Optimizing Polyp Resection

Heiko Pohl, MD
Dartmouth Geisel School of Medicine, Hanover, NH
VA Medical Center, White River Junction, VT
Resection is central to screening efficacy

Screening test
(FIT, fecal DNA, colonoscopy, CT colo)

Detection

Resection

Metachronous lesions

ADR
• Prep quality
• Cecal intubation
• Withdrawal time
• Endocuff
• Image enhancement

IRR
(Relative resection rate)

• Right technique
• Right approach

Metachronous lesions
• segment metachronous neoplasia: >2 fold
• PC-CRC: 10-28%
Optimize resection – Right technique?

Principles:

1. Inspect
   - size, morphology \(\rightarrow\) plan/approach

2. Resect
   - healthy margin!

3. Inspect
   - base & margin \(\rightarrow\) treat as needed

4. Retrieve
Optimize resection – Right approach

- ESGE (2017) and US-MSTF (2020)
Optimize resection – Right approach

ESGE (2017) and US-MSTF (2020)

1) <10 mm: Cold snare
2) 10-19 mm: Cold or hot snare
3) ≥10 mm: Image enhancement
4) ≥20 mm: Clip closure for prox. polyps
Cold resection for <10 mm polyps is safe and effective!

(7 studies: ~5000 polyps/2500 patients)

<table>
<thead>
<tr>
<th>Study</th>
<th>Size</th>
<th>Design</th>
<th>Complete resection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ichise 2011 (n=80)</td>
<td>&lt;8mm</td>
<td>CSP vs. HSP</td>
<td>96 vs. 96%</td>
</tr>
<tr>
<td>Maruoka 2018 (n=111)</td>
<td>&lt;9 mm</td>
<td>CSP</td>
<td>99%</td>
</tr>
<tr>
<td>Zhang 2018 (n=525)</td>
<td>6-9 mm</td>
<td>CSP vs. HSP EMR</td>
<td>92 vs. 98%</td>
</tr>
<tr>
<td>Kawamura 2018 (n=687)</td>
<td>4-9 mm</td>
<td>CSP vs. HSP (EMR 43%)</td>
<td>98 vs. 97%</td>
</tr>
<tr>
<td>Papapsteriou 2018 (n=164)</td>
<td>6-10 mm</td>
<td>CSP (EMR) vs. HSP (EMR)</td>
<td>93 vs. 96%</td>
</tr>
</tbody>
</table>

CSP cold snare polypectomy; HSP hot snare polypectomy

Immediate bleeding (clips) 4%  5%
Severe delayed bleeding 1%  2%
Cold resection for \( \geq 10\) mm polyps is safe and may be effective

Meta-analysis: 8 studies, 522 non-pedunculated polyps \( \geq 10\)mm
Cold resection for ≥10 mm serrated polyps is safe and can be effective!

Meta-analysis: 14 studies, 911 patients with 1137 polyps
Retro single center: 312 patients with 566 polyps

- Recurrence rate
- Intra-procedural bleeding
- Post-procedural bleeding
- Perforation

<table>
<thead>
<tr>
<th></th>
<th>Hot</th>
<th>Cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence rate</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Intra-procedural</td>
<td>2%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Post-procedural</td>
<td>2.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Perforation</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Heiko Pohl
≥20 mm polyps: Clip closure of proximal defects lowers the risk of bleeding

Spadaccini et al. Gastro 2020 Meta-analysis 9 trials

Clipping vs not clipping in preventing Post-Polypectomy Bleeding

<table>
<thead>
<tr>
<th>Study</th>
<th>Clipped Events Total</th>
<th>Unclipped Events Total</th>
<th>Risk Ratio</th>
<th>RR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osada (2016)</td>
<td>0 13</td>
<td>0 13</td>
<td>1.00 [0.02; 46.94]</td>
<td></td>
</tr>
<tr>
<td>Alberti (2019)</td>
<td>6 119</td>
<td>14 181</td>
<td>1.27 [0.47; 3.56]</td>
<td></td>
</tr>
<tr>
<td>Dokoshi (2015)</td>
<td>4 154</td>
<td>3 134</td>
<td>1.16 [0.26; 5.09]</td>
<td></td>
</tr>
<tr>
<td>Zhang (2015)</td>
<td>2 174</td>
<td>12 124</td>
<td>0.17 [0.04; 0.73]</td>
<td></td>
</tr>
<tr>
<td>Pohl (2019)</td>
<td>16 460</td>
<td>33 499</td>
<td>0.49 [0.28; 0.88]</td>
<td></td>
</tr>
<tr>
<td>Fregona (2016)</td>
<td>12 680</td>
<td>15 706</td>
<td>0.63 [0.39; 1.07]</td>
<td></td>
</tr>
<tr>
<td>Random effects model</td>
<td>1630 1842</td>
<td>54 [0.36; 0.81]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: I² = 5%, p = 0.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Studies w/o ≥20mm

<table>
<thead>
<tr>
<th>Study</th>
<th>Clipped Events Total</th>
<th>Unclipped Events Total</th>
<th>Risk Ratio</th>
<th>RR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi (2015)</td>
<td>2 73</td>
<td>2 75</td>
<td>5.14 [0.25; 105.17]</td>
<td></td>
</tr>
<tr>
<td>Shioji (2003)</td>
<td>2 205</td>
<td>2 208</td>
<td>1.01 [0.14; 7.13]</td>
<td></td>
</tr>
<tr>
<td>Matsumoto (2016)</td>
<td>18 1636</td>
<td>15 1728</td>
<td>1.27 [0.64; 2.51]</td>
<td></td>
</tr>
<tr>
<td>Random effects model</td>
<td>1914 2011</td>
<td>1.32 [0.70; 2.47]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: I² = 0%, p = 0.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Random effects model: 3544 3653

Clipping appeared to be beneficial after resection of large and proximal lesions
≥20 mm polyps: Clip closure of proximal defects lowers the risk of bleeding

Clipping ≥20mm lesions:
RR 0.51 (0.33-0.78)

Clipping <20mm lesions:
RR 1.32 (0.70-2.47)

Spadaccini et al. Gastro 2020 Meta-analysis 9 trials
How to assess quality of resection?

• Skills assessment tools
  – Any resection: DOPyS (Direct Observation of Polypectomy Skills)
  – Cold snare: CSPAT (cold snare polypectomy assessment tool)

• Measurement in clinical practice?
  – SMAR (segment metachronous adenoma rate)?
Summary – Optimizing Polyp Resection

1) Apply the **right technique**:  
   • Principles & skills

2) Apply the **right approach**:  
   • Shift from hot to cold resection (<10mm, all SSL)

3) Assess **quality** of resection

4) Future:  
   • Address possible **overtreatment** (value of removing ≤5mm polyps)?  
   • Sustainability of polyp resection practice