



Surgical Treatment of GERD

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Objectives

Review Work-up of GERD

- History, Differential Diagnosis, Investigations

- Discuss Important Criteria of Investigations

Discuss Indications/Contraindications for Surgery

- Traditional Indications for Surgery

- Unusual Indications for Surgery

Understand Barrett's Esophagus – Implications for Surgery

Discuss Surgical Treatment

- Results

- Complications

Faculty/Presenter Disclosure

Faculty: Dr. Cliff Sample

Relationships with commercial interests:

- Not applicable

Disclosure of Commercial Support

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Potential for conflict(s) of interest:

- Not applicable

Mitigating Potential Bias

- Not applicable

Mechanisms of GERD

LES dysfunction

low LES pressure

Transient Inappropriate Relaxation of LES

Impaired Esophageal Clearance

scleroderma, achalasia

Delayed Gastric Emptying

Diabetic Gastroparesis

Obesity

GERD

History

1. pyrosis (burning pain arising at epigastrium and radiating to throat or neck)
2. Exacerbating factors
 - meals
 - recumbency
 - acidic drinks
 - leaning over
 - alcohol
3. Relieving factors
 - antacids
4. Waterbrash
5. Regurgitation
6. Chest Pain (esophageal spasm)

History

Odynophagia (esophagitis)

Respiratory symptoms

- Cough

- Choking

- Voice changes

Alarm symptoms

- Dysphagia

- Weight loss

- Hematemesis or melena

Differential Diagnosis

Biliary disease

Peptic Ulcer Disease

Cardiac

DES

Gastritis

Neoplastic disease of upper GI

Chronic pancreatitis

Diagnostic Investigations

Esophagoduodenoscopy (Biopsy)

Esophageal Manometry

24H pH

Barium UGI series

Ultrasound abdomen

Gastric Emptying study

Esophageal Impedance Studies

EGD

Mandatory to perform before consideration of surgery

Indicated in work-up of alarm symptoms

Indicated in chronic reflux

1. May support diagnosis
 - findings of esophagitis, changes on biopsy
2. Evaluation of anatomy
3. Evaluation for complications of GERD
 - Barrett's, stricture, ulceration
4. Rule out some other causes of upper abdominal pain

Manometry

Two important areas to evaluate in GERD

| <u>Lower Esophageal Sphincter</u> <u>(normal values in brackets)</u> | <u>Esophageal body:</u> <u>(normal values in brackets)</u> |
|---|---|
| Resting Pressure: 7 mmHg (16-30) | Peristaltic contractions: 100 % (>80%) |
| Relaxation duration: 8.8 seconds (> 2) | Simultaneous contractions: 0 % (<20%) |
| %Relaxation: 97 % (80-100%) | Mean contraction amplitude: 120 mmHg (30-180) |
| Residual Pressure: 0 mmHg(< 8) | Mean contraction duration: 3.1 seconds (<5.8) |
| | Low amplitude contractions: 0 % (<30%) |
| | Spontaneous activity between swallows: none |

rap

b and

duration of relaxation (rule out achalasia)

Manometry

Original probes had a single side-hole sensor and measured pressures using a pull through technique

Later probes had multiple sensors

Currently high resolution 3D manometry is available with increased accuracy versus earlier probe systems

Allows calculation of trans-sphincteric pressure gradient

Calculation of intrabolus pressure

Procedure Summary

Acid Episodes with pH<4.0, Analyzed for 21:44

| Distal Channel | Upright | (Normal) | Recumbent | (Normal) | Total | (Normal) |
|-------------------------|---------|----------|-----------|----------|--------------------|----------|
| Percent time pH<4.0 | 0.2% | (6.3%) | 0.0% | (1.2%) | 0.1% | (4.2%) |
| Total time pH<4.0 (min) | 2 | 0 | 0 | 0 | 2 | 0 |
| Reflux episodes | 2 | 0 | 0 | 0 | 2 | 0 |
| Episodes >5 min | 0 | 0 | 0 | 0 | 0 | 0 |
| Longest episode | 1 min | | 0 min | | 1 min at 20:49 / 1 | |

