

# Minimising Complications During UGI Stricture Dilatation



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## Considerations:

### **Etiology**

**What dilatation technique to use**

**What diameter to dilate to**

**What duration of dilatation is best**

**At what intervals should I be dilating**

**When is a stricture refractory**

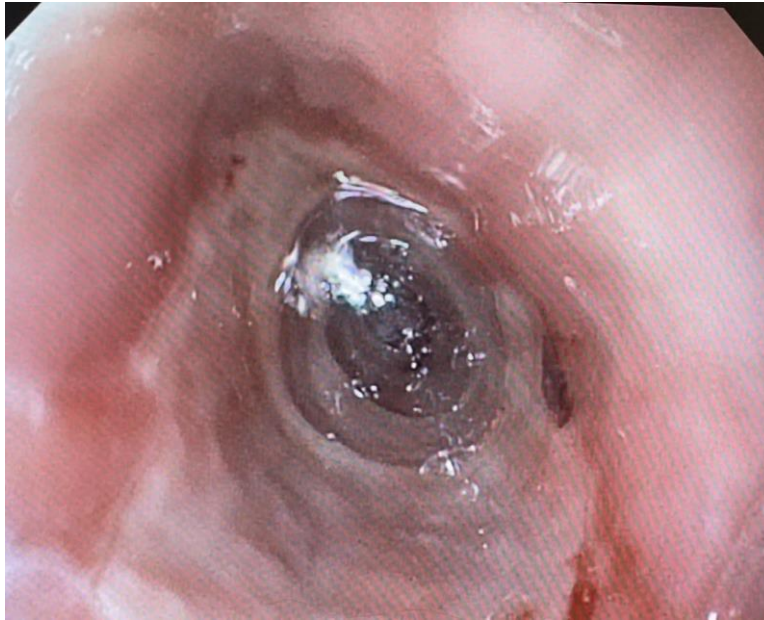
**Reasons for failure**

**Options to try with refractory strictures**

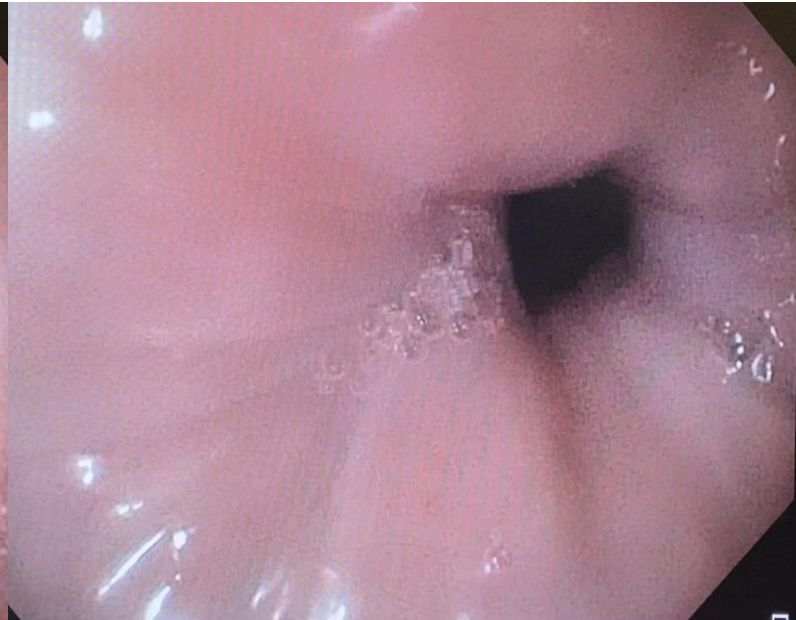
**How to manage a perforation**



## Etiology:



Peptic



Caustic

**Considerations: length / residual lumen diameter / position**

# Case discussion: Step 1

**22 yr old male patient**

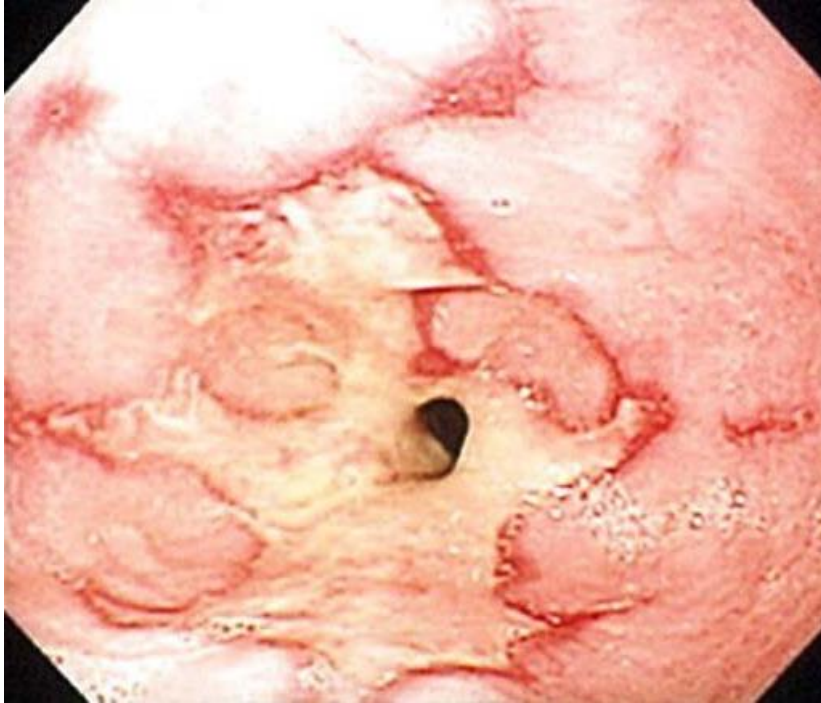
