Why EMR?

• Endoscopic mucosal resection creates a resection **through the submucosal layer**.

• For lesions that require deep resection margins, **EMR is a surgical sparing procedure**.
When to perform EMR

• Nodular Barrett’s Esophagus
• Early Gastric Cancer
• Duodenal polyps
• Flat Colon Polyps
• Large Colon polyps
• Carcinoid lesions in stomach, rectum
Layers of the esophagheal wall
How to Perform EMR

• Communication is key
  – Doctor and nurse/assistant must be able to communicate with one another, this is a two person procedure.
EMR in six steps
How to Perform EMR

• Injection/Lift technique
  – Assistant starts injecting before needle is inserted
    • Guarantees a submucosal lift.
  – Check for symmetric lift
    • “Tacked down” areas may be signs of deep invasion and risk of perforation is much higher.
How to Perform EMR

• Snare technique
  – Spiral snare is preferred
    • Better “grasp” of flat mucosa.
  – Insure “mushroom shape” of snared specimen.
  – When resistance is encountered, say “resistance”.
    • Sometimes, MD may want to “feel” the snare resistance by holding the catheter.
How to Perform EMR

“Suck and cut” technique

• Cap kit
  – Olympus kit with “crescent snare”
    • Extra snares necessary
  – Cook EMR kit
    • Similar to band ligation
• Lift Solution
  – Saline 19ml
  – Epinephrine 1ml
  – Indigo Carmine (2-3 drops)
    • Windex blue
• Hot biopsy forceps
• Clips

“Lift and cut” technique

• Lift solution
  – Saline 19ml
  – Epinephrine 1ml
  – Indigo Carmine (2-3 drops)
• Injection needle
• Spiral Snare
• Hot biopsy forceps
• APC (straight fire)
• Clips
• Roth net
EMR for large or flat colon polyps
EMR for nodular Barrett’s Esophagus

Barrett’s mucosa with nodularity

- Should undergo EUS evaluation to determine if deep invasion is present
- If no deep invasion (beyond Muscularis mucosa) the nodule should be resected using EMR technique
- The deep margins of the resected specimen will be evaluated by pathology.
Nodular Barrett’s Cap assisted EMR
What if we perforate?

- Most perforations are small and can be managed endoscopically.

- **CO2 insufflation is mandatory for any EMR**
  - CO2 is absorbed 150x faster than room air from the peritoneum.
  - Allows the endoscopist time to close a perforation using endoclips.
  - Antibiotics are administered, patient is admitted for observation.
EMR for early cancers

- Early stage T1 cancers are resectable via EMR techniques.
- More recently, ESD (endoscopic submucosal dissection) has been favored due to resection of deeper margins as compared to EMR.
- ESD also allows for “en bloc” resection whereas EMR resections are often piecemeal.
EMR for early cancer in Barrett’s

<table>
<thead>
<tr>
<th>Depth of Cancer invasion</th>
<th>Rate of lymph node metastasis</th>
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<tbody>
<tr>
<td>M1-M3</td>
<td>0-1%</td>
</tr>
<tr>
<td>SM1</td>
<td>2%</td>
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<tr>
<td>SM2</td>
<td>25%</td>
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<tr>
<td>SM3</td>
<td>50%</td>
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</table>
Questions?

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