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U.O. ENDOSCOPIA DIGESTIVA
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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 (LIMITS EXPLORED)

- **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

Zuckerman: 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 ...

Rockey: N. Engl. J. Med. 1999

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**

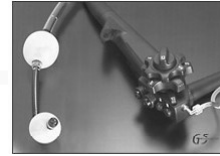
• **Double-balloon enteroscopy**

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

Keizman: Gastroint. Endosc. 2003

Double-balloon endoscopy system

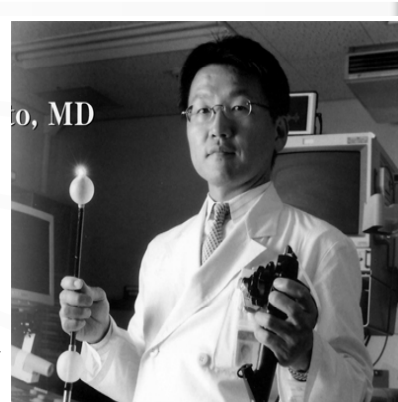
- **EN-450T5 (enteroscope)**
- **Overtube specification**
- **PB-20 balloon pump remote controller**
- **Processor EPX-4400**



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 ...



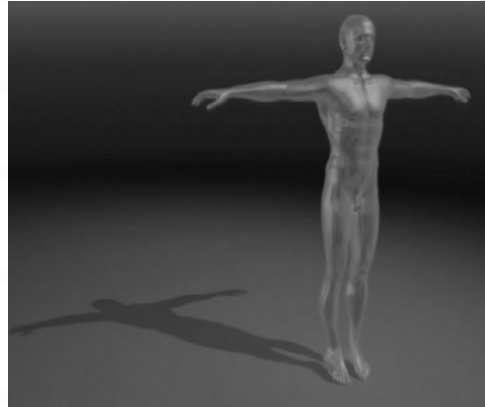
Yamamoto: Gastrointest. Endosc. 2001

Double-balloon enteroscopy: technique

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

2...by inflating the over tube 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

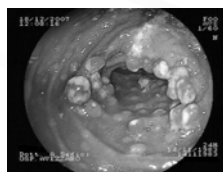
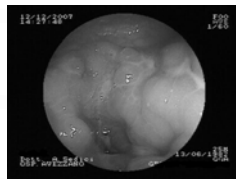
1...unexplained digestive bleeding

2...crohn's disease

3...radiographic abnormalities of the small-bowel

4...unexplained chronic diarrhea and abdominal pain

5...multi-generating polyps



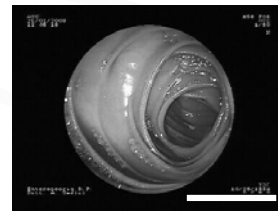
May: Gastrointest. Endosc. 2003

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...

May: *Gastrointest. Endosc.* 2005

Double-balloon enteroscopy: outcomes

1...the japanese experience demonstrated that total enteroscopy was possible in 86% of cases, documented by indian ink 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...



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

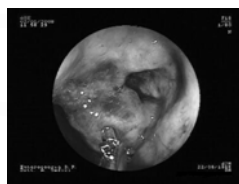
- 1...7 procedures in 6 patients with suspected small-bowel disorders**
- 2...mean examination time was 125 minutes (range 80-170 minutes)**
- 3...mean deep exploration was 280 cm. (range 190-370)**
- 4...4 diagnosed pathological conditions (jejunal carcinoma, crohn's disease, jejunal ulcer, angiodysplasia)**



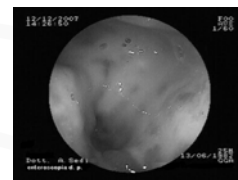
Preliminary experience with double-balloon enteroscopy



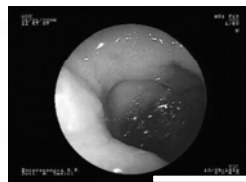
1...jejunal carcinoma



2... crohn's disease




3...jejunal ulcer



4...angiodysplasia






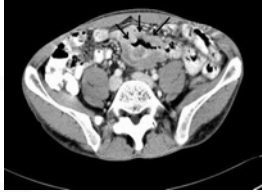
Preliminary experience with double-balloon enteroscopy

unexplained digestive bleeding
(chronic anemia of strict degree)


capsule endoscopy



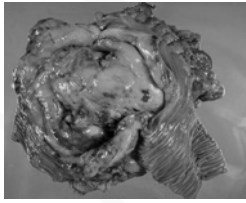
TC-scan




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