Probe placed in esophagus, 5cm and 15cm from GEJ as well as a probe in the stomach

Readings taken every 4-6 seconds

Event markers for symptoms and position changes

look for correlation (Symptom Index)

pH <4, should be less than 4% of the time

Composite Score Analyses (Johnson/DeMeester)

| Dist Channel | Normal | Patient | Score |
|--------------------------|-----------|---------|-------|
| Upright time in reflux | < 6.3% | 8.6% | 5.2 |
| Recumbent time in reflux | < 1.2% | 2.7% | 7.2 |
| Total time in reflux | < 4.2% | 8.2% | 6.8 |
| Episodes over 5 min. | < 3 | 1 | 2.5 |
| Longest Episode | < 9.2 min | 5.8 min | 2.7 |
| Total Episodes | < 50 | 248 | 17.4 |

| | | |
|------------------------------|--------|-------|
| Johnson/DeMeester | Normal | Score |
| Dist Channel Composite Score | <22.0 | 41.8 |

and time

Other

Barium UGI

Optional in pt with small or no HH
used to assess anatomy, length of esophagus

US abdomen

useful to R/O biliary disease

Gastric Emptying

if symptoms suggestive of delayed gastric emptying

Esophageal Impedance Studies

measures electrical impedance, liquid decreases,
gas increases

measures direction

acid and non-acid fluid - combine with pH

Bravo probe

tubeless – implantable – 48H

Indications for Surgery

Failure of medical management

Intolerance/Non-compliance with medical therapy in young patient

Persistent regurgitation/aspiration

Asthma/bronchiectasis with reflux contribution

Complications of GERD/Barrett's

Indications - Atypical

GERD laryngitis

Chronic cough

Dental caries

Contraindications

To Surgery:

- Failure to confirm diagnosis

- Aperistalsis of esophagus

- Medical contraindication to surgery

To Laparoscopic Surgery

- Uncorrectable Coagulopathy

- Severe COPD

- Pregnancy

- Previous Upper GI Surgery (relative)

- Shortened Esophagus (relative)

Goals of Surgery

Complete Dissection of Esophageal Hiatus and both crura

Re-establish Intra-abdominal Esophagus (3cm)

Closure of Esophageal Hiatus

Adequate mobilization of the gastric fundus (+/- division of short gastrics)

Creation of 1.5-2.5 cm tension free wrap (+/- Bougie)

Anchoring of wrap to esophagus

Complications of Surgery

Table 42-2 -- Complications in 400 Laparoscopic Antireflux Procedures

| COMPLICATION | NO. (%) |
|---------------------------|-------------------|
| Postoperative ileus | 28 (7) |
| Pneumothorax | 13 (3) |
| Urinary retention | 9 (2) |
| Dysphagia | 9 (2) |
| Other minor complications | 8 (2) |
| Liver trauma | 2 (0.5) |
| Acute herniation | 1 (0.25) |
| Perforated viscus | 1 (0.25) |
| Death | 1 (0.25) |
| Total | 72 (17.25) |

Complications of Surgery

Postoperative

Dysphagia

up to 50% first 3 weeks

3-15% longterm

Gas Bloat

30% early

<5% after 2 mo - most can be managed medically

Nausea and Wretching

very common – can lead to early complications

Chest Pain

Early Re-herniation (<1%)

