

# Endoscopic Management of Surgical Complications

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# Disclosure

- Lifecell
- Boston Scientific
- Covidien

# Objectives

- Review surgical complications amenable to endoscopic intervention
- Demonstrate tools of the trade
- Understand limitations of current endoscopic therapeutic options



# Surgical Complications Amenable to Endoscopic Intervention

- Anastomotic stricture
- Fistula, leaks and perforation



# Anastomotic stricture

- Etiology
  - Inflammatory, Leak, Ischemia, Iatrogenic
- Common anastomotic strictures
  - Esophago-gastric: Esophagectomy
  - Gastro-jejunal: Gastric bypass
  - Colorectal
  - Biliary: Liver transplant



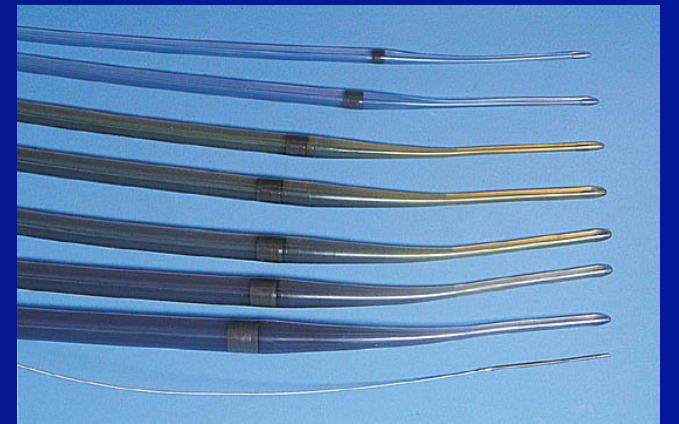
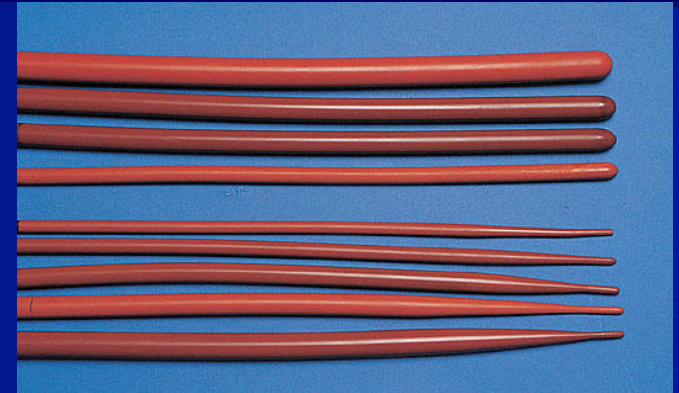
# Anastomotic stricture

- Technique
  - Dilation
  - Stenting
  - Strictureplasty
  - Combined therapy
- Tools
  - Dilators
  - Needle knife/ energy source
  - Stents



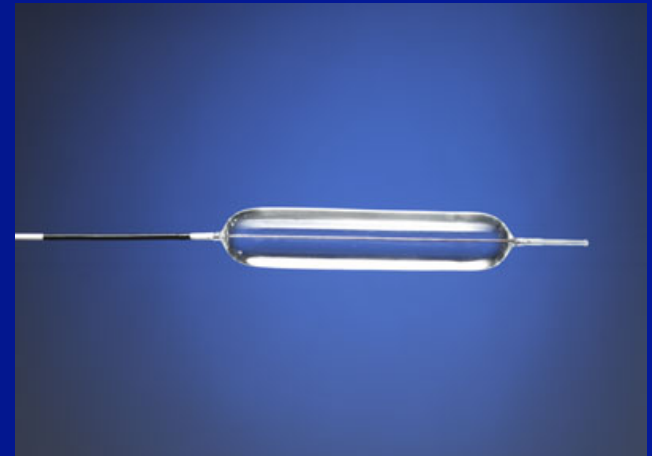
# Bougie Dilation

- Non wire-guided
  - Maloney
- Wire-guided bougie dilators
  - Savary-Gilliard



# Balloon Dilation

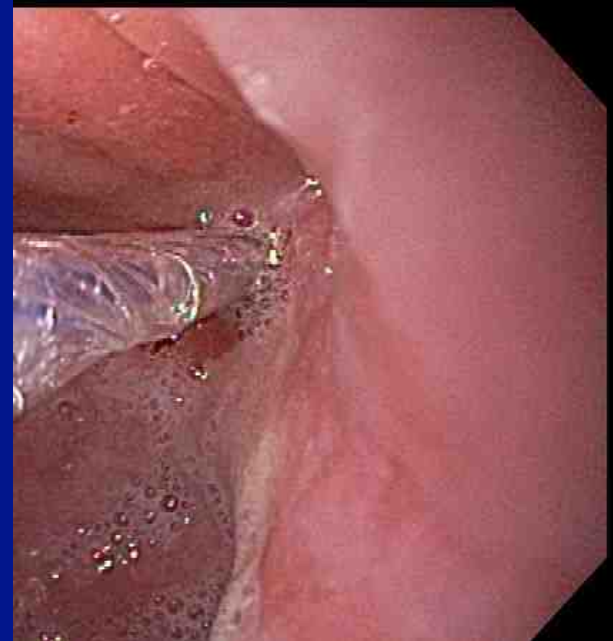
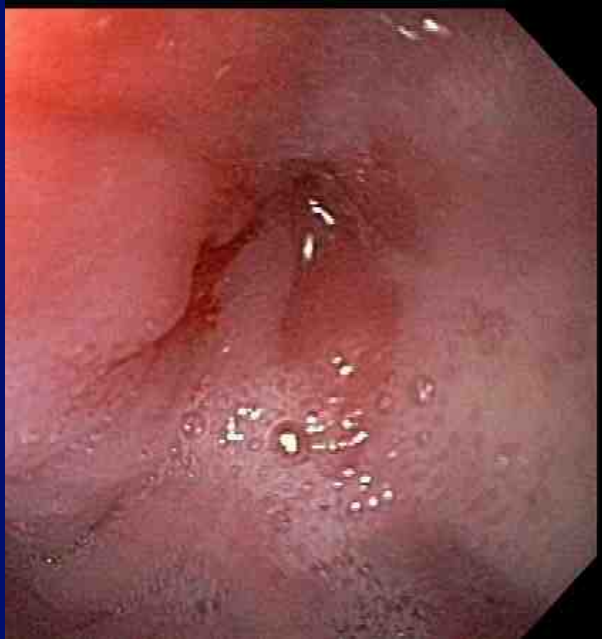
- Method of introducing balloon
  - Through the scope (TTS)
  - Under fluoro guidance (achalasia)
- Method of inflation
  - Hydrostatic
  - Pneumatic





# Anastomotic stricture: Balloon Dilation

- Esophago-gastric: Post Esophagectomy



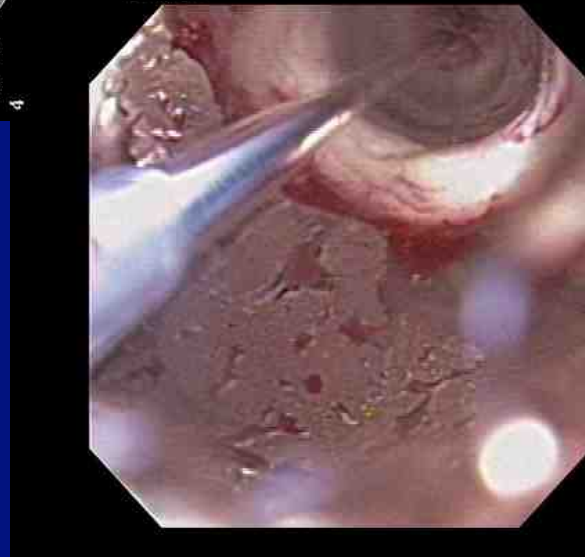
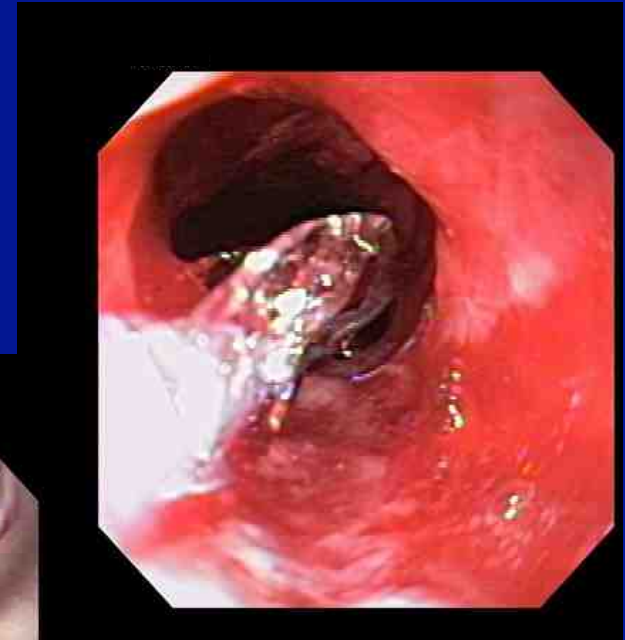
# Anastamotic stricture: Balloon Dilatation

## Esophago-gastric: Post Esophagectomy



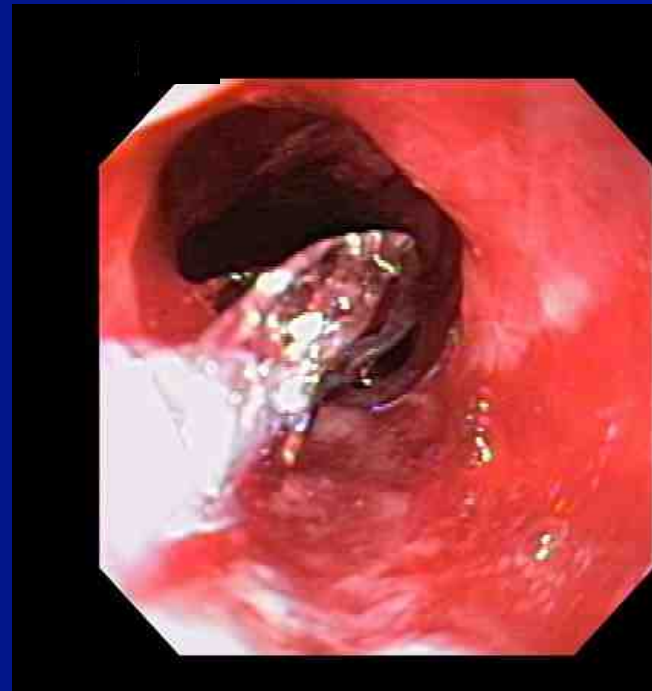
# Anastomotic stricture: Balloon Dilatation

## Esophago-gastric: Post Esophagectomy



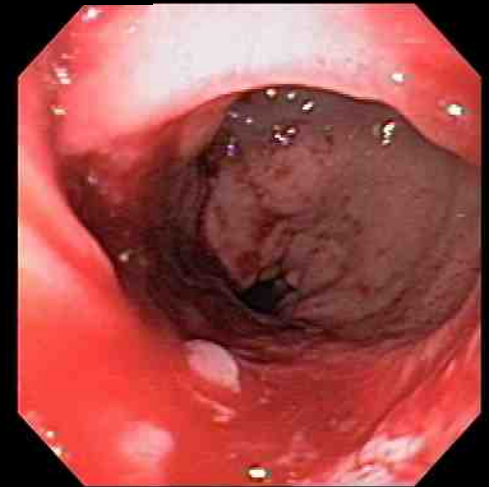
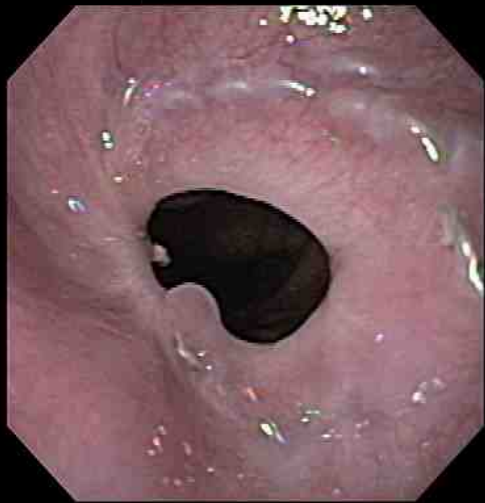
# Anastomotic stricture: Balloon Dilation

