



# Polypectomy Pearls

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Endo Skills 2025

# 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<sup>1,2</sup>
- 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

# 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?

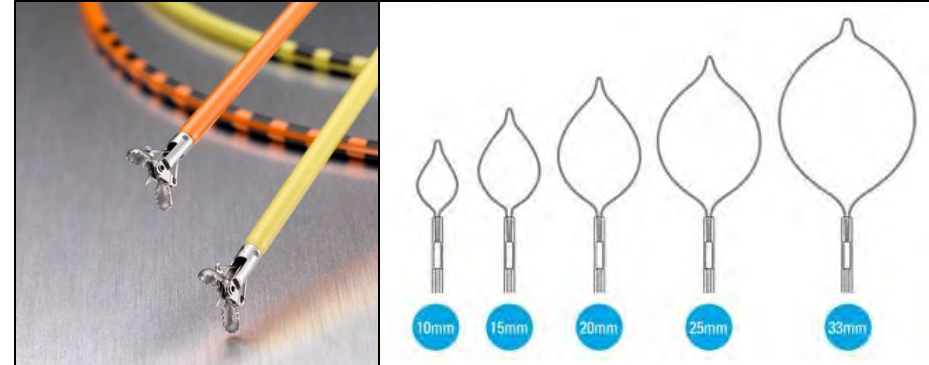
# Polyp Assessment: Size and Morphology

## 1. Estimate size using:

### a) Standard biopsy forceps:

- i. Closed: 2.5 mm
- ii. Open: 7 mm

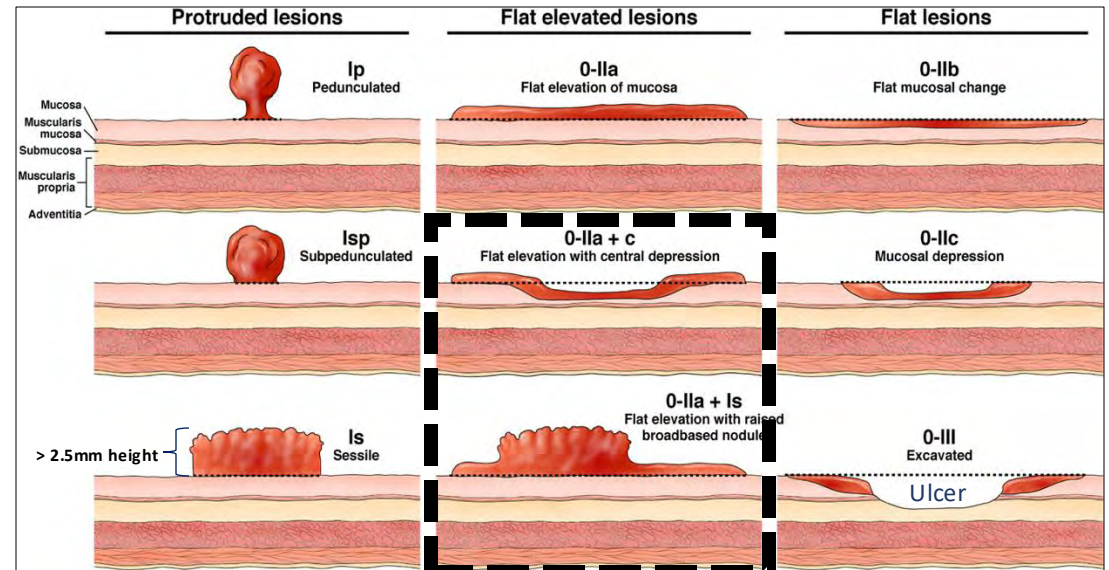
### b) Known size of colonic snare



## 2. Classify morphology of polyp, under white-light, using:

- Paris Classification

## PARIS CLASSIFICATION



# 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?

# Gross Morphology

## 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**





**Chicken Skin Appearance**



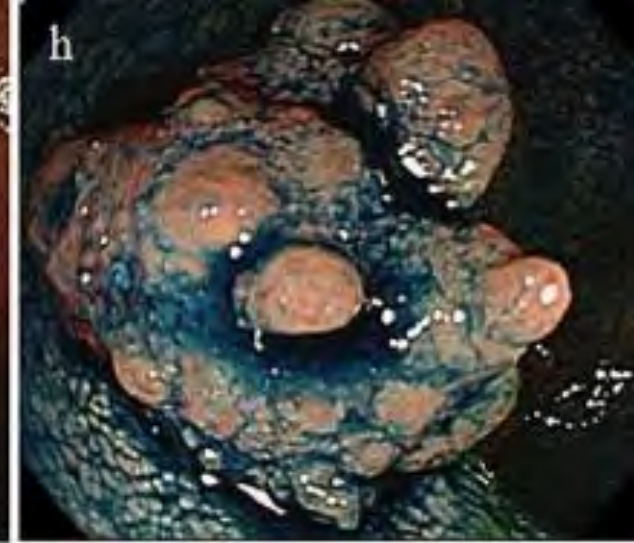
**Erythema**



**Surface Expansion**



**Firm Consistency**



**Irregular Lobulation**



**Loss of Lobulation**



**Thick Stalk**

**Polyp found... time to remove!**

# Uncomplicated polypectomy

- Polyps < 10mm,
- No HRS, favorable location
  
- Wide variety of tools to achieve the goal of polyp removal
- Choice of the tool based on situation and personal preference
  - As long as it's a snare

# Small Polyp Removal

- **Cold biopsy forceps**

- Quick, easy to use and cheap
- Associated with significant rates of incomplete polyp removal, increased recurrence rates and interval CRC
- Efthymiou et al. conducted en bloc snare resection of surrounding mucosa of 5mm polyps removed with cold biopsy forceps<sup>1</sup>
  - 61% of these sites had residual adenomatous tissue!

- **In general DO NOT USE**

- Restrict use to diminutive 1-2mm polyps not amenable to snare removal

# Small Polyp Removal

- **Hot Biopsy forceps**
- Once popular, now out of favor
  - 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<sup>1,2</sup>
- **DO. NOT. USE.**

1. Monkemuller,KE et al. Endoscopy. 2004. 36(5) 432-436

2. Paspatis GA et al. Colorectal Dis. 2011. 13 (10): 345-348

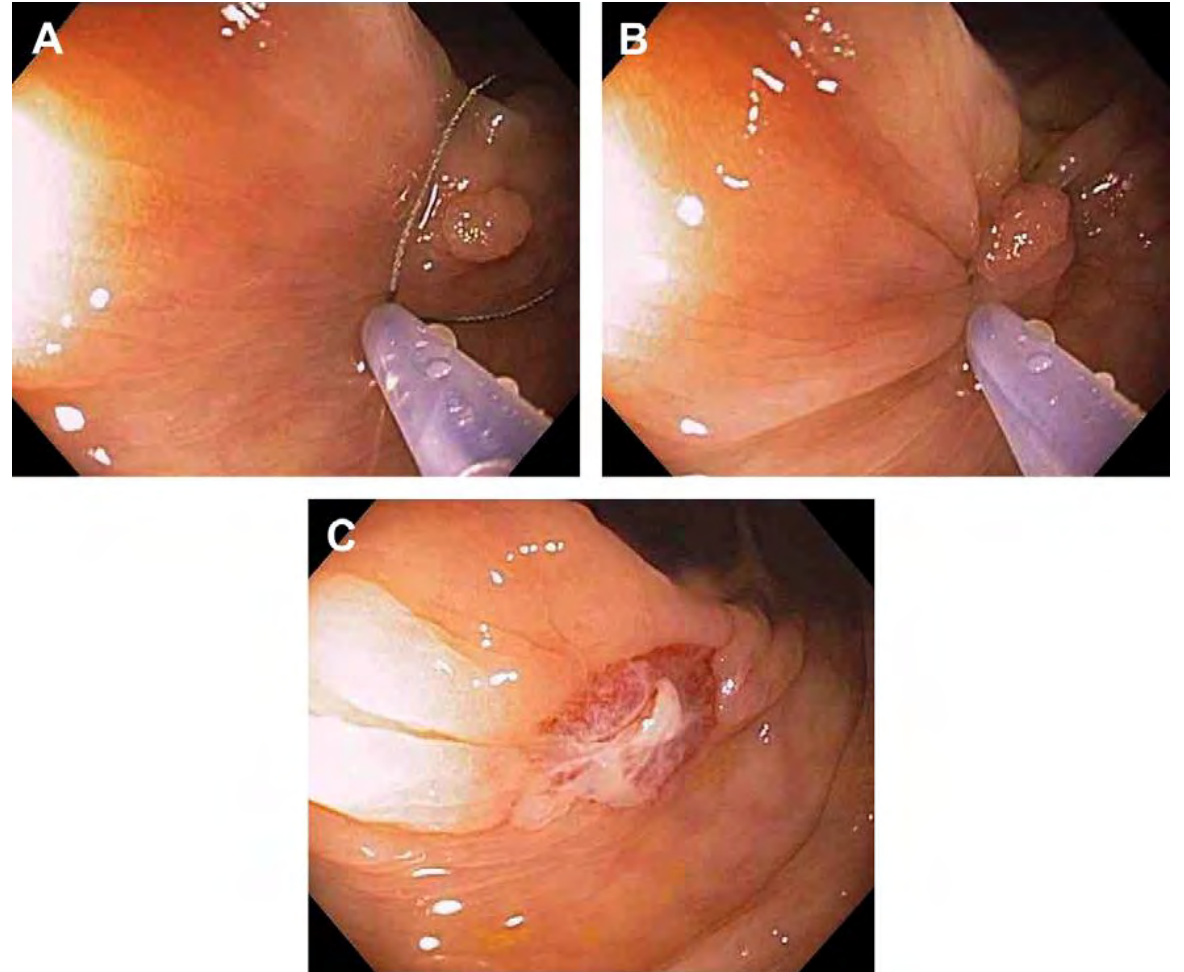
# Small Polyp Removal

- **Snare polypectomy** – Gold standard for polyp removal
- **Technique**
  - Idea polyp position → 6 O'clock
  - Opened snare placed around polyp
  - Aim of capturing 1-2mm of normal tissue around the polyp
- **Hot vs. Cold?**
  - No significant difference in removal rate
  - Cold for polyps <8mm, hot snare for larger
  - Increased non-significant immediate bleeding with cold compared to increased delayed bleeding, post-polypectomy syndrome rates with hot snare



