



# Learning Luncheon 1: Extraesophageal GERD: Still a Concern?



## Extra-Esophageal GERD: Still a Concern?

Michael F. Vaezi, MD, PhD, MSc(Epi), FACP  
Professor of Medicine  
Division of Gastroenterology, Hepatology and Nutrition  
Vanderbilt University Medical Center



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## CASE SCENARIO

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- 46 year old female with chronic cough, asthma and throat clearing:
  - referred to GI from ENT with the diagnosis of reflux laryngitis.
  - treated with once daily PPI for the past 6 months with minimal improvement.
  - has mild HB and occasional regurg. especially at nights.
  - denies any baseline heartburn, regurgitation, dysphagia or weight loss
- Asks about undergoing endoscopy, pH monitoring and possibly fundoplication.



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## Clinical Management Points

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- I. Diagnostic tests can provide valuable information about the nature of esophageal refluxate.
- II. Emerging data suggests on therapy testing with impedance monitoring may be helpful in ruling out GERD.
- III. Short term aggressive acid suppression may identify those in whom GERD may be a contributing factor.



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# Learning Luncheon 1: Extraesophageal GERD: Still a Concern?

 **Learning Objectives**

- At the end of this session, the successful learner should:
  - Better understand the role of GERD in patients with extra-esophageal symptoms
  - Appreciate diversity of patient complaints and the role of diagnostic testing in extra-esophageal GERD
  - Know the optimal medical and surgical treatment strategies for those with extra-esophageal symptoms.

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 **MONTREAL CLASSIFICATION**

GERD is a condition which develops when the reflux of stomach content causes *troublesome* symptoms and / or complications

Esophageal Syndromes      Extra-esophageal Syndromes

|   |  |   |   |
|---|--|---|---|
| <b>Symptomatic Syndromes</b> <ul style="list-style-type: none"><li>• Typical reflux syndrome</li><li>• Reflux chest pain syndrome</li></ul> | <b>Syndromes with Esophageal Injury</b> <ul style="list-style-type: none"><li>• Reflux esophagitis</li><li>• Reflux stricture</li><li>• Barrett's esophagus</li><li>• Adenocarcinoma</li></ul> | <b>Established Association</b> <ul style="list-style-type: none"><li>• Reflux cough</li><li>• Reflux laryngitis</li><li>• Reflux asthma</li><li>• Retrocardial erosions</li></ul> | <b>Proposed Association</b> <ul style="list-style-type: none"><li>• Sinusitis</li><li>• Pulmonary fibrosis</li><li>• Pharyngitis</li><li>• Recurrent otitis media</li></ul> |
|---|--|---|---|

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 **US Preventive Services Task Force**  
Quality of Evidence

- **Good**
  - Consistent results from well-designed, well-conducted studies.
- **Fair**
  - Strength of the evidence is limited by the number, quality, or consistency of the individual studies.
- **Poor**
  - Insufficient evidence to assess the effects on health outcomes because of limited number or power of studies.

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**US Preventive Services Task Force**  
**Strength of Evidence**

- A recommends that clinicians provide to eligible pts
  - Good evidence benefits substantial over harm
- B recommends that clinicians provide to eligible pts
  - Fair evidence benefits substantial over harm
- C no recommendation for or against
  - benefits == harm
- **D recommends against**
  - benefits < harm
- I Insufficient evidence to recommend for or against

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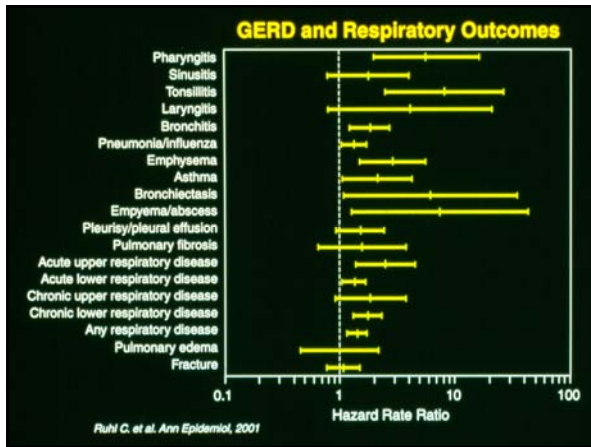
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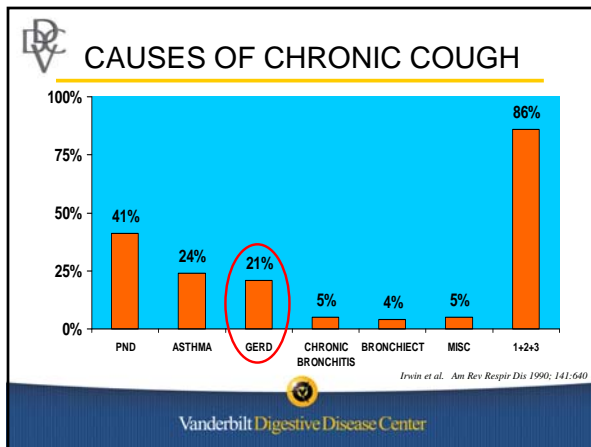
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**LPR**

