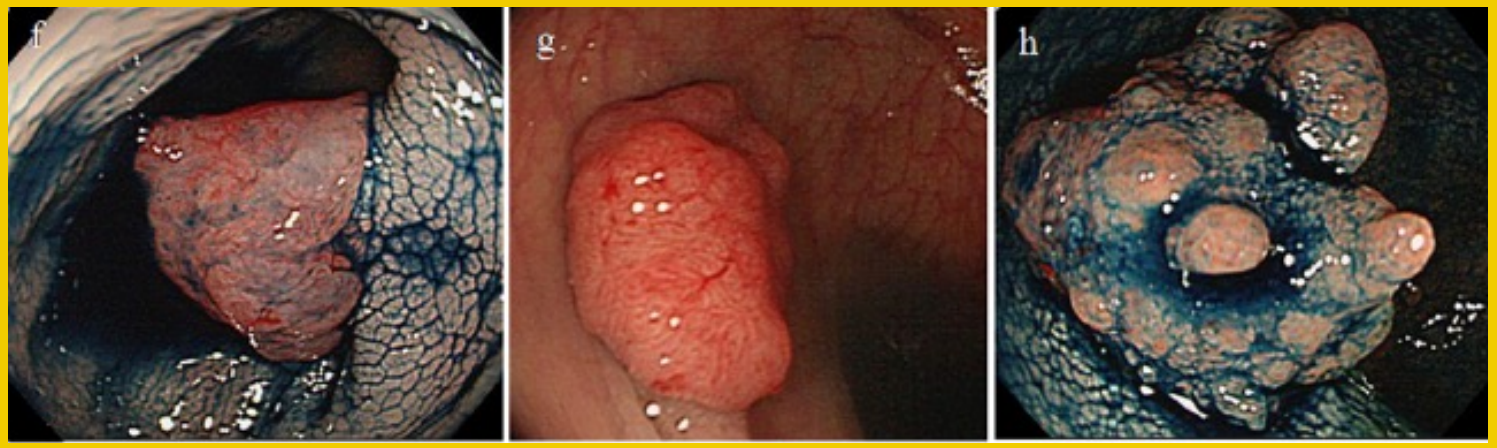

Surface Expansion **Firm Consistency** **Irregular Lobulation**

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Endoscopy vs Surgery

- Size is not a limiting factor!
  - Extensive colonic lesions limited to the mucosa can be cured via EMR
  - Unique absence of lymphatics in the colonic mucosa
- Three major question
  - Is there suspicion of submucosal invasion (SMI)?
  - Is the lesion in an area that precludes EMR?
  - Does the patient have comorbidities that preclude even moderate risk procedures like EMR?

Polyp found, polyp thoroughly assessed, safe for endoscopic removal…

So how to take it off?

Small Polyp Removal

- Polyps < 10mm,
- No HRS, favorable location

- Wide variety of tools to achieve the goal of polyp removal
- So what is the gold standard for removal?

Small Polyp Removal

- **Cold biopsy forceps – do not use**
  - Quick, easy to use and cheap
  - Associated with significant rates of incomplete polyp removal, increased recurrence rates and interval CRC
    - Efthymiou et al[1]. conducted en bloc snare resection of surrounding mucosa of 5mm polyps removed with cold biopsy forceps[1]
    - 61% of these sites had residual adenomatous tissue!
- **Hot Biopsy forceps - do not use**
  - Significantly increased complication rate compared to snare removal
  - Poor quality of specimen histology due to cautery artifact
  - Same (POOR) quality of polyp eradication as cold biopsy forceps[2-3]

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1. Efthymiou et al. Endoscopy 2011. 43(4): 312-316
2. Monkemuller,KE et al. Endoscopy. 2004. 36(5) 432-436
3. Paspatis GA et al. Colorectal Dis. 2011. 13 (10): 345-348

Small Polyp Removal

Gold standard for polyp removal - SNARES

- **Technique**
  - Idea polyp position → 6 O'clock
  - Opened snare placed around polyp
  - Aim of capturing 1-2mm of normal tissue around the polyp
- **Cold vs Hot snare Polypectomy?**
  - No significant difference in removal rate
  - Cold for polyps <10mm, hot snare for larger
  - Increased non-significant immediate bleeding with cold compared to increased delayed bleeding, post-polypectomy syndrome rates with hot snare

Small Polyp Removal

- **COLD SNARE POLYPECTOMY (CSP)**

- US Multi-Society Task Force on Polypectomy 2020[1] / European Society of GI Endoscopy 2024[2] (Update)
  - Recommend CSP for diminutive (<5 mm) and small (6-9 mm) lesions due to high complete resection rate and safety
  - Recommendations against CFB and HFB
  - ESGE recommends including a 1-2mm clear margin of normal tissue surrounding the polyp

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1. Kaltenbach T, et al. Am J Gastroenterol 2020;115:435-64
2. Ferlitsch M, et al. Endoscopy 2024. 56(7): 516-545

