



INTRODUZIONE DI BASE ALL'ECOENDOSCOPIA (EUS: Endoscopic UltraSonography)

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Learning Corner AIGO

XX Congresso Nazionale delle Malattie Digestive

Napoli 19-22 Marzo 2014

C'era una volta...

Papà e mamma

1932 primo endoscopio semiflessibile

1947 primo trasduttore ecografico

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Papà e mamma

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1947 primo trasduttore ecografico

Perché è nata l'EUS?

ETG pancreas

- ✓ *Meteorismo intestinale*
- ✓ *Costituzione del paziente*

Dov'è nata l'EUS?



Dov'è nata l'EUS?







Di Magno E. et al.
“Ultrasonic endoscope.”
The Lancet 1980;1:629-31.



Prima EUS: 1980

prototipo ecoendoscopio radiale Olympus con centralina (1980)

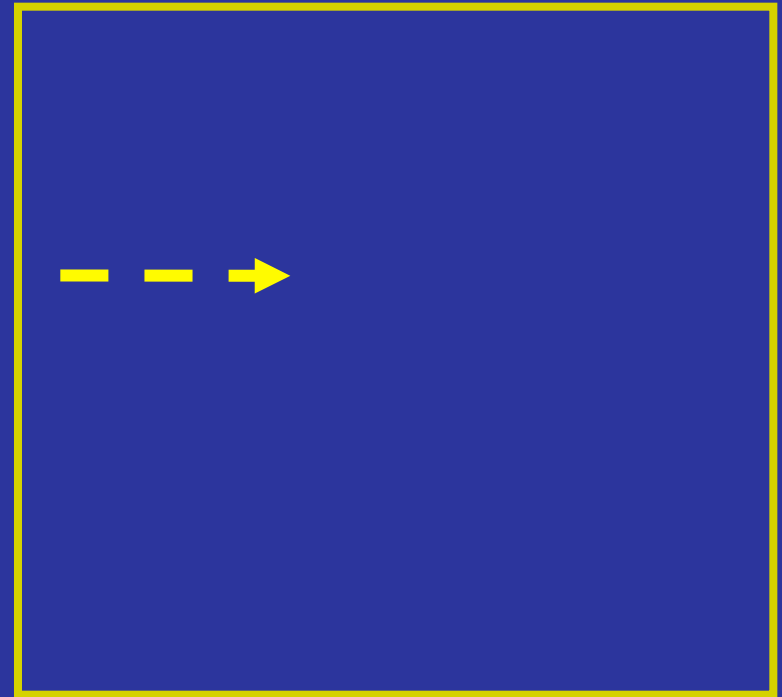


trasduttore
ecografico



1982

**primo ecoendoscopio a
scansione radiale
(Olympus)**

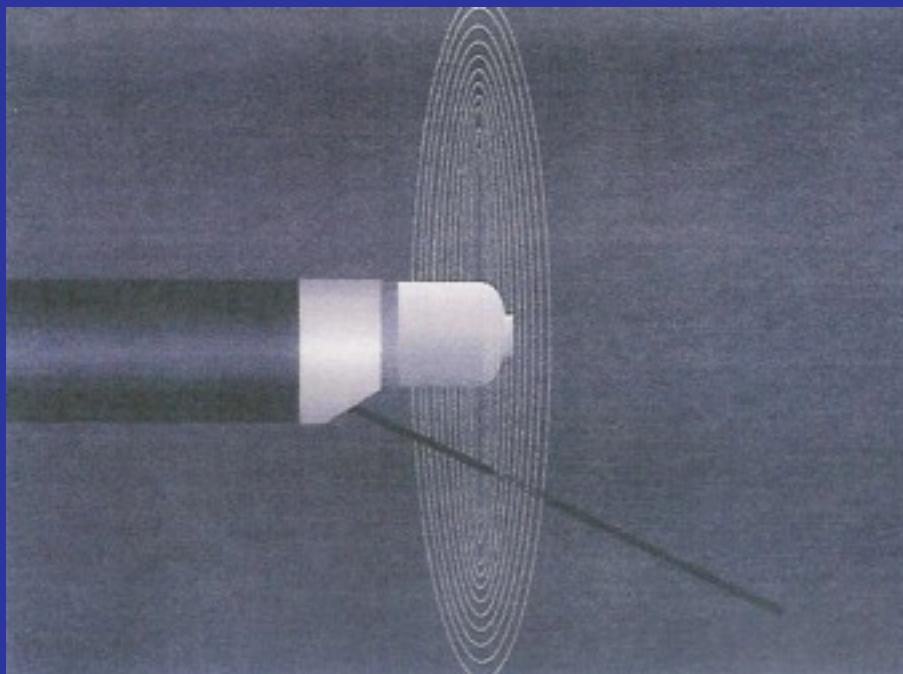


1989 – 1991

**ecoendoscopio a
scansione lineare
(Pentax)**

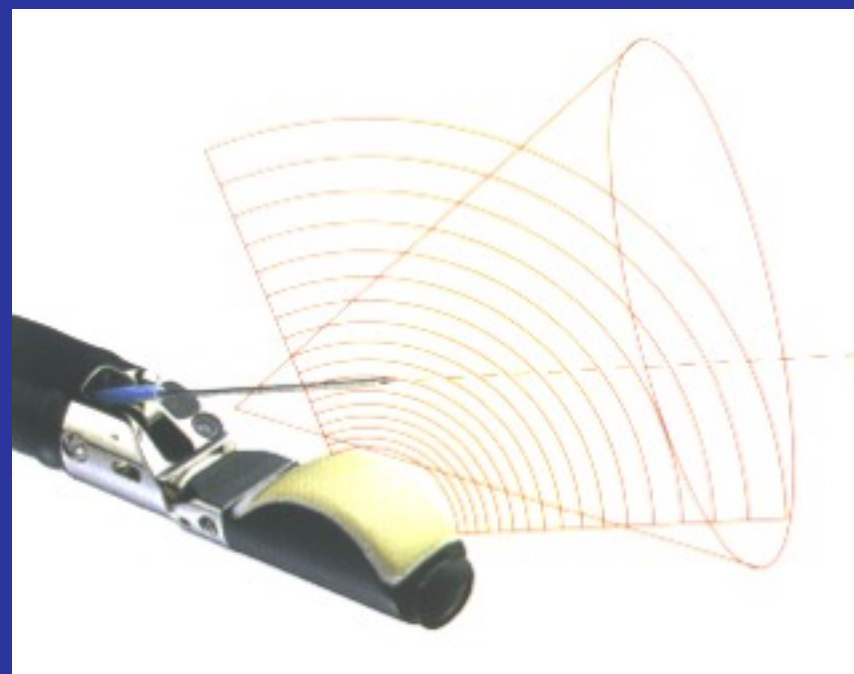


Ecoendoscopi



RADIALE

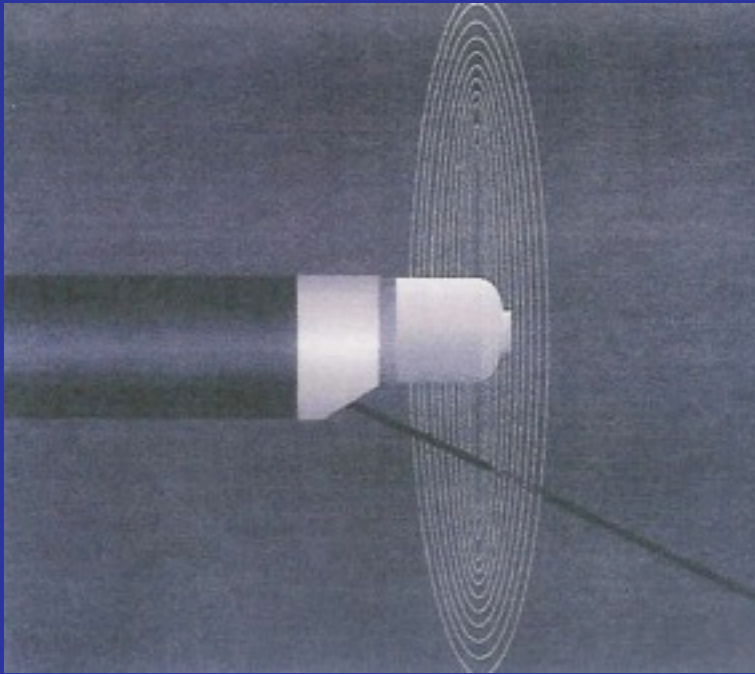
immagine ultrasonora a 360°,
perpendicolare all'asse
dell'endoscopio



LINEARE O OPERATORE

immagine lineare all'asse
dell'endoscopio

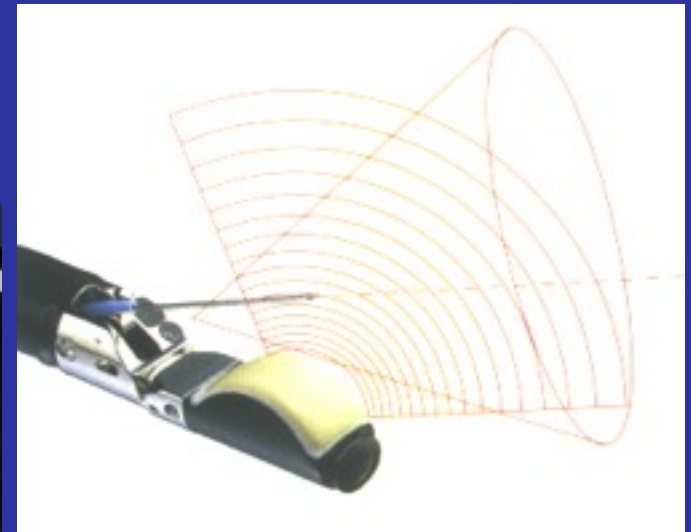
Ecoendoscopi



RADIALE

immagine ultrasonora a 360°,
perpendicolare all'asse
dell'endoscopio

Ecoendoscopi



Prima EUS-FNA: 1991



Vilmann P, et al.

“Endoscopic ultrasonography with guided fine needle aspiration biopsy in pancreatic disease.”

