

# The 4<sup>th</sup> annual Schultz Lecture

**Interventional endoscopy and Surgeons:  
The future of surgery is *Flexible!***

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Legacy Health System  
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# Observation

Surgery is evolving away from a tactile craft to a visual (image guided), computer augmented one

- Orthopedics
- Urology
- Neurosurgery
- GYN
- Vascular
- General/GI



# Observation 2

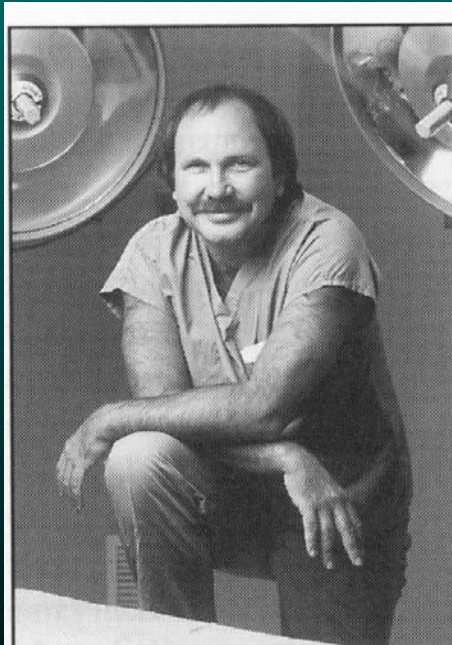
- Minimally Invasive is how the public wants it...



*“Surgery, gaining much from the general advancement of knowledge will be rendered both knifeless and bloodless...”*

John Hunter, London 1762

# The laparoscopic revolution...



SCHOOL OF MEDICINE  
LASER INSTITUTE  
AND  
The OFFICE OF CONTINUING  
MEDICAL EDUCATION



## 1991 POSTGRADUATE LAPAROSCOPIC CHOLECYSTECTOMY COURSES

ENDORSED  
BY:

SOCIETY OF AMERICAN  
GASTROINTESTINAL ENDOSCOPIC  
SURGEONS (SAGES)



COURSE  
DIRECTORS:

GEORGE BERCI, M.D.  
CEDAR SINAI MEDICAL CENTER  
LOS ANGELES, CALIFORNIA

# “The greatest medical advances of the 20th century include:

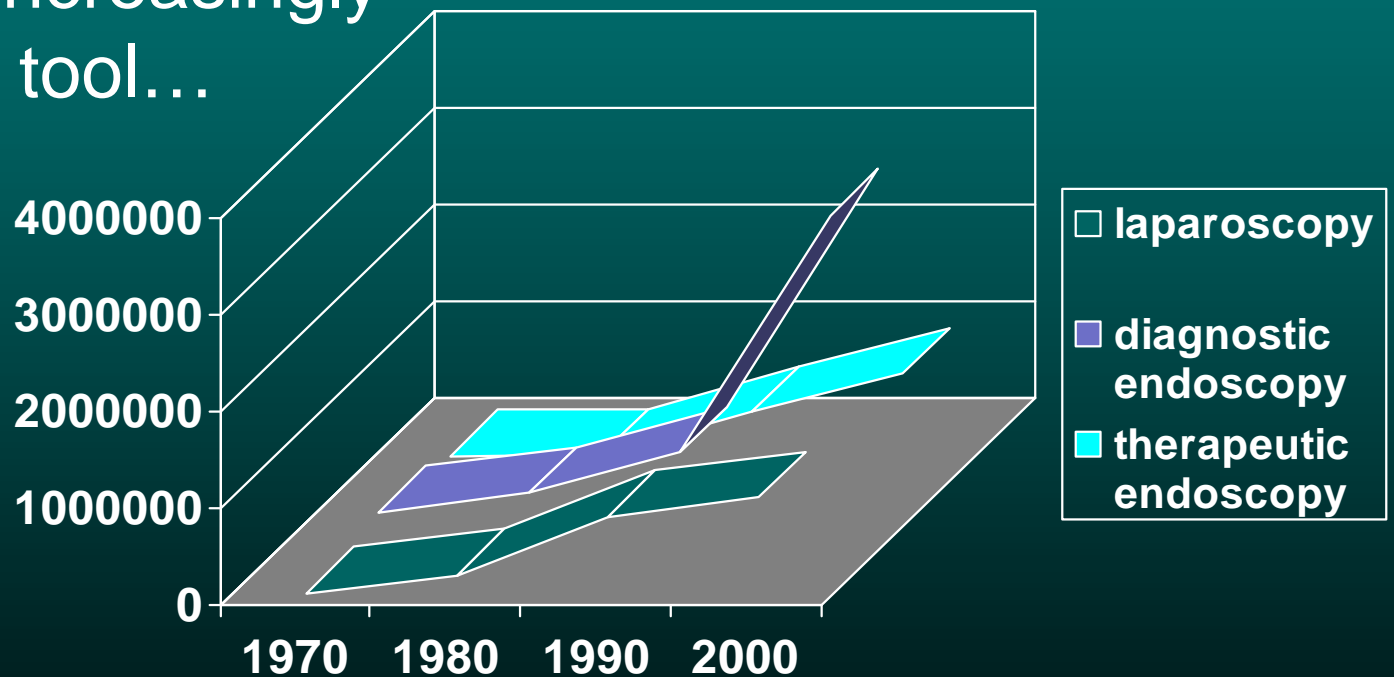
- Anesthesia
- blood typing/ transfusion
- surgical nutrition
- organ transplant
- cardiac bypass
- laparoscopic surgery

James Thompson, MD  
presidential address,  
*Bulletin of the ACS*; 1/2000

*By 2005, every general/GI surgery  
Had been performed with a minimally  
Invasive, laparoscopic approach...*

# Observation 3

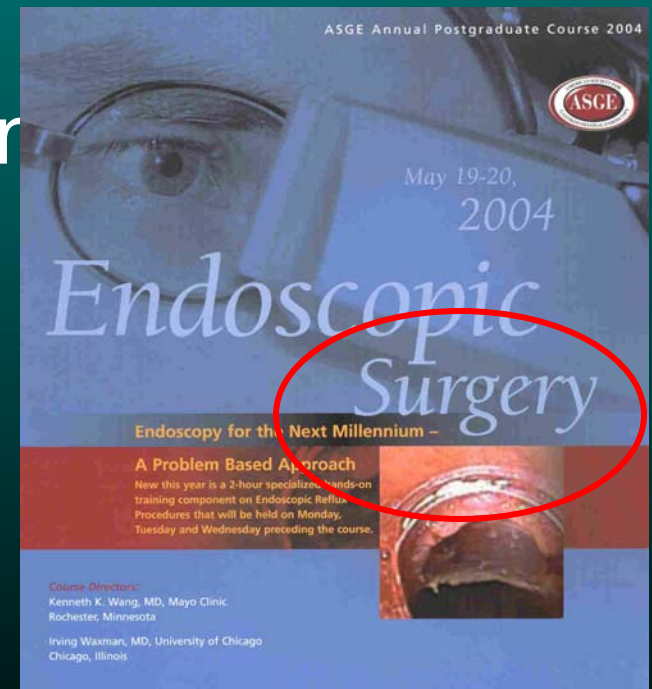
- Flexible endoscopy is continuing to evolve into an increasingly surgical tool...





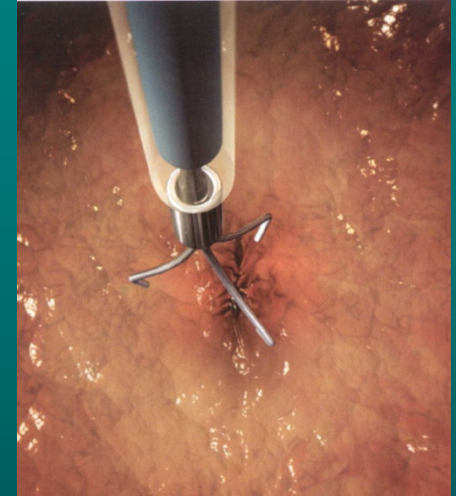
# Advanced endoluminal GI surgeries:

- Mucosal ablation
- Partial thickness resection
- Full thickness resection
- Perforation repair/treatment
- Stenting
- Antireflux surgery
- Bariatric surgery



# Flexible endoscopic instrumentation

- Snares
- Clips
- Stents
- Endoloops
- Argon beam
- RFA
- Retrieval baskets
- Bipolar vessel sealing
- FNA needles
- Ultrasound
- staplers



# Observation 4

- Much of GI surgery as practiced now is disappearing...

