

Endoscopy: Past, Present, Future

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October 8, 2022



Objectives

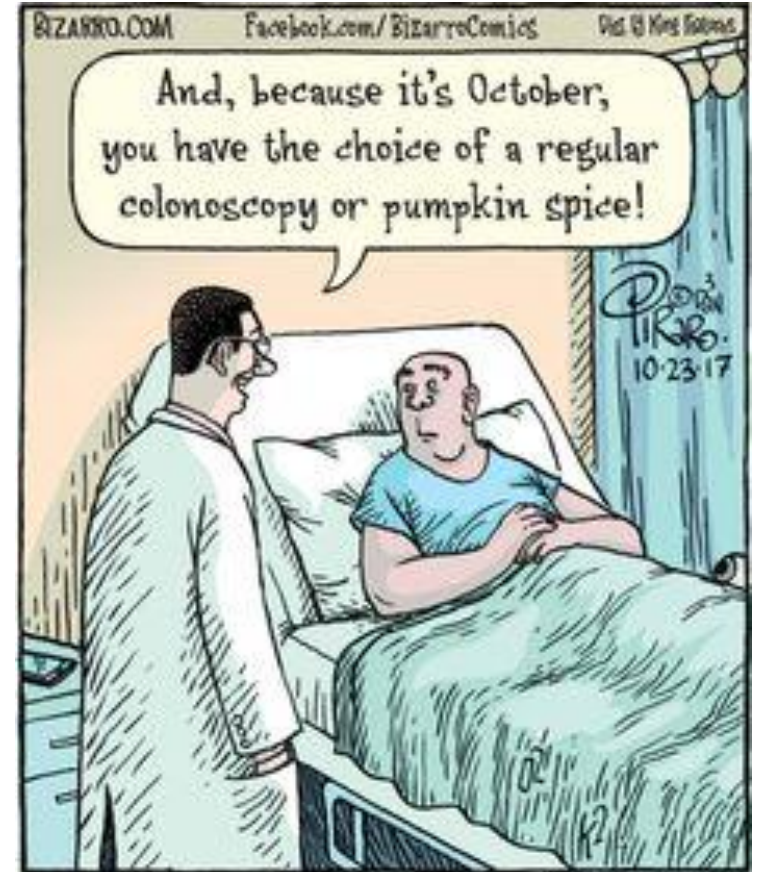
- Discuss history of endoscopy
- Discuss options for a performing endoscopy today
- Discuss what the future looks like for Endoscopic Procedures

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Disclosures

The presenter has identified no relevant relationships with commercial interest organizations whose products are related to the program content.

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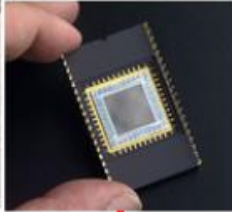
Bozzini (1805)
(Edmonson JM, 1991)



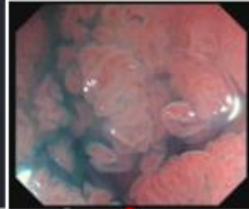
Fibreoptics: Hirschowitz and Curtiss (1963)
(Edmonson JM, 1991)



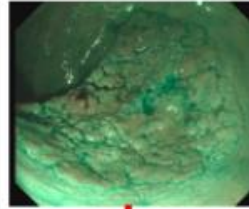
SD/CCD



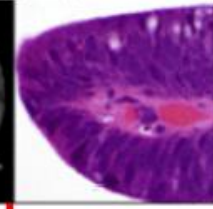
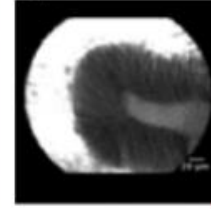
HD/magnification (late 1990's)



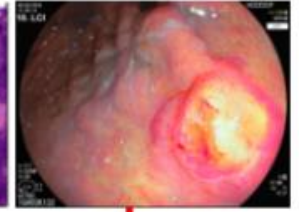
Narrow Band Imaging (2004)



Confocal laser endomicroscopy (2005)
(ASGE Tech Committee, 2014)



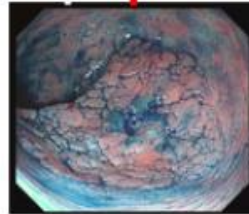
Linked Colour Imaging (2015)



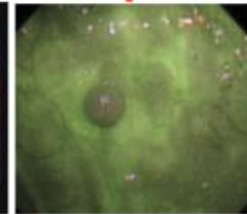
The Wolfe-Schindler gastroscope (1920's)
(Edmonson JM, 1991)



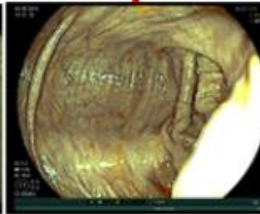
Olympus EVIS-1 Video-endoscope (1980's)
(Olympus)



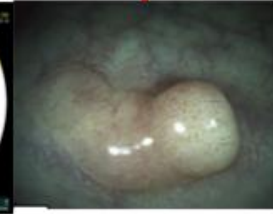
Chromoendoscopy (1990's)



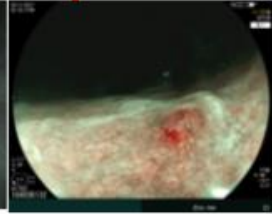
Autofluorescence imaging (2001)
(ASGE Tech Committee, 2011)



Fujinon Intelligent Colour Enhancement (2005)



Pentax i-scan (2010)
(Fuji, 2001)
(ASGE Tech Committee, 2015)



Blue Light Imaging (2014)

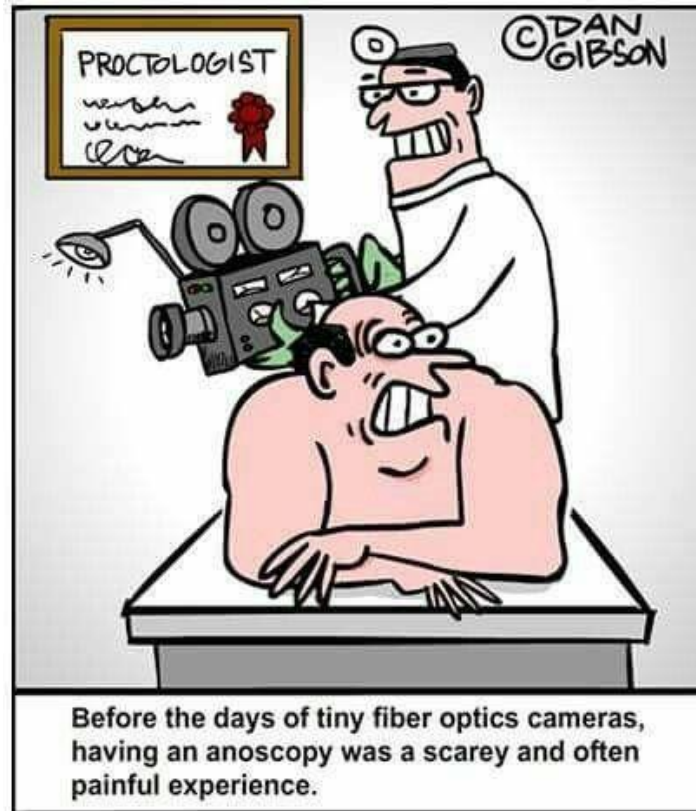


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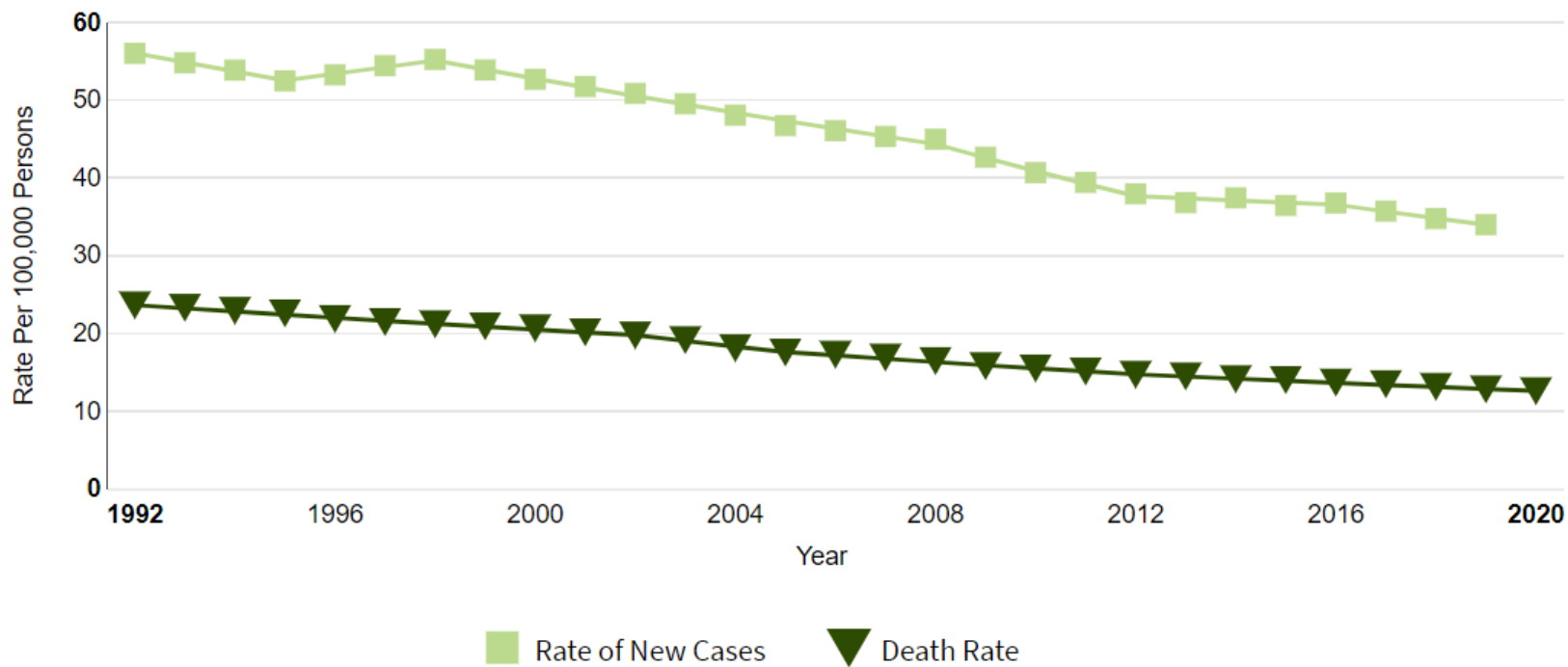