# Cold Snare Polypectomy (CSP): Technique<sup>1</sup>

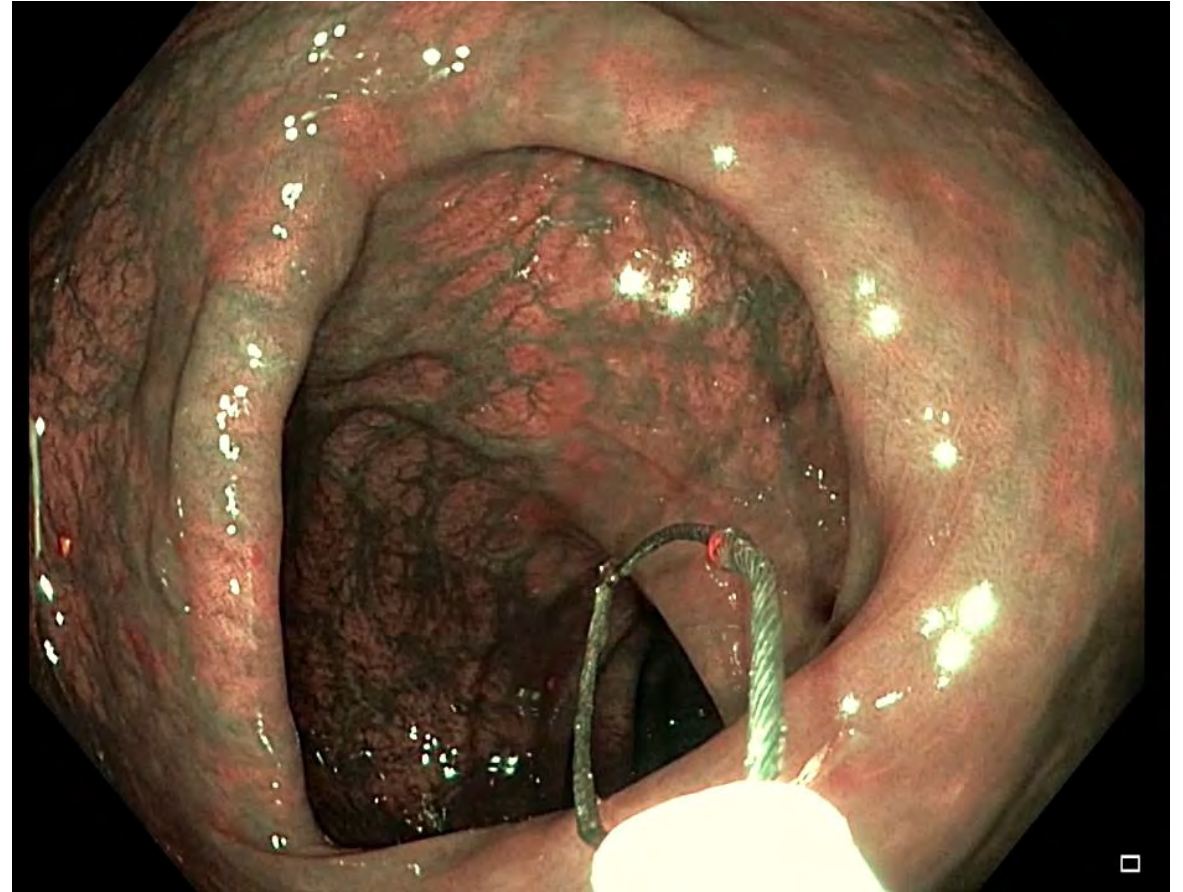
1. Position polyp at 5-6 o'clock position
2. Open snare then lower over lesion
  - Aim for a 1-2 mm margin of normal tissue around resected polyp
3. Anchor tip of snare catheter 1-2 mm distal to lesion over normal tissue
4. Angle endoscope tip downwards and/or right into colonic wall (using 'up/down' wheel + torque on the endoscope), applying pressure onto colonic mucosa
5. Ask assistant to close snare in smooth, continuous fashion, cutting through polyp



# CSP: Technique<sup>1</sup>

## 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



# CSP: Snare Stalling

What to do, when it doesn't cut through<sup>1</sup>

- **Strategy 1**

1. Maintain squeeze on snare for at least 10-15s, to account for slow transection
  - Ensure colonoscope is straight
  - Angulate colonoscope tip down towards colonic wall
  - Move catheter forwards/backwards within colonoscope working channel

- **Strategy 2**

1. Pull snare with entrapped polyp against tip of colonoscope and apply gentle traction to guillotine polyp

- **Strategy 3**

1. Slowly open small amount of snare
2. Gently lift lesion away from colonic wall
3. Observe for release of entrapped submucosal tissue
4. Lower polyp
5. Close and cut polyp

You DON'T need to put on the grounding pad!

1. Hewett DG. *Gastrointest Endosc.* 2015;82(4):693-696.

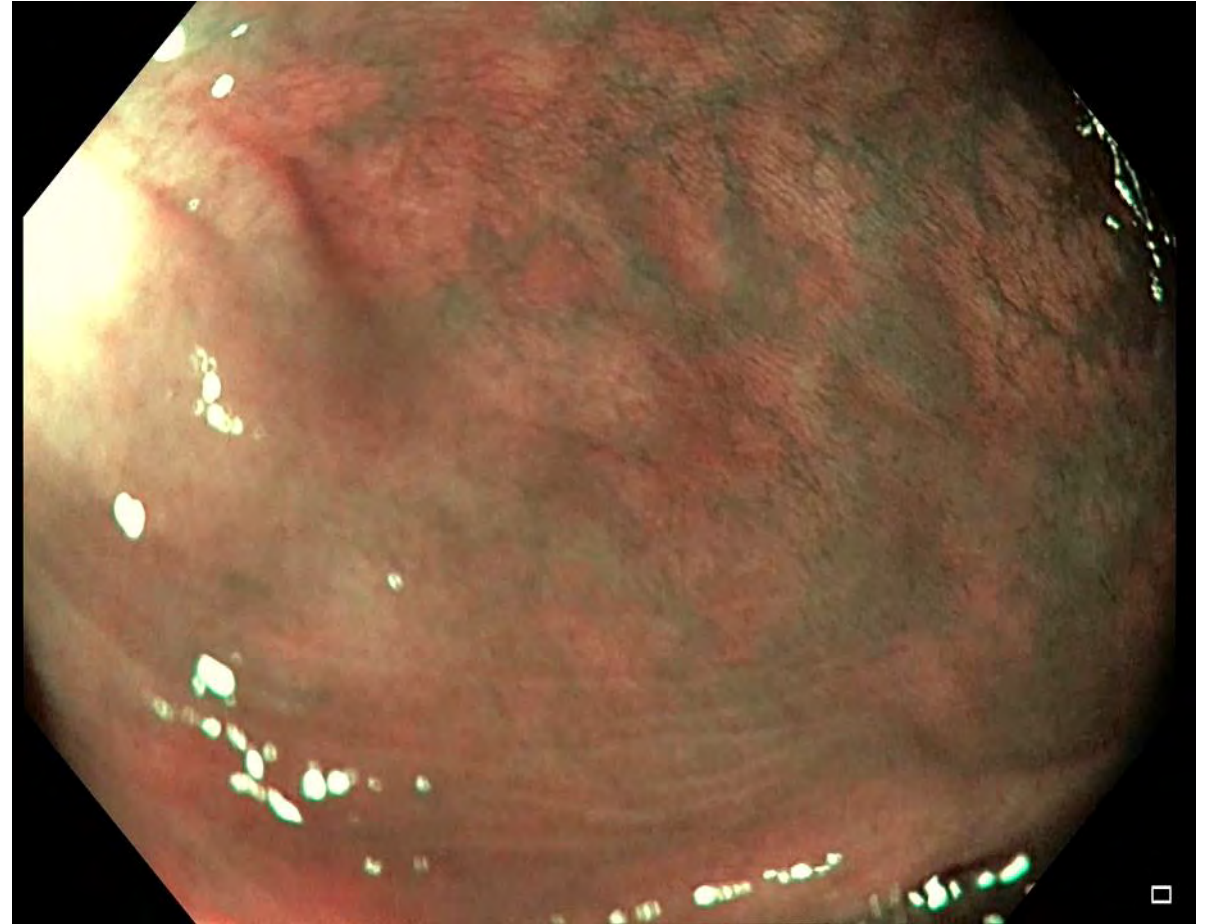
2. With contributions from Dr. DJ Tate, UK

# 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





# CSP: Defect evaluation<sup>1</sup>

- **Tips:**

- Don't worry about these protrusions = cold snare defect protrusions (CSDP)

- Single-centre, prospective, observational trial

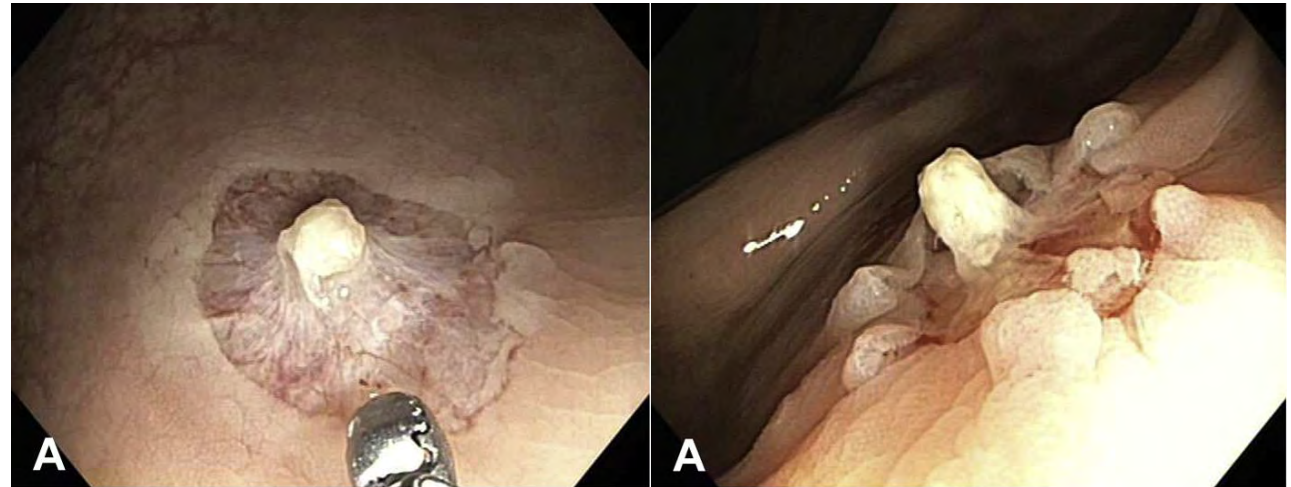
- **Methods:** All polyps  $\leq 10$  mm removed and CSDPs biopsied

- **Results:**

- N=88 (257 polyps)
- CSDP: 14.4%
- CSDP histopathology:
  - Submucosa: 95%
  - Muscularis mucosae: 80%
  - Residual polyp: 0%

