ESD for colorectal lesions
„I am in favour“

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Endoscopic submucosal dissection: established, or still needs improving?

Commentary

From EMR to ESD: A new challenge from Japanese endoscopists

ESD for colorectal neoplasms: dissecting value from virtue

“*To ESD, or not to ESD—that is the question*”

(with apologies to William Shakespeare)

A recently published large multicenter series on ESD for large colorectal lesions reported high rates of curative en bloc resection.\(^6\)
Surgery for early colonic lesions

- 51 pts referred for lap colectomy of polyps unfit for endoscopic resection
- Mean polyp size 3.1 cm
- 10% converted to open surgery
- 6 pts with major complications (17%) of whom 2 required a second operation
- Pathology: adenocarcinoma in 11 polyps (20%)

40 pts potentially suitable for endoscopic resection?

Dept of Colorectal Surgery, Cleveland Clinic Foundation, OH

Oncologic Colorectal Resection, not Advanced Endoscopic Resection is the best treatment for large dysplastic adenomas

- 386 patients with polyps retrospectively reviewed
- 68% lap, 24% open, 8% hybrid,
- Minor complications 23.9%, major 4%
- 16% of polyps “contained an area of invasive cancer” with the majority of them limited to first level of submucosa

Recurrence after transanal endoscopic microsurgery for large rectal adenomas.

Allaix ME, Arezzo A, Cassoni P, Famiglietti F, Morino M.

- 293 patients with a rectal adenoma ≥3 cm treated by TEM
- Postoperative morbidity rate was 7.2 % (21/293)
- 29 patients (10%) with positive margins
- 13 patients (5.6 %) were diagnosed with local recurrence within 12 months
TEM approach
Causes for surgical indication or incomplete endoscopic removal

- Larg size
- Difficult morphology
- Difficult position
- Suspicion of advanced histology
- Inability to provide complete or “en-bloc” resection

Moss A, et al Gastroenterology 2011
Jang HJ et al, J Gastrointest Surg 2012
Endoscopic mucosal resection outcomes and prediction of submucosal cancer from advanced colonic mucosal neoplasia.


- 479 pts with colorectal lesions
  - In 15 pts EMR wasn’t attempt
  - 464 pts with colorectal lesions
    - In 50 pts EMR failed
      - 414 pts treated by EMR
        - 28 referred for surgery because of sm1 invasion or post-EMR recurrence
  - Most of the patients had no residual cancer on surgical specimen
EMR outcomes and prediction of submucosal cancer from advanced colonic mucosal neoplasia

• Paris classification 0+IIa+IIc

• Non-granular surface

• Pit pattern type IV and V

Moss A, et al Gastroenterology 2011
Why ESD instead of EMR for those lesions?

• En-bloc resection with lateral and vertical margin free of disease

• Appropriate pathologic evaluation with oncologic staging

• Reduced recurrence rate

• Reduced unnecessary surgical resections for lesions limited to mucosa and/or first level of submucosa.

• ESD may provide non-invasive management of colonic neoplastic lesions:
  - maintaining the anatomic integrity,
  - improving quality of life,
  - saving money and resources
EMR vs ESD

- Easy and established
- Standard devices
- Relatively short
- Low risk of complication
- Uncertain pathology

- Technically demanding
- Dedicated device
- Long-lasting
- High risk complication
- Accurate pathology
ESD for colorectal lesions

- Technically demanding
- Labor-intensive
- Time-consuming
- Requires dedicated devices and instruments
- High-risk of perforation  (5-7% in japanese papers, 10% in my hands)
- Dedicated training program
Endoscopic submucosal dissection with or without snaring for colorectal neoplasms

Jeong-Sik Byeon, MD,1 Dong-Hoon Yang, MD,1 Kyung-Jo Kim, MD,1 Byong Duk Ye, MD,1 Seung-Jae Myung, MD,1 Suk-Kyun Yang, MD,1 Jin-Ho Kim, MD1