Gastrointest Endosc 1992; 38: 172-3



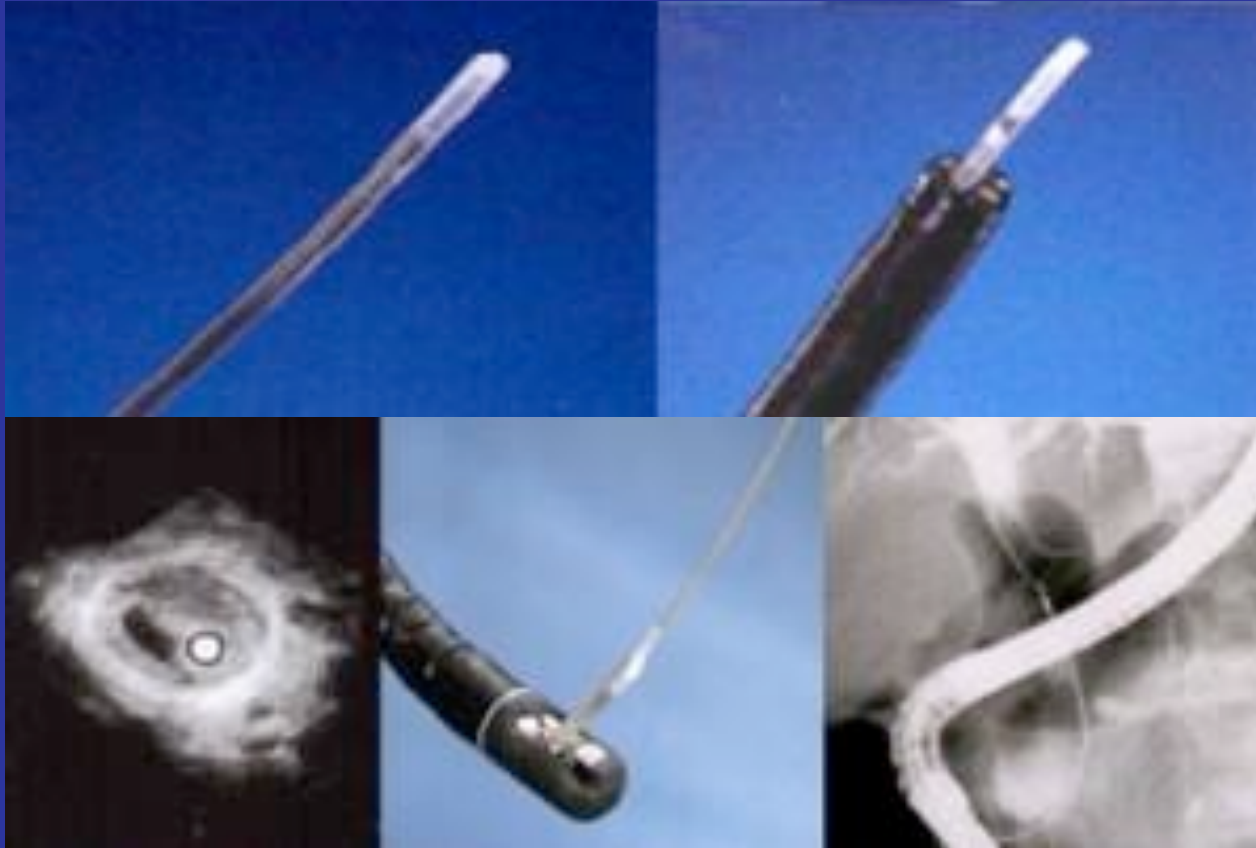
Prima EUS-FNA: 1991

EUS impatto clinico

- **Canale operatore 3.7–3.8 mm**
- **Sonda cieca su filo guida**
- **Minisonde ad alta frequenza (7.5 – 20 mHz)**
- **IDUS Intra Ductal Ultrasound System**
- **CHE–EUS**
- **Elastografia**
- **nCLE**

Minisonde

(alta frequenza 7.5-20 mHz)
dentro normali endoscopi



INTRADUTTALE (IDUS): dentro coledoco e Wirsung

Tecnica

PREPARAZIONE:

- come normale EGDS o rettoscopia

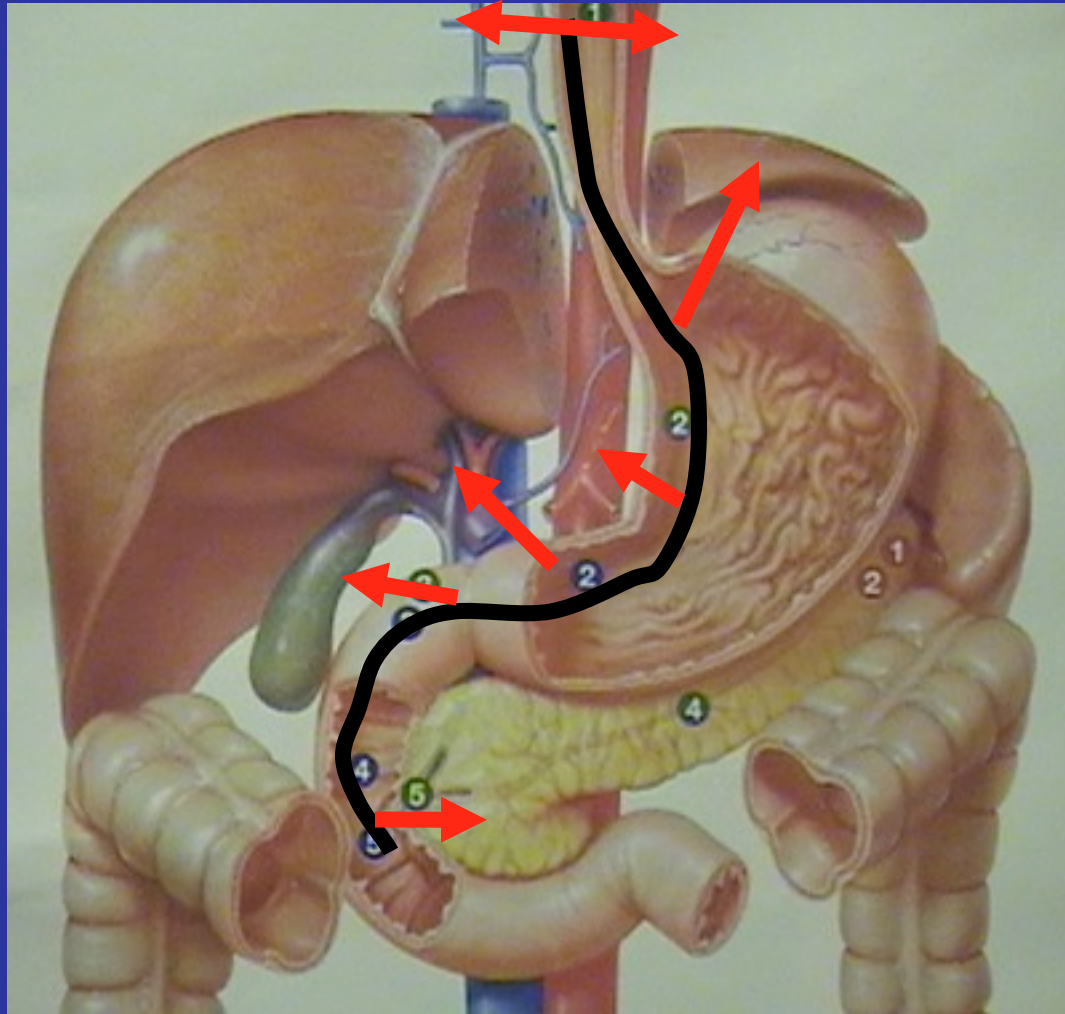
SEDAZIONE:

- fentanyl
- midazolam
- propofol

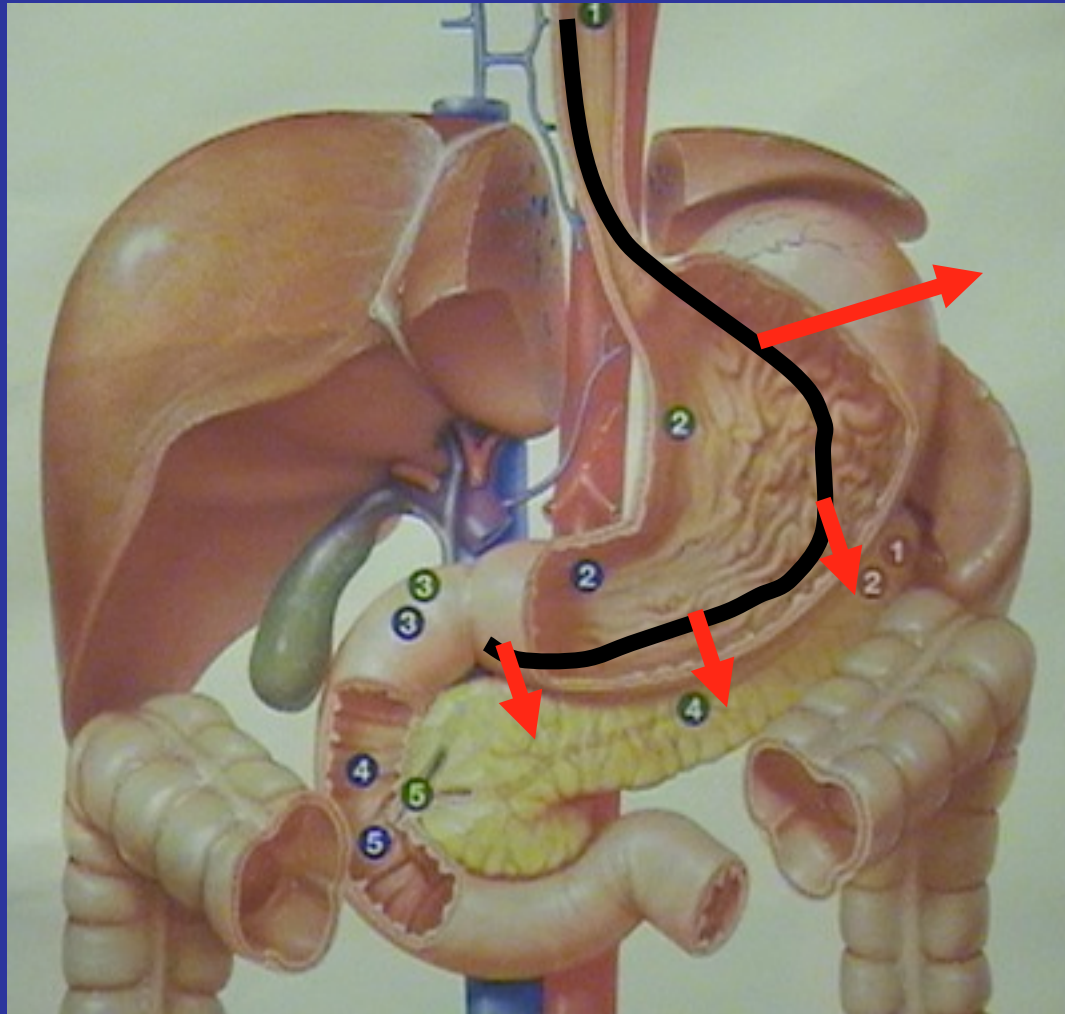
ANTIBIOTICOPROFILASSI

- EUS-FNA lesioni cistiche
- procedure terapeutiche
- altre indicazioni

Anatomy



Anatomy



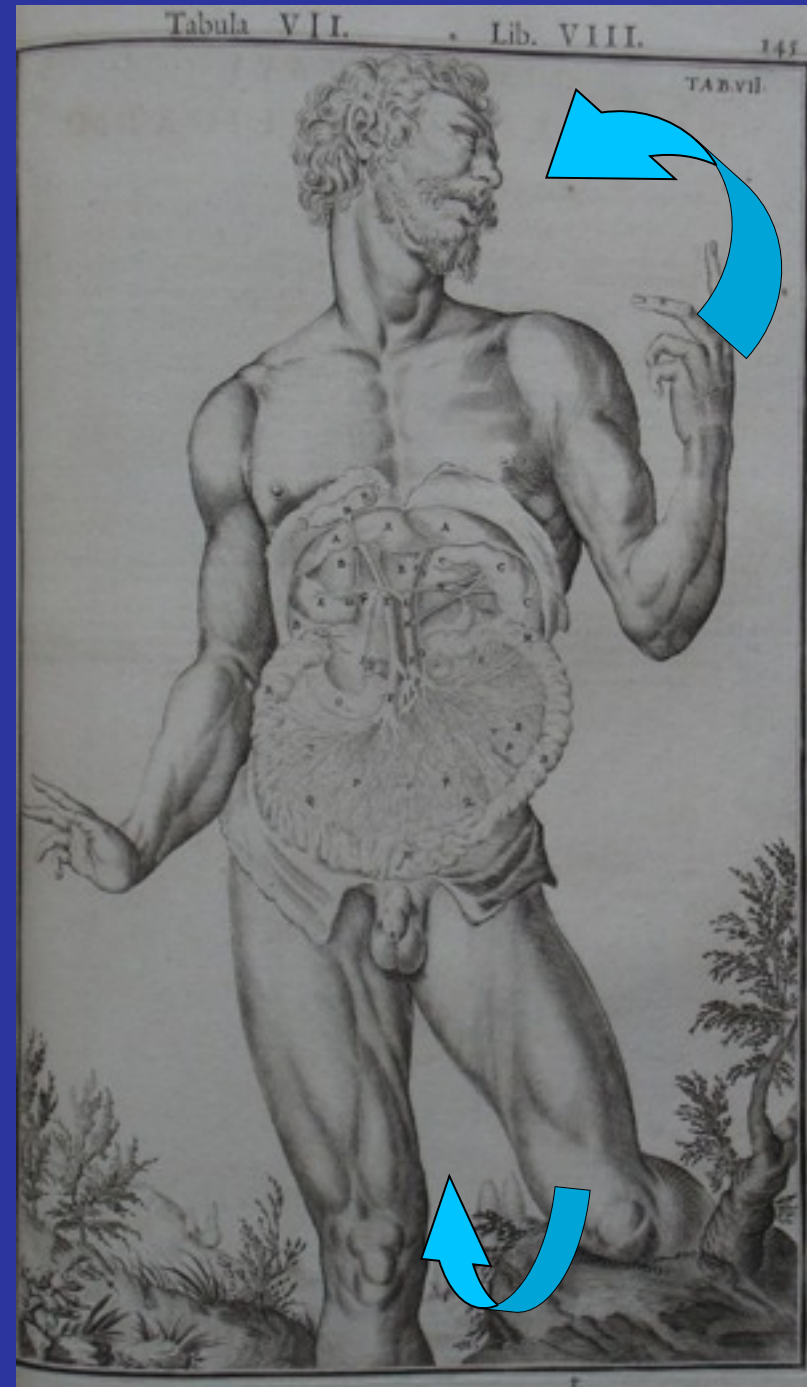
