

2023 SCSG LGI SYMPOSIUM



EMR vs ESD for Large Polyps

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Disclosures

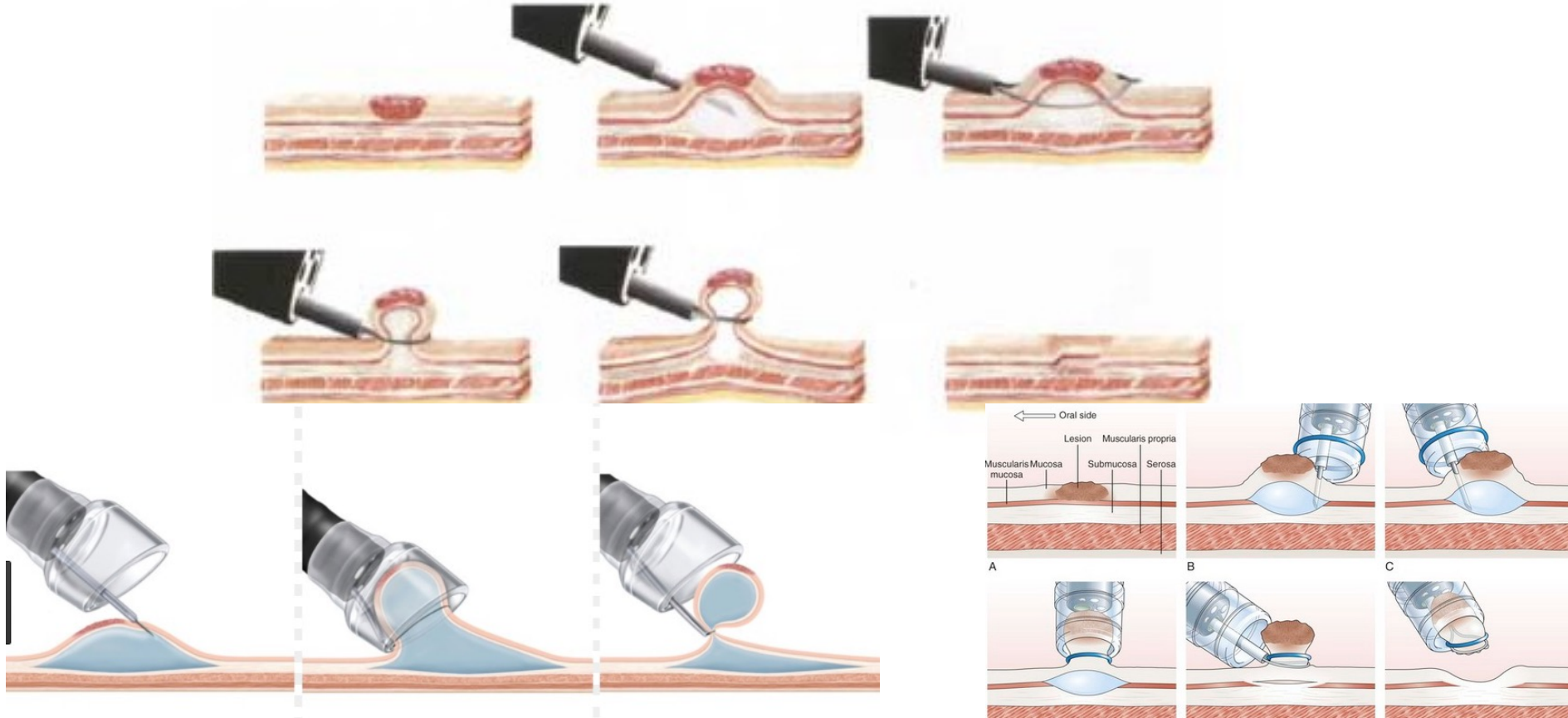


- Cook: Consultant
- Olympus: Consultant
- Boston Scientific: Consultant
- Noah Medical: Consultant