- Esophago-gastric: Post Esophagectomy



# Anastomotic stricture: Savary Dilation

Esophago-gastric: Post Esophagectomy



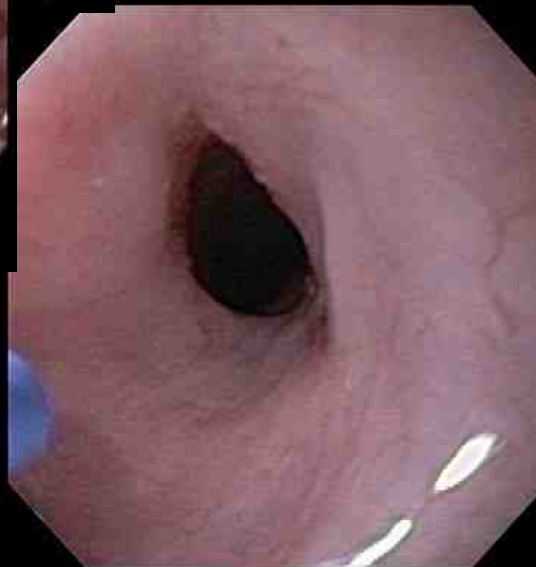
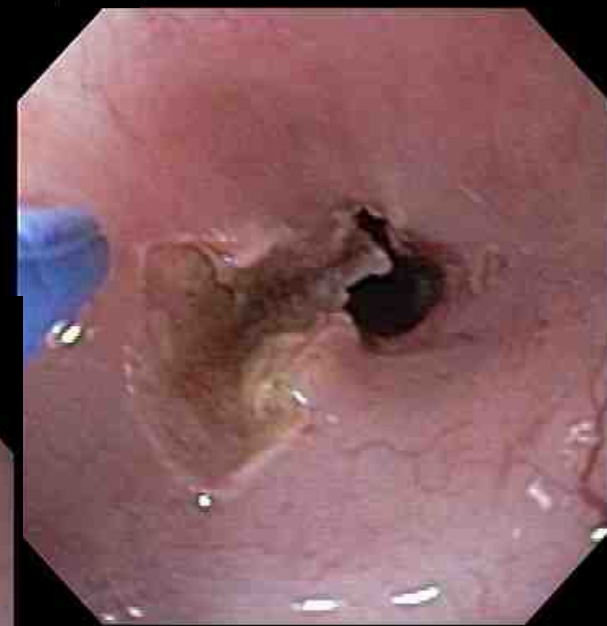
# Which Method of Dilation Best?

- Bougie
  - Inexpensive
  - Both radial and shearing force
  - Effective
- Balloon
  - More expensive
  - Radial force only (safer?)
  - Easier to traverse complex strictures

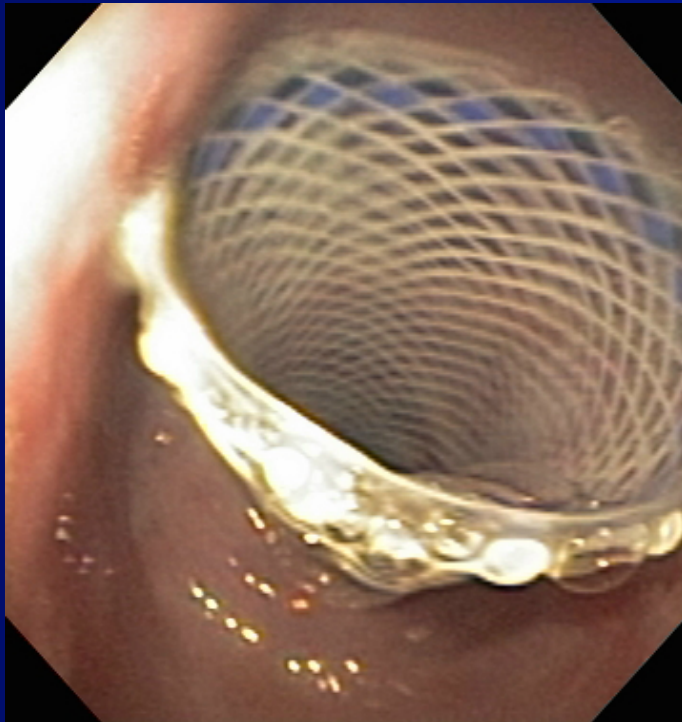


# Anastomotic stricture: Strictureplasty stubborn

Esophago-gastric: Post Esophagectomy



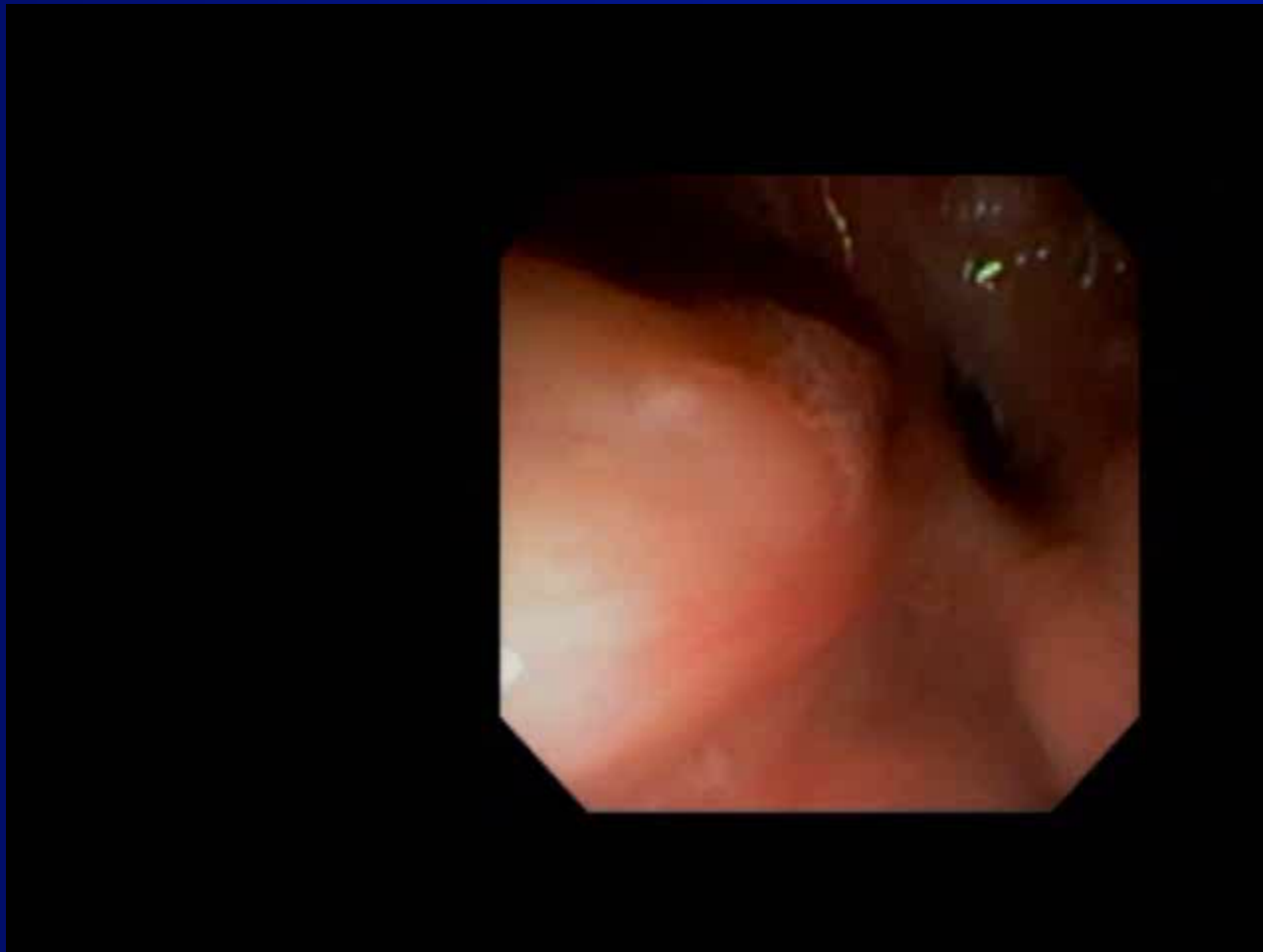
# Anastomotic stricture: Removable stent





# Benign Strictures

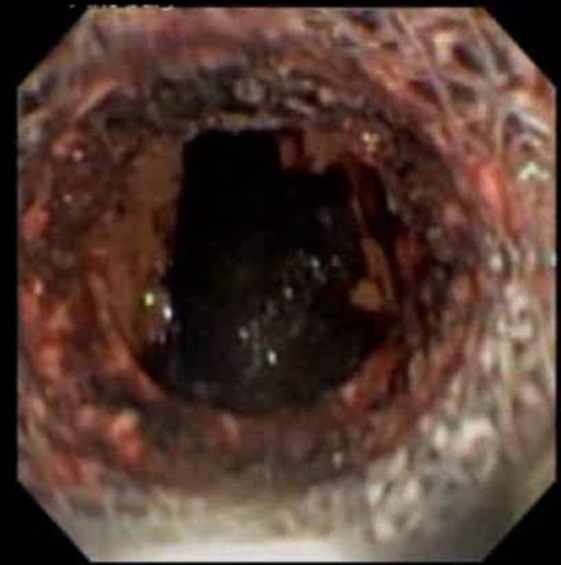
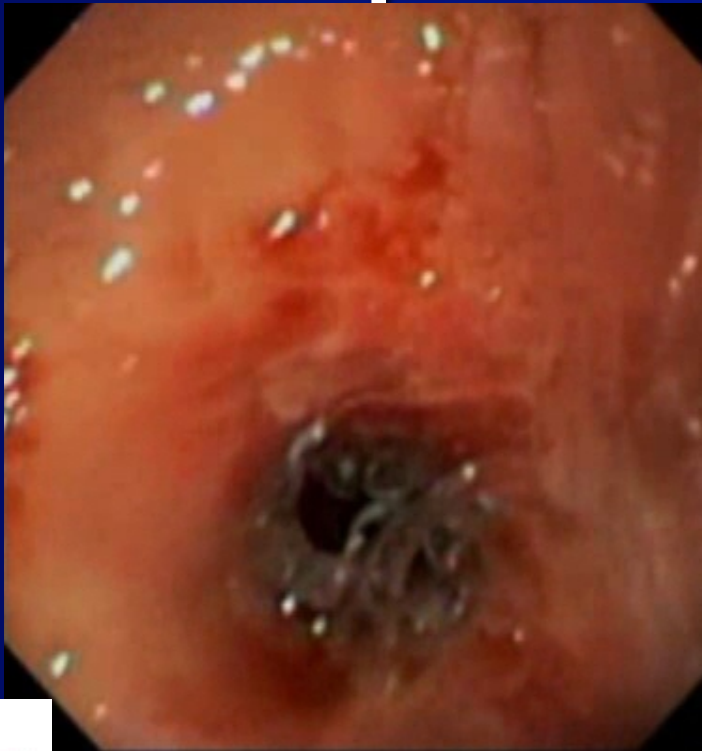
## Esophagus



# Clinical Vignette

## Esophageal Stent

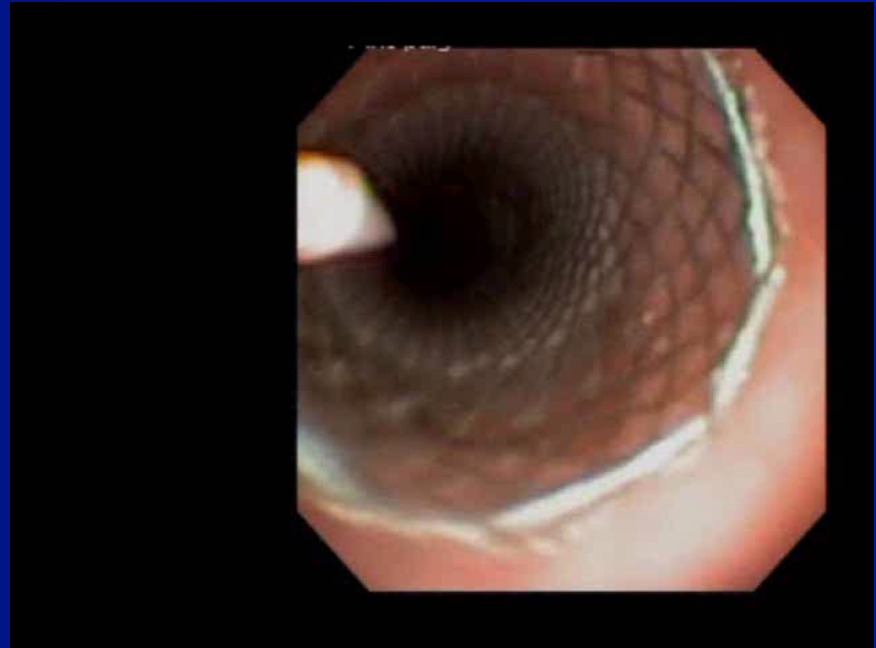
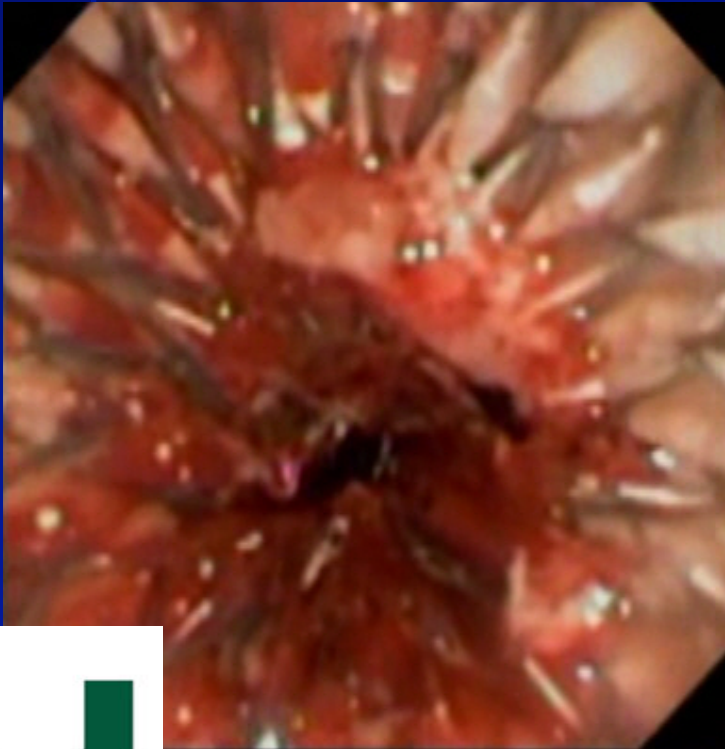
### Stent reposition