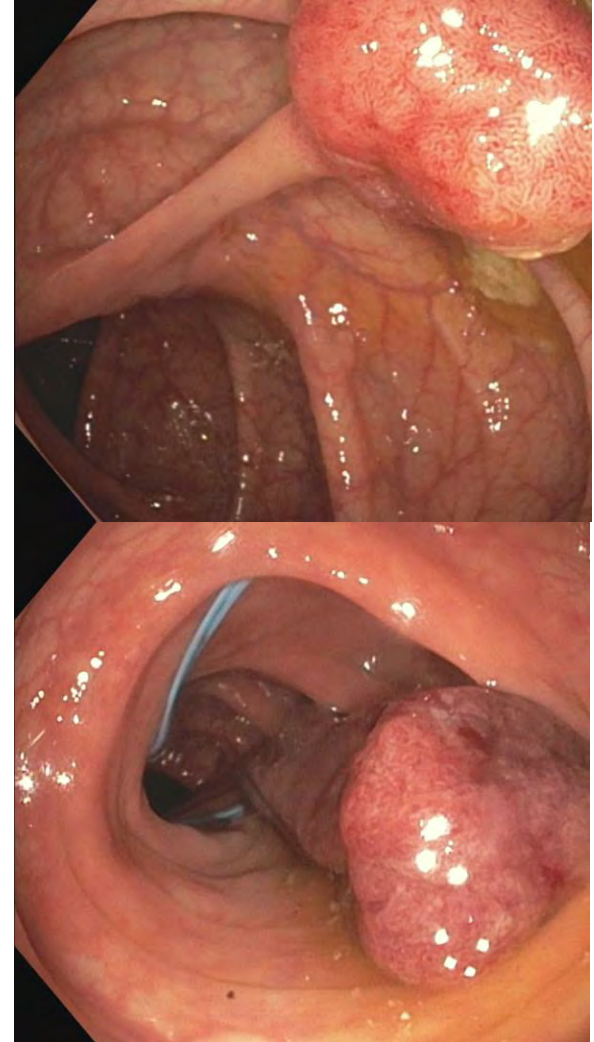
- **Conclusions:**

- CSDPs are common
- Not associated with vascular structures, residual polyp or adverse outcomes



# Pedunculated Polyps<sup>1</sup>

- 1/4 of polyps
- Majority in left colon, adenomas
- 75% > 10 mm
- Patients may present with bleeding, obstruction
- Factors associated with ↑ bleeding<sup>2</sup>:
  - Stalk diameter  $\geq$  5 mm (OR 7.17;  $p < 0.001$ )
    - Due to large vessels in stalk
  - Size of polyp  $\geq$  17 mm (OR 17.1;  $p < 0.001$ )



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<sup>1</sup>

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.

# 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

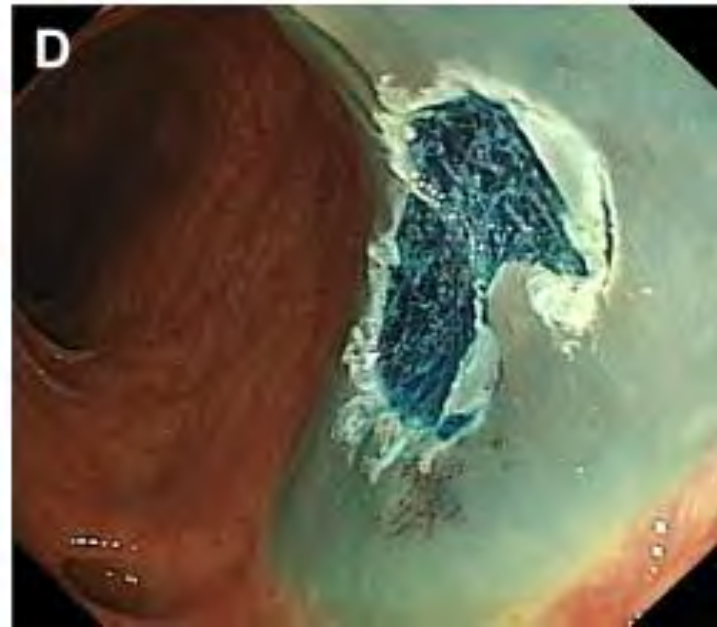
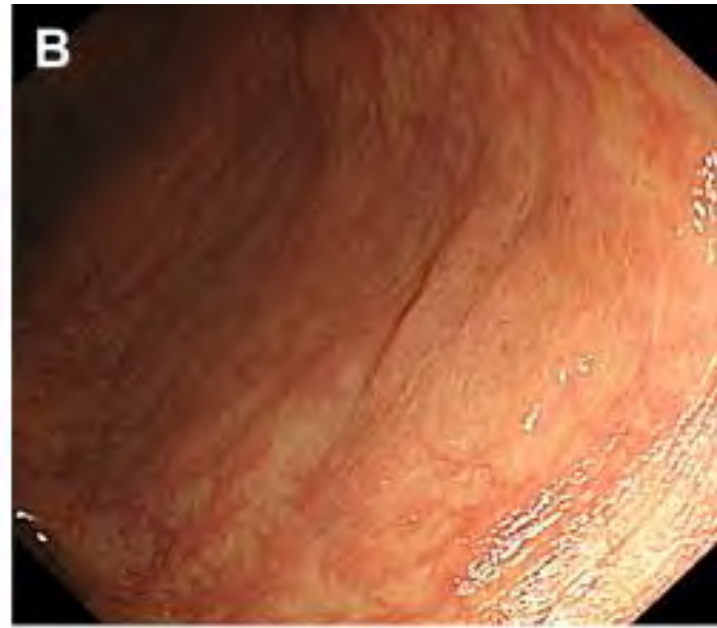
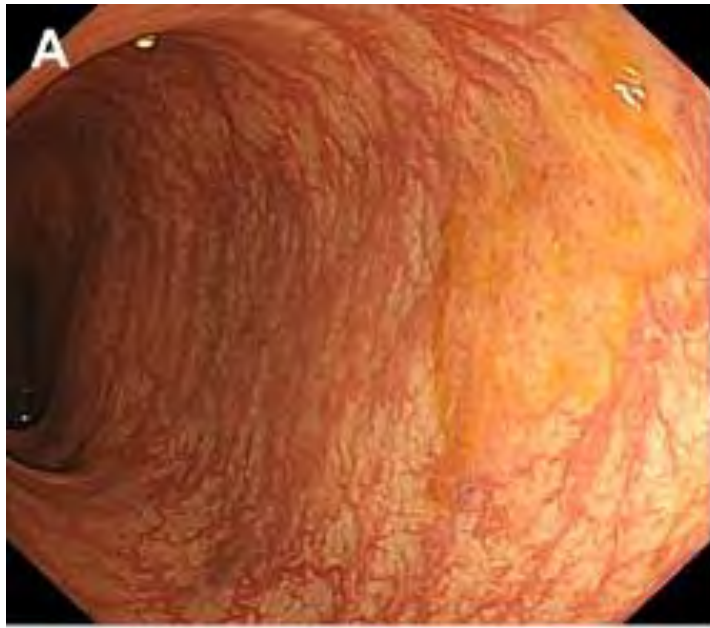
- **Submucosal injection solution**