**Only tolerating liquids on referral**

**Progressive dysphagia 6 months**

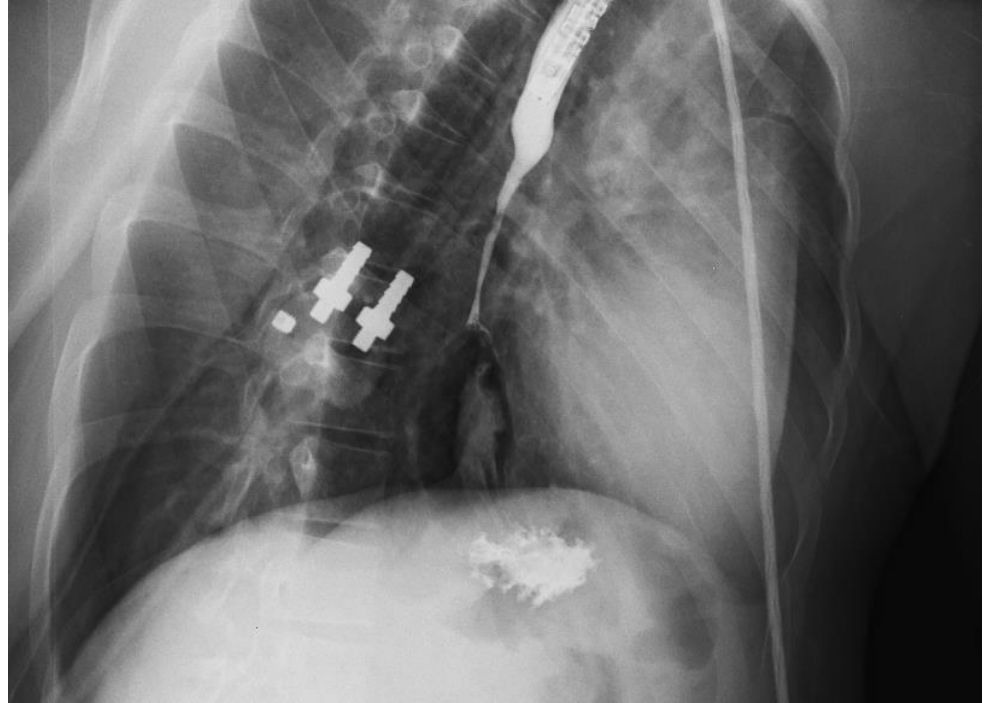
**Recently started on ARV's**



## Case discussion:



**2mm opening at 30cm  
Biopsy = severe oesophagitis**



**4 cm stricture above HH**

# Case discussion: How would you like to dilate this?



## Case discussion: Bougie or balloon?

**No definitive proof either better – personal and stricture preference**

**Bougie: biaxial**

**at least know dilated to bougie size (not guaranteed with balloon)**

**cheaper**

**reusable**

**Biaxial forces: Radial forces complemented by longitudinal forces**

**Can “feel” stricture**

**Balloon: can get through tighter strictures**

**not guaranteed to reach diameter**

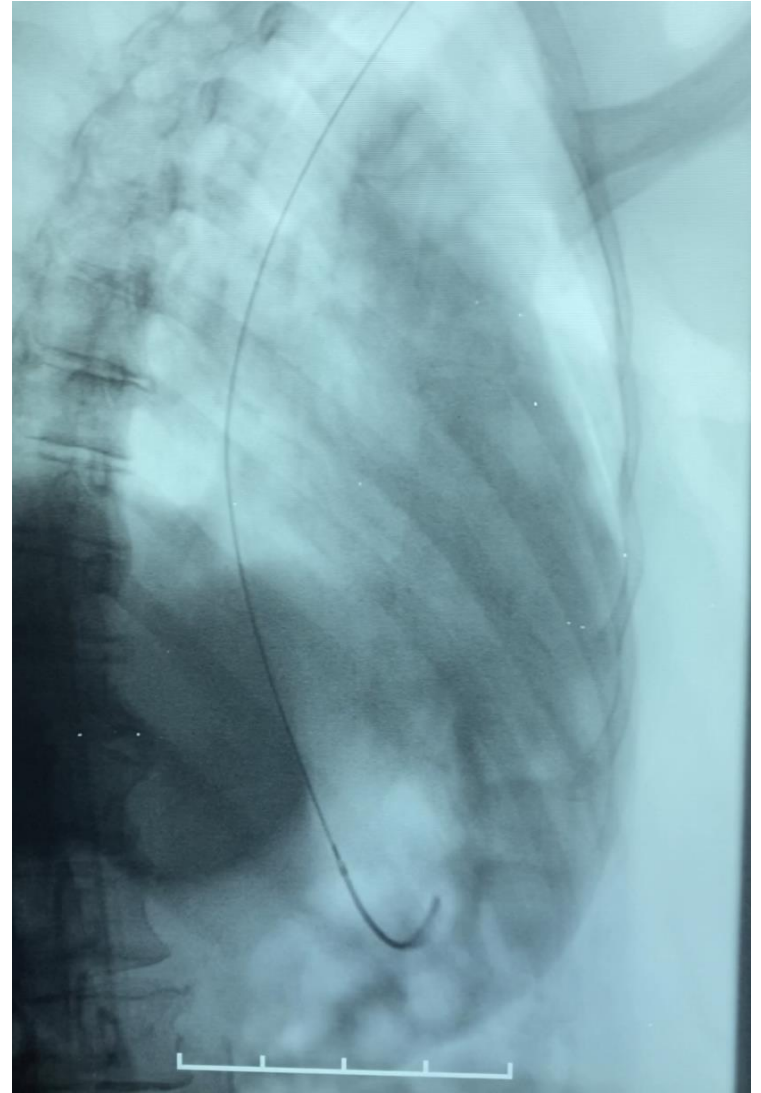
**requires no scope removal**

**can visualise stricture during procedure**

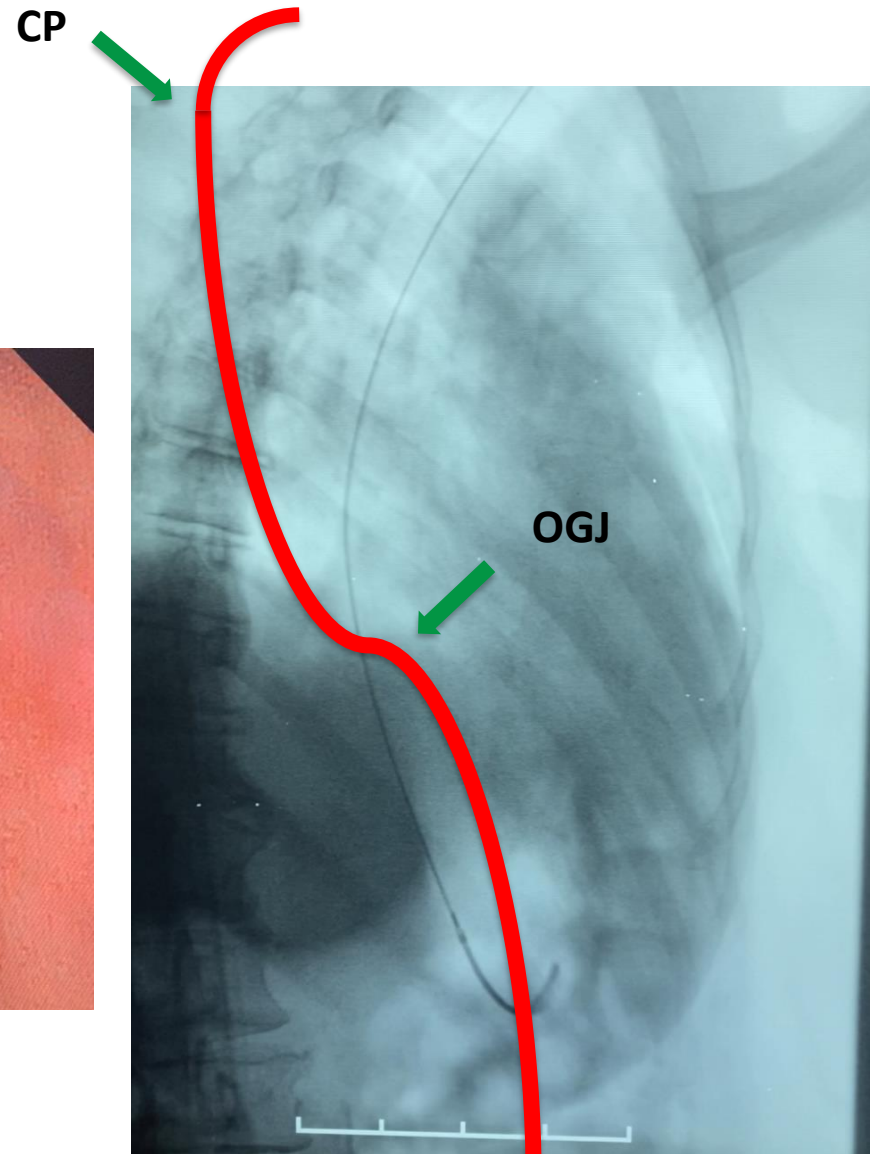
**Radial force**

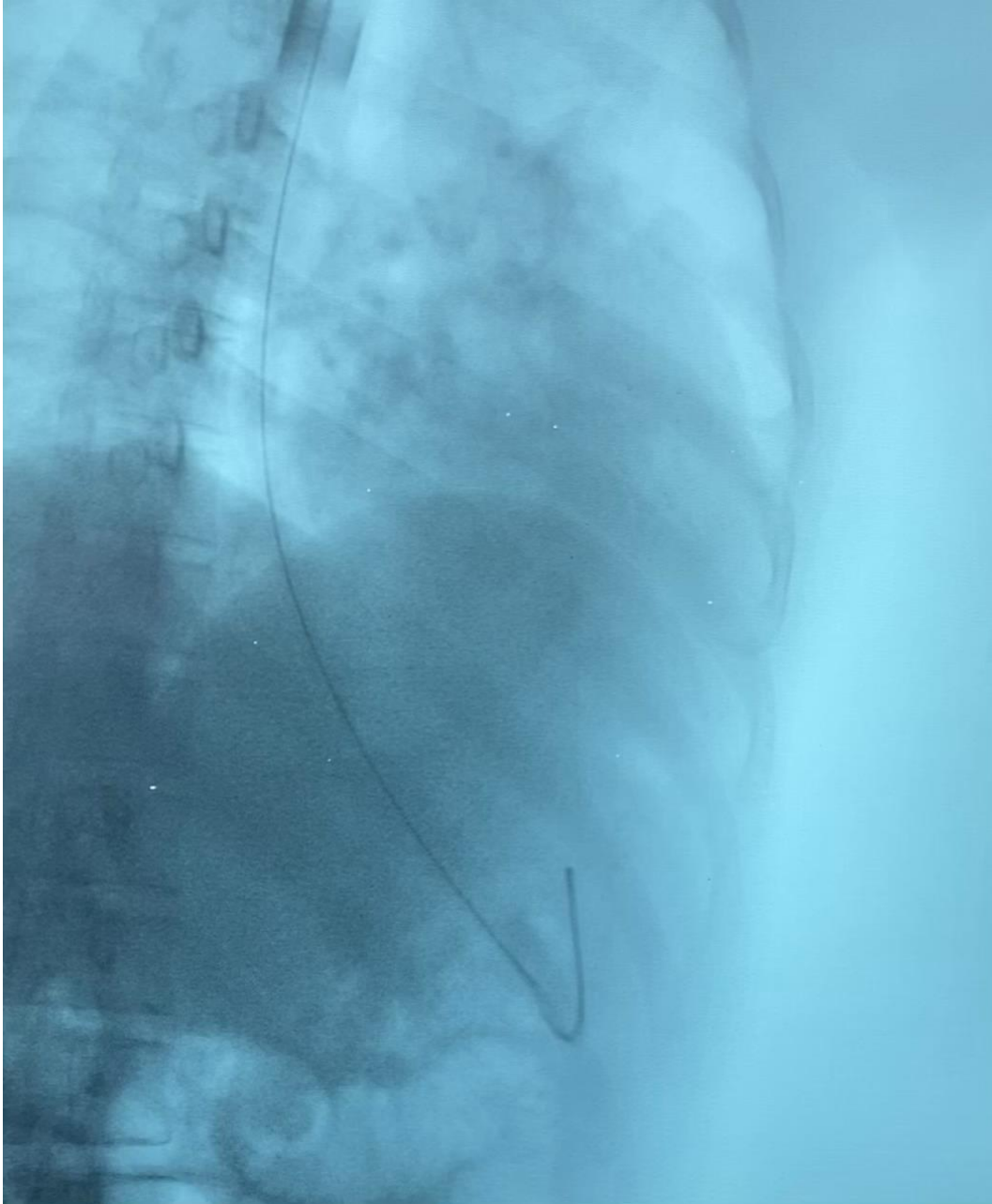












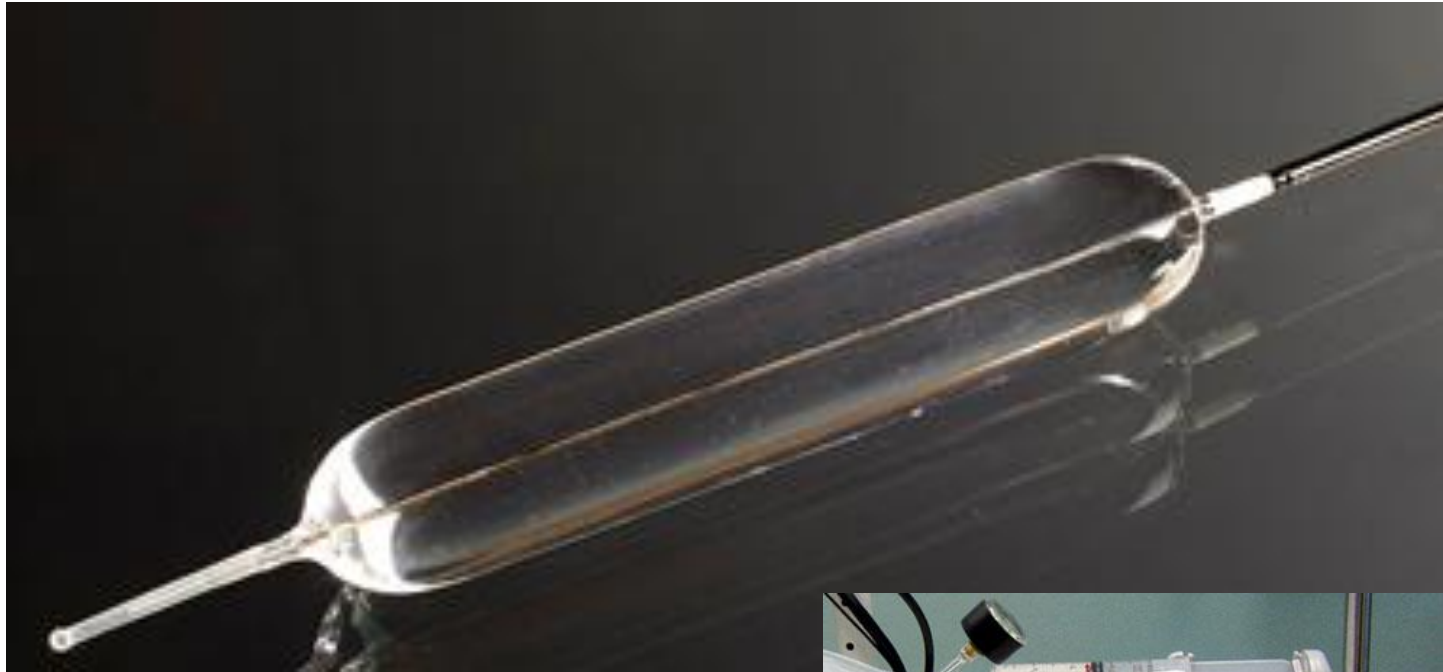
# Bougienage: Rule of three vs Rule of six?



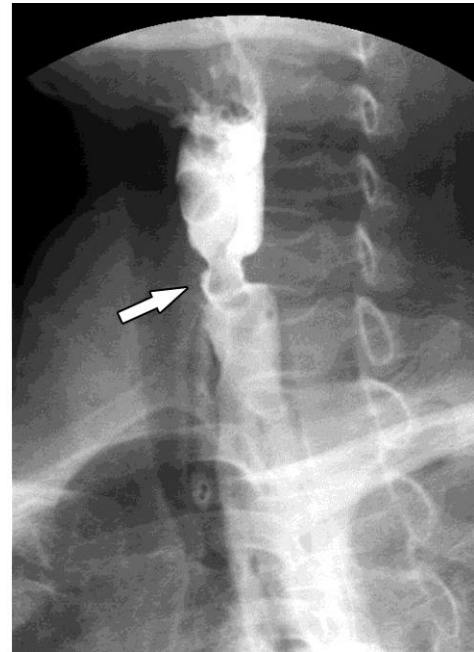
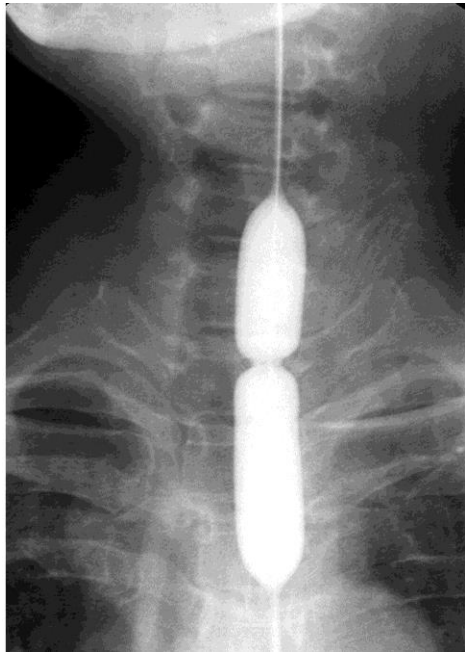
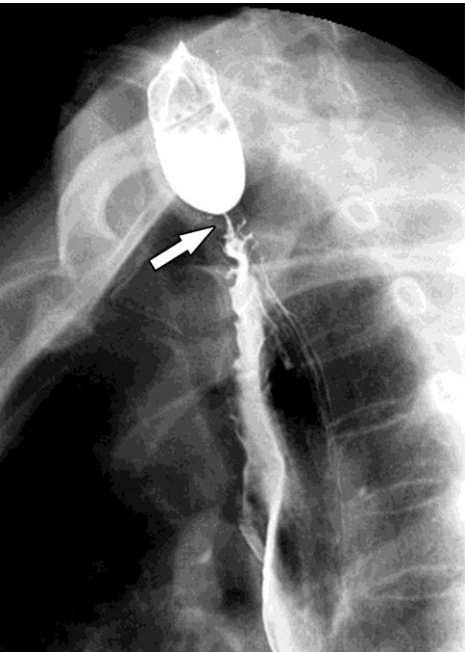
Grooteman *et al* Gastrointestinal Endoscopy 2017

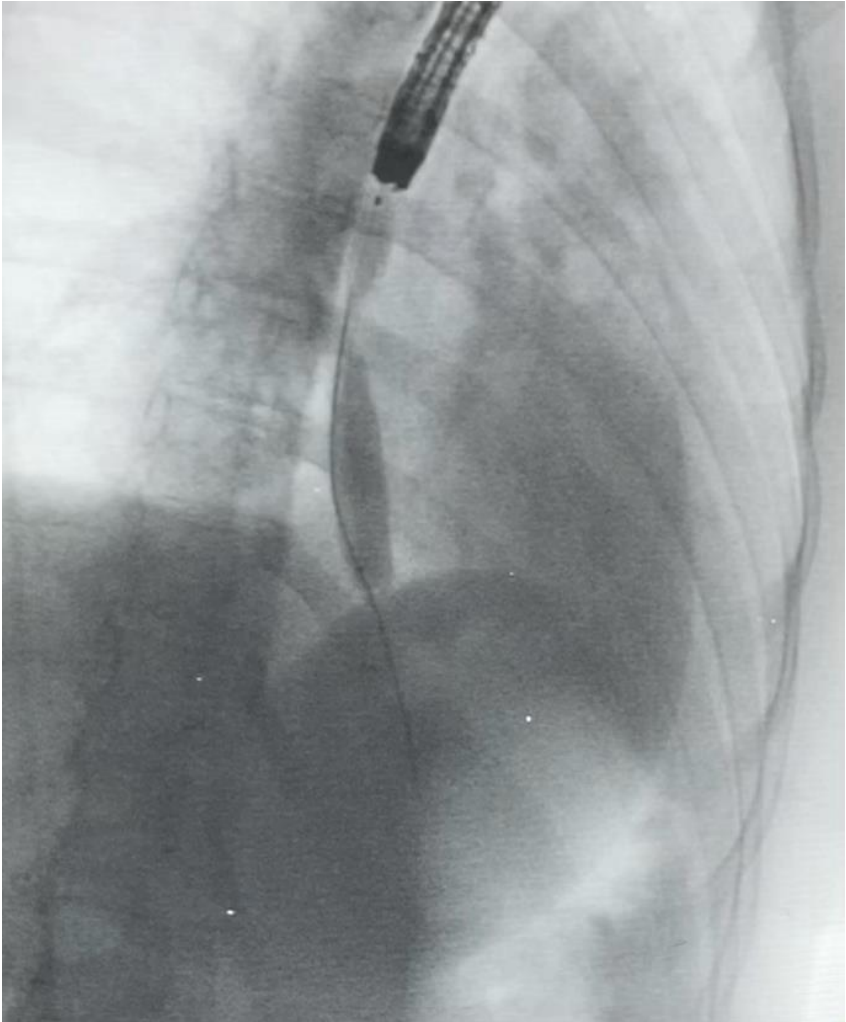
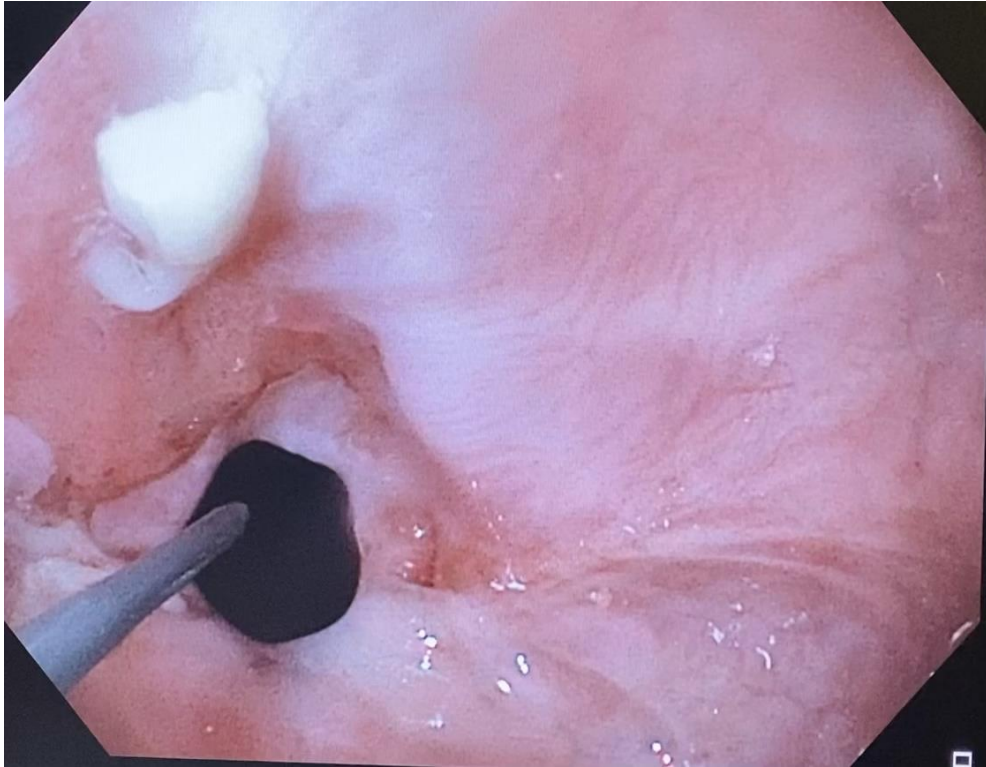