# Clinical Vignette

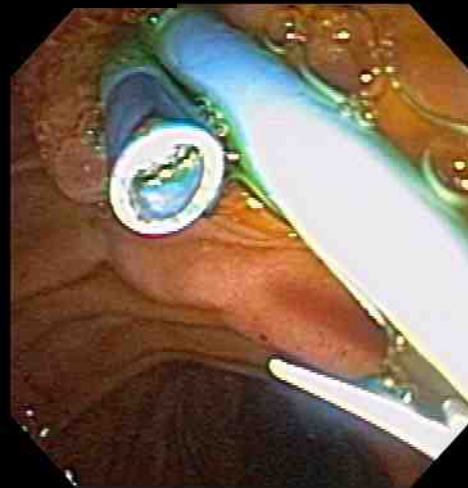
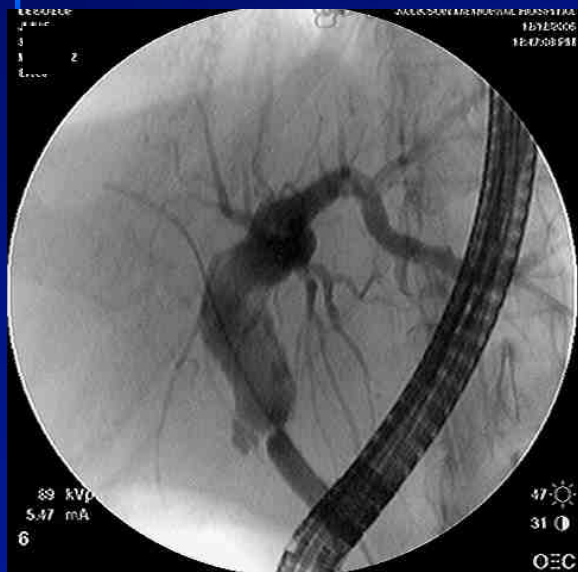
## Esophageal Stent

### Stent reposition



# Anastomotic stricture: Biliary Dilatation: Stents

## ■ Duct-to-duct anastamosis:



# Fistula, leaks and perforation

- Etiology
  - Ischemia, foreign body, iatrogenic, infection/inflammation, distal obstruction
- Common treated complications
  - Anastomotic leaks/ fistula
  - Enterocutaneous fistula
  - Bile leak



# Fistula, leaks and perforation

- Techniques

- Closing it, Covering it, Sealing it, relieving a distal obstruction

- Tools

- Clips, Stents, Fibrin Glue, Dilators



# Tools: Endoscopic Clips

## •Olympus



## •Boston Scientific

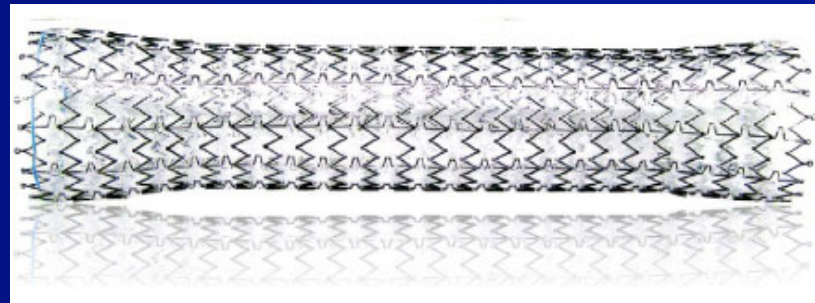


## •Ovesco



# Esophageal Metal Stents

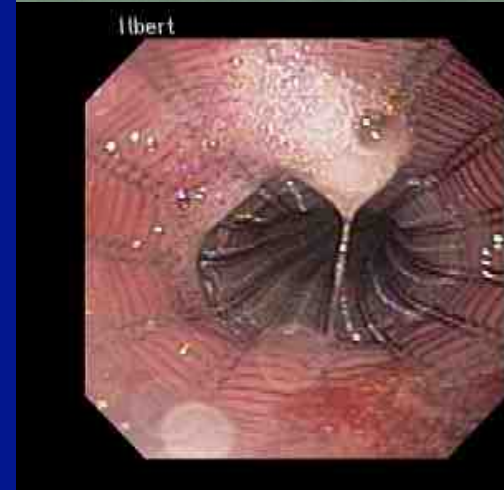
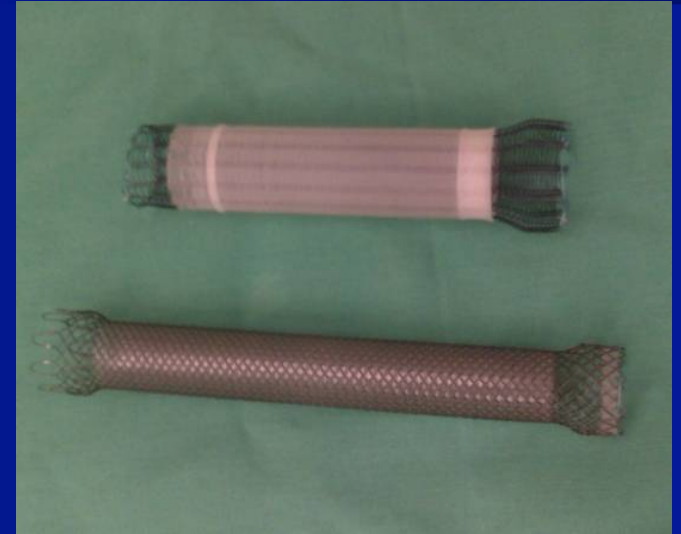
- Merit
  - Alimaxx





# Esophageal Metal Stents

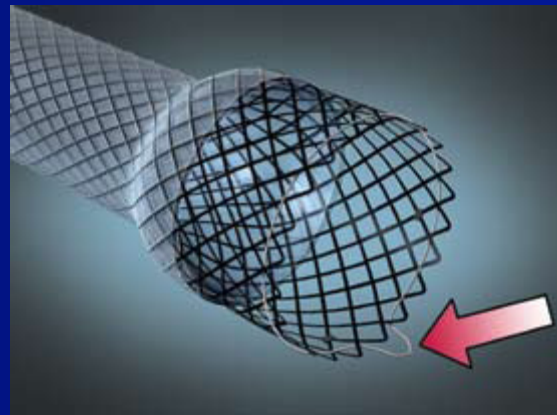
- Boston Scientific
  - Ultraflex NG
  - Wallflex



# Esophageal Metal Stents

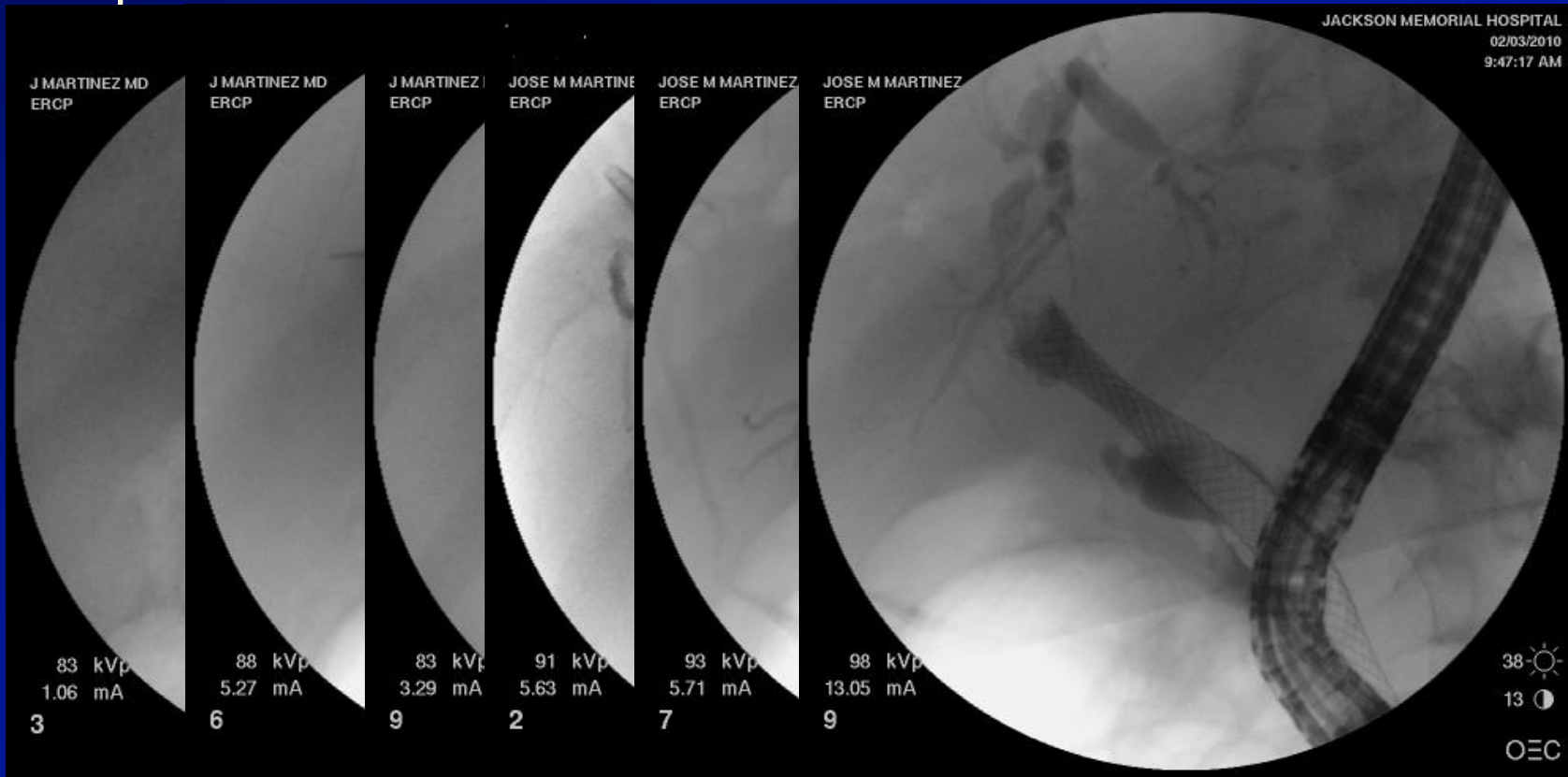
## ■ Cook Medical

- Z-Stent Fully Covered: Stainless Steel
- Z-Stent Uncoated Flange: Stainless Steel
- Z-Stent with Dua Anti-Reflux Valve
- Evolution Controlled release stent



