Handling Large Sessile or Flat Polyps

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Lecture Overview

- Introduction
- Available techniques
  - EMR
  - ESD
- Complications
- Results
- Conclusion

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Advantages of Endoscopic Therapy Comparing To Traditional Surgical And Laparoscopic Approach:

- Organ preservation
- Early return to work and regular physical activity
- Low complication rate
- Out-patient procedures
- Low cost

What Are The Indications For Endoscopic Lesion Removal?

Lesion causes clinical problems (bleeding, obstruction, etc.)

Lesion of uncertain etiology (need specimen for diagnosis)

Lesion is thought to be premalignant or malignant
  - Limited to mucosa or submucosa
  - No lymph node metastases
  - Well-differentiated
When Endoscopic Removal Should Not Be Attempted

Ulcerated lesions
Aggressive, undifferentiated malignant lesion
Enlarged regional lymph nodes
Non-lifting after submucosal injection
  – Lifting sign as predictor of invasive colorectal cancer (Uno Y, Munakata A, GI Endoscopy 1994):
  – Sensitivity 100%
  – Specificity 99% PPV 83%

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Types of EMR

Injection assisted
- Inject-and-cut
- Inject-lift-and-cut

Suction assisted
- Over-tube assisted
- Cup assisted

Ligation assisted
Types of EMR

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EMR Caps
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Endoscopic En Bloc Resection
Rosch T et al, Endoscopy 2004

[Diagram of endoscopic en bloc resection process]

[Image of endoscopic view of tissue resection]
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Complications

Bleeding – 1.4% (0-11.6%)
  - Arterial spurting or venous
  - Inject, cauterize or use endoclips and endoloops

Perforation – 0.5% (0-3.4%)

Stricture

No procedure-related deaths
Complications

Bleeding – 1.4% (0-11.6%)
Perforation – 0.5% (0-3.4%)
  – Endoclips application
  – Endoscopic suturing
  – Surgery
Stricture
No procedure-related deaths
Endoscopic management of colonic perforations: clips versus suturing closure (with videos)

Sergey V. Kantsevoy, MD, PhD; Mariana Bitner, CRNA; Gulam Hajiya, MD; Paulina M. Mirovski, RN; Michael E. Cox, MD; Thomas Swepe, MD; Kelly Abernethy, MD; Nora Mecagni, MD; J. Lawrence Fitzpatrick, MD; Vadim Gushchin, MD

Background and Aims: Perforation during colonoscopy remains the most worrisome adverse event and usually requires urgent surgical rescue. The aim of this study was to evaluate the feasibility and effectiveness of endoscopic closure of full-thickness colonic perforations.

Methods: We performed a retrospective analysis of all consecutive patients with endoscopically closed colonic perforations over the past 6 years (2009-2014). Colonic perforations were closed by using endoscopic clips or an endoscopic suturing device. Most patients were admitted for treatment with intravenous antibiotics and kept on bowel rest. If their clinical condition deteriorated, urgent surgery was performed. If patients remained stable, oral feeding was resumed and patients were discharged with subsequent clinical and endoscopic follow-up.

Results: Twenty-one patients had intra-procedural colonic perforations closed with an endoscopic suturing device or endoscopic clips during the study period. Primary closure of a colonic perforation was performed with endoscopic clips in 5 patients and sutured with an endoscopic suturing device in 16 patients. All 5 patients after clip closure had worsening of abdominal pain and required laparoscopy (4 patients) or rescue colonoscopy with endoscopic suturing closure (1 patient). Two patients had abdominal pain after endoscopic suturing closure, but diagnostic laparoscopy confirmed complete and adequate endoscopic closure of the perforations. The other 15 patients did not require any rescue surgery or laparoscopy after endoscopic suturing. The main limitation of our study is its retrospective, single-center design and relatively small number of patients.

Conclusions: Endoscopic suturing closure of colonic perforations is technically feasible, eliminates the need for rescue surgery, and appears more effective than closure with hemostatic endoscopic clips. (Gastrointest Endosc. 2015; 81: 16.)
Complications

Bleeding – 1.4% (0-11.6%)
Perforation – 0.5% (0-3.4%)

Strictures

– in 6-26% of patients after endoscopic removal of esophageal and in 3.3% after removal of gastric (pre-pyloric) lesions
– More common after removal of large lesions occupying more than 75% of the esophageal circumference or colonic circumference
– Successfully treated by endoscopic dilation

No procedure-related deaths
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Large refractory colonic polyps: is it time to change our practice? A prospective study of the clinical and economic impact of a tertiary referral colonic mucosal resection and polypectomy service (with videos)

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Sydney, Australia

Background: Patients who have large, difficult colorectal lesions not readily amenable to endoscopic resection are often referred directly to surgery. The application of advanced polypectomy and endoscopic mucosal resection (EMR) techniques undertaken by a tertiary referral colonic mucosal resection and polypectomy service (TRCPS) is not often considered but may be superior to surgery.

Results: This study included 174 patients (mean age 68 years) who were referred with 193 difficult polyps (386 laterally spreading, mean size 30 mm [range 10-80 mm]). We totally excised 173 laterally spreading lesions by EMR (115 piecemeal; 58 en bloc). Invasive adenocarcinoma was found in 6 lesions—5 treated successfully with EMR. Eleven patients were referred directly to surgery without an endoscopic attempt due to suspected invasive carcinoma. Seven > 30 mm, pedunculated polyps were removed. There were no perforations. A total of 20 bed days was used because of endoscopic complications. Among all patients referred, 90% avoided the need for surgery. Excluding patients who were treated surgically for invasive cancer the procedural success was 95% (165 of 178). By using Australian cost estimates applied to the entire group and compared with cost estimates assuming all patients had undergone surgery, we calculated the total medical cost savings was $6990 (U.S.) per patient, or a total savings of $1,216,231 (U.S.).

