

What to Do About Bizarre Esophageal Symptoms?

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Is GERD to Blame?

livingwithgerd
GERD Sw

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Tho
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Yellow Tongue
=
Acid Reflux

osion due
stomach
outh and
teeth



Extra-Esophageal GERD

- **ENT**
 - Globus
 - Hoarseness
 - Laryngitis
 - Otitis
 - Pharyngitis
 - Sore Throat
 - Subglottic stenosis
 - Vocal Cord Granulomas
- **Pulmonary**
 - Chronic Cough
 - Asthma
 - Pulmonary fibrosis
 - Pneumonia
- **Miscellaneous**
 - Non-Cardiac Chest Pain
 - Dental erosions

Vaezi et al. Clin Cornerstones 2003



Objectives

- **Non-Cardiac Chest Pain (NCCP)**
- **Throat and Cough Symptoms**
- Is there evidence that GERD is a cause?
- What are the best diagnostic tools?
- How effective are GERD treatments?
- If not GERD, then what?



Non-Cardiac Chest Pain

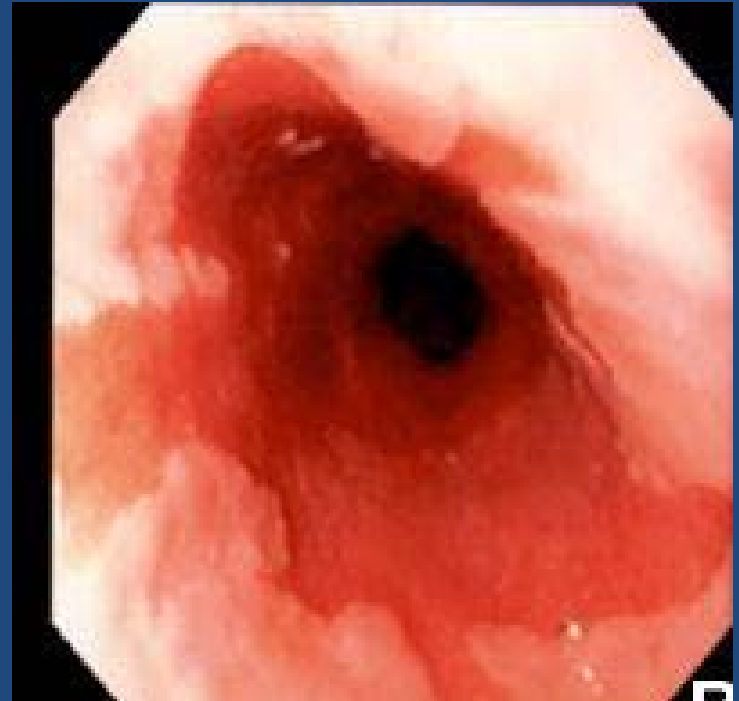
- Evidence for GERD as a cause
 - NCCP reported in 37% with weekly heartburn vs 7.9% without GERD symptoms
 - Heartburn is the only reliable risk factor for NCCP (OR=1.74, 95% CI: 1.08-2.79)

1) Locke et al. Gastroenterology 1997 2) Eslick et al. Aliment Pharmacol Ther 2003



Diagnosis of NCCP

- **Upper Endoscopy**
 - 19.4% Erosive Esophagitis
 - 4.4% Barrett's
 - 28.6% Hiatal Hernia
 - Findings were less common than in classic GERD

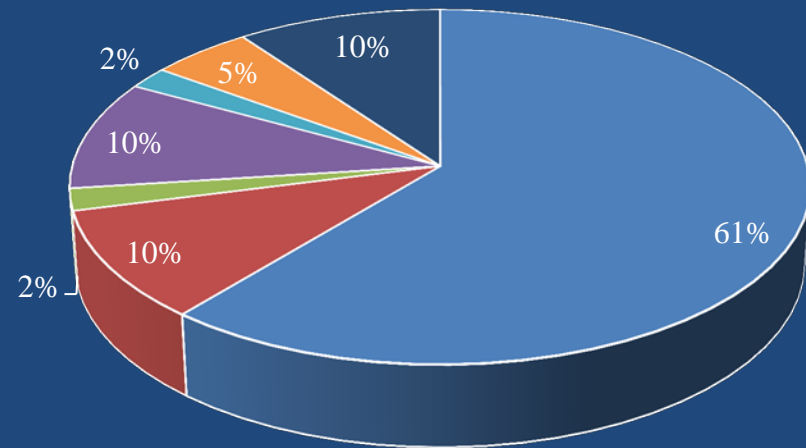
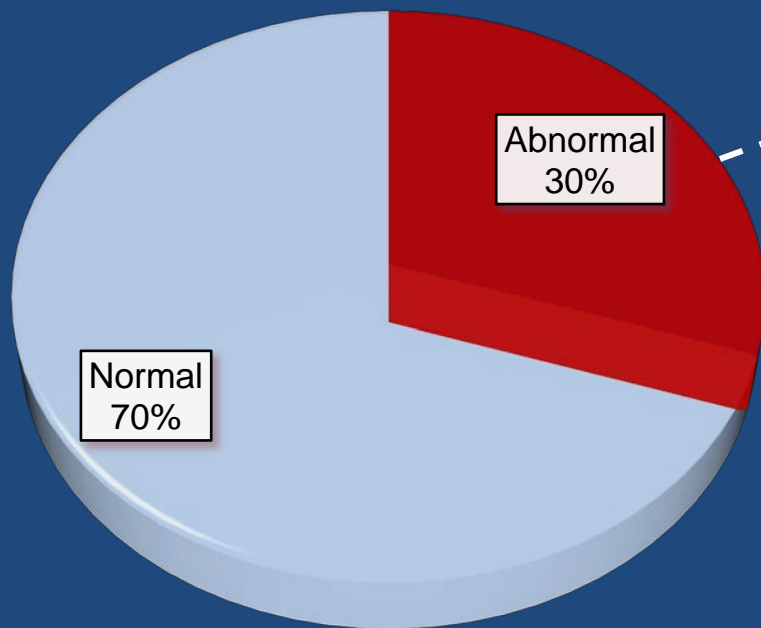