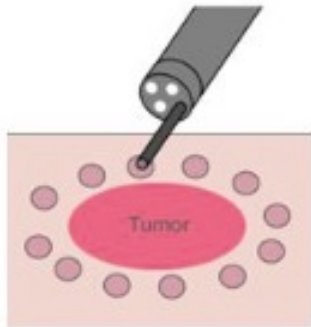
Introduction: Terminology

- EMR: Endoscopic mucosal resection
 - Usually with submucosal injection and resection using a snare loop.
 - For en bloc resection of small superficial lesions
 - Piecemeal resection of larger lesions
 - Multiple techniques for EMR
- ESD: endoscopic submucosal dissection
 - Submucosal injection and dissection using specialized electrosurgical knives.
 - For en-bloc resection of superficial lesions of the GI tract of any size

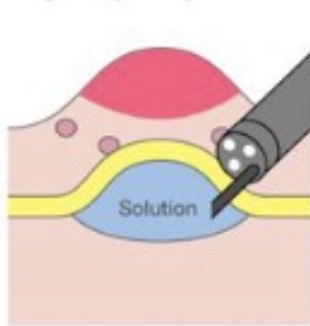
What is EMR?



What is ESD?



1. Create markings around the tumor to be cut away.



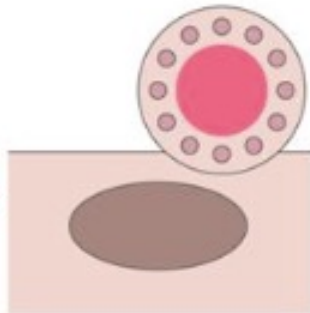
2. Inject saline solution underneath the affected area to raise it.



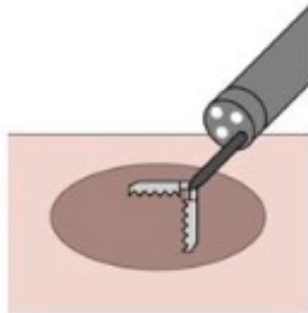
3. Cut along the markings using an insulated-tip knife.