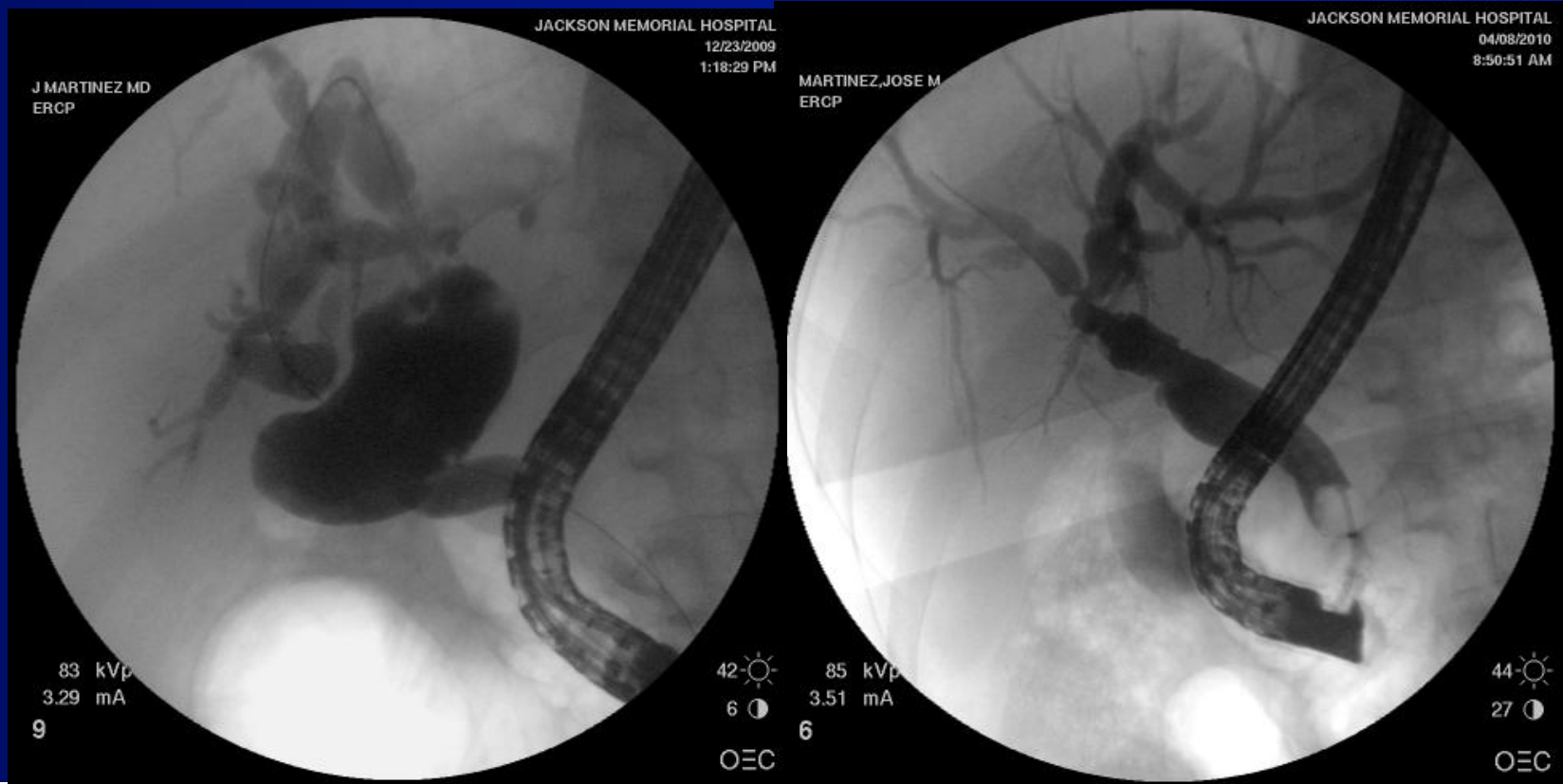
# Fistula / Leaks

## Bile ducts



# Fistula / Leaks

## Bile ducts



# Newer Metal Stents: Advantages



# Fistula, leaks and perforation

## Esophago-pleural Fistula

Combined therapy- Glue and Stent



# Fistula, leaks and perforation

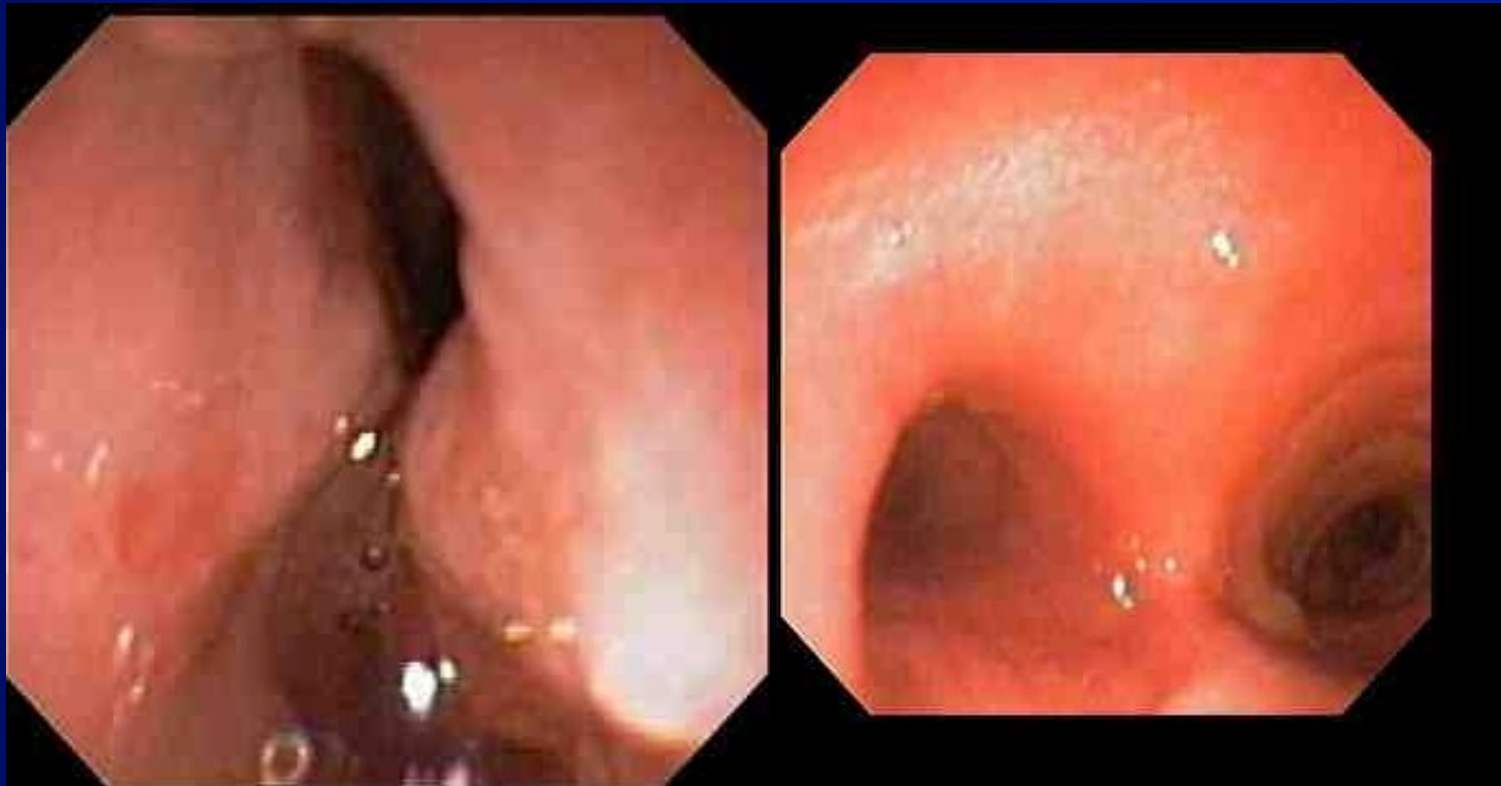
## Esophago-pleural Fistula

Combined therapy- Glue and Stent



# Fistula, leaks and perforation

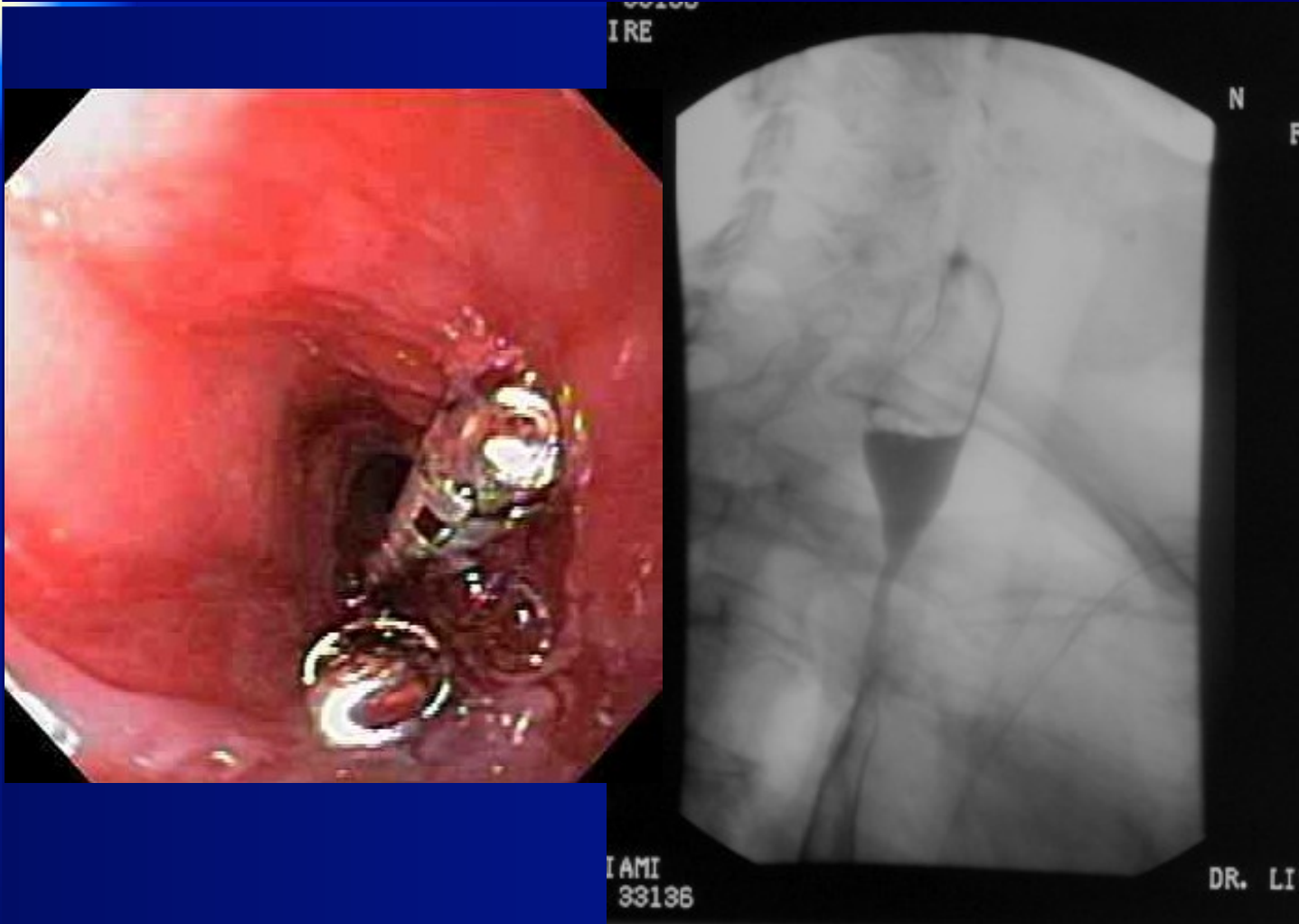
## Esophageal Fistula





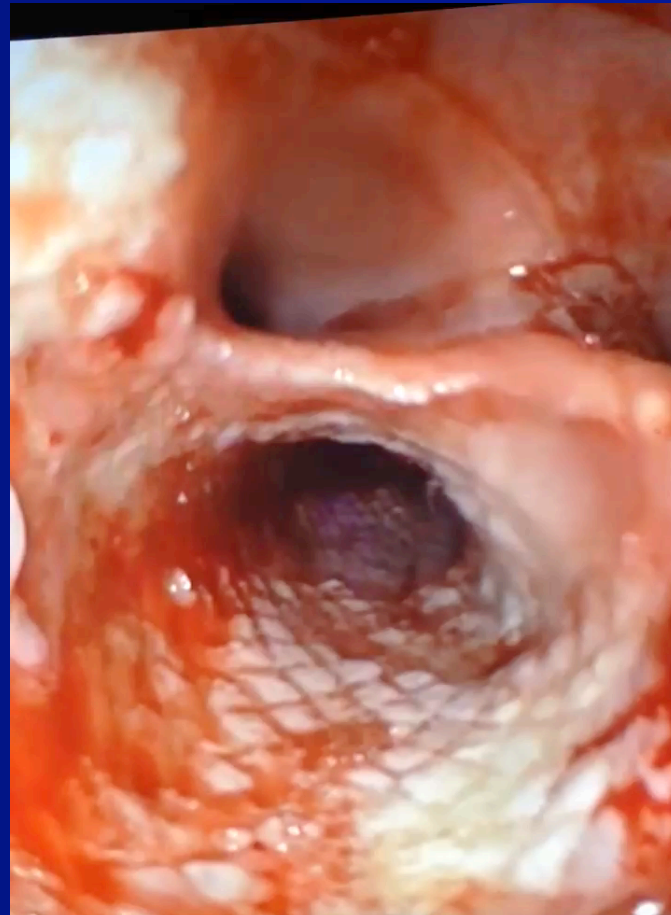
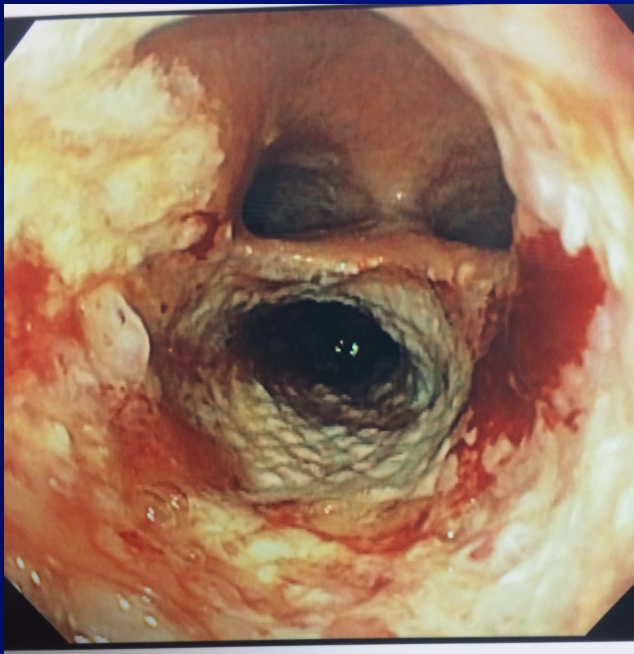
# Fistula, leaks and perforation