# Pneumatic balloon dilatation



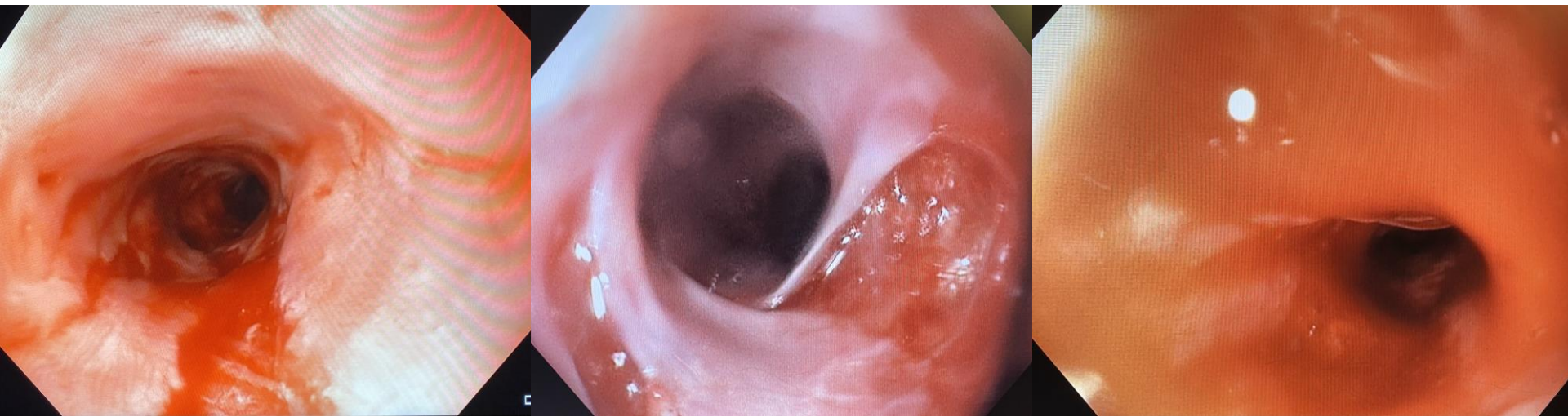








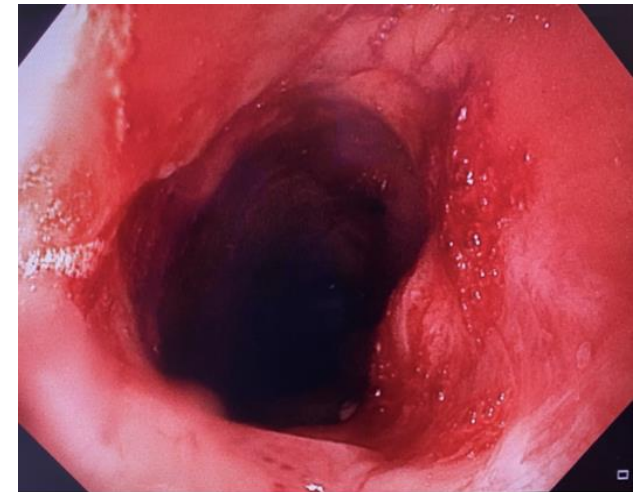
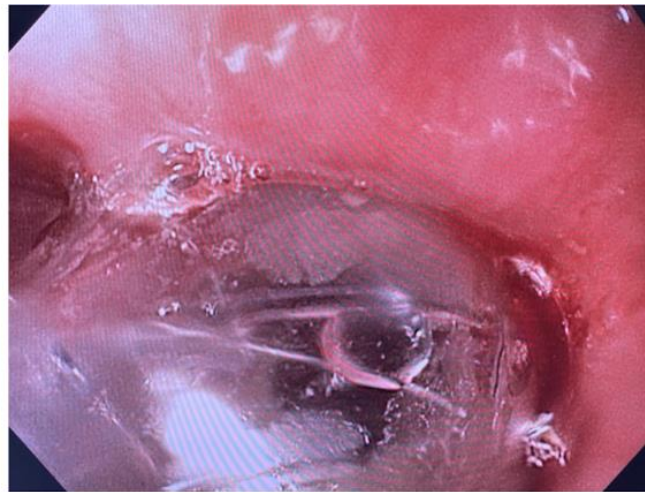
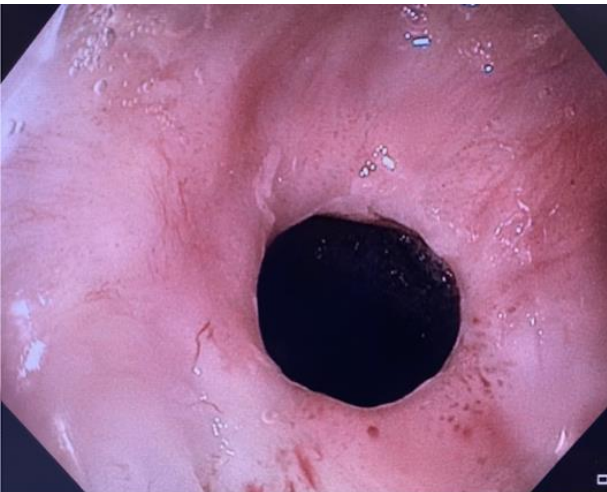








## Any advice regarding insufflation size with PBD?



**Guided by: residual lumen, length and etiology – 12mm?**  
**Exception: anastomotic strictures more resilient generally – 18-20mm**