Cold Snare Polyp Technique

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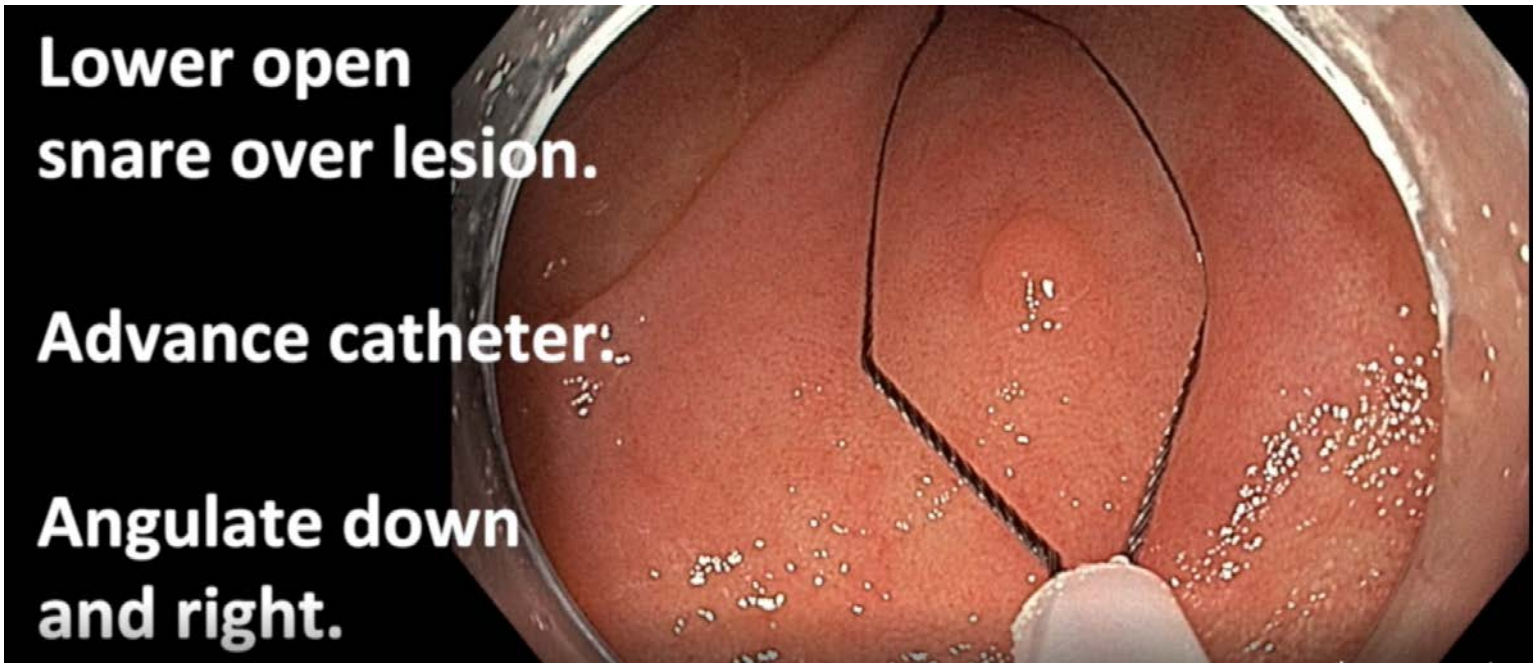
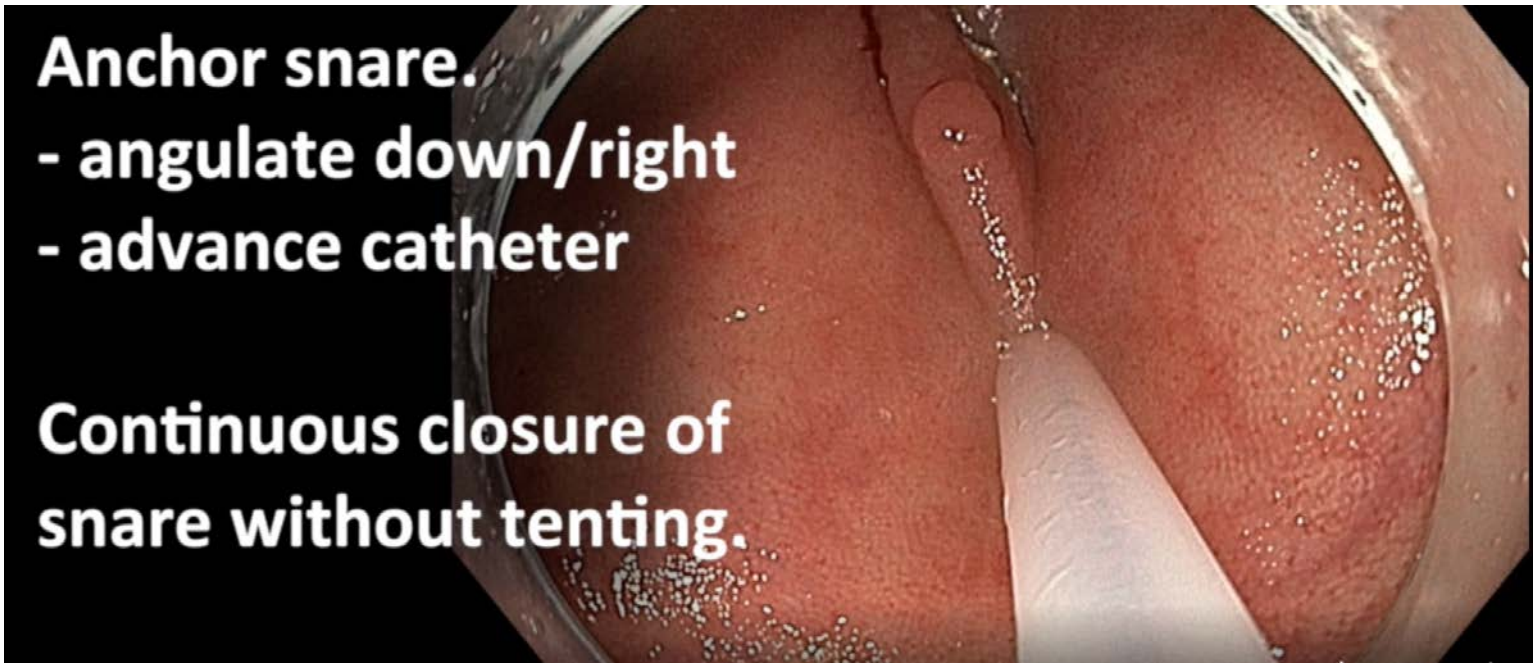
CSP Technique