Dickman et al. Am J Gastroenterol 2007



Low Yield Esophageal Manometry

ESOPHAGEAL MANOMETRY FINDINGS



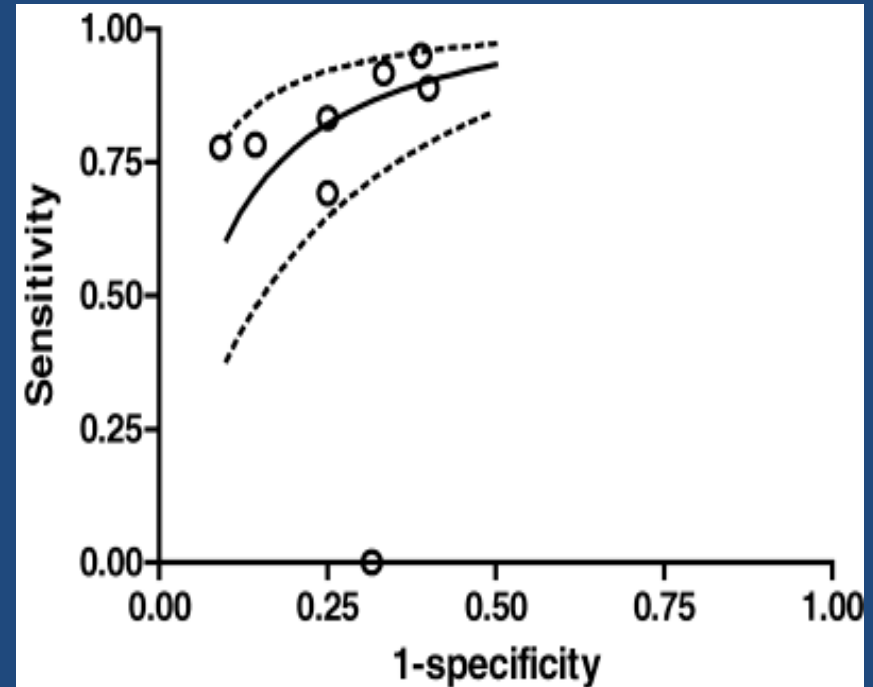
- Hypotensive LES
- Hypertensive LES
- Achalasia
- Nutcracker Esophagus
- Diffuse Esophageal Spasm
- Ineffective Peristalsis

Dekel et al. Aliment Pharmacol and Ther 2003



Empiric PPI Therapy

- Pooled Sensitivity 80%
- 74% Specificity for GERD as cause of NCCP



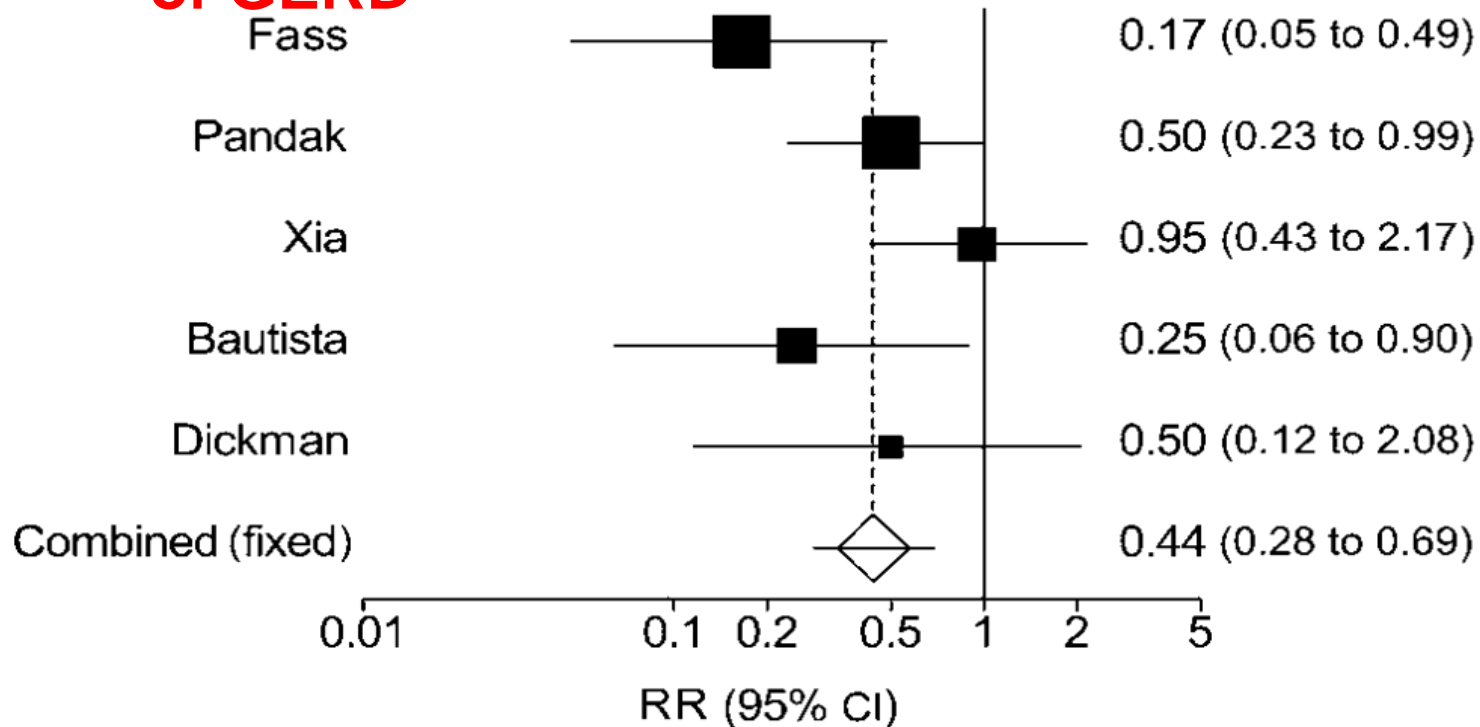
Cremonini et al. Am J Gastroenterol 2005



