Endoscopic management of esophageal strictures

Digestive Diseases of the Caribbean

February 9, 2024

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Disclosures

Research funding: NIH, ACG, AGA, CURED, Adare/Ellodi, Allakos, Arena/Pfizer, AstraZeneca, Celgene/Receptos/BMS, Eupraxia, GSK, Meritage, Miraca, Nutricia, Regeneron, Revolo, Shire/Takeda, UNC/NCTraCS

Consultant: Abbott, Abbvie, Adare/Ellodi, Aimmune, Akesobio, Alfasigma, ALK, Allakos, Amgen, Aqilion, Arena/Pfizer, Aslan, AstraZeneca, Avir, Biorasi, Calypso, Celgene/Receptos/BMS, Celldex, Eli Lilly, EosCap, Eupraxia, Ferring, GSK, Gossamer Bio, Holoclara, Invea, Knightpoint, Landos, LucidDx, Morphic, Nexstone, Nutricia, Parexel/Calyx, Phathom, Regeneron, Revolo, Robarts/Alimentiv, Salix, Sanfoi, Shire/Takeda, Target RWE, Upstream Bio

Educational grant: Allakos, Aqilion, Holoclara, Invea

I will be discussing off-label uses of meds

Objectives

- Discuss causes, classification, and general approaches to esophageal strictures
- Discuss dilation in EoE (of course!)
- Discuss additional endoscopic approaches to stricture management
  - focus on benign strictures

Causes of esophageal strictures

Benign

GERD/peptic stricture
Radiation therapy
Caustic injury (lye ingestion; button batteries)
Ischemic injury (cocaine; vascular insult)
Congenital stricture
Post-ablation therapy (RFA or EMR/ESD for BE)
Pill esophagitis
Eosinophilic esophagitis
Schatzki's ring/webs
Post surgical
- Anti-reflux surgery
- Myotomy
- Anastomotic
- Esophageal atresia/TEF repair

Benign, cont'd

Post-variceal therapy
Crohn's disease
Graft-vs-host disease
Benign mucous membrane pemphigoid
Epidermolysis bullosa dystrophica
Extrinsic compression

Malignant

Adenocarcinoma of the esophagus
Squamous cell carcinoma of the esophagus
Extrinsic compression

→ Treating the underlying cause, when possible, is critical for long-term success

Stricture classification, definitions

Simple stricture:

- Short (<2cm), straight, allows passage of standard endoscope

Complex:

- Long (≥2 cm), angulated, not allowing scope passage

Refractory:

- Inability to maintain a diameter of 14-16mm after 5 session at 1-2 week intervals

Recurrent:

- Inability to maintain luminal diameter for 4 weeks once a diameter of 14-16mm has been achieved

Siersema, Gastro, 2019; Kochman et al, GIE, 2005

Treatment options for strictures - overview

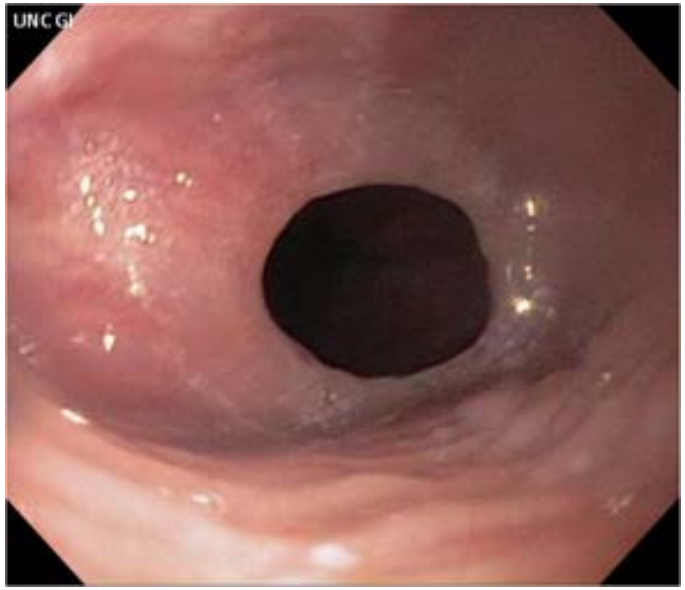
Dilation

- Mechanical
  - Non-wire guided bougie
  - Wire-guided bougie
- Balloon
  - Through-the-scope
  - Over-the-wire
- Cap
- Combined antegrade-retrograde technique (for complete esophageal obstruction)

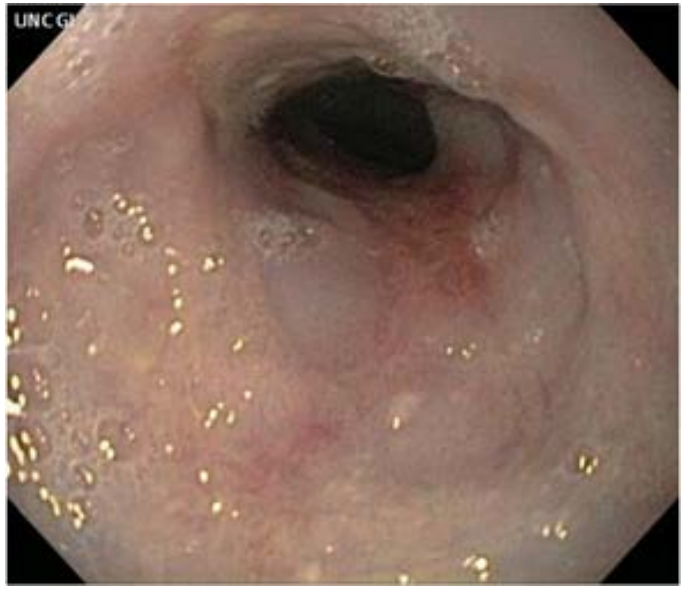
Second line options

- Intra-lesional steroid injection
- Esophageal stenting
  - Self-expanding plastic
  - Fully covered metal
  - Biodegradable
- Incisional stricturoplasty
- Antiproliferative drug application
- Self-dilation
- Surgery