- 1968- Cherry contact uclers and granuloma
- 1968- Malcomson globus pharyngeus
- 1971- Delahunty posterior laryngitis
- 1977- Chodosh hoarseness, cough, otalgia
- 1981- Fearon aspiration pneumonia
- 1983- Olson granuloma
- 1976- Glanz laryngeal carcinoma
- 1980- Bogdasarian laryngeal stenosis

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Why Don't Patients Improve on Therapy?

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**META ANALYSIS Cough**

| Study          | Proton pump inhibitor<br>Not cured/ No in group | Placebo<br>Not cured/ No in group | Odds ratio (random)<br>(95% CI) | Weight (%) | Odds ratio (random)<br>(95% CI) |
|----------------|---|-----------------------------------|---------------------------------|------------|---------------------------------|
| Ours 1999      | 7/8   | 9/9                               |                                 | 25.34      | 0.26 (0.01 to 7.43)             |
| Kjander 2000   | 7/9   | 12/12                             |                                 | 28.17      | 0.12 (0.01 to 2.85)             |
| Cherrier 2003  | 2/5   | 4/6                               |                                 | 46.49      | 0.33 (0.03 to 3.93)             |
| Total (95% CI) | 22  | 27                                |                                 | 100.00     | 0.24 (0.04 to 1.27)             |

Total events: 16 (PPI), 25 (placebo)  
 Test for heterogeneity:  $\chi^2=0.26$ ,  $df=2$ ,  $P=0.88$ ,  $I^2=0\%$   
 Test for overall effect:  $z=1.68$ ,  $P=0.09$

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 Chang et al, BMJ 2005

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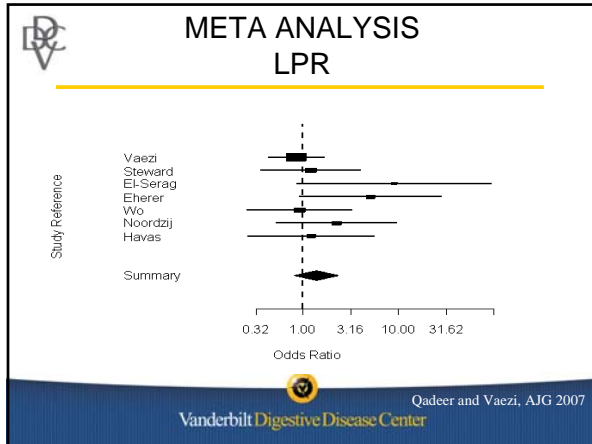
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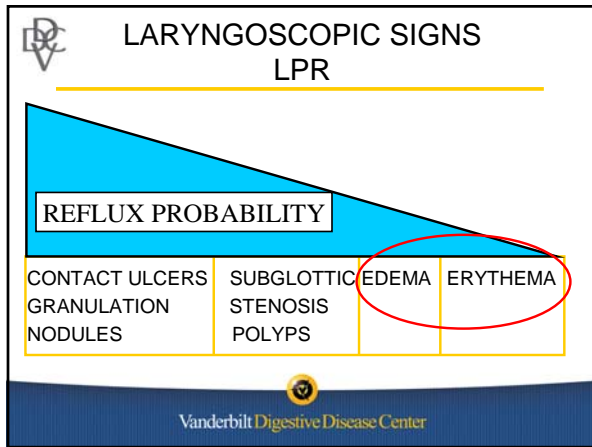
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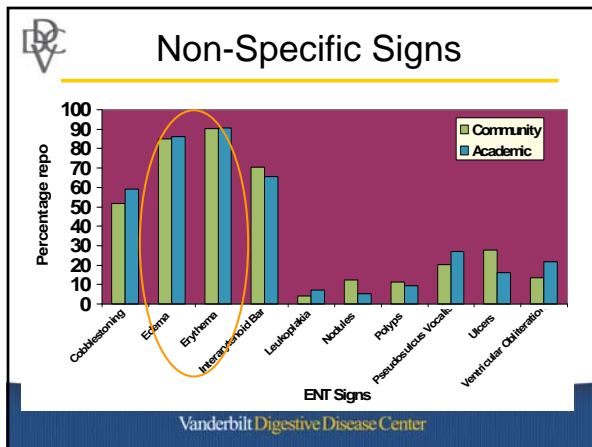
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Is Reflux of any Nature the Contributing Etiology for Patient's Persistent Symptom DESPITE Aggressive PPI Therapy?