pH Testing predicts response to PPI Therapy

B - Evidence of GERD

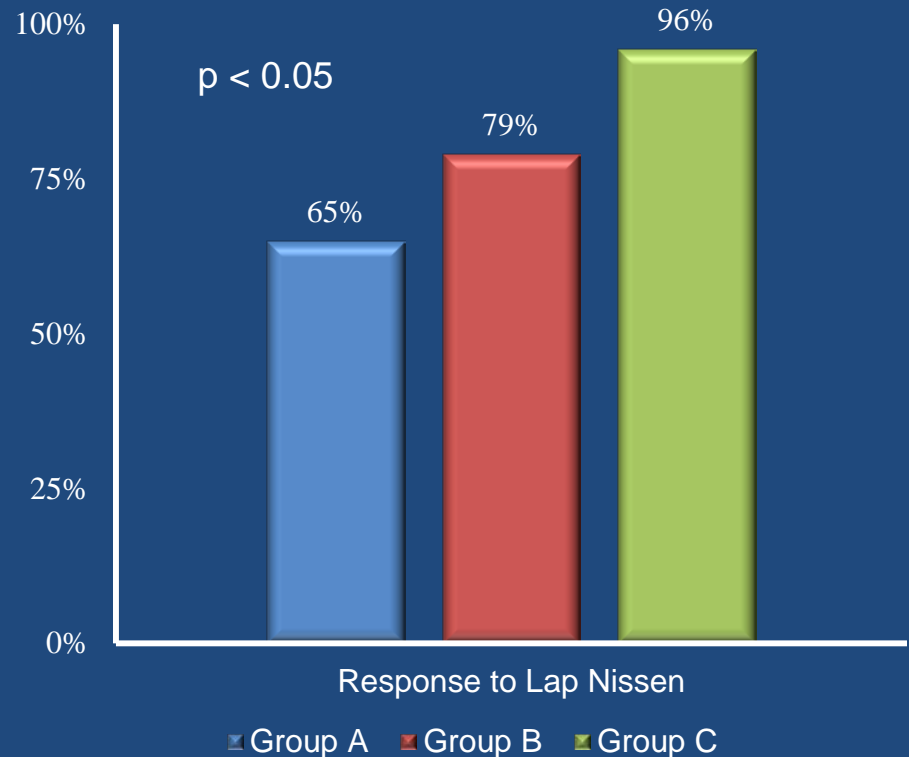
RR meta-analysis plot (fixed effects)



pH Testing Predicts Response to Anti-Reflux Surgery

- **Group A**
 - No episodes of chest pain during pH monitoring
- **Group B**
 - < 40% chest pain correlated with acid reflux
- **Group C**
 - > 40% chest pain correlated with reflux

Response Rate to LARS for NCCP



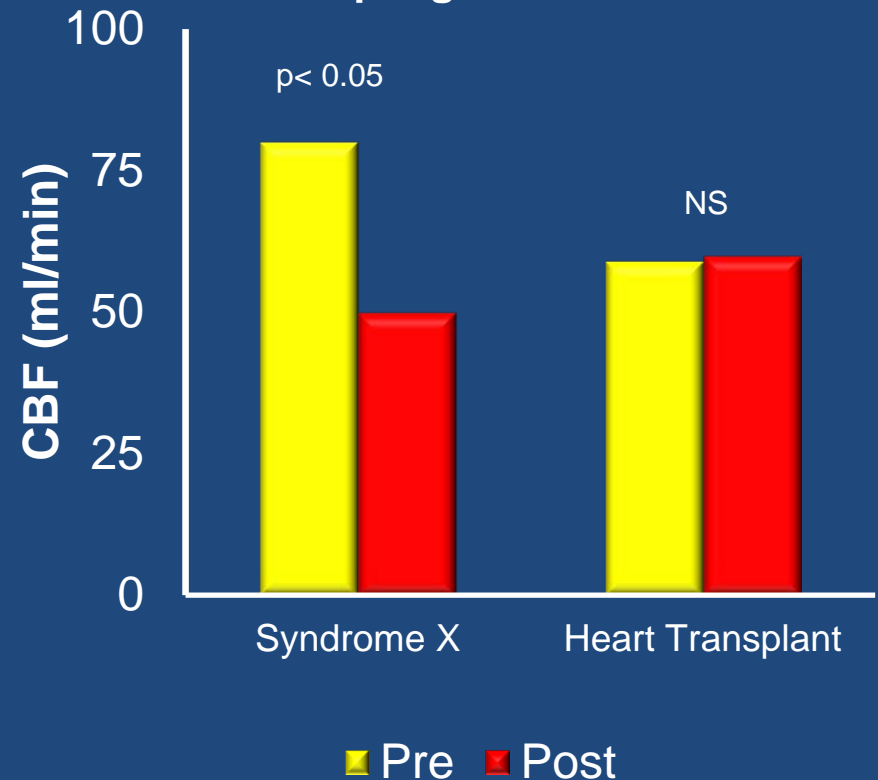
Patti et al. Surg Endosc 2002



NCCP: Alternative Explanations

- **Functional Chest Pain**
 - Panic Disorder 15%
 - OCD 21%
 - Major Depression 28%