4. Remove the cancerous tissue.

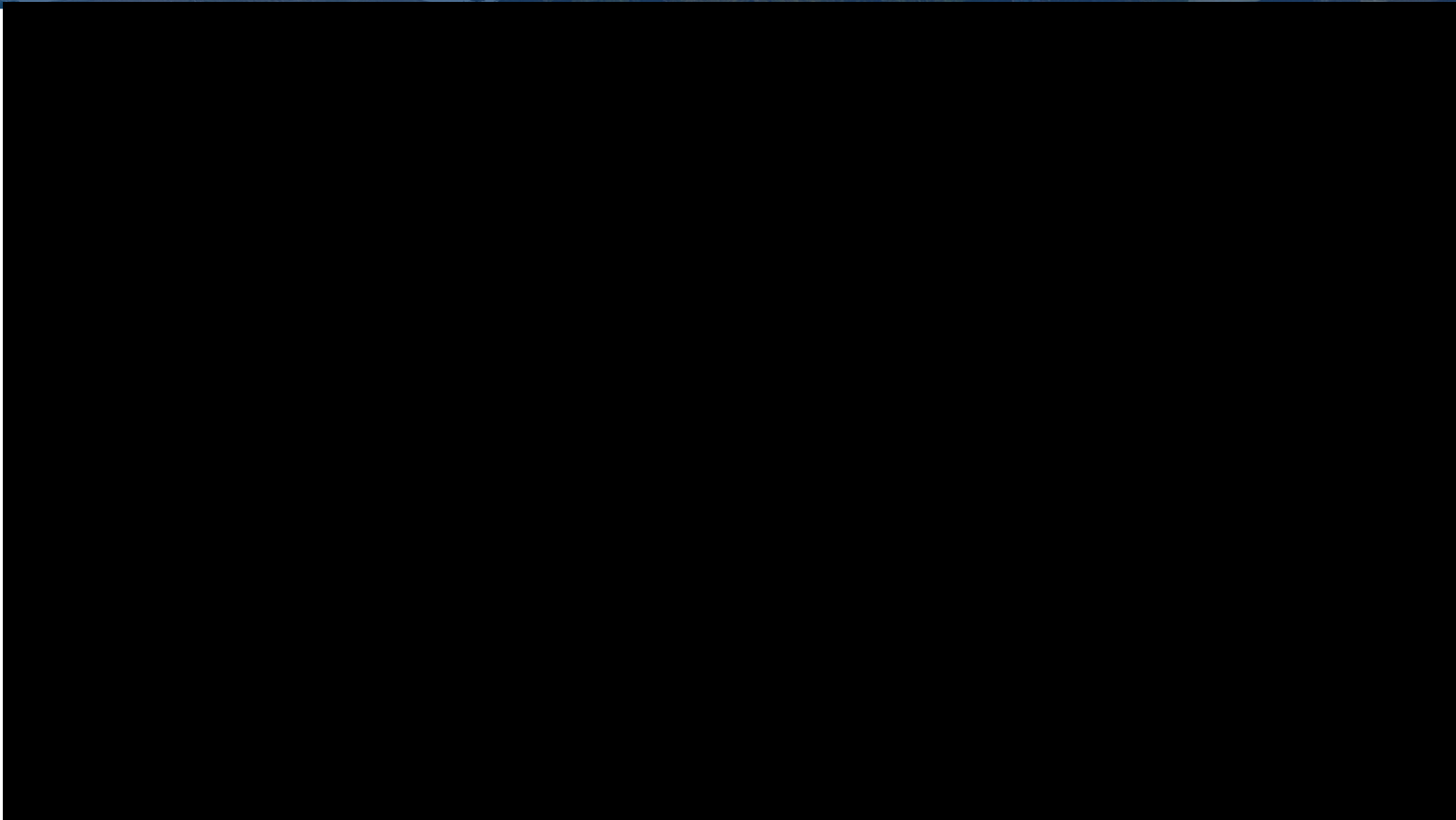


5. Remove the tumor through the orifice. Send samples to the pathology laboratory to see whether there is a possibility that the cancer has spread.

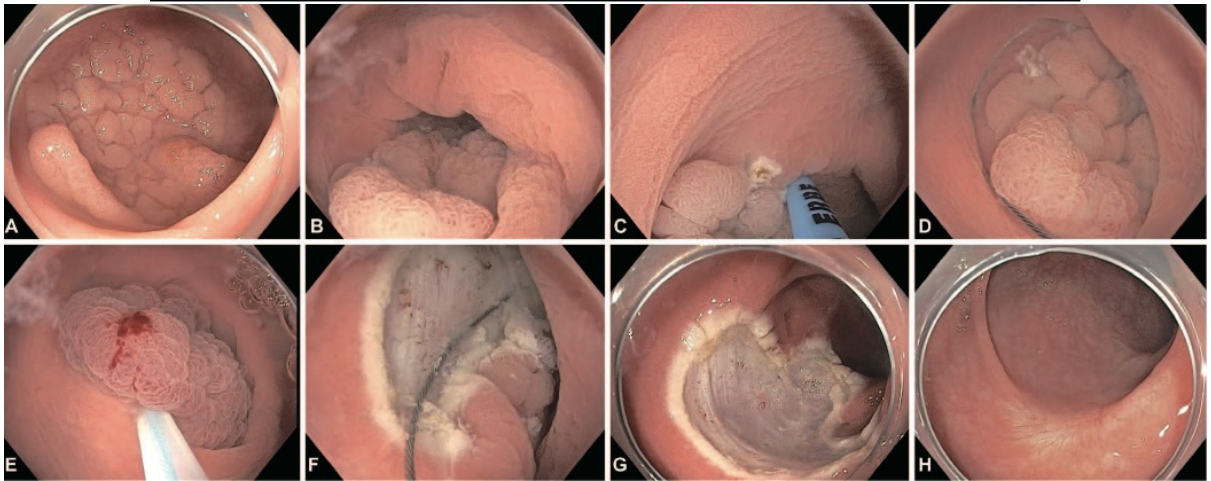
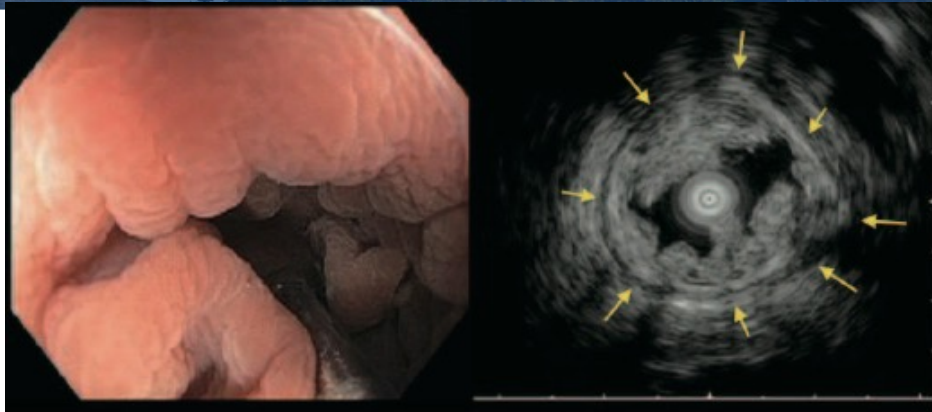