Cubas *et al* Surgical Endoscopy 2021

## Any advice regarding insufflation time?

Comparisons have been made ranging from 10 secs to 5 mins

Equally effective stricture dilatation; no benefit after 3 mins

Less pain



Probably opt for shorter time – our practice 30secs

Wang *et al* Surg Endoscopy 2022



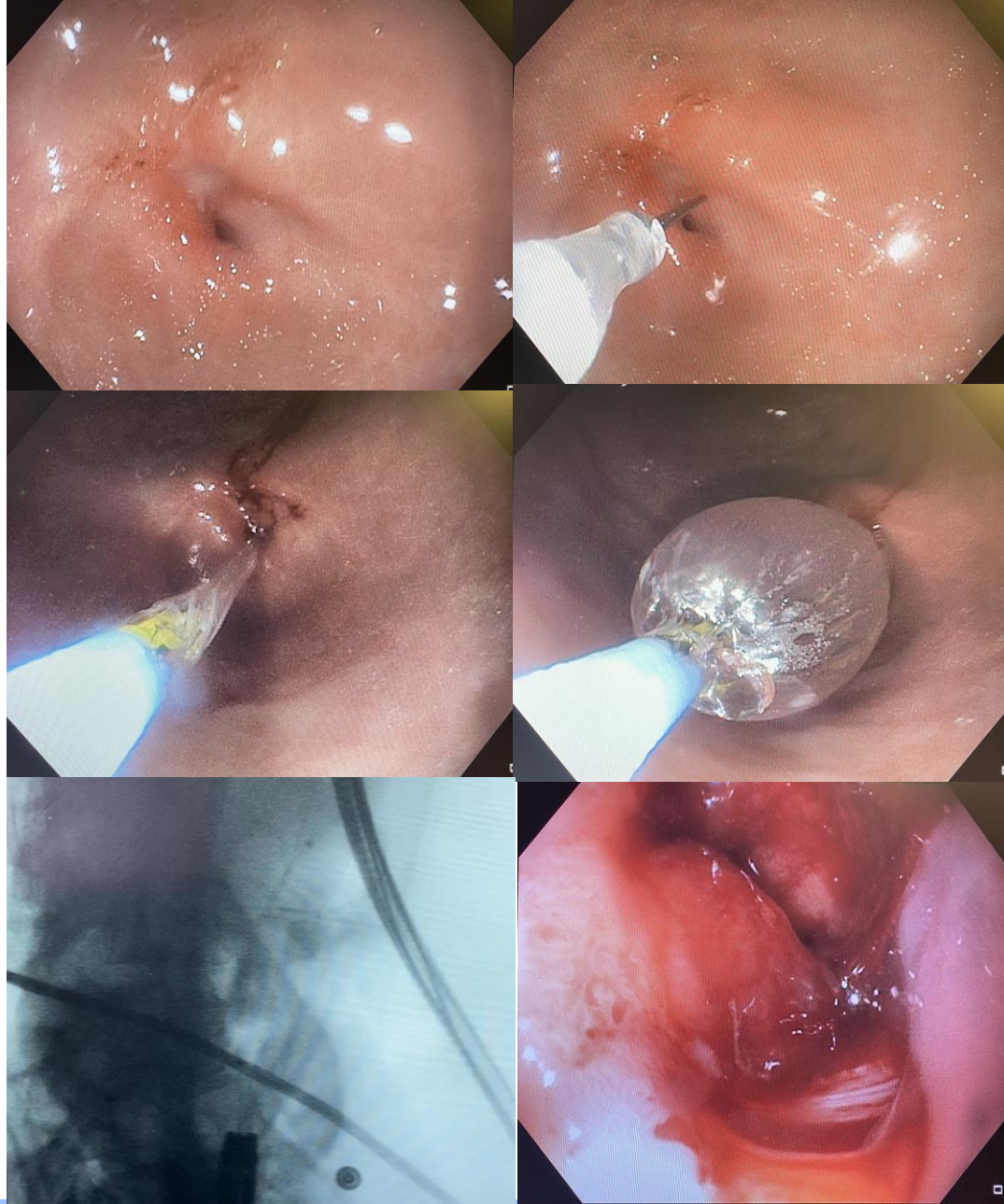
## Dilatation benign pyloric strictures



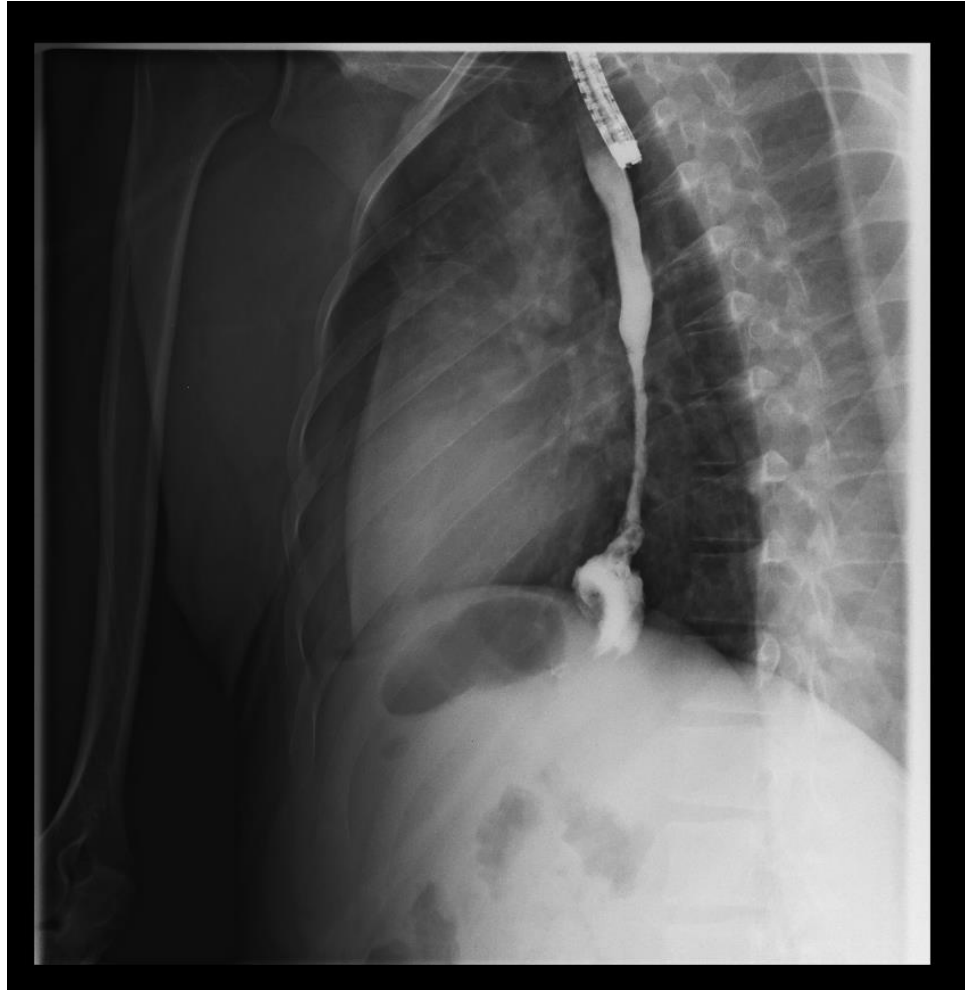
**Locally:  
frequently PUD related  
then caustics**

**15 mm resultant lumen deemed  
successful endoscopic outcome**





## Case discussion: after 10 months of 1-2 weekly dilatations



## Alternative options: Medicinal

**Intra-lesional steroid injections:**

**Triamcinolone acetate 20-40mg into 4 quadrants**

**Results “encouraging”**

**(Dexamethasone 8mg – 2mg into each quadrant)**

**Mitomycin C: topical vs injected**

**Most reports in paediatrics with topical application**

**“Potential benefit” in adults**

Bartel *et al* Digest Liver Dis 2016

Daoud *et al* Digestive Diseases and Sciences 2022



# Alternative options: Incisional therapy

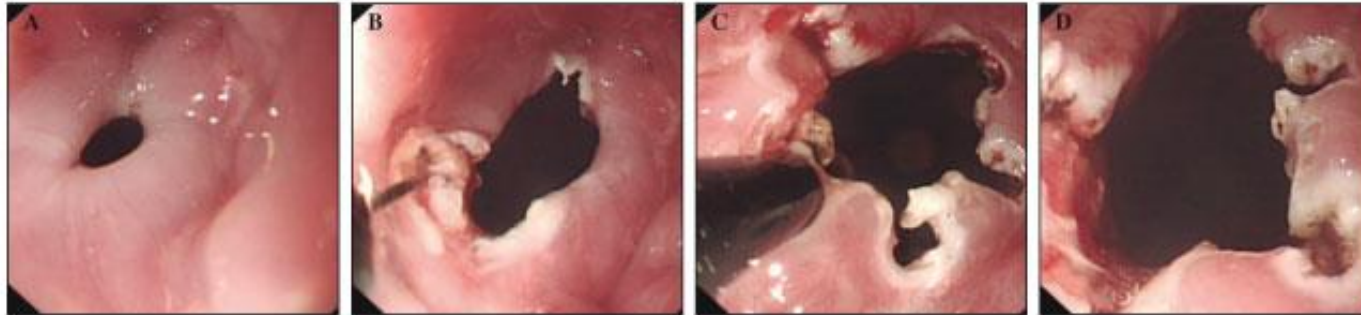
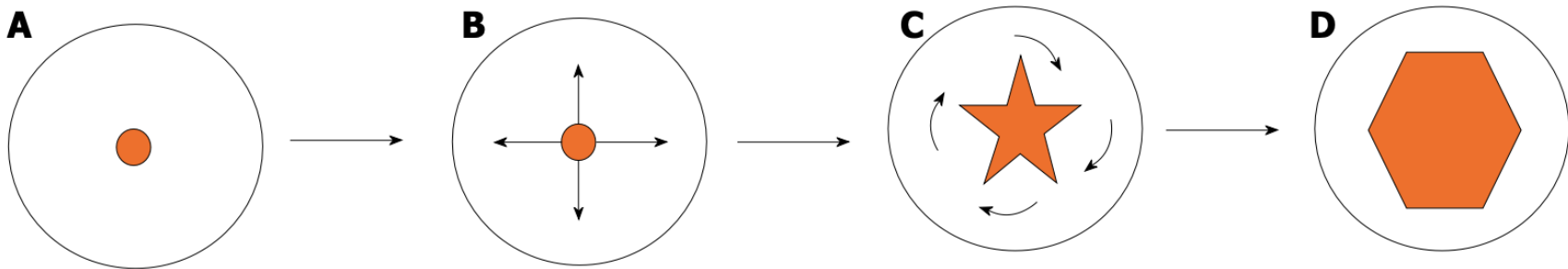
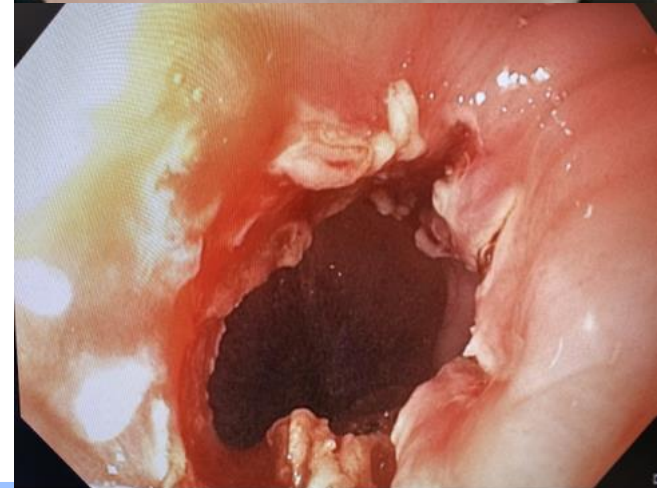
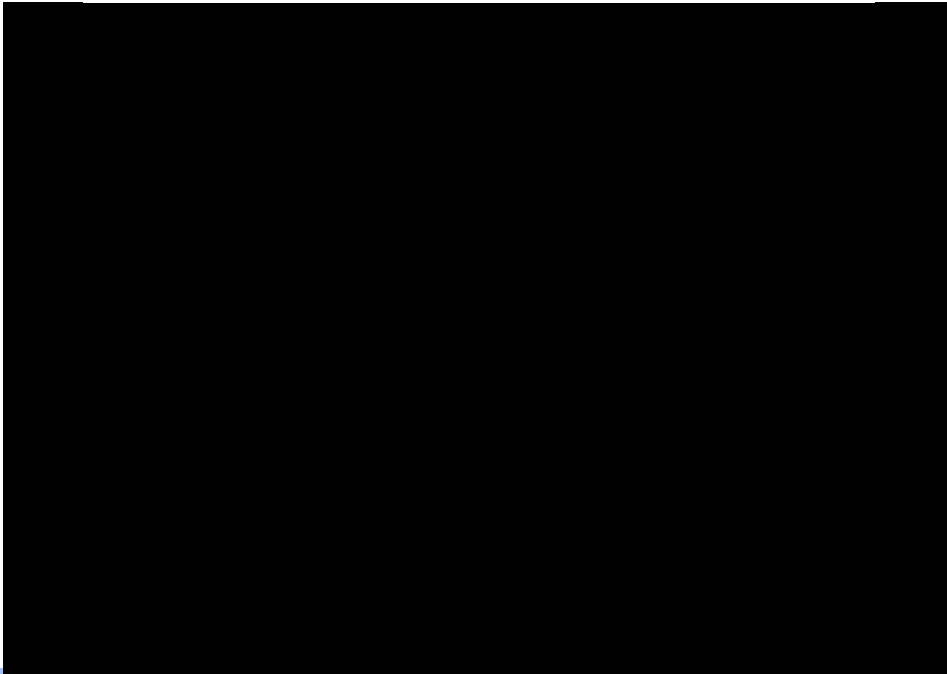
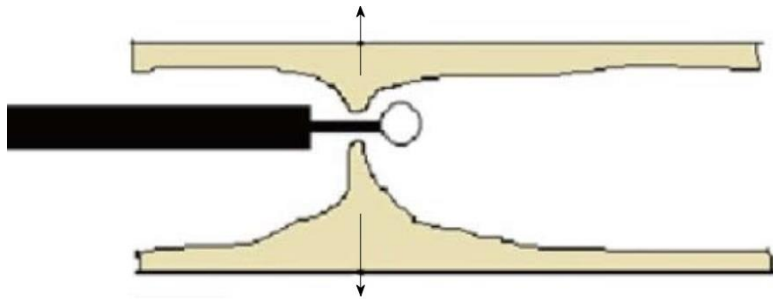