  
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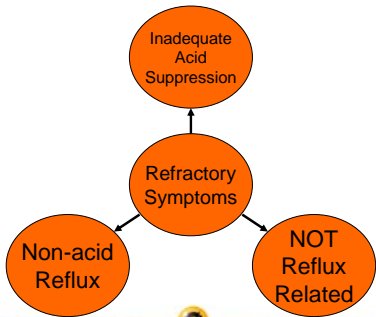
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### Refractory Reflux Symptoms



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graph TD; A[Refractory Symptoms] --> B[Inadequate Acid Suppression]; A --> C[Non-acid Reflux]; A --> D[NOT Reflux Related];
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Vaezi, AJG 2004

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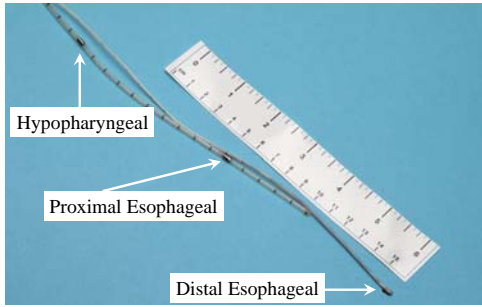
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### pH Monitoring



Hypopharyngeal

Proximal Esophageal

Distal Esophageal

  
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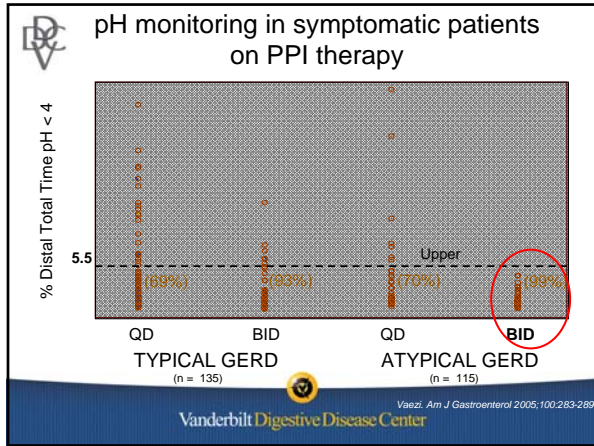
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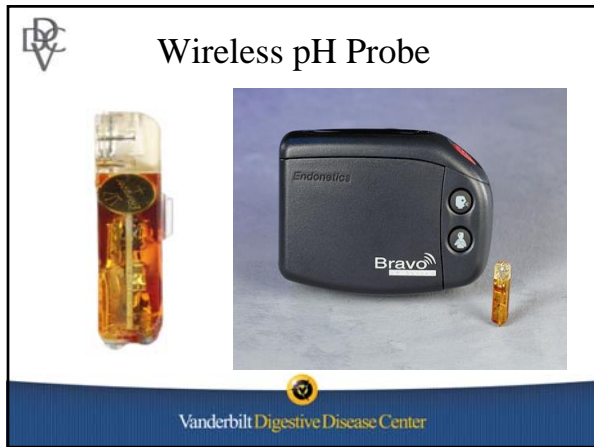
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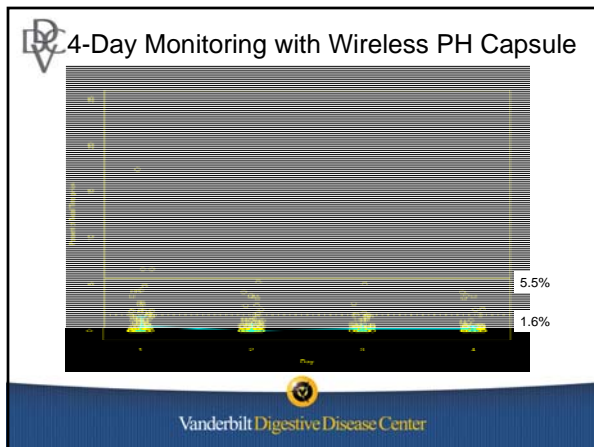
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 Restech pH Monitoring