6. Stop any bleeding.

Colon EMR video



Underwater EMR



Underwater EMR video



Rectal ESD



Introduction to ESD

- Goal of ESD: Staging and curative endoscopic resection
- Requirements for ESD
 - Localized tumor: intramucosal (superficial submucosal invasion: SM1)
 - No lymph node metastasis
 - Histopathologic type (well-differentiated)
 - No Lymphovascular invasion

ESD: Pros and Cons

Advantages

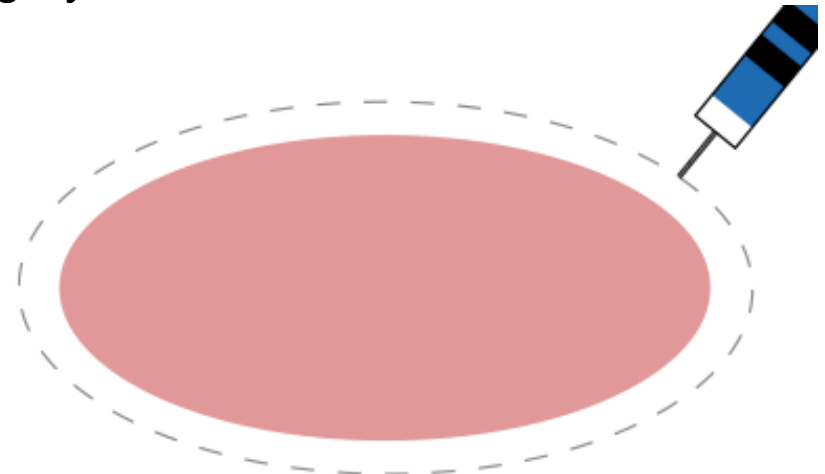
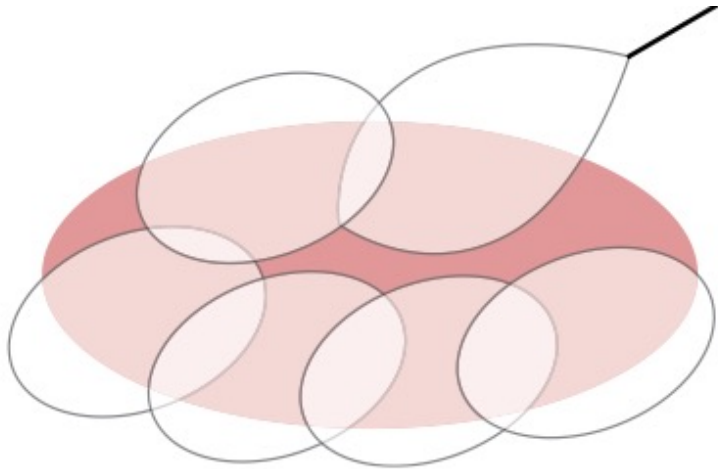
- Technically easier compared to ESD
- Easy to train
- Quick procedure
- Effective and safe in most cases (benign disease)