Colonoscopy

- Modern day colonoscopy was first performed 1969
- 1983 First video endoscope
- Mid 1990's first screening recommendations were established
 - 1999 survey 40.3% over age 50 had colonoscopy
- 2000 ASGE published first guidelines and quality Metrix
 - ADR
 - Prep
 - Complications
 - Cecal intubation rate
 - Withdrawal time

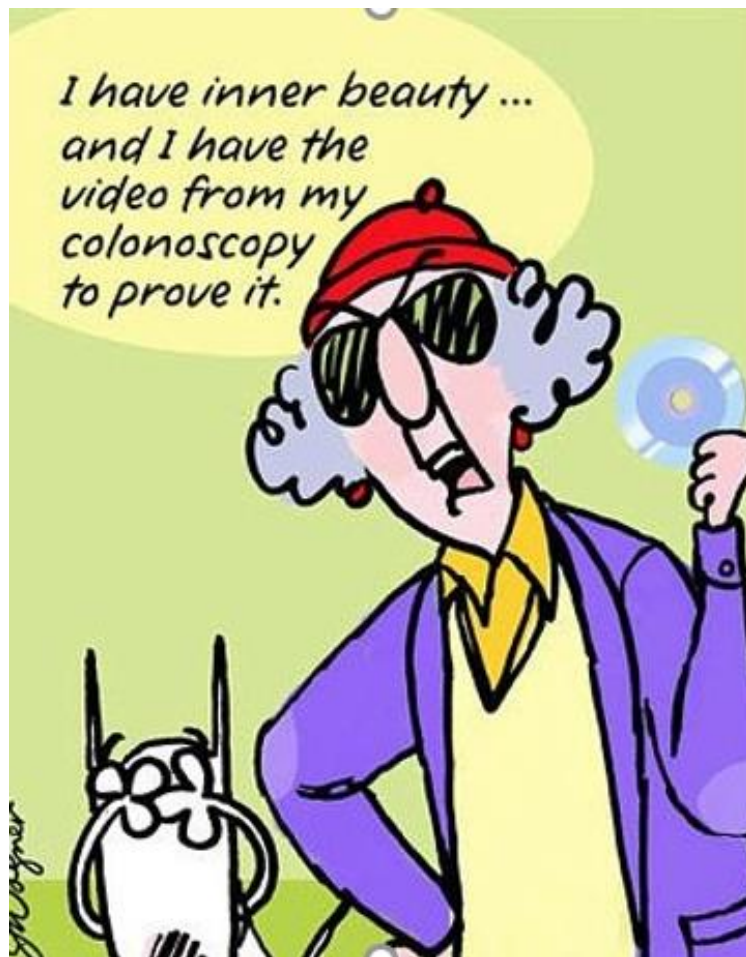


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Stool DNA Test (sDNA)

- Rationale

- Fecal occult blood tests detect blood in the stool- which is intermittent and non-specific
- Colon cells are shed continuously
- Polyps and cancer cells contain abnormal DNA
- Stool DNA tests detect abnormal DNA
- Stool DNA tests detect abnormal DNA from cells that are passed in the stool*
 - All positive tests should be followed with colonoscopy
- Sensitivity ranges from 46% to 91%

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Stool DNA: Potential Advantages

- No dietary restrictions needed
- Specificity for cancer may be significantly higher than other forms of stool testing
- No stool sampling required (entire bowel movement collected)
- (Company sponsored) studies report high levels of patient acceptance

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Stool DNA: Limitations

- Sensitivity for adenomas with current commercial version of test is low, misses some cancers
- Technology (and test versions) are in transition
- Appropriate re-screening interval is not known
- Costs much more than other forms of stool testing (approximately \$300-\$400 per test)
- Not covered by most insurers
- Not clear how to manage positive stool DNA test if colonoscopy is negative
- FDA approval concerns

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CT Colography “Virtual Colonoscopy”

- Rationale:
 - Allows detailed evaluation of the entire colon
 - Minimally invasive (rectal tube for air insufflation)
 - No sedation required
 - A number of studies have demonstrated a high level of sensitivity for cancer and large polyps

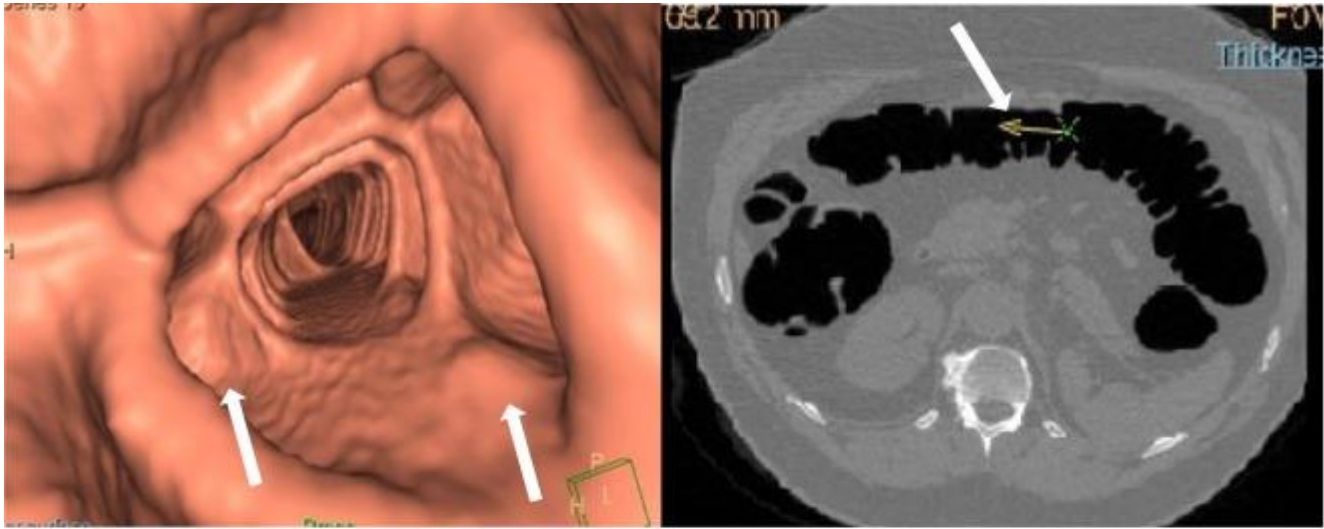
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CT Colography Applications

- High-risk Colonoscopy
 - Warfarin
 - Sedation risk
 - Previous complication
- Incomplete Colonoscopy
 - Superior to barium enema

