Background: gastroesophageal reflux disease (GERD)

- Patient profile
- Pathophysiology & evaluation
- Treatment
- Operative indications
- Antireflux procedure
GERD: Patient profile

Primary symptom = heartburn

Primary sign = esophagitis (EGD)
<table>
<thead>
<tr>
<th>Symptoms 2° to</th>
<th>Effect</th>
<th>Evaluate with</th>
</tr>
</thead>
<tbody>
<tr>
<td>dysfunctional LES</td>
<td>poor antireflux valve</td>
<td>manometry; pH probe</td>
</tr>
<tr>
<td>esophageal dysmotility</td>
<td>poor esoph. clearance</td>
<td>manometry</td>
</tr>
<tr>
<td>gastric outlet obstruction</td>
<td>poor gastric emptying</td>
<td>UGI</td>
</tr>
<tr>
<td>gastric dysmotility</td>
<td>poor gastric emptying</td>
<td>gastric emptying study</td>
</tr>
<tr>
<td>acid hypersecretion</td>
<td>overwhelm nl defenses</td>
<td>hypersecretion W/U</td>
</tr>
</tbody>
</table>
Treatment of GERD 2° ↓ LES

1. Lifestyle changes
2. Medication (PPI’s)
3. Antireflux procedure
GERD:
Indications for antireflux procedure

- Symptoms and
- Esophagitis and/or abnormal pH study
- Dysfunctional LES
- Response to medication
- Complications (?)
Nissen fundoplication

(Mastery of Surgery. Little, Brown 1992)
Retrospective data on laparoscopic antireflux procedures

14 studies (1994-1999), 4,857 patients

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>mortality</td>
<td>0.06 %</td>
</tr>
<tr>
<td>conversions</td>
<td>2.59 %</td>
</tr>
<tr>
<td>reoperations</td>
<td>2.64 %</td>
</tr>
<tr>
<td>“good” results</td>
<td>90-95 %</td>
</tr>
</tbody>
</table>
Overview of laparoscopic Nissen complications

• Complications of access
• Procedure-specific intraoperative complications
• Postoperative complications
• Long-term side effects
Complications of Access

• Trocar injury
  1. Abdominal wall (0.05 %)
  2. Visceral (0 %)

• Port site hernia (0.10 %)
Access methods

• Closed (Veress needle)
• Open (Hasson canula)
• Direct insertion

• Optical trocar
Optical trocar
View through optical trocar
Preventing abdominal wall injury:

Abdominal wall transillumination
Port site closure: 1, 4, 5

(Laparoscopic and Thoracoscopic Surgery. Mosby-Year Book, 1995.)
The CloseSure™ Procedure Kit makes full-thickness suturing easy, each and every time.

- Features the Carter-Thomsson® suture passer and Pilot™ suturing guides.
- Takes the time and frustration out of full-thickness closure.
- Easy to use on a wide variety of patients.
- Effective with many size ports.
- Disposable for insured safety, sharpness and convenience.

**Fascial closing device**
Port site closure
Procedure-specific intraoperative complications

- Pneumothorax (1.46 %)
- Perforation (0.73 %)
- Hemorrhage (0.77 %)
- Splenic injury (0.08 %)

1 splenectomy = 0.03 %
Pneumothorax (1.46%)

• More common with laparoscopic approach
• Pleural tear during mediastinal dissection
• Occasionally requires release of pneumoperitoneum
• Occasionally requires chest tube
Perforation (0.73 %)

• Usually posterior esophagus

• Bougie trauma

• Intraoperative repair, buttressing

• Delayed diagnosis: treat as any other esophageal perforation
Lighted esophageal bougie
Retroesophageal exposure
Crural dissection
Atraumatic grasper
Atraumatic grasper
Hemorrhage (0.77 %)

• Retraction injury (liver)
• Accessory left hepatic artery
• Spleen (0.08 %)
Inflatable balloon retractor
Gastrohepatic ligament
Tamponade of capsular tear
Takedown of gastrospenic ligament
Postoperative complications

- Leak (0.47 %)
- Gastric necrosis (0 %)
- Wound infection (0.06 %)
- Mechanical (wrap related)

- MI (0.06 %)
- PE (0.06%)
- Death (0.06%)
Postoperative leak/abscess (0.47 %)

- Usually unrecognized esophageal or gastric perforation

- Nonoperative or operative management
Gastric necrosis

• Lesser curve or fundus
• Most likely if lesser and greater curves are devascularized

*Do not perform Nissen and PGV together
Wound infection (0.06 %)

Antibiotic prophylaxis
probably not justified
Temporary wrap-related complications
(variable reporting and incidence)

1. Bloating

2. Dysphagia
Reoperations on failed laparoscopic Nissen fundoplications (publications)

1999

1997

1996

1995
Long-term side effects

• Recurrent reflux (2.59 %)
• Dysphagia (4.23 %)
• Bloating/flatulence (12.3 %)
Recurrent reflux (2.59 %)

• Fundoplication failure

• Hiatal herniation
Failure of wrap

- Disruption of fundoplication
- Wrap migration ("slipped Nissen")
- Malposition of wrap
Fundoplication disruption

- Sutures tear through fundus
- Probable precipitating event
- Often requires operative repair
- Prevention
Slipped Nissen fundoplication

(Hill et al. Arch Surg 1979;114:542)
Avoiding a slipped Nissen

(Mastery of Surgery. Little, Brown 1992)
Malpositioned fundoplication

(Horgan et al. *Arch Surg* 1999;134:809)
Positioning the wrap
Recurrent reflux 2° hiatal herniation

- Inadequate or absent cruroplasty
- Large hiatal defect (prosthetic repair?)
- Short esophagus
Hiatal hernia (types I-IV)

Posterior cruroplasty
Anatomy of esophageal hiatus

(Am Surg 1979;45:575)
Large hiatal defect
Short esophagus


*(Gastroenterology, 4th ed. W.B. Saunders, 1985)*
Placement of cephalad stitch
Fundoplication anchored to diaphragm
PTFE study

Problem: large hiatal defect

↓

High recurrence after cruroplasty

*Will prosthetic reinforcement of posterior cruroplasty reduce recurrence?
PTFE onlay and completion of wrap
PTFE (MycroMesh®) onlay
PTFE trial: 35 pts, single institution

“Large” hiatus = 8 cm or more

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>+PTFE</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>-PTFE</td>
<td>18</td>
<td>3</td>
</tr>
</tbody>
</table>

p > 0.05

(Frantzides et al. Surg Endosc 1999;13:906)
Dysphagia (4.23 %)

• Temporary dysphagia common

• Causes: overly tight wrap and/or undiagnosed dysmotility

• Dilatation and/or reoperation may be necessary
Bloating/flatulence

• Inability to eructate

• Cause = overly tight wrap
Floppy Nissen fundoplication

• Mobile fundus (take short gastrics)

• Create wrap loosely over large dilator, fundus-to-fundus

• Short wrap length (2 cm)

• Intraabdominal location, no tension
Conclusions

1. Complications of access
2. Intraoperative complications
3. Postoperative complications
4. Long-term side effects