ENDOLUMINAL COLONIC STENTING

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COLONIC STENT...

... « bridge to surgery »
more frequent application

... for palliation in case of tumoral obstruction
less invasive for high risk elderly patients

... in benign diseases
to avoid difficult surgical procedures or surgery
in emergency

Versus the Gold Standard ... SURGERY!!
DIFFICULT AND CONTROVERSIAL SITUATIONS

Right colon
Extrinsic compression
Low rectum
Long-term applications
RIGHT COLON...
Possible!
SAME TECHNICAL AND CLINICAL SUCCESSES than FOR DISTAL COLON (> 90%)
   Repici et al. GIE 2007 (21 patients)
   Yao et al. World J Gastro 2011 (81 patients)
EVEN EASIER THAN FOR DISTAL COLON ?!...
Morbidity 27.2% vs 12.5% (p=0.06)
   Small AJ et al. GIE 2010 (233 patients)
LOW RECTUM...

Poor tolerance if distal tumor margin – anus < 5 cm

Only one retrospective comparative study (30 patients)
Rectal syndrom and pain
62.5% (stent < 5 cm) vs 7.1% (stent > 5 cm) (p = 0.011)

Analgesics needed

To be avoided ...

Song Hy et al. GIE 2008
LONG TERM PALLIATION...

SAME RATE of TECHNICAL & CLINICAL SUCCESSES (90%)

MEAN PATENCY: 6 MONTHS

Small AJ et al. GIE 2010
168 patients with stent for palliation
Mean patency: 145 days
Migration: 5%
108/122 (88.5%) had a patent stent until death
EXTRINSIC COMPRESSION...

CONTROVERSED RESULTS

Case-control study

94%

Endoluminal tumor (n=34)

Extrinsic compression (n=15)

20%

9%

33%

Clinical success
Complications

p < 0.001
p = 0.04

Keswani RN et al. GIE 2009
EXTRINSIC COMPRESSION...
CONTROVERSED RESULTS
Case-control study

- 85% Endoluminal tumor (n=53)
- 77% Extrinsic compression (n=44)

Clinical success: NS
Complications: NS

Moon SJ et al. Dig Dis Sci 2013
EXTRINSIC COMPRESSION...

CONTROVERSED RESULTS

Case-control study

- 93% 87%
  - Endoluminal tumor (n=149)
  - Extrinsic compression (n=60)

Clinical success: NS
Reobstruction: NS

Kim JY et al. Surg Endosc 2013
DIFFICULT AND CONTROVERSIAL SITUATIONS

Right colon surgery feasible
Extrinsic compression possible
Low rectum no
Long-term applications still a need?
W Baraza, F Lee, S Brown and M Bassuni, Combined endo-radiological colorectal stenting: A prospective 5 years clinical evaluation. Colorectal Disease, 10, 901–906
<table>
<thead>
<tr>
<th>Complication</th>
<th>Location of stent</th>
<th>Occurrences, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overgrowth</td>
<td>Rectum (1)</td>
<td>6 (8%)</td>
</tr>
<tr>
<td></td>
<td>Rectosigmoid (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sigmoid (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Descending colon (1)</td>
<td></td>
</tr>
<tr>
<td>Migration</td>
<td>Rectosigmoid (3)</td>
<td>4 (6%)</td>
</tr>
<tr>
<td></td>
<td>Descending colon (1)</td>
<td></td>
</tr>
<tr>
<td>Fistulation</td>
<td>Rectovaginal</td>
<td>3 (4%)</td>
</tr>
<tr>
<td></td>
<td>Rectum, (1)</td>
<td>(colorectal cancer)</td>
</tr>
<tr>
<td>Colovesical</td>
<td>Rectosigmoid (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(endometrial cancer)</td>
<td></td>
</tr>
<tr>
<td>Enterocolic</td>
<td>Proximal sigmoid (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(endometrial cancer)</td>
<td></td>
</tr>
<tr>
<td>Fracture</td>
<td>Rectum (1)</td>
<td>2 (3%)</td>
</tr>
<tr>
<td></td>
<td>Rectosigmoid (1)</td>
<td></td>
</tr>
<tr>
<td>Tenesmus</td>
<td>Rectosigmoid (2)*</td>
<td>2 (3%)</td>
</tr>
</tbody>
</table>

W Baraza, F Lee, S Brown and M Bassuni, Combined endo-radiological colorectal stenting: A prospective 5 years clinical evaluation. Colorectal Disease, 10, 901–906
<table>
<thead>
<tr>
<th>Malignancy (n)</th>
<th>Complications</th>
<th>Technical failure</th>
<th>Clinical failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate (3)</td>
<td>None</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Endometrial (2)</td>
<td>Proximal migration (1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ovarian (1)</td>
<td>None</td>
<td>1</td>
<td>n/a</td>
</tr>
<tr>
<td>Metastatic gastric (1)</td>
<td>Tenesmus and urgency</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

W Baraza, F Lee, S Brown and M Bassuni, Combined endo-radiological colorectal stenting: A prospective 5 years clinical evaluation. Colorectal Disease, 10, 901–906
Technique

- Conscious sedation (Midazolam and Buscopan)
- Left Lateral position under image intensifier (C Arm)
- Colonoscopy (Olympus GIF H260 scope with 4.2 mm working channel)
- Experienced Radiologist always present (Paul Spencer)
Proximal and distal flanges designed to reduce the risk of migration.

Yellow, highly visible endoscopic and fluoroscopic marker defines proximal end of stent to facilitate more precise placement.