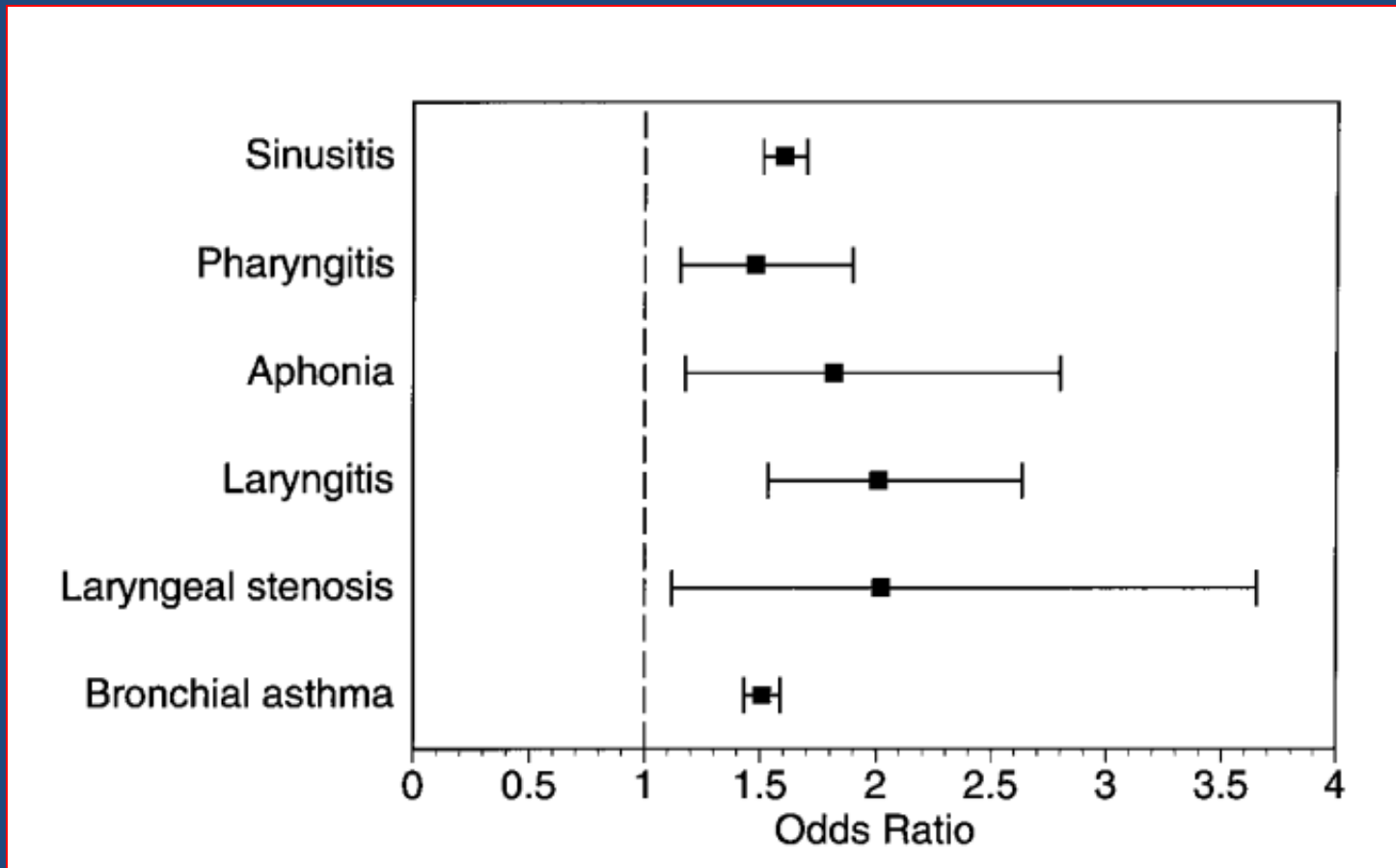
Coronary Blood Flow Before and After Esophageal Acidification



