

# MANO-IMPENZIOMETRIA

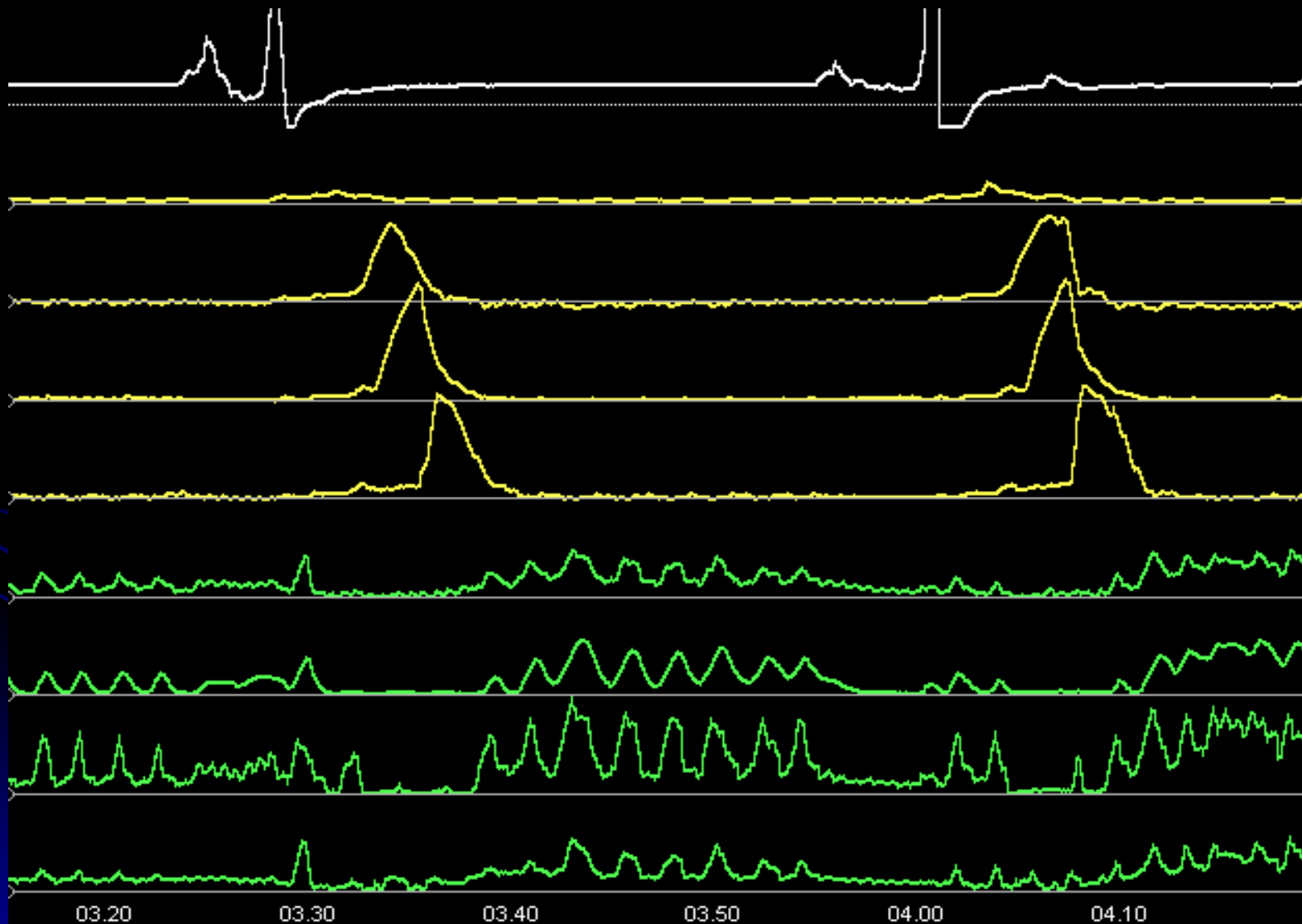
Luigi Benini, Fosca De Iorio, Italo Vantini