CSP Technique



CSP Technique



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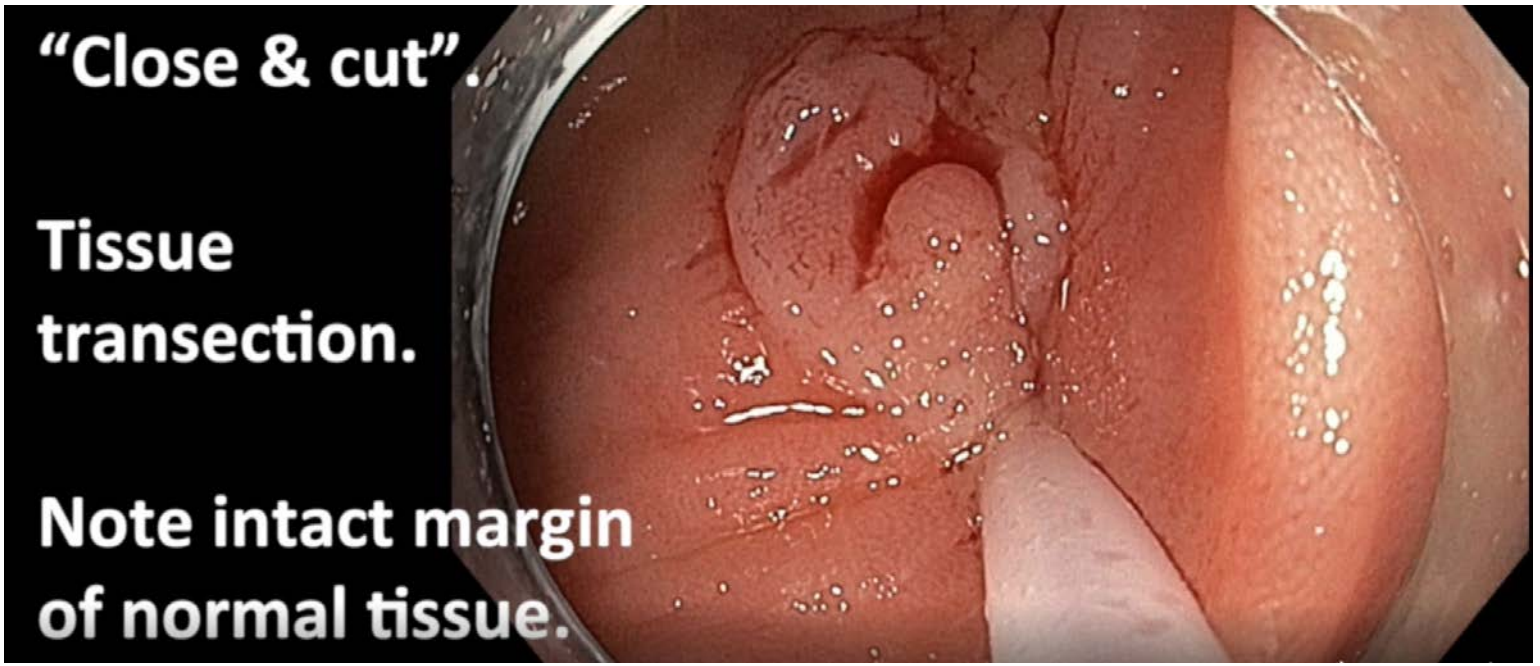
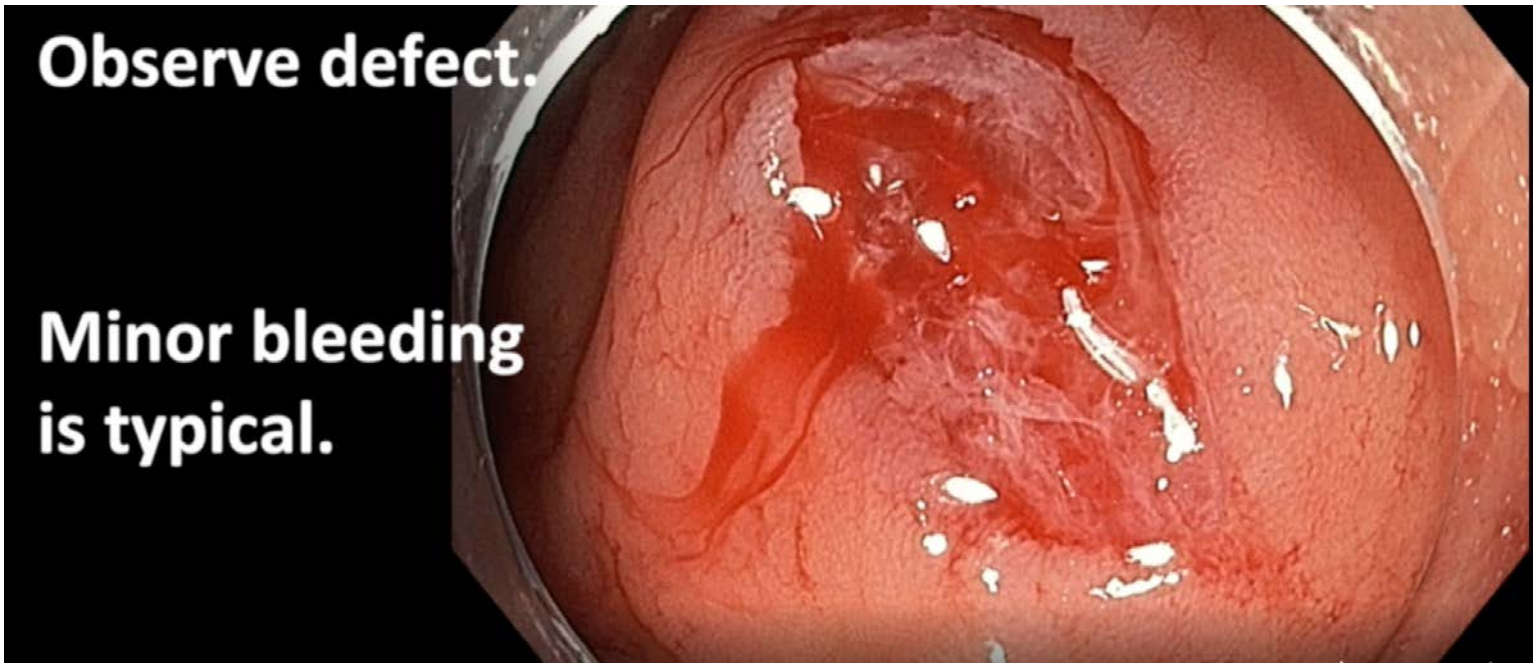
CSP Technique



CSP Technique



CSP Technique

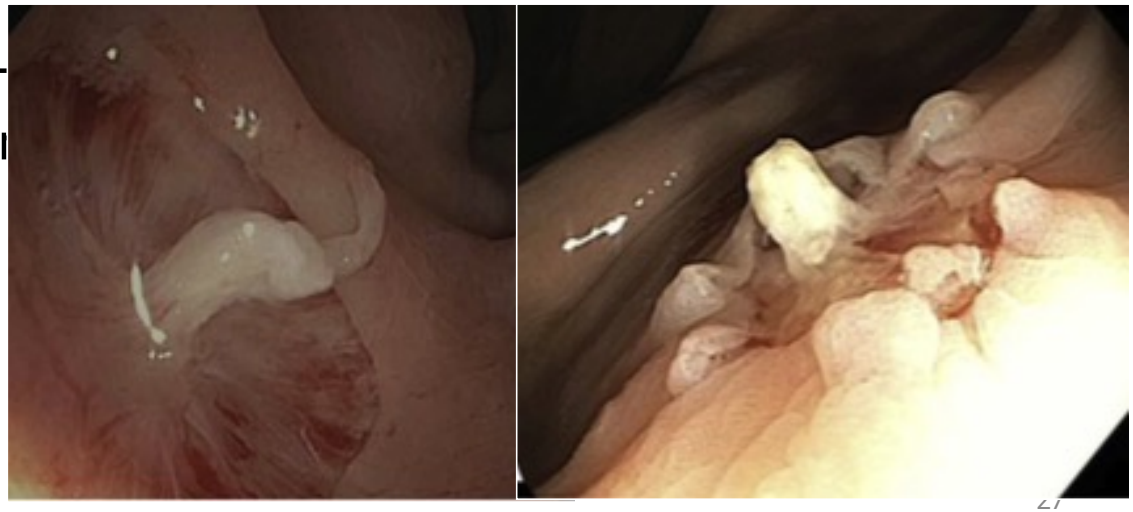
PRE REMOVAL

- Take time to fully assess margins, especially SSL type lesions
  - Use NBI/FICE/i-SCAN
  - Consider methylene blue /saline topically or with SM injection
- Optimize insufflation
  - Too much – slide over mucosa, incomplete capture
    - Residual polyp
  - Too little – increased submucosal capture
    - Difficult to cleanly cut

CSP Technique

REMOVAL

- Dynamic Closure
  - Advance catheter as nurse is closing
  - “Pin” the sheath to the mucosa
- White frond/stalk at base - “H
  - Entrapped submucosal tissue, r