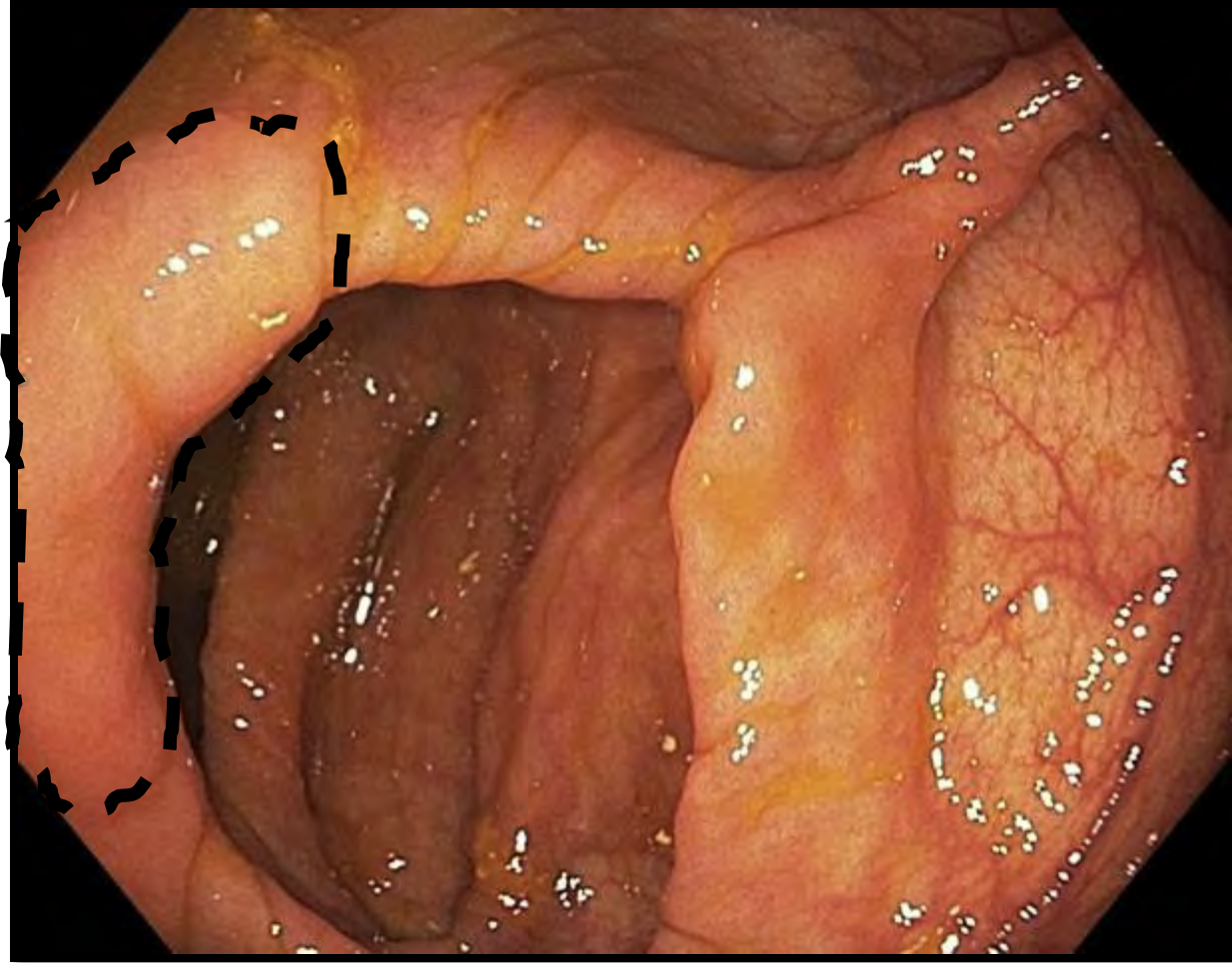
- **Methylene blue / Indigo carmine**

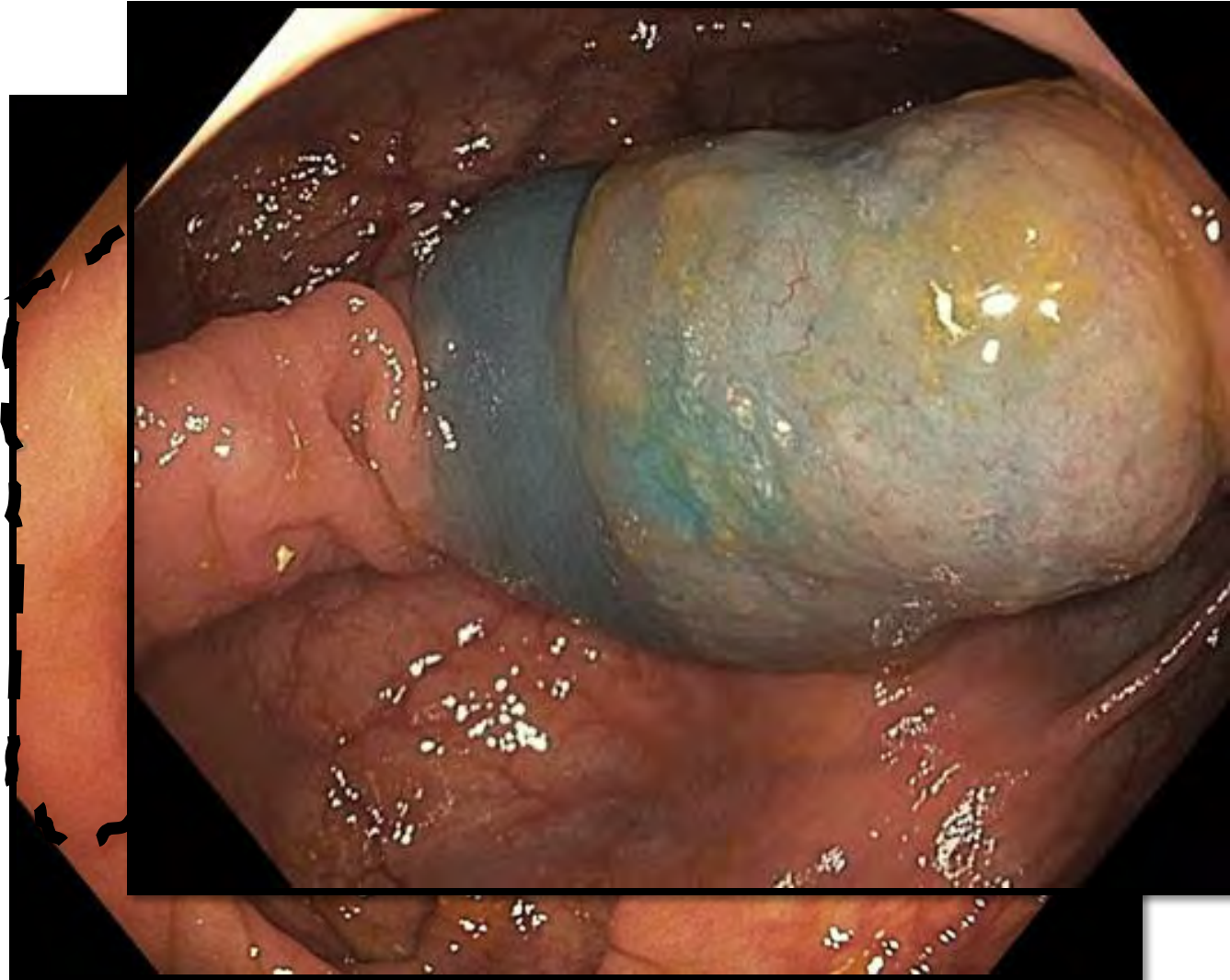
- Biologically inert blue dyes that are avid for loose areolar tissue of the SM layer
    - Confirms the resection is taking place in the correct plane
    - Helps delineate polyp borders to ensure complete resection

- **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







Dx: Portions of Sessile Serrated Adenoma

# 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

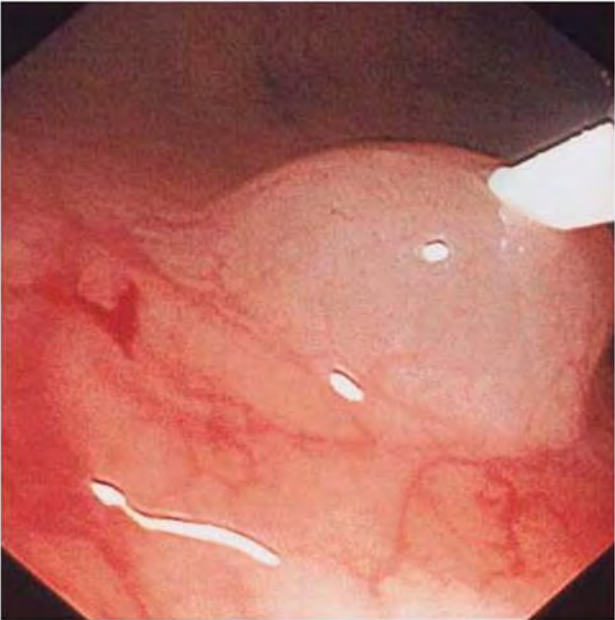
# Tattooing

- **How**

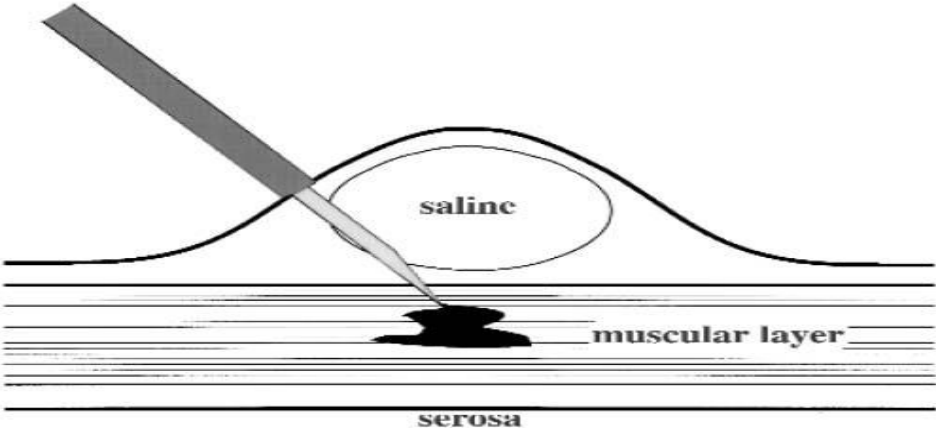
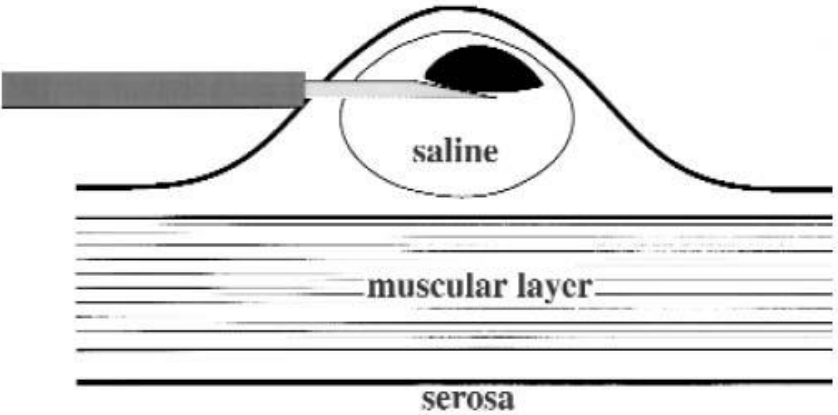
- ~5cm away from resection site, typically 1-2 separate locations on opposite wall
  - Mesenteric vs. anti-mesenteric border
- Initially create a saline “bleb” to ensure correct plane then inject SPOT into this cushion
- No more than 3cc of SPOT



# Tattooing



DO NOT →



# Tattooing

- **Complications**

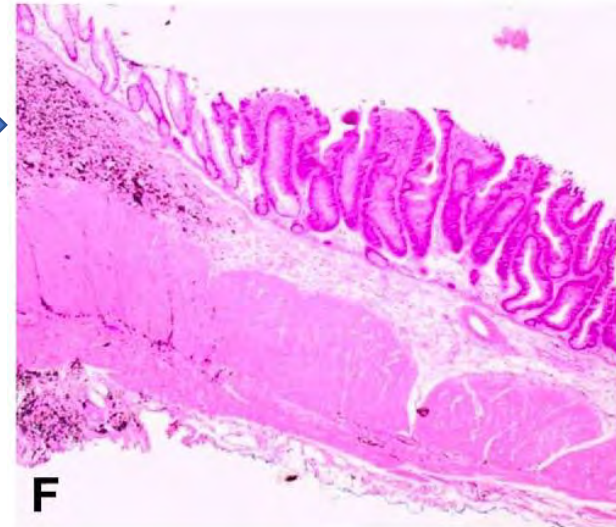
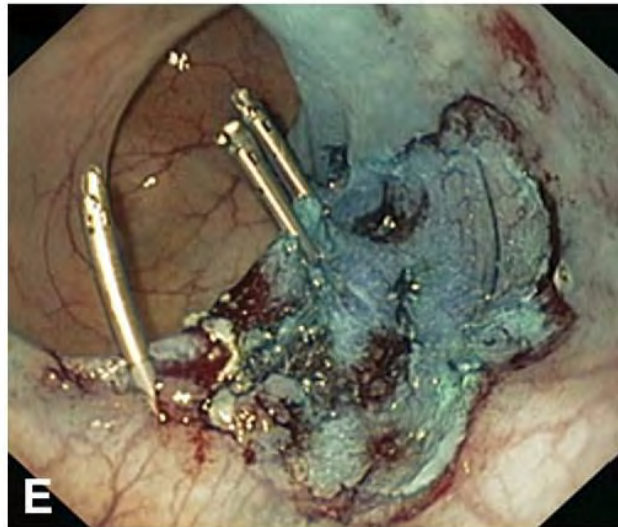
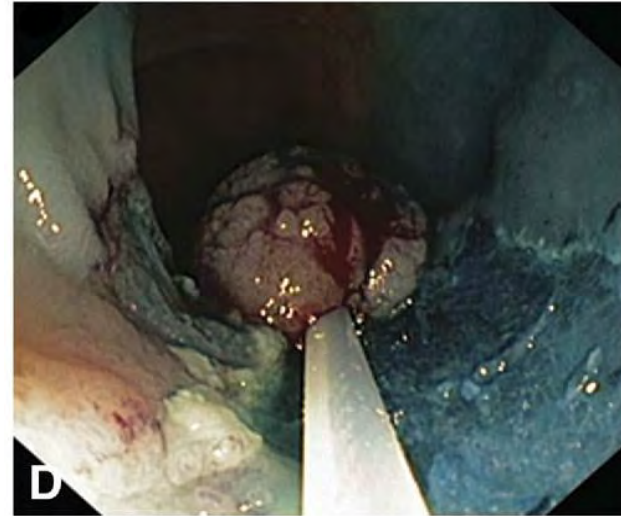
- **Transmural injection**