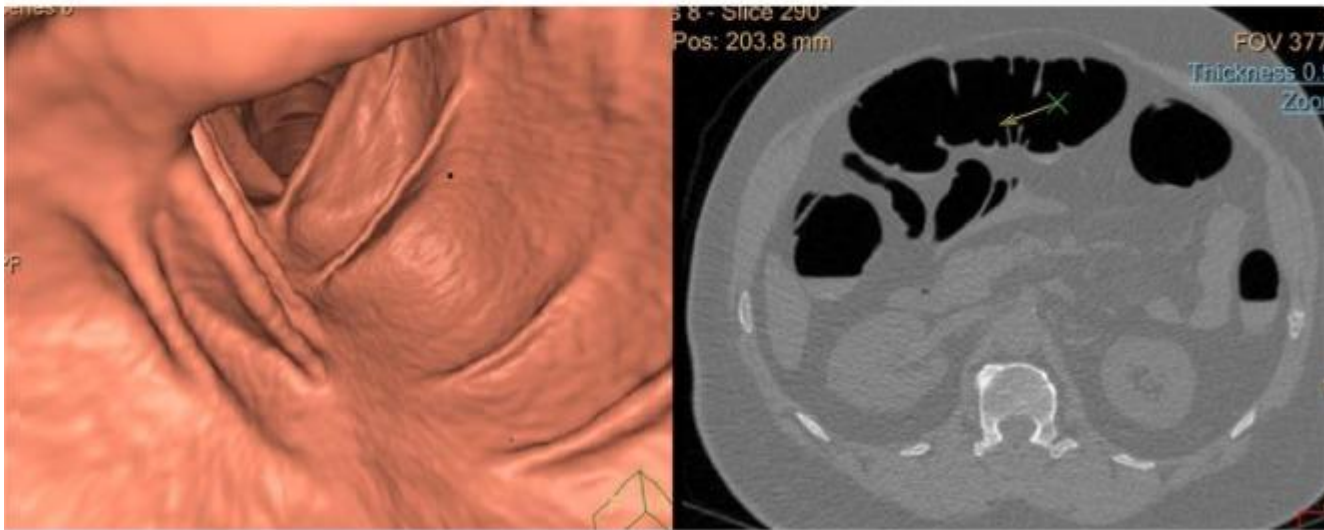
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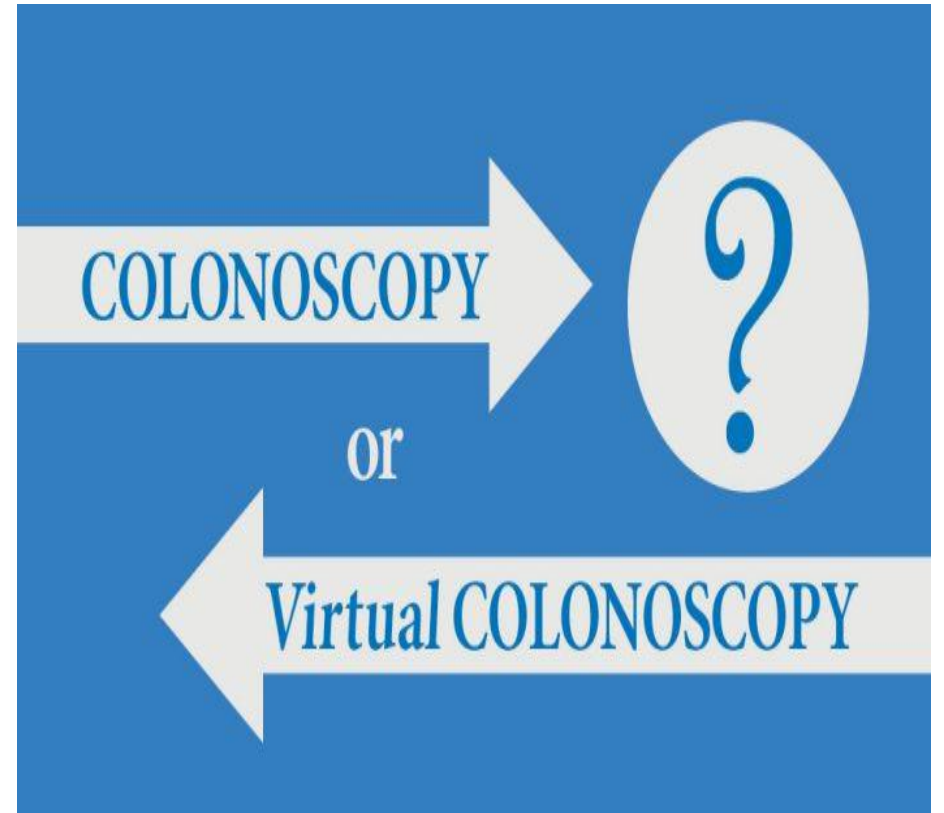
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B



C

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CT Colography vs Colonoscopy

CTC

- Polyp Size

- > 10 mm 92.2%
- > 8 mm 92.6%
- > 6 mm 85.7%

Colonoscopy

- Polyp Size

- > 10 mm 88.2 %
- > 8 mm 89.5%
- > 6 mm 90.0%

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CT Colonography: Limitations

- Requires full bowel prep
- Non-therapeutic
- Sensitivity to small and flat polyps
- Radiation exposure
- Insurance coverage

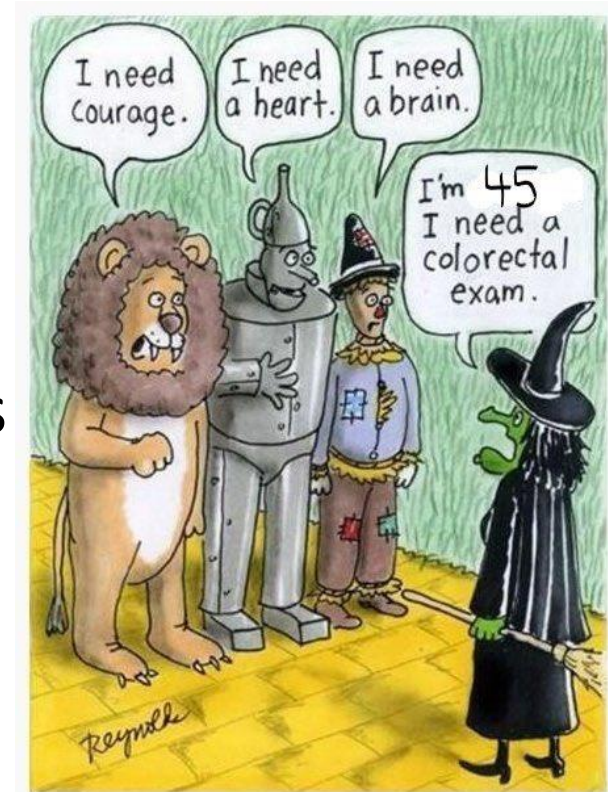


"Will the results of this probe be sent to my gastroenterologist?"

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Screening Colonoscopies

- Was age 50 now 45
- Increased colon cancer among people between age 25-40 may change those guidelines
- Will we have the ability to screen the additional patients in this age group?



For more information on the different ways you can be tested, call 1.800.227.2345 or visit www.cancer.org/NY NJ.

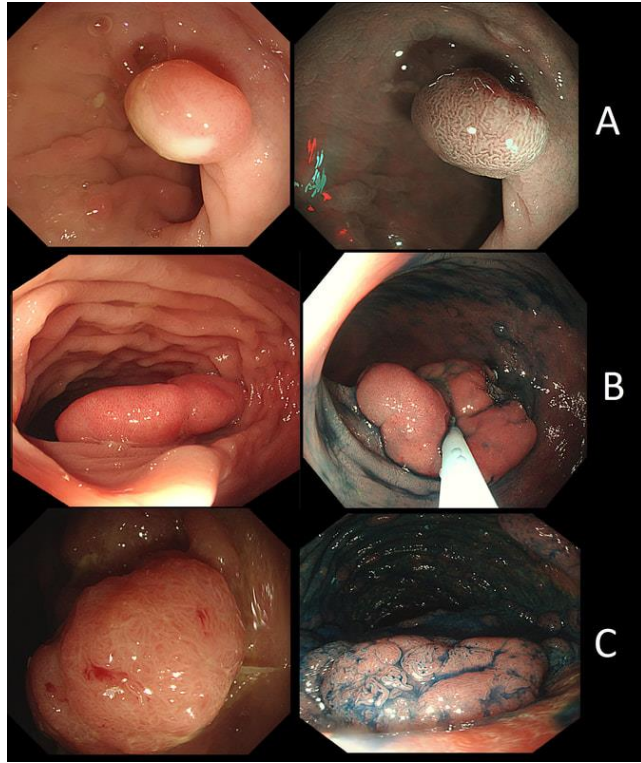
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Future of Colonoscopy