1) Ho et al. Gut 1998 2) Chauhan et al. Eur Heart Jour 1996



Evidence for GERD as Cause of Laryngopharyngeal Reflux Symptoms



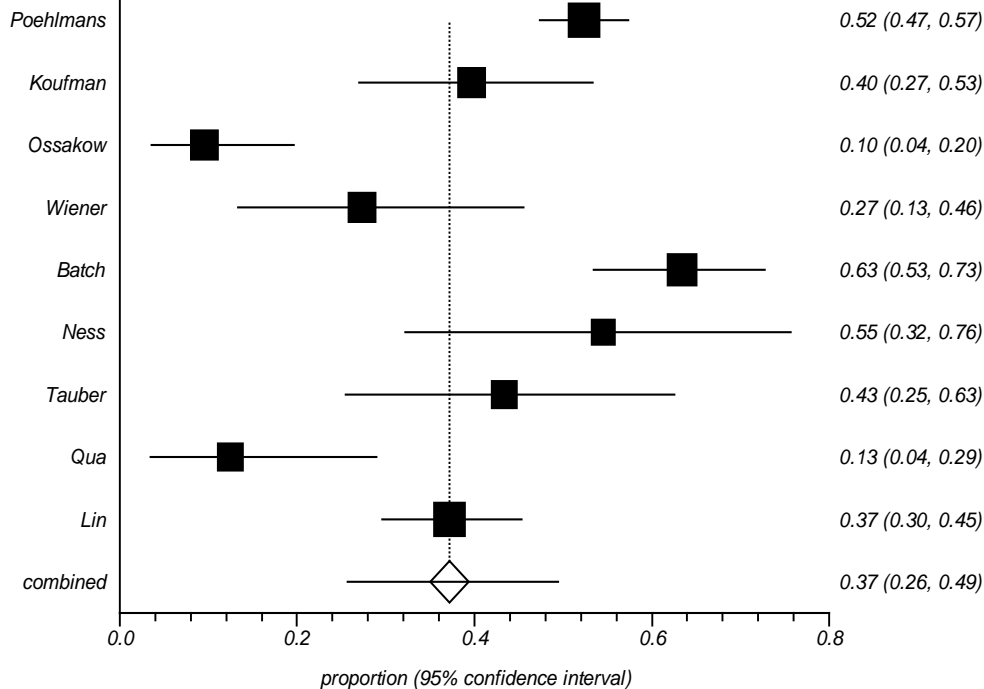
El-Serag et al. Gastroenterology 1997



Diagnosis of GERD for LPR

Symptoms: EGD

37% Prevalence of EE



Lee et al. Am J Gastroenterol 2008, (103) A994



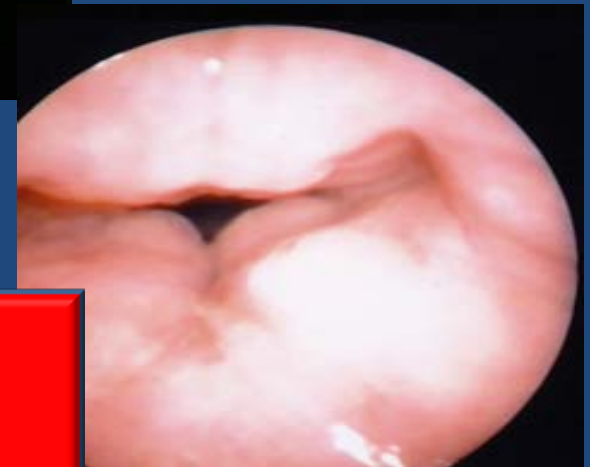
Diagnosis: Laryngoscopy



Infraglottic Erythema



Obliteration of ventricles



Laryngeal Edema

Sensitive but Not Specific

Poor Inter-Observer Agreement of Laryngoscopy

Intraclass Correlation Coefficient (ICC) = Agreement Between Examiners	
$r > 0.74 = \text{Excellent}$	
Finding	r
Anterior Edema	0.363
Membranous Fold Edema	0.461
Arytenoid Edema	0.161
Anterior Erythema	0.293
Membranous Fold Erythema	0.369
Arytenoid Erythema	0.181
Severity of GERD	0.265
Likelihood GERD	0.248

Branski et al. Laryngoscope 2002



pH Testing for LPR Symptoms

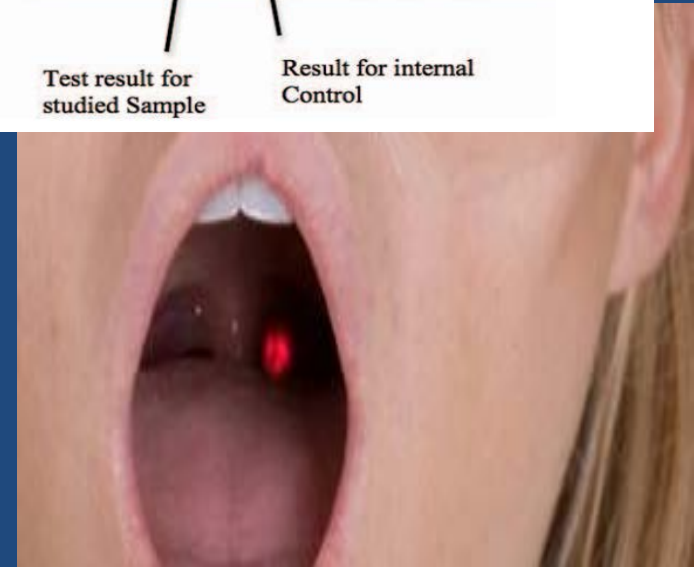
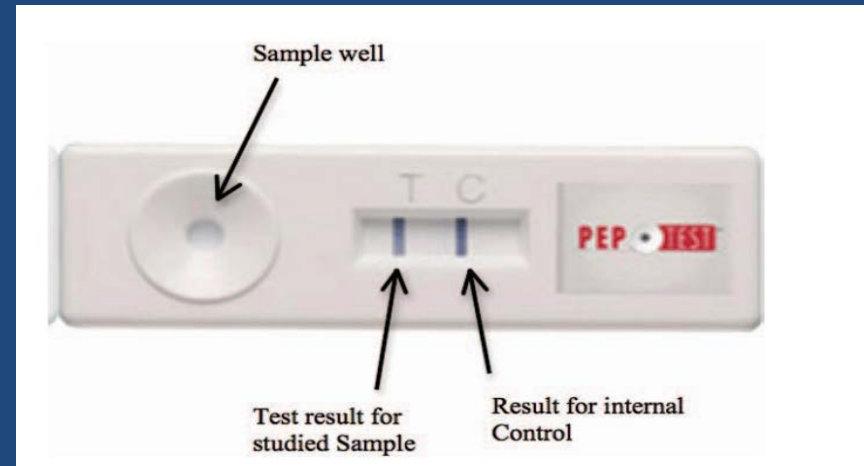
Study	N	Abnormal Distal EAE	%
Havas	15	6	40%
Metz	10	?	?
Little	222	90	40.5%
Chen	735	170	23.1%
Wiener	15	9	60%
Katz	10	7	70%
Ulualp	20	-	-
McNally	11	6	54.5%
Shaker	12	-	-
Ossakow	38	26	68.4%
Kouffman	32	24	75%
Wilson	97	17	17.5%
Cumulative	1217		54%

Vaezi et al. Clin Gastroenterol and Hepatol 2003



Oropharyngeal pH Testing and Salivary Pepsin

- Pepsin could not discriminate between controls and LPR+ subjects
- Oropharyngeal pH scores similar between all groups