**Dx-pH Measurement System™**  
Telemetry / Wireless communication transmission  
Comfortable, well tolerated by patients

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 MII-pH Monitoring



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 MII-pH in GERD Refractory to PPI BID

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graph TD; A[Symptomatic pts (N=144)] --> B[Abnl Non-acid reflux (37%)]; A --> C[Inadequate Acid Supp (Distal acid > 1.6%) (11%)]; A --> D[Normal (52%)];
```

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Mairia et al. Gut 2006; 55:1398-1402.

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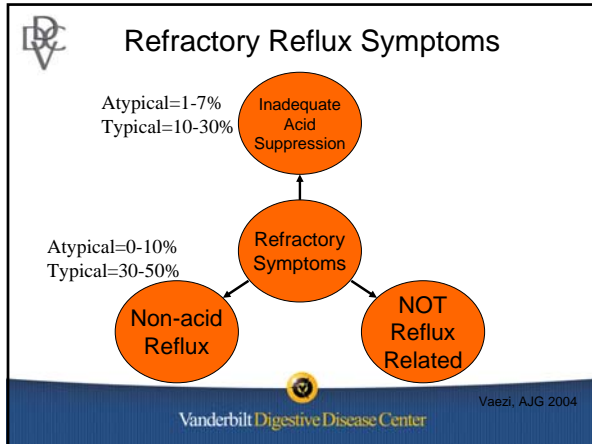
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Should We Do pH Monitoring Off Therapy or Impedance Monitoring On Therapy?

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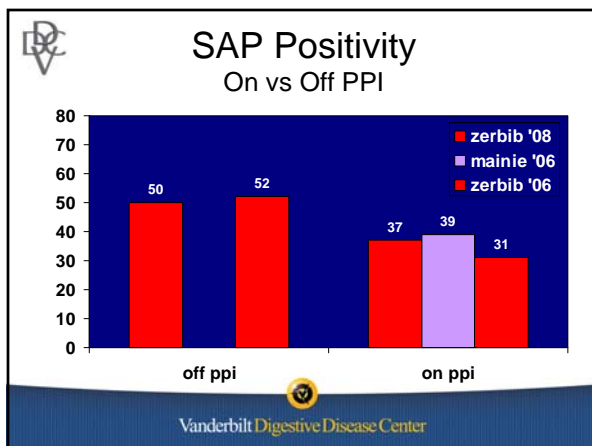
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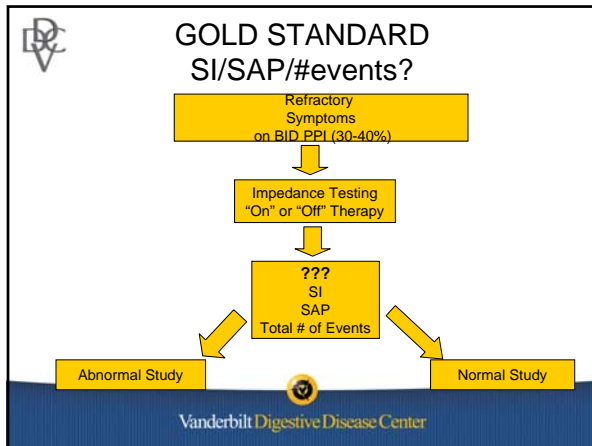
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**Prevalence of Abnormal SAP/SI/# events**

|             | SAP         | SI                | Total Number of Events |
|-------------|-------------|-------------------|------------------------|
| On Therapy  | 31% (28/90) | 21% (19/90)       | <b>11% (10/90)</b>     |
| Off Therapy | 30% (12/40) | <b>23% (9/40)</b> | 47% (20/43)            |

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**SENSITIVITY AND SPECIFICITY  
As a function of "gold standard"**

Sensitivity (Specificity)

|             | "Gold Standard" | # Events         | SI               | SAP              |