Disadvantages

- En bloc resection of only small lesion
- Complete resection not ALWAYS possible (fibrosis, recurrent lesion, partially resected lesion, tattoo at the base)
- Pathologic evaluation can be problematic (carcinoma)
- Piecemeal: High rate of recurrence (~20%)

Advantages of ESD

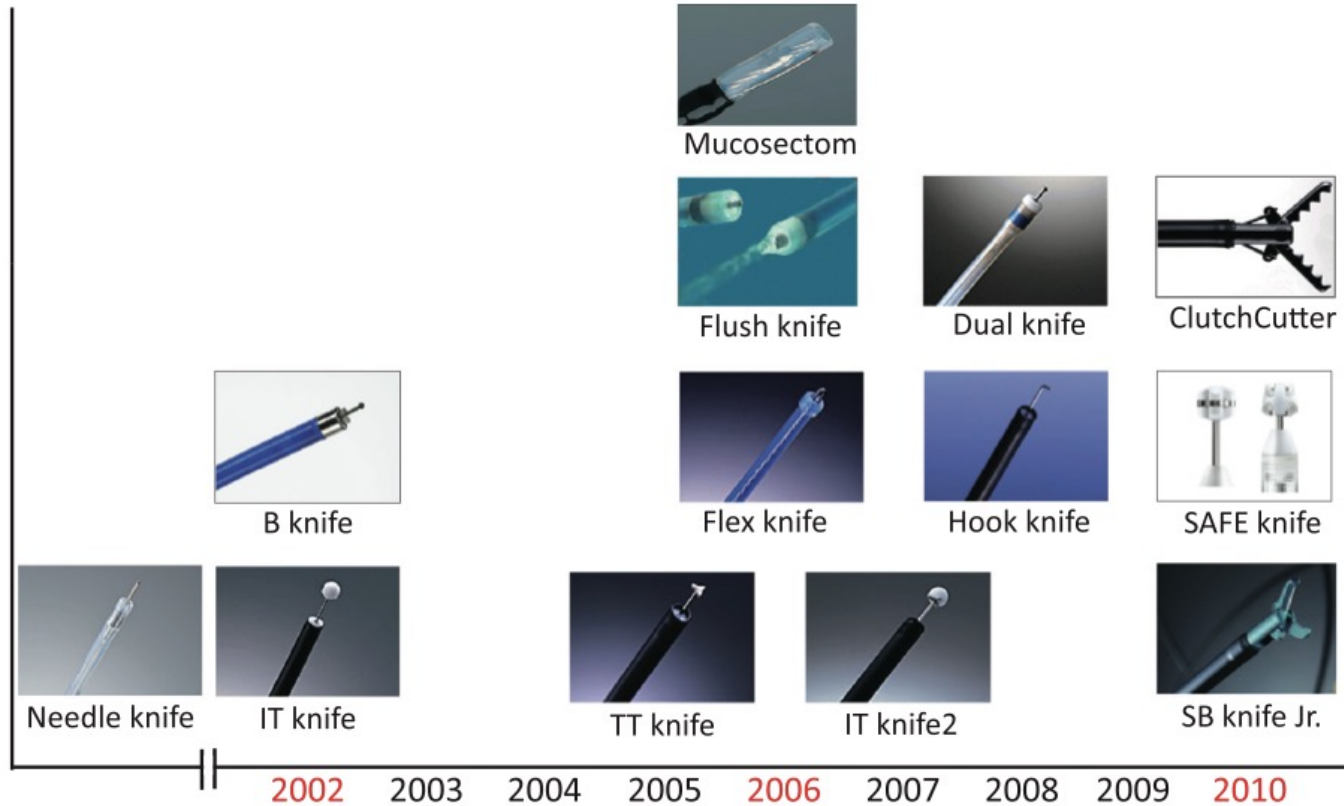
- High rate of en-bloc resection, regardless of size
- Endoscopist determines margins: low recurrence rate
- Accurate histological assessment
 - Determines curative resection v. surgery



Disadvantages of ESD

- Time
- Lack of reimbursement
- Higher complication rate
- Technically challenging
- Considerable training (observation and live models)