INDICAZIONI:

STUDIO DI PARETE GASTROINTESTINALE:

(esofago, stomaco, duodeno, retto, colon)

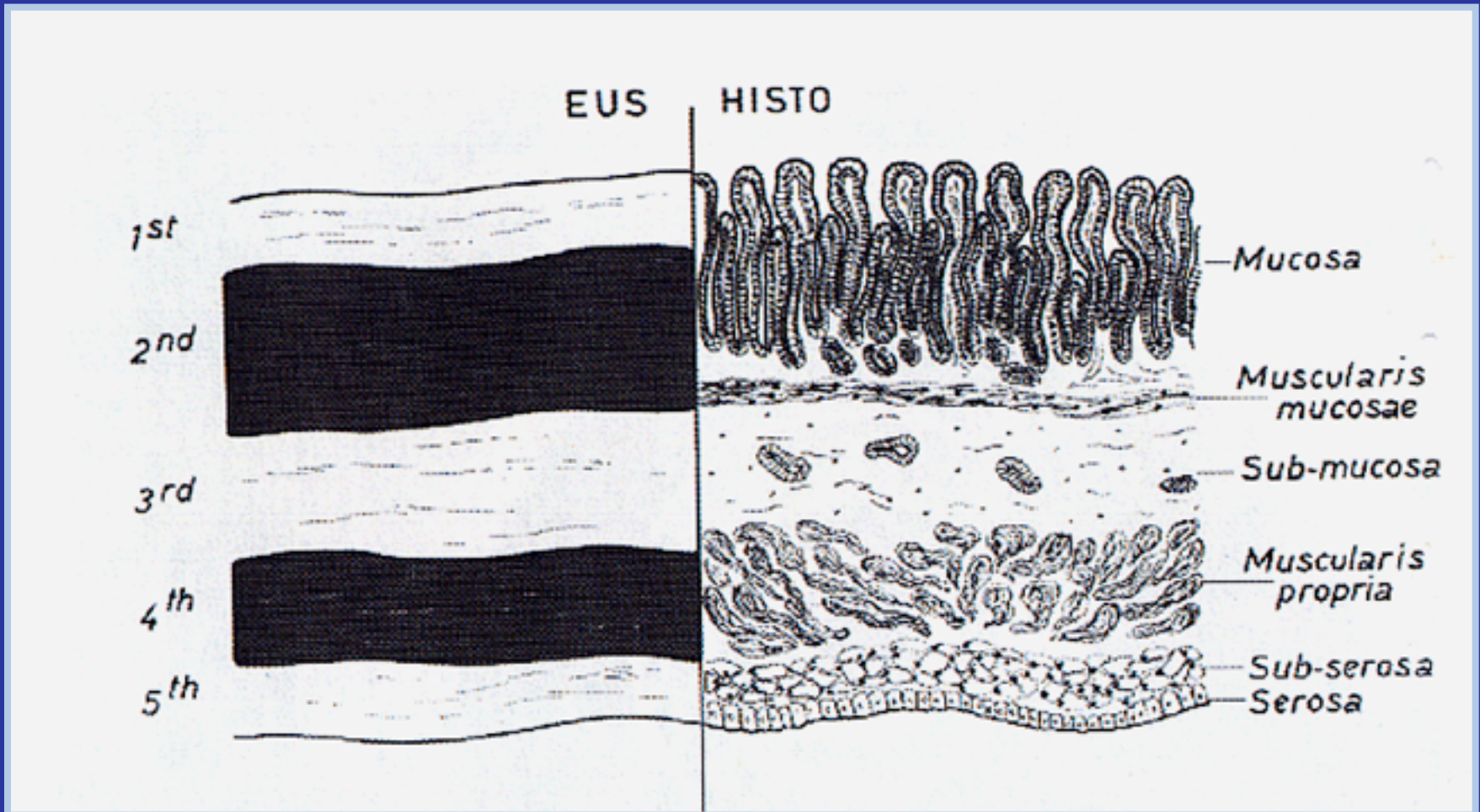
- stadiazione K
- lesioni sottomucose
- indicazioni resezione endoscopica