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CSP Technique

REMOVAL

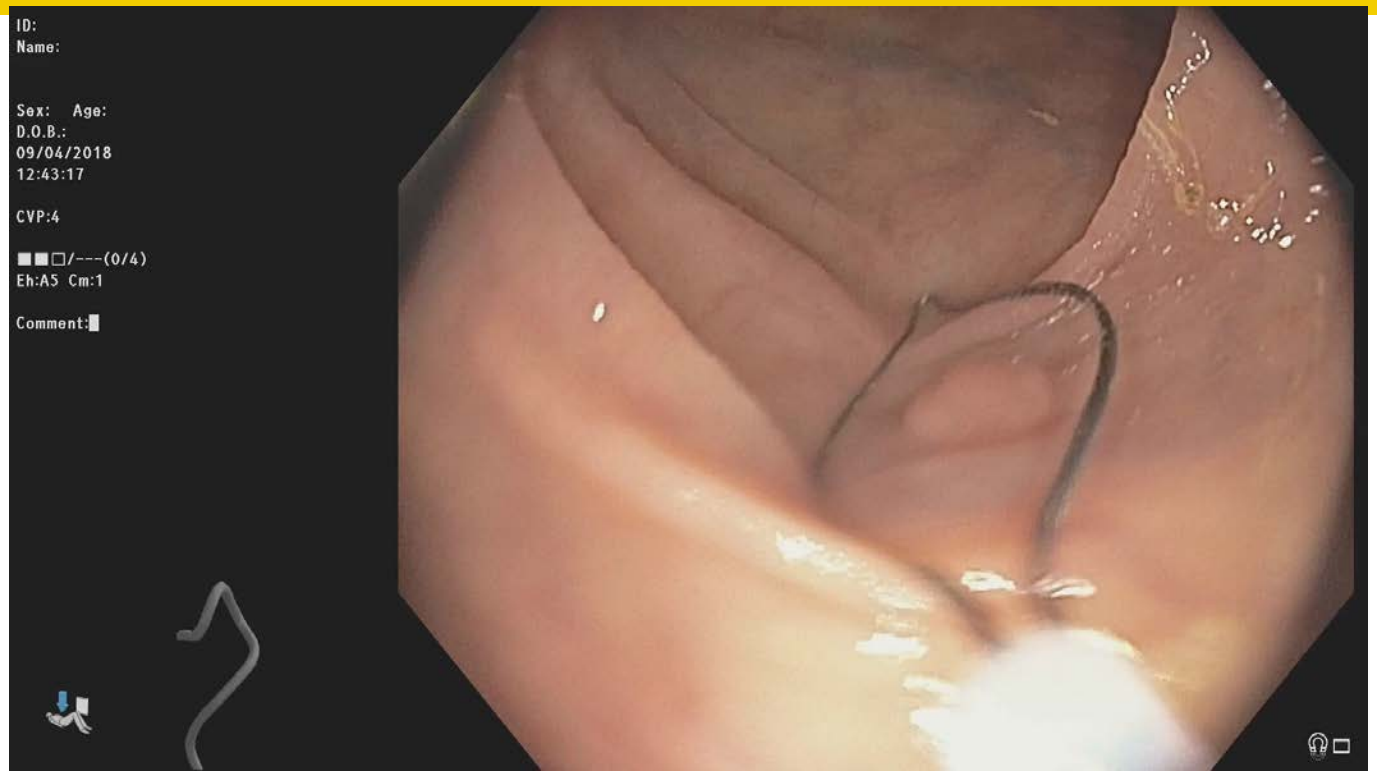
- Failure to cut
  - Be patient!
  - DO NOT RAPIDLY OPEN AND CLOSE
  - “Milk” the sheath
  - Gently move the catheter in and out of the channel to transmit force to snare tip
  - Consider PARTIAL re-opening of the snare
  - Gentle traction

CSP Technique

POST REMOVAL

- Ensure completeness of resection
  - NBI to assess margins
  - Foot pedal irrigation of polypectomy site
    - Free submucosal injection
    - Also a good way to stop oozing

CSP Videos



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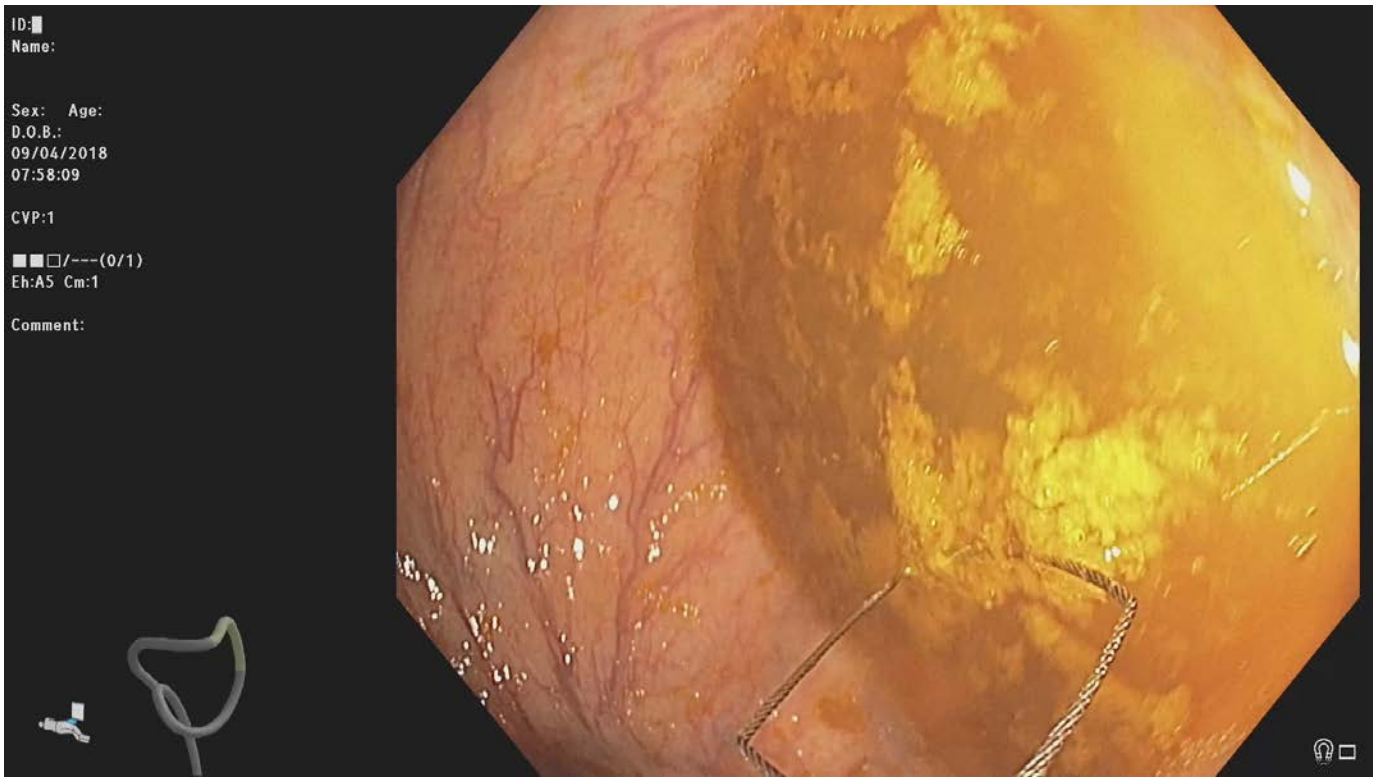
CSP Videos – Position change