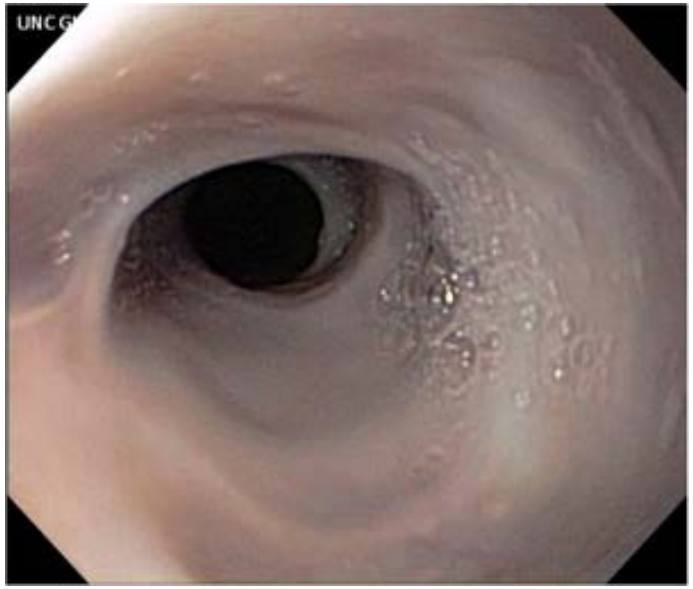
Some strictures…



Schatzki's ring



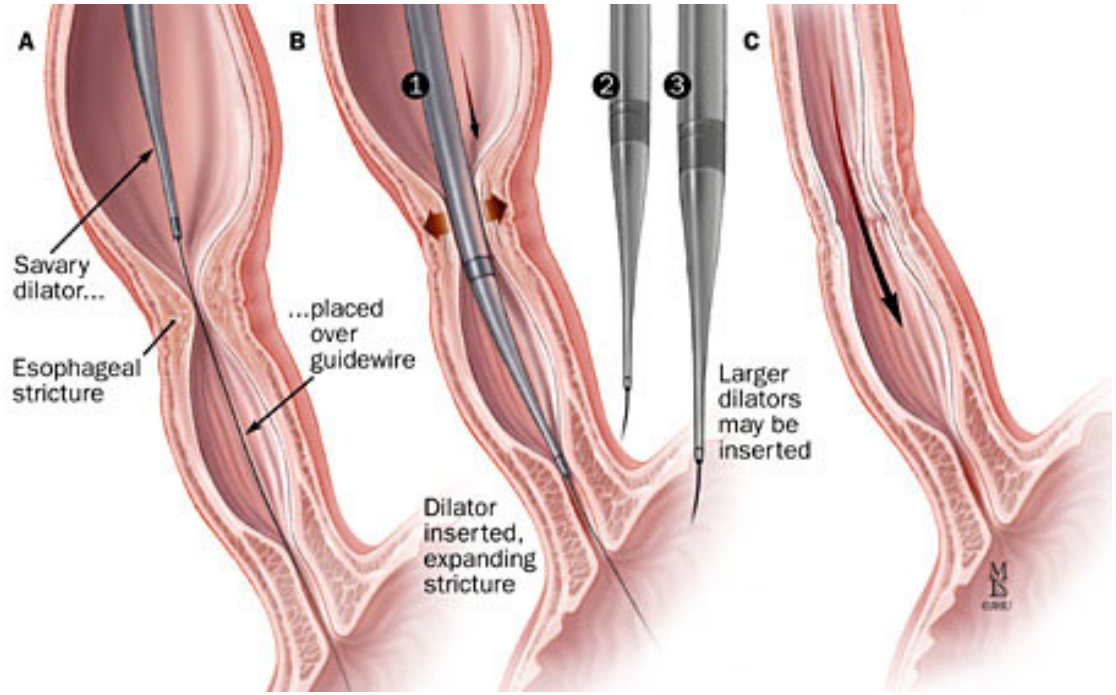
Peptic



Caustic

Esophageal dilation techniques

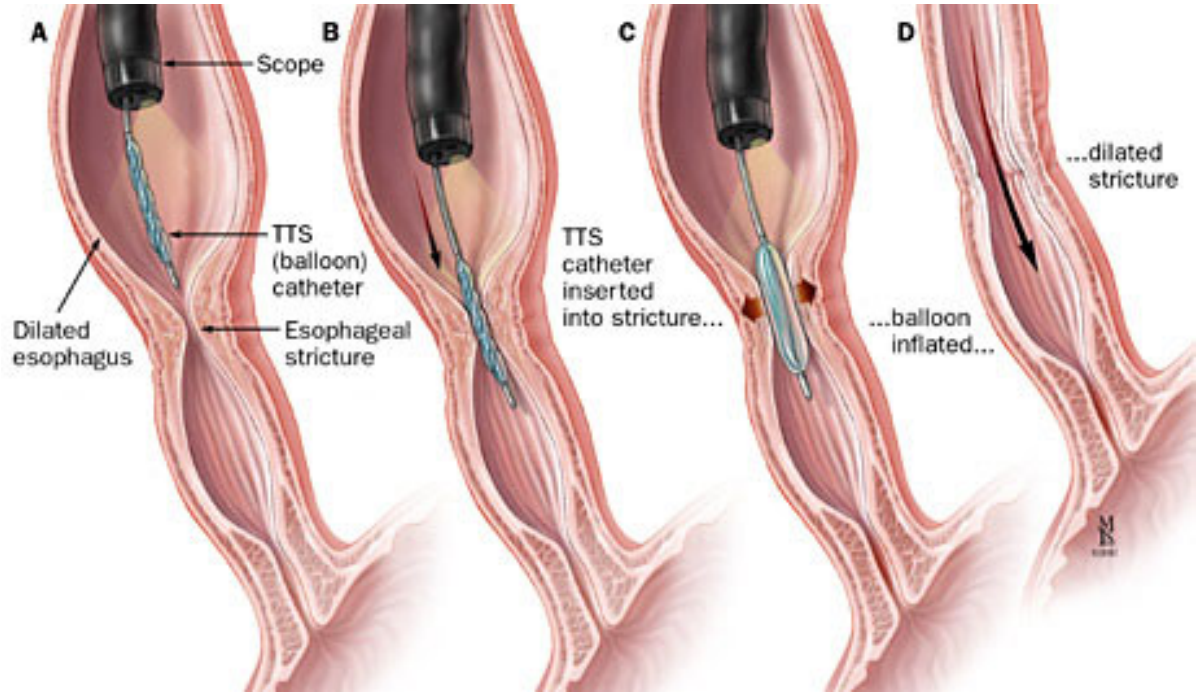
Dilation with tapered bougies over a guidewire (“Savary”)