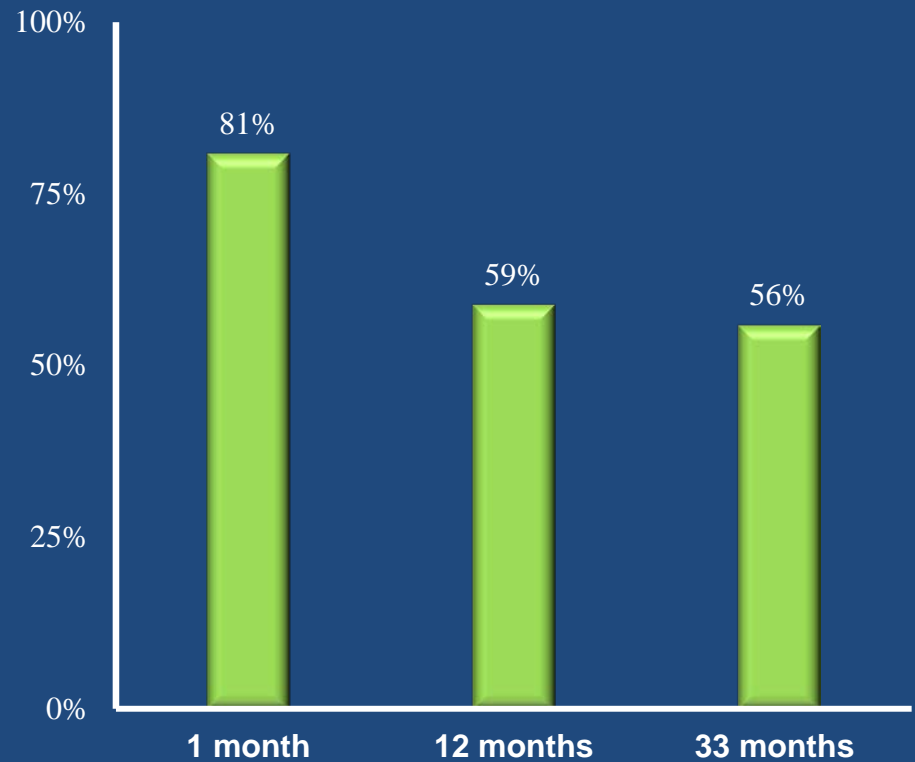
Yadlapati et al. Clin Gastroenterol and Hepatol 2015



pH Impedance and Response to Surgery

- Only abnormal pH predicted response
- No impedance parameter was predictive
- Abnormal pH+Heartburn \rightarrow 90% probability of improvement

Response Rate of LPR Symptoms After Lap Nissen



Francis et al. Laryngoscope 2011

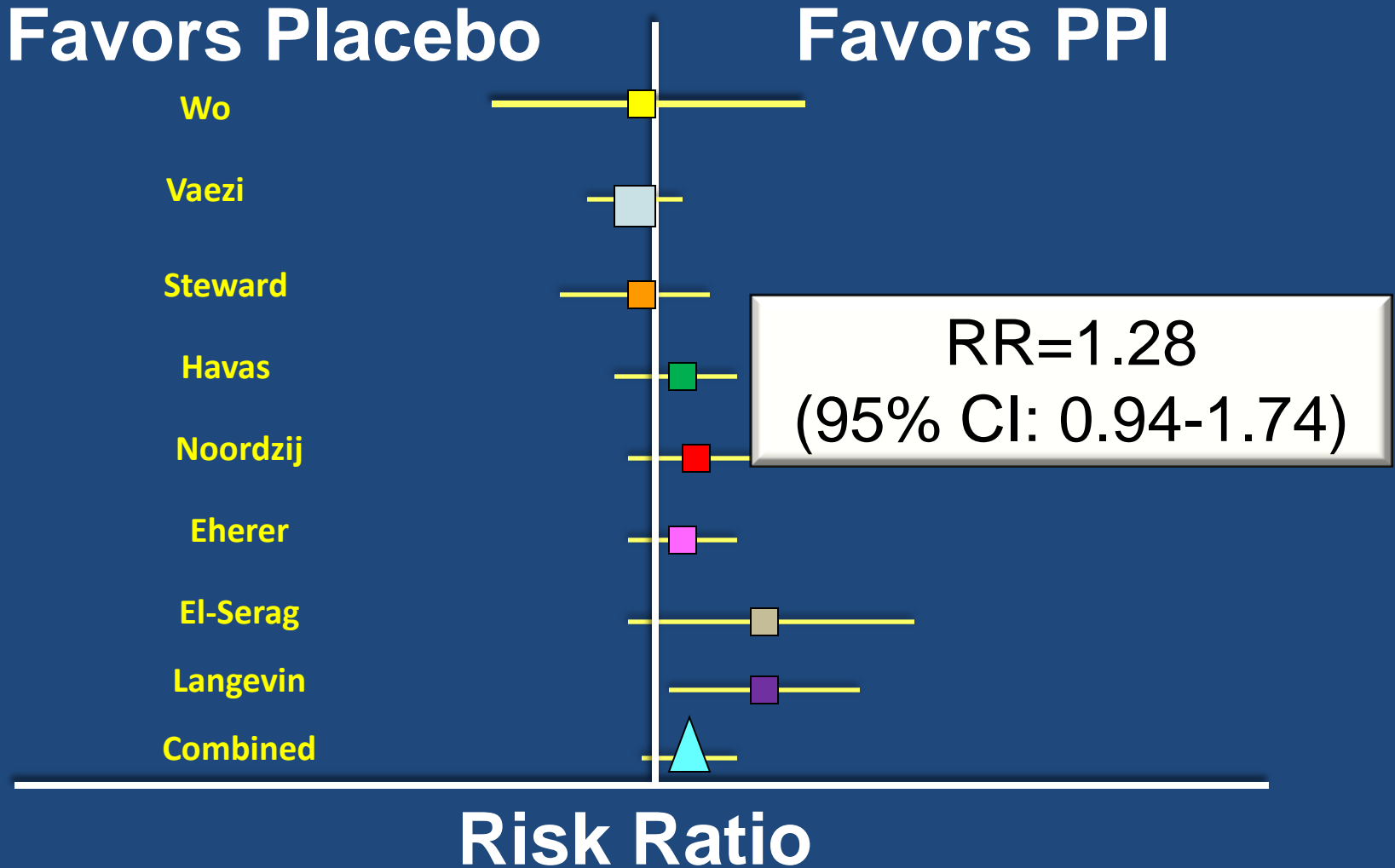


Diagnostic Approach to LPR

- **ACG Guidelines**
 - Empiric PPI trial in pts who have both LPR and GI GERD Symptoms
 - Ambulatory Reflux Testing in pts with LPR Symptoms Alone