- Serosal inflammation, abscess, peritonitis
    - Fibrosis, adhesions

- **Direct tattooing of polyp site itself**

- SM fibrosis can results
    - Difficult to lift, significantly higher risk of perforation

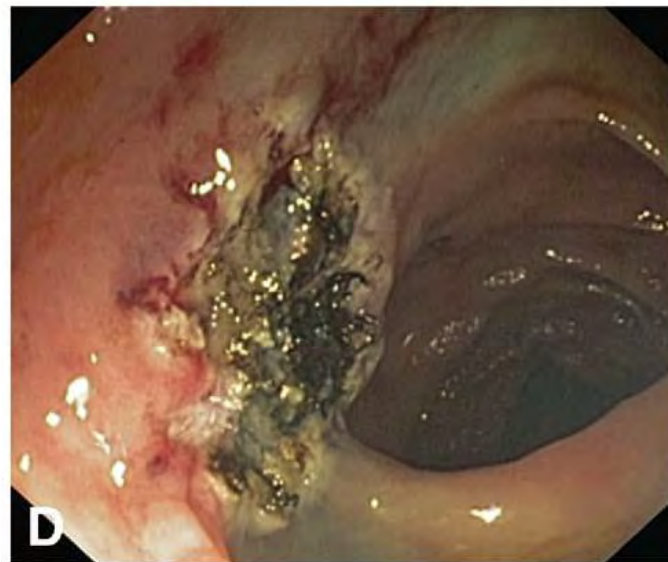
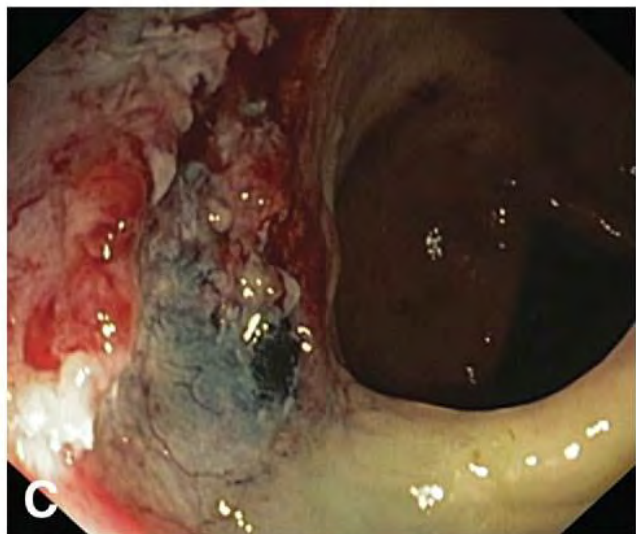




Carbon particles

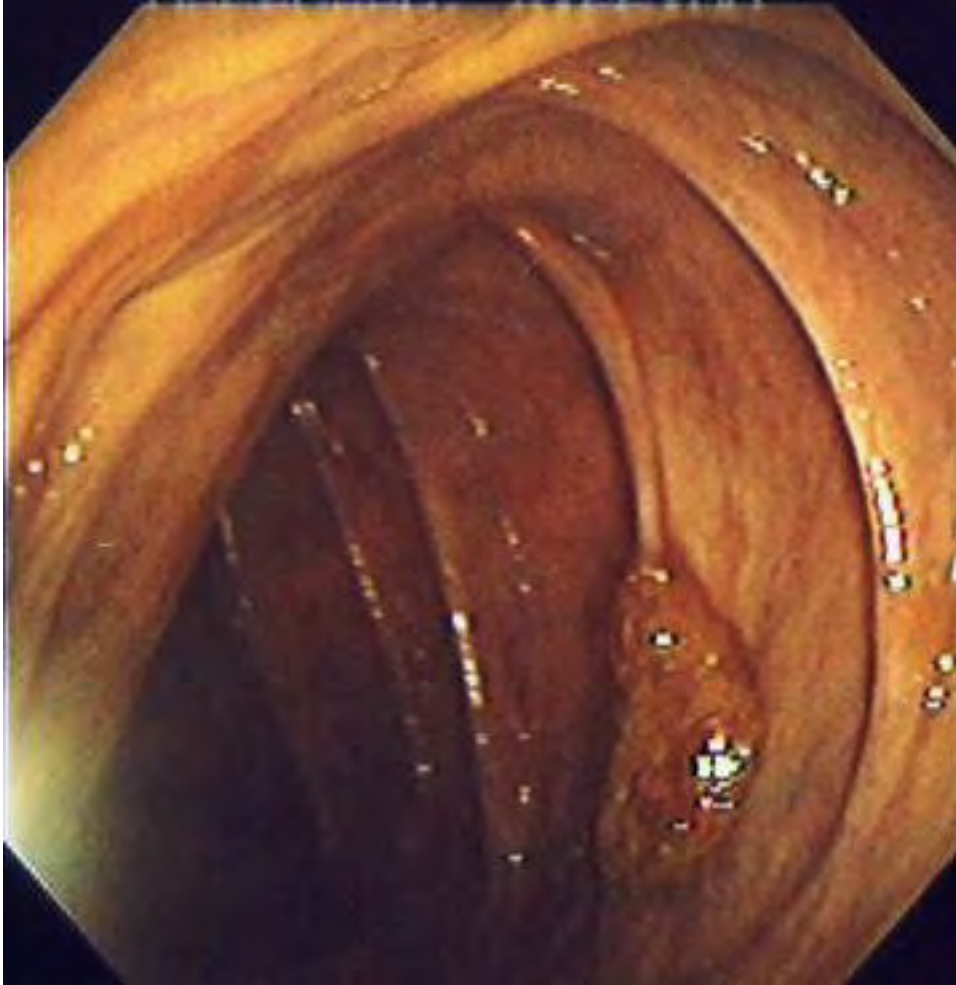


Unable to lift



**Polyp found... now what?**

# Lesion A – Ascending colon



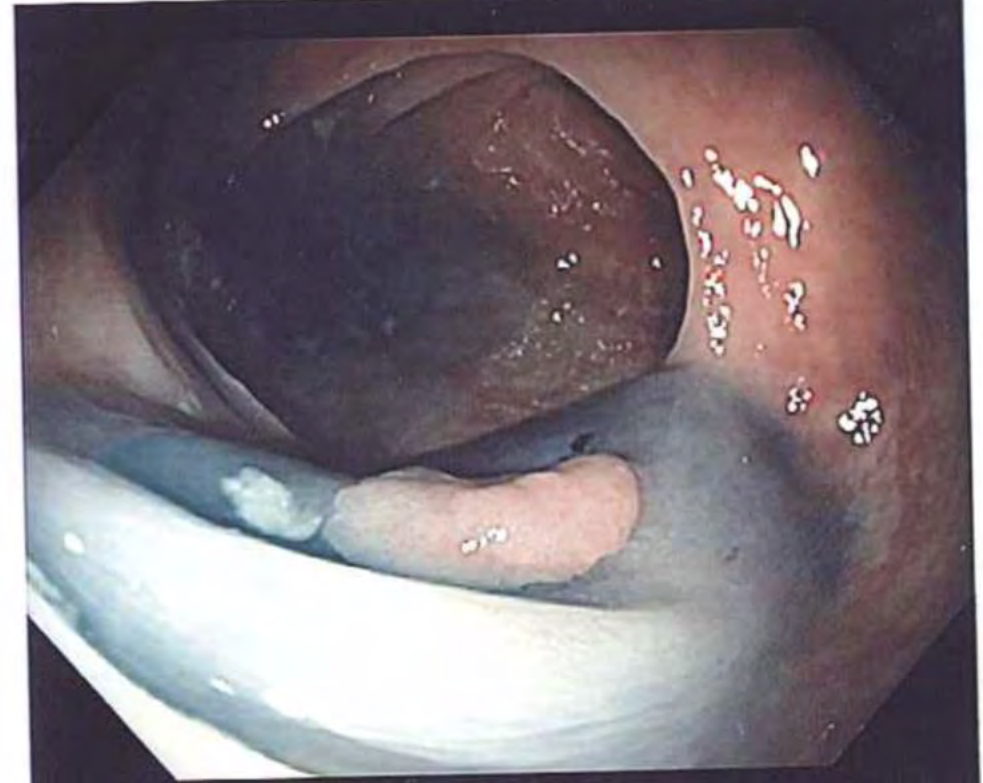
- Description
  - Classification
- Position for inspection and resection?
- What tools to use?



# Lesion B – Splenic flexure



- Description?
  - Positioning
  - Tools?
- 
- Good injection?
  - Would you inject?
  - Remove?
  - Method?



# Lesion C



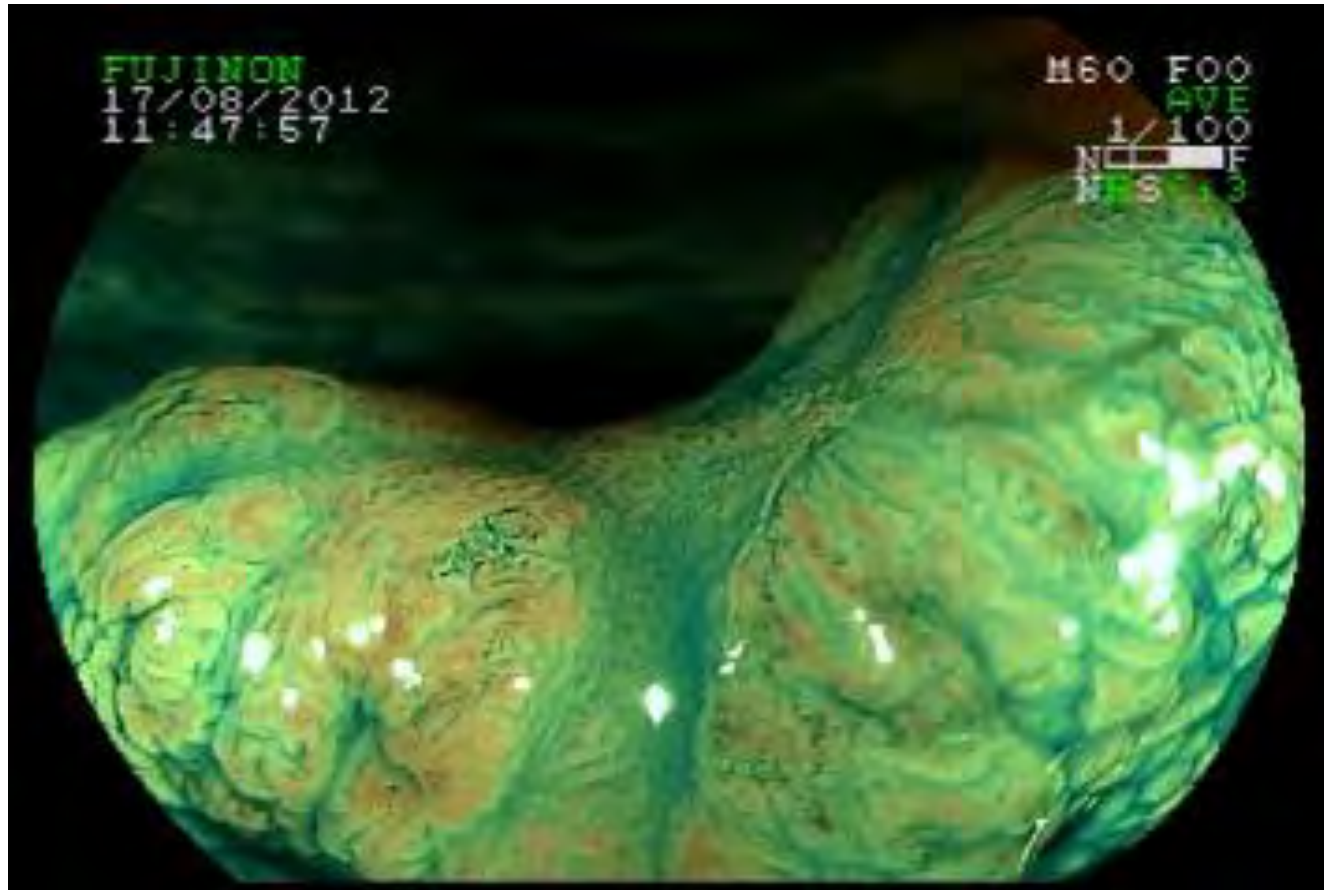
- Description
- Classification
- Size?
- How to visualize?
- Biopsy?
- Inject?
- Resect on this endoscopy?