Fig. 1. Procedure of endoscopic incision. A. Preoperative stricture. B and C. Radial endoscopic incision with an IT knife. D. Dilated esophageal lumen after incision.



Poincloux *et al* Expert Rev Gastroenterol Hepatol 2017  
Tan *et al* 2016  
Samanta *et al* World J Gastrointest Endosc 2015

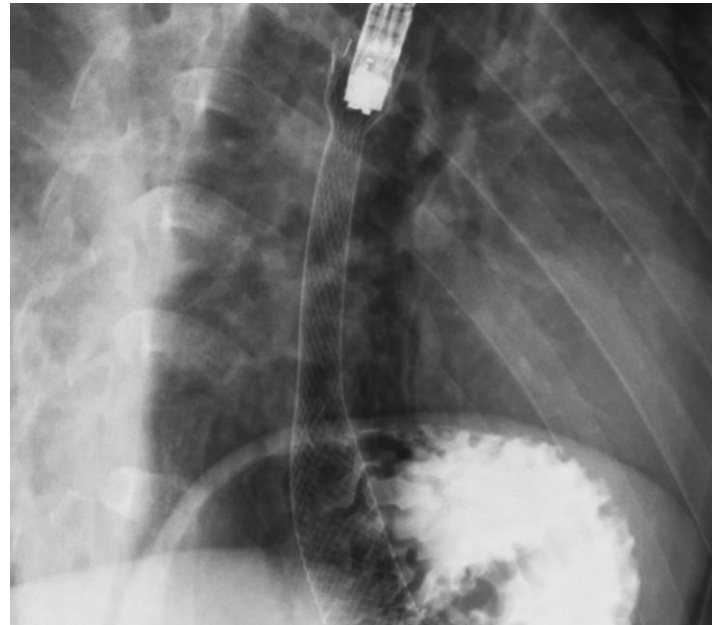
# Alternative options: Incisional therapy





# Alternative options: Stenting

Self expanding plastic stents vs fully covered SEMS vs biodegradable stents



Daoud *et al* Digestive Diseases and Sciences 2022



# Refractory/recalcitrant oesophageal strictures

Successful treatment in 70 to 90%

40% of patients require more than 3 dilation sessions

**Refractory stricture** = the inability to successfully achieve a diameter of 14 mm over five sessions of dilation done at 2-week intervals

**Recurrent stricture** = the inability to maintain an adequate luminal diameter for 4 weeks after achieving the target diameter of 14 mm

Teitelbaum *et al* Gastrointes Endosc 2004  
Siersma *et al* Gastroenterology 2019  
Daoud *et al* Dig Diseases and Sciences 2022



# Case discussion: Causes for refractory/recurrent oesophageal strictures?

**Peptic (GORD)**

**Infective (candida/CMV/TB/HSV)**

**Caustic**

**Pill-oesophagitis**

**EoE**

**Radiation strictures**

**Idiopathic**



## Radiation strictures:

**Delayed onset (30 days) from time of radiation injury**

**High long-term recurrence rate of up to 33 %**

**Injected steroids do not promote remediation of radiation strictures**

**Improvement post radiation strictures following laryngectomy can be achieved but require frequent dilations**

**Certain clinical and procedural predictor patients at high risk of refractory strictures**

Argawalla *et al* Surg Endosc 2015





## Case discussion:

**22 yr old male:**

**Regular serial bougie dilatation of stricture >10 months**

**Long 5cm stricture with hiatus hernia below (35cm)**

**Iatrogenic perforation - covered SEMS**

**Distal migration of stent – repeatedly replaced, eventually removed**

**Increasingly difficult dilatations required every 1-2/52**



# Case discussion: Why are we not winning?





# Pill oesophagitis

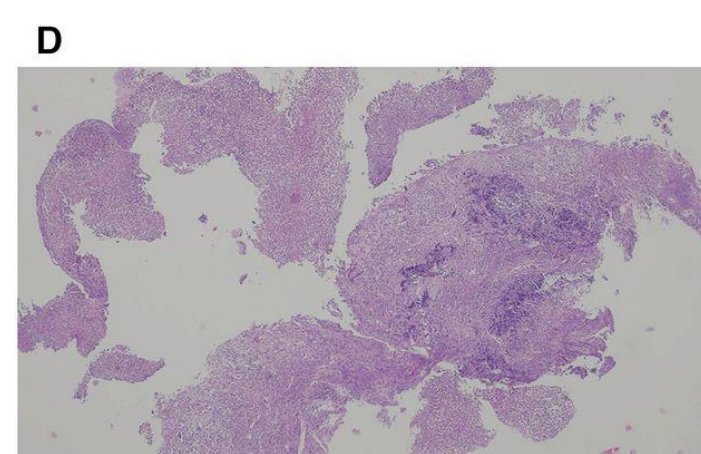
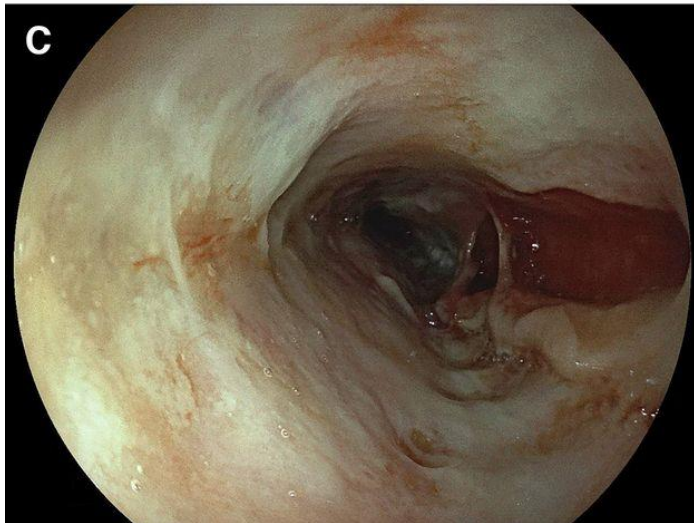
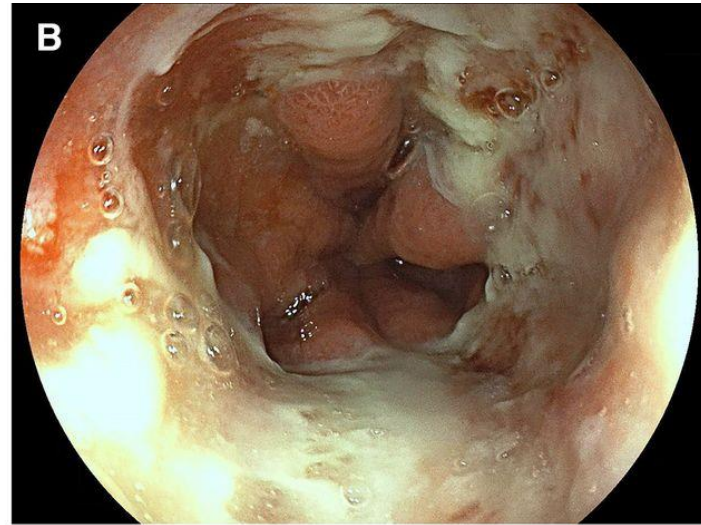
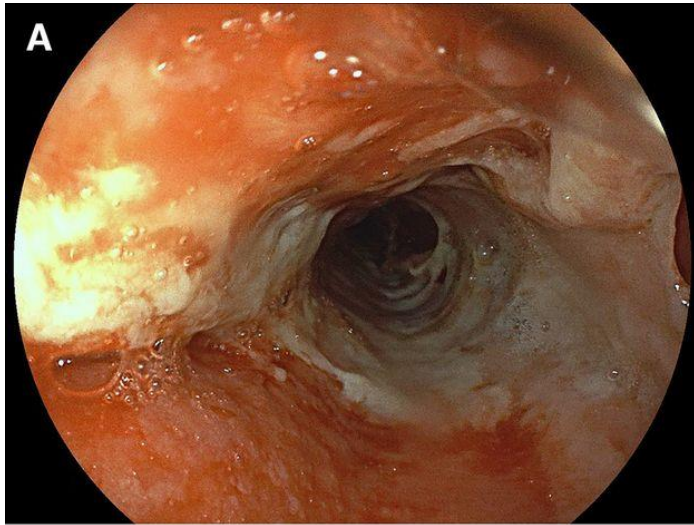
**Injury related to prolonged mucosal contact with a caustic agent**