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CSP Videos – Snare Stalling

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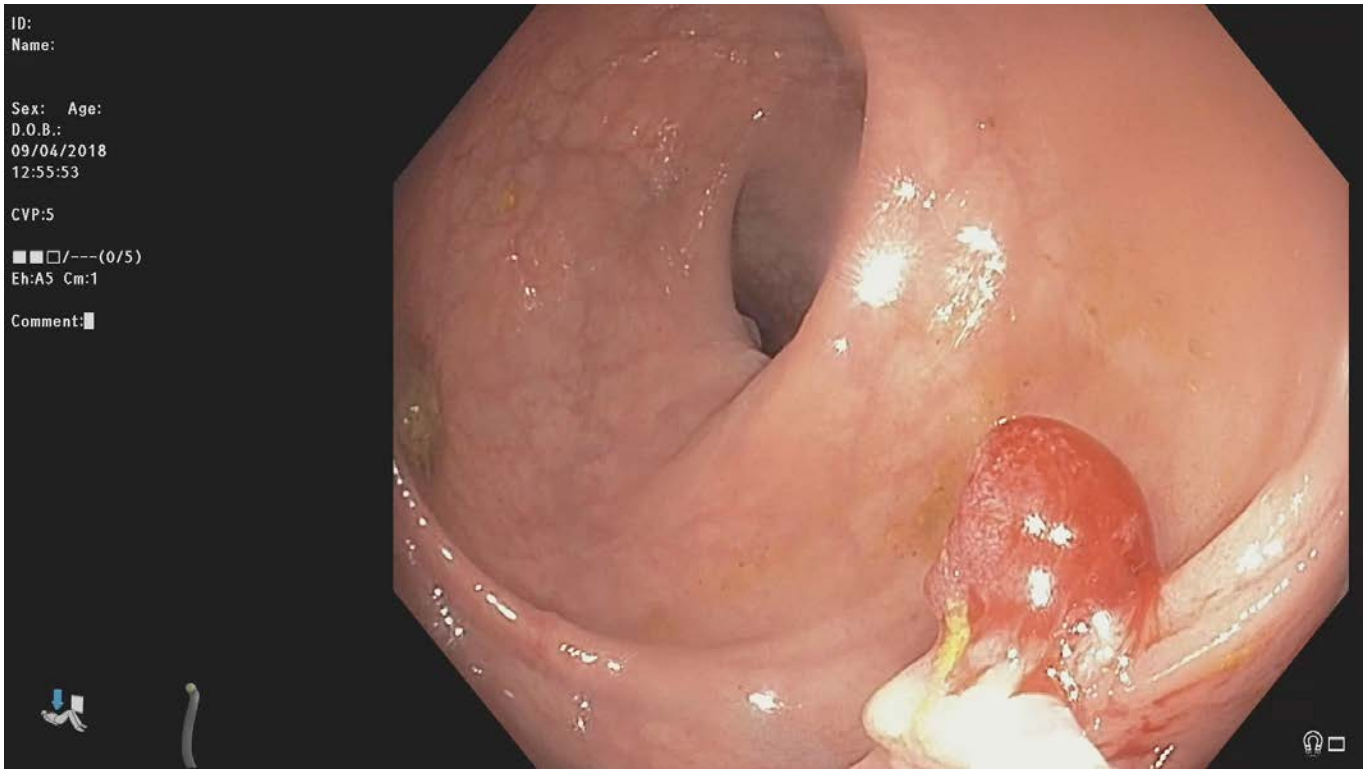
CSP Videos - Submucosal strand



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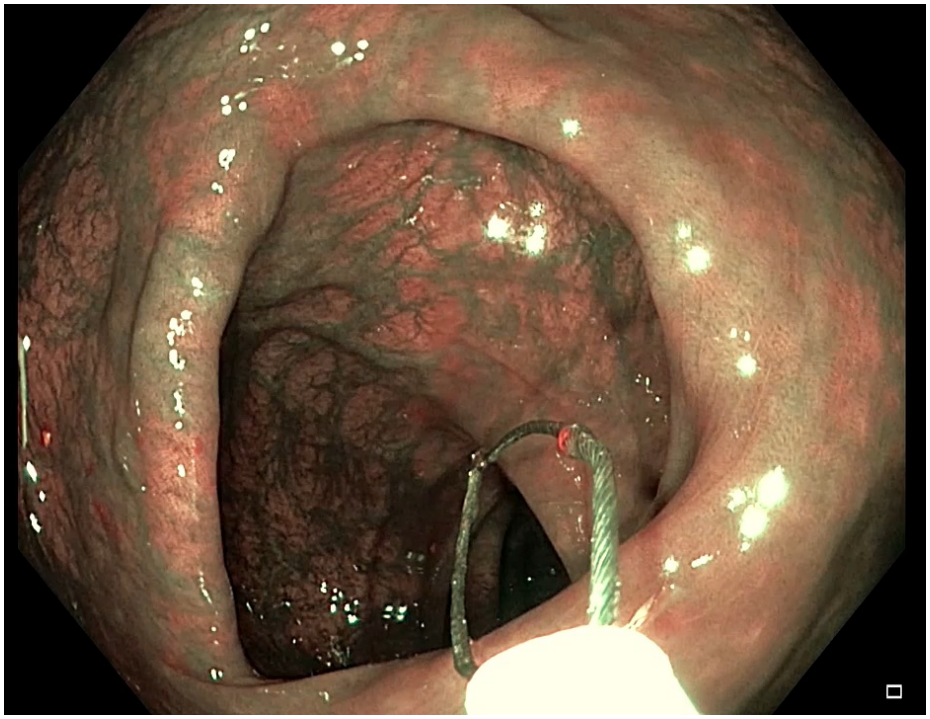
CSP TIPS

Tips

- Keep snare catheter tip 1-2 mm distal to polyp edge throughout snare closure
- Do not place tip of catheter directly at border of polyp
  - Risk transecting through polyp WITHOUT clear margins
- Do not lift/tent ensnared tissue during closure as margin of normal may be lost
  - Ensures excised tissue remains in defect



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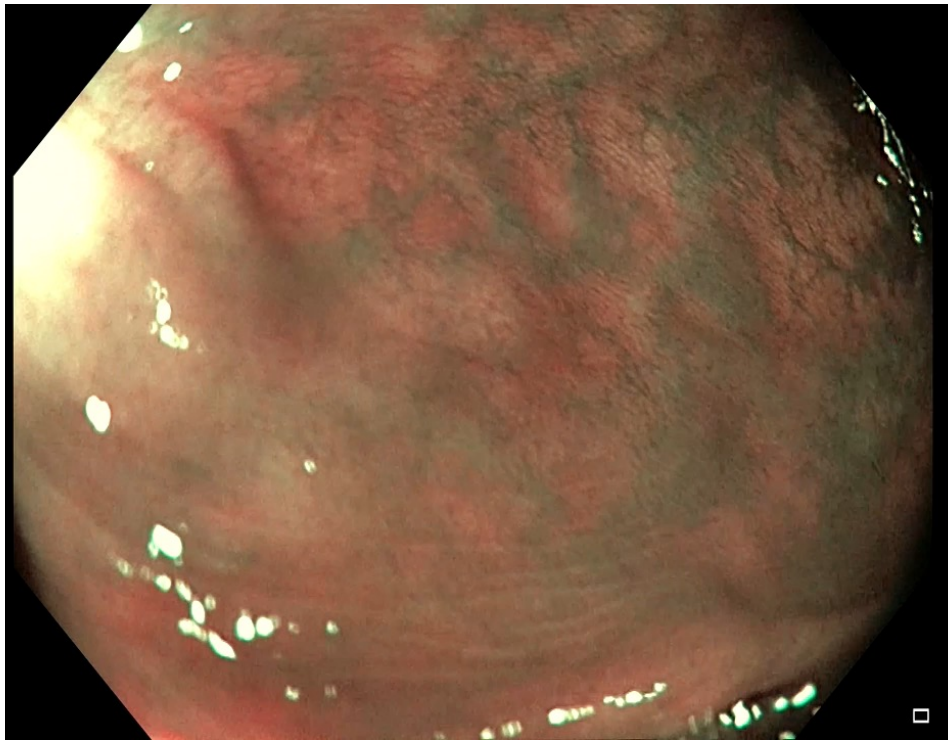
CSP: Defect Evaluation

1. Directly irrigate CSP defect with colonoscope water jet:
   - Creates submucosal cushion
   - Accentuates defect's borders
   - Tamponades any immediate bleeding
2. Under white-light and virtual chromoendoscopy (i.e. NICE), examine defect base/edges for evidence of residual tissue



Emerging Techniques
Cold Snare EMR
(CS-EMR)