## Esophageal Fistula



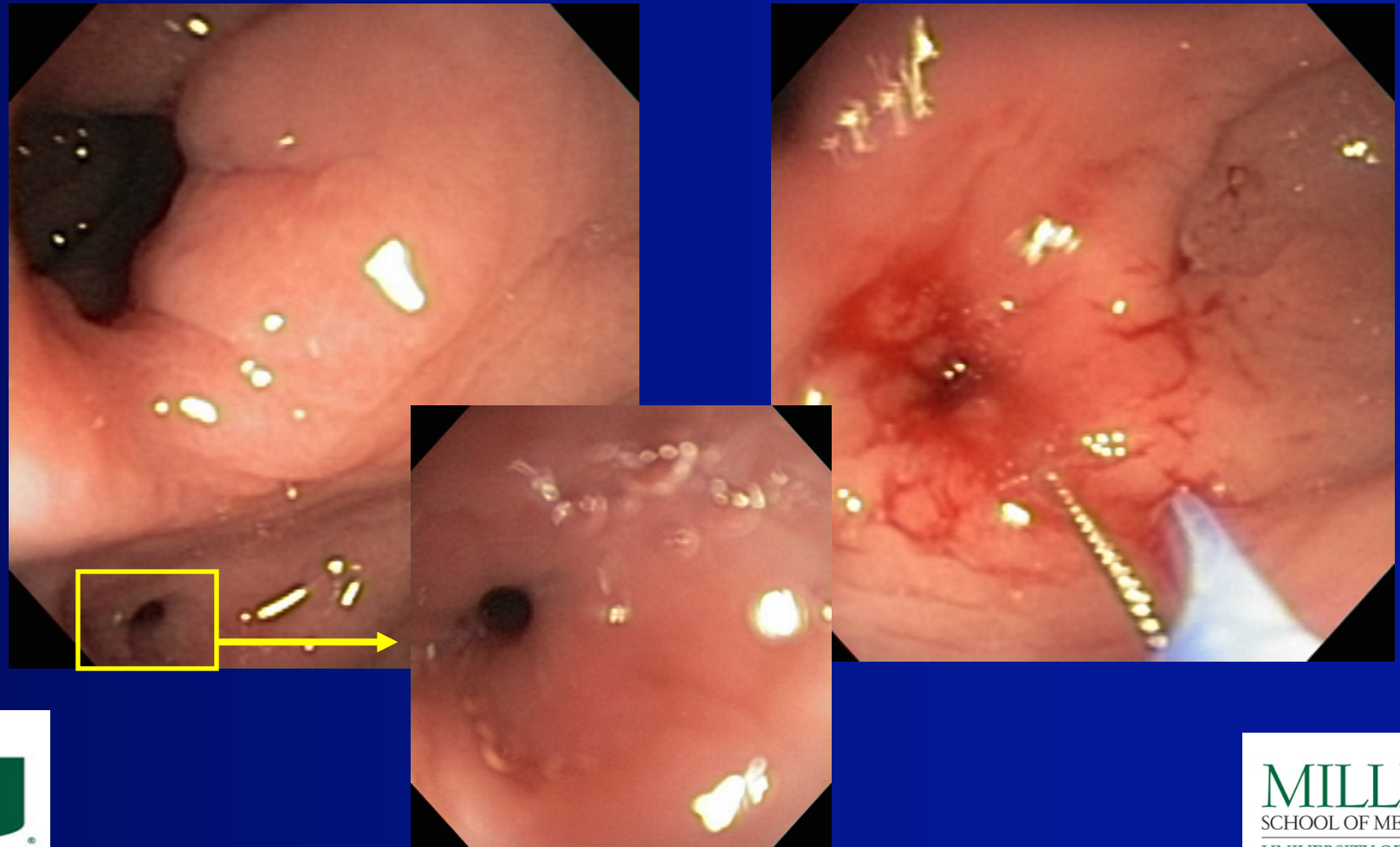
# Fistula, leaks and perforation

## Tracheo-esophageal Fistula



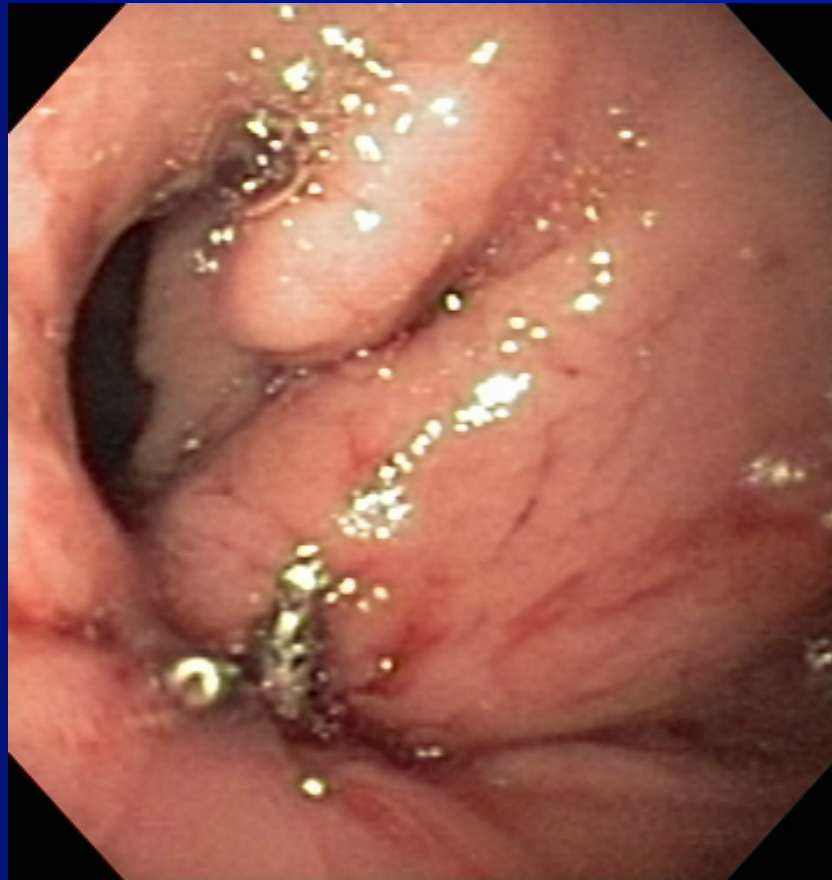
# Fistula, leaks and perforation

## Gastro-gastric fistula: Small

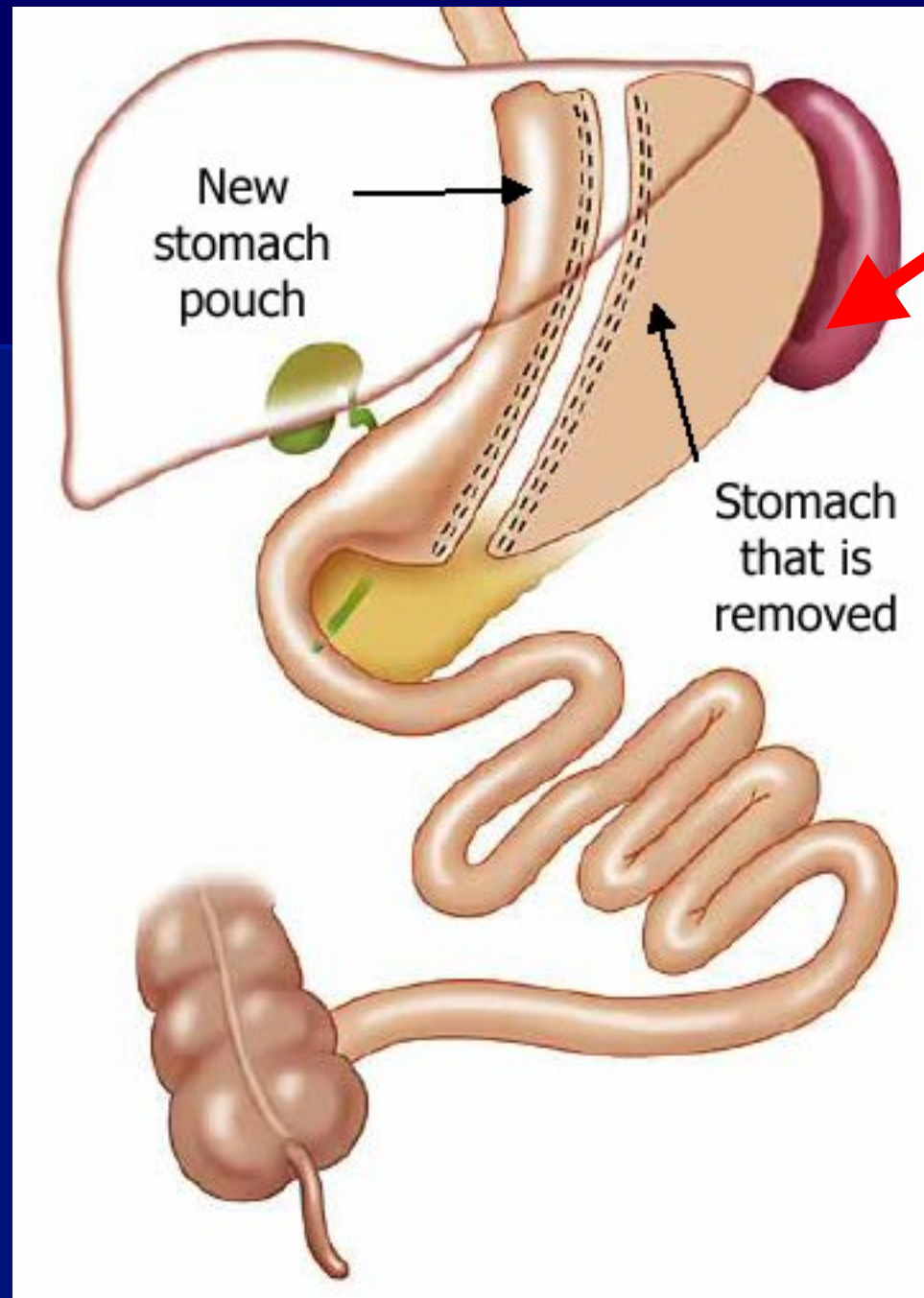


# Fistula, leaks and perforation

## Gastro-gastric fistula: Small

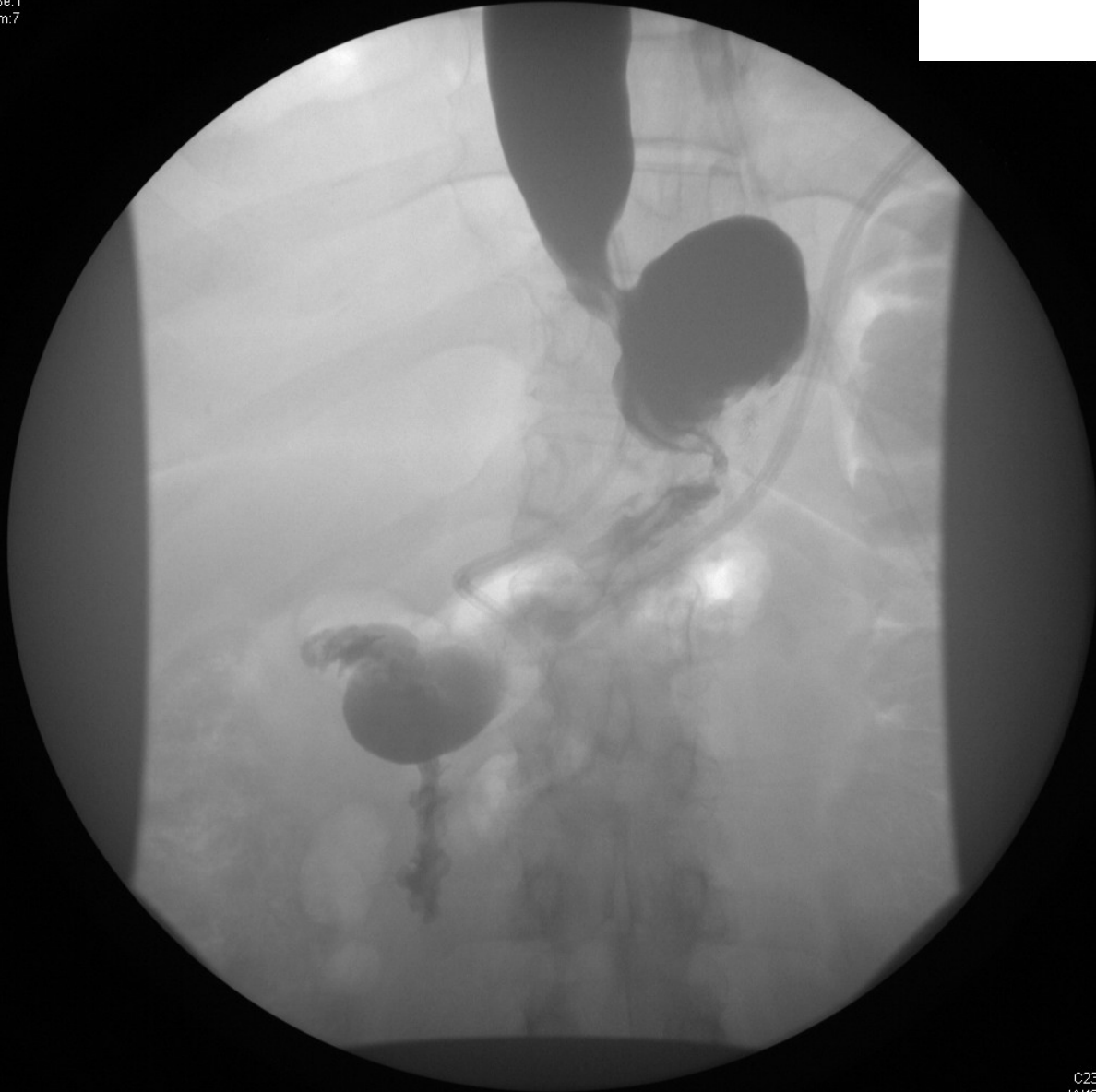


# Gastric Sleeve

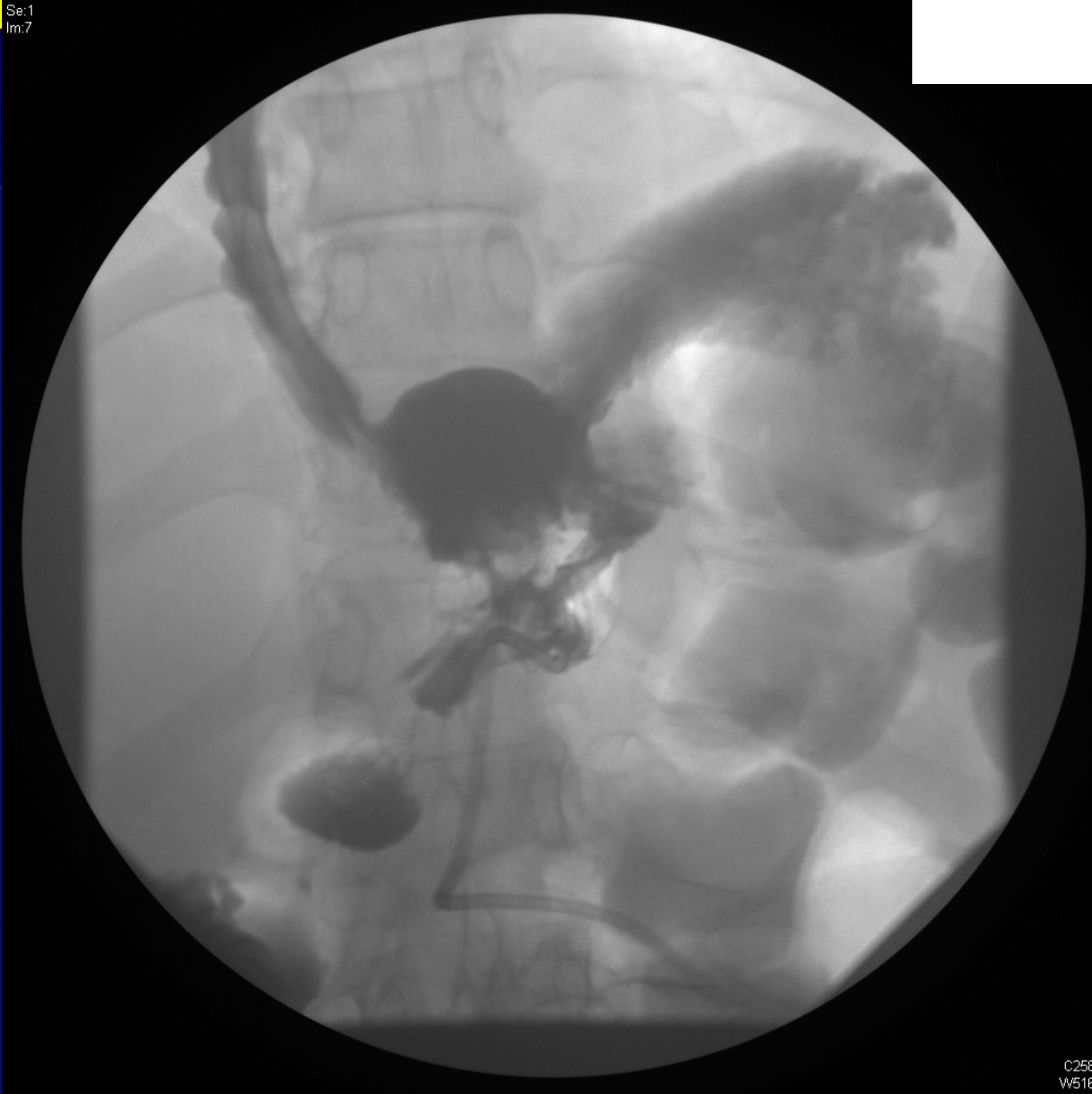