Tools of the Trade: Knives

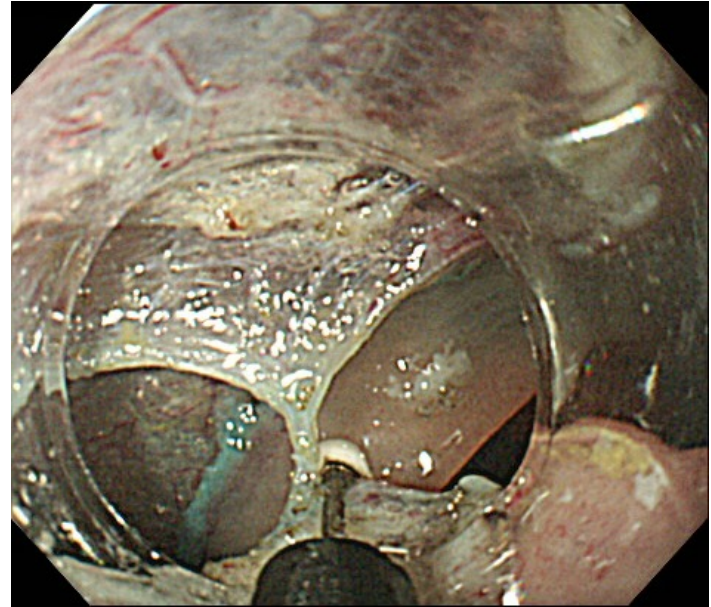
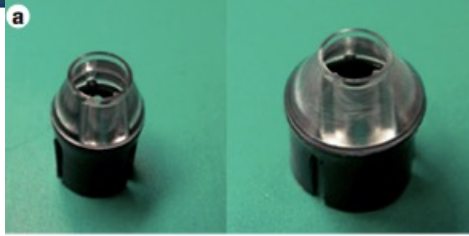


Tools of the Trade: Knives



Tools of the Trade: Caps

- Traction
- Control of bleeding
- Endoscope stabilization

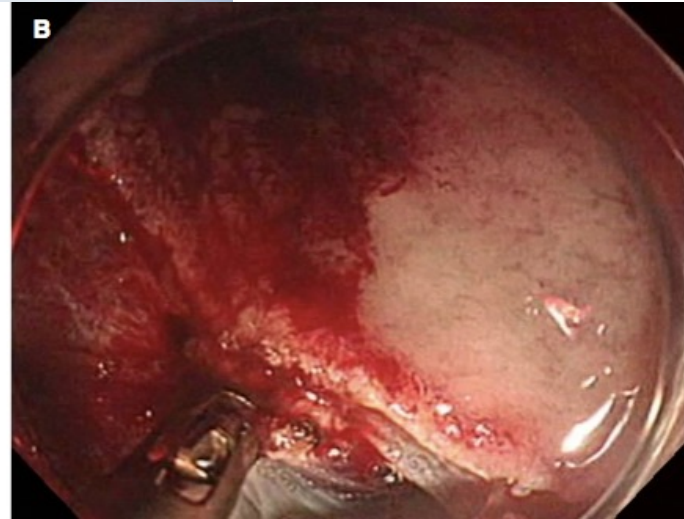
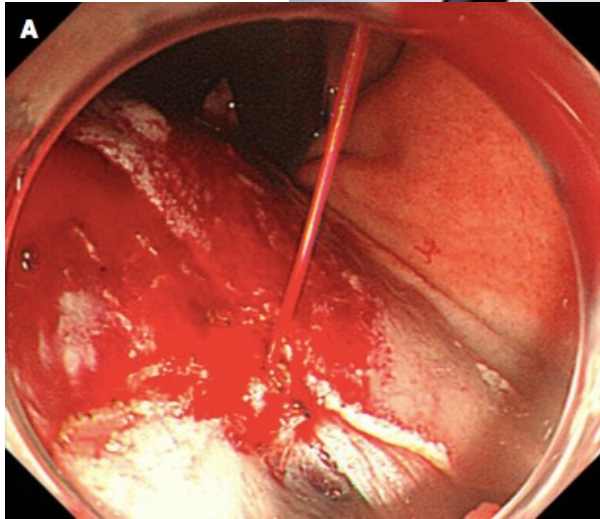