Illustrations from www.hopkins-gi.org

Esophageal dilation techniques

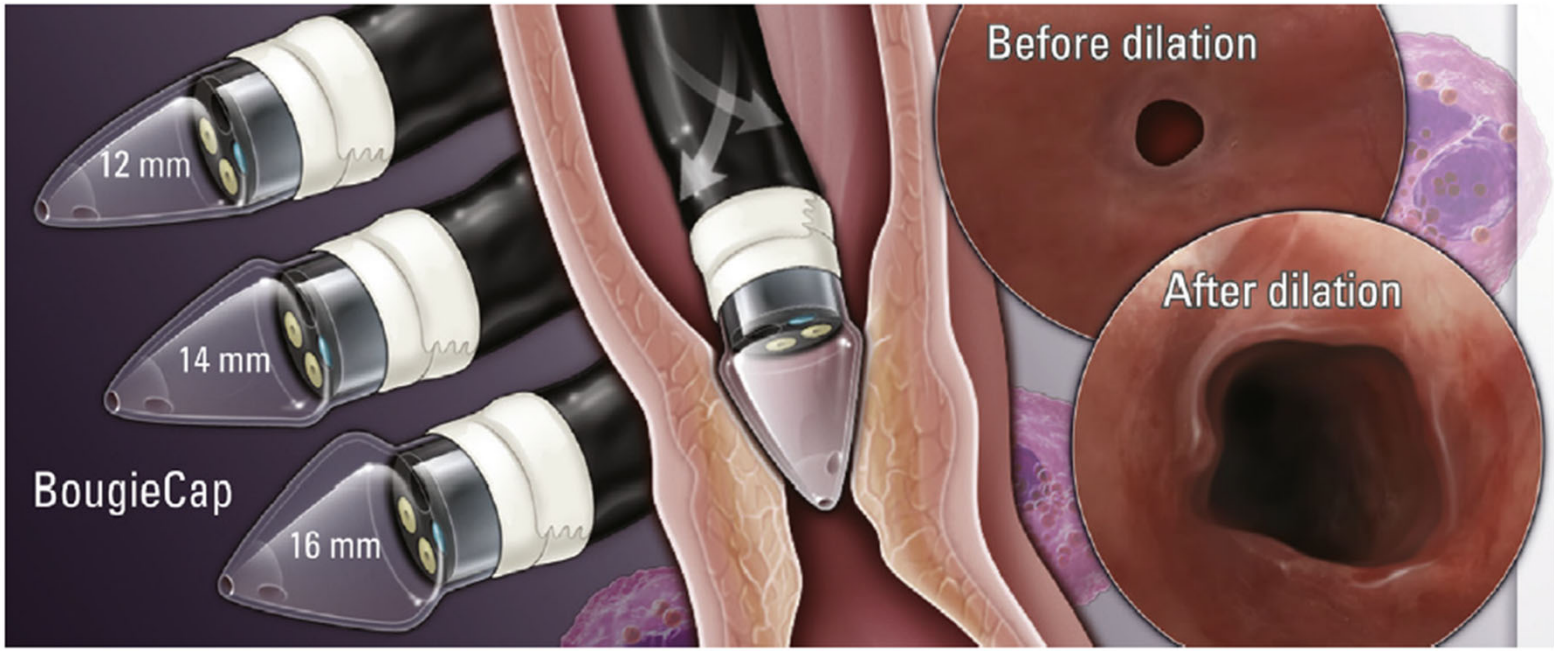
Dilation with through the scope balloons (“TTS”)