- Access issues



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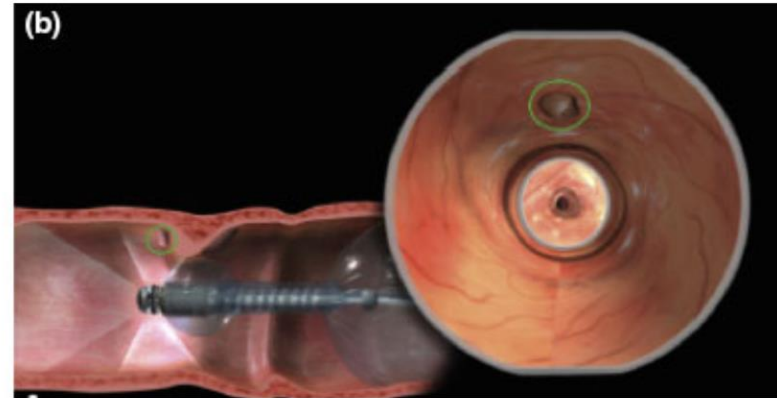
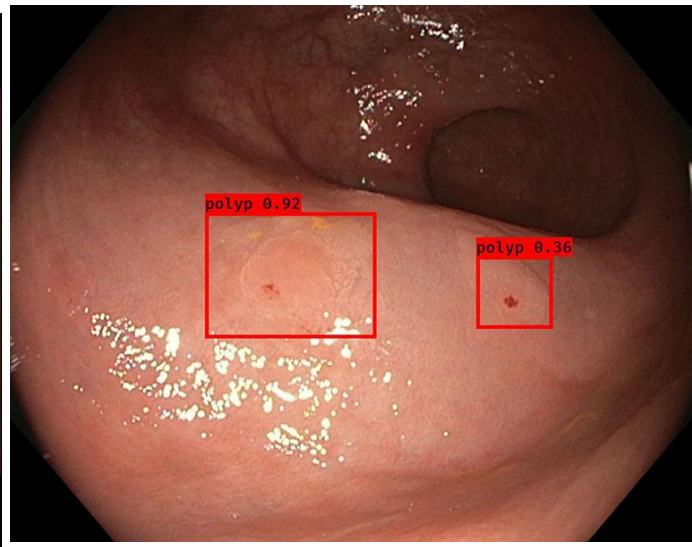
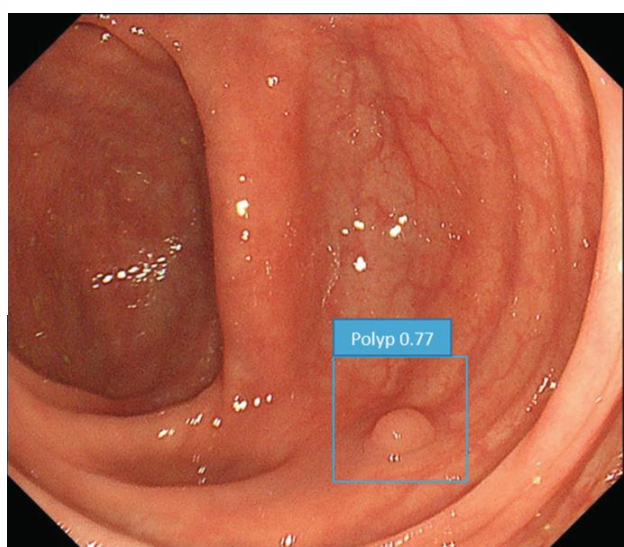
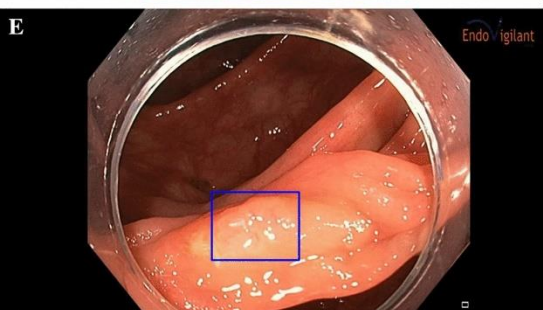
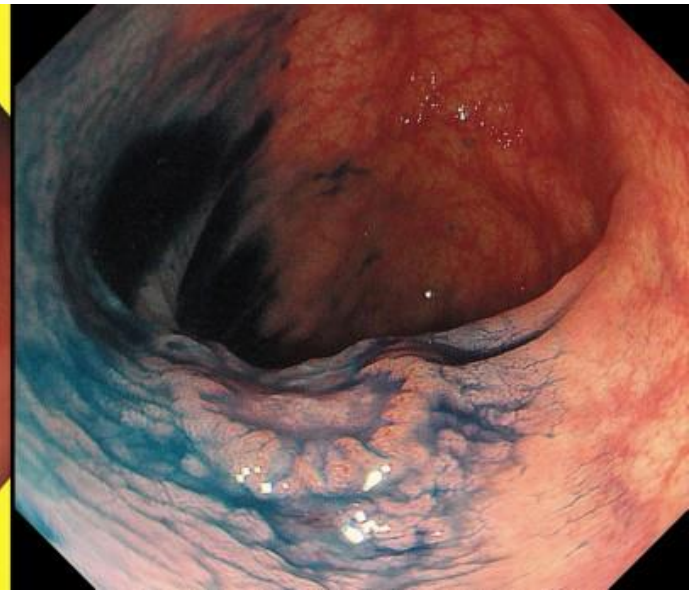
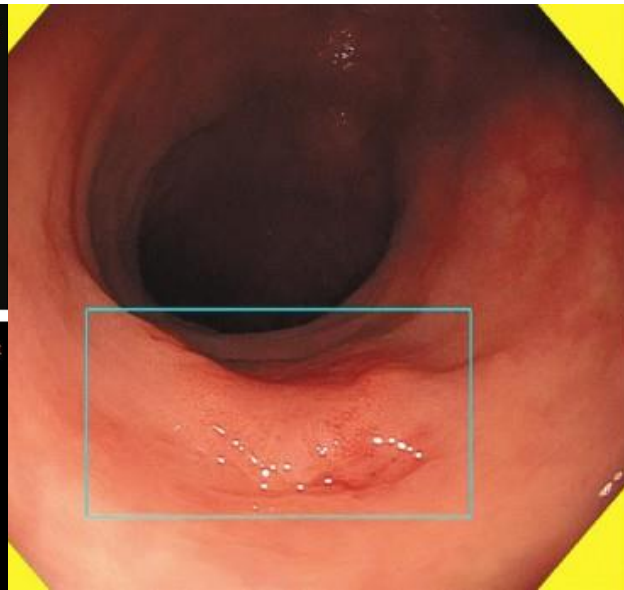
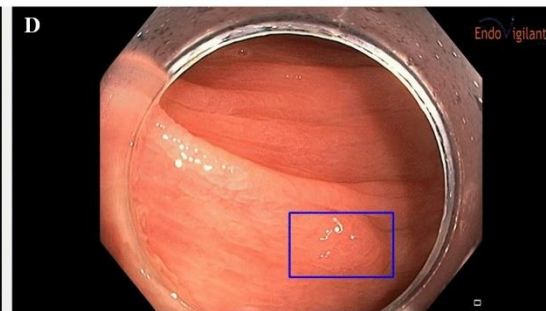
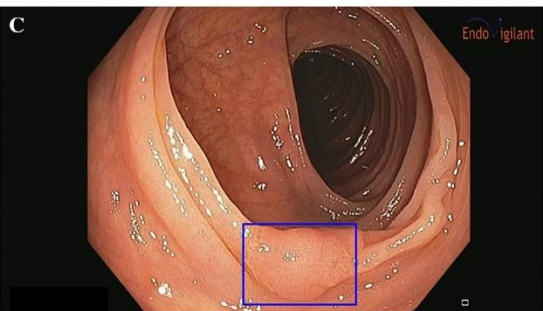
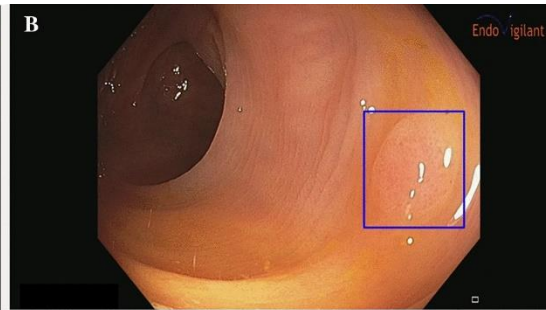
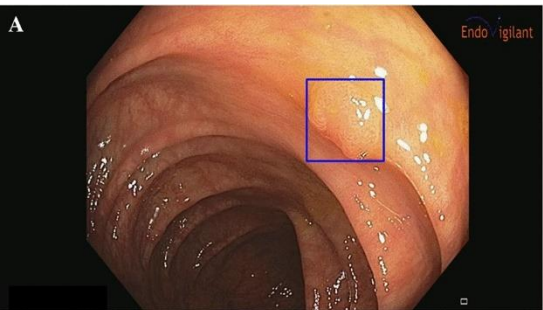


Figure 6 (a) Aeroscope design. (b) Aeroscope colonic visualisation field of view in white illumination including a polyp within this field encircled in green. Gluck *et al.* 2015.



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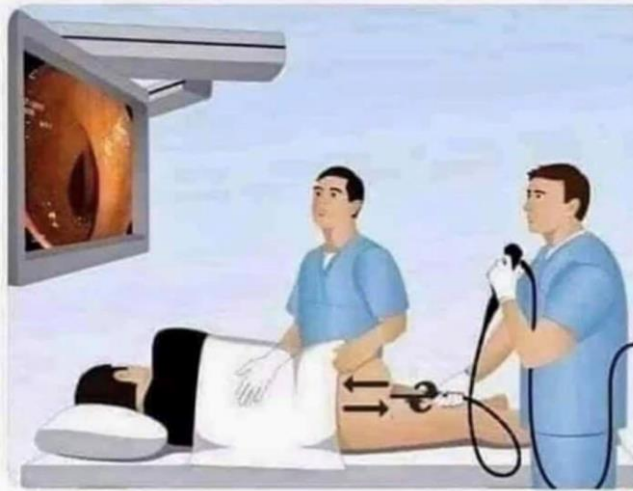
Endoscopy Rooms



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Interventional Endoscopy

This is the weirdest karaoke place I've ever seen.