VIE BILIARI
PANCREAS
MEDIASTINO
LINFONODI
(stadiazione)



STUDIO DI PARETE GASTROINTESTINALE

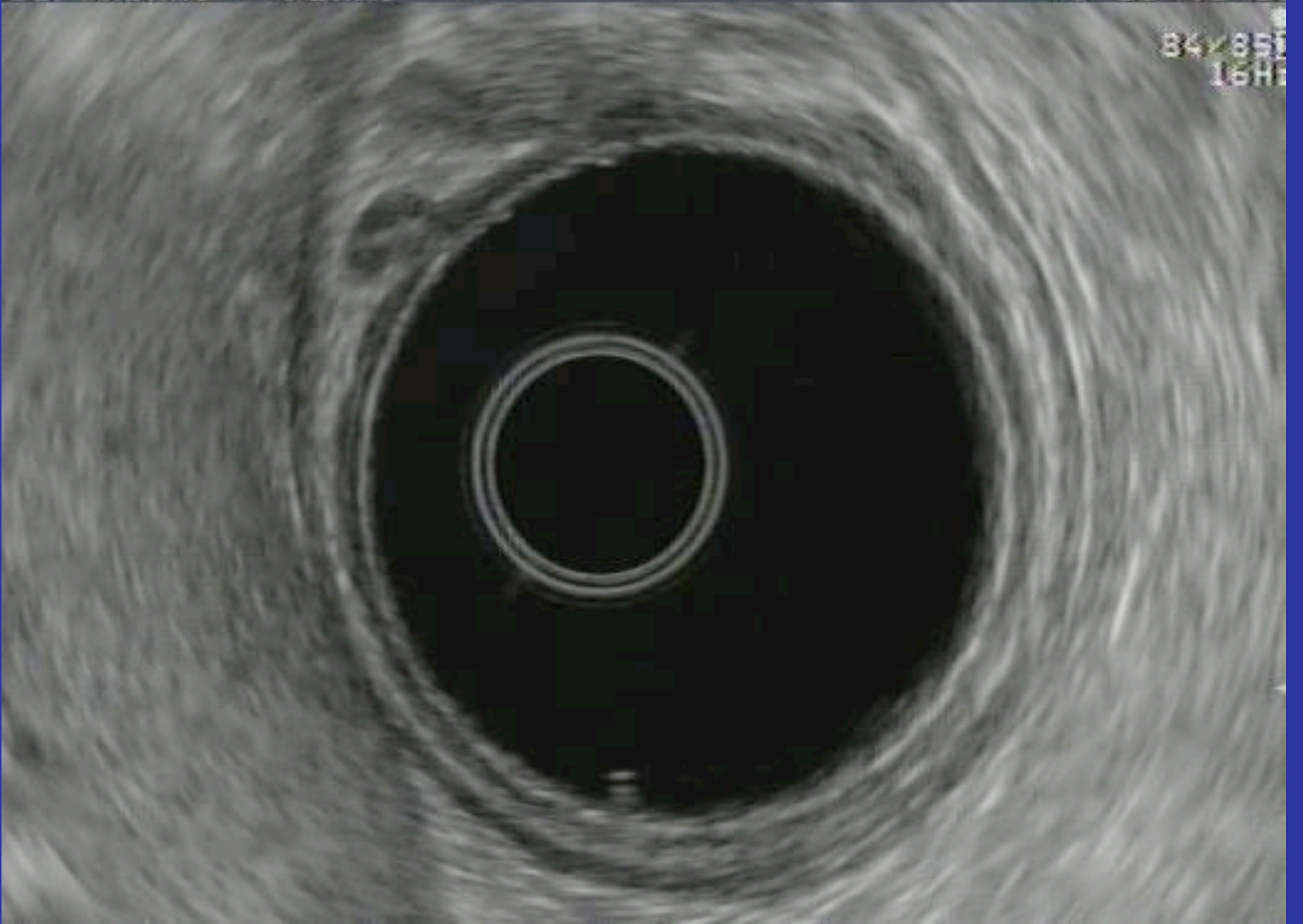
5 STRATI DI PARETE

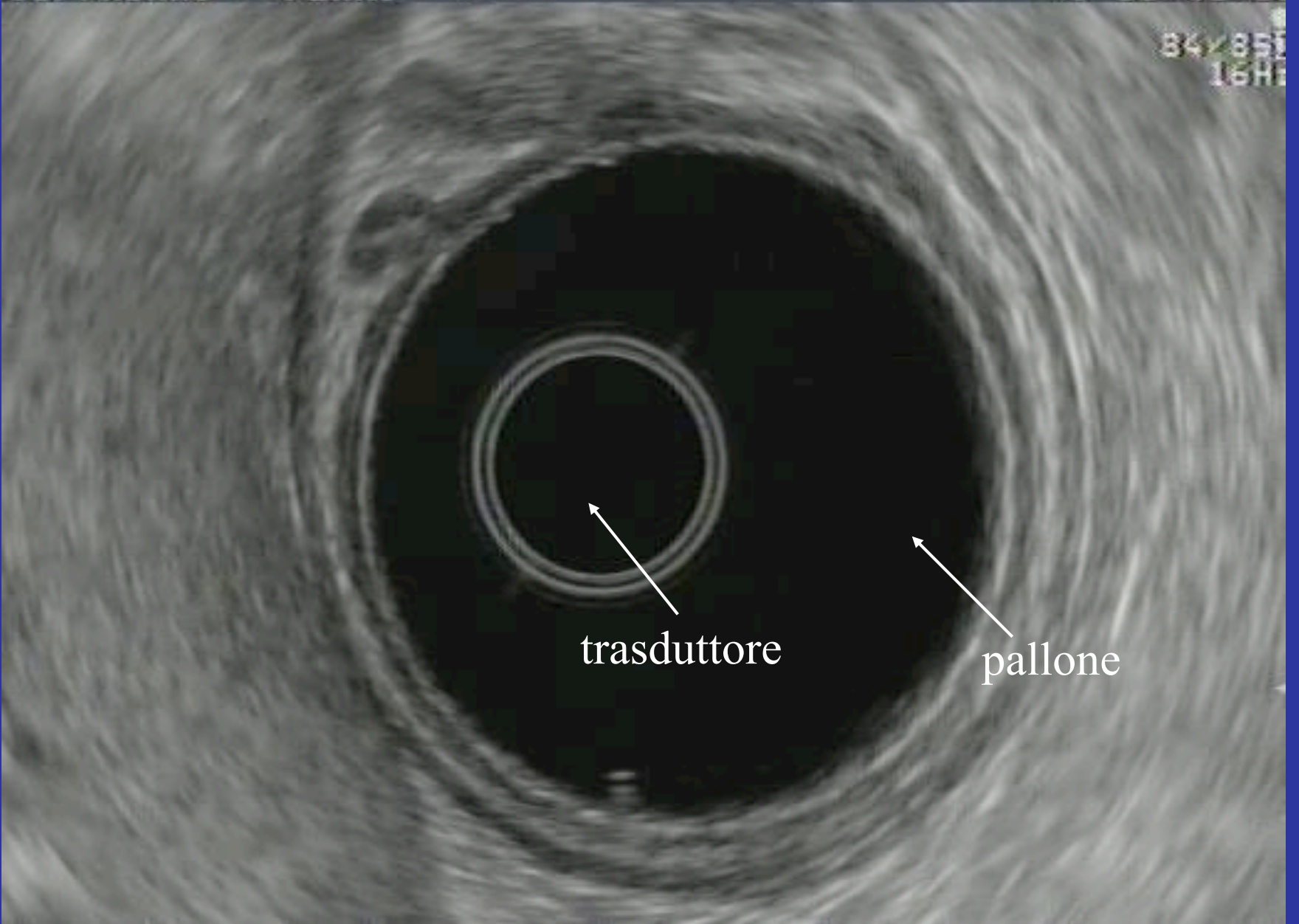