|-------------|-----------------|------------------|------------------|------------------|
| On Therapy  | # Events        | -                | <b>70% (85%)</b> | <b>60% (72%)</b> |
|             | SI              | 37% (96%)        | -                | 53% (75%)        |
|             | SAP             | 21% (94%)        | 36% (85%)        | -                |
| Off Therapy | # Events        | -                | <b>44% (95%)</b> | 39% (77%)        |
|             | SI              | <b>89% (68%)</b> | -                | <b>89% (87%)</b> |
|             | SAP             | 58% (61%)        | 67% (96%)        | -                |

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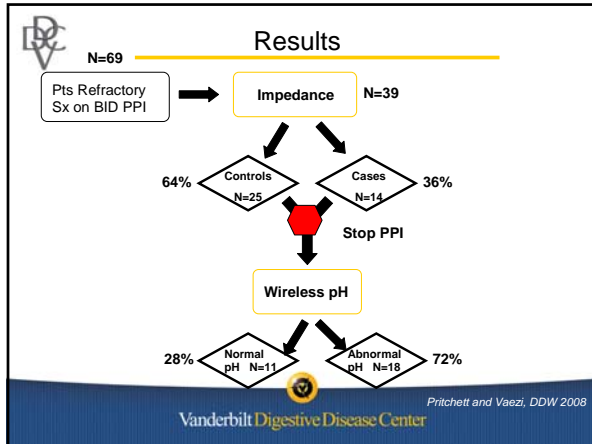
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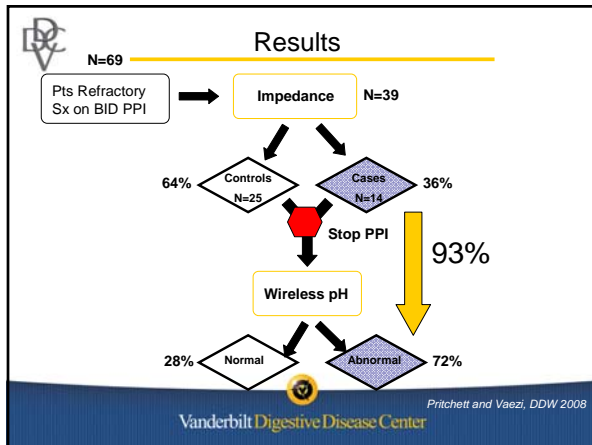
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Role of Fundoplication in Pts Unresponsive to Therapy?

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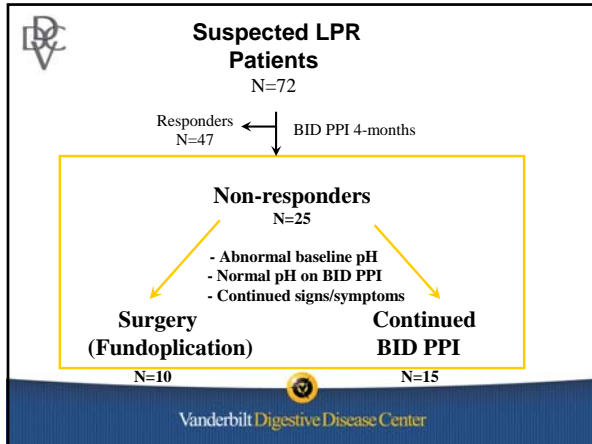
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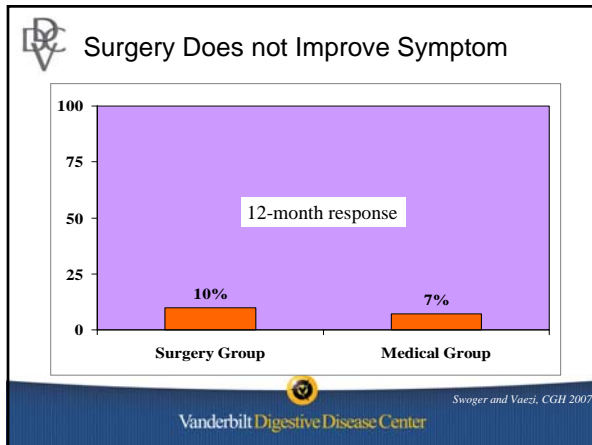
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**Abnormal Impedance Fundoplication**

- 200 patients with refractory sx's on bid PPI's
- 172 had sx's during study day

| Reflux Pattern | Distribution | Fundoplication |
|----------------|--------------|----------------|
| Non-acid       | 61 (35%)     | 14             |
| Acid           | 13 (8%)      | 4              |
| None           | 98 (57%)     | 1              |

} 16/17 better

Mainie et al Br J Surg 2006, 93, 1483-87