# Lesion D - Rectosigmoid tumour



- Description
- Classification
- Size?
- How to visualize?
- Biopsy?
- Inject?
- Resect on this endoscopy?

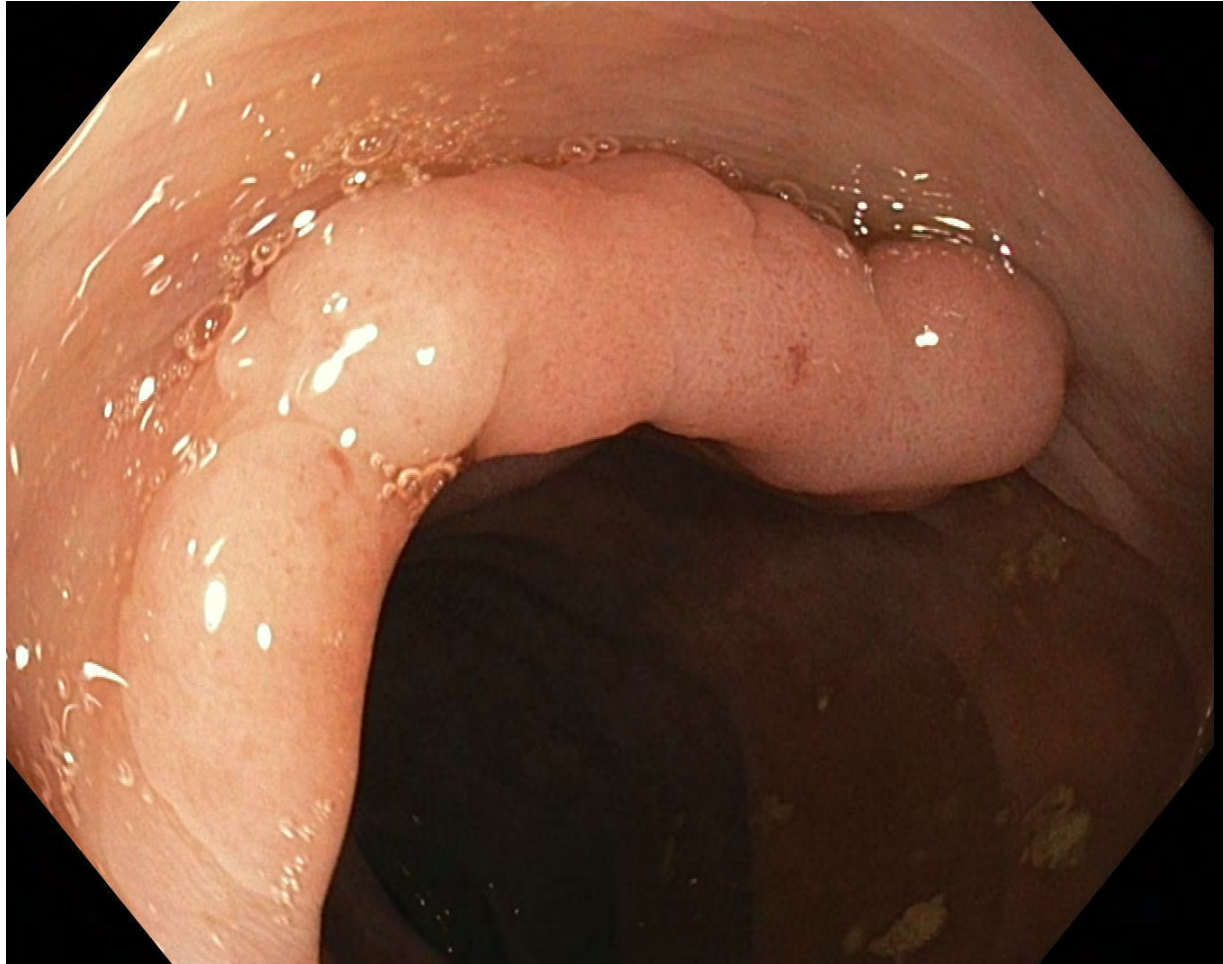
# Lesion D



- Virtual chromoendoscopy
- Describe?
- NICE?
- Resect? Surgery?

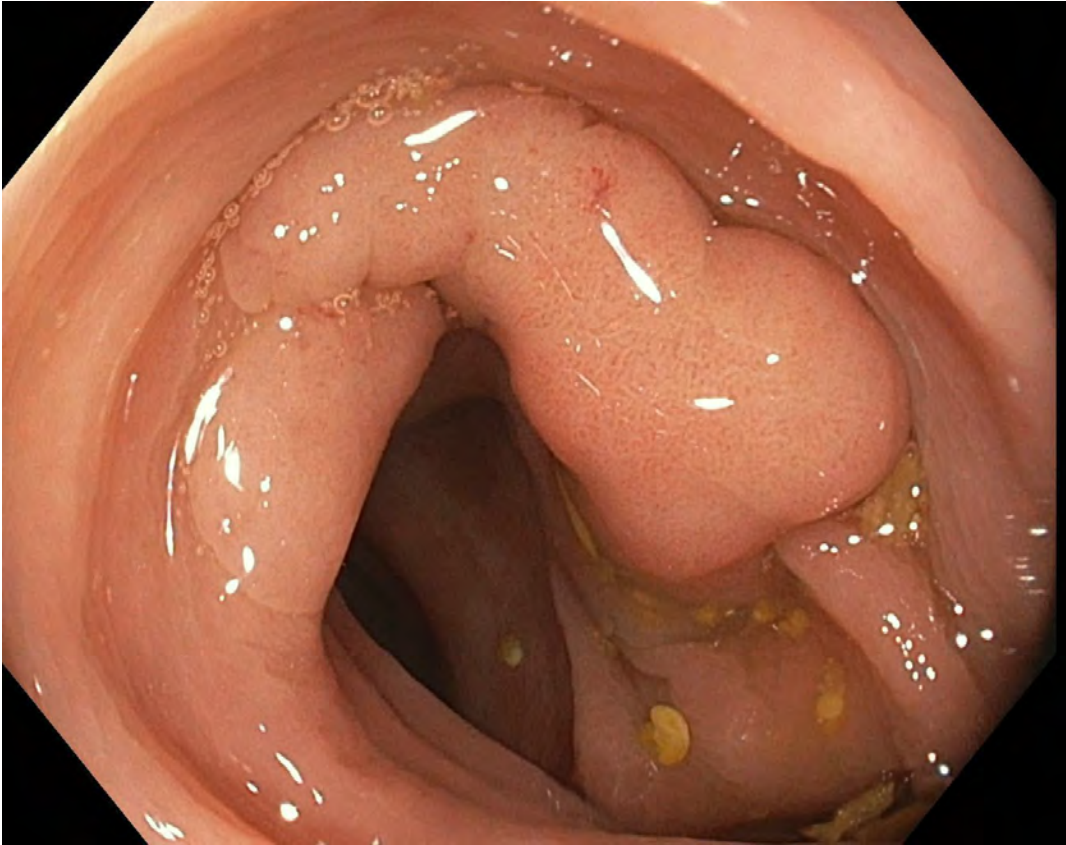


# Lesion E – Descending colon



- Description
- Classification
- Size?
- How to visualize?
- Biopsy?
- Inject?
- Resect on this endoscopy?