# POD #1 (9/20) – UGI

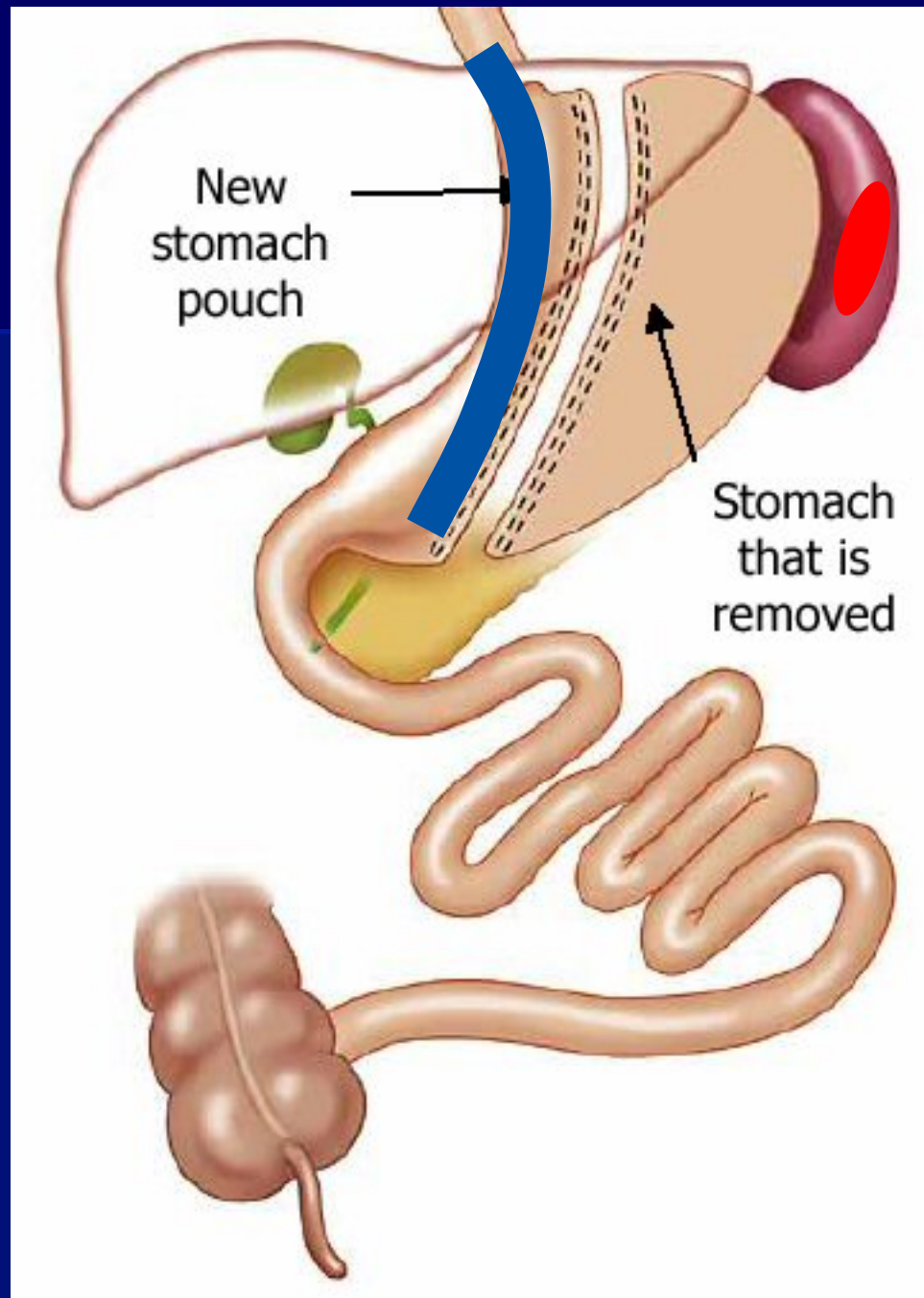
Se:1  
Im:7



# POD #7 (9/26) – Repeat UGI

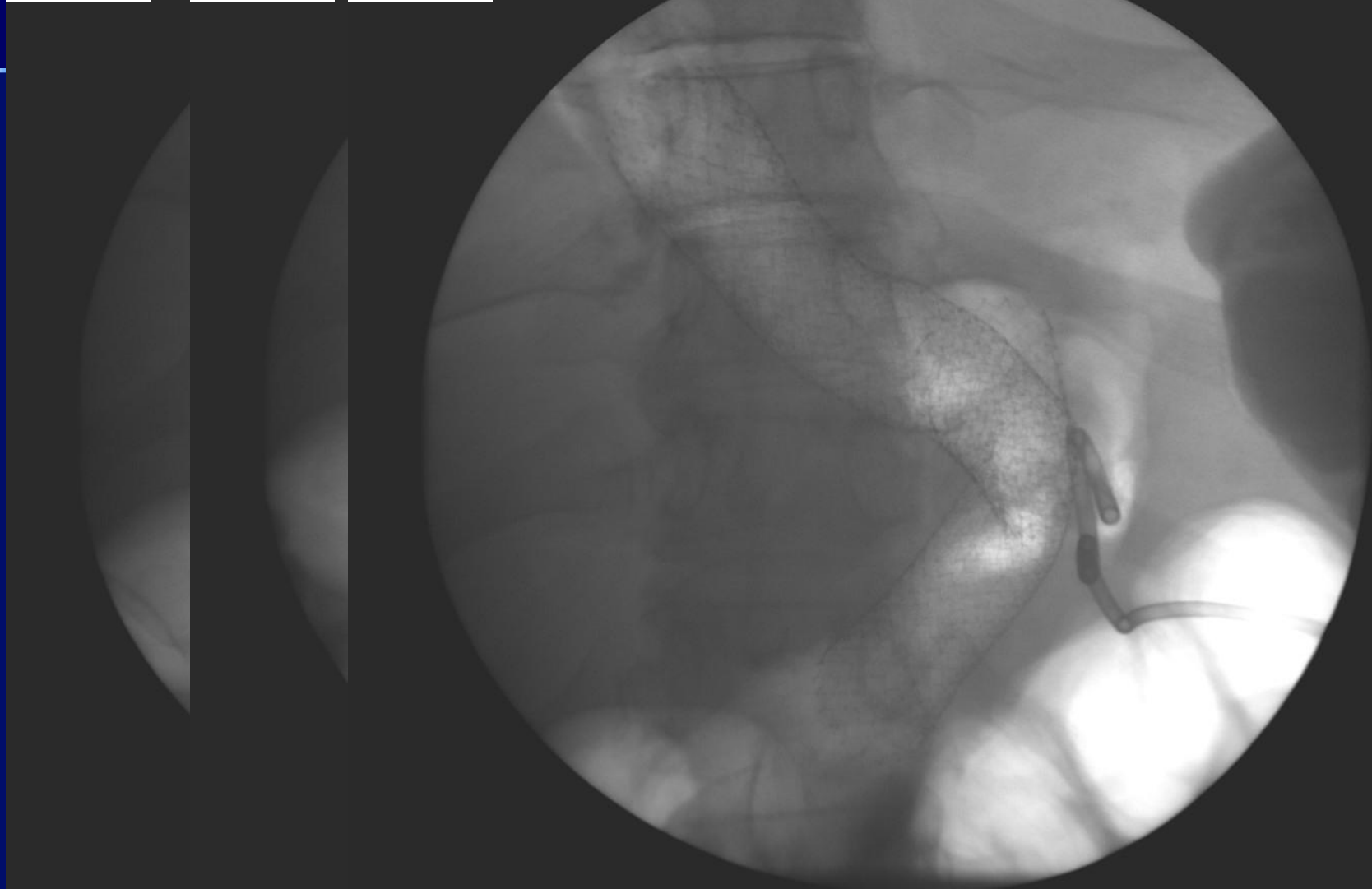


# Gastric Sleeve





# POD #8 - Fluoro



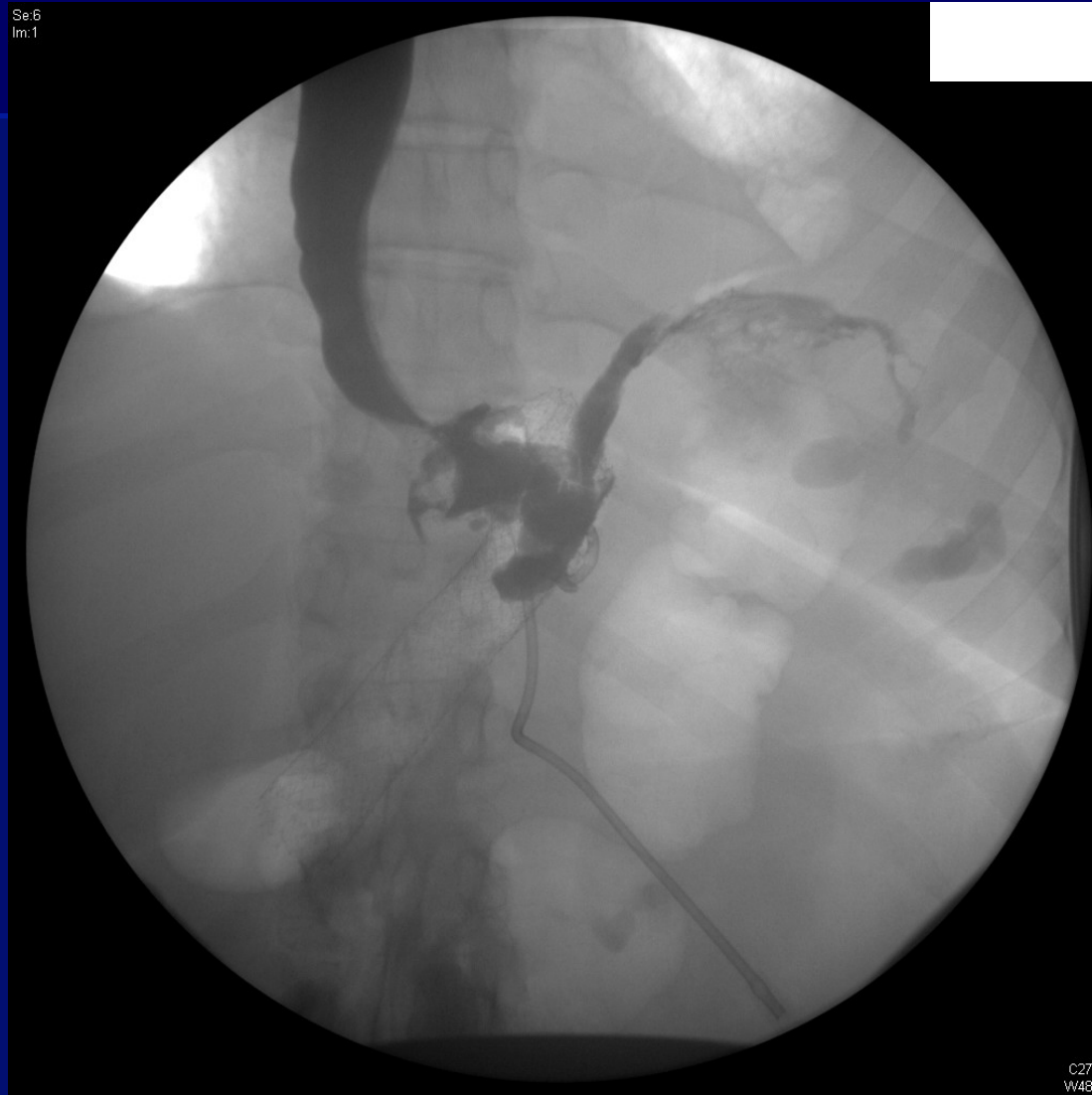
1.02  
Yml

1.02  
Yml

1.02  
Yml

1.02  
Yml

# POD #13 (10/2) – Repeat UGI

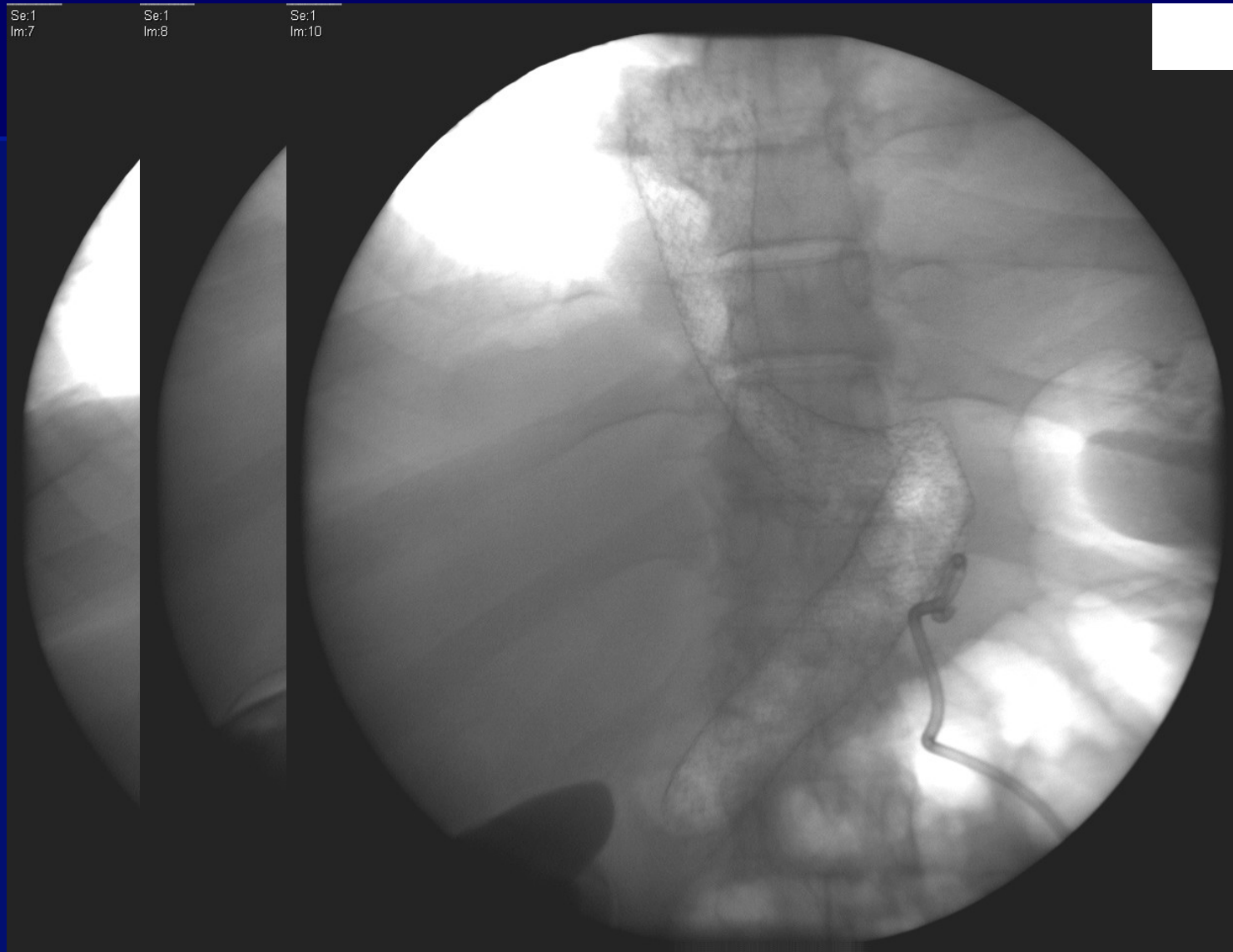


# POD #14 – Fluoro

Se:1  
Im:7

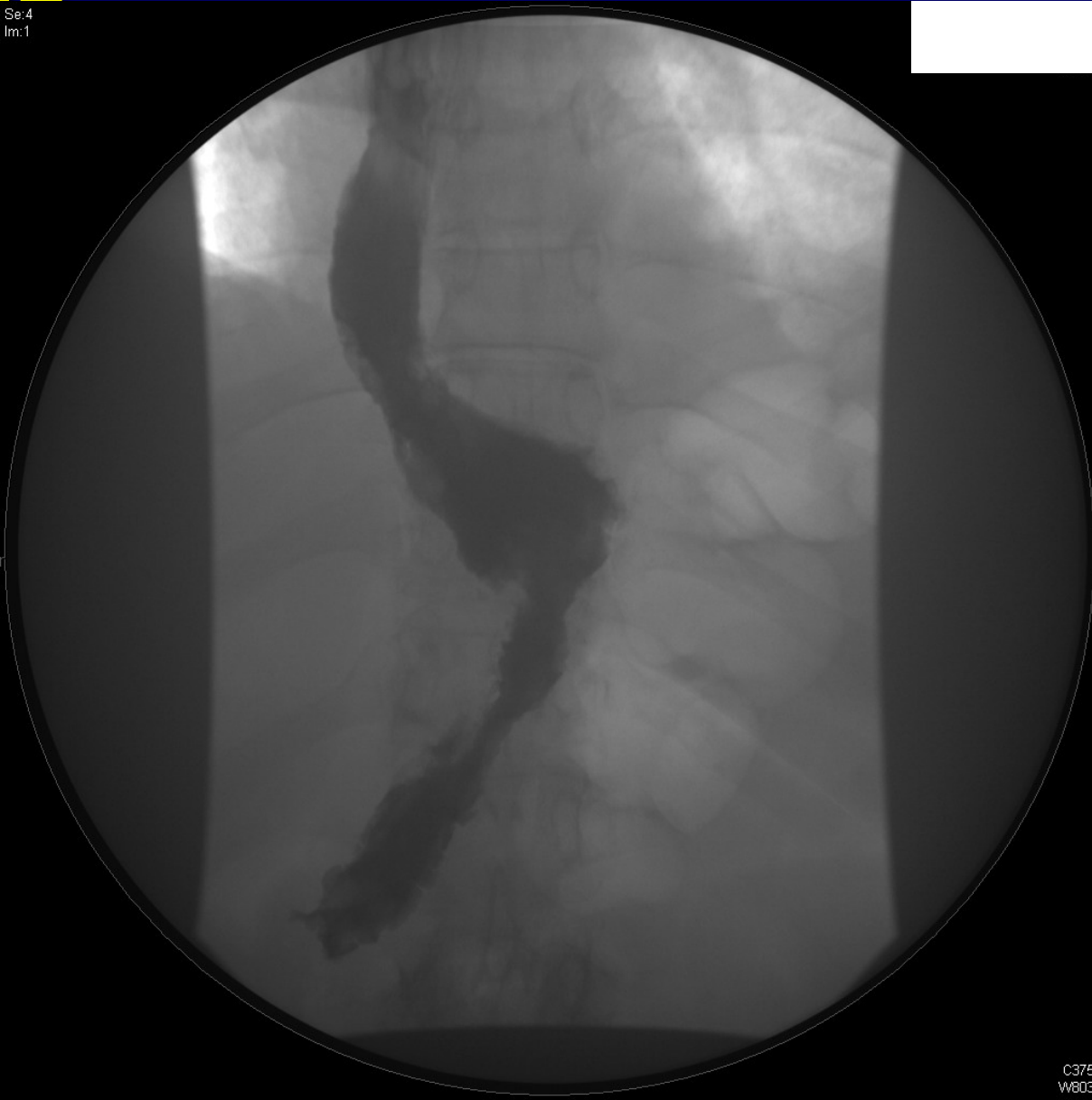
Se:1  