GASTROENTEROLOGIA :
OSP. MURRI - FERMO :

17-11-'10
:0 18:41:50

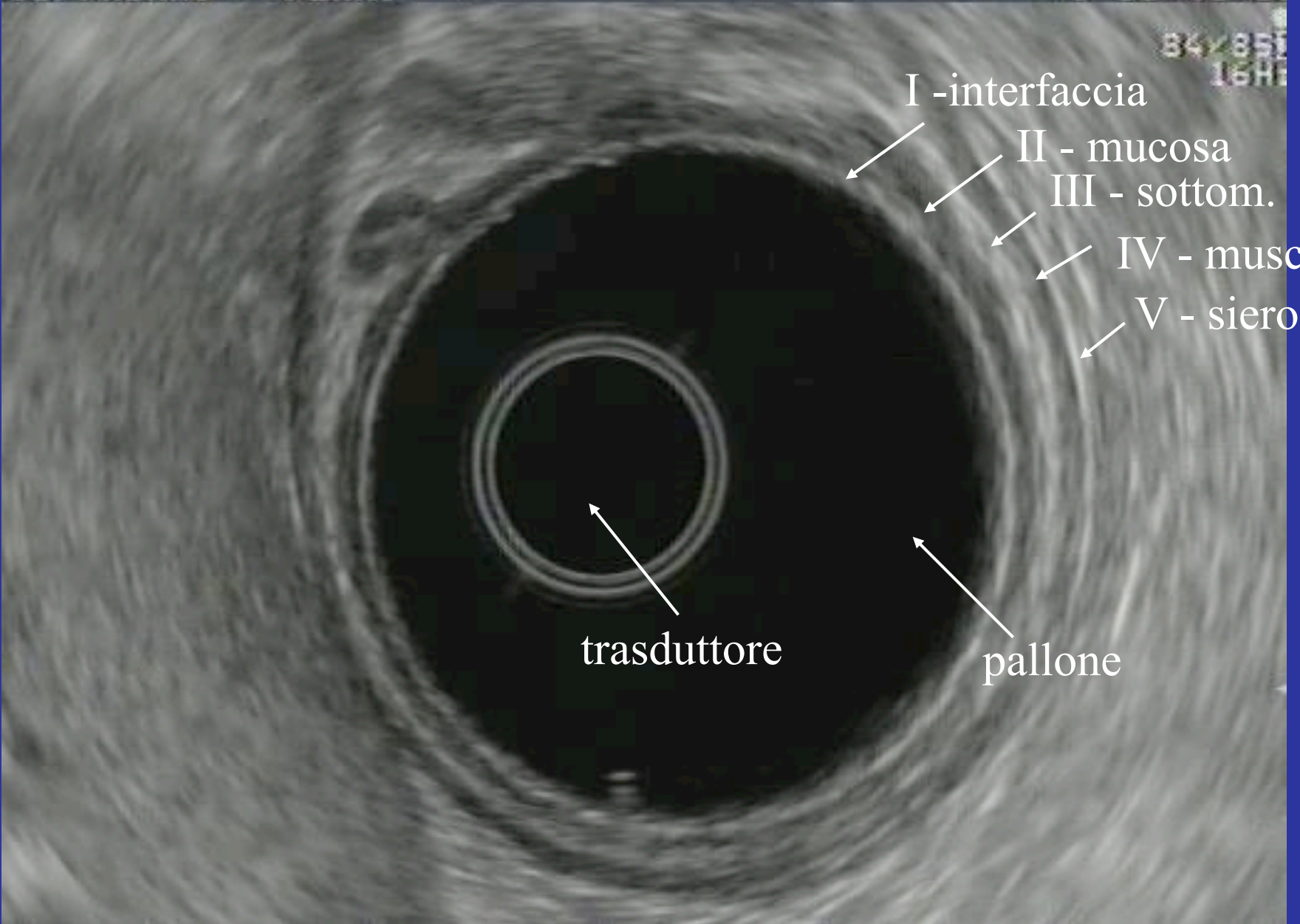
84x85
16H





trasduttore

pallone



I - interfaccia

II - mucosa

III - sottom.

IV - musc.

V - sierosa

trasduttore

pallone

COMPLICANZE:



Digestive and Liver Disease 38 (2006) 762–767

**Digestive and
Liver Disease**

www.elsevier.com/locate/dld

Digestive Endoscopy

Multicentre retrospective study on endoscopic ultrasound complications

E. Buscarini^{a,*}, C. De Angelis^b, P.G. Arcidiacono^c, R. Rocca^d, G. Lupinacci^a, R. Manta^a,
P. Carucci^b, A. Repici^b, S. Carrara^c, D. Vallisa^e, L. Buscarini^f, F. Cosentino^g, A. Pera^d,
M. Rizzetto^b, P.A. Testoni^c, A. Zambelli^a

- 11539 EUS!
- 10731 were conventional
- 808 interventional

Results

- No deaths occurred
- 14 (0.12%) complications
- 5 (0.046%) following conventional EUS
- 9 (1.11%) after interventional EUS
 - 7 mild
 - 4 moderate
 - 3 severe

Buscarini E, et al. Dig Liver Dis. 2006



Digestive and Liver Disease

Volume 46, Issue 1, January 2014, Pages 41–44



Digestive Endoscopy

Complications of endoscopic ultrasound fine needle aspiration on pancreatic cystic lesions: Final results from a large prospective multicenter study

Ilaria Tarantino^a  , Carlo Fabbri^b, Roberto Di Mitri^c, Nico Pagano^d, Luca Barresi^e, Filippo Mocciaro^c, Antonella Maimone^e, Gabriele Curcio^e, Alessandro Repici^d, Mario Traina^e

- 298 pazienti
- EUS-FNA of pancreatic cystic lesions

Results

Mean size was 34.1 ± 9 mm.

No deaths occurred

Adverse events: 18 patients (6%)

Mild complications: 12/18 (66.6%)

Moderate complications: 6/18 (33.3%)

- 7 immediate

- 6 early

- 5 late

All resolved with medical therapy

Tarantino I, et al. Dig Liver Dis. 2014

LEARNING CURVE:

- Bhutani MS, et al. Training facilities in gastrointestinal endoscopy: an animal model as an aid to learning endoscopic ultrasound. *Endoscopy*. 2006
- Azad JS, et al. Can U.S. GI fellowship programs meet American Society for Gastrointestinal Endoscopy recommendations for training in EUS? A survey of U.S. GI fellowship program directors. *Gastrointest Endosc*. 2006
- Barthet M. Endoscopic ultrasound teaching and learning. *Minerva Med* 2007
- Club Francophone d'Echoendoscopie Digestive. EUS training in a live pig model: does it improve echoendoscope hands-on and trainee competence? *Endoscopy* 2007
- European Society of Gastrointestinal Endoscopy (ESGE). Learning, techniques, and complications of endoscopic ultrasound (EUS)-guided sampling in gastroenterology. *Endoscopy* 2012
- American Society of Gastrointestinal Endoscopy (ASGE). Learning curves for EUS by using cumulative sum analysis: implications for American Society for Gastrointestinal Endoscopy recommendations for training. *Gastrointest Endosc*. 2013

LEARNING CURVE:

- For achieving competence: 150 supervised cases (75 pancreaticobiliary, 50 EUS-FNA).
- training in a center performing > 200 /year.
- theoretical teaching and practical teaching expert supervision (live demonstration, hands-on in humans, simulator models).
- lowest annual number EUS 200-250/year.

In France:

- 2 year intensive program including 4 weeks of theoretical training and 20 one-day practical sessions per year (computed-based simulator, swine model).
- gastroenterologists and EUS experts, but also by pathologists, surgeons, anatomists and radiologists.

EUS operativa

Drenaggio pseudocisti pancreatiche
Neurolisi plesso celiaco
Alcolizzazione tumori cistici pancreatici
Drenaggi bilio-pancreatici EUS-guidati
Ablazione con radiofrequenza
Crioterapia EUS-guidata
Terapia fotodinamica
Chemioterapia locoregionale
Radioterapia EUS-guidata

...



Terada, *Endoscopy* 1998
Goldberg, *Gastrointest Endosc* 1999
Chang, *Cancer* 2000
Sheen, *Br J Surg* 2002
Chan, *Gastrointest Endosc* 2004
Simon, *Radiographics* 2005

Gold-standard per lo studio di parete GI, per la patologia bilio-pancreatica e per la stadiazione loco-regionale (TN)

Può cambiare radicalmente l'outcome clinico di molti pazienti identificando il trattamento più adeguato (terapeutico o palliativo) che eviti inutili sofferenze e sprechi economico-organizzativi

Rappresenta il maggior *upgrading* in endoscopia digestiva

In continua evoluzione: alcolizzazione di plesso celiaco, ecoendoscopia intraduttale, minisonde, CHT locoregionale, nCLE, radioterapia...

Operatore dipendente

Elevata difficoltà → lunga e lenta curva di apprendimento

GRAZIE



giovedì 27 marzo 2014