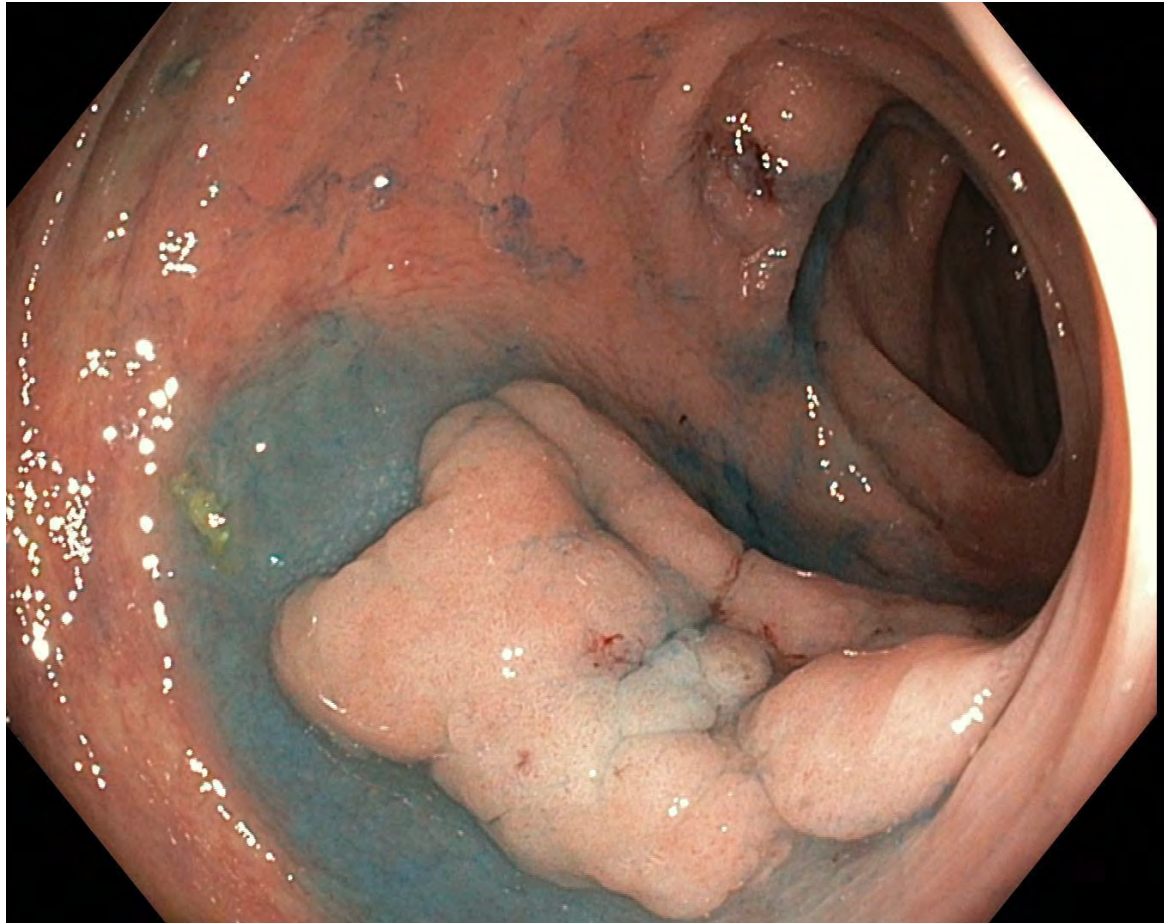
# Lesion E



- After manoeuvres – lesion is more apparent
- Classify? Size?
- Next steps?



# Lesion E



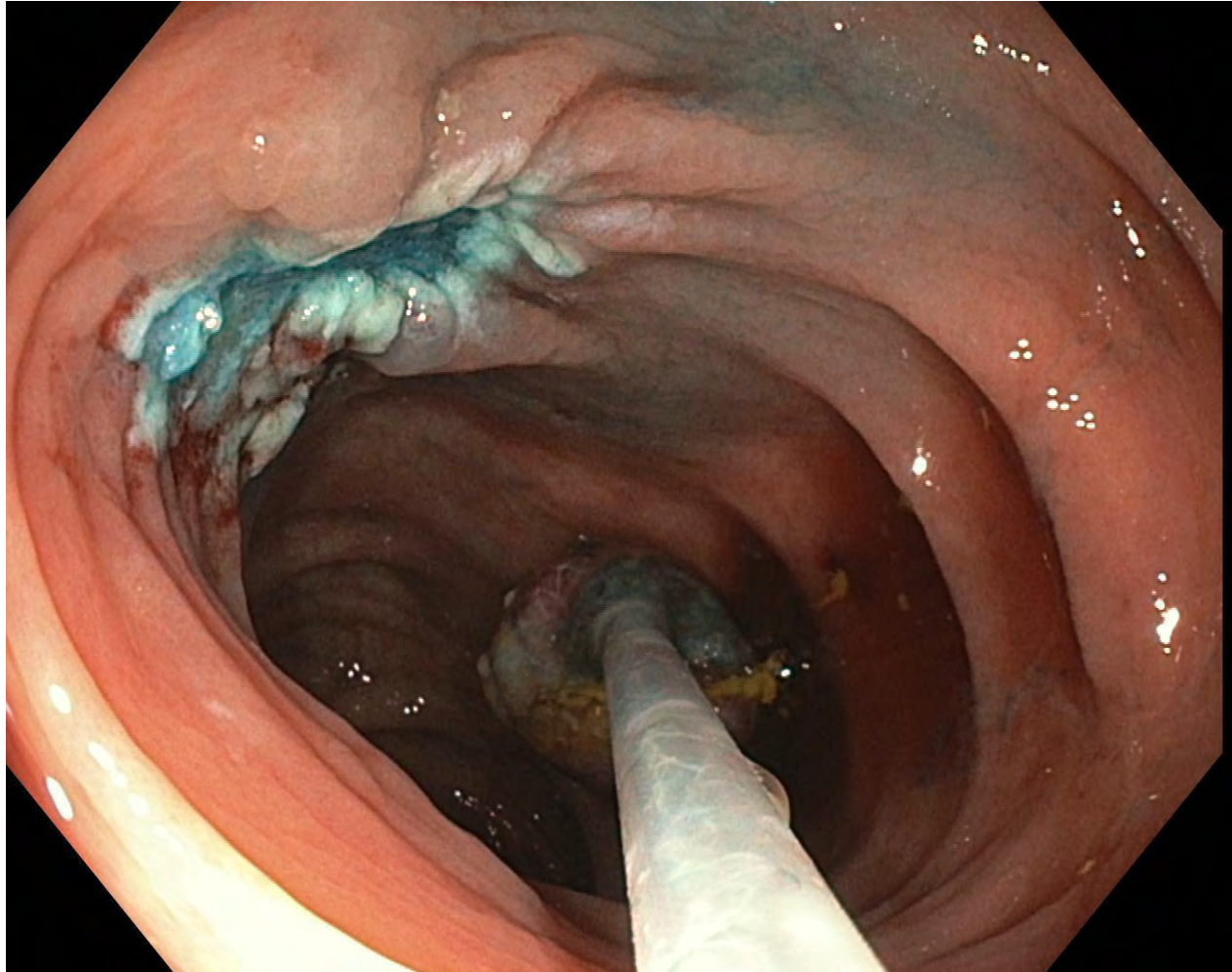
Lesion was lifted

What agents?

Would you tackle?

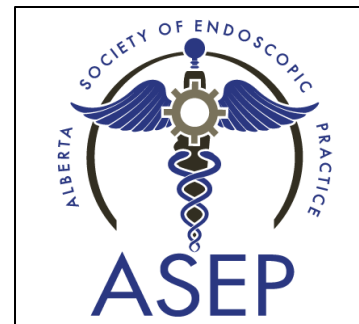
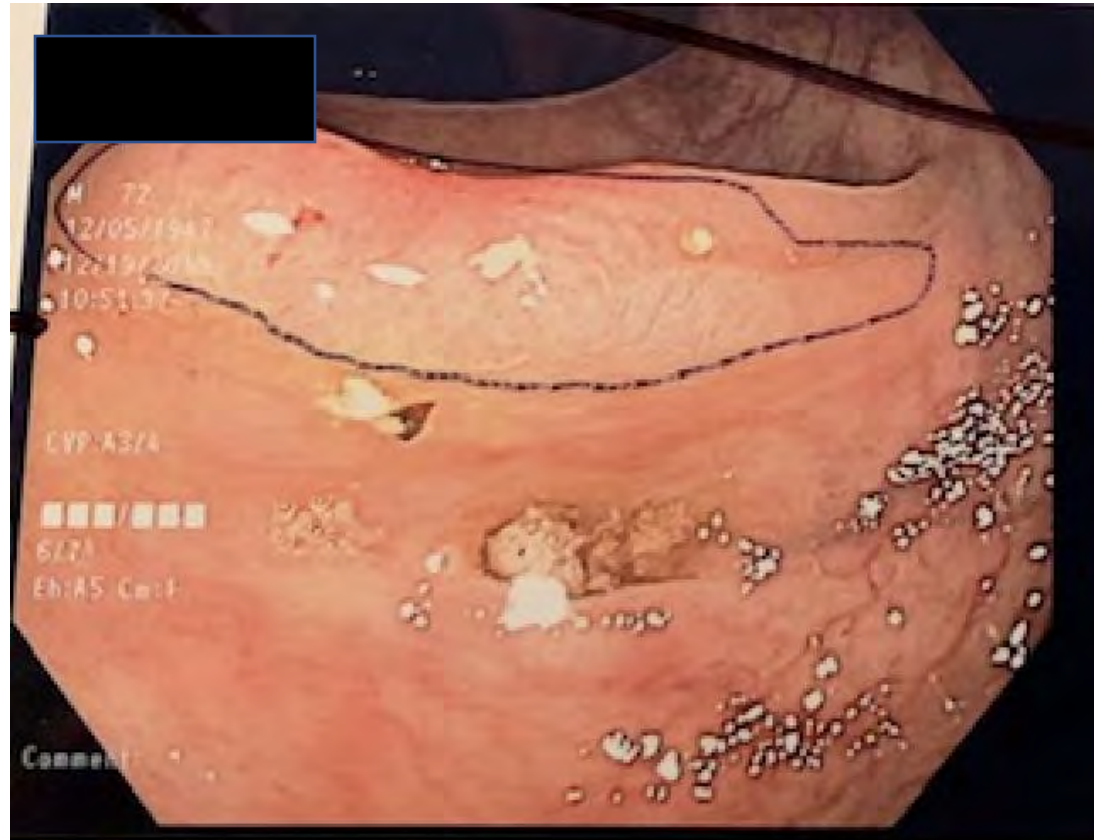
What do you think of appearance?

# Lesion E



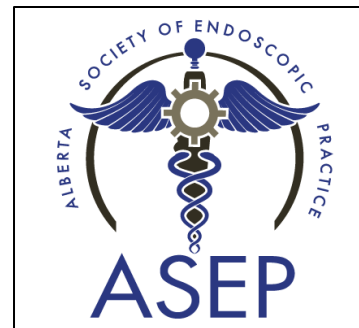
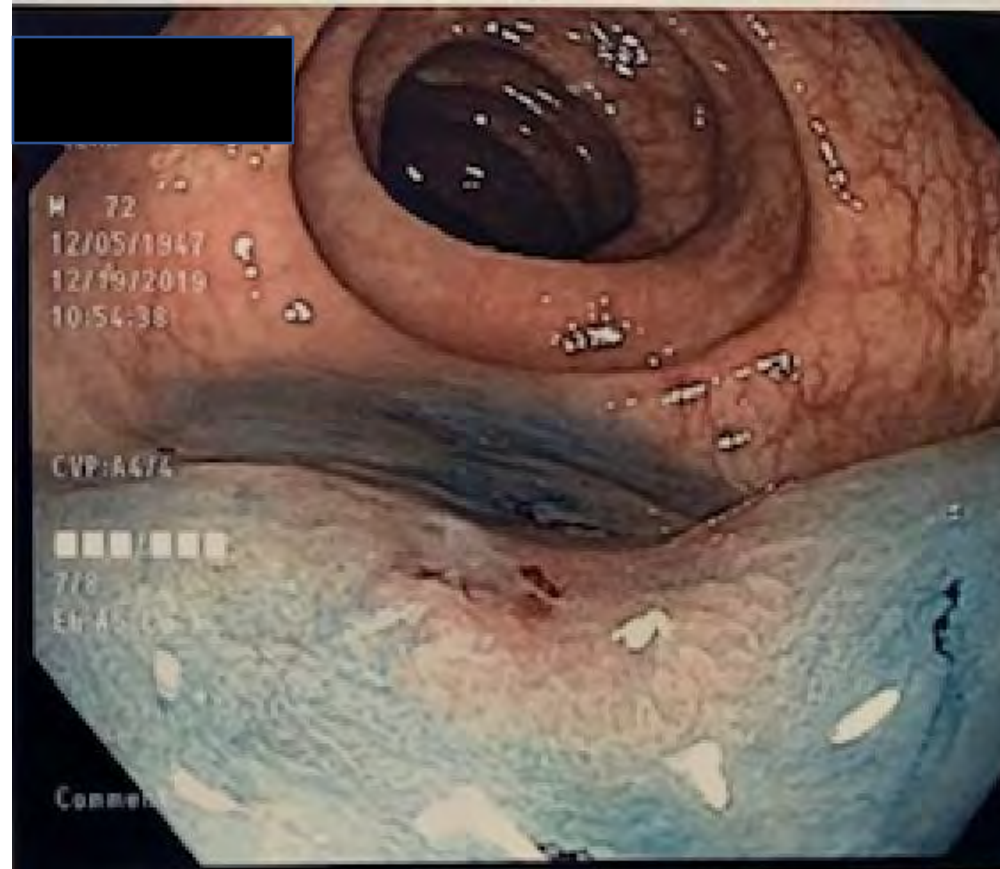
- Next steps?
- Edges?
- Retrieval?
- Followup endoscopy?