**4 mechanisms:**

- **production of caustic acid (ascorbic acid, ferrous sulphate) or**
- **alkaline (alendronate) solution**
- **hyperosmolar solution (potassium chloride)**
- **direct drug toxicity (tetracycline)**

**Risk factors for injury related to swallowing position, fluid intake, pill size, stricture, dysmotility**



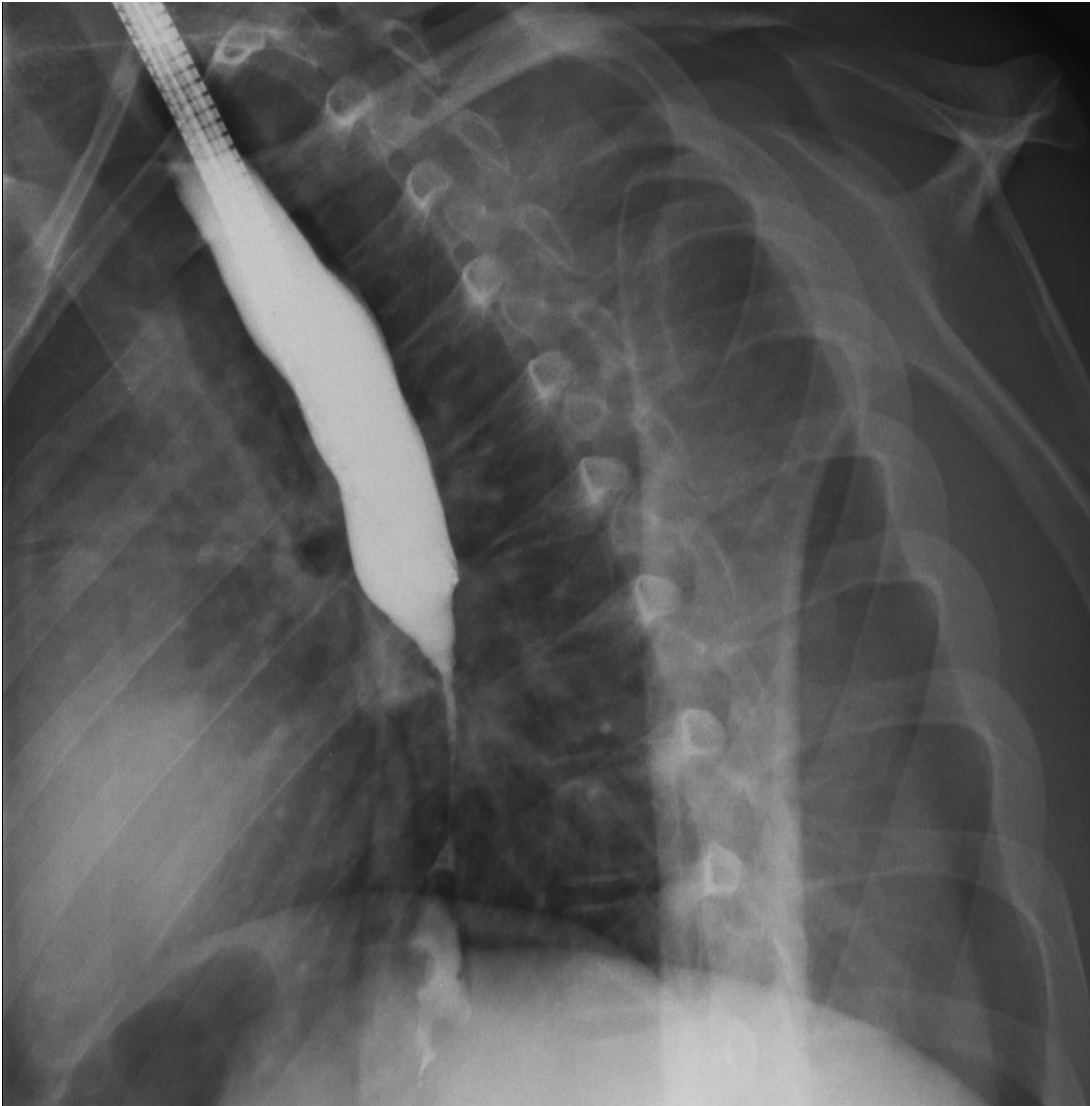


Costa *et al* / BMJ Case reports 2022

## Common culprits for pill oesophagitis:

- **Antibiotics: doxycycline, tetracycline, clindamycin**
- **NSAIDS & ASA**
- **KCl**
- **Ascorbic acid**
- **Ferrous sulphate**
- **Quinidine**
- **Theophylline**
- **Antiretrovirals**
- **Bisphosphonates**