© Astier - www.dessindepresse.com



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NO MATTER WHAT THE PATIENT

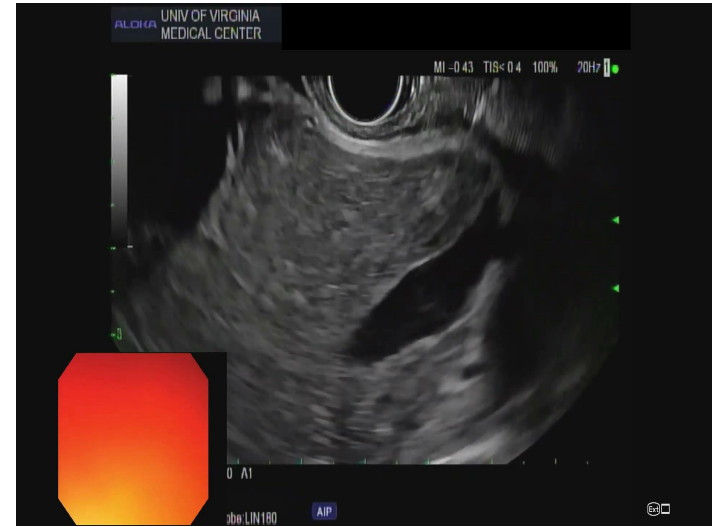
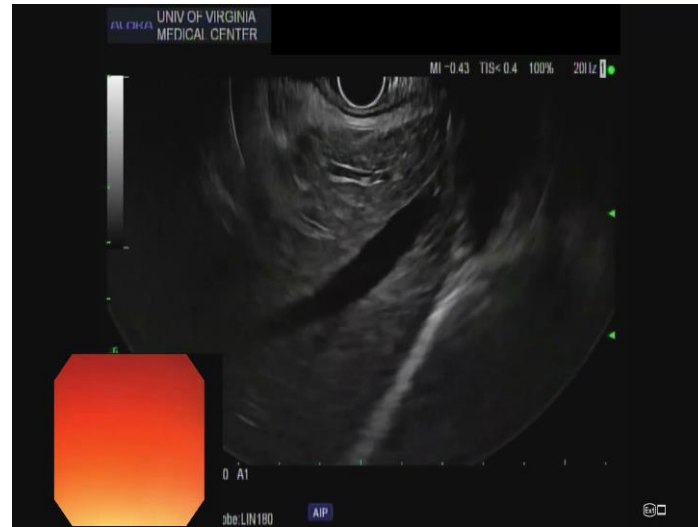


Portascope.com

WE HAVE A SCOPE FOR YOU!

EUS-guided portal pressure gradient measurement

Middle Hepatic Vein



30 sec
↔



30 sec
↔



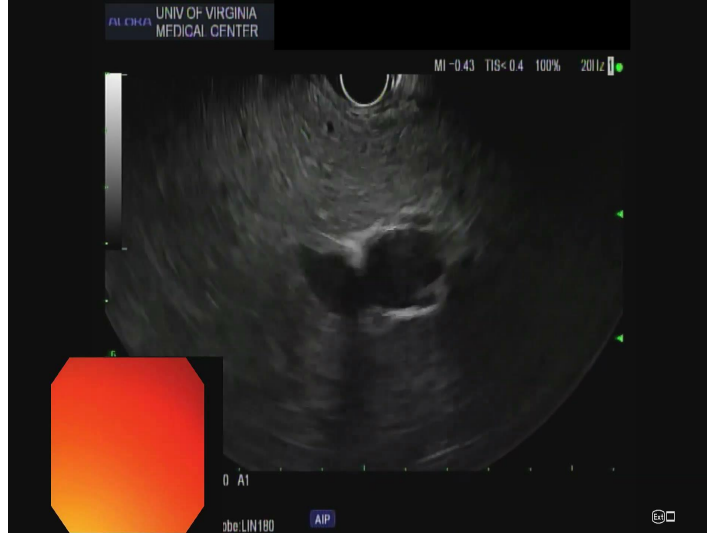
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EUS-guided portal pressure gradient measurement

Portal Vein



30 sec
↔



30 sec
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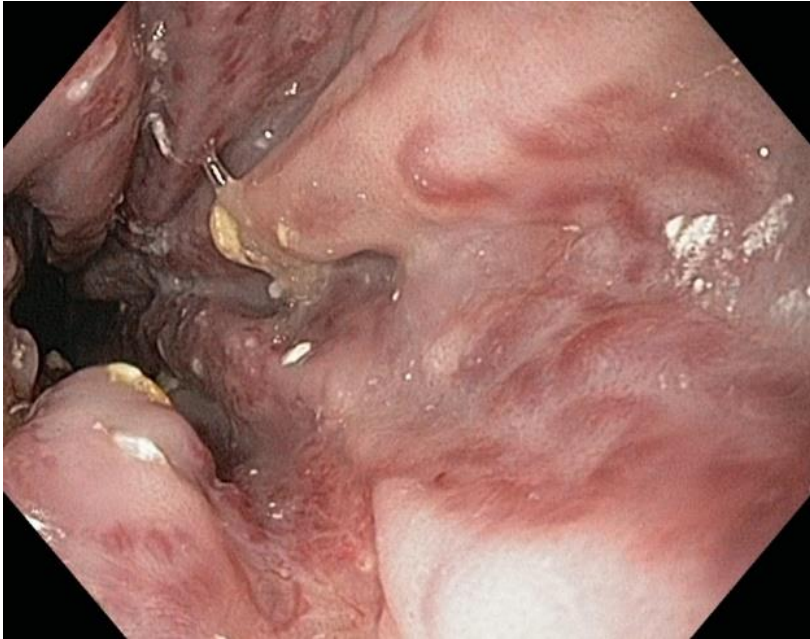


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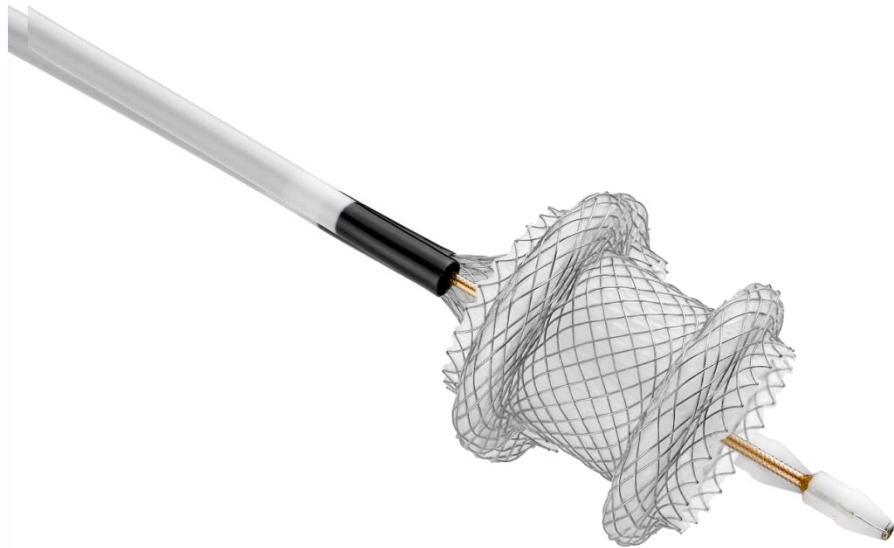


While we are at it we can...



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Lumen Apposing Metal Stents (LAMS)