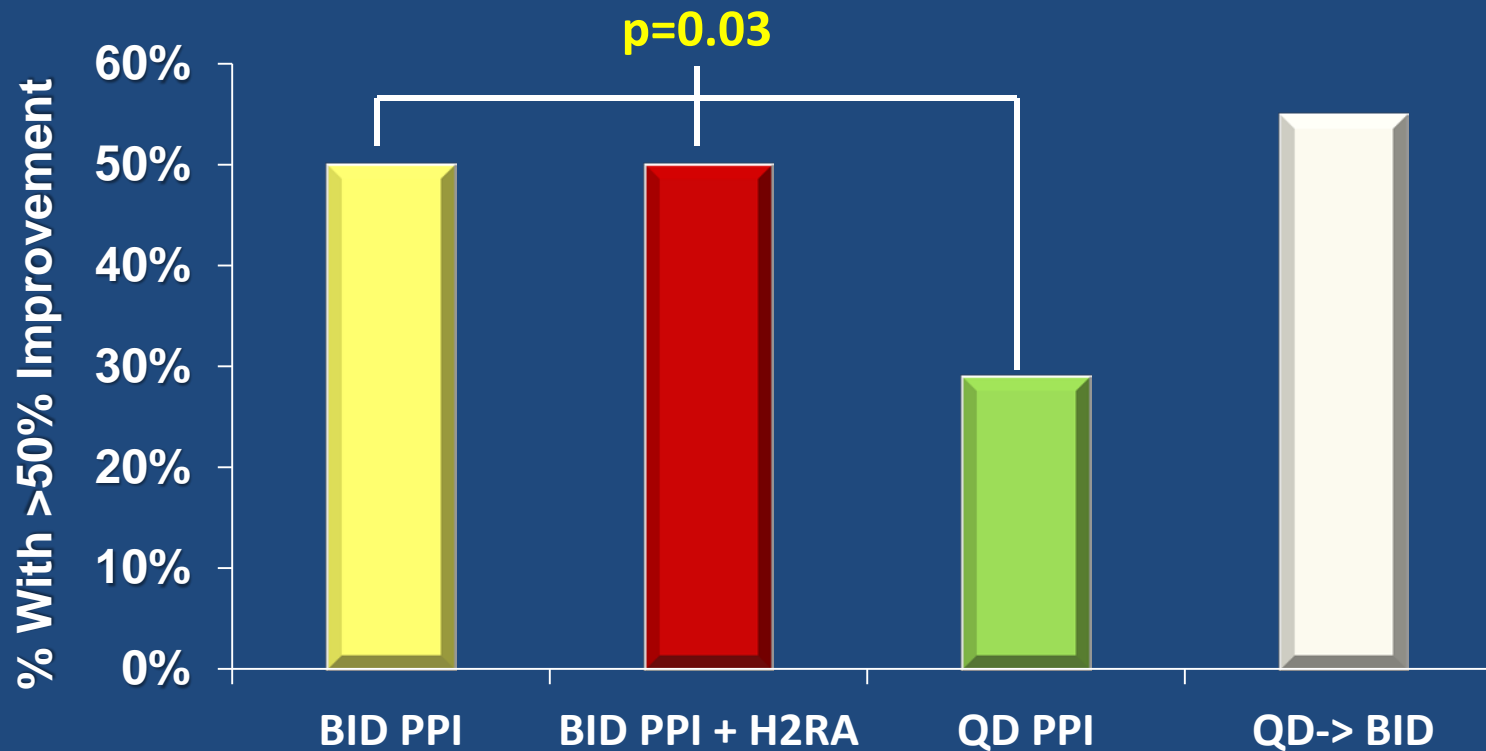


Effectiveness of PPI Therapy for LPR Symptoms



High Dose PPI Therapy for LPR Symptoms

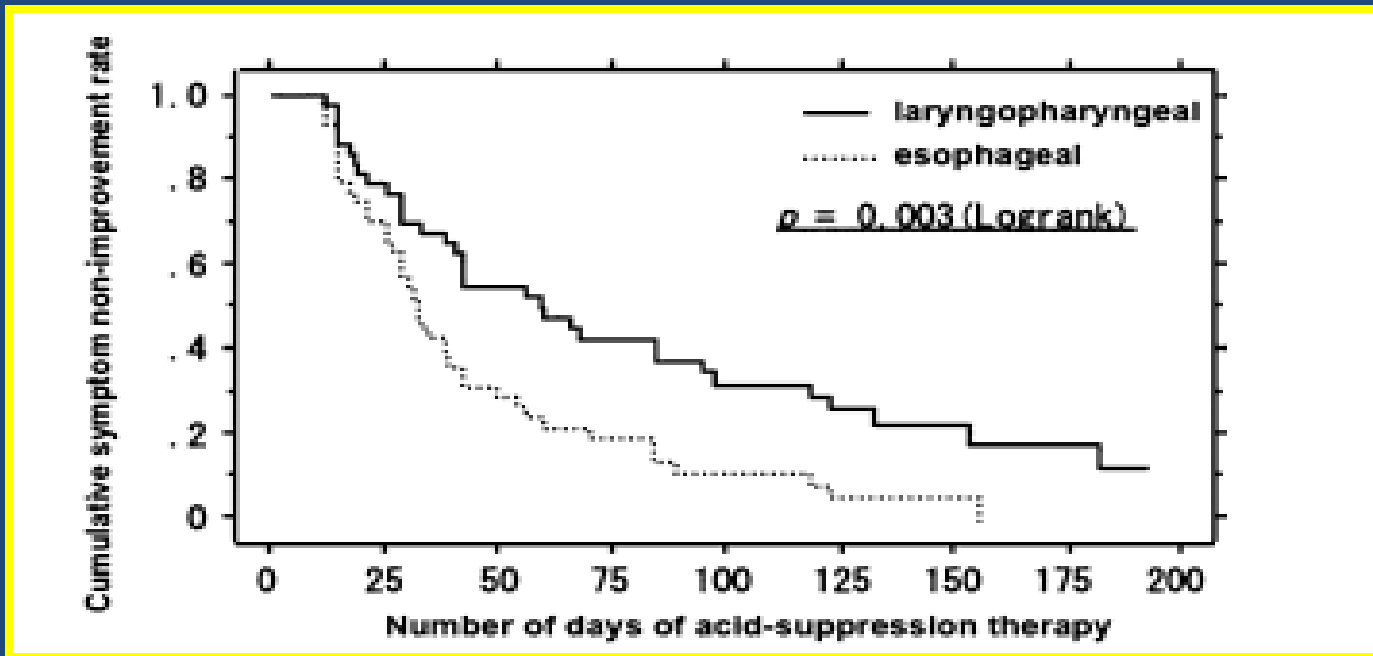
Symptom Response on PPI Therapy at 8 Weeks