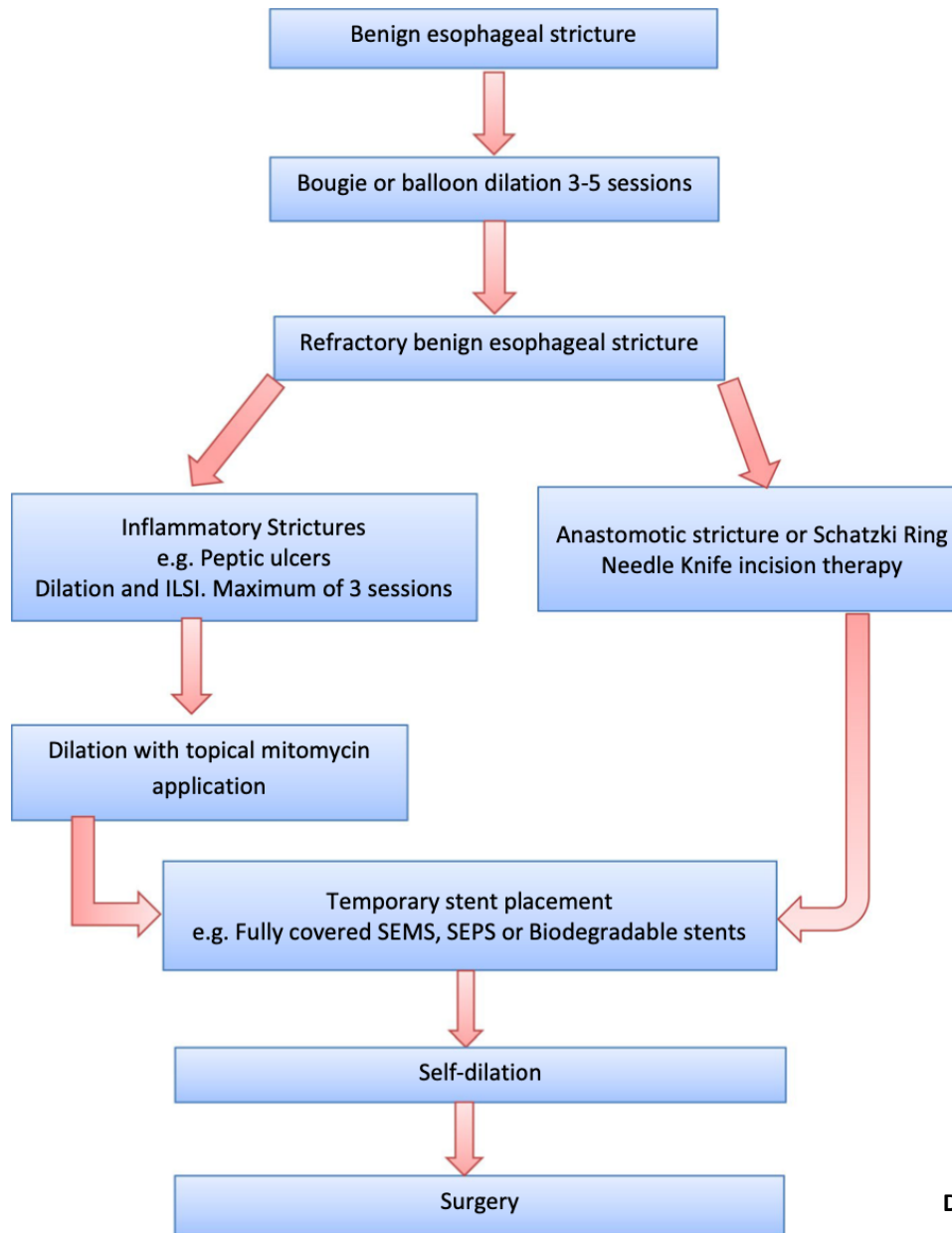




**Final result:**

**After 10 months of  
1 – 2 weekly dilatations  
plus multiple stents**

**Now what?**



Daoud *et al* Dig Diseases and Sciences 2022







**Histo:  
IgG4 mediated-  
oesophagitis**



# Pyloric dilatation



a. Endoscopic view through balloon showing fibrotic stricture band

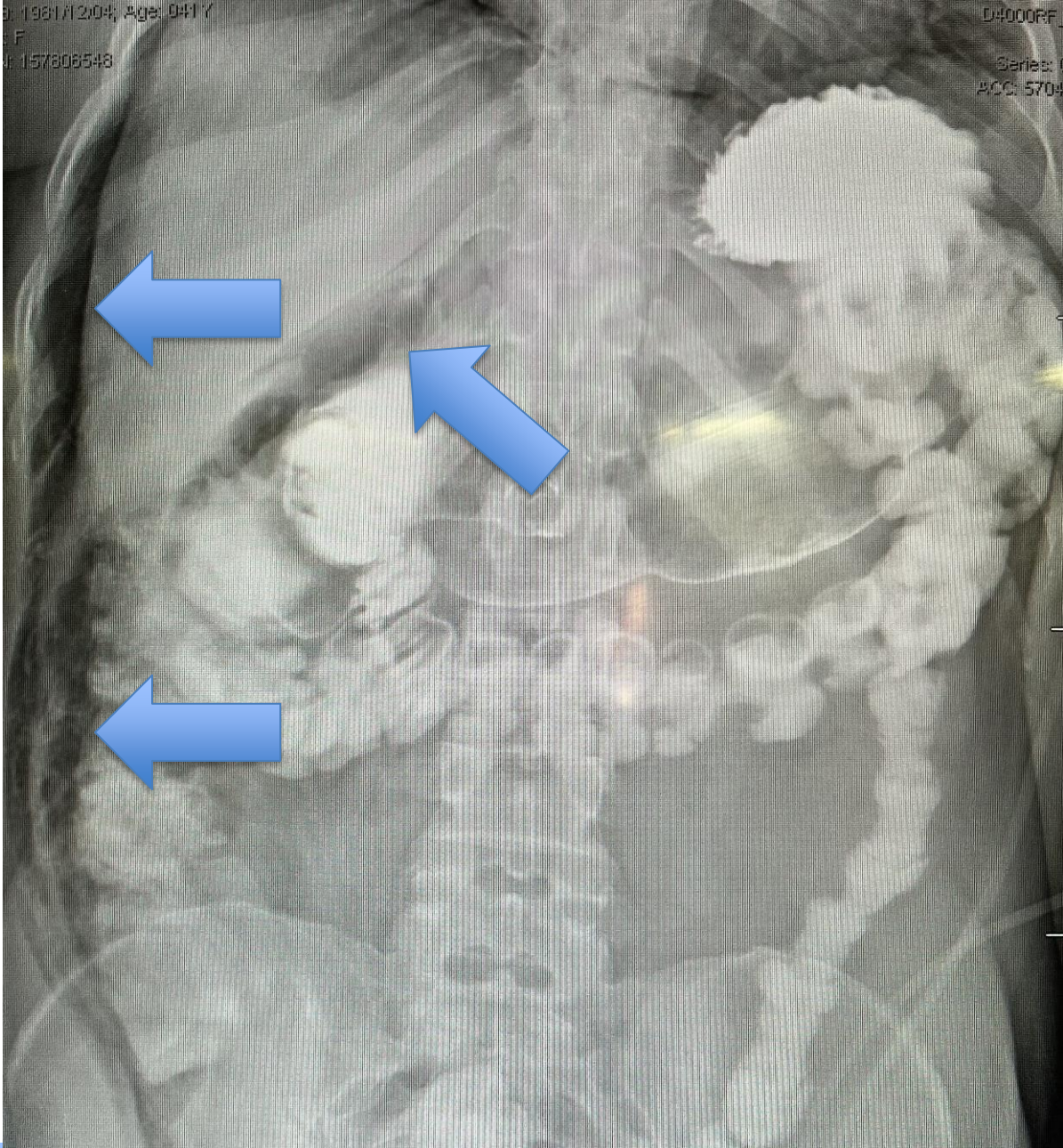
b. Fluoroscopic view of mid-balloon waist at stricture

c. Fluoroscopic view of balloon waist resolution



Dr: 1981/1204; Age: 9417  
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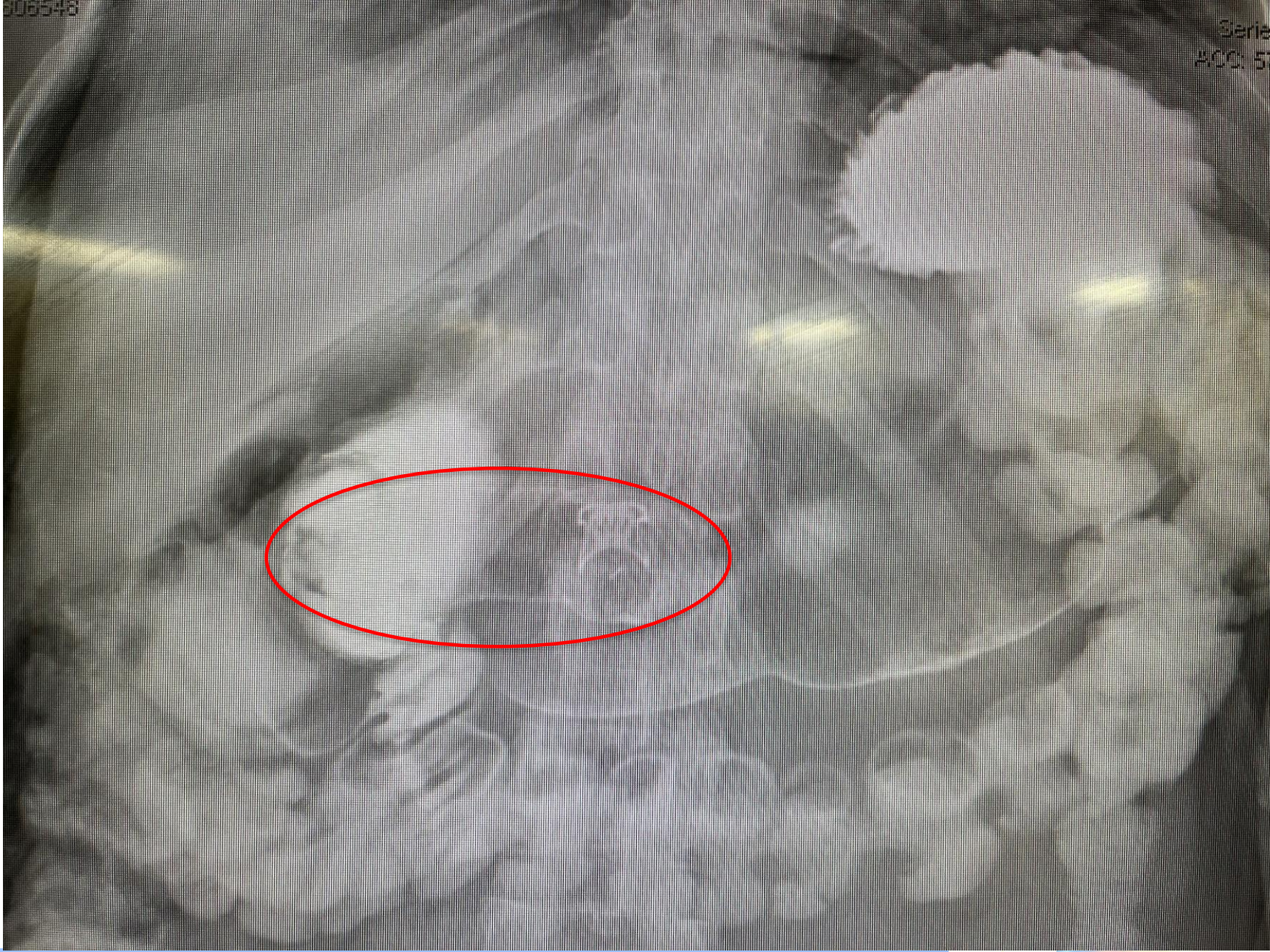
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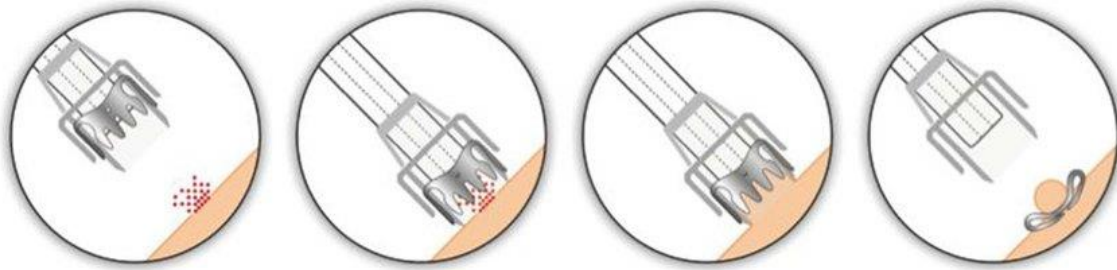


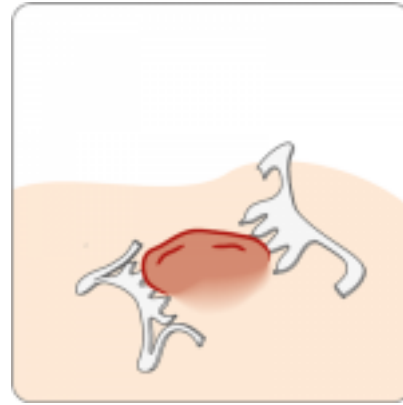
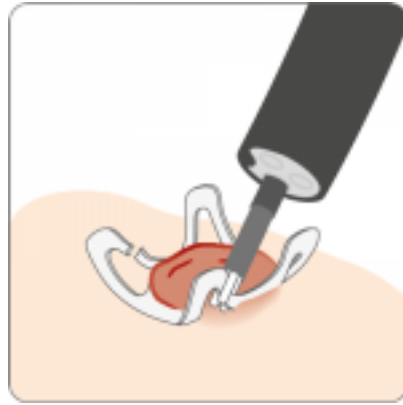












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