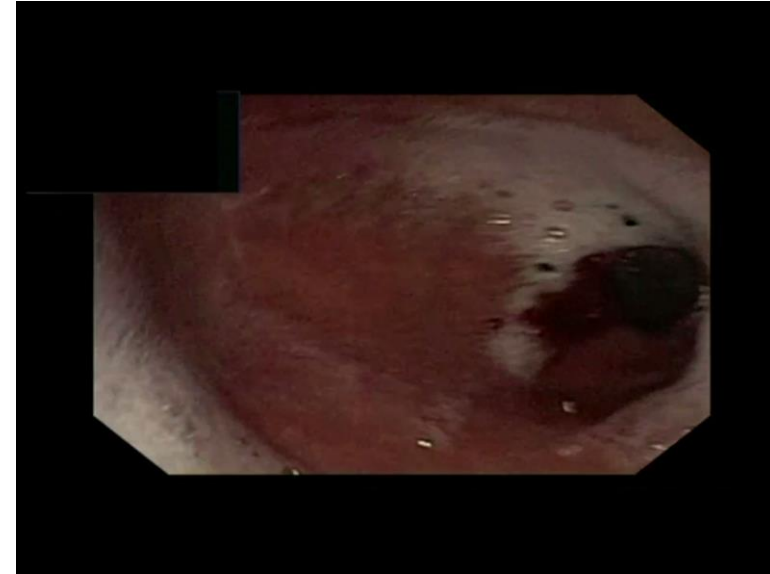
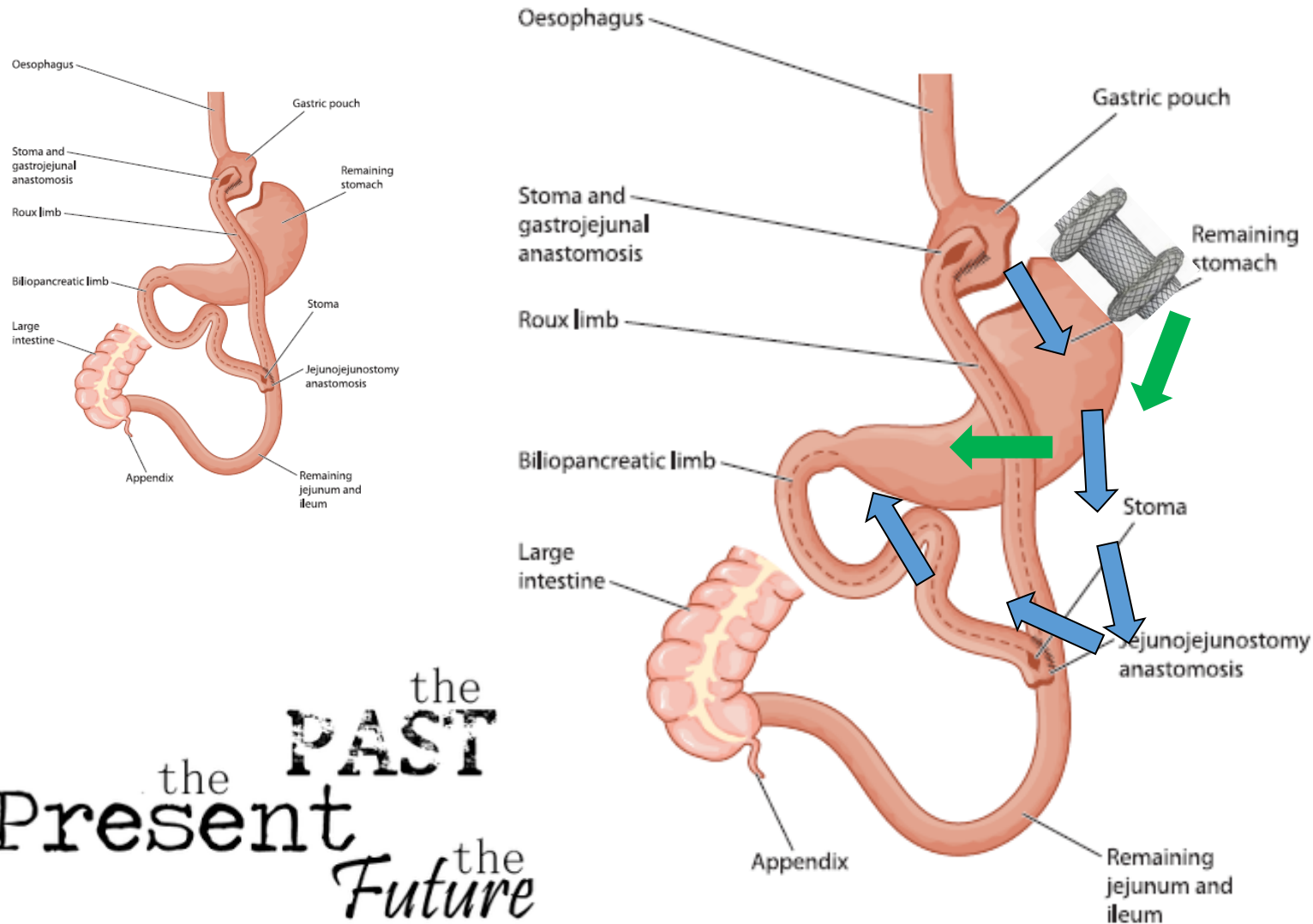


Gastroenterol 2018

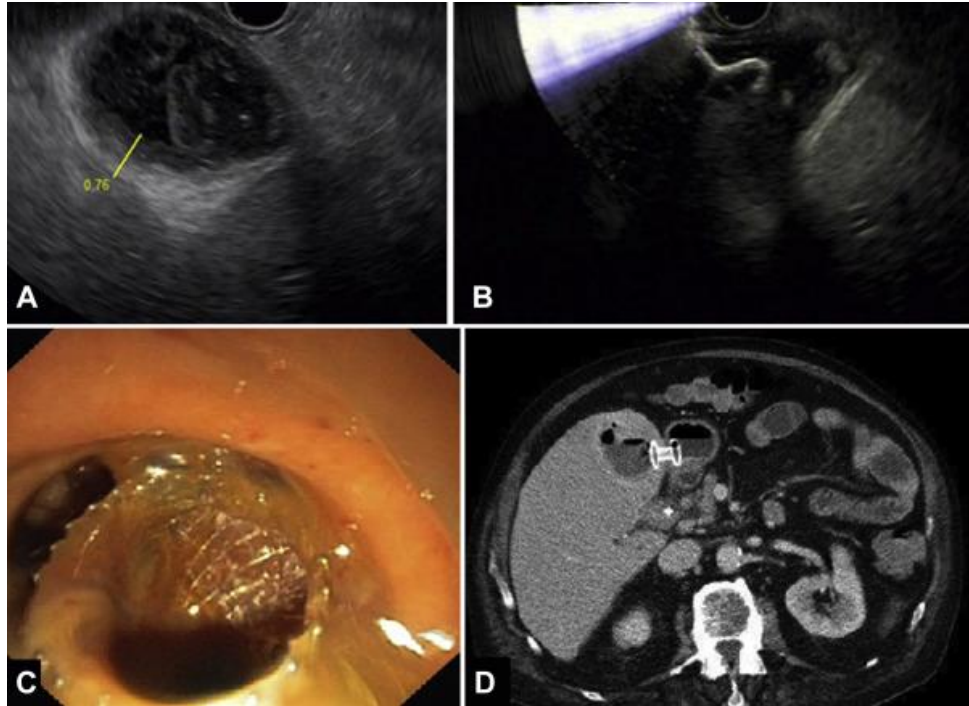
| Stent | Diameter | Image |
|---|----------------------------------|-------|
| AXIOS (Boston Scientific, Marlborough, MA) • Cold (non-cautery enhanced) • Hot (cautery enhanced) | 10 mm 15 mm | |
| SPAXUS (Taewoong Medical, Gimpo, S. Korea) | 8 mm 10 mm 16 mm | |
| NAGI (Taewoong Medical, Gimpo, S. Korea) | 10 mm 12 mm 14 mm 16 mm | |

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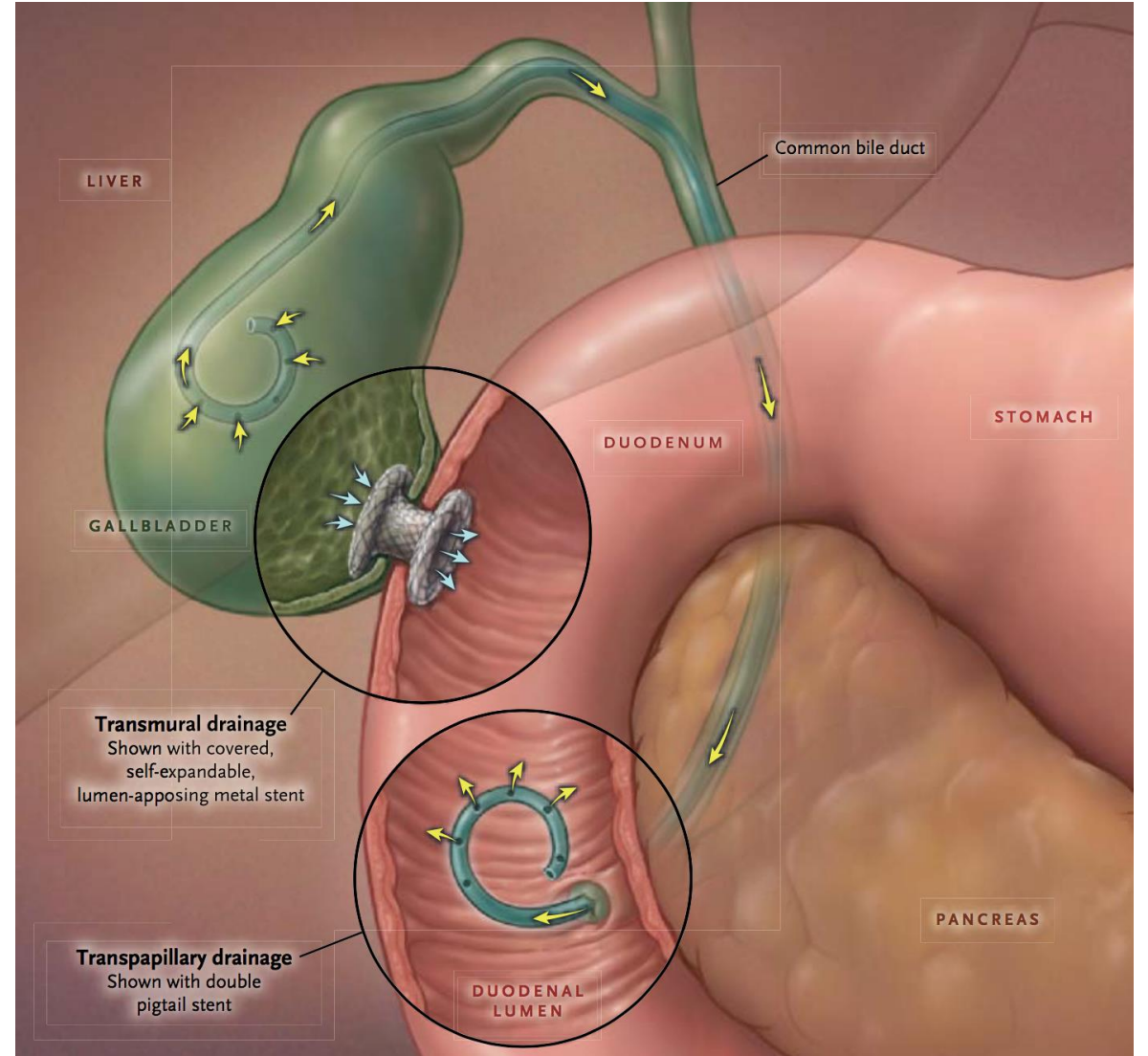
Roux-en Y Bypass EDGE Procedure