Tools of the Trade: CO₂



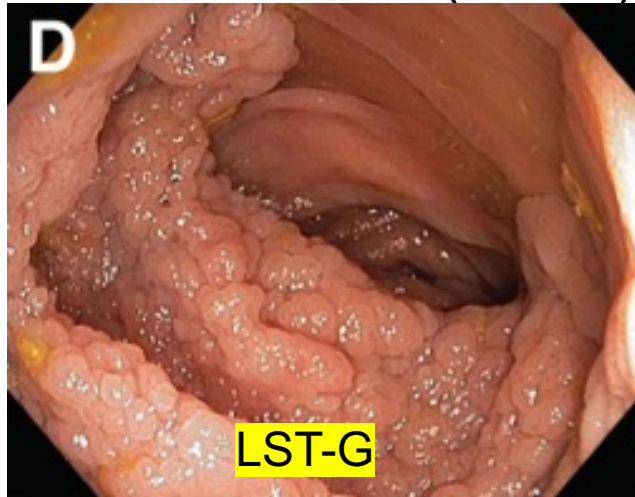
*Abdominal Decompression
Using 18G Needle*

Tools of the Trade: Hemostatic Forceps

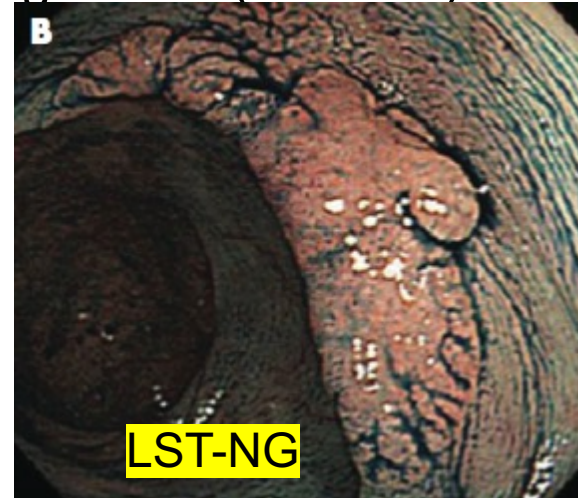


Colon ESD





- 90% colonic adenomas <1cm → standard polypectomy
- Laterally spreading tumors (LST)
 - Large flat spreading lesions >10mm
 - Can have invasive behavior
 - LSTs: Granular (LST-G) and non-granular (LST-NG)



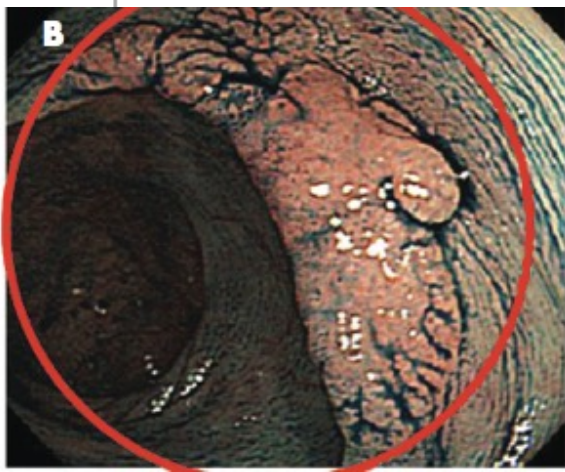
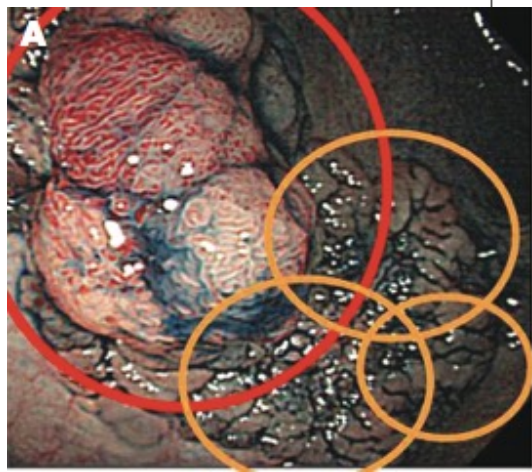
0-IIa