Illustrations from www.hopkins-gi.org

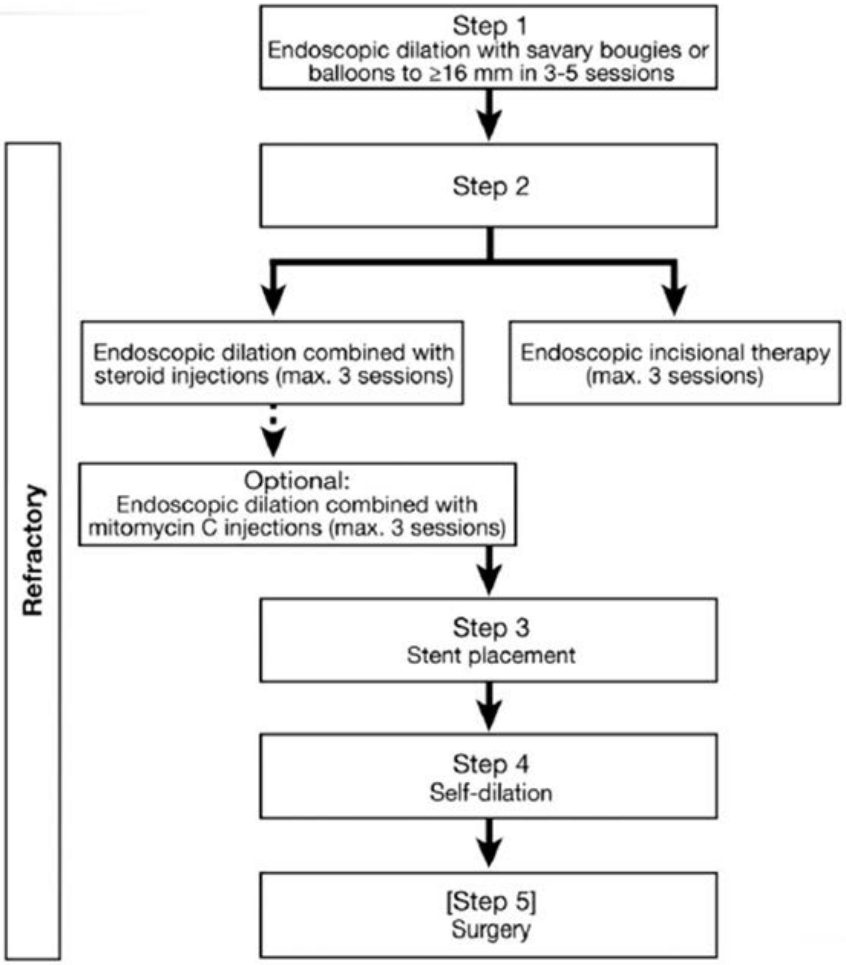
Esophageal dilation techniques

Dilation attachment cap



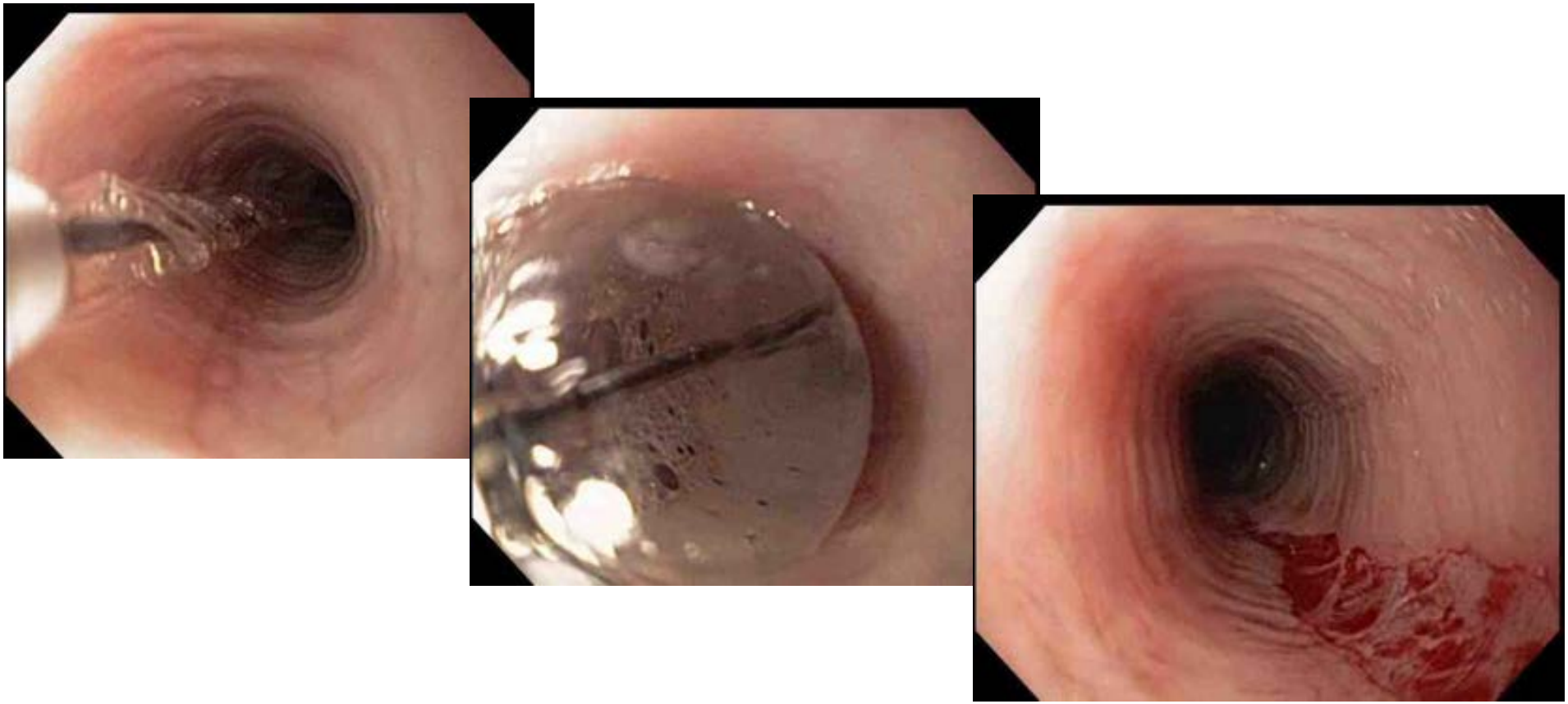
Schoepfer et al, GIE, 2019S

Algorithm for benign strictures

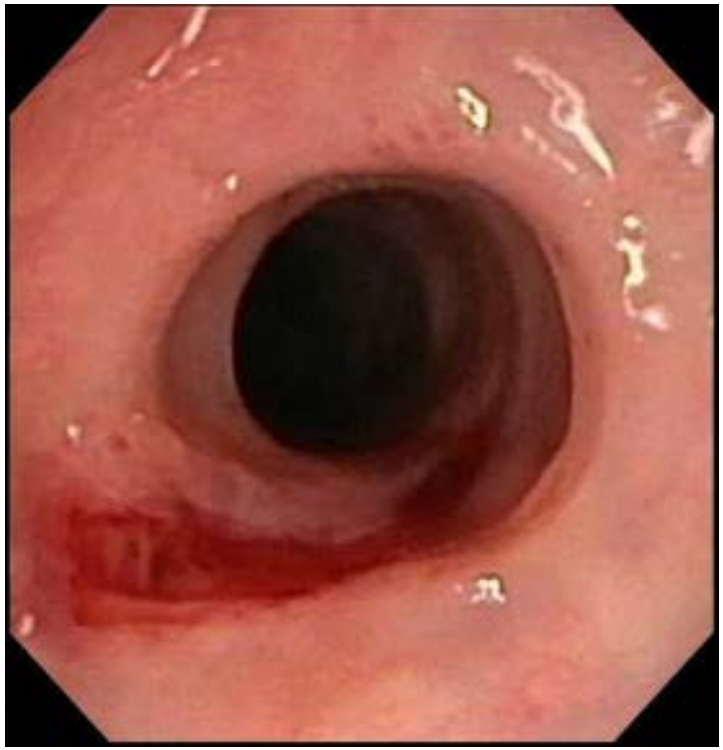


Siersema, Gastro, 2019

Dilation in EoE



Dilation in EoE

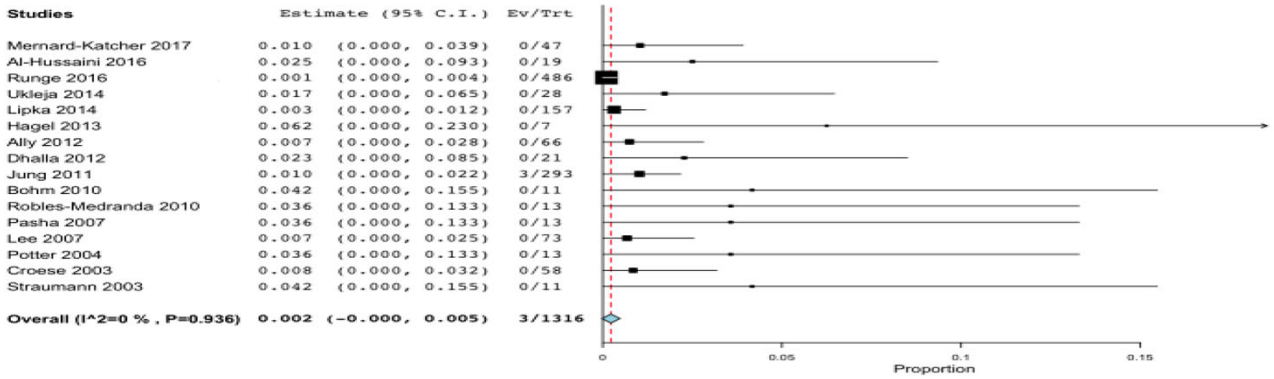


Recommendation: Esophageal dilation

Recommendation: In adult patients with dysphagia from a stricture associated with EoE, the AGA/JTF suggests endoscopic dilation over no dilation (*conditional recommendation, very low quality evidence*).