Post-operative Care

Diet

Balanced fluid Diet 1-2 weeks

Soft diet additional 2-4 weeks

Dietician

Avoidance of carbonation, bread

Contrast Study

Selective – revisional

Anti-emetics

some use routinely

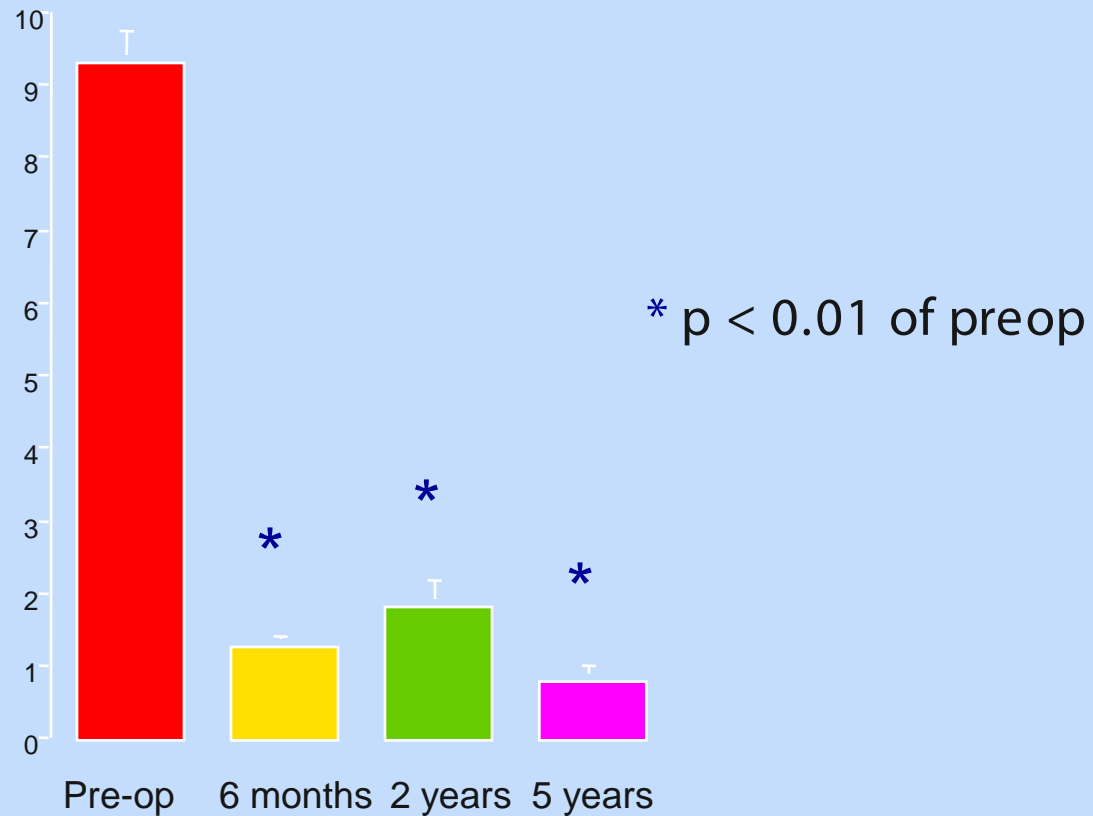
Withdrawal of PPI

weaning

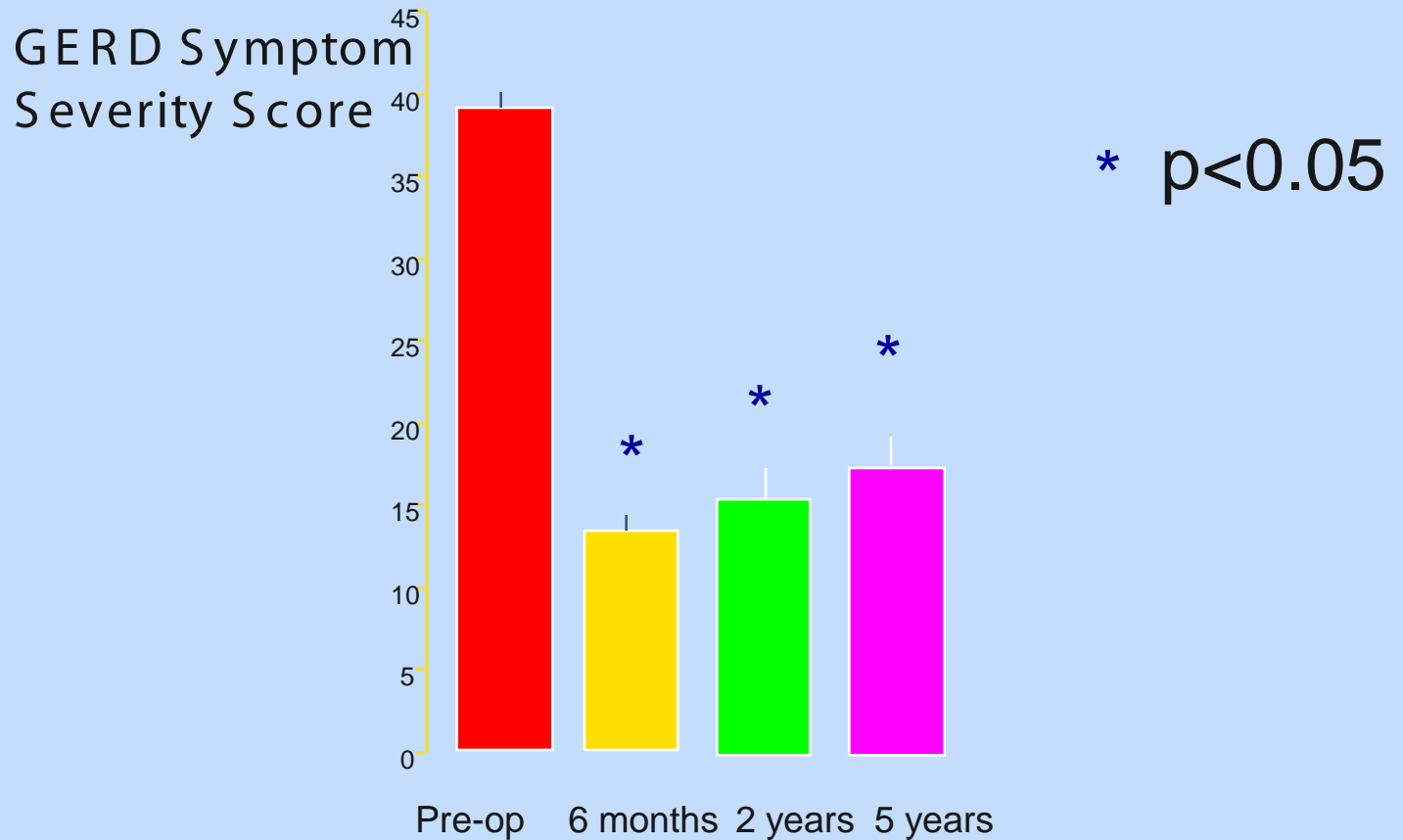
H2B

CONTROL OF ACID REFLUX

% Acid Reflux
in 24 hours



SYMPTOM CONTROL



Recurrence

At 2 years, recurrence is 5%

At five years, 12% recurrence

Patient satisfaction at 5 years is 86%

9/21(4%) had abnormal 24 hr pH study

3% have undergone re-operative surgery for reflux

Results - Literature

Numerous large case series encompassing thousands of patients

93% are symptom free at one year

3% require medications to control symptoms

Other series as above with up to 10y f/u (Kelly, Dallemagne), similar results

RCT

Lundel et al, improved symptom control in surgical

Mehta et al, further improvement in symptom scores in surgical crossover group

Non-randomized Comparative Studies

VA study (5054 pt treated for esophagitis)

improved healing and symptom control in surgery group

Results - Literature

Long term results – In favor of medical

In some cases less convincing

Spechler (1992), 62% in surgical group taking anti-secretory medications at 10 y

16% re-operation rate

same symptom control – esophagitis healing

many limitations...

Barrett's Esophagus

Implications for Surgery

- Still require long term monitoring for dysplasia

- Should have stable mucosa before OR (1 year)

- Otherwise same goals for Surgery

Advantage of Surgery over medication for Barrett's

Regression of Barrett's

- No convincing evidence (Ortiz, DeMeester)

- Newer studies with some suggestion (Rossi, Sharma)

Prevention of Dysplasia

- Risk of adenocarcinoma drops with time (MacDonald)

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