Limitation: Not a randomized trial.

Conclusions: Colonoscopic polypectomy performed by a TRCPS on large or difficult polyps is technically effective and safe. This approach results in major cost savings and avoids the potential complications of colonic surgery. This type of clinical pathway should be developed to enhance patient outcomes and reduce health care costs. (Gastrointest Endosc. 2009;70:1128-36.)
Figure 6: Flow chart of all patient outcomes.

Table 4: Total cost and length of stay for TRCPS cohort

<table>
<thead>
<tr>
<th>Cost Incurred</th>
<th>No.</th>
<th>Cost per procedure</th>
<th>Total cost</th>
<th>Average length of stay (days)</th>
<th>Total days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopy</td>
<td>174</td>
<td>$818</td>
<td>$142,332</td>
<td>1.0</td>
<td>174</td>
</tr>
<tr>
<td>Abdominoperineal resection</td>
<td>0</td>
<td>$1,296</td>
<td>$0</td>
<td>10.2</td>
<td>0</td>
</tr>
<tr>
<td>Anorectal ressecton</td>
<td>6</td>
<td>$10,466</td>
<td>$63,976</td>
<td>10.2</td>
<td>61.2</td>
</tr>
<tr>
<td>Extended right hemicolectomy</td>
<td>3</td>
<td>$8,404</td>
<td>$25,212</td>
<td>6.6</td>
<td>25.5</td>
</tr>
<tr>
<td>Right hemicolectomy</td>
<td>9</td>
<td>$8,404</td>
<td>$75,636</td>
<td>6.5</td>
<td>76.5</td>
</tr>
<tr>
<td>+ Overnight stay</td>
<td>20</td>
<td>$690</td>
<td>$13,800</td>
<td>1.0</td>
<td>20.0</td>
</tr>
<tr>
<td>+ Angiographic embolization</td>
<td>1</td>
<td>$975</td>
<td>$975</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>+ Repeated colonoscopy at 3 months</td>
<td>45</td>
<td>$818</td>
<td>$36,810</td>
<td>1.0</td>
<td>45.0</td>
</tr>
</tbody>
</table>
| Total cost of TRCPS arm (174 patients) | $355,941 | Total length of stay (174 patients) | 463.2

Per-patient cost: $3,051 ± 2,937 (SD)  
Average length of stay per patient: 2.3 ± 2.3 (SD)

TRCPS: Tertiary referral colonoscopic polypectomy service; SD, standard deviation.

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Table 5 — Total cost and length of stay for TROPs cohort all undergoing surgery

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No. of lesions</th>
<th>Cost per procedure</th>
<th>Total cost</th>
<th>Average length of stay</th>
<th>Total days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdomino-peritoneal resection</td>
<td>2</td>
<td>$10,496</td>
<td>$20,992</td>
<td>10.2</td>
<td>20.4</td>
</tr>
<tr>
<td>Anterior resection</td>
<td>51</td>
<td>$10,496</td>
<td>$535,286</td>
<td>10.2</td>
<td>500.2</td>
</tr>
<tr>
<td>Extended right hemicolectomy</td>
<td>25</td>
<td>$6404</td>
<td>$101,010</td>
<td>6.5</td>
<td>212.5</td>
</tr>
<tr>
<td>Right hemicolectomy</td>
<td>96</td>
<td>$6404</td>
<td>$608,784</td>
<td>6.5</td>
<td>816.0</td>
</tr>
<tr>
<td>Total cost of surgery arm (173 patients)</td>
<td>$1,573,172</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per-patient cost</td>
<td>$9041</td>
<td>Average length of stay per patient</td>
<td>9.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TROPs: Tertiary referral colonoscopic polypectomy service.

Table 6 — Cost and length of stay comparisons between actual TROPs cohort outcome and hypothetical all surgery outcome

<table>
<thead>
<tr>
<th></th>
<th>TROPs cohort</th>
<th>Actual all surgery</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost for cohort</td>
<td>1,573,172</td>
<td>$1,573,172</td>
<td>$1,218,231</td>
</tr>
<tr>
<td>Total cost per patient</td>
<td>$9041</td>
<td>$8941</td>
<td>$990</td>
</tr>
<tr>
<td>Total length of stay for cohort (days)</td>
<td>203.2</td>
<td>1569.1</td>
<td>1165.9</td>
</tr>
<tr>
<td>Average length of stay per patient (days)</td>
<td>2.3</td>
<td>9.0</td>
<td>6.7</td>
</tr>
</tbody>
</table>

TROPs: Tertiary referral colonoscopic polypectomy service.

Mercy Results:
March 2013 – November 2014

Total of 729 sessile lesions over 10 mm in size were removed in 508 patients

240 lesions (32.9%) were removed by ESD.

489 lesions (67.1%) were removed by EMR.

Lesions removed by ESD (mean size 30.9±16.1 mm) were significantly larger (p<0.0001) than lesions removed by EMR (mean size 16.1±10.1 mm).
Conclusion

Even large and flat colonic polyps can and should be removed endoscopically

Multiple techniques are now available to remove benign and early malignant lesions of the GI tract

Learning and perfecting EMR skills is a mandatory step for physicians who plan to specialize in endoscopic removal of GI tract lesions

Conclusion (Cont.)

Incomplete removal (snaring piece of the polyp, applying APC, etc.) creates excessive scar tissue, and essentially eliminates chances of successful subsequent endoscopic submucosal dissection

When in doubt:

– Sample the lesions
– Tattoo the spot
– Refer to a center specializing in endoscopic removal

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