Comment: Patients who put a high value on avoidance of uncommon but potential risks of esophageal dilation may reasonable choose to use medical or dietary therapy prior to consideration of esophageal dilation.

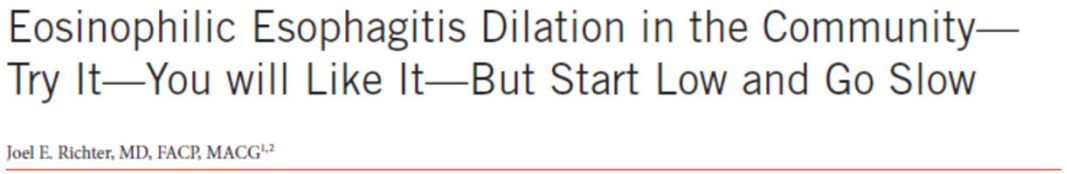
Forest plot for perforation



Notes: Certainty in evidence rated down for retrospective design and single arm cohort study. Only one RCT. Safety data is largely based on larger series from esophageal centers that have adopted a conservative dilation approach based on early reports of frequent complications

Hirano et al, Gastro, 2020; Rank et al, Gastro 2020

Practical approach to dilation


Eosinophilic Esophagitis Dilation in the Community—
Try It—You will Like It—But Start Low and Go Slow

Joel E. Richter, MD, FACP, MACG[1,2]

- Discuss what to expect with the patient – discomfort is common
- Assess esophageal size – we often miss subtle strictures/narrowing
- Start with an "underestimate" for dilator size
  - Balloons or bougies are safe
- Re-look to assess for "dilation effect"
- Multiple sessions usually required to achieve a goal of 16-18mm
  - Incorporate repeat dilations into endoscopies to assess response
- Understand that dilation does not impact the underlying inflammation and disease process – need to couple this with anti-inflammatory treatment

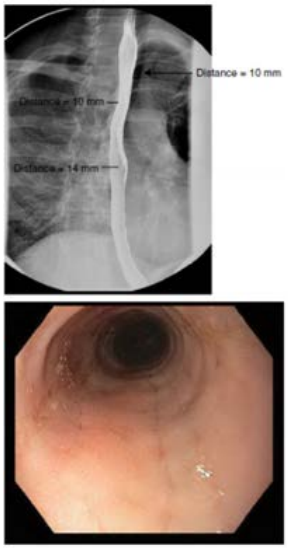
AJG, 2016

Practical approach to dilation

Realize that we're not great at picking up strictures endoscopically

Oesophageal narrowing is common and frequently under-appreciated at endoscopy in patients with oesophageal eosinophilia

N. Gentile*, D. Katzka*, K. Ravi*, S. Trenkner†, F. Enders‡, J. Killian‡, L. Kryzer*, N. J. Talley§ & J. Alexander*

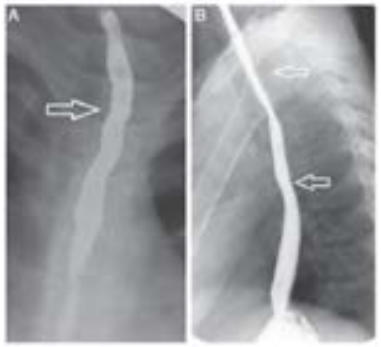


Sensitivity of EGD for detecting decreased esophageal diameter, as compared to radiologic diameter:

≤ 18mm: 16%
≤ 15mm: 25%
≤ 13mm: 33%

Contribution of Esophagram to the Evaluation of Complicated Pediatric Eosinophilic Esophagitis

*Calies Menard-Katcher, †Mathew P. Swerdlow, *Pooja Mehta, *Glenn T. Furuta, and †Laura Z. Fenton



In 55% of children with EoE and known strictures (n=22), esophagram identified luminal narrowing not observed at endoscopy

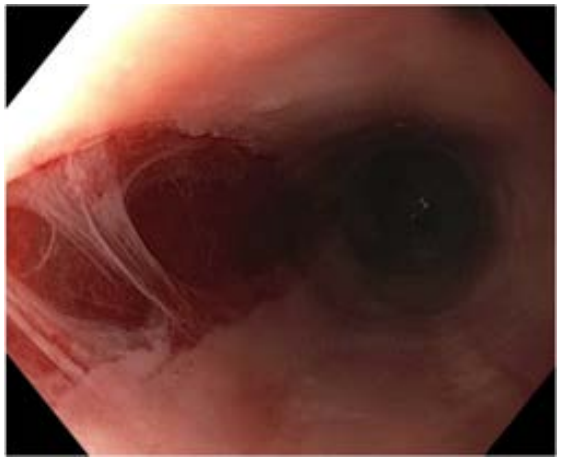
APT, 2014; JPGN, 2015

Practical approach to dilation

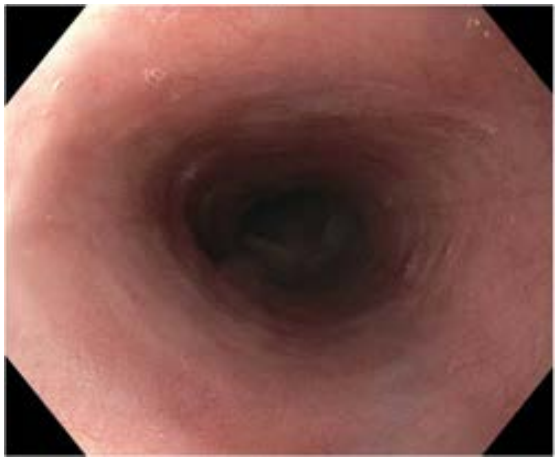
Realize that we're not great at picking up strictures endoscopically

Patient referred to me for EoE; EREFS done; stricture specified as absent; images reviewed:

My own patient, who I was dilating for a distal stricture, and I saw this post-dilation proximally:



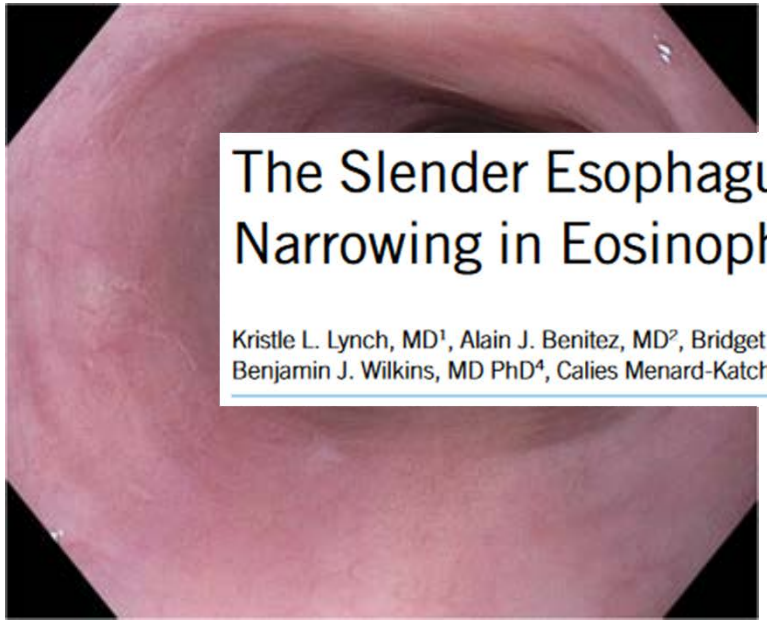
Post-dilation



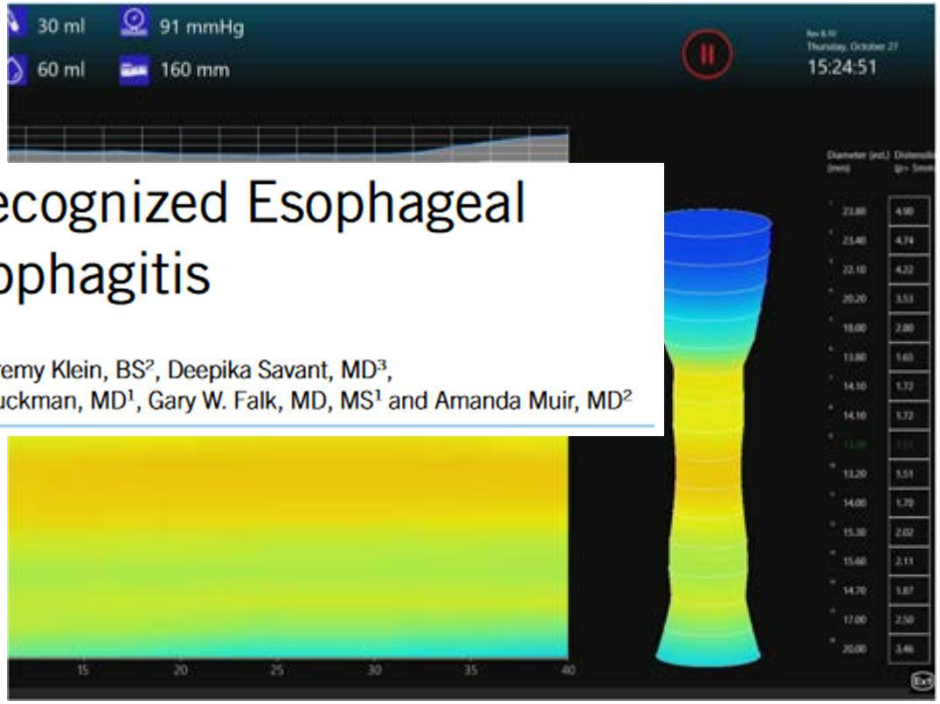
Pre-dilation

Practical approach to dilation

Subtle narrowing endoscopically…



…apparent on FLIP (13mm)



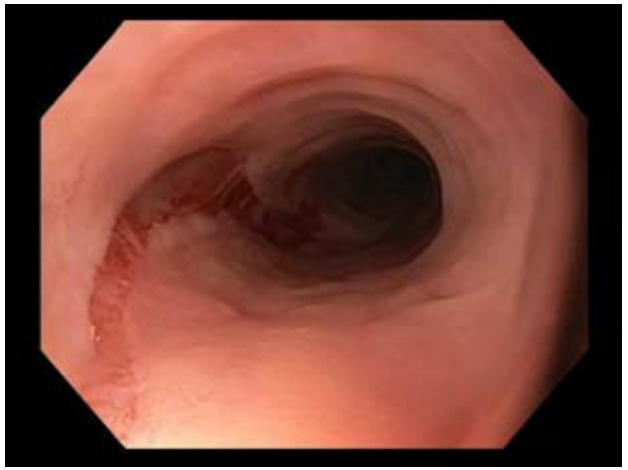
The Slender Esophagus: Unrecognized Esophageal Narrowing in Eosinophilic Esophagitis

Kristle L. Lynch, MD[1], Alain J. Benitez, MD[2], Bridget Godwin, MD[2], Jeremy Klein, BS[2], Deepika Savant, MD[3], Benjamin J. Wilkins, MD PhD[4], Calies Menard-Katcher, MD[5], Craig Gluckman, MD[1], Gary W. Falk, MD, MS[1] and Amanda Muir, MD[2]

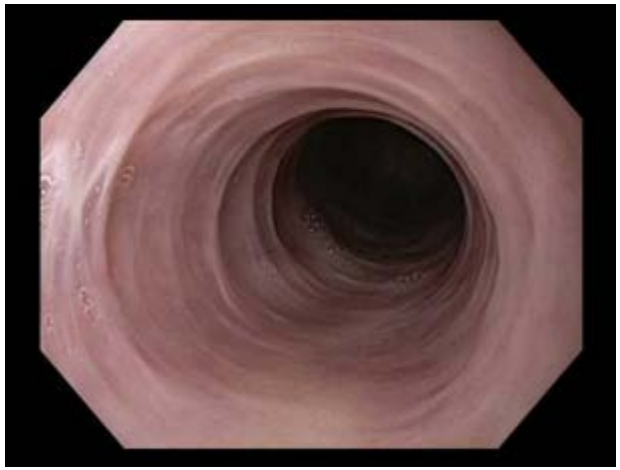
Practical approach to dilation

Balloon - after 13.5mm

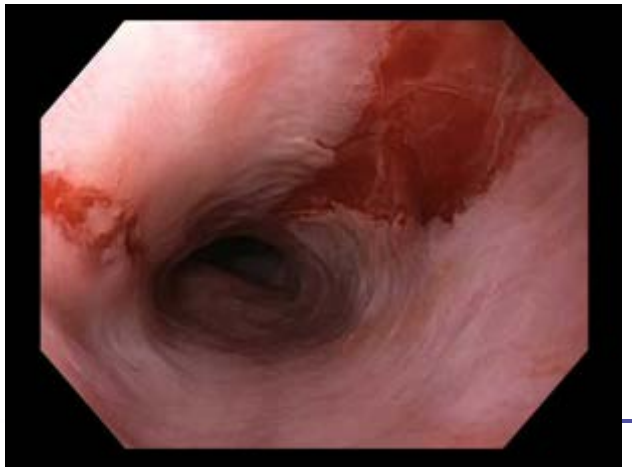
Balloon - after 15mm



Savary - after 12.8mm



Savary - after 14mm



Timing of dilation?