CS-EMR

- Emerging topic of interest, many new publications pending
- Cold EMR Technique
  - Cold snare, piecemeal resection of large (>20mm) polyps including SSL and adenomatous polyps

Benefits

- Similar efficacy of traditional EMR without the risk of electrocautery related complications
  - Delay bleeding, post-polypectomy syndrome, perforation

CS-EMR

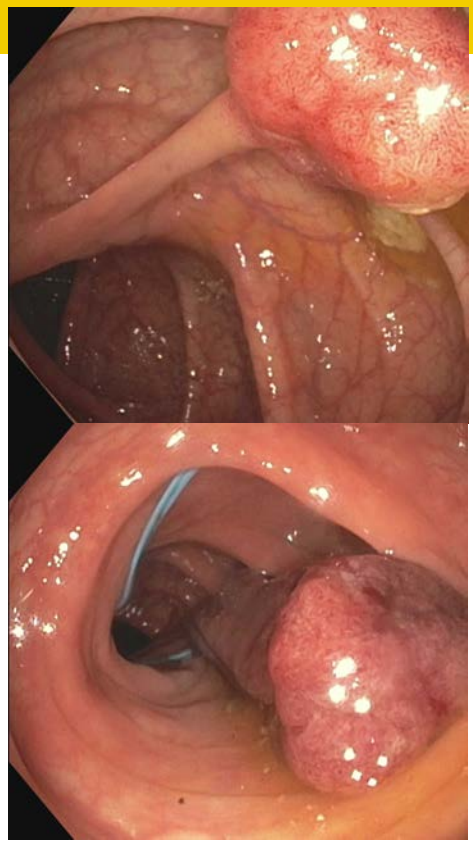
- Recent systematic review/meta analysis 2023[1]
  - 16 studies, 2592 polyps: 55% Adenomas, 45% SSL (All>2cm)
  - Pooled technical success 97.2%, 99.5% for SSL
  - Recurrence 17.1% Adenoma, 5.7% SSL
  - Pooled intraprocedural bleeding 2.6%, delayed bleeding 1.5%
  - No perforations or post-polypectomy syndrome reported

Abdallah,M. et al. Endoscopy2023. 55: 1082-1094

Pedunculated Polyps

Pedunculated Polyps

- 15-20% of polyps[1]
- Majority in left colon, adenomas
- Patients may present with bleeding, obstruction
- Factors associated with ↑ bleeding[2]:
  - Stalk diameter ≥ 5 mm (OR 7.17; p<0.001)
    - Due to large vessels in stalk
  - Size of polyp ≥ 17 mm (OR 17.1; p<0.001)



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1. Burgess NG, *et al. Gastrointest Endosc*. 2015;81(4):813-835.
2. Dobrowolski S, *et al. Gastrointest Endosc*. 2006;63(7):1004-1009.

Pedunculated Polyps[1]

TECHNICAL REVIEW

Colonic polypectomy (with videos)

Nicholas G. Burgess, MBChB, BSc, FRACP, Farzan F. Bahin, MBBS, FRACP, Michael J. Bourke, MBBS, FRACP
Sydney, New South Wales, Australia

TABLE 7. Technical tips for removal of pedunculated polyps

Position the patient so that the polyp hangs in a dependent manner. This may require the patient to be rolled into a supine or right-lateral position. Dependency elongates the stalk and facilitates snare placement. In the event of immediate postpolypectomy bleeding, blood streams away from the nondependent bleeding point, and endoscopic access for hemostasis is optimized. Similarly, in the unlikely event of a perforation, the risk of leakage of bowel content is minimized.
Align the polyp mucosal attachment point at 6 o'clock in the endoscopic view.
For polyps with a pedicle diameter > 5 mm or a head size > 20 mm, consider prophylactic detachable nylon loop placement or endoscopic clips.
Deploy the snare midway between the mucosal attachment point and the head. In cases where malignant head infiltration is suspected, consider application closer to the mucosal wall.
Apply the snare to resistance.
Use conventional low-power coagulation current to maximize coagulation while closing the snare in a controlled manner to transect the stalk.
If the snare stalls, consider options that include removing the snare by fully opening it and gently passing the colonoscope 5-10 cm proximal to the polyp.
In cases of sustained stalling without evidence for muscularis propria entrapment, consider the use of pure-cut or blended electrocautery to complete the resection.

1. Burgess NG, *et al. Gastrointest Endosc*. 2015;81(4):813-835.

Essential Techniques

Submucosal Injection

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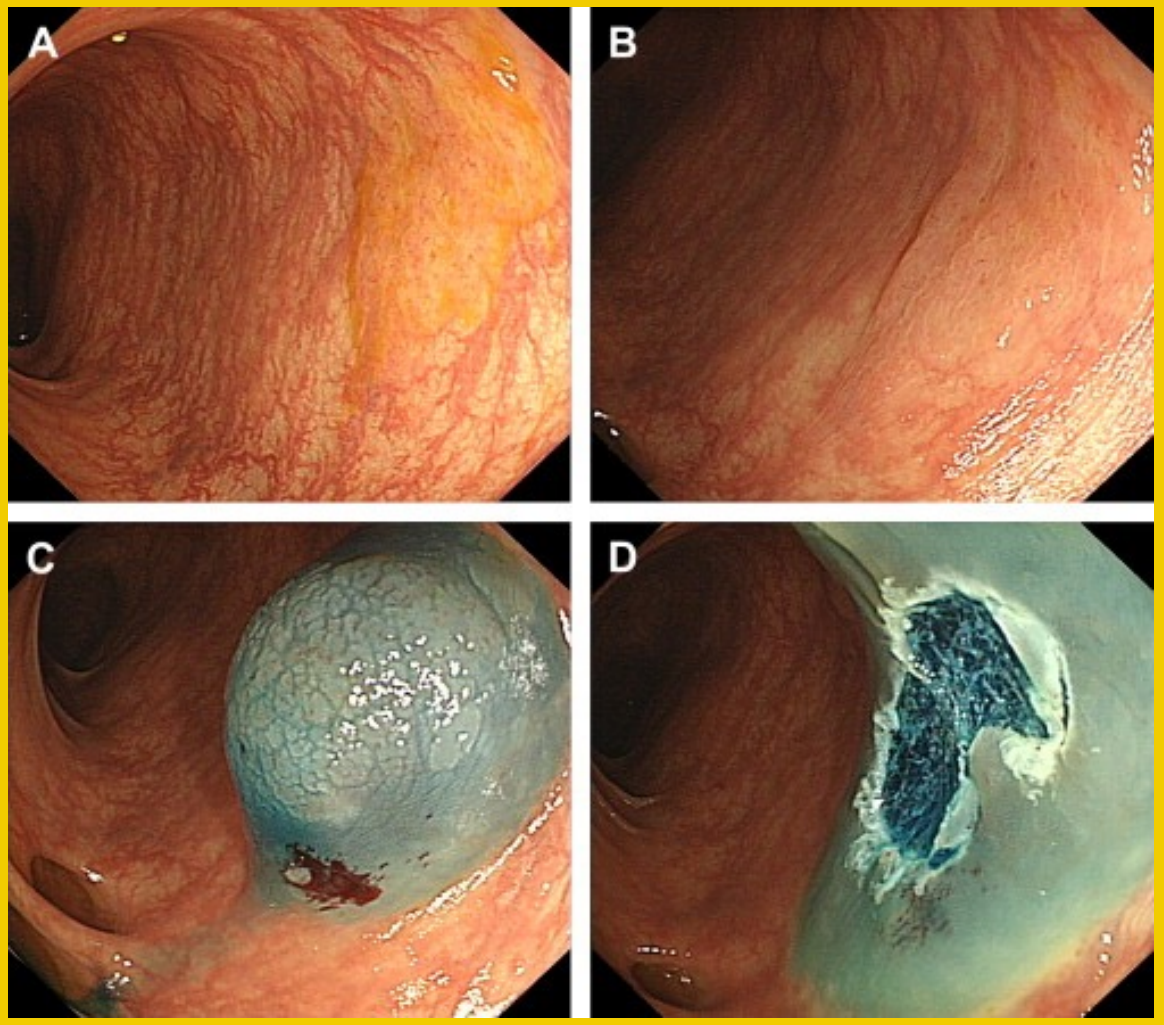
SM Injection Technique

