POEM with the Flexible Scope

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Per-oral Endoscopic Myotomy
Objectives

- Review diagnosis and management of achalasia and Zenker's diverticulum
- Describe the benefits and risk of treatment strategies
- Demonstrate endoscopic myotomy technique.

Achalasia

- Motor disorder of esophagus
- Frequency: 1/100000
- Autoimmune neuron degeneration
  - Excitatory nerves variable affected
  - Inhibitory nerves invariably affected
Symptoms

- Dysphagia 82-100%
- Regurgitation/aspiration 60-80%
- Chest pain, esophageal type 17-95%
- Weight loss 32%
- Minor symptoms:
  - Heartburn, halitosis, slow eating, stereotypical manoeuvres at eating, inability to burp, dental caries, nocturnal coughing or choking

Diagnosis

- Symptomatology
- Barium swallow
  - Bird beak, sigmoid esophagus, diverticulum, absence of gastric gas bubble
- Esophageal manometry
  - Sensitive, picks up early
- EGD
  - More than diagnosis, rules out pseudo achalasia
- CT/EUS
  - With significant weight loss
**Subtypes of Achalasia – diagnosed by HREM**

- **Type I**
  - No distal pressurization

- **Type II**
  - Pan esophageal pressurization

- **Type III**
  - Spastic contractions


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**Types of Achalasia**

- EG outlet obstruction: treated like achalasia
  - Normal peristalsis
Treatments

- Incurable disease
  - Traditional treatment more effective for dysphagia than for chest pain

Treatment

- Medications
  - Calcium channel blockers: poor response

- Endoscopic
  - Botox
  - Pneumatic dilations

- Surgical
  - Heller Myotomy
  - Trans esophageal Endoscopic Myotomy
  - esophagectomy
Figure 3. Type II achalasia has a higher success rate compared with type I achalasia (P < .01) and type III achalasia (P < .001), as shown in a Kaplan–Meier curve.

Wout O. Rohof, Renato Salvador, Vito Annese, Stanislas Bruyé des Varannes, Stanislas Chaussade, Mario Costant...

Outcomes of Treatment for Achalasia Depend on Manometric Subtype
Gastroenterology, Volume 144, Issue 4, 2013, 718 - 725
http://dx.doi.org/10.1053/j.gastro.2012.12.027

Pneumatic Dilatation

- Dilatation to 30 – 40 mm
  - >90% effective
- Advantages
  - OP procedure, endoscopic
  - Immediate symptom relief
- Disadvantages
  - Need fluoroscopy
  - Technical skill, 1-3 sessions
  - 1% - 15% Perforation, 33% complications
Pneumatic dilation
Heller Myotomy

- Open and laparoscopic techniques
  - >90% effective
- Advantages
  - Recurrence rates lower
- Disadvantage
  - Mobilization of GEJ attachments
  - 2% - 5% Perforation
  - Post fundoplication syndrome
- Surgery most costly
  - cost-effective if relief lasts >10 years
Surgery vs PD

- Two small, randomized studies, 1 yr f/u
  - first (16 PD, 14 LM): no difference
  - second (26 PD, 25 LM): 6 vs 1 failure (p=0.04)
- European achalasia trial: Randomized
  - 94 PD (3.0 & 3.5 cm) vs 106 to LM with Dor
    - recurrent symptoms after PD retreated X 3
  - comparable success at 2 years
  - 92% for dilation and 87% for myotomy.
- Canadian longitudinal: 1741 patients
  - cumulative risk of subsequent treatment after 1, 5 and 10 years
    - 36.8%, 56.2% and 63.5% after PD
    - 16.4%, 30.3% and 37.5% after initial myotomy
      - hazard risk: 2.37; CI 1.86 to 3.0

Figure 4: Kaplan-Meier curves comparing PD and LHM are shown for the 3 subtypes for up to 60 months after treatment. Success rates are comparable in type I achalasia (P = .84). Pneumodilation has a significantly higher success rate in type II achalasia (P = .034).

Outcomes of Treatment for Achalasia Depend on Manometric Subtype

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Totally Endoscopic Esophageal Myotomy

- Liquid diet for several days
- Consider antifungals
- NPO past midnight
- Intra-procedure antibiotics

Advantages
- Totally endoscopic
- Easy redo
- Myotomy length to your hearts desire!