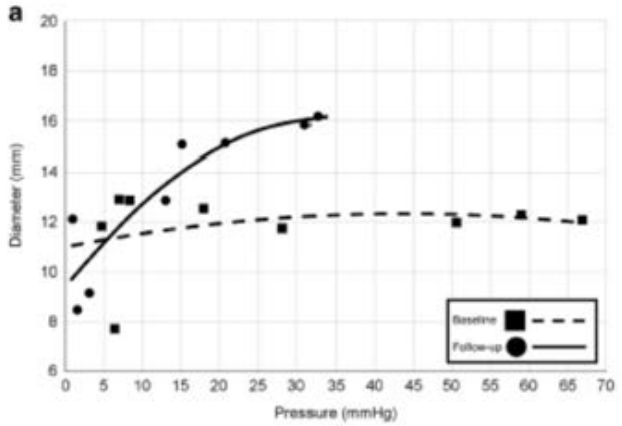
Should dilation be before or after anti-inflammatory treatment?

Citation: Clinical and Translational Gastroenterology (2017) 8, e119; doi:10.1038/ctg.2017.47
Official journal of the American College of Gastroenterology
www.nature.com/ctg

Improvement in Esophageal Distensibility in Response to Medical and Diet Therapy in Eosinophilic Esophagitis

Dustin A. Carlson, MD, MS[1,2], Ikuo Hirano, MD[1,2], Angelika Zalewski, BS[1], Nirmala Gonsalves, MD[1], Zhiyue Lin, MS[1] and John E. Pandolfino, MD, MS[1]

- 18 adults treated w/o dilation
  (8 steroid; 6 diet; 4 PPI only)
- Assessed with FLIP before/after
- Diameter (distensibility plateau) increased from an average of 13.9 to 16.8 mm w/o dilation



Timing of dilation?

A patient with longstanding solid food dysphagia:

70 eos/hpf

Anti-inflammatory treatment

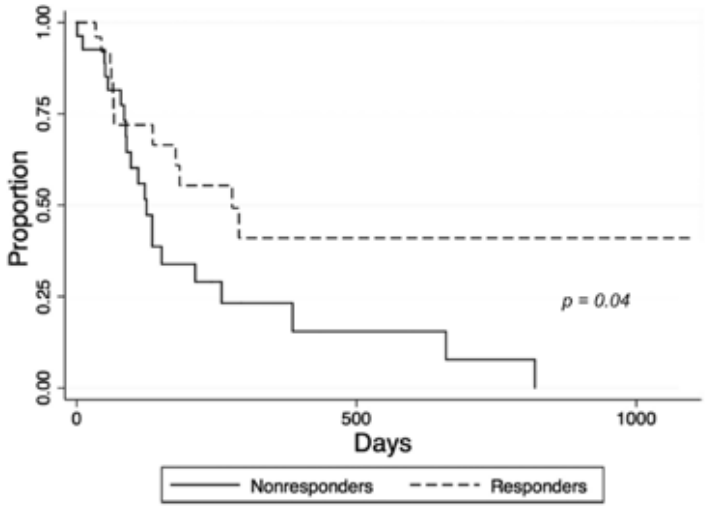
0 eos/hpf

"Doc, I still can't swallow, the treatment didn't work!"

Treat the underlying EoE

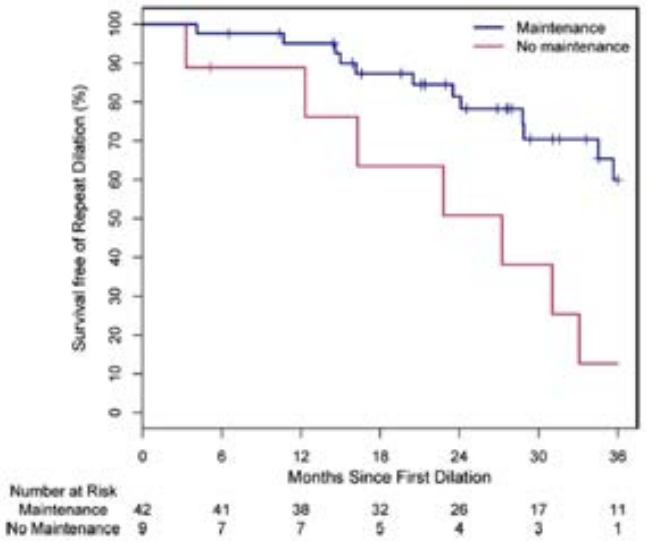
Control of inflammation decreases the need for subsequent esophageal dilation in patients with eosinophilic esophagitis

T. M. Runge,[1,2] S. Eluri,[1,2] J. T. Woosley,[3] N. J. Shaheen,[1,2] E. S. Dellon[1,2]



Effect of Maintenance Therapy for Eosinophilic Esophagitis on Need for Recurrent Dilation

Daniel A. Schupack[1] · Karthik Ravi[1] · Debra M. Geno[1] · Katrina Pierce[1] · Kristin Mara[1] · David A. Katzka[1] · Jeffrey A. Alexander[1]



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Dis Esoph, 2017; DDS, 2020

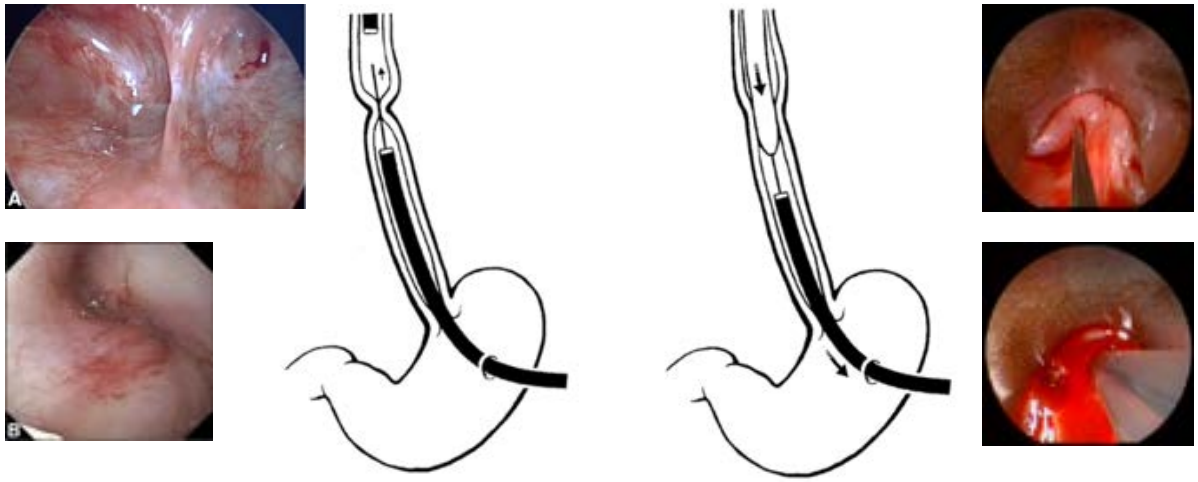
Now back to other strictures…

A severe radiation stricture…

Former site of esophageal lumen

A rendezvous procedure

Combined ante- and retro-grade visualization and dilation:



- Typically >75% initial technical success
- Modified to use rigid esophagoscopy with ENT colleagues (complex anatomy; airway control)

Bueno et al, GIE, 2001; Maple et al, GIE, 2006; Dellon et al, GIE, 2010

Intralesional steroid injection

Rationale: Inhibit post-dilation inflammation and recurrence of fibrosis

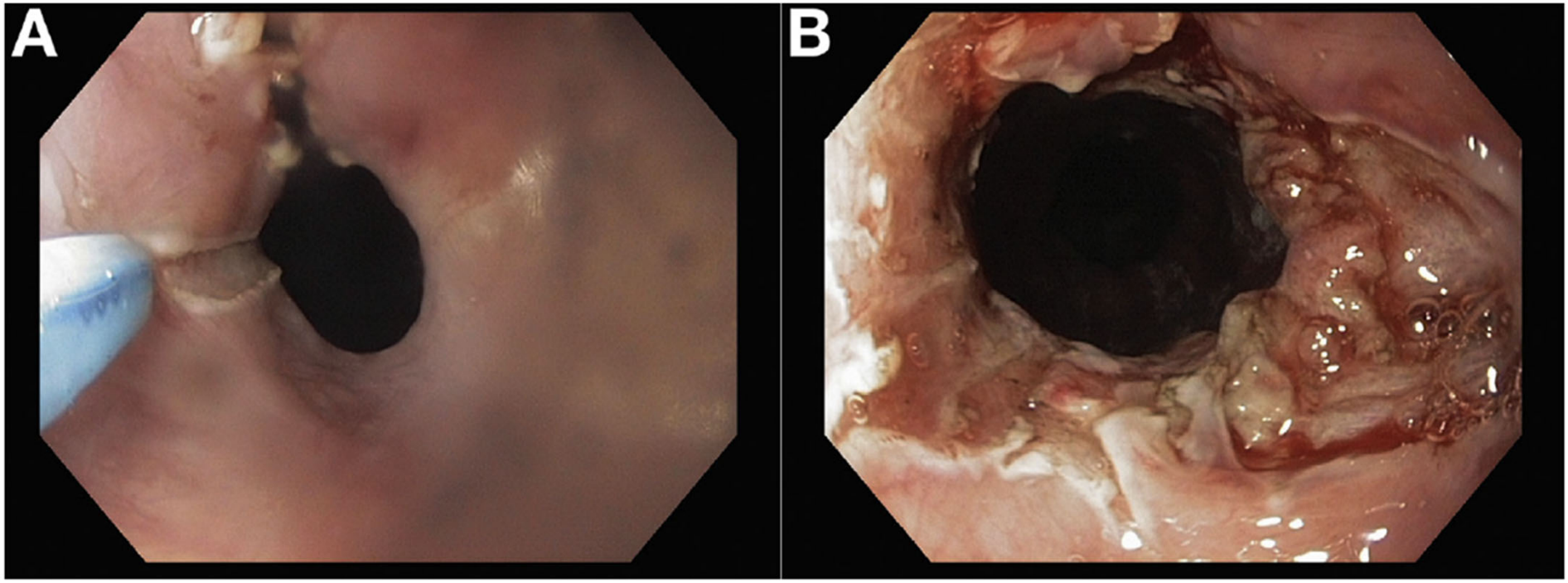
Technique: Triamcinolone 40mg/mL, 0.5-1mL injections in 4 quadrants

Data/caveats:

- Limited RCT data (difficult to conduct studies; small n); equivocal results
- Meta-analysis of 11 studies
  - increased the time between dilations (significant)
  - decreased number of repeat dilations (non-significant)
- Possible risk of candida
- Limit use to maximum of 3 sessions

Siersema, Gastro, 2019; Szapary et al, World J Gastro, 2018

Incisional therapy



Siersema, Gastro, 2019

Incisional therapy

Technique

- Select appropriate stricture type
- Needle-knife or similar
- 4-8 radial electrosurgical incisions

Data – limited (small studies, mostly retrospective)

- RCT (n=62) of incision vs Savary (Hordijk, GIE, 2009)
  - Similar number of dilations within 6 mos of initial therapy
  - Well-tolerated

Siersema, Gastro, 2019

Stent placement

Stent types: Plastic (no longer available); fully covered self-expandable metal (stent of choice currently); biodegradable

Generally readily placed – there are over-the-wire and through-the-scope options now (need sufficient diameter to get deployment system through)

Issues:

- Pain post-placement
- Migration
- Issues with removal
- Recurrence after removal (only moderate long-term success)

Siersema, Gastro, 2019

Self dilation

Self-Dilation of Refractory Benign Esophageal Strictures

Allon Kahn, MD[1], Magnus Halland, MD, PhD[2] and David E. Fleischer, MD[1]

Am J Gastroenterol 2022;117:364–366. https://doi.org/10.14309/ajg.0000000000001589; published online December 16, 2021

Table 1. Preparation considerations for the patient's first self-dilation session

1. Duration of appointment of at least 1 hr (to allow for patient anxiety and potential difficulties)
2. Patient fasts 6 hr before appointment
3. Posterior oropharynx numbed with a local anesthetic (e.g., benzocaine spray or viscous lidocaine)
4. Instructing physician models the technique (or may actually demonstrate) with a dilator
5. First dilator chosen to pass with minimal resistance to improve patient confidence (i.e., smaller diameter than eventual home dilator)
6. Extent of dilation is marked with a tape on the dilator
7. Lubricant is used to lightly coat distal tip of the dilator before insertion

https://www.youtube.com/watch?v=FIRiPny4n6Y

Summary

- Identify the cause of the stricture and treat the underlying problem if possible
  - Strictures will persist/recur if the cause remains active
- Cautious approach to dilation in EoE is safe to do
  - Counsel patient as to what to expect
  - Underestimate initial diameter size and look for “dilation effect”
  - Use an anti-inflammatory treatment in parallel with dilation
- For non-EoE strictures, individualize approach to stricture characteristics, underlying cause, and refractoriness of stricture

Thank you!