Park et al. Laryngoscope 2005



Prolonged Course of PPI Therapy



Improvement Rate	30 days	60 days	90 days	120 days
LPR	30%	49.8%	62.7%	71.1%
Esophageal	45.5%	78.3%	89%	91.7%

Oridate et al. Dig Dis Sci 2008



Raft-Forming Alginates

- Floats to the Top of the Fundus
- Mechanical barrier to both acid and non-acid reflux
- In vitro inhibits pepsin diffusion and enzymatic activity

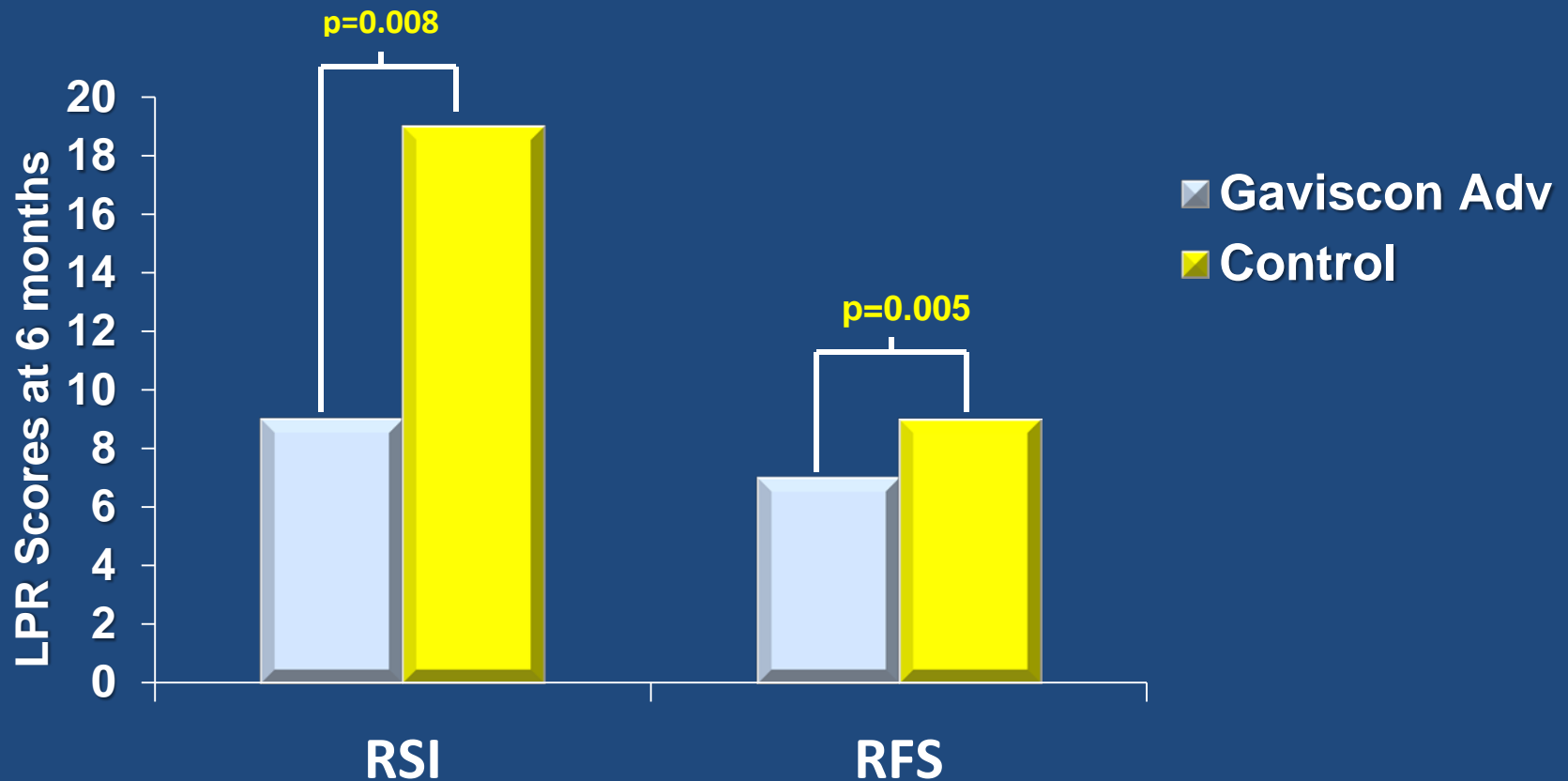


Strugala et al. J Pharm Pharmacol 2009



Gaviscon Advance

Gaviscon Advance vs Usual Care