# Lesion F: What Would you Do with This?

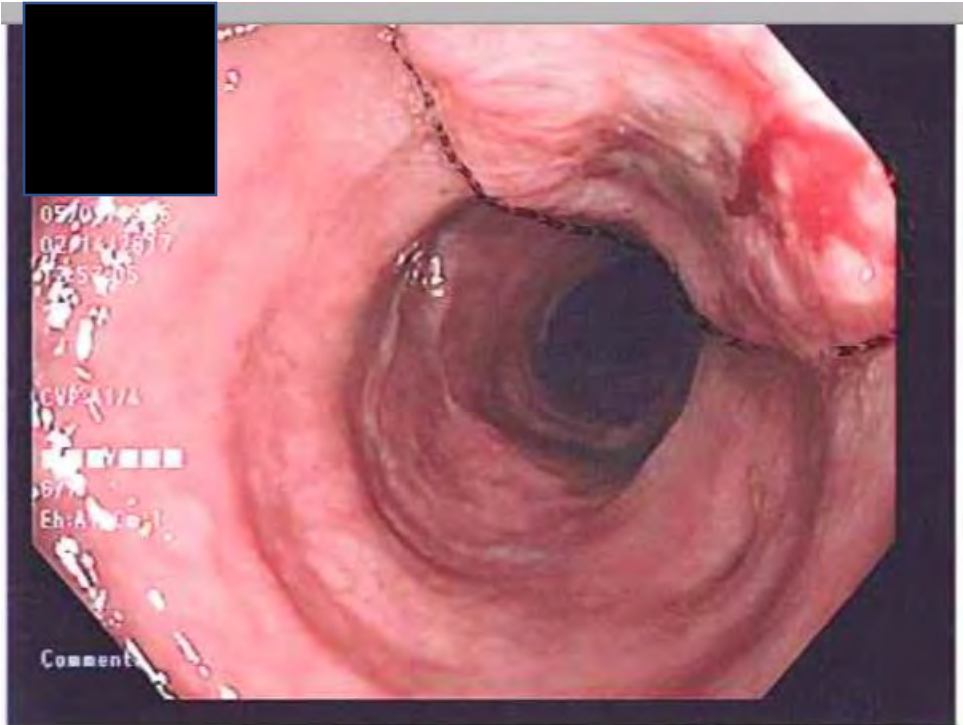




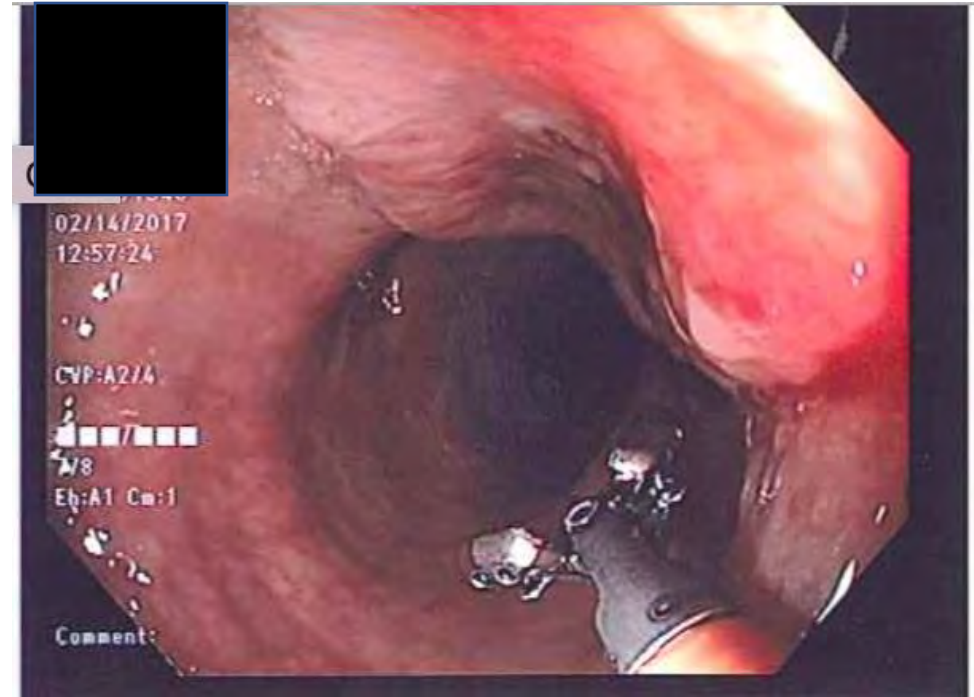
# Lesion F: What if your Injection Went Like This?



# Lesion G

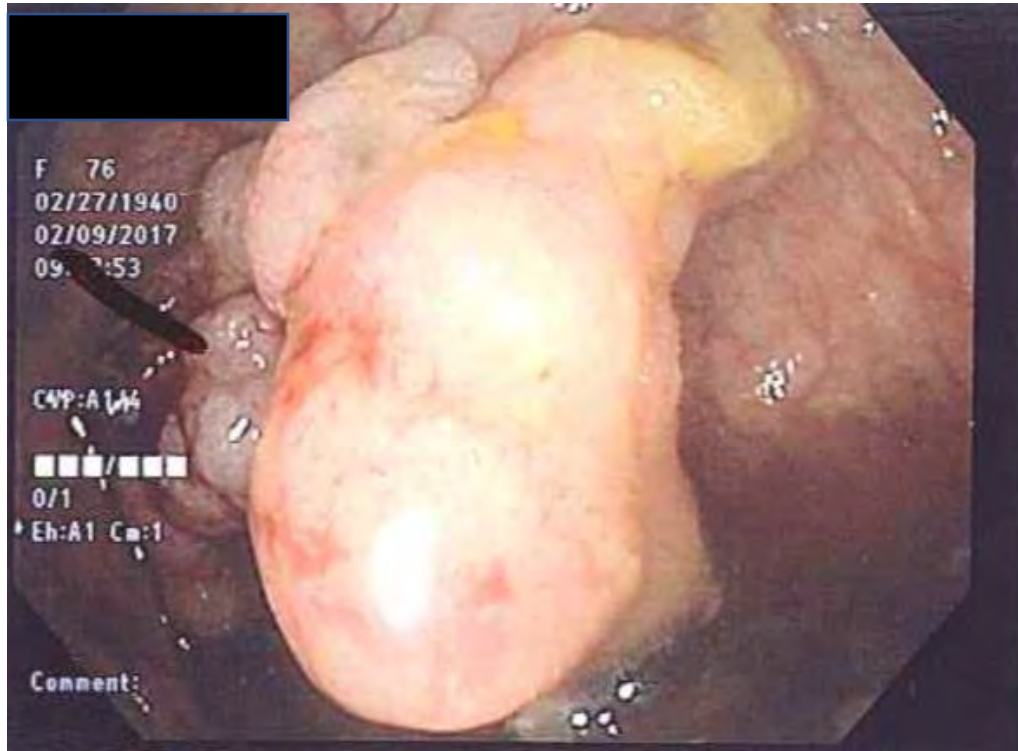


- Description
- Classification
- Size?
- How to visualize?

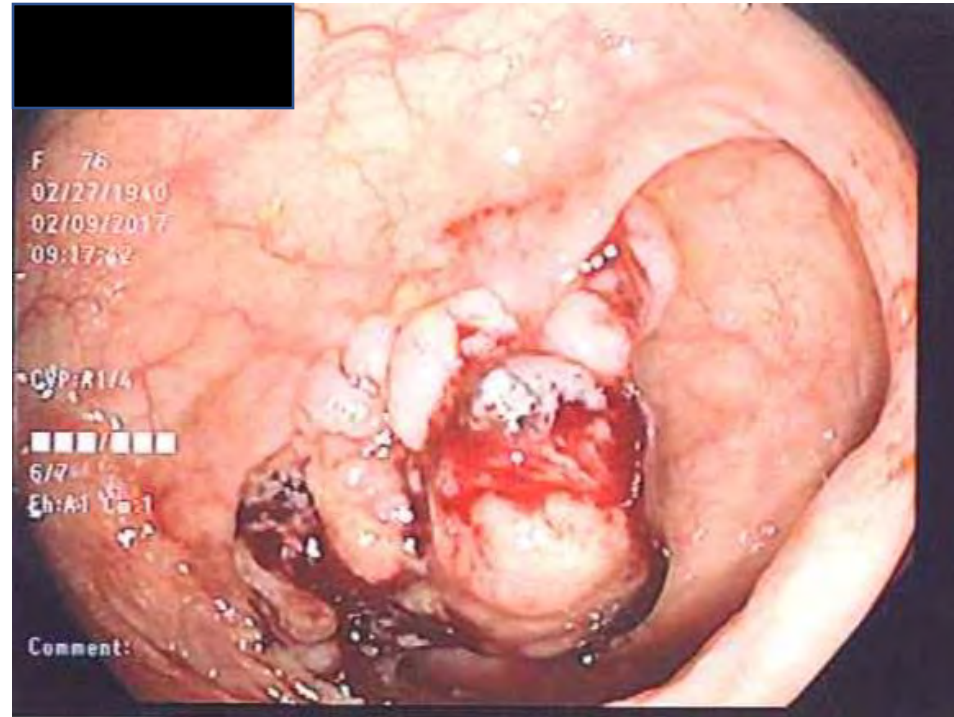


- Biopsy?
- Inject?
- Resect on this endoscopy?

# Lesion H: What Would you Do With This?



- Description
- Classification
- Size?
- How to visualize?



- Biopsy?
- Inject?
- Resect on this endoscopy?



Questions?