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EUS-guided gallbladder drainage in patients with acute cholecystitis and high surgical risk using an electrocautery-enhanced LAMS device

Dollhopf et al. GIE 2017

TABLE 2. Procedural characteristics of EUS-GBD using the Hot Axios device (n = 75)

| Characteristic | Value |
|--|------------|
| Technical success, n (%) | 74 (98.7) |
| Puncture site, n (%) | |
| Stomach | 36 (48.0) |
| Duodenum | 38 (50.7) |
| Jejunum | 1 (1.3) |
| Axios size, n (%) | |
| 6 × 8 mm | 1 (1.3) |
| 8 × 8 mm | 2 (2.7) |
| 10 × 10 mm | 65 (86.7) |
| 10 × 15 mm | 7 (9.3) |
| Technique, n (%) | |
| 19G needle, guidewire, then Hot Axios | 32 (42.7) |
| Directly Hot Axios | 43 (57.3) |
| Fluoroscopy use, n (%) | |
| No fluoroscopic assistance at all | 31 (41.3) |
| Limited fluoroscopic use to check stent placement at the end | 26 (34.7) |
| During most of the procedure | 18 (24.0) |
| Median total scope time, min (range) | 26 (8-60) |
| Median total stent deployment time, min (range) | 4.5 (1-20) |

EUS-GBD, EUS-guided gallbladder drainage.

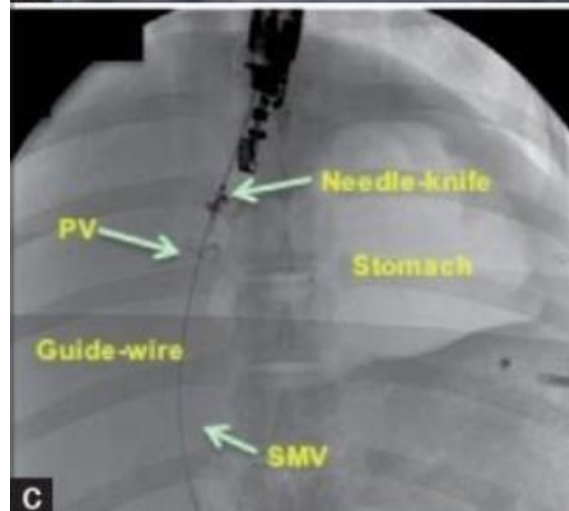
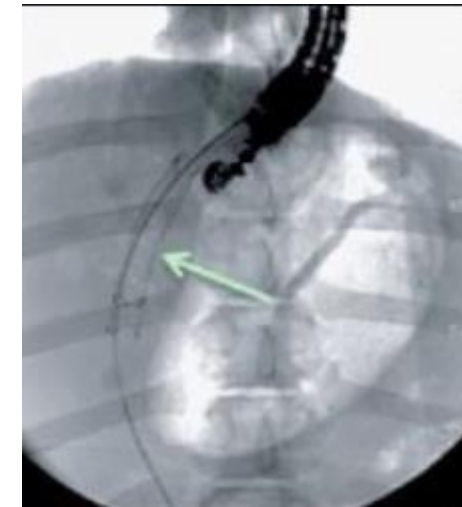
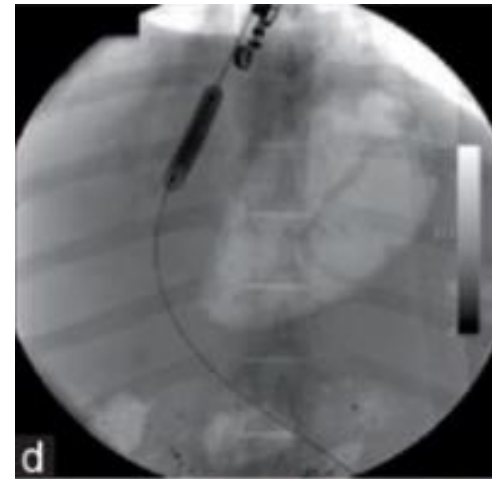
- 75 pts
- TSR 98.7%
- FSR 95.9%
- 1 perforation
- 1 major but self-limiting bleeding

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EUS-Guided Intrahepatic Portosystemic Shunt Placement

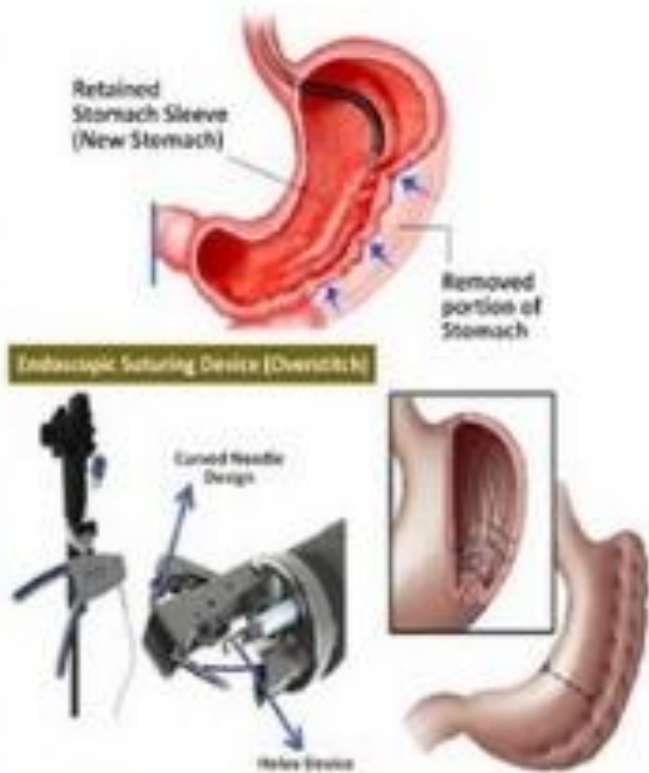
Poincloux et al. Endosc Ultrasound 2017

- 17 pigs



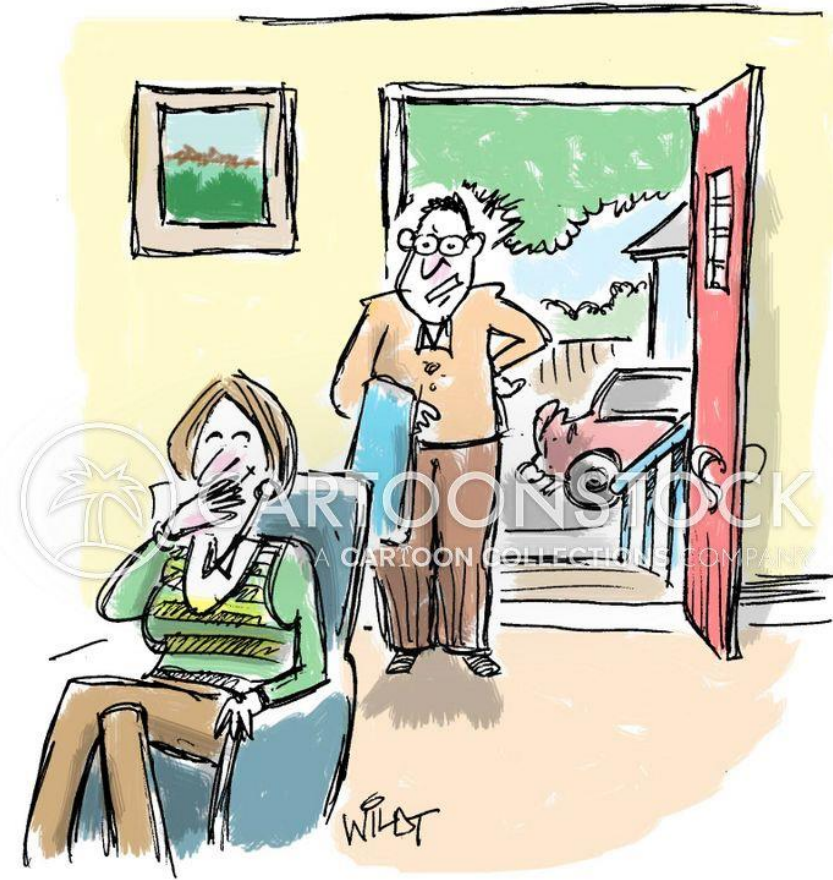
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Endoscopic Sleeve Gastroplasty - Best Procedure to shrink the size of your stomach