Disadvantages
- New
- Skill for advanced tissue dissection and basic endoscopy
- Acid reflux 5-30%
Post procedure

- Pneumoperitoneum 30% : caused by the non-pressure controlled insufflation of carbon dioxide
- Post procedural care
- admission for one night
- water soluble contrast X-ray the next morning
- semi-solid diet for 14 days after the procedure.
- Routine upper endoscopy 1 or 2 days by some centers
- Acid suppression for 2 weeks postoperatively
- Barium study in 3-4 weeks
2 week follow up

Other applications


Algorithm

- Short life expectancy or poor surgical candidate: Botox
- Surgical candidate: offer POEM vs Pneumatic dilation vs Heller
- Patients choice

Decision making

- Prefer not to stay for a day, do not mind more than one procedure + 2-5% perforation: Pneumatic dilation
- Prefer one stop shopping: Heller or POEM
- Prefer Minimal invasion over established procedure: POEM
Mega esophagus

• >6–9 cm with a horizontal configuration
  – failure of myotomy is controversial
  – up to 50% having persistent dysphagia
  – esophagectomy for the failures
    • 2–5%

Per oral – upper- esophageal endoscopic myotomy

• Zenkers diverticulotomy
Technique of Diverticulotomy

Pre                          Post

[Images of pre- and post-operative X-rays]
Outcome

• > 90% near total resolution of symptoms
• Pouch persists, but empties much better
• More than one session may be needed, may depend on initial aggressiveness.
POEM vs Lap Heller’s

- All patients are candidates
  - Botox: no added difficulty
- Easy redo
- Complication 1-5%
- Low recurrence
  - (5yr follow up or less)
- GEJ intact
- Extended myotomy easy

- All patients are candidates
  - Botox: difficult procedure
- Re do is difficult
- Complication: 1-5%
- Low recurrence
  - Long follow up
- Fundoplication must
- Extended myotomy difficult

POEM vs pneumatic

- Similar efficacy
- Similar complication rates
- Perforation managed by endoscopy
- Endoscopic suturing device may change equation
- Poem likely have recurrence rate similar to laparoscopic myotomy
Recurrence of dysphagia

- Result of an incomplete myotomy: gastric side
  - Repeat pneumatic dilation
  - POEM

- Other factors
  - Esophageal scarring
  - Obstruction by the fundoplication
  - Mega esophagus
  - Severe GERD

### Efficacy of POEM

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Outcome measure</th>
<th>Reported efficacy</th>
<th>Follow-up</th>
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</thead>
<tbody>
<tr>
<td>Inoue, 2010</td>
<td>17</td>
<td>Dysphagia score (0-10)</td>
<td>1.3</td>
<td>5 months average</td>
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<tr>
<td>Von Renteln, 2012</td>
<td>16</td>
<td>Eckardt score S3</td>
<td>94%</td>
<td>3 months</td>
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<tr>
<td>Von Renteln, 2013</td>
<td>70</td>
<td>Eckardt score S3</td>
<td>97%, 89% and 82%</td>
<td>3, 6 and 12 months</td>
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<td>Zhou, 2012</td>
<td>205</td>
<td>Dysphagia relief</td>
<td>97%</td>
<td>8.5 months average</td>
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<td>Costamagna, 2012</td>
<td>11</td>
<td>Eckardt score S3</td>
<td>91%</td>
<td>1 month</td>
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<tr>
<td>Minami, 2013</td>
<td>28</td>
<td>Eckardt score S3</td>
<td>100%</td>
<td>3 months</td>
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<tr>
<td>Swanstrom, 2012</td>
<td>18</td>
<td>Eckardt score S3</td>
<td>94 and 100%</td>
<td>1 and 6 months</td>
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<tr>
<td>Hungness, 2013</td>
<td>18</td>
<td>Eckardt score S3</td>
<td>89%</td>
<td>6 months average</td>
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<tr>
<td>Lee, 2013</td>
<td>13</td>
<td>Eckardt score S3</td>
<td>100%</td>
<td>3 months</td>
</tr>
</tbody>
</table>
Thank you for your attention

Questions?