- **Submucosal injection**
  - Fluid “cushion” between the mucosa and muscularis propria (MP)
  - Reduces risk perforation and transmural thermal injury
  - **“Lift sign”** to identify SMI
  - Helps identify polyp margins for complete resection
  - Ideally inexpensive, easy to use and provides a sustained, well-circumscribed mucosal elevation
  - Normal saline most commonly used although the use of colloidal solutions has been reported to be superior in a number of studies

SM Injection Technique

- **Submucosal injection solution**
  - **Methylene blue / Indigo carmine**
    - Biologically inert blue dyes that are avid for loose areolar tissue of the SM layer
    - Confirms the resection is taking place in the correct plane
    - Helps delineate polyp borders to ensure complete resection
  - **Dilute epinephrine (1:100,000)**
    - Added to injectate by some physicians, very helpful for EMR
      - Bloodless resection field, but higher risk of delayed polypectomy bleeding
    - Not used for assessment, only EMR



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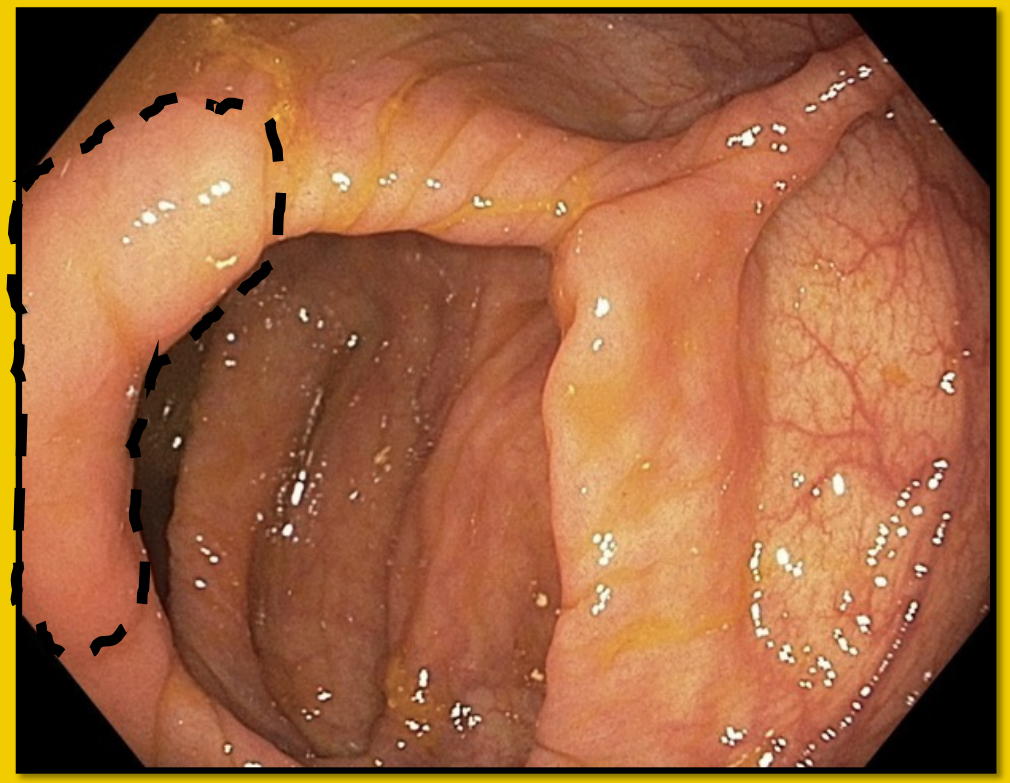

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Dx: Portions of Sessile Serrated Adenoma

Essential Techniques

Tattooing

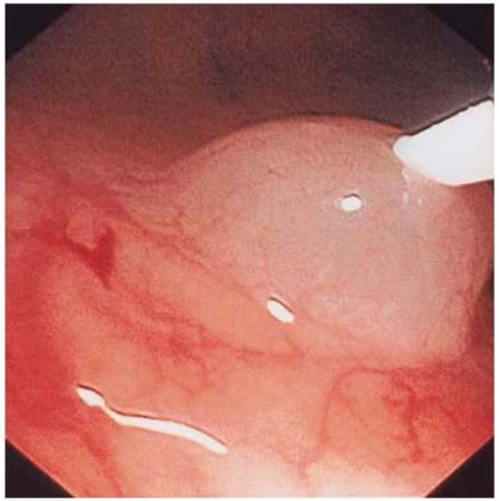
Tattooing

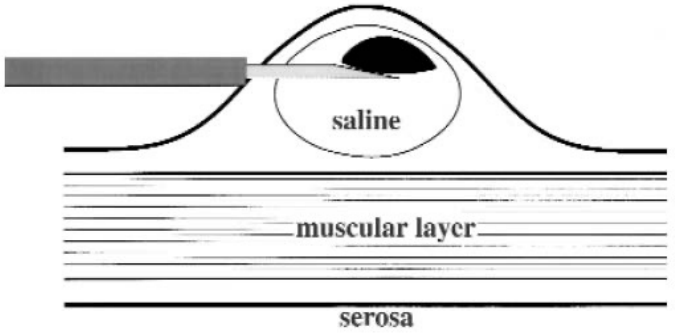
- **When**:
  - Marking difficult to find polyps when referring elsewhere for resection
  - Surgical planning (concern about malignancy of a polyp or cancer)
  - Help identify EMR polypectomy site during future
- **Where**?
  - Anywhere outside of the cecum or rectum
- **What: India Ink (SPOT)**
  - Sterile carbon particle mixture, injected into submucosa

Tattooing

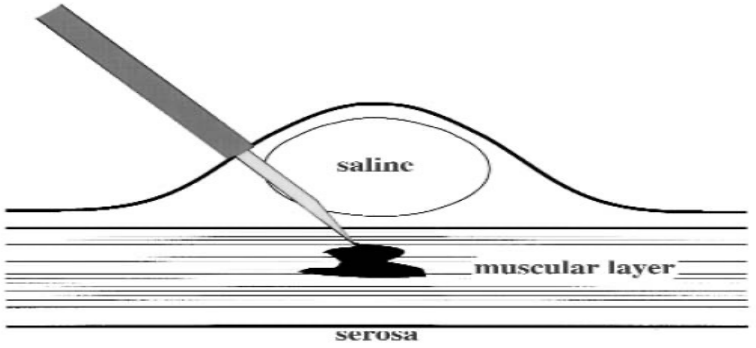
- **How**
  - ~5cm away from resection site, typically 1-2 separate locations on opposite wall
    - Mesenteric vs. anti-mesenteric border
  - Initially create a saline “bleb” to ensure correct plane then inject SPOT into this cushion
  - No more than 3cc of SPOT