Seoul, Korea
Outcome between ESD and ESD-S groups according to lesion size

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Lesions &lt;20 mm</th>
<th>Lesions &gt; 20 mm</th>
<th>P value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedural time (min)</td>
<td>ESD (n=22)</td>
<td>ESD-S (n=27)</td>
<td>.23</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>31 (+13)</td>
<td>25 (+18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>En bloc resection</td>
<td>96%</td>
<td>89%</td>
<td>.62</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>R0 resection</td>
<td>86%</td>
<td>82%</td>
<td>.72</td>
<td>&lt;.01</td>
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<tr>
<td>Complications</td>
<td></td>
<td></td>
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<tr>
<td>Immediate bleeding</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
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<tr>
<td>Delayed bleeding</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
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<tr>
<td>Perforation</td>
<td>14%</td>
<td>0</td>
<td>0.8</td>
<td>6%</td>
</tr>
</tbody>
</table>

Byeon J-S, et al Gastrointest Endosc 2011
Technical issues for colorectal ESD

- CO$_2$ insufflator
- Different types of scopes
- Distal attachments
- Long-lasting submucosal substances
- Devices for cutting and dissecting
- Coa-grasper
- Clips

- Proper position of the lesion
- Change patient decubitus
- Provide careful hemostasis
ESD for colonic lesions: the devices

• A wide range of devices are available

• Shorter metallic tip to reduce the risk of perforation

• Experts have adopted a dedicated device according to personal choices
Hybrid Function „Waterjet - HF“

The multi-function probe combines electrosurgical and waterjet surgery technologies in one instrument.

Elevation with the waterjet function.

Marking, incision/dissection and coagulation with the electrosurgical tip.
Check maneuverability of the endoscope

YES  NO

Quality in Endoscopy: Colonoscopy, Berlin 2012
Treatment strategy for colorectal ESD

Upper side according to gravity

Preoperative check for patient position and gravity.

Quality in Endoscopy: Colonoscopy, Berlin 2012
# Efficacy and safety of endoscopic submucosal dissection for colorectal neoplasia: a systematic review

<table>
<thead>
<tr>
<th>Reference</th>
<th>Number of lesions, n</th>
<th>R0 ESD resection, %</th>
<th>Post-ESD surgery for complications, %</th>
<th>Endoscopic en bloc ESD resection, %</th>
<th>Bleeding, %</th>
<th>Perforation, %</th>
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<tbody>
<tr>
<td>Kuroki et al. [25]</td>
<td>418</td>
<td>92</td>
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<td>Saito et al. [18]</td>
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<td>Niimi et al. [9]</td>
<td>310</td>
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<td>Nishiyama et al. [14]</td>
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<td>Toyonaga et al. [21]</td>
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<td>Yoshida et al. [12]</td>
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<td>Matsumoto et al. [10]</td>
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<td>Uraoka et al. [15]</td>
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<td>Hurlstone et al. [28]</td>
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<td>Probst et al. [19]</td>
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Conclusions: ESD appeared to be an extremely effective technique to achieve R0 resection of large colorectal lesions. The very low rate of surgery for complications also shows the potential safety of this approach.
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A recently published large multicenter series on ESD for large colorectal lesions reported high rates of curative en bloc resection. A

ESD for colorectal neoplasms remains a largely virtuous undertaking because the added value of ESD over EMR for the vast majority of colorectal neoplasms (ie, adenomas) cannot be reconciled with the increased risk and procedure duration. ESD-S is an incremental consideration to close that gap. The sheer number of ESD tools that are currently being promoted by individual ESD enthusiasts is an indirect surrogate indicator that the optimal design has not yet been developed. As tools, techniques, and training evolve, en bloc resection by using ESD or hybrid-ESD will likely supplant piecemeal EMR for large mucosal neoplasms... but not just yet.
“Pro” ESD for colonic lesions

• I do believe this is a quite difficult task to achieve

• At the same time is extremely relevant for the destiny of our patients with “difficult colorectal lesions or superficial carcinoma”

• Indeed we are probably missing adequate therapeutic management in a certain subgroup of patients with colonic lesions that are over-treated by surgical resection or improperly treated by piecemeal resection

• A well structured training program and implementation program should be urgently defined by national institutions as well as national and European endoscopic societies