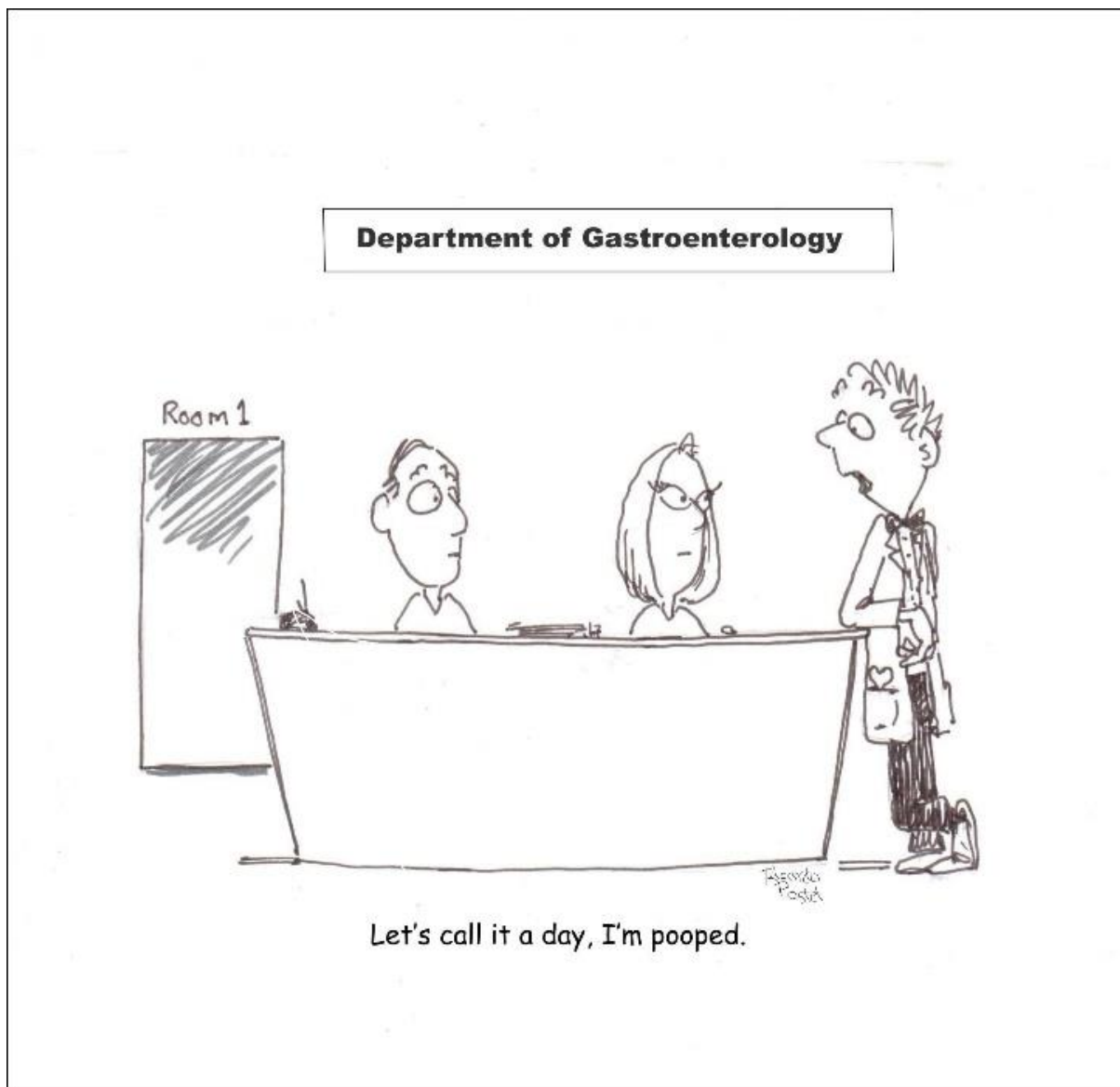
Endoscopic Sleeve Gastroplasty or ESG is a new procedure for treatment of obesity. In this procedure the stomach size is reduced from the oral route with the help of sutures without any scar or stitches.



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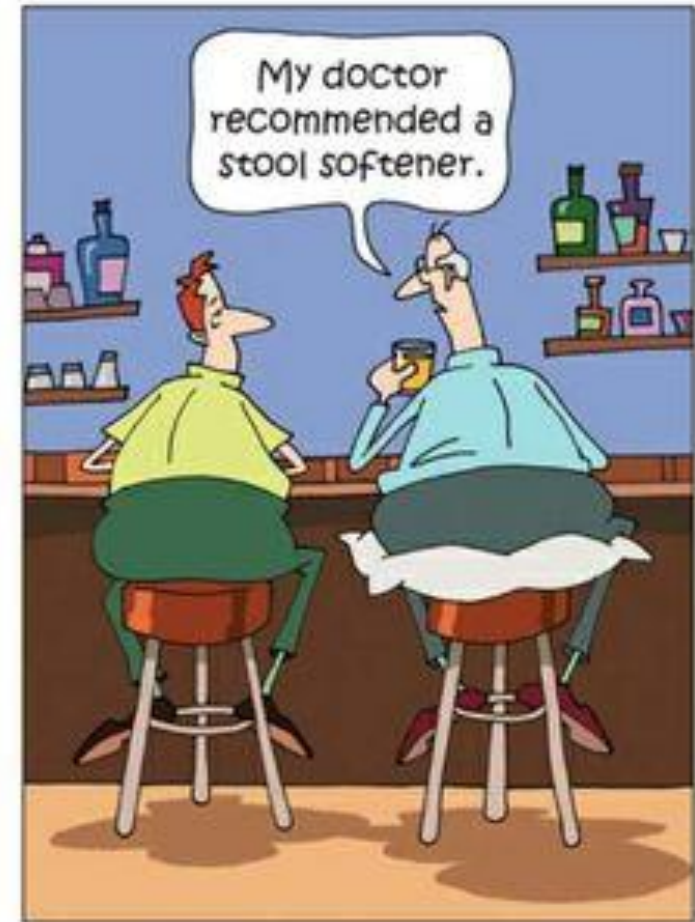
"When you're done laughing, I'll explain how I got rear-ended driving to my colonoscopy."

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We took a detour with the
endoscope to your nose
and made this great selfie!



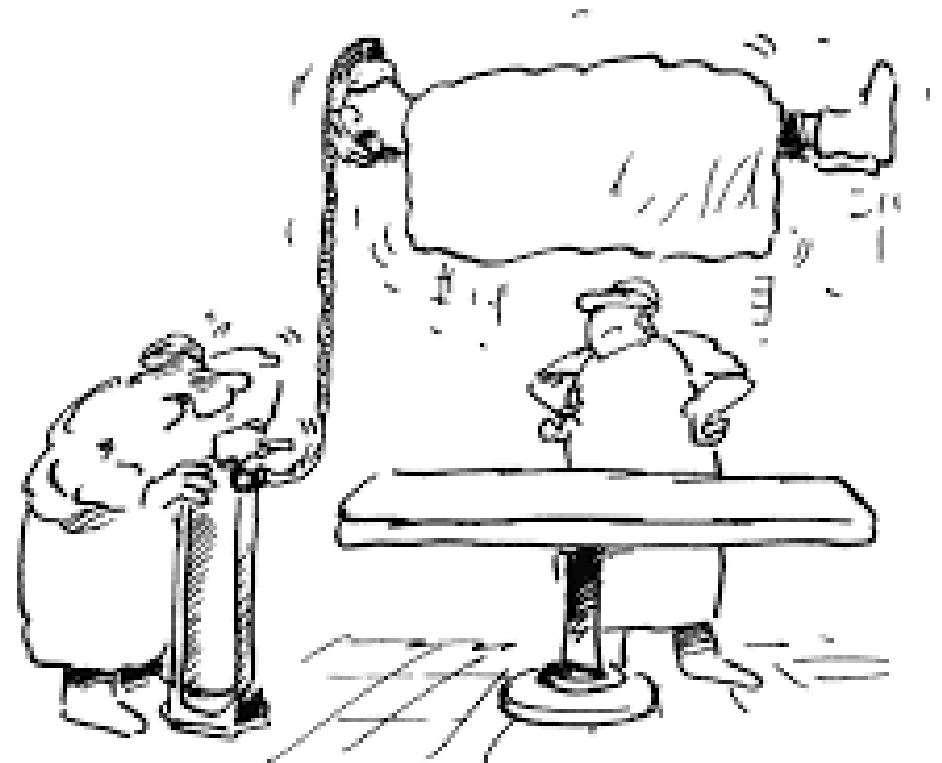
CS441400



"We just got a new computer system,
so don't be surprised if your colonoscopy
shows up on YouTube."



"Well, you appear to be free of infection, but your colonoscopy video has gone viral."



"The valve's stuck ..."