Image courtesy of Dr. Mario Traina, ISMFTT, Palermo, Italy.

Flexor® Kink-Resistant Technology delivers excellent pushability for difficult anatomical challenges.

The coiled portion of the Flexor provides improved stability at the crucial point near the proximal end of the stent and allows each squeeze of the trigger deploys – or recaptures – a proportional length of stent.
Comparison of efficacy between uncovered and covered self-expanding metallic stents in malignant large bowel obstruction: a systematic review and meta-analysis

Comparison of efficacy between uncovered and covered self-expanding metallic stents in malignant large bowel obstruction: a systematic review and meta-analysis

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Uncovered Mean</th>
<th>SD</th>
<th>Covered Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Mean difference IV, random, 95% CI</th>
<th>Mean difference IV, random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kang 2002</td>
<td>146.25</td>
<td>119.93</td>
<td>82.93</td>
<td>102.57</td>
<td>15</td>
<td>0.8%</td>
<td>63.32 [-58.92, 185.56]</td>
<td></td>
</tr>
<tr>
<td>Chol 2007</td>
<td>165</td>
<td>25</td>
<td>25</td>
<td>14</td>
<td>16</td>
<td>67</td>
<td>15</td>
<td>34.4%</td>
</tr>
<tr>
<td>Lee 2007</td>
<td>169</td>
<td>25</td>
<td>16</td>
<td>67</td>
<td>15</td>
<td>15</td>
<td>58.6%</td>
<td>22.00 [7.59, 36.41]</td>
</tr>
<tr>
<td>Park 2010</td>
<td>160</td>
<td>266.4</td>
<td>55</td>
<td>219</td>
<td>32.4</td>
<td>15</td>
<td>10.0%</td>
<td>-39.00 [-151.62, 73.62]</td>
</tr>
<tr>
<td>Park 2011</td>
<td>88.5</td>
<td>84.9</td>
<td>73</td>
<td>96.8</td>
<td>123</td>
<td>30</td>
<td>5.2%</td>
<td>-8.30 [-56.43, 39.83]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>162</td>
<td></td>
<td></td>
<td></td>
<td>135</td>
<td>100.0%</td>
<td>15.34 [4.31, 26.37]</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.00; Chi² = 3.82, df = 4 (P = 0.43); I² = 0%
Test for overall effect: Z = 2.73 (P = 0.006)
# Benign Colorectal Stenosis and Stents: Results (1)

**To be avoided:**
1. Diverticular stenosis
2. Uncovered stents

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Stent Type</th>
<th>Diverticular stenosis</th>
<th>Technical success</th>
<th>Clinical success</th>
<th>Migration</th>
<th>Severe complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small AJ et al. Surg Endosc 2008</td>
<td>23</td>
<td>Uncovered</td>
<td>16/23</td>
<td>100%</td>
<td>95%</td>
<td>9%</td>
<td>38%</td>
</tr>
<tr>
<td>Forshaw MJ et al. Colorectal Dis 2005</td>
<td>11</td>
<td>Uncovered</td>
<td>3/11</td>
<td>81%</td>
<td>81%</td>
<td>10%</td>
<td>36%</td>
</tr>
<tr>
<td>Geiger TM et al. Int J Colorectal Dis 2008</td>
<td>53</td>
<td>Uncovered</td>
<td>19/53</td>
<td>-</td>
<td>-</td>
<td>43%</td>
<td>21%</td>
</tr>
<tr>
<td>Keränen et al. Scand J Gastro 2010</td>
<td>21</td>
<td>Uncovered</td>
<td>10/21</td>
<td>100%</td>
<td>76%</td>
<td>38%</td>
<td>28%</td>
</tr>
<tr>
<td>Vambierillet et al. Endoscopy 2013</td>
<td>43</td>
<td>Covered</td>
<td>-</td>
<td>100%</td>
<td>81%</td>
<td>63%</td>
<td>5%</td>
</tr>
</tbody>
</table>
BENIGN COLORECTAL STENOSIS AND STENT: RESULTS (2)

- Technical success (43/43)
- Clinical success (35/43)
- Migration (27/43)
- Success of removal (16/16)
- Recurrence (23/43)

Vanbiervliet et al. Endoscopy 2013
BENIGN COLORECTAL STENOSIS
AND STENT: RESULTS (3)

Mean duration of calibration
26.6 days ± 28.6 [1-130]

Mean delay for migration
14.6 days ± 7.1 [1-59]

In case of recurrence...
- Dilation or medical treatment 12%
- New stent 41%
- Surgery 47%

Vanbiervliet et al. Endoscopy 2013

20th Annual EGRS- Cairo 2018
BENIGN COLORECTAL STENOSIS and STENT: RESULTS (4)

Log-rank's Test
\[ p = 0.2983 \]

- Mean F-U: 16.3 months ± 15.5 [1-55]
- Recurrence in 23 patients (53%)
- Recurrences occur within 3 months
- Recurrence independent from migration

Vanbiervliet et al. Endoscopy 2013
BENIGN COLORECTAL STENOSIS and STENT: RESULTS (5)

Review, 130 articles Currie A et al, Colorectal Dis 2013

Diverticulitis: 54% (66/122)

Technical success: 94% (115/122)
Clinical success: 87% (108/120)

Perforation rate: 12% (15/122)
Reobstruction rate: 14% (17/122)

Stoma avoided in 48% (23/48) of bridge to surgery patients

Perforation and stoma avoidance in the bridge to surgery group were worse with diverticulitis aetiology