Tattooing





DO NOT →



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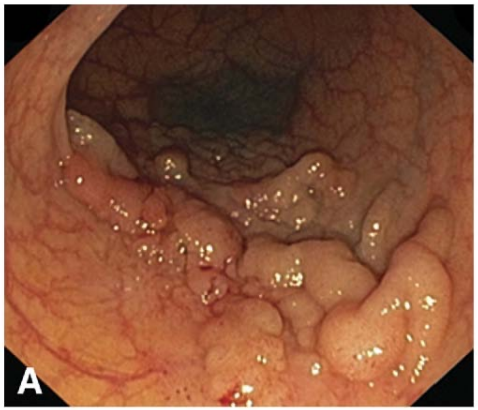
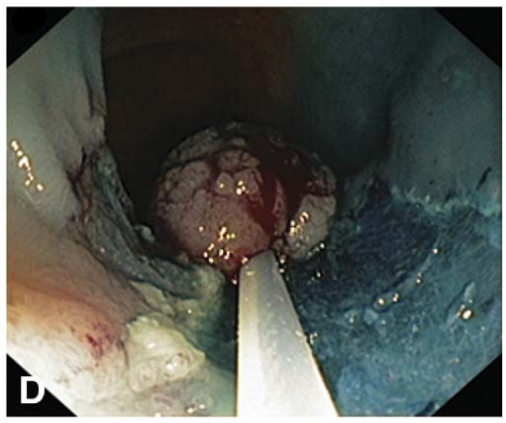
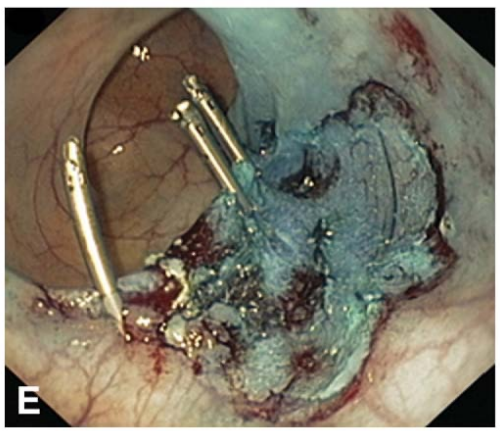
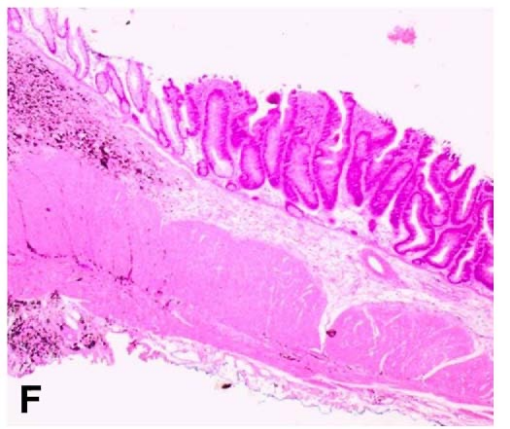
Tattooing

- **Complications**
  - **Transmural injection**
    - Serosal inflammation, abscess, peritonitis
    - Fibrosis, adhesions
  - **Direct tattooing of polyp site itself**
    - SM fibrosis can results
    - Difficult to lift, significantly higher risk of perforation



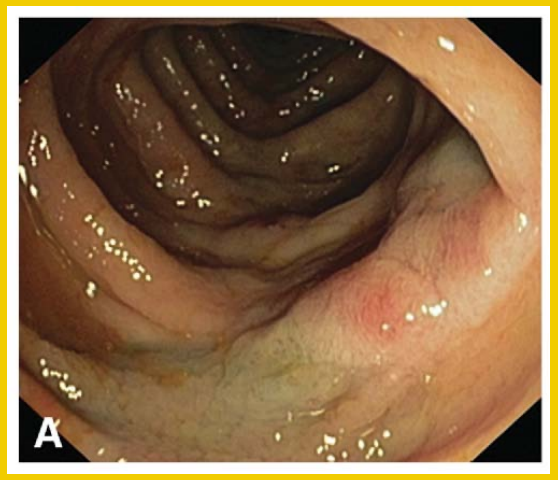


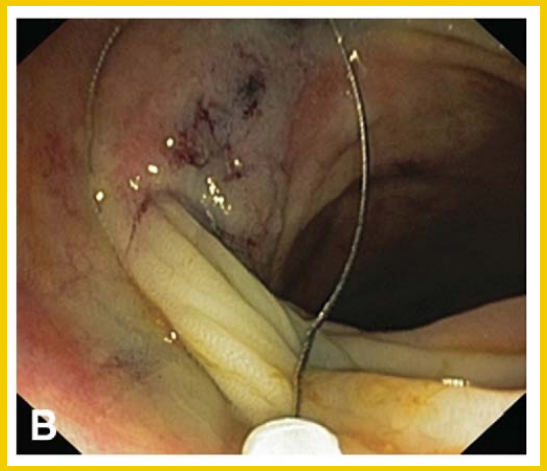




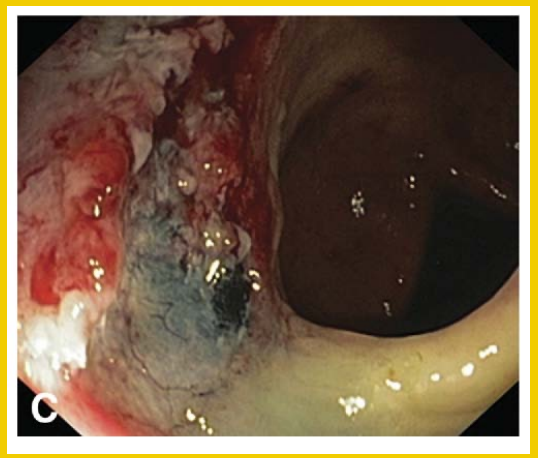
Carbon particles

Moss et al. GI Endoscopy 2011;74:214-8





Unable to lift



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Moss et al GI Endoscopy 2011;74:214-8

Summary

- **Develop conscious competency in polypectomy**
- Having a standardized approach to polypectomy is important
- set up/ pre-assessment
- polypectomy
- post resection

So How Can We Improve?

CAG SEE™ Program
Endoscopic Polypectomy
Improvement Course
EPIC

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CAG EPIC Program

ENDOSCOPIC POLYPECTOMY IMPROVEMENT COURSE

- Course designed to
  - Upskill endoscopists in the removal of polyps up to 20mm
  - Expose the to a variety of tools and devices that may not be available in their unit

CAG EPIC Program

ENDOSCOPIC POLYPECTOMY IMPROVEMENT COURSE

- EPIC Launched: December 2, 2017 (McGill Simulation Center) &
  January 27, 2018 (Ottawa Simulation Center)
  - EPIC: December 1, 2018 & March 30, 2019 (McGill)
- January 12, 2019 (Ottawa)
  - EPIC: December 3, 2022 (Ottawa)
  - EPIC: Nov 4th, 2023 (Ottawa)
  - EPIC : May 25th, 2024 (Hamilton)
- EPIC Jan 27th, 2025 Edmonton
- **EPIC Jan 27th, 2026 Edmonton!!**

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Questions?

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