ESOPHAGEAL STRICTURE

DEFINITION

- A benign esophageal stricture is a narrowing or tightening of the esophagus that causes swallowing difficulties.
- An anatomic restriction due to circatricial luminal compromise or fibrosis that results in the clinical symptom of dysphagia in the absence of endoscopic evidence of inflammation.

CAUSES

- It can be caused by or associated with gastroesophageal reflux disease, esophagitis, a dysfunctional lower esophageal sphincter, disordered motility, lye ingestion, or a hiatal hernia. Strictures can form after esophageal surgery and other treatments such as laser therapy or photodynamic therapy. While the area heals, a scar forms, causing the tissue to pull and tighten, leading to difficulty in swallowing.

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REFRACTORY AND RECURRENT STRICTURES

- This may occur as the result of either an inability to successfully remediate the anatomic problem to a diameter of 14 mm over 5 sessions at 2 week intervals (refractory) or as a result of an inability to maintain a satisfactory luminal diameter for 4 weeks once the target diameter of 14 mm has been achieved (recurrent).

MANAGEMENT OF STRICTURES AND GOALS OF THERAPY

- Biopsy
- Acid Suppression and Treatment of Inflammation

BENIGN STRICTURES

DILATION

- There are three basic types of dilators: rigid bougies, wire-guided polyvinyl dilators and Through-The-Scope (TTS) balloons.
- Balloon dilators exert almost all of their force in a radial outward fashion while rigid dilators have a longitudinal force that is converted by the step-up of the ramp angle to radial force.
- This means that there may be longitudinal shear forces applied to the esophagus proximal to the stricture (which if greater than the force needed to relieve the stricture may result in a more proximal perforation).
Rigid dilators are non-compressible so the operator can be assured that the true diameter was achieved after passage, while balloons may reach the pressure indicated but may not be fully expanded to the stated diameter.

Maloney-type dilators (somewhat flexible with a tapered tip) should not be used for a complex stricture.

The main complications associated with esophageal dilation include perforation, hemorrhage and bacteremia.

When using the rigid wire-guided dilators we adhere to the “rule of 3.”

The rule essentially attempts to codify that once moderate resistance is encountered, no more than three dilators of consecutive size should be passed (two after the resistance is felt). This attempt to minimize the risk of perforation; though there is no data validating this in a prospective manner. With balloon dilators the “rule of 3” does not apply.

Typically 4 x 10 mg injections of triamcinolone are used intra-procedurally.

Complex strictures - ‘endoscopic rendezvous’ approach can be employed

This is accomplished by introducing a small diameter endoscope through a mature PEG (Percutaneous endoscopic gastrostomy) tract and advancing it in a retrograde fashion into the esophagus until the stricture is identified. In some patients, the guidewire, be it stiff or floppy, can be passed through the stricture, but in others a thin membrane is present that precludes its passage. In these patients, the guidewire, or a needle knife, can be used to puncture the membrane. The puncture should be aided by a second flexible endoscope or rigid laryngoscope approaching the stricture in an antegrade fashion. Subsequently, the stricture is dilated over the guidewire using a balloon dilator (retrograde) or Savary-Gilliard® dilator (antegrade). As these post-radiation strictures need repeat dilations, a nasogastric feeding tube should be placed to maintain luminal access for future dilations.

**ENDOPROSTHETICS**

FDA has approved only a plastic endoprosthesis for use in benign strictures

<table>
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<th>Table 3: Common Complications of Endoprosthetic Placement</th>
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<td><strong>Short-Term</strong></td>
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<td>Mediastinal pain (more common in patients already with pain or on narcotics)</td>
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<tr>
<td>Aspiration (both intra-procedural and post-procedure)</td>
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<tr>
<td>Migration</td>
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<td>Overgrowth (benign/malignant)</td>
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**MALIGNANT STRICTURES**

Surgeries for oesophagectomy include – Lewis tanner, Transhiatal, triple stage procedure, Lower thoracoabdominal, minimally invasive

**STENTS**

- *Mid and distal esophageal cancer*
- Partially or fully covered stents give better longterm palliation of malignant dysphagia than uncovered stents.
- Three commonly used stent types placed:
  - The Ultraflex™ stent
  - Flamingo Wallstent
  - Z-stent
- Both the Ultraflex™ stent and Flamingo Wallstent are made of nitinol and covered at their midsections with a polyester cover.
- The Z-stent is made of stainless steel and covered with polyethylene over its entire length.
- An ongoing issue with stents is the occurrence of recurrent dysphagia because of stent migration, tumoral or nontumoral tissue growth and food obstruction.
- **Proximal esophageal cancer**
  - Placing stents at this location was thought to be associated with a high risk of complications, such as perforation, aspiration pneumonia, proximal migration, and patient intolerance caused by pain and foreign body sensation.
  - Ultraflex™ stents, which have a relatively low radial force and flexible mesh compared with other stent designs, are the preferred stent type for patients with a malignant stricture that is close to the upper esophageal sphincter.
- **Extrinsic compression of the esophagus**

**Brachytherapy versus stent**

- Brachytherapy can be carried out as an outpatient procedure and is performed with a 10 mm applicator that is passed down into the esophagus over a guidewire.
- It is recommended that stents be placed in patients who have dysphagia caused by esophageal or gastric cardia cancer and a calculated life expectancy of 3 months or less. Brachytherapy should be reserved for patients who have a life expectancy longer than 3 months.