Materials: 51 LSTs with sm-Ca

| | | |
|-------------|---|---|
| LST-G type | Under largest nodule | Under depressed area |
| |  |  |
| 19 | 16 (84%) | 3 (16%) |
| LST-NG type | Under depressed area | Multifocal/lymph follicular |
| |  |  |
| 32 | 23 (72%) | 9 (8/1) (28%) |

→ ESD if >3 cm



→ ESD if >2 cm



22





35



Colon ESD Outcomes

Table 3 | Outcomes of colorectal endoscopic submucosal dissection

| Study | Lesions (n) | Time (min) | Lesion size (mm) | Specimen size (mm) | En bloc resection (%) | Complete en bloc (%) | Bleeding (%) | Perforation (%) | Recurrence (%) |
|---|-------------|----------------|------------------|--------------------|-----------------------|----------------------|--------------|------------------|------------------|
| Niimi et al. (2010) ⁸⁵ | 310 | NR | 28.9 (6–100) | NR | 90.3 | 74.5 | 1.6 | 4.8* | 2 |
| Nishiyama et al. (2010) ⁸⁶ | 300 | NR | 26.8 | NR | 89.2 | 79.1 | 0.7 | 8.1 | 0.3 [‡] |
| Saito et al. (2010) ²⁸ | 145 | 108±71 | 37±14 | NR | 84 | NR | 1.4 | 6.2 | 2 |
| Saito et al. (2010) ⁸⁷ | 1,111 | 116±88 | 35±18 | NR | 88 | NR | 1.5 | 4.9 [§] | NR |
| Yoshida et al. (2010) ⁸⁸ Nonelderly | 87 | 92 (20–270) | 30.6 (12–80) | NR | 93 | NR | 2.2 | 9.1 | NR |
| Yoshida et al. (2010) ⁸⁸ Elderly | 32 | 96 (40–290) | 32.6 (15–70) | NR | 81.2 | NR | 0 | 3.1 | NR |
| Yamamoto (unpublished data) | 467 | 60 (5–457) | NR | 37 (21–170) | 91.3 | 80.4 | 1.3 | 4.3 | 1.2 |

*Emergency surgery was required for one case of postoperative perforation. †One case of locally recurrent tumour with incomplete resection. ‡Two immediate perforations with ineffective endoscopic clipping and three delayed perforations required emergency surgery. Abbreviation: NR, not recorded.

Efficacy and adverse events of EMR and endoscopic submucosal dissection for the treatment of colon neoplasms: a meta-analysis of studies comparing EMR and endoscopic submucosal dissection CME

Mikihiro Fujiya, MD, PhD, Kazuyuki Tanaka, MD, Tatsuya Dokoshi, MD, Motoya Tominaga, MD, Nobuhiro Ueno, MD, PhD, Yuhei Inaba, MD, PhD, Takahiro Ito, MD, PhD, Kentaro Moriichi, MD, PhD, Yutaka Kohgo, MD, PhD

- Meta-analysis of 8 studies comparing EMR/ESD in colon
- Rate of en-bloc resection and curative resection higher in ESD group
- Rate of recurrence lower in ESD group
- Procedure time higher in ESD group
- Rate of additional surgery higher in ESD group (more cases of SM invasion)
- Rate of perforation higher in ESD group

ESD: A Western Perspective

- Technical skill/expertise
- Long procedure time
- Lack of reimbursement (no CPT code)
- Difficulty in training
 - Asia: distal stomach → rectum → colon/esoph/prox stomach
 - West: Observe expert cases (15)
 - Animal model, explant and live (30)
 - Stomach/rectum → esophagus → colon
- Benefits of less recurrence and accurate histological margins
 - ESD: suspected malignancy and judiciously in benign disease (colon)

Introduction: Terminology

