DIFFICULT TO DEAL COLON POLYPS

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Disclosures

• I do not have any relevant financial relationships with any commercial interests.

Colonoscopic Polypectomy

• The role of colonoscopic polypectomy in the prevention of colorectal cancer is now well-established
• Resection of adenomatous colon polyps reduces colorectal cancer incidence & mortality
• Role of endoscopic resection has expanded
• Only polyps with overt evidence of cancer or submucosal invasion should not be resected via colonoscopy otherwise all polyps are amenable to endoscopic resection

NEJM 2012;366:924

Malignant Potential of Polyp

• Visual impression
  – Ulcerations, friability, induration, failure to rise with sub-mucosal injection
• Biopsy
  – Sampling error
• Size of the polyps
  – Incidence of invasive cancer is 10% in endoscopically resected polyps 2 cm or > that met visual criteria of being benign

“Difficult” or “Defiant” Polyp

- No “impossible” polyp
- Polyp factors:
  - location, size, morphology, configuration
- Endoscopist factors:
  - experience, level of training, familiar/availability of ancillary devices for complex polypectomy
- Patient factors:
  - comorbid condition may affect recovery from complication
  - Expectations: may not be ready to experience significant complication

Polyp Factors

- Size
  - Size alone can cause some hesitation
- Morphology
  - Flat or slightly elevated above mucosal surface
- Location or configuration
  - Located on the wall of colon that is not accessible to the snare
  - Polyp in a segment of severe diverticular disease
  - Polyp wrapped around a fold in a clam-shell fashion
  - Polyp located behind a fold – difficult to approach
  - Polyp on or behind the IC valve
  - Located on appendiceal orifice
- Bleeding risk
  - Stalk >5 mm, piecemeal resection

Polyp Size

- “Large” >2 cm; “Giant” >3 cm
- Prevalence: 15-30 polyps/year at tertiary centers
- Success of endoscopic resection 90%
- Sessile polyps >2 cm in size are associated with higher adverse event rates

Polyp Morphology

- Flat or minimally elevated
- Sessile
- Laterally Spreading Tumor (LST)
  - Granular (submucosal invasion 3-7%)
  - Non-granular or smooth (submucosal invasion 14-15%)

Binmoeller KF. et al. GIE 1996;43:183
Moss A. et al. Gastroenterology 2011;140:1839
**Polyp Configuration**

- Expert could resect
- Consider referral for surgical resection
  - Colonoscopy appear difficult & demanding
  - May require multiple session

**Polyp Location**

- Polyp may extend into the appendix
  - Rare
  - Total removal of this type is problematic

**Polyp Configuration**

- May be almost impossible to remove entire polyp
  - Portion that lies in the valley between 2 inter-haustral septae
Difficult Colon Polyp

**Polyp Bleeding Risk**

- Large pedunculated polyp (>2 cm) with broad stalk (>5 mm) may bleed during or after polypectomy
  - Large feeding vessels
- Endoloop with epinephrine injection or endoscopic clip may decrease risk of bleeding

Hogan et al. GIE 2007;66:1018

**Presence of Sub-mucosal Fibrosis**

- Previous attempts at resection or injudicious biopsy
- Fibrosis adheres mucosa & submucosa to MP resulting in incomplete separation of layers
  - Areas of non-lifting with submucosal injection
- Risk of submucosal invasive cancer can be determined accurately from gross appearance, biopsies are often not required


- Laterally spreading tumors
- Sessile or flat lesion >2 cm
- Controlled by using thermal modalities or endoscopic clips
Practice Issues for Difficult Polypectomy

- Risks & informed consent
- Which snare or type of scope to use
- Technique
  - EMR
  - En-block vs piecemeal
  - Use of APC
- Judging & marking the location of the lesion

Risks & Informed Consent

- Repeated endoscopy session, need for FU colonoscopy
  - Recurrence rate of 10%
  - >1 session in 11%; >2 sessions in 2%
- Risk of complications
  - Perforation 2%
  - Bleeding requiring intervention 5%
- Inpatient versus ambulatory
- Availability of resources
  - Ancillary staff, equipment, times, endoscopic skills
- Referral to tertiary-care center
  - Resources are not sufficient to remove the entire lesion safely & manage adverse events


Endoscope for Difficult Polypectomy

- Many use standard colonoscope
- Therapeutic colonoscope (4.2 mm channel) useful in case of bleeding
- Sometimes a thinner colonoscope (pediatric or gastroscope) is helpful
  - Lighter bending radius of the tip
  - The tip is shorter beyond the bending portion
- Gastroscope has greater tip deflection capability & shorter nose which may helpful in rectal polyps

Endoscope for Difficult Polypectomy

- Retroflexion
  - Polyps on the proximal aspect of folds, clam shell polyp, polyps on anterior/medial wall of cecum
  - Safe & effective
  - RF related perforation has been reported
  - Use gastroscope for RF in left colon

Difficult Colon Polyp

Snare for Difficult Polypectomy

- Mini snare (3x1 cm), standard snare (6 cm)
- Braided vs. monofilament, no difference
- Braided snare may be helpful in difficult & tight locations such as segment of diverticulosis or inter-haustral folds
- Braided snare creates more coagulation effect decreasing the risk of bleeding but increases risk of perforation – greater thermal penetration depth