# ~~Surgery~~ → Endoscopy

- Large colon polyps
- Common duct explorations
- GI bleeding
- Esophageal varix surgery
- Bile duct and foregut/hindgut palliative surgery
- Open Zenkers excision
- Pancreatic pseudocyst drainage
- Iatrogenic perforation repair
- Transthoracic repair esophageal perforation
- Esophageal exclusions
- Esophagectomy for HGD Barretts
- Early gastric cancers
- Pancreatic necrosectomy



# Stents for perforations



Ident. Nr. :  
Sex: Alter:  
Geburtsdatum:

20/01/2008  
12:56:04

CVP: 1  
Gr: 7 Gr: 1

Doktor:  
Kommentar:



Polyflex  
geal Stent

# Perforation closure

## Treatment of esophageal perforations 1999–2006: N=29



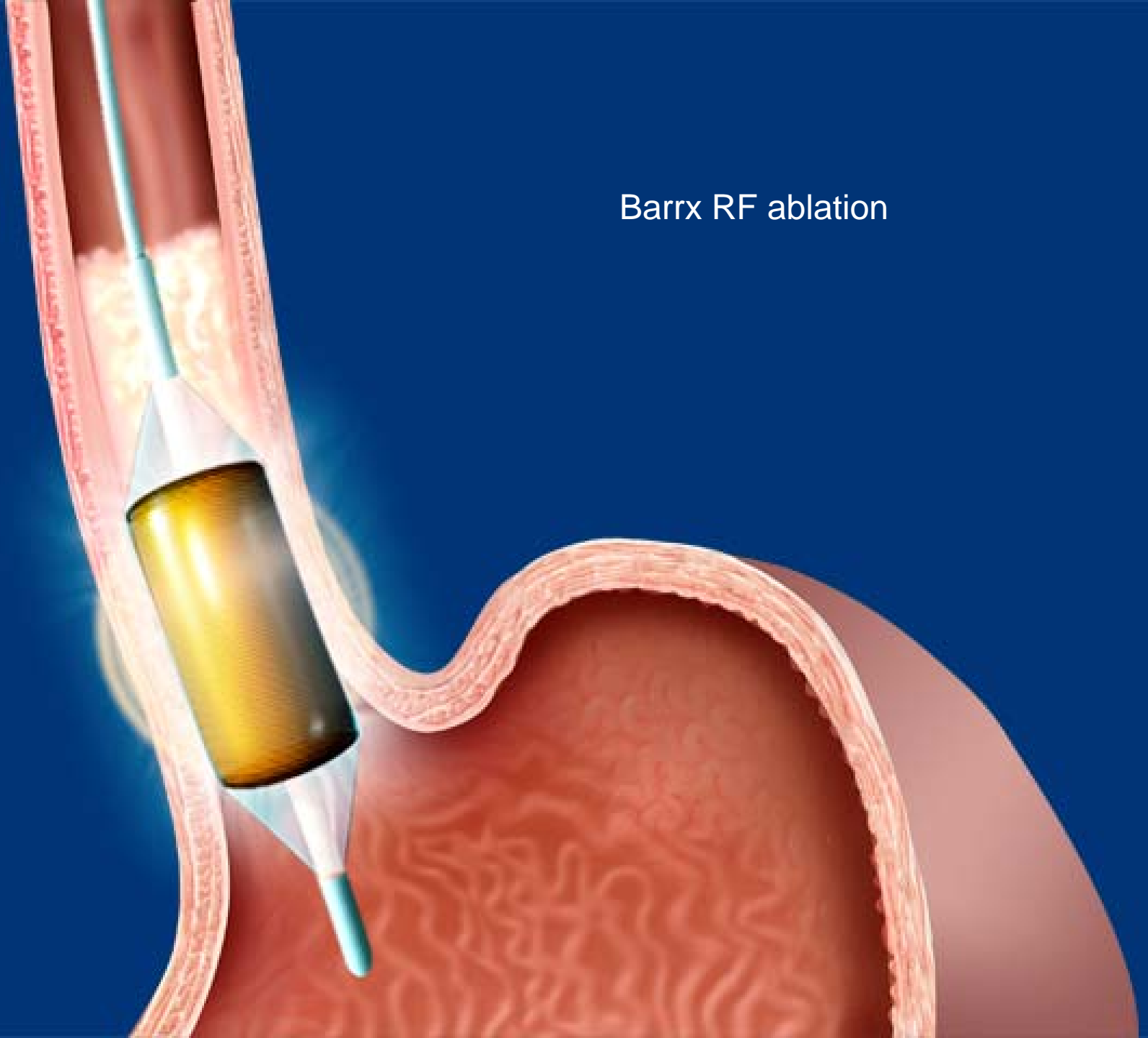
### Operative = 8

- Debride and drain = 2
- Primary closure = 2
- Exclusion = 3
- Esophagectomy = 1
- Subsequent surgery 2
- Hospital stay = 19

### Non-operative = 21

- Clips = 4
- Stent = 7
- Clip + stent = 10
- Subsequent surgery 2
- Hospital stay = 8.5

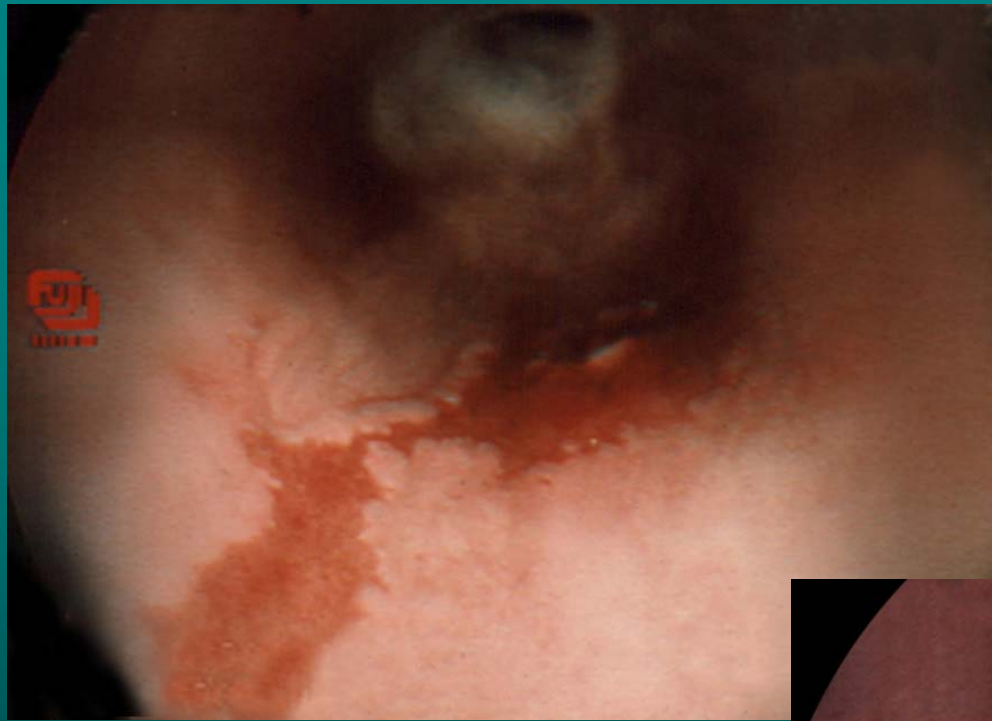
Barrx RF ablation



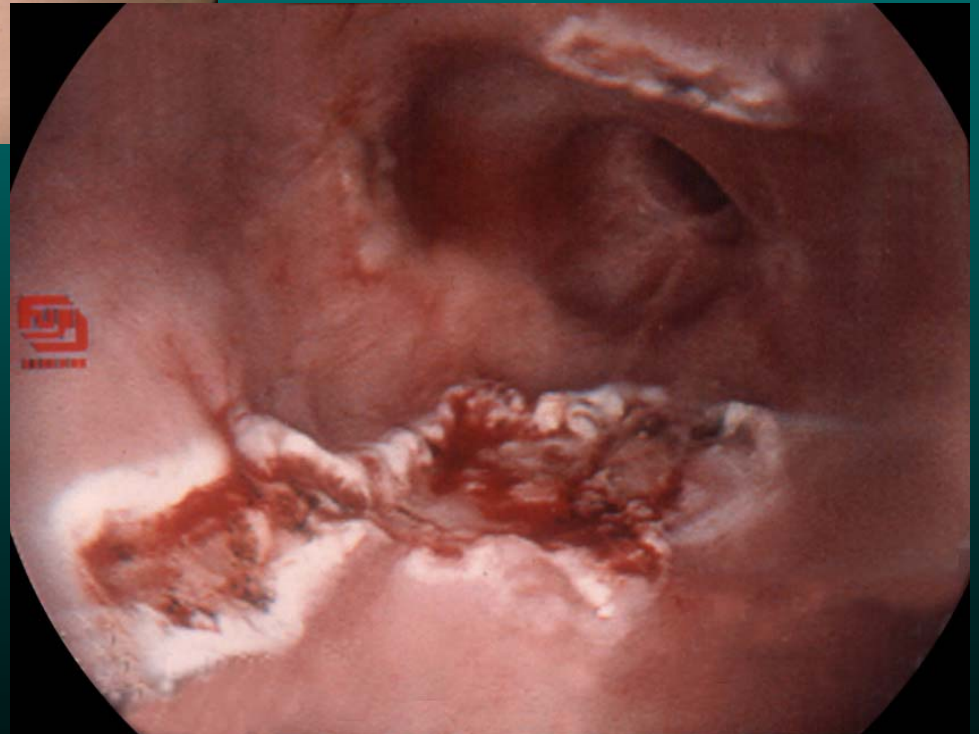
# Complete Response after HALO<sup>360</sup>



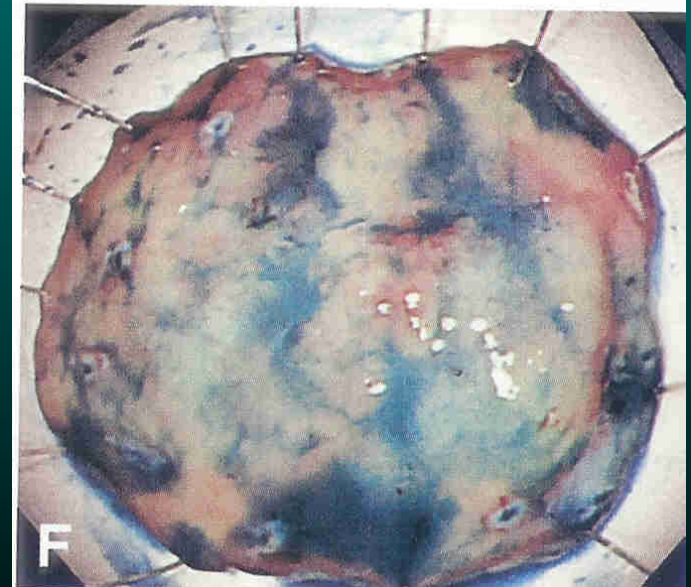
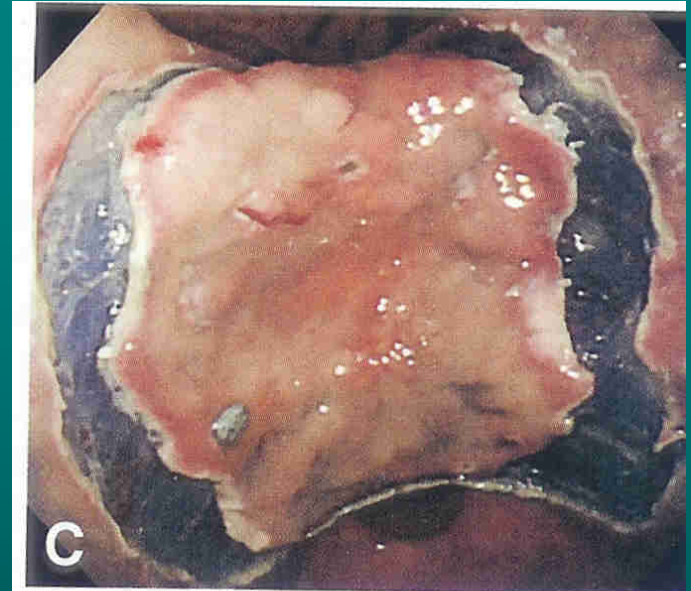




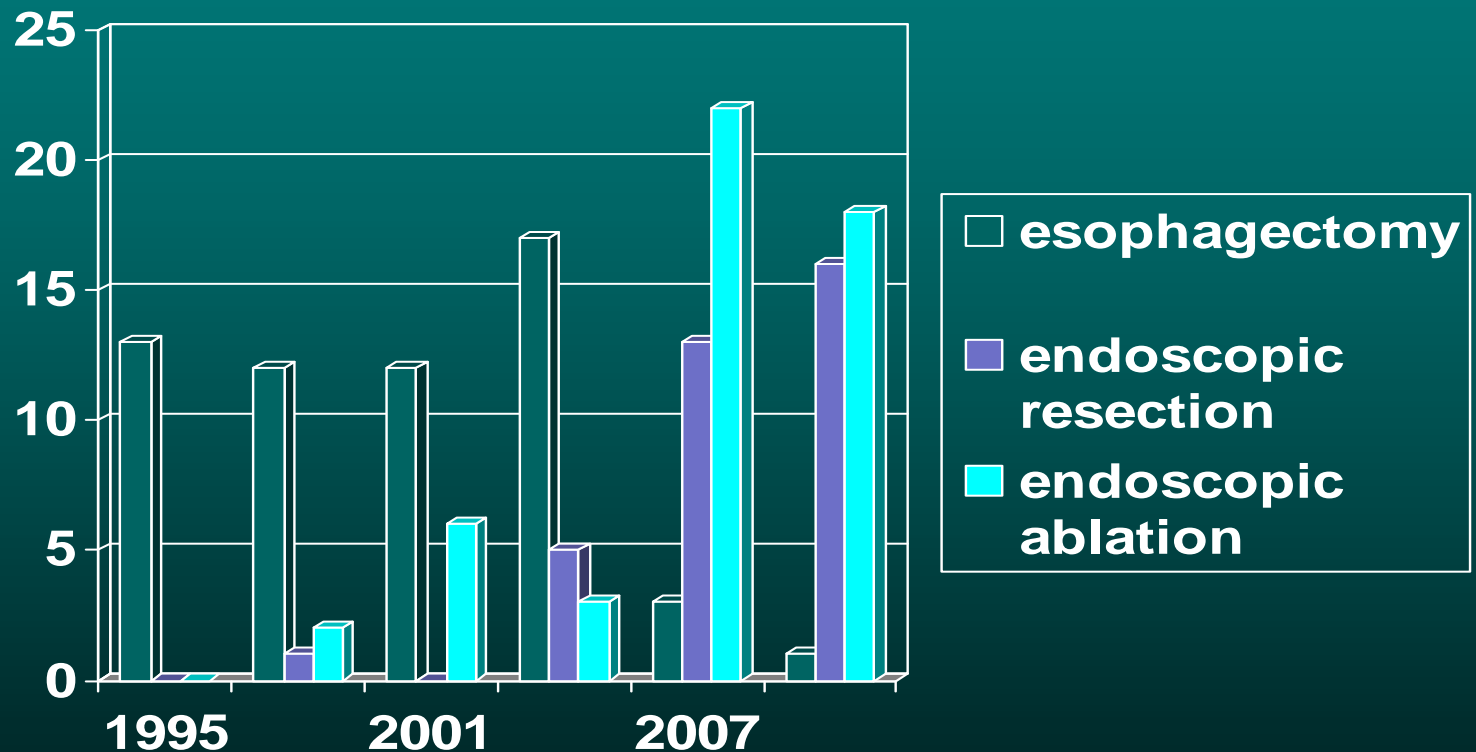
mucosectomy



# Extended mucosectomy (ESD)



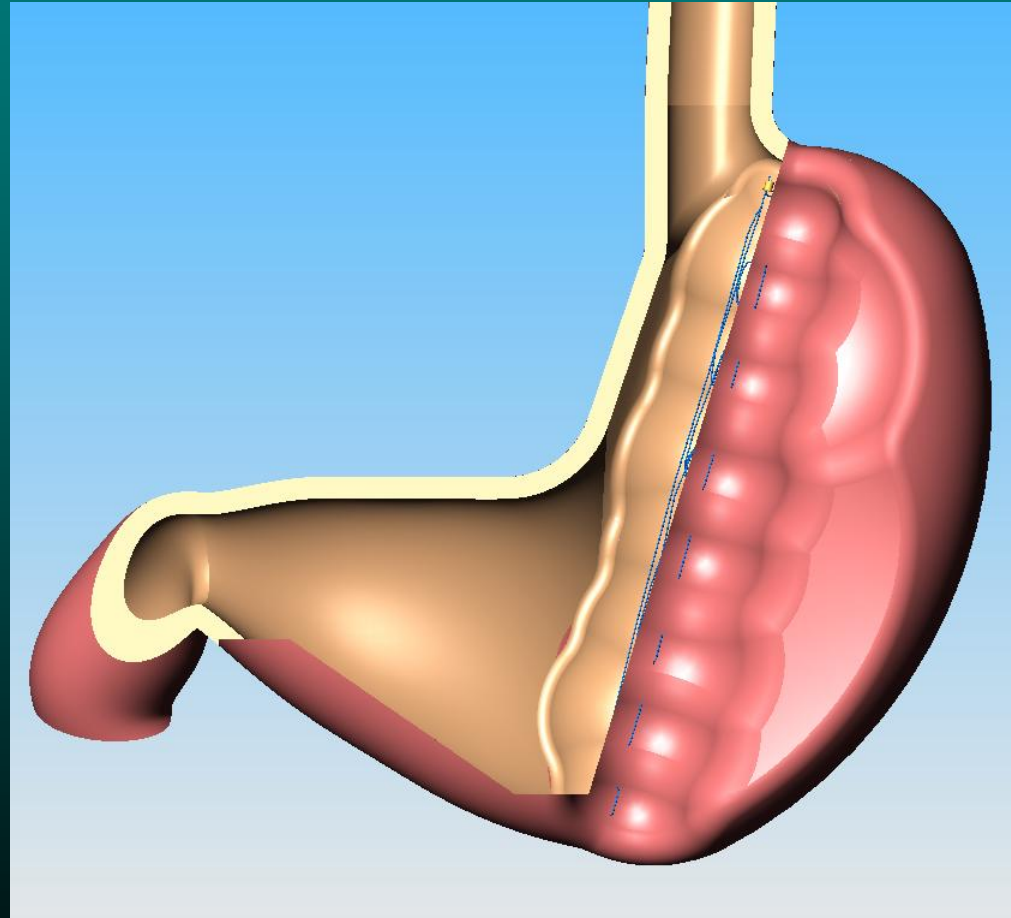
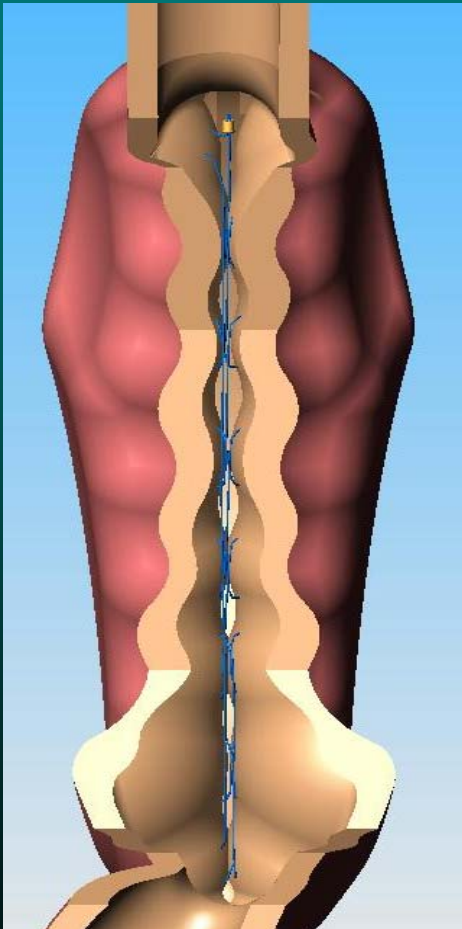
# Treatment of Barretts HGD



# Under current development...

- Full thickness GI excision
- Local cancer diagnosis and treatment
- Ablation of GI premalignancies and cancers in the whole GI tract
- Bariatric surgery
- Intrathoracic / intrabdominal node harvests
- Antireflux surgery

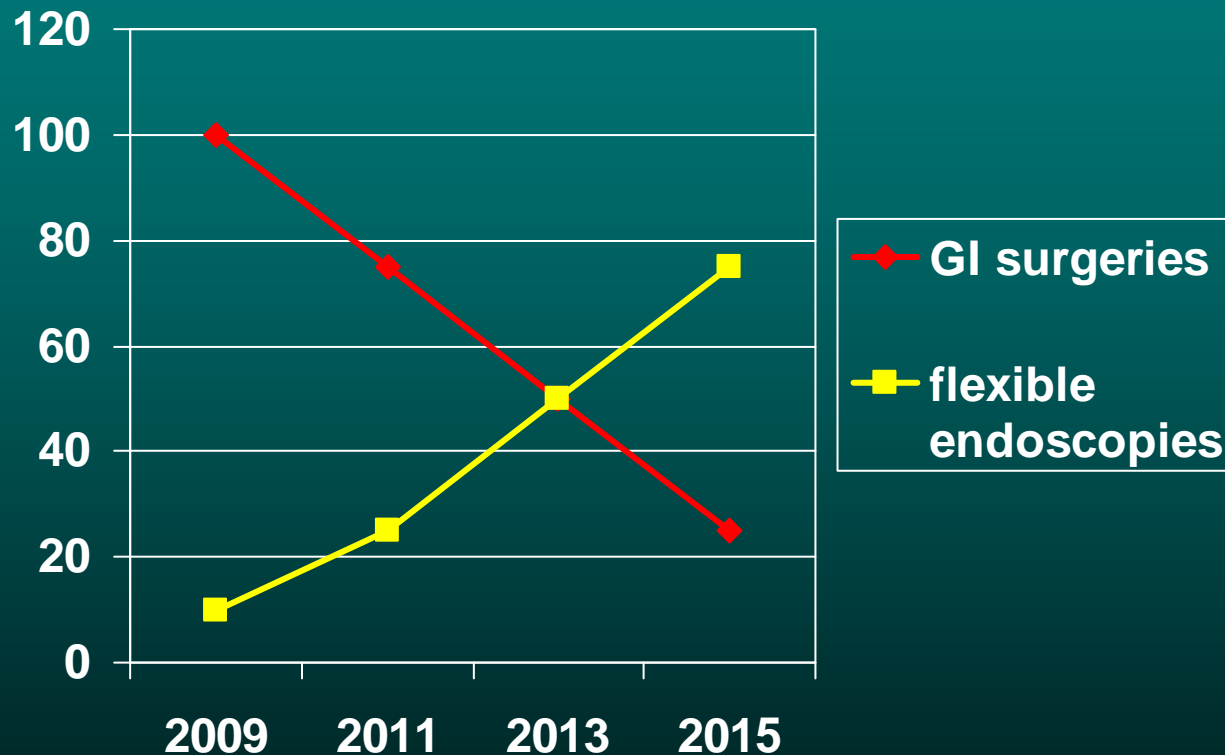
# Endoscopic bariatric procedures



# Intra-abdominal/intrathoracic EUS/node biopsy



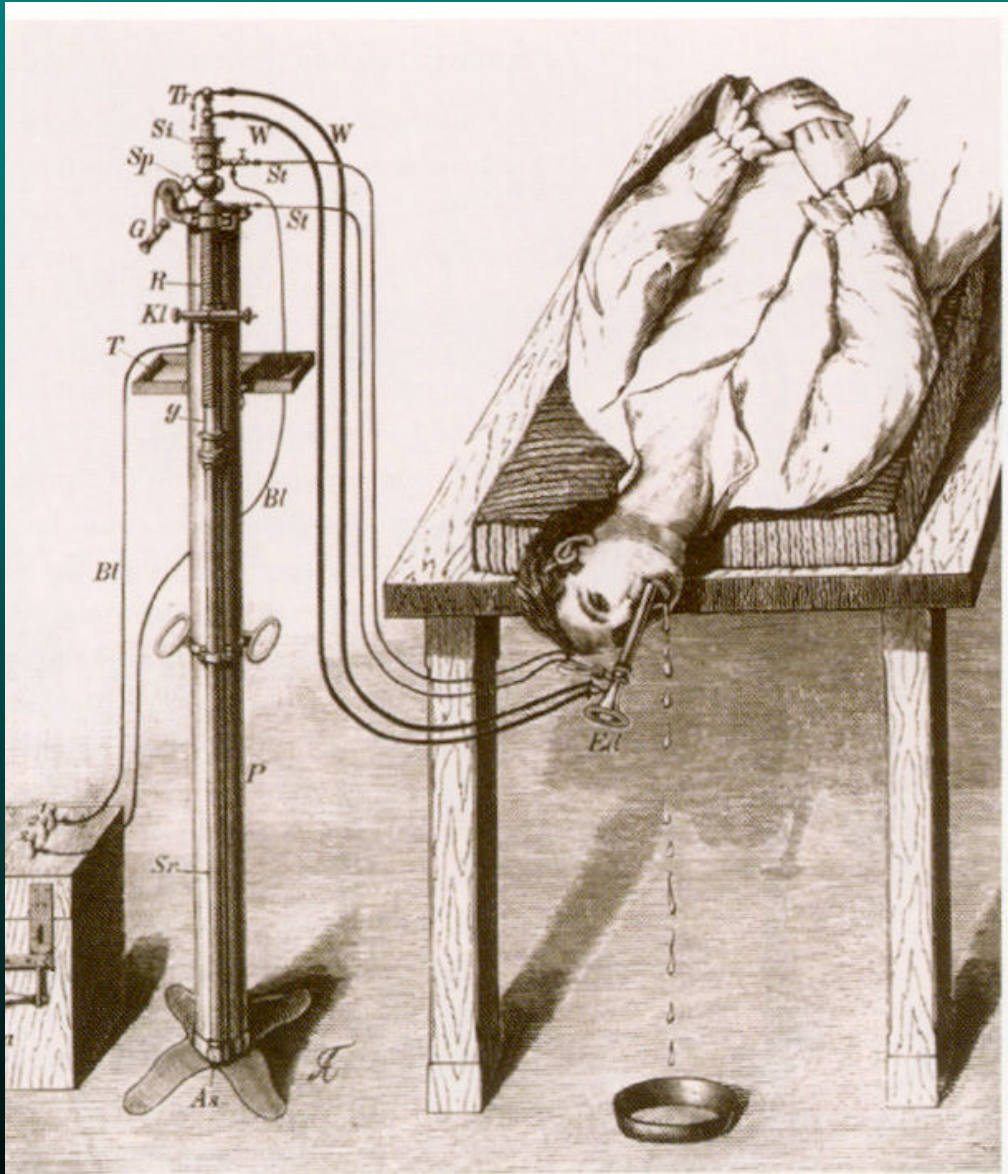
...at this rate, this could be bad for surgery



Endoscopy and surgeons –  
what happened?



# early endoscopy...



Chevalier Jackson  
*JAMA* 1929: 29

In 1929 one of the first surgical endoscopists publishes his findings from a series of 4,000 rigid upper endoscopies for peptic complaints.

# History of Endoscopy



1853 – “Endoscope”  
coined

1868 – Gastroscope

1881 – Esophagoscope

1923 – “Lehrbuch und  
Atlas der Gastroskopie”

1957 – Fiberscope

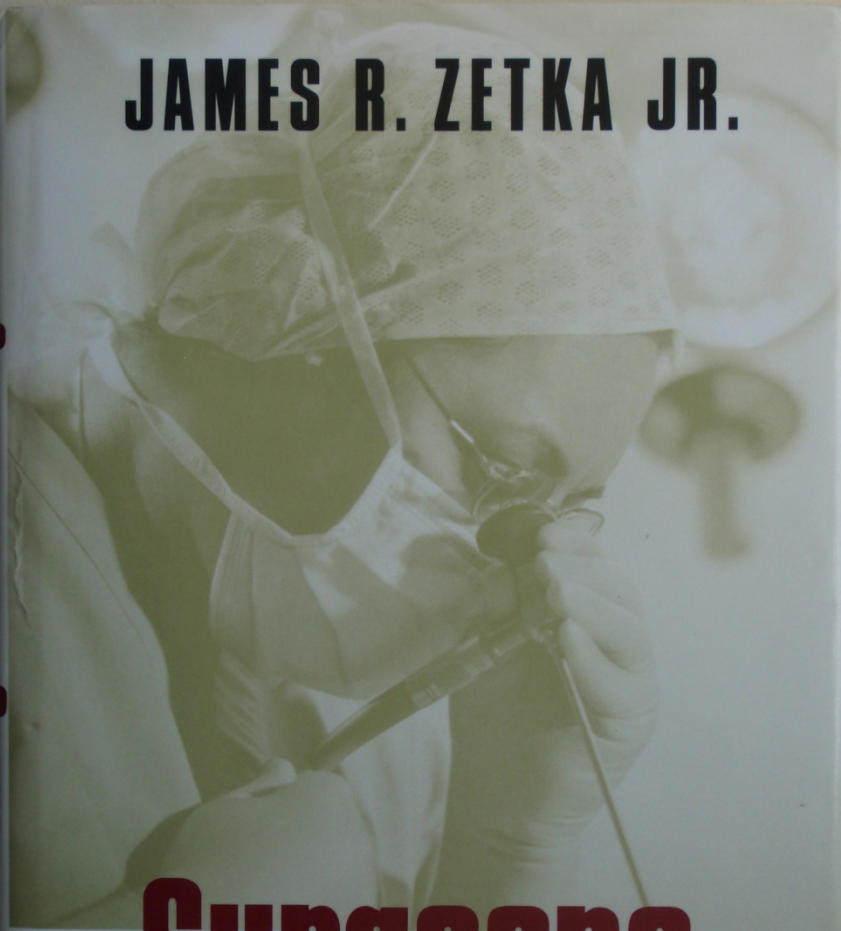
1959 – colonic  
polypectomy

1968 – ERCP

1985 –PEG tubes

1986 –Varices banding

**JAMES R. ZETKA JR.**



**Surgeons**  
and the **Scope**



# Zetka's summation of surgeons and endoscopy:

- Flexible endoscopy was developed by and belonged to surgeons in the 70's...
- A sub-group of GI physicians in the late 70's advocated a specialty of medical endoscopists...
- Surgeons by and large were uninterested in this “diagnostic” modality feeling it was “distant from their tactile skill set and feeling their market hold to be invulnerable”
- GI ran with it and it reconfigured their medical specialty into an interventional endoscopic one...

“In response to their turf losses to these competitors (medication, IR and endoscopists) general surgeons were forced to change their orientation to the scope technology. To protect their livelihoods in an increasingly uncertain environment, surgeons embraced the endoscope during the 80’s and staked claims over its operative applications... [but] Surgeons, by and large, could not wedge their way into the endoscopy markets that gastroenterologists had already developed.”

Zetka JR, 2003

# Observation 5:

- NOTES is a very important and perhaps critical development for surgery...



WHITE PAPER



ASGE/SAGES Working Group on Natural Orifice Transluminal  
Endoscopic Surgery  
White Paper  
October 2005

Open surgery

## Evolution of GI Surgery

Laparoscopic  
Surgery

SILS



invasiveness

**Transluminal  
Endoscopic  
surgery**

Therapeutic  
Endoscopy

Mucosectomy/  
Mucosal resection

ablations

EUS  
FNA

stents

Diagnostic  
Flex endoscopy

## Flexible Endoscopy

# The true importance of NOTES...

- NOTES has shaken surgeons and industry out of their laparoscopic induced coma..
- NOTES may be even less invasive and better care for patients
- NOTES may be the entrée needed for surgeons to resume a leadership role in interventional flexible endoscopy



- SPA
- SPL
- LESS
- TUES
- eNOTES



HD INSTRUMENTATION

## Go Single

Your patients will thank you.



### Single Port Surgery With RealHand High Dexterity (HD) Instrumentation

RealHand HD instruments deliver surgeons the maneuverability and control to perform single port laparoscopy entirely through the umbilicus. This approach may provide patients with less post-op pain, reduced risk of complications and better cosmetic results.

Please visit us at the American Society of Colon & Rectal Surgeons  
Annual Meeting, June 7-11, 2008

Booth #1107



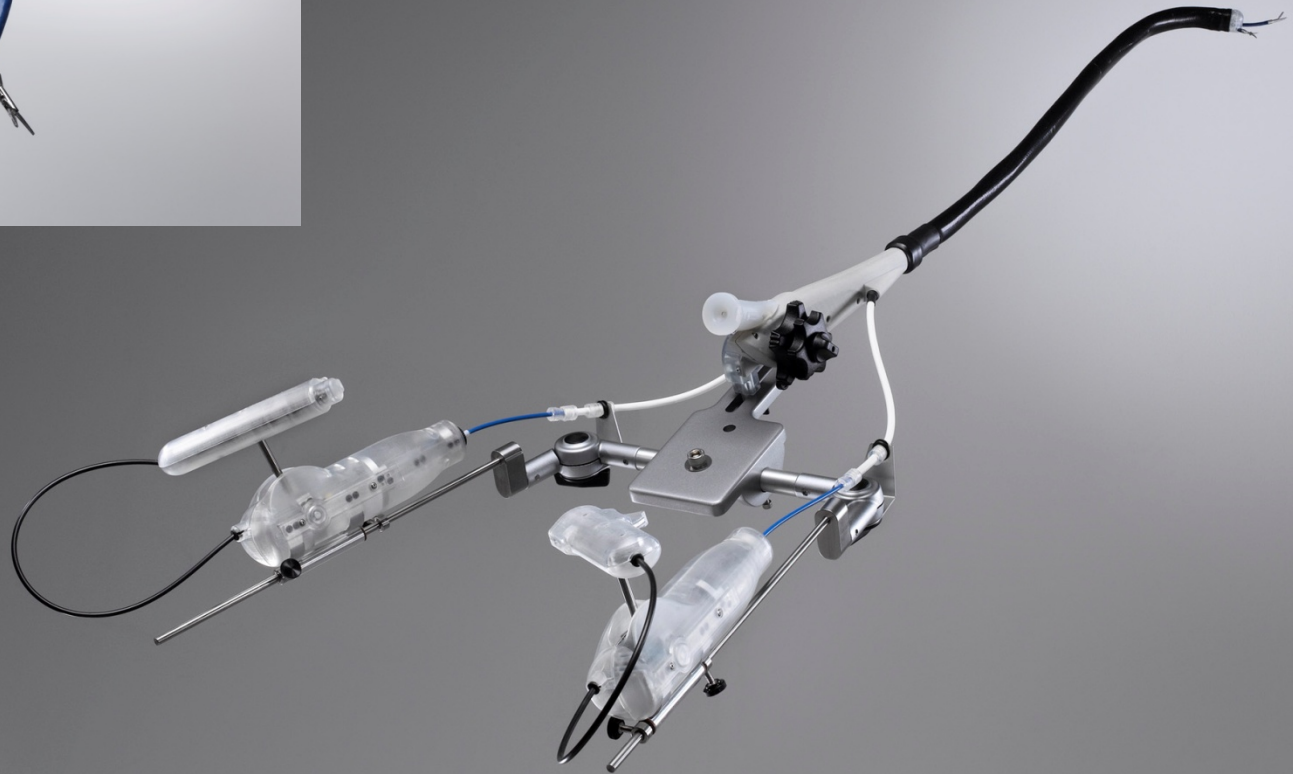
[www.novaresurgical.com](http://www.novaresurgical.com)

# Endoscopes are an old technology



1982 Videoscope

# DDES



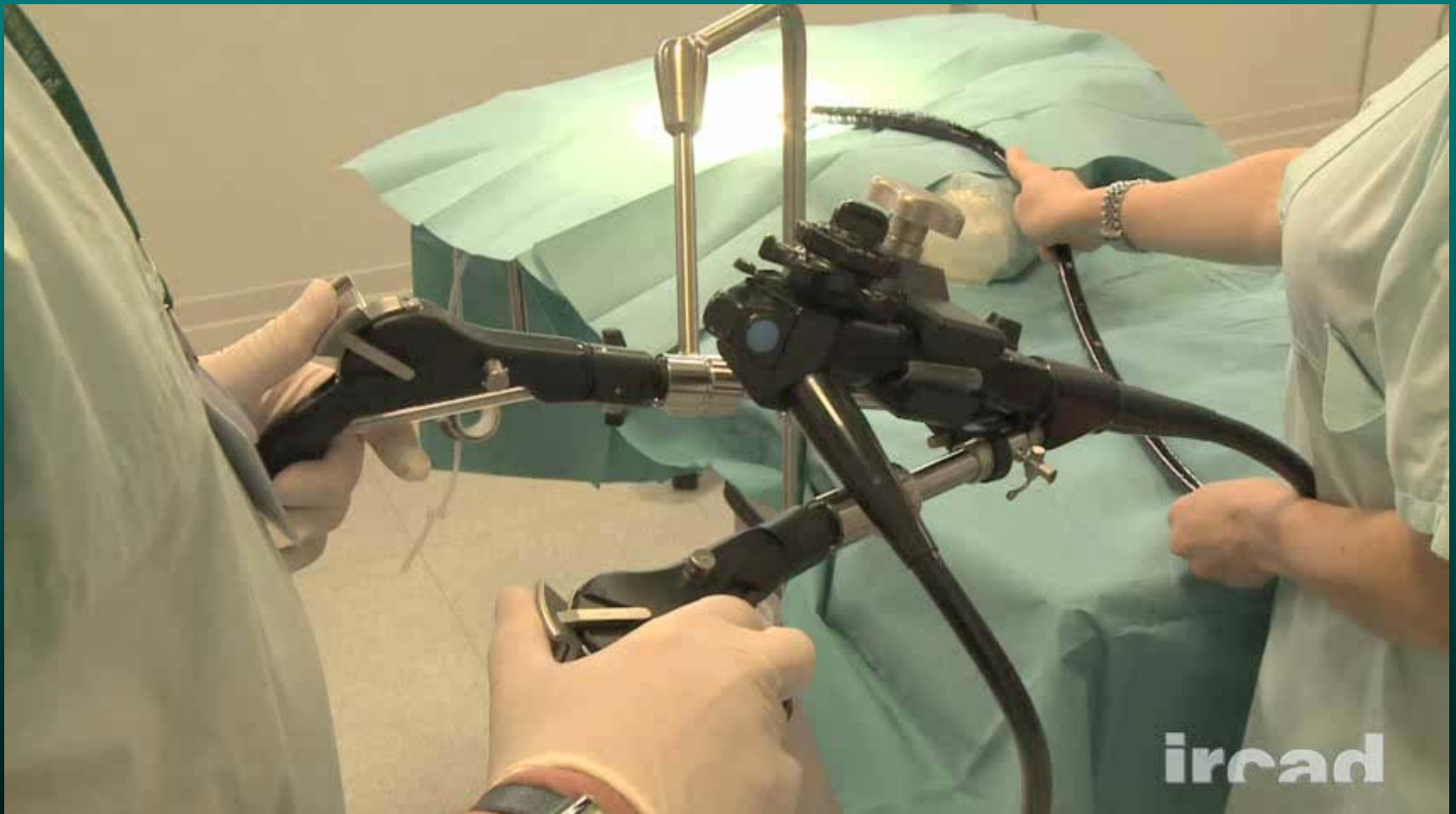
Boston Scientific



# Olympus EndoSamurai



# Anubiscope: Storz

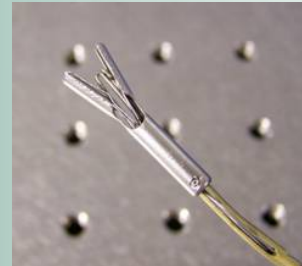




**Dissection**  
Articulating Hook



**Manipulation**  
Articulating Grasper



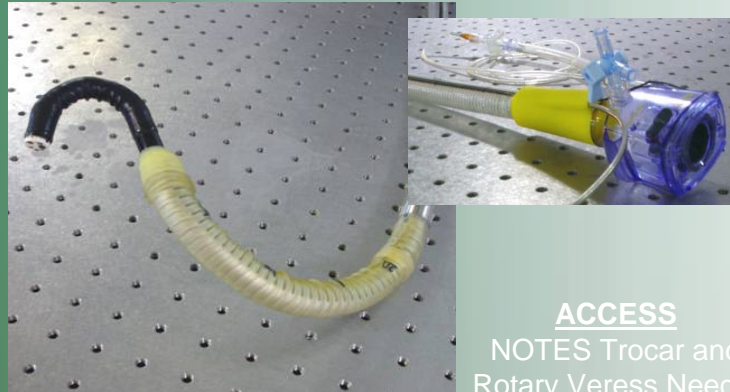
**Ligation**  
Flex Clip Applier



**Tissue Sampling**  
Articulating Bx Forceps



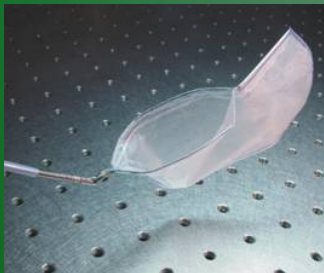
**Dissection**  
Articulating Needle Knife



**ACCESS**  
NOTES Trocar and  
Rotary Veress Needle



**Hemostasis**  
Bela Bipolar Forceps



**Specimen Retrieval**  
Articulating Specimen Bag



**Cutting**  
Flexible Scissors

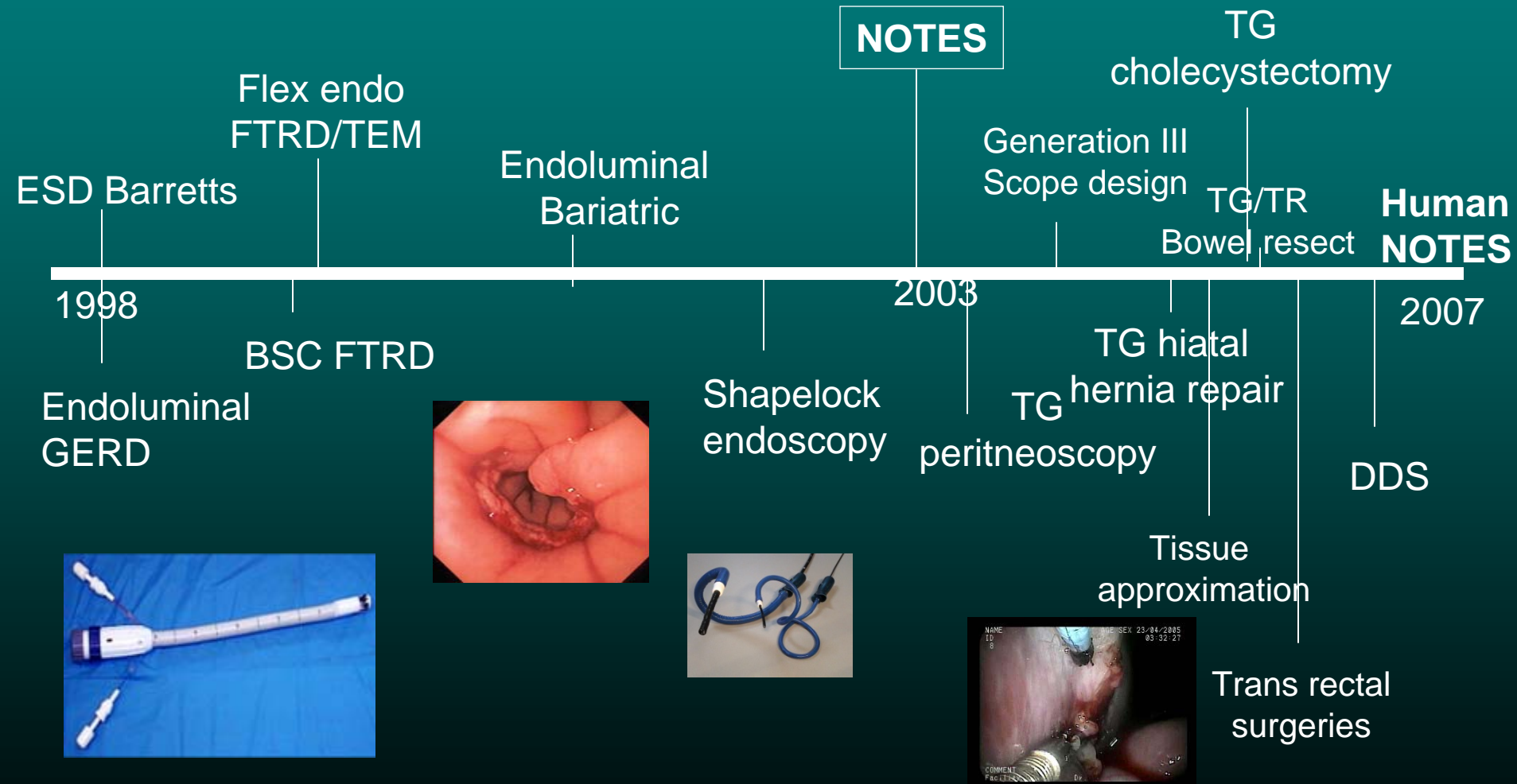


**Dissection**  
Oscar Marylands



**Closure/Suturing**  
TAS

# timeline







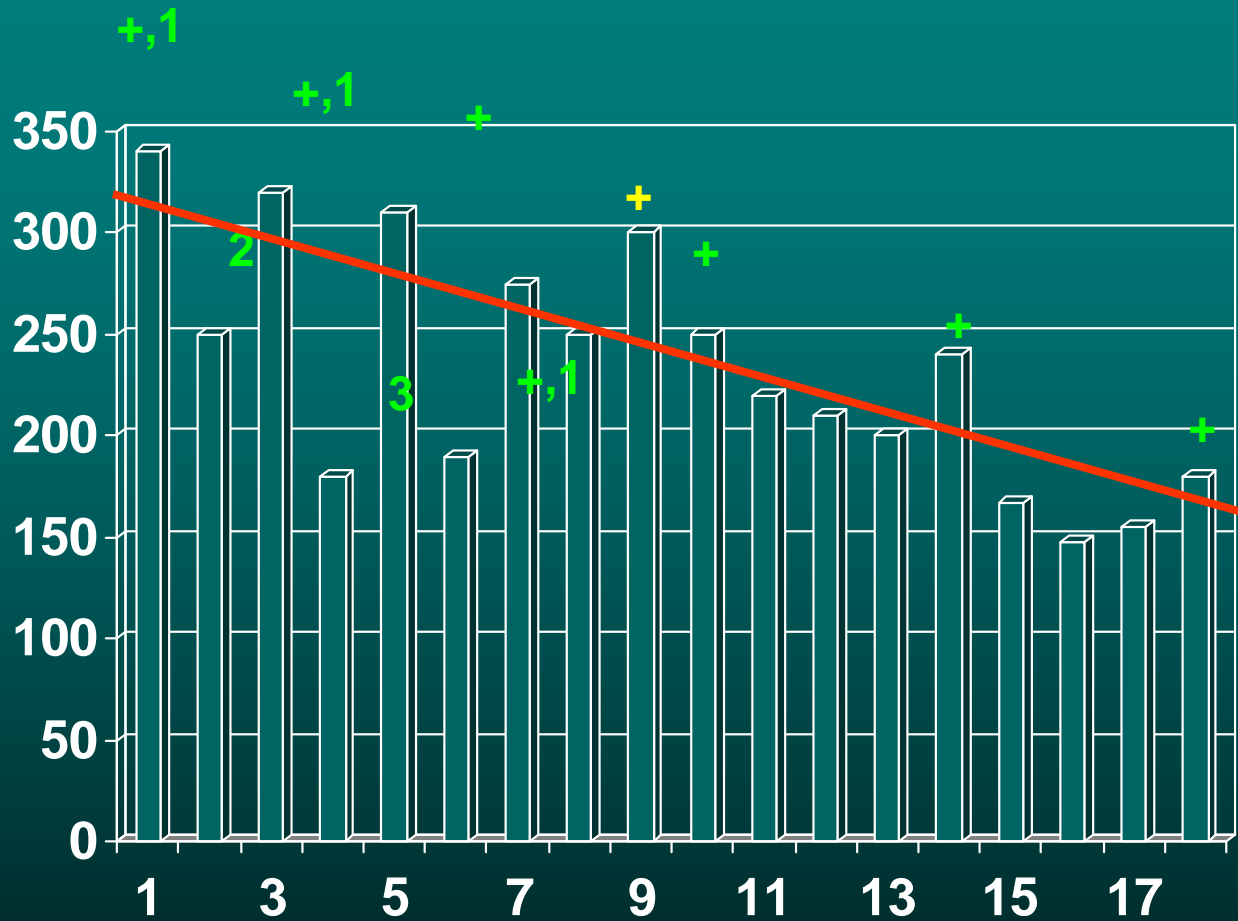


# 5/2007 – 11/2010

- 18 patients: 12 female, 3 male
- Age 39 – (26 – 66)
- BMI 33 – (25 – 37)
- 10 - Biliary cholic with stones
- 3 – biliary dyskinesia
- 2 – acute cholecystitis

# Results:

- 1 patient 3 ports, 1 patient 2 ports, 3 patients 1 port + Berci needle, 5 Berci needle only, 8 no assist (true NOTES)
- Mean time = 4.1 hr (145 – 310 min)
- Intraoperative Complications:
  - 1 pharyngeal laceration
  - 2 positive leak tests with oversew
  - 1 gastric wall bleed
  - 2 stone spillage



□ operative time

+ - needle assist  
1 - 1 ports  
2 - 2 ports  
3 - 3 ports

- 1 return to OR POD 1 for pain
- 3 numb tongue
- 3 post op nausea
- Length of stay:
  - 15 patients 24 hr stay,
  - 1 patient home same day,
  - 2 pt 48 hr stay

- Max Pain score

NOTES	vs	lap Chole
– RR 6.0		6.5
– 6 hr 5.5		4.2
– 24 hr 4.0 (pharynx)		5.0

- 9 patients report minimal or no abdominal pain

# Long term FU

- 2 weeks: no complications, pain score =0
- 1 year (9 patients):
  - no complaints, GRQOL = baseline
  - EGD – normal
  - 9 satisfied or very satisfied
  - 9 “would recommend to friends or family”

Observation: cholecystectomy is not the “killer app” for NOTES...

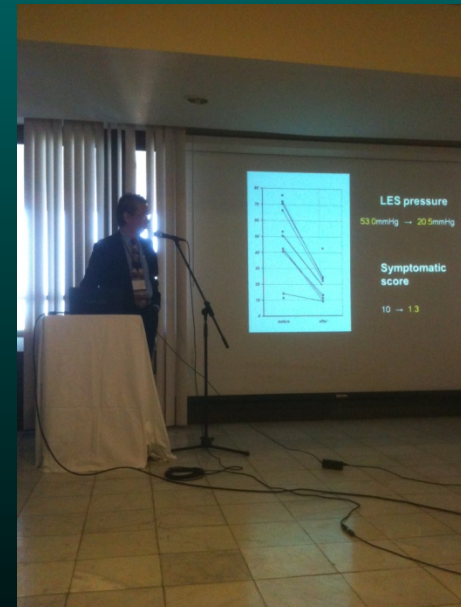




# H. Inoue

## POEM procedure

- DDW 2008
- 4 cases
- ESD technique



# Per-oral endoscopic myotomy (POEM) for consecutive 43 cases of esophageal achalasia]

Inoue H, Kudo SE.

Nippon Rinsho. 2010

Sep;68(9):1749-52.

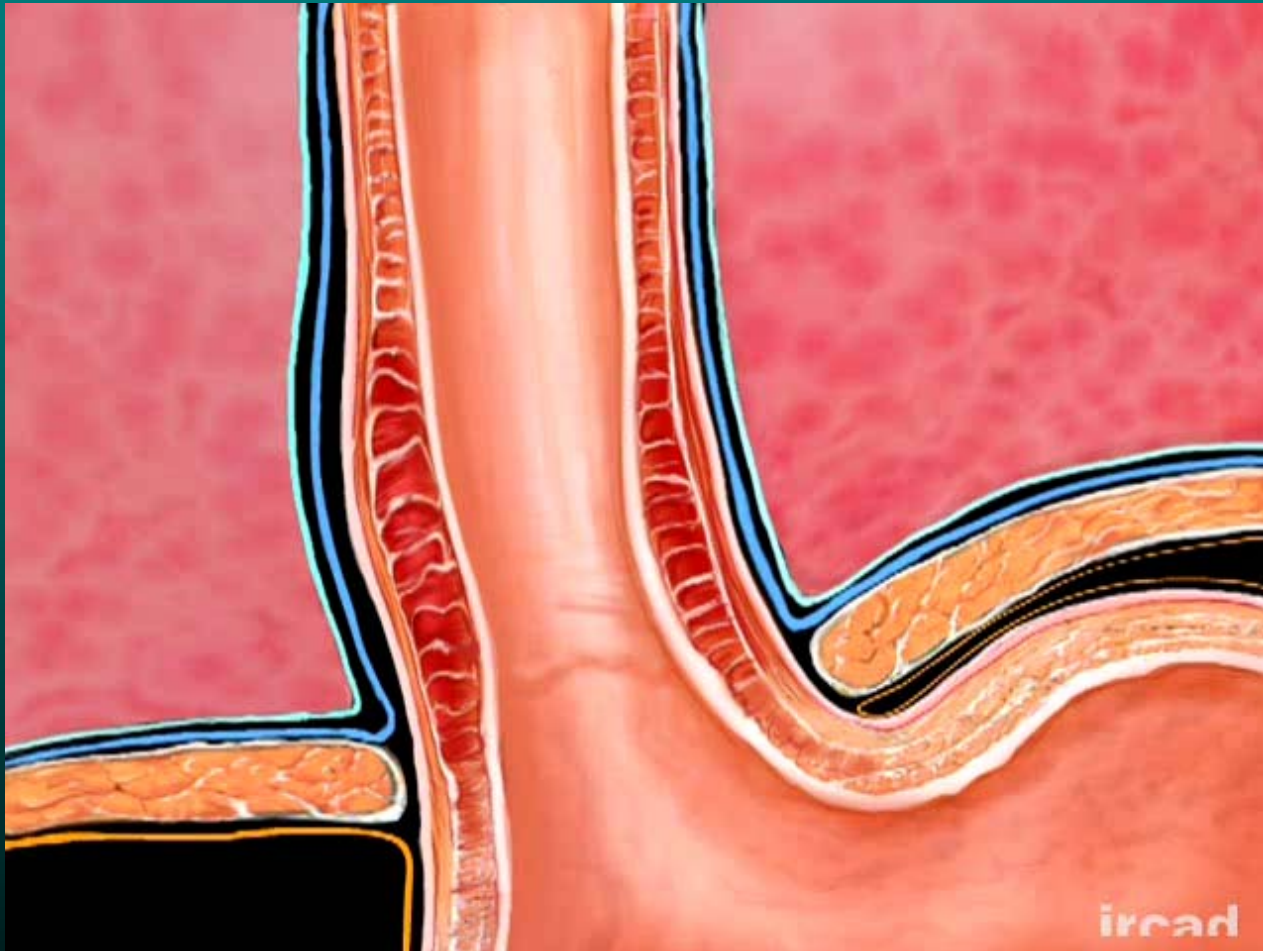
- Mixed motility disorders
- 2 reoperative
- 3 sigmoid esophagus
- Minimal complications

# Portland Experience

- IRB approval 9/2010
- Pure achalasia
- HRM, QOL, timed barium swallow
- 1<sup>st</sup> case Sept 27, 2010
- Currently 10 cases



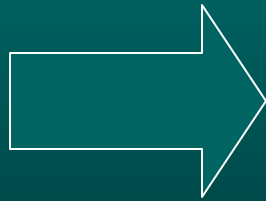
# Circular myotomy





- Operative time = 128 min (118 – 180)
- 1 mucosal perforation stomach
- 24 hour hospital stay
- Dysphagia symptom score 3.6 – 1.6
- No pain medications at discharge





# Prediction>>>>

- In 3 years laparoscopic Heller myotomy will no longer be the “gold standard”

# Transcervical esophageal mobilization

- Sentinel node
- Cancer staging
- Tumor resections
- Esophageal mobilization



# *“Transrectal colectomy may be the one of the best applications for NOTES...”*

- Large access for multiple instruments
- Can use rigid and flexible access
- No opening of uninvolved organs
  - Site of colotomy can be the site of the anastomosis
- Saves the patient a major incision and multiple large ports





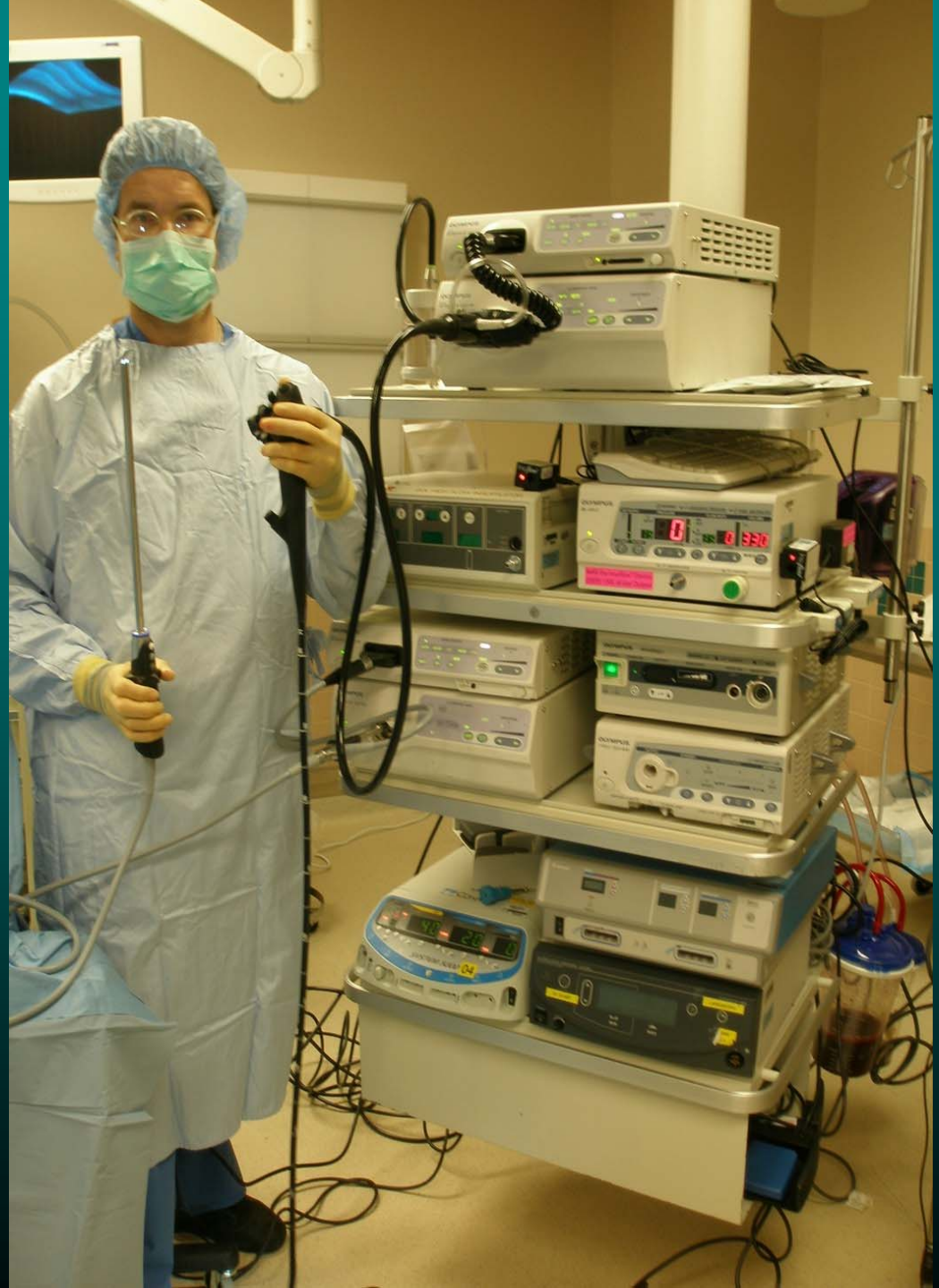
# The true importance of NOTES...

- This may be our “second chance” in the practice of flexible endoscopy.
  - General/GI surgeons can replicate the history of cardiac surgery and ignore interventional techniques..
  - Or follow the lead of vascular surgery and aortic stenting



To future GI  
surgeons:

- “Embrace the  
scope!”



# Thank you

The 4th annual Schultz  
Lecture

1/31/2011