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**Predictors of Response to Fundoplication**

- 18 patients poorly responsive to BID PPI
  - Impedance on PPI therapy
  - pH monitoring off tx-all +
  - 67% HB; 56% regurg.
  - 60% H/H
    - 10% esophagitis
  - 71% low LES

**Primary sx**

- Reflux (42%)
- H/H (22%)
- Esophagitis (11%)
- Regurgitation (11%)
- Chest pain (8%)

Kloehan and Vaezi; DDW 2009  
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**Predictors of Response to Fundoplication**

|                      | Non-responder   | Responder (partial + complete) | P-value |
|----------------------|-----------------|--------------------------------|---------|
| % time pH <4 (total) | 0.15 (0.0-8.25) | 0.3 (0.0-4.32)                 | 0.76    |
| SI >50%              | 50%             | 60%                            | 0.7     |
| SAP >95%             | 50%             | 50%                            | 0.8     |
| Total reflux events  | 70 (58-101)     | 46 (36-59)                     | 0.2     |
| Heartburn            | 38%             | 90%                            | 0.02    |
| Regurgitation        | 25%             | 80%                            | 0.02    |

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**BE CONSERVATIVE IN DIAGNOSING ABNORMALITY!**

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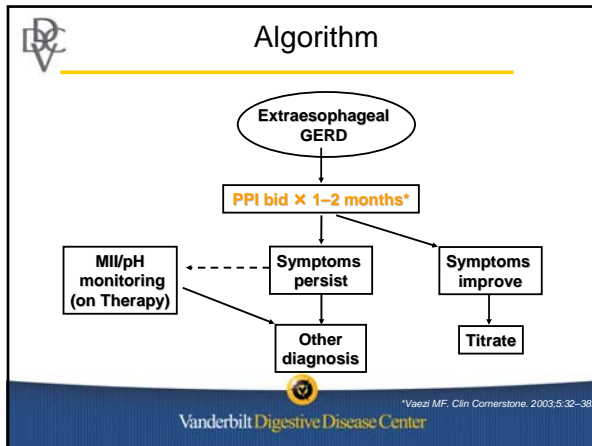
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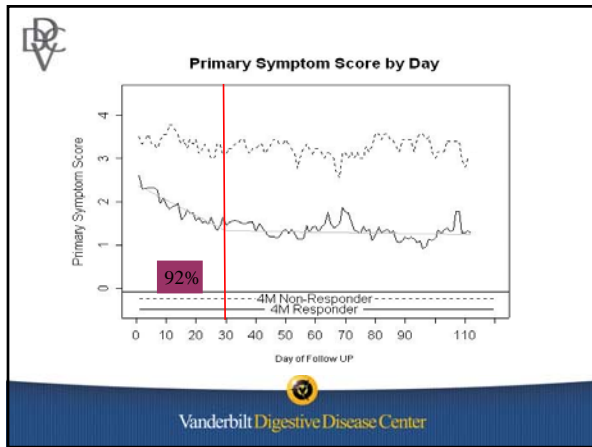
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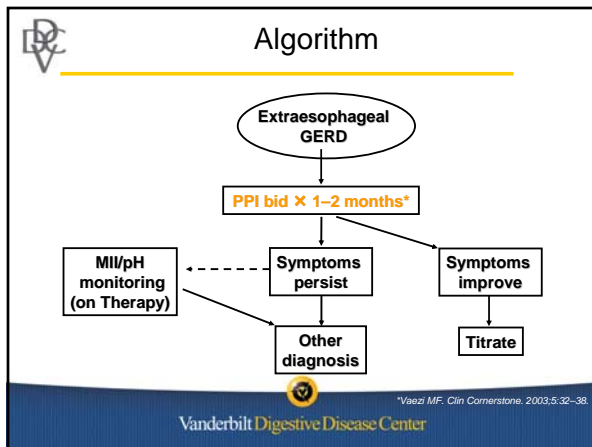
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