Difficult Colon Polyp

EMR for Difficult Polypectomy

- Inject-and-resect or standard EMR
- Cap assisted EMR
- Underwater EMR

Inject-and-Resect EMR

- Often used for large sessile polyps
- Large submucosal “cushion” of fluid decrease likelihood of thermal injury to the serosal surface
- NS (normal or hypertonic) with or without MB & with or without epinephrine (1:10,000 to 20,000)
  - Doesn’t prevent PP bleeding
- Hyaluronate (0.5%), remains at inj site longer than NS
- MB stains areolar tissue of submucosa, creates homogenous post-resection plane
  - Non-staining may represent residual adenoma or MP exposed by deeper resection
Inject-and-Resect EMR

• Achieve a stable endoscope tip position
• Orient the polyp at 5 to 7 o'clock position

Inject-and-Resect EMR

• If using a snare, be aware of its closed position on the handle prior to grasping the polyp
• Inject edge or center of the polyp
• Polyp behind a fold or wrapped around in a clamshell fashion then inject far side of polyp first
• Use tangential approach
• Usual inject volume 3-4 ml, up to 30 ml in some cases
• En-block resection for 2 cm and piecemeal for >2 cm
• Non-lifting sign: sub-mucosal invasion or prior resection attempts
Difficult Colon Polyp

Inject-and-Resect EMR
- Do not feel compelled that all polyps must be removed endoscopically
- Patient & his family are unlikely to be fully prepared for the consequences of perforation
- Biopsy, document the lesion
- Discuss with patient & family options such as repeat colonoscopy after detailed discussion of potential risks or lap resection

Cap-assisted EMR
- The lesion is aspirated into a specially designed cap that has an inbuilt gutter containing a snare
- The risk of perforation is high when the cap is filled with tissue in the thin-walled colon
- Standard EMR is as effective
- Requirement for specialized equipment has limited use of this technique

Underwater EMR
- Water immersion maintains involutions of mucosa and submucosa & floats these away from the deeper MP layer
- The lesion is resected by snare with cautery
- The non-lifting sign for submucosal invasion by CA is lost
- Small series by single operator – outcome as good as standard EMR
- Need multi center RCT in a large cohort with range of operators

Adjuvant Thermal Ablation
- Argon plasma coagulation, snare tip soft coagulation, hot biopsy forceps
- Thermal ablation of visible residual adenoma after polypectomy of large polyp
  - Small studies
  - Recurrence is reduced
  - Effect is unreliable
  - Adenoma persists in 14 to 50% of cases
  - Widely used because few other studied thermal ablation modalities are available
Judging & Marking Location of Polyp

- Location by depth of insertion: poor method of tip localization as there is no relation between tip location & depth of insertion
  - “polyp was found 70 cm from anal verge” meaningless
- Tattoo for lap resection or FU
  - Ideal method
  - Place injection 2 or 3 cm from the polyp because infiltration of ink particles into the submucosa underlying the polyp can cause fibrotic reaction
- Endoscopic landmarks: cecum, rectum
- Endoscopic clips: usually fall off in 10 days

Judging & Marking Location of Polyp

- Approach the mucosa tangentially
- Insert the needle into the wall & then withdraw until 1/3rd to ½ of needle is embedded, lift toward the lumen & inject small amount to confirm submucosal bleb
- For surgery mark full circumference, 3 quadrant 2-3 cm distal to lesion, “a circumferential tattoo is placed 3 cm distal to polyp”
- For FU, place tattoo on opposite wall or 2-3 cm distal & include description in the report for easier identification at FU, “with the lesion down the tattoo is the right”
Follow-up after Difficult Colon Polypectomy

- Recurrence or residual adenoma at 1st surveillance colonoscopy (3-6 months) is 10% to 30%,
  - Recurrence is usually diminutive & is managed endoscopically
- Recurrence rate at 2nd surveillance colonoscopy (12 months later) is 4% if no recurrence at 1st surveillance colonoscopy; however, recurrence rate is 20% if recurrence occurs at 1st colonoscopy that has been treated
  - FU at 1 year is essential
- US Multi-Society Task Force on Colorectal Cancer recommends FU within 1 year for flat & sessile polyps >15 mm if there is any questions about incomplete resection

Complications

- Bleeding
  - 4 to 24 percent, our study 5%
  - Definition of bleeding varies among studies
  - Risk factors: size, large sessile, proximal location, anticoagulation use
  - Pure cut vs pure coagulation vs endocut
  - Endoscopic intervention successful
  - Prophylactic clip?
- Perforation
  - 0-2%
- Post polypectomy syndrome: transmural thermal injury
  - 1 to 4 percent
  - Responds to conservative management

Sources:
- Moss et al. Gastroenterology 2011;140:1908
- Moss et al. Gut 2015;64:57
Conclusion

- The success or failure of colonoscopic polypectomy is determined by patient, polyp and endoscopist factors.
- High rates of successful endoscopic resection of difficult colon polyps have been reported in tertiary-level advanced endoscopy units.
- Only contraindication to endoscopic resection is a polyp that appear to have invasive cancer on visual inspection or fails to rise after submucosal injection.
- DO NOT feel compelled that all polyps must be removed endoscopically; however, understand your “comfort level” & consider referral to an advanced endoscopy unit prior to surgery referral for laparoscopic resection.