THE DIFFICULT COLONOSCOPY: TIPS AND TRICKS

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LSGE Congress
Beirut, Lebanon
November 30, 2013
CECAL INTUBATION

• Critical aspect of effective, complete colonoscopy
• Quality targets
  - All colonoscopies: ≥ 90%
  - Screening colonoscopies: ≥ 95%

• Cecal intubation may be difficult in 5-15% of cases
• Cecal intubation rates are variable in clinical practice

  Cotton et al. GIE 2003;57:352–357
  Aslinia et al. Am J Gastroenterol 2006;101:721–731

• Higher completion rate ➔ Lower risk of interval CRC
**Basic Insertion Tips**

- Never push against fixed resistance
- Keep insertion tube straight
  - Speed comes primarily from:
    - Loop recognition
    - Loop reduction
- Keep colon wet, use CO2 if available
- Use suction to go forward in proximal colon
- Anticipate difficult cases
  - Young, female, abdominal/pelvic surgery
    - Consider pediatric scope with stiffener
- Change ancillary maneuvers quickly-stiffen scope, abdominal counter-pressure, turn patient.
Classifying the difficult colonoscopy

• Redundant colon
  – Good standard technique with adult colonoscope
  – Overtubes
  – Enteroscopes
  – Balloon enteroscopy
  – Water-aided colonoscopy

• Angulated sigmoid
  – Narrow scopes (pediatric colonoscopes, upper scopes, enteroscopes)
  – Cap-assisted colonoscopy
  – Water-aided colonoscopy

• Abdominal hernias
  – Hernia reduction.
Sequential approach

• Sedation problems: propofol
• Hernia: reduce it and hold it in place
• Fixation: need skinnier more flexible scope
• Redundancy:
  – Standard scope with water technique; overtube
  – Then enteroscope; overtube
  – Then DBE
• Difficult sigmoid:
  – Pediatric colonoscope, water technique
  – Then upper scope
  – Then guidewire exchange
  – Then long skinny scope (e.g. DBE).
Series of 119 patients referred for incomplete colonoscopy

- 54 due to redundant colon, 33 difficult sigmoid, 8 sedation issues
- Cecal intubation successful in 117 (98%)
- Success involved:
  - Adult colonoscope in 43%
  - Peds colonoscope in 29%
  - Special equipment in 26%
    (Straighteners, upper scopes, wire exchange, enteroscopes)
- Most patients can be successfully scoped to the cecum using good basic technique, and categorization of reason for difficult colonoscopy

Cap-Assisted Colonoscopy

- Helps in luminal orientation by keeping mucosa away from lens
- Helps better anticipate direction with sharp turns
- Less potential for looping

- RCT of patients with failed cecal intubation with cap or standard colonoscopy: Underwent repeat procedure with opposite method
  → Cecal intubation better with cap (67% vs 21%, p=0.003)
  
  *Lee et al. Am J Gastroenterol 2009; 104: 41-6*

- Time to cecum also lower with cap

Water-Aided Colonoscopy

- Gas shut off at source
- Infuse water – usually with continuous water jet
- Suction pockets of gas
- Reduces pain in unsedated and lightly sedated patients
- Facilitates cecal intubation in redundant colons
- Water exchange technique: remove dirty water (prep suboptimal) and infuse clean water simultaneously.
Gas lengthens sigmoid, makes angles more acute

Normal

Gas insufflation
Water keeps sigmoid short, makes angles less acute

Normal

Water immersion
Water Immersion Simplifies Cecal Intubation in Patients with Redundant Colons and Previous Incomplete Colonoscopy

• Series of 345 patients referred for incomplete colonoscopy
• Overall cecal intubation rate 332/345 (96.2%)
  – Without water immersion: 162/167 (97%)
  – With water immersion: 170/178 (95.5%)

• In patients with redundant colons (n=148):

<table>
<thead>
<tr>
<th></th>
<th>Water Immersion</th>
<th>Air Insufflation</th>
<th>P</th>
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<tbody>
<tr>
<td>External straightener</td>
<td>7%</td>
<td>37%</td>
<td>&lt; 0.0001</td>
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<tr>
<td>Need for position change</td>
<td>5%</td>
<td>22%</td>
<td>0.01</td>
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</table>

Overtube-assisted Colonoscopy

<table>
<thead>
<tr>
<th>Author (reference)</th>
<th>Device</th>
<th>N</th>
<th>Cecal intubation, %</th>
<th>Complication</th>
<th>Reason for failure</th>
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<tr>
<td>Mönkkemüller22</td>
<td>DBE-P</td>
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<td>100</td>
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<td>NA</td>
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<tr>
<td>Kaltenbach23</td>
<td>DBE-T</td>
<td>20</td>
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<tr>
<td>Pasha24</td>
<td>DBE-T</td>
<td>16</td>
<td>88</td>
<td>0%</td>
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<tr>
<td>Moreels25</td>
<td>DBE-T</td>
<td>26</td>
<td>89</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Moreels26</td>
<td>DBE-T</td>
<td>45</td>
<td>93</td>
<td>Polypectomy bleeding</td>
<td>Loop formation</td>
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<tr>
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<td></td>
<td></td>
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<td>Redundant colon</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Intolerance</td>
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<tr>
<td>Dzeletovic27</td>
<td>DBE-T</td>
<td>27</td>
<td>93</td>
<td>0%</td>
<td>Loop formation</td>
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<tr>
<td></td>
<td>SBE</td>
<td>26</td>
<td>100</td>
<td>0%</td>
<td>–</td>
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<tr>
<td>Gay28</td>
<td>DBC</td>
<td>29</td>
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<td>Fixed angulation</td>
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<tr>
<td>Hotta29</td>
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<td>Mucosal tear</td>
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<tr>
<td>May30</td>
<td>SBE&lt;sup&gt;a&lt;/sup&gt;</td>
<td>14</td>
<td>100</td>
<td>0%</td>
<td>–</td>
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<tr>
<td>Teshima31</td>
<td>SBE</td>
<td>22</td>
<td>96</td>
<td>0%</td>
<td>Poor preparation</td>
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<tr>
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<td>Spiral</td>
<td>24</td>
<td>92</td>
<td>0%</td>
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<tr>
<td>Rex24</td>
<td>ShapeLock</td>
<td>54</td>
<td>98</td>
<td>0%</td>
<td>Loop formation</td>
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</table>

DBE, double-balloon enteroscope EN-450P5/20; DBE-T, double-balloon enteroscope EN-450T5; N, number of patients; NA, not available; SBE, single-balloon enteroscope SIF-Q180; Spiral, Endo-Ease Vista.

<sup>a</sup>Single-balloon technique with EN-450P5/20.

<sup>b</sup>These patients do not represent previous incomplete conventional colonoscopy.

Primum non Nocere

• The great majority of colonoscopies can be completed, usually with standard equipment

• Know when to give up!

• Consider referral to expert at tertiary center.