double-balloon enteroscopy

“new gold standard for small-bowel imaging?“

A. Sedici

...G.I. hemorrhage is a common and clinically significant health care problem, associated with meaningful percentage of hospital admissions...

• 100/100.000 upper G.I. bleeding sources
• 20/100.000 lower G.I. bleeding sources

Longstreth: Am. J. Gastroenterol. 1995
STANDARD ENDOSCOPY
(LIMITSexplored)

• UPPER G.I. TRACT (ligament of Treitz)
  • Peptic lesions 70%
  • Esophageal-gastric varices 10%
  • Mallory-Weiss tears 7%

• LOWER G.I. TRACT (ileocecal valve)
  • Diverticulosis 20% - 55%
  • Angiodisplasia 3% - 35%
  • Cancer or polyps 8% - 30%

Silverstein: Gastroint. Endosc. 1991
Zuckerma: Gastroint. Endosc. 1991

OBSCURE G.I. BLEEDING

...in up to 5% of cases, however, patients may present with “obscure G.I. bleeding”, defined as the absence of identified source of hemorrhage after standard evaluation by upper endoscopy and colonoscopy ...


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OBSCURE G.I. BLEEDING
(diagnostic yield)

• Barium contrast examinations 0% - 20%

• Technetium Tc99m 20% - 40%
   (labeled red-blood-cell scintigraphy 0,1-0,5 cc/min.)

• Angiography 40% - 60%
   (active bleeding – therapeutic intervention)

Gutierrez: Am. Surg. 1998
Rollins: Am J roentgenol. 1991

...endoscopic examination of the small-bowel
for G.I. bleeding is possible by using...

• Push enteroscopy
• Capsule endoscopy
• Intraoperative enteroscopy

• Double-balloon enteroscopy

the diagnostic yield for double-balloon enteroscopy surpasses other imaging modalities and allows therapeutic intervention

Keitzman: Gastroint. Endosc. 2003
Double-balloon endoscopy system

- EN-450T5 (enteroscope)
- Overtube specification
- PB-20 balloon pump remote controller
- Processor EPX-4400

Fujinon Corporation

Double-balloon enteroscopy: technique

...double-balloon enteroscopy, first described by Yamamoto and colleagues in 2001, is an exciting new endoscopic technique that allows complete visualization of the small-bowel by using a 200-cm. Fujinon enteroscope equipped with a 140-cm. overtube ...

Yamamoto: Gastrointest. Endosc. 2001
**Double-balloon enteroscopy: technique**

1...the overtube than can be inserted while the endoscope balloon is inflated...

2...by inflating the overtube balloon enough to grip the intestinal wall...

3...the endoscope can be inserted further without forming redundant loops in the small-bowel...

Yamamoto: Gastrointest. Endosc. 2001

**Double-balloon enteroscopy: indications**

1...unexplained digestive bleeding

2...crohn’s disease

3...radiographic abnormalities of the small-bowel

4...unexplained chronic diarrhea and abdominal pain

5...multi-generating polyps

May: Gastrointest. Endosc. 2003

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Double-balloon enteroscopy: outcomes

1...the mean examination time for anterograde and retrograde approaches averaged 73.5 and 75 minutes (*p non significant*)...

2...significantly more mucosa visualized via the oral approach (235 cm. vs. 120 cm., *p<0.0001*)...

3...patients are able to tolerate the examination with standard conscious sedation or propofol administered by anesthetist...

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Double-balloon enteroscopy: outcomes

1...the Japanese experience demonstrated that total enteroscopy was possible in 86% of cases, documented by indigo carmine injection at the most distal point during the anterograde approach...

2...in contrast to the Yamamoto series, May et al. attempted total enteroscopy in 45% of cases...

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May: Gastrointest. Endosc. 2005
Preliminary experience with double-balloon enteroscopy

D.B.E. was introduced in the ours endoscopy unit in the fall of 2007

1...7 procedures in 6 patients with suspected small-bowel disorders

2...mean examination time was 125 minutes (range 80-170 minutes)

3...mean deep exploration was 280 cm. (range 190-370)

4...4 diagnosed pathological conditions (jejunal carcinoma, crohn’s disease, jejunal ulcer, angiodysplasia)
Preliminary experience with double-balloon enteroscopy

unexplained digestive bleeding
(chronic anemia of strict degree)

capsule endoscopy

TC-scan

D.B.E.
surgery

DIAGNOSIS: jejunal carcinoma

Double-balloon enteroscopy: future questions

1...because double-balloon enteroscopy is a new therapeutic procedure, it is currently not known when it should be performed during the evaluation of obscure GI bleeding

2...while capsule endoscopy appears to be a reasonable initial diagnostic imaging test, miss rate of up to 36% have been reported with the capsule because of limited 140° field of view

3...training of endoscopists in the techniques of double-balloon enteroscopy is another area that requires investigation

May: Endoscopy 2005
Appleyard: Gastroenterology 2001
Double-balloon enteroscopy: conclusion

1...double-balloon enteroscopy is an exciting new technology for imaging of the small bowel

2...the diagnostic yield from double-balloon enteroscopy appears to surpass other imaging modalities, while allowing the opportunity for therapeutic intervention

3...disadvantages of the technique include a long examination time and additional sedative medication, the need for supplemental staff and the need for fluoroscopy for direction of loop reduction

Lauren: Gastroint. Endosc. 2005

...nothing is too high for a man to reach...
...but he must climb with care and confidence...

Hans Christian Andersen 1805-1875