Im:8

Se:1  
Im:10



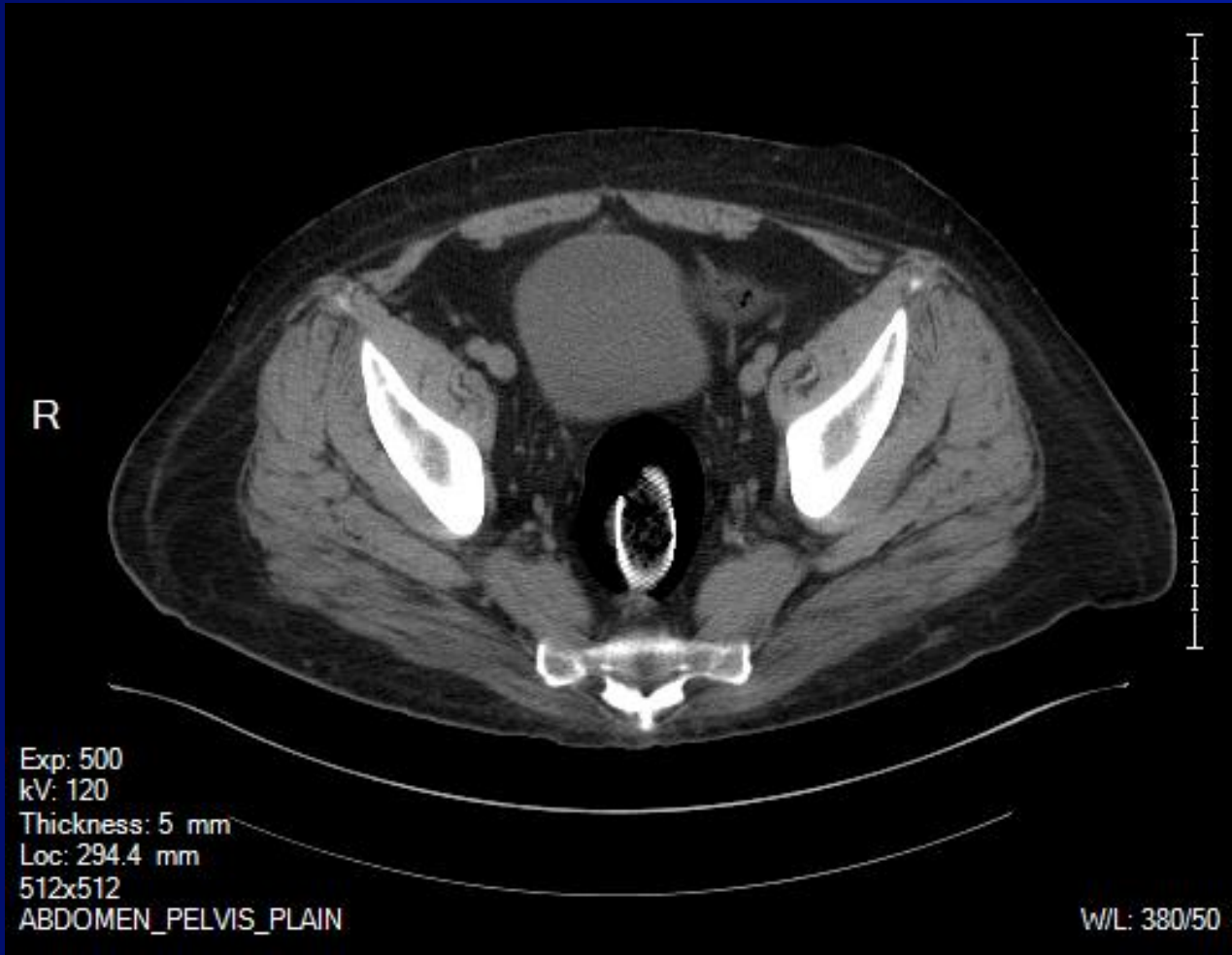
# POD #45 (11/3) – repeat UGI

Se:4  
Im:1



C375  
W803

# Stent Migration



# Clinical Vignette

## Esophageal Stent

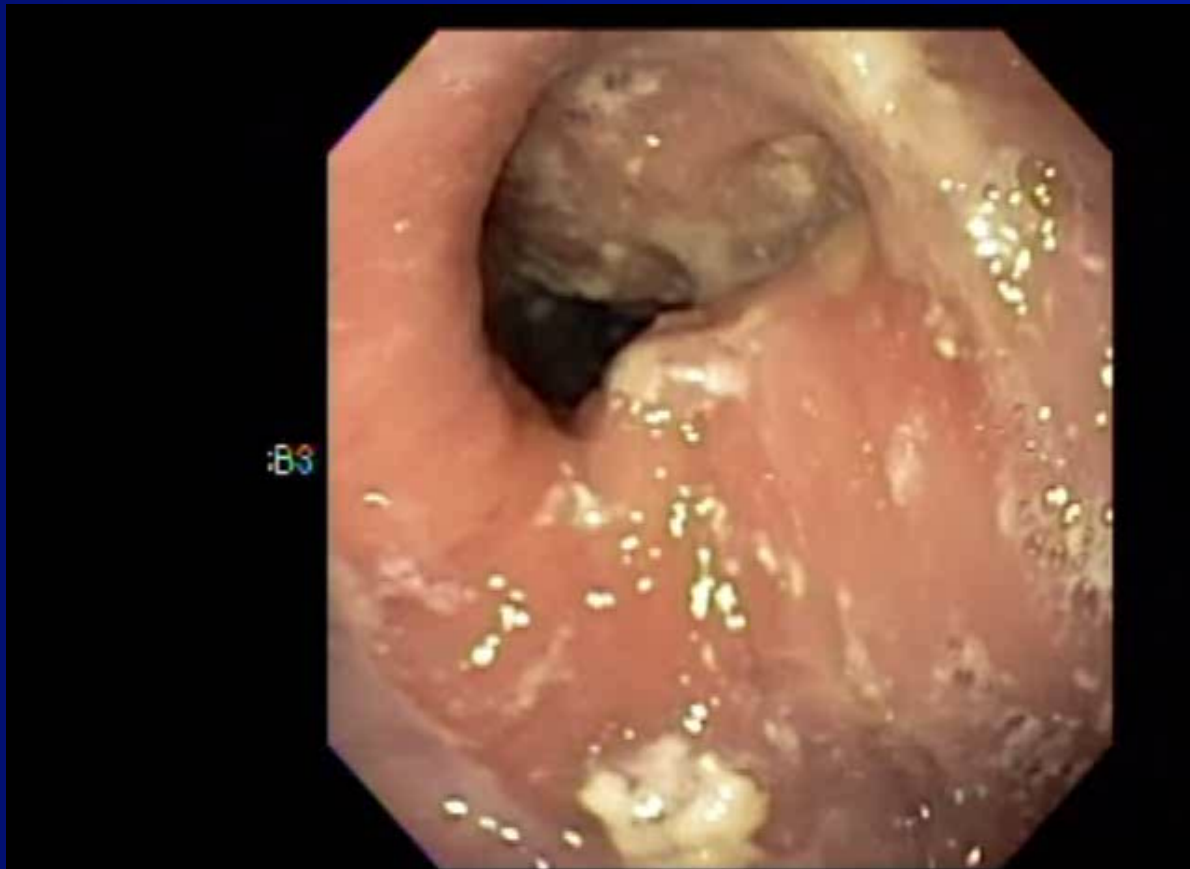
### Stent removal : Proximal method



# Clinical Vignette

## Esophageal Stent

### Stent removal : Distal method

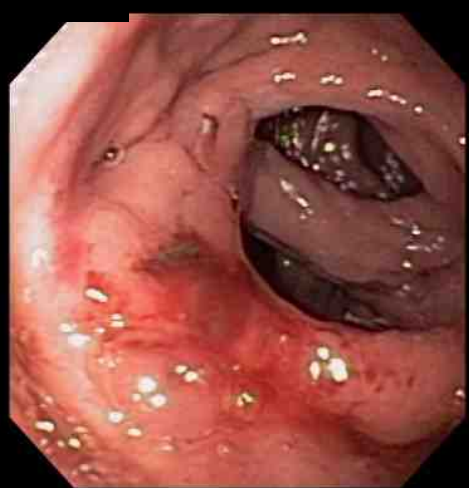


# Foreign Body

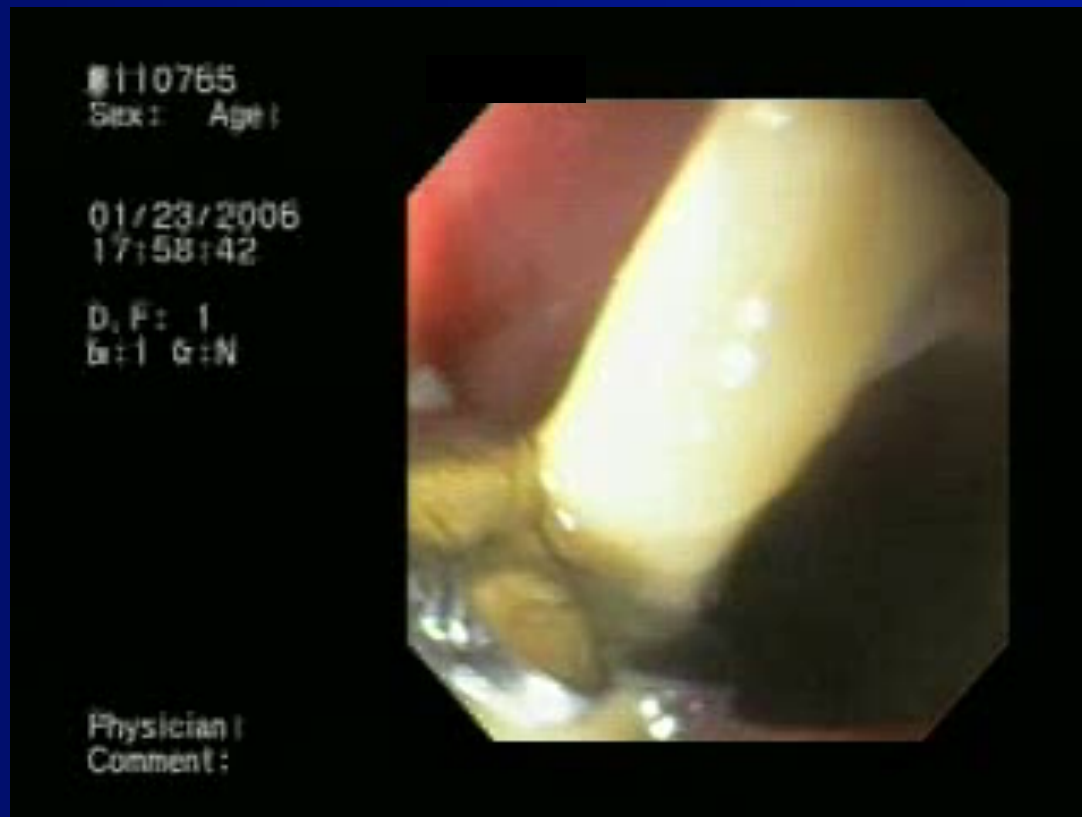
- Etiology
  - Erosion into intestinal lumen
  - Presentation- ulcers / fistula
- Commonly encountered
  - Suture
  - Staples
  - Bands (silastic, Lap, Mesh)



# Foreign Body- Suture



# Foreign Body- Eroded band post RYGBP



# Conclusion

- Many surgical complications are amenable to being managed endoscopically
- Discuss all possible options for your surgical complications prior to proceeding with take back to the OR

# Future in Surgical Endoscopy