U.O Gastroenterologia

Università di Verona



# Normal manometry

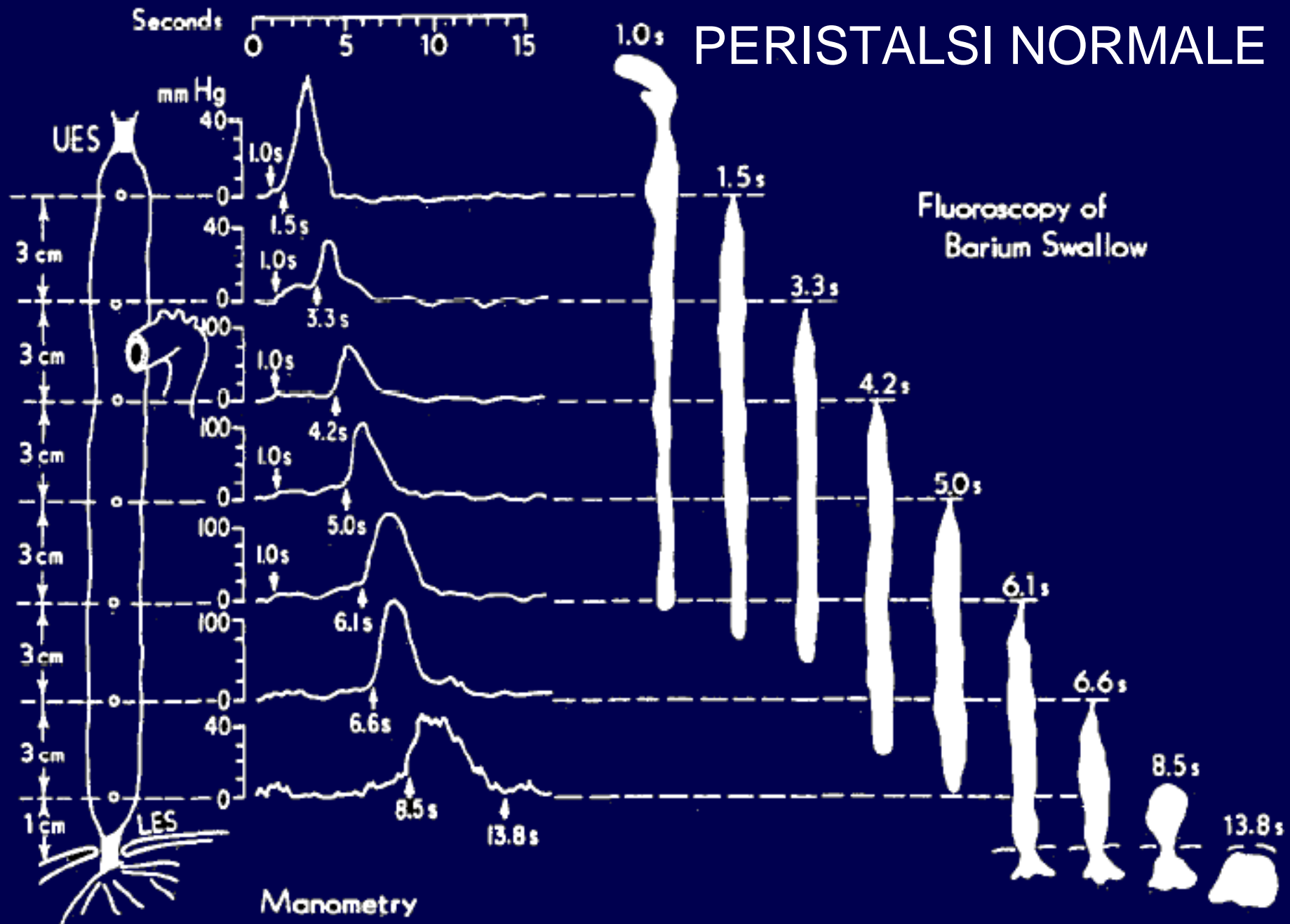


# COSA SI DEFINISCE “ANORMALE”?

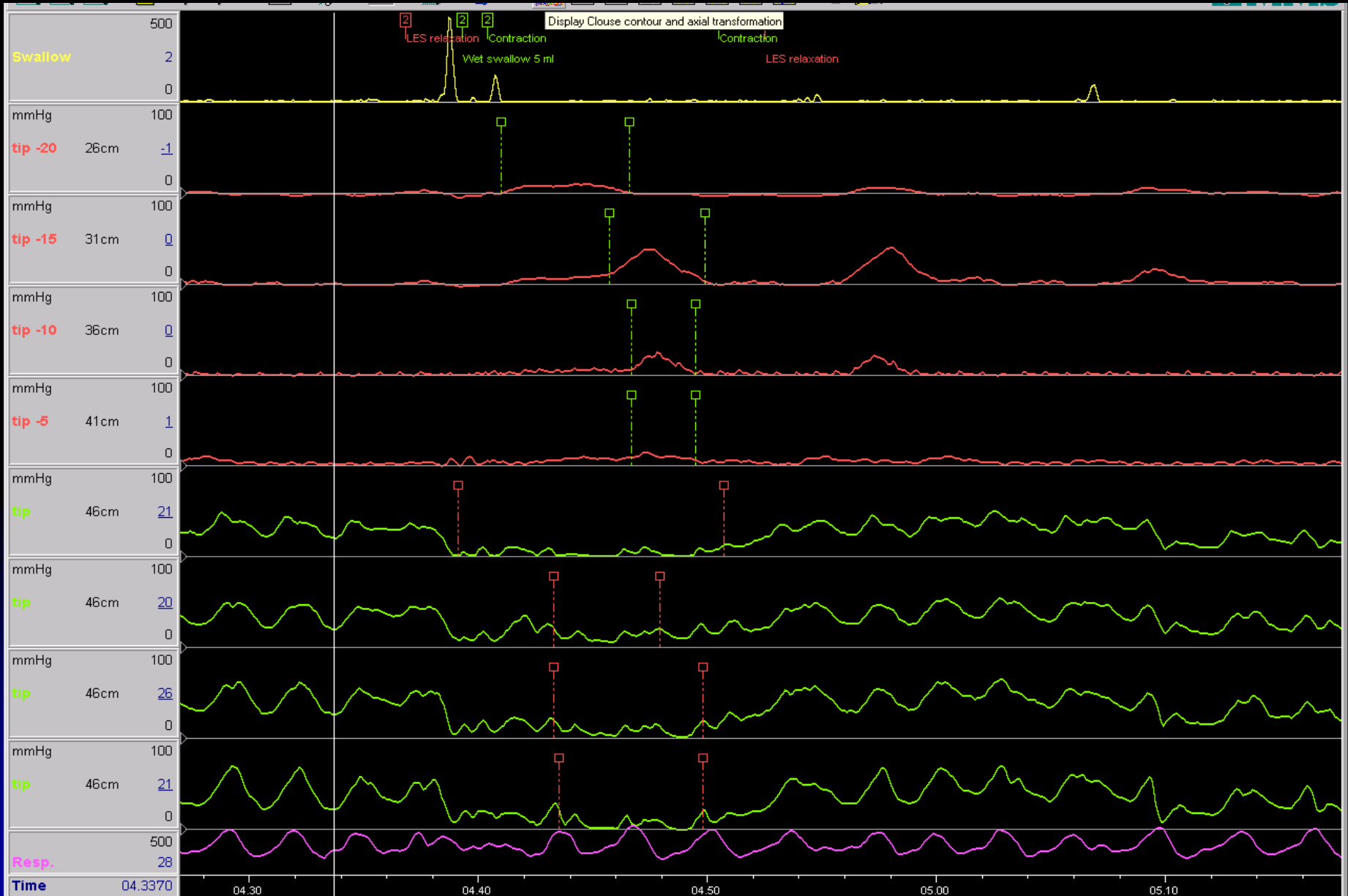
- pattern non trovato in sani
  - 95 soggetti sani, pagati, 22→74 aa
  - Onde peristaltiche in  $\geq 80\%$  dei casi
  - Ampiezza 50-180 mmHg
- ➔ Peristalsi inefficace
  - ➔ Onde non trasmesse per il 30% delle occasioni
  - ➔ Ampiezza  $< 50$  mmHg

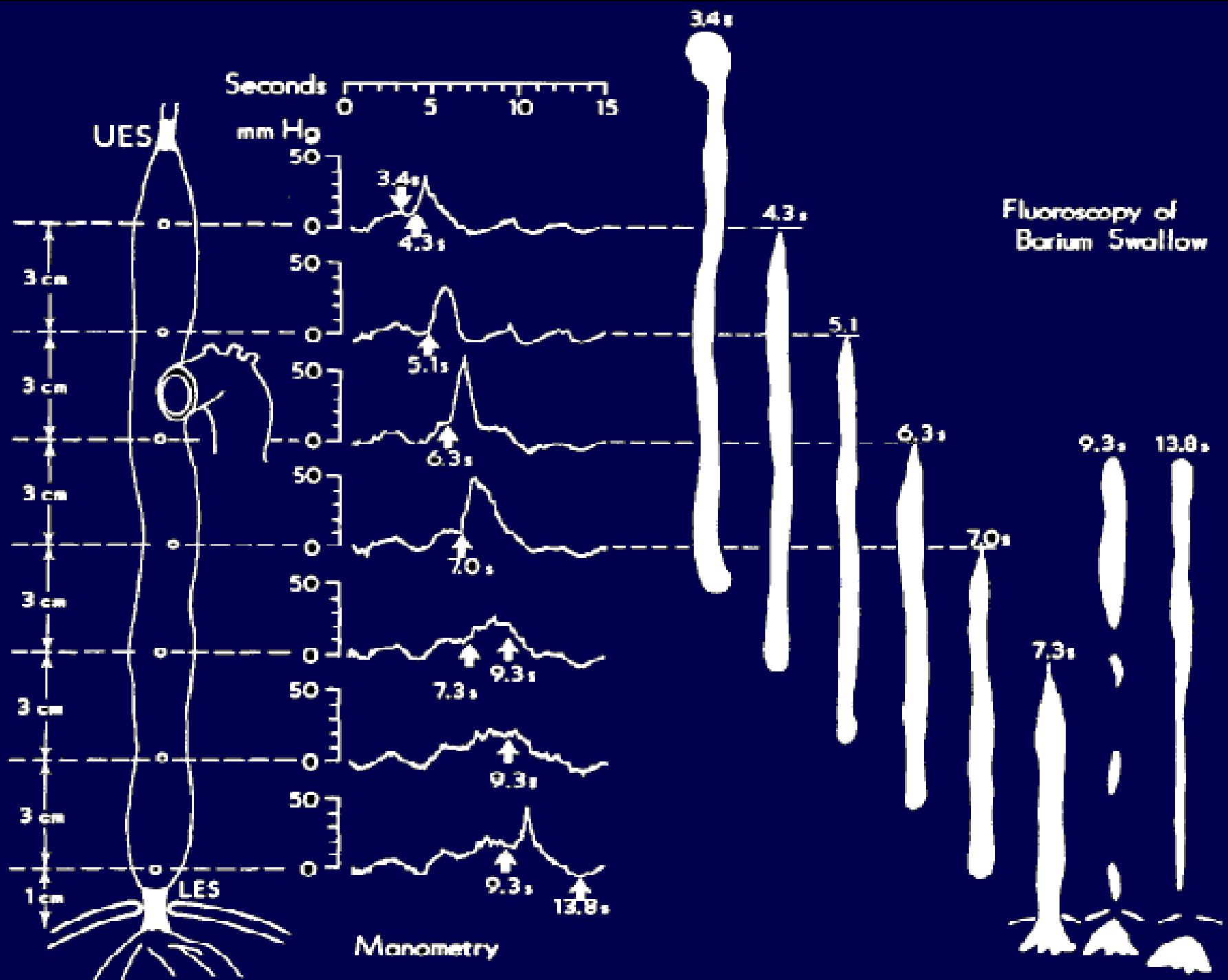
Richter, Dig Dis Sci 1987

# PERISTALSI NORMALE



# Peristalsi inefficace



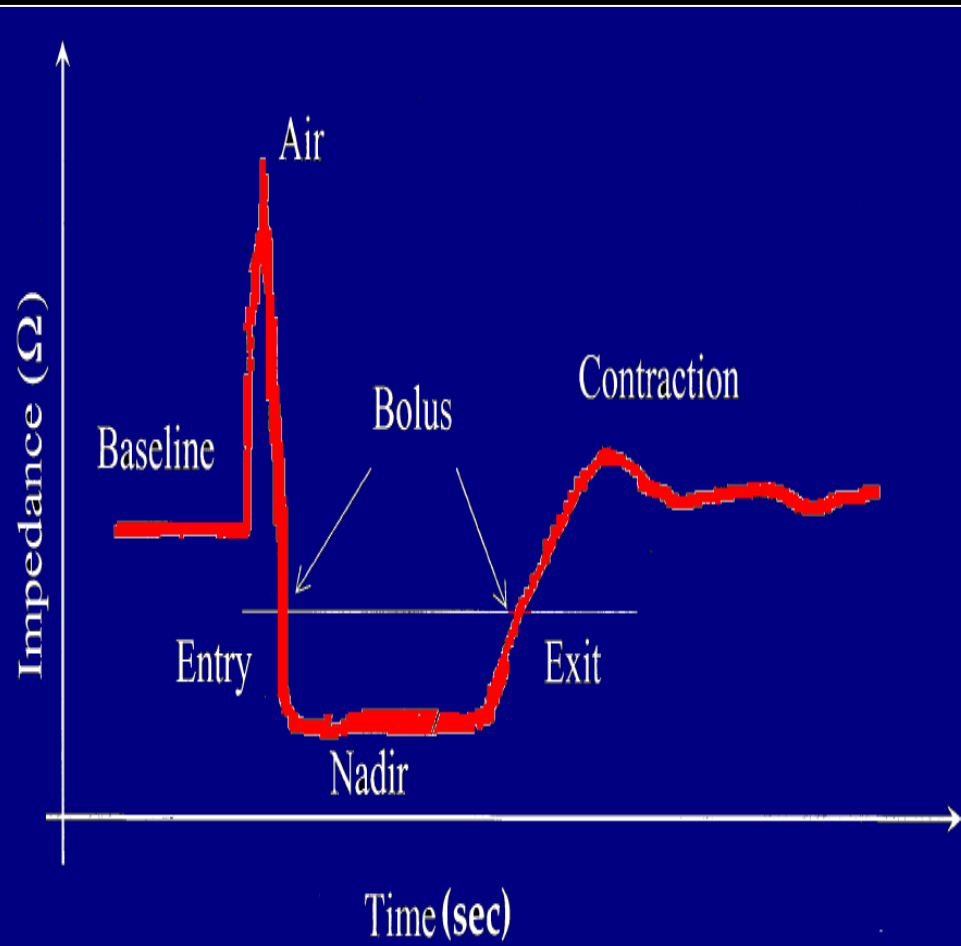


# COSA SI DEFINISCE “ANORMALE”?

- pattern non associato a progressione dei boli
  - 11 soggetti con disfagia o pirosi
  - Progressione del bario se ampiezza
    - >30 mmHg distalmente
    - >20 mmHg prossimalmente
- Peristalsi inefficace
  - Onde non trasmesse per il 30% delle occasioni
  - Ampiezza < 30 mmHg dist e/o <20 mmHg prox

Kahrilas GE 1988

# IMPEDENZA

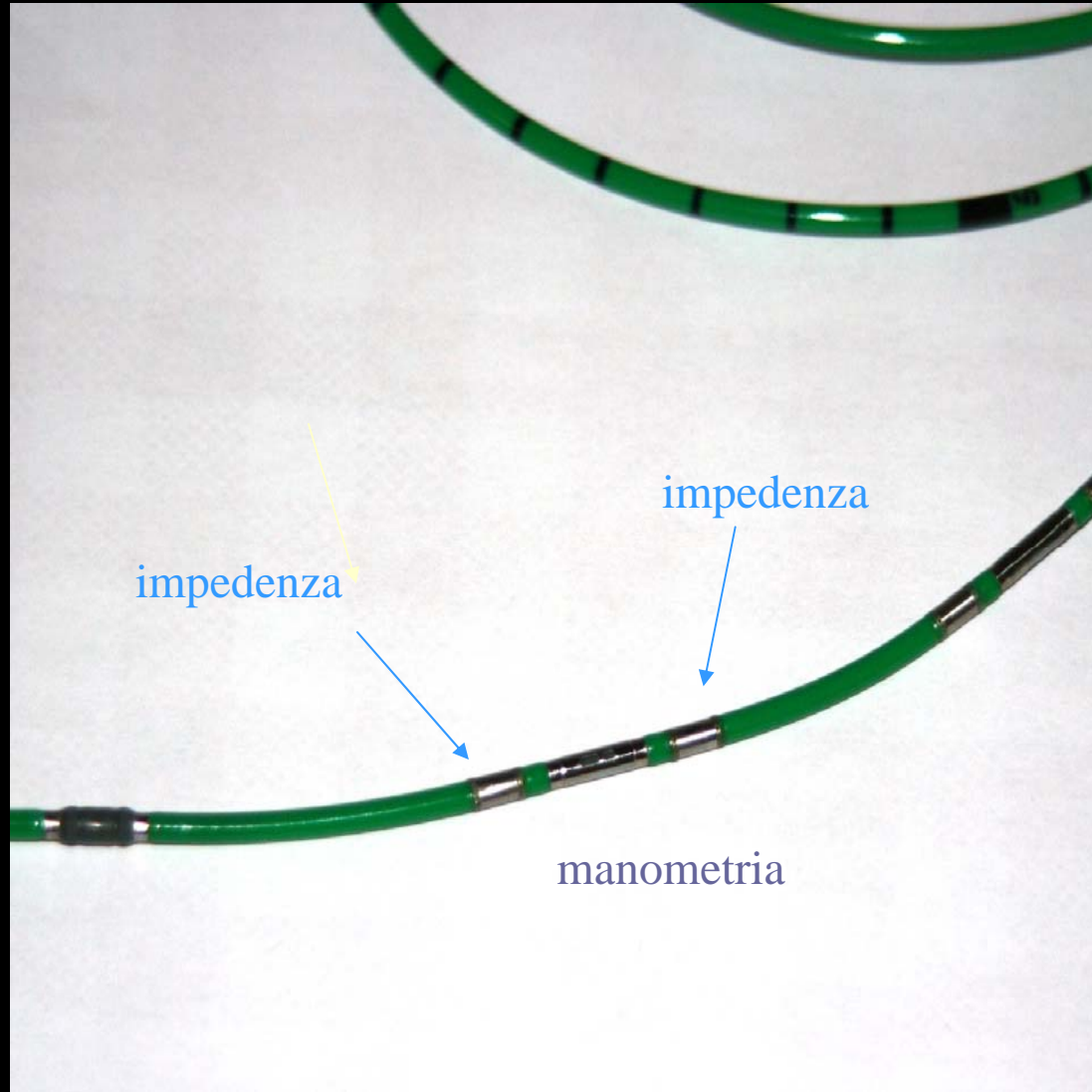
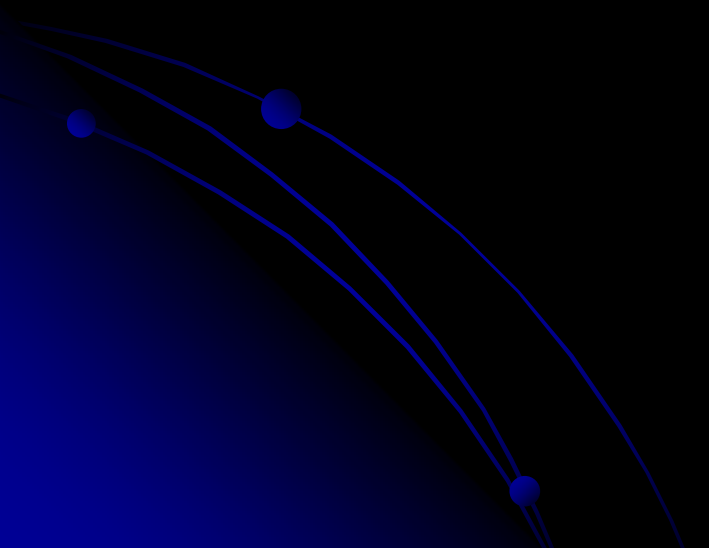


- ❖ È l'inverso della conduttività
- ❖ Varia con la natura del bolo (chimica e fisica)
- ❖ Parametro **diretto** di transito del bolo
- ❖ Permette di visualizzare direzione transito (anche reflussi ed eruttazioni)

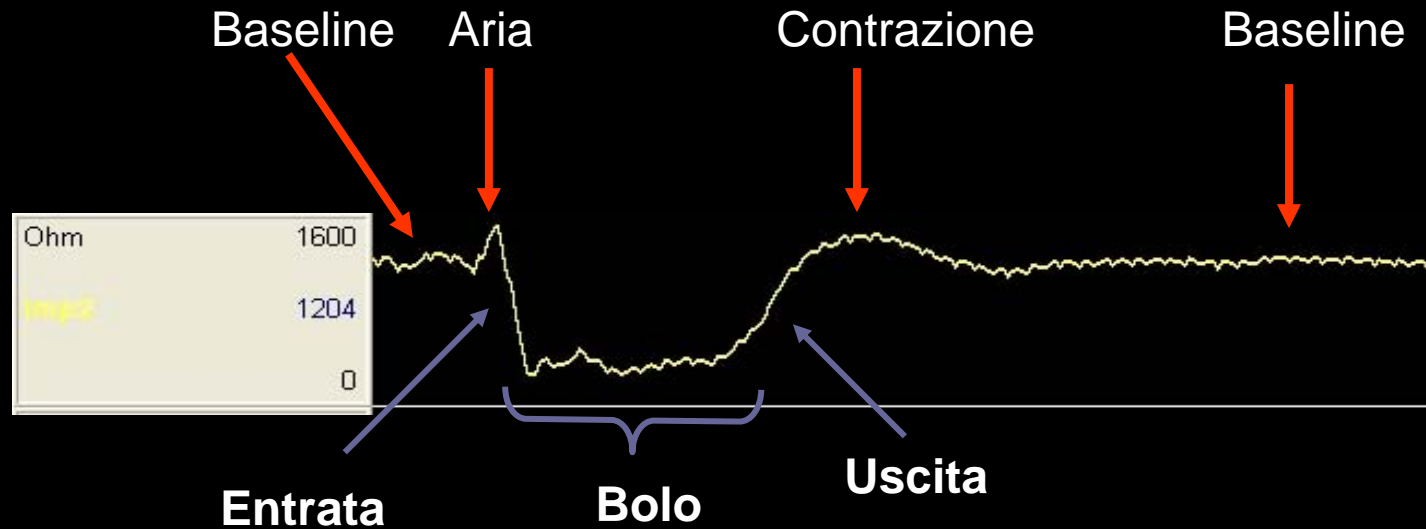
# impedenza

**Ohm\*cm (at 1 kHz)**

● Contenuto gastrico	30 – 100
● Bile	90
● Soluzione fisiologica salina	100
● Saliva	110
● Muscolo scheletrico	250 - 700
● Latte / Yoghurt	300
● Creme e Dessert	400
● Acqua potabile	1100
● Cola	1100
● Parete esofagea	2000
● Epidermide	2000 – 100.000
● Aria	10.000.000



# MANO-IMPEDENZIOMETRIA ESOFAGEA



## Normalità:

### Manometria

≥80% delle contrazioni

peristaltiche

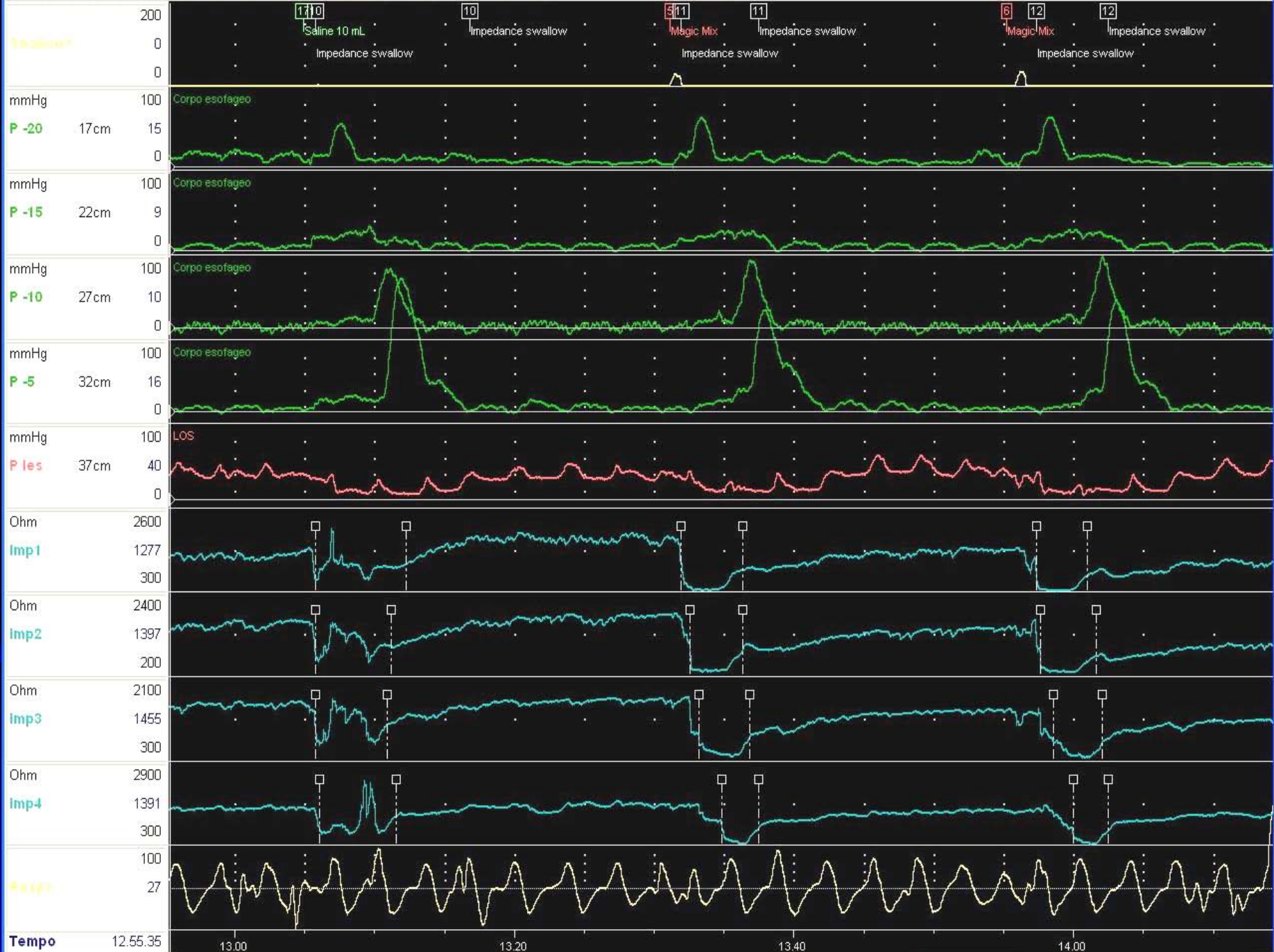
DEA ≥ 30 mmHg

### Impedenziometria

Transito completo (entrata del bolo nel canale prossimale + uscita nei 3 distali)

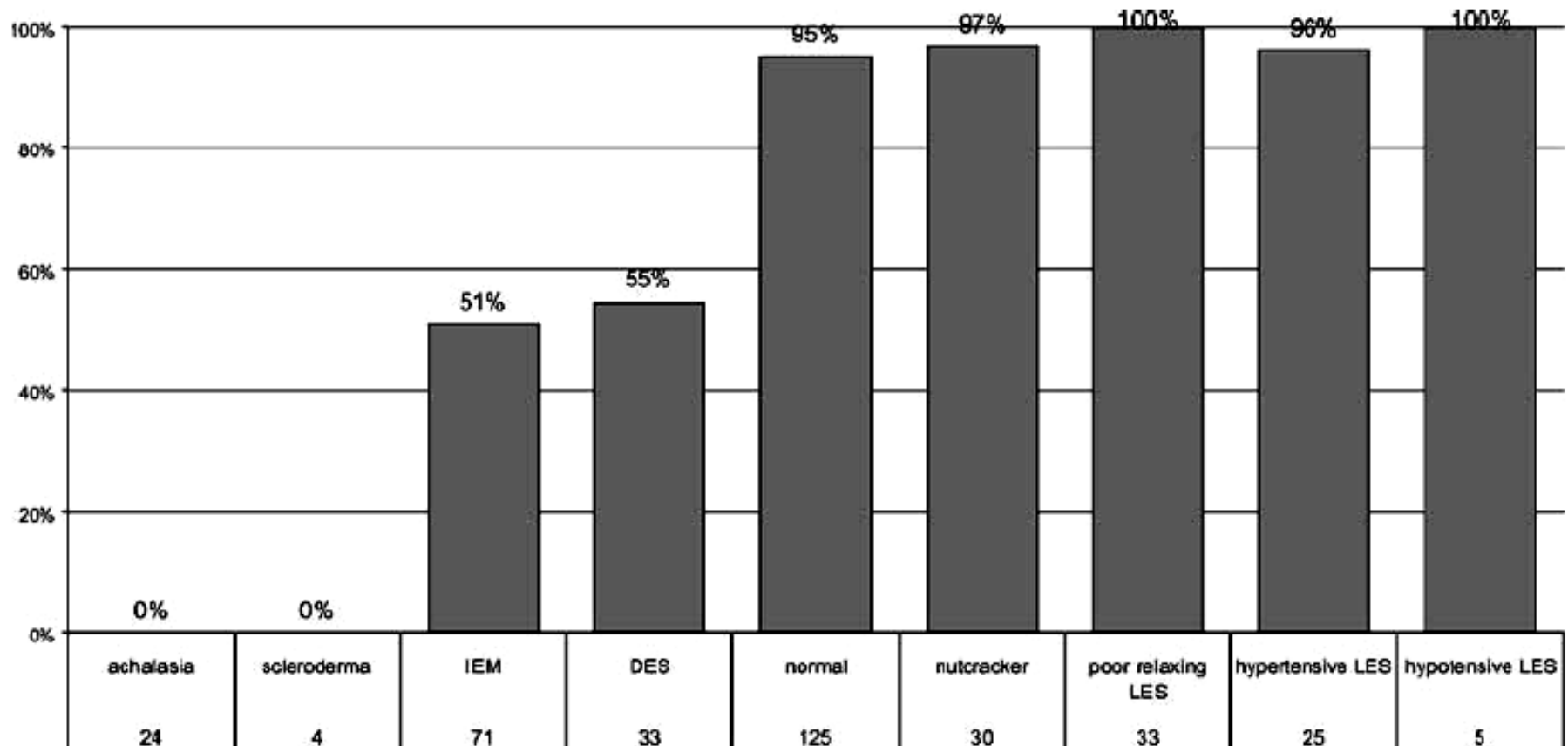
≥ 70% dei liquidi

≥ 60% dei gelatinosi



# Combined Multichannel Intraluminal Impedance and Manometry Clarifies Esophageal Function Abnormalities: Study in 350 Patients

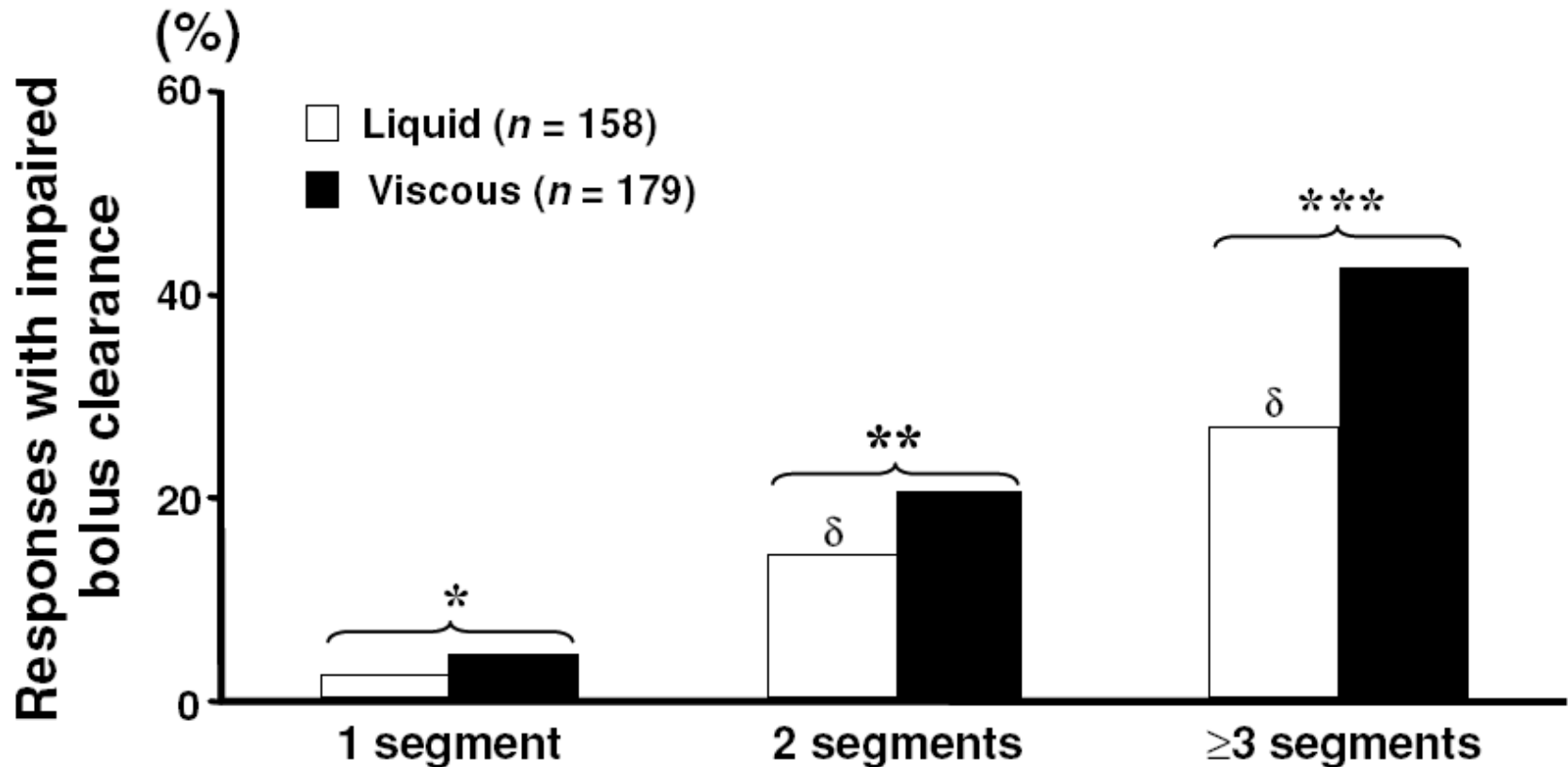
Radu Tutuian, M.D. and Donald O. Castell, M.D.



**Figure 6.** Percentage of patients with normal bolus transit for liquid based on manometric diagnoses.

# Relationship Between Pressure Wave Amplitude and Esophageal Bolus Clearance Assessed by Combined Manometry and Multichannel Intraluminal Impedance Measurement

Nam Q. Nguyen, M.B.B.S. (hons), F.R.A.C.P.,<sup>1</sup> Marcus Tippett, Sc. Tech. Cert.,<sup>1</sup> Andre J.P.M. Smout, M.D., Ph.D.,<sup>2</sup> and Richard H. Holloway, B.Sc. (med), M.B.B.S., F.R.A.C.P., M.D.<sup>1</sup>

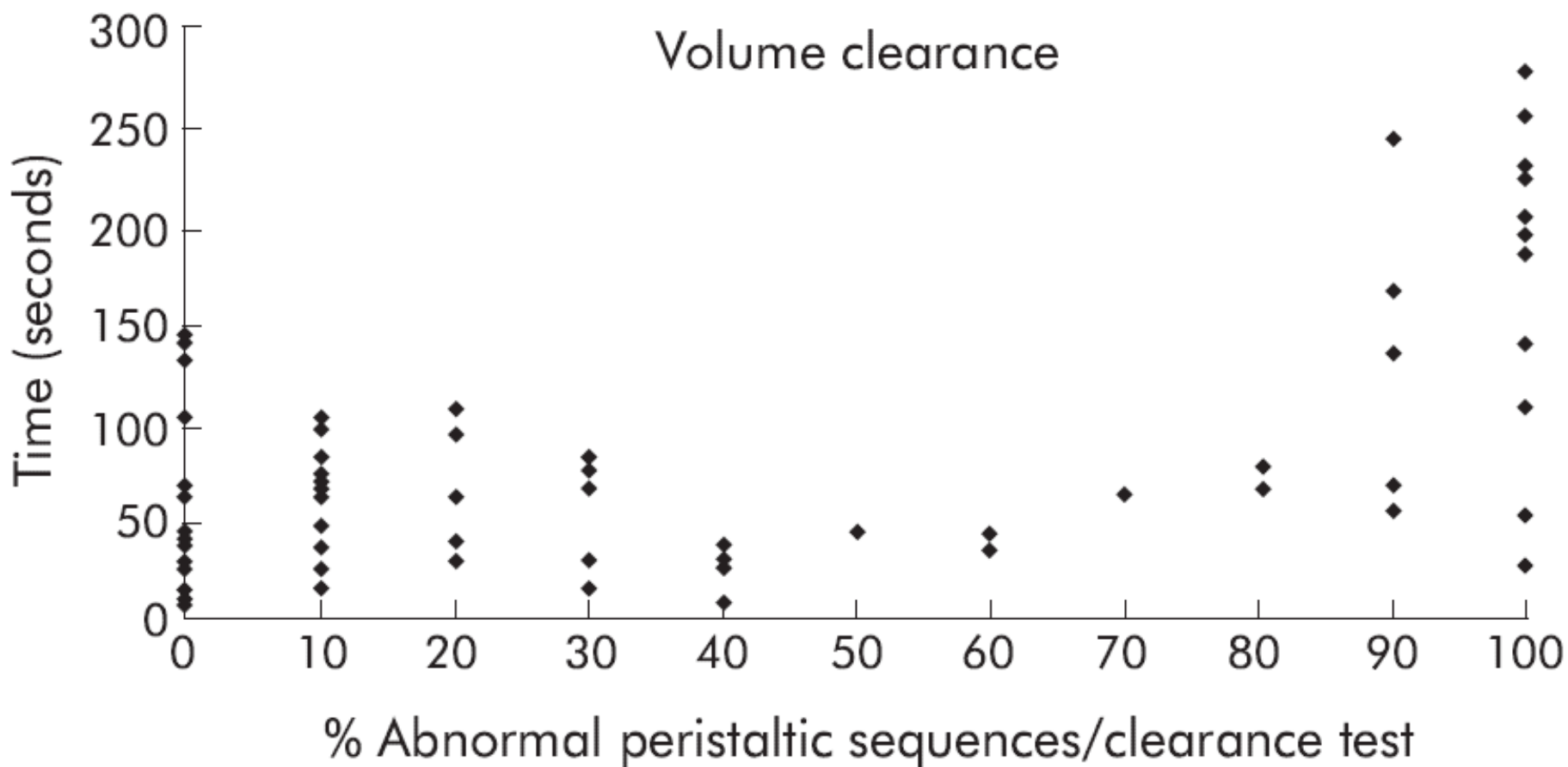


## OESOPHAGUS

# Relevance of ineffective oesophageal motility during oesophageal acid clearance

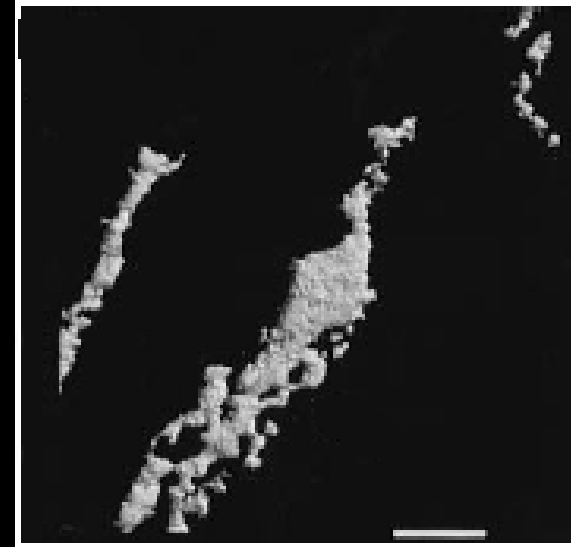
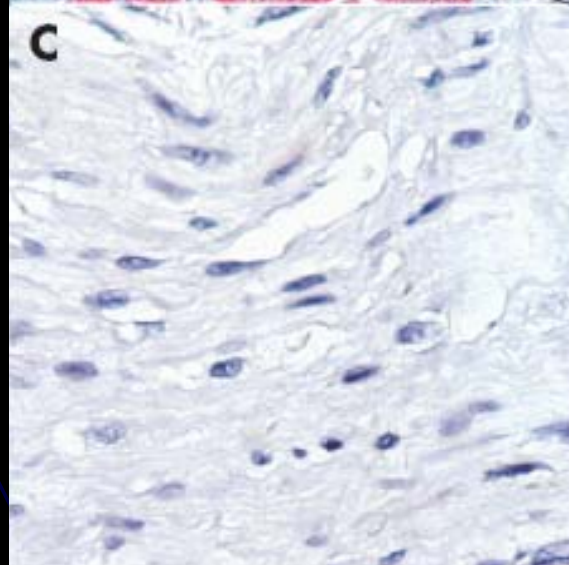
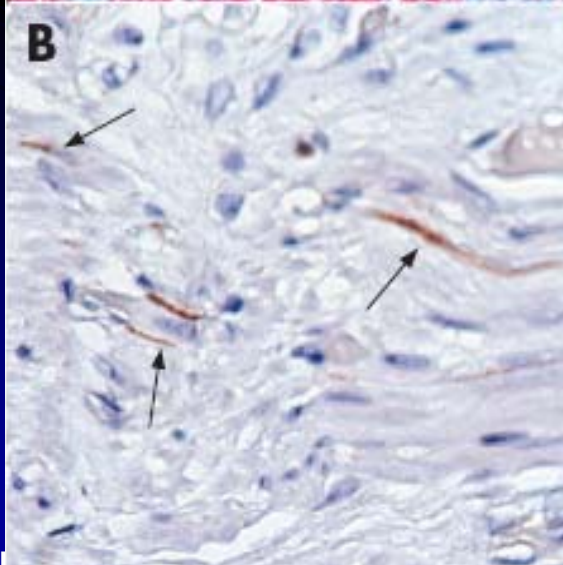
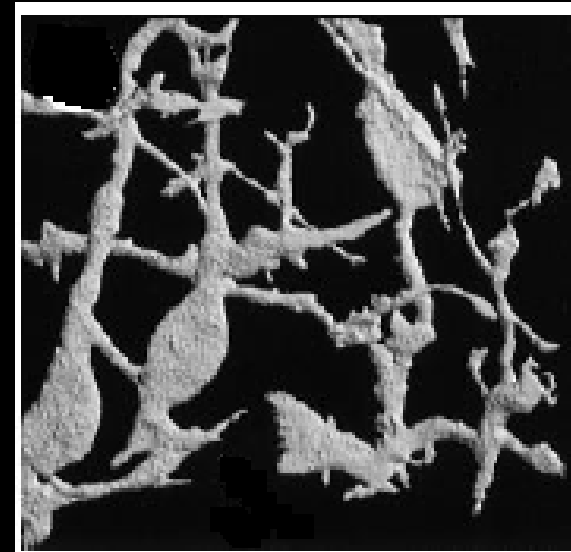
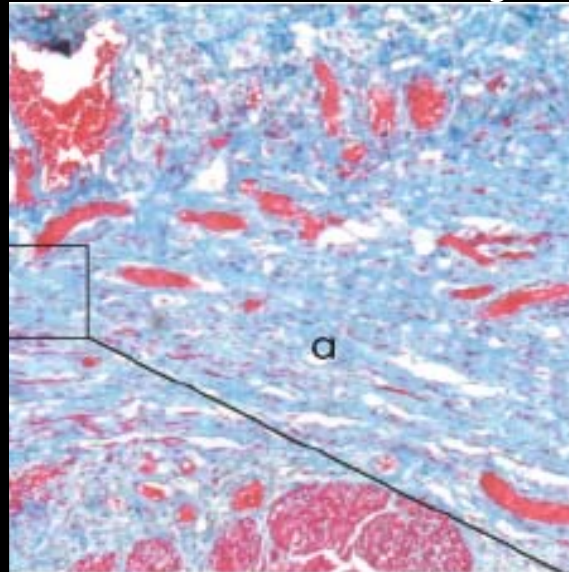
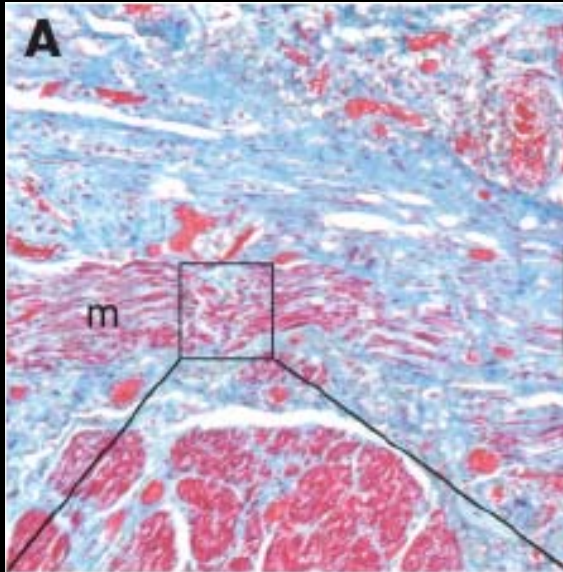
M Simrén, J Silny, R Holloway, J Tack, J Janssens, D Sifrim

*Gut* 2003;**52**:784-790

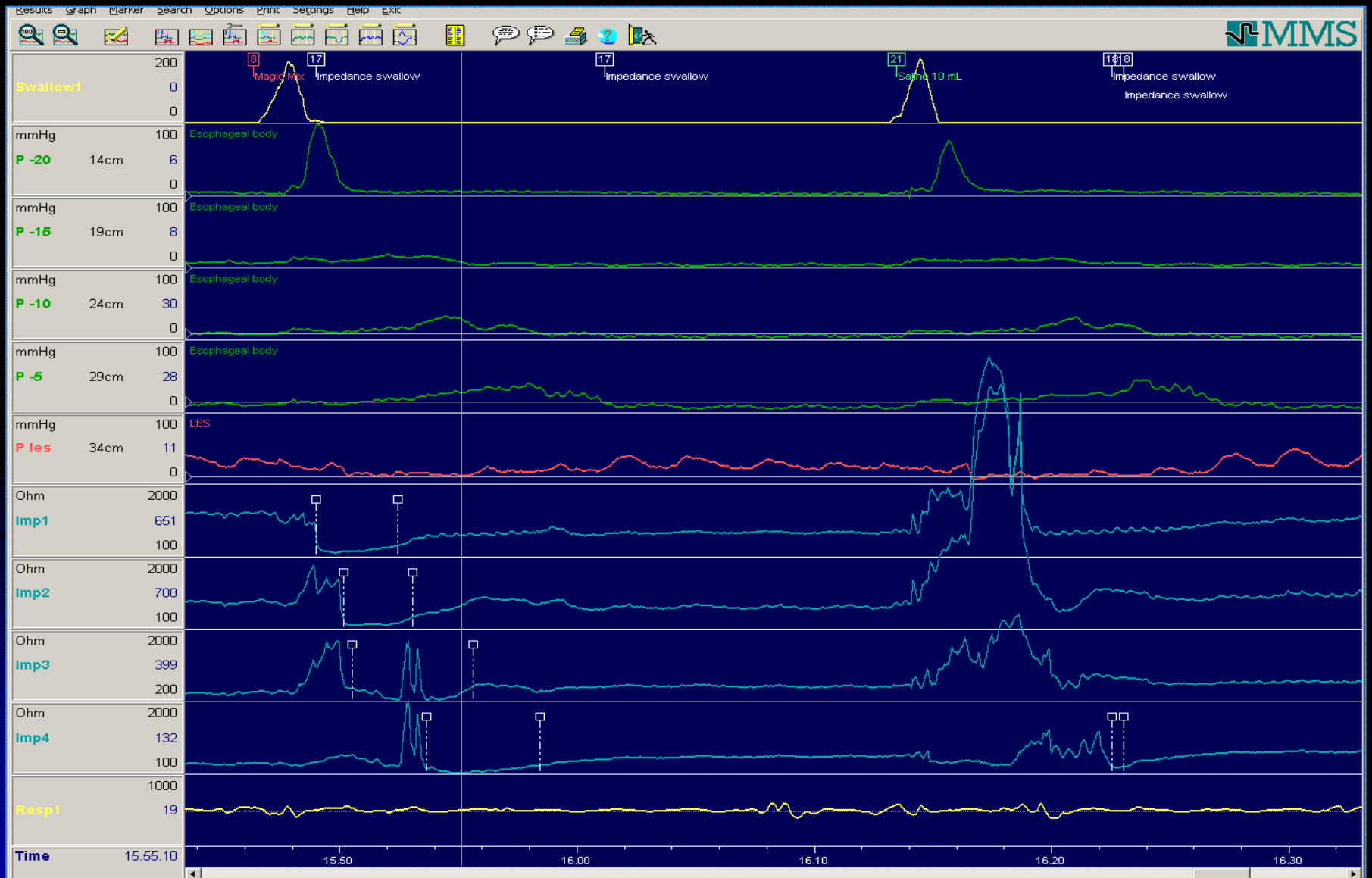


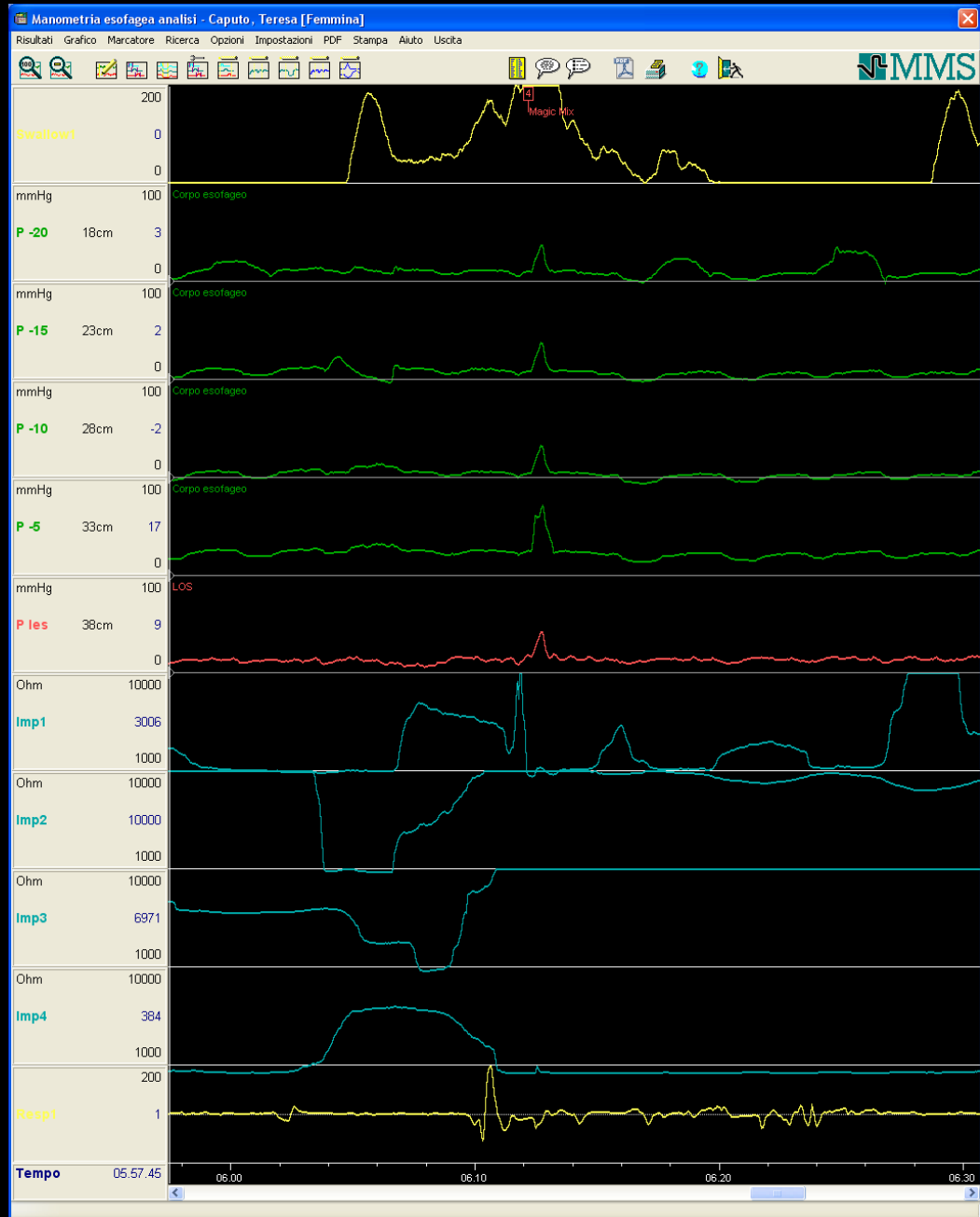
# Atrofia muscolatura circolare e cellule di Cajal

Roberts, Gut 2006



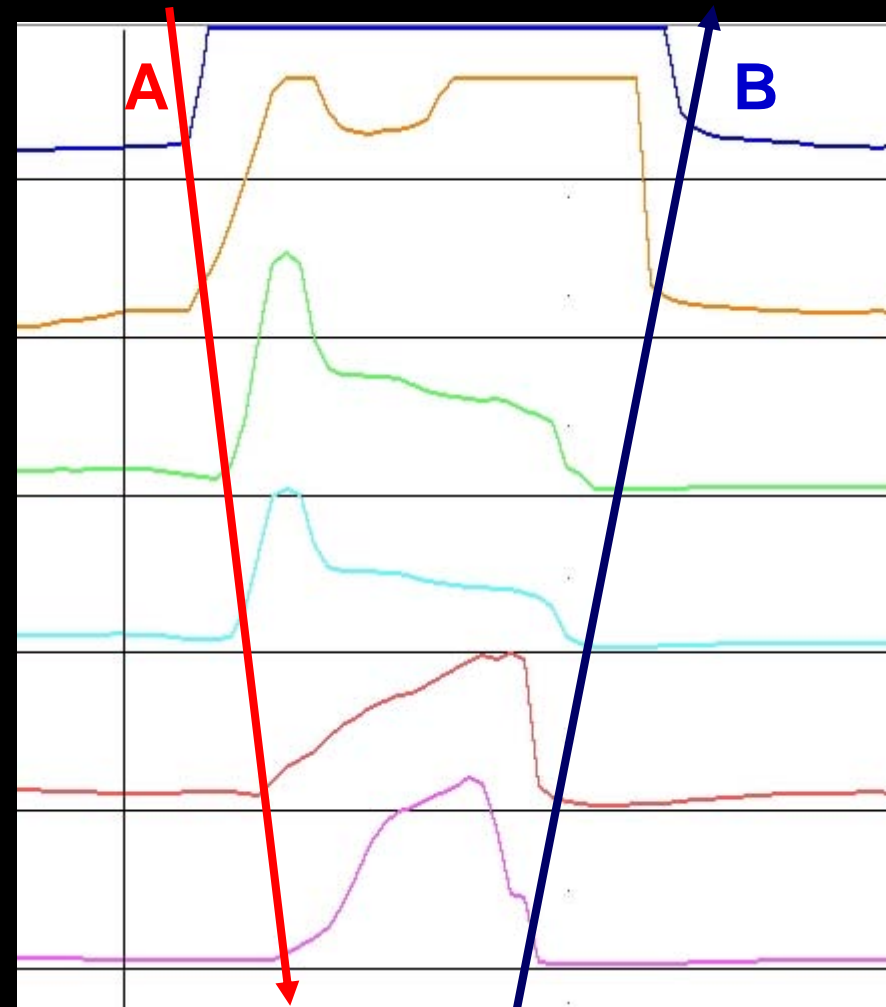
# TRACCIATO MANOIMPEDENZIOMETRICO IN PAZIENTE SCLERODERMICO

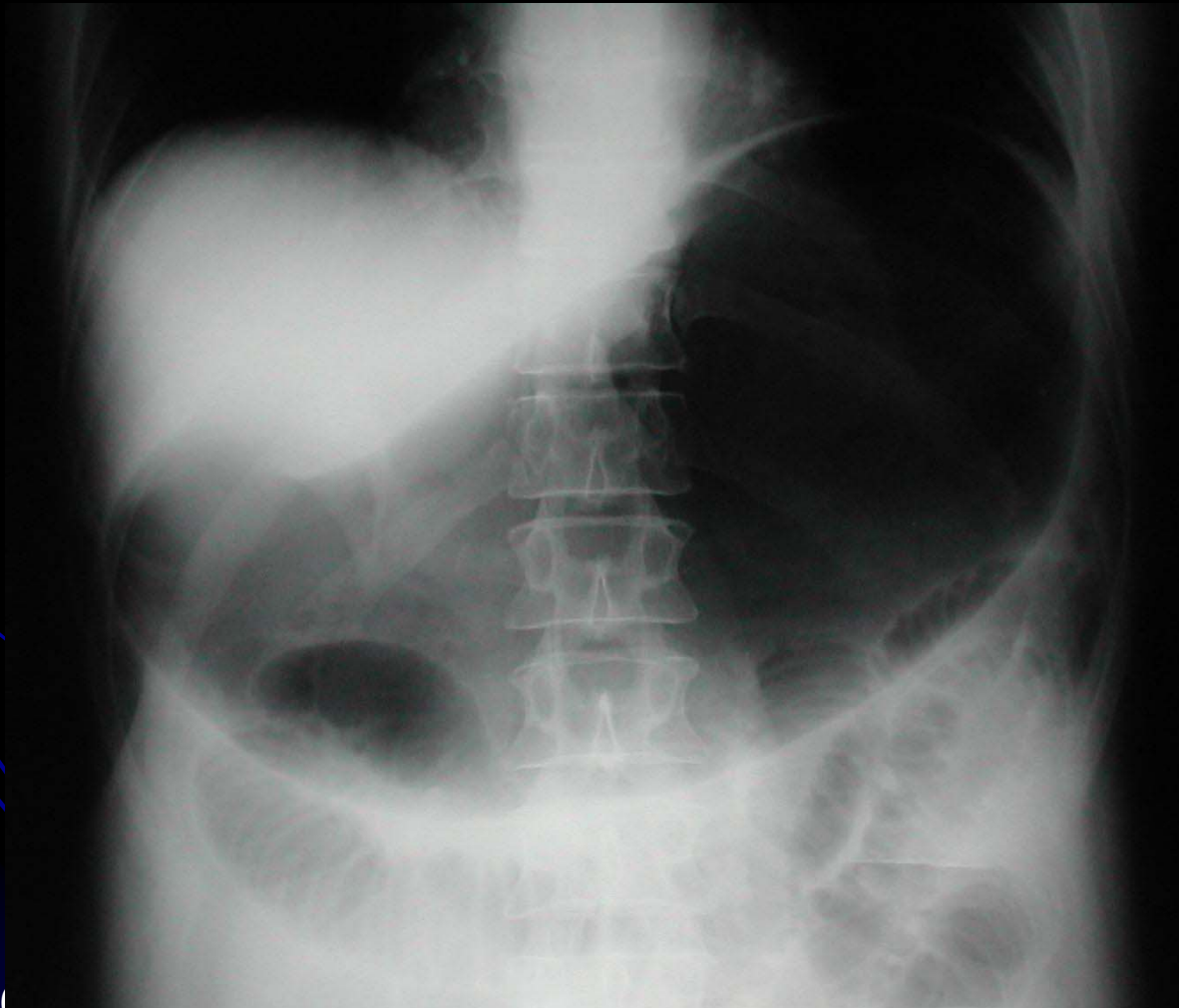




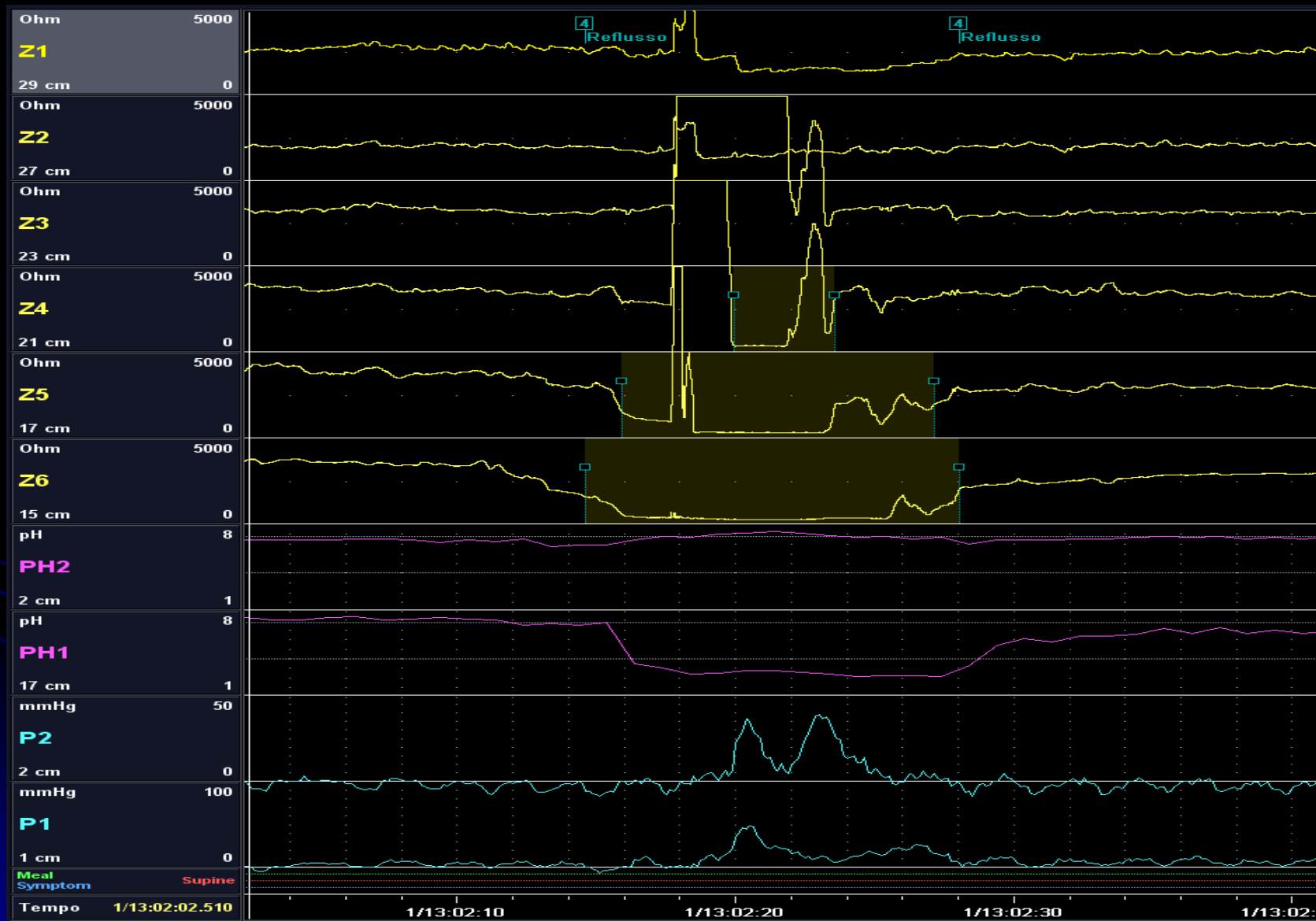
# Eruttazione sopra-gastrica (type II)

- Eruttazione Tipo II
- Eruttazione sopra-gastrica
  - Ingestione d'aria in esofago con immediata espulsione.
  - Aerofagia
- [A] Ingestione d'aria
- [B] Eruttazione





# TOSSE E pH-mano-impedenza

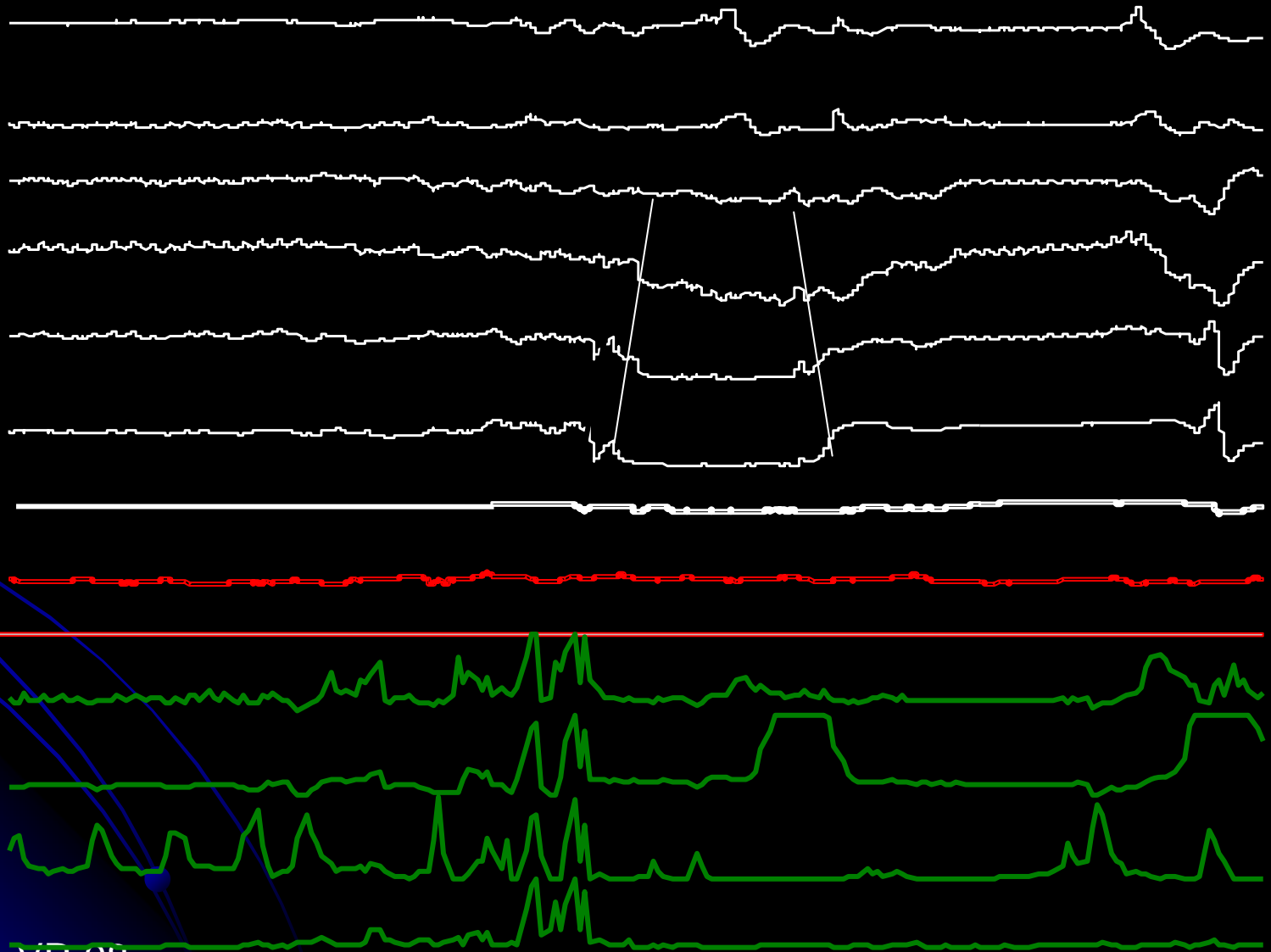


# Tosse-reflusso

impedenza

pH

manometria



# Conclusioni

- La mano-impedenziometria fornisce nuove informazioni sulla funzione esofagea
- Può chiarire il ruolo di strutture diverse dalle fibre circolari nella progressione dei boli
- Da considerare metodica di ricerca
- Non è chiaro se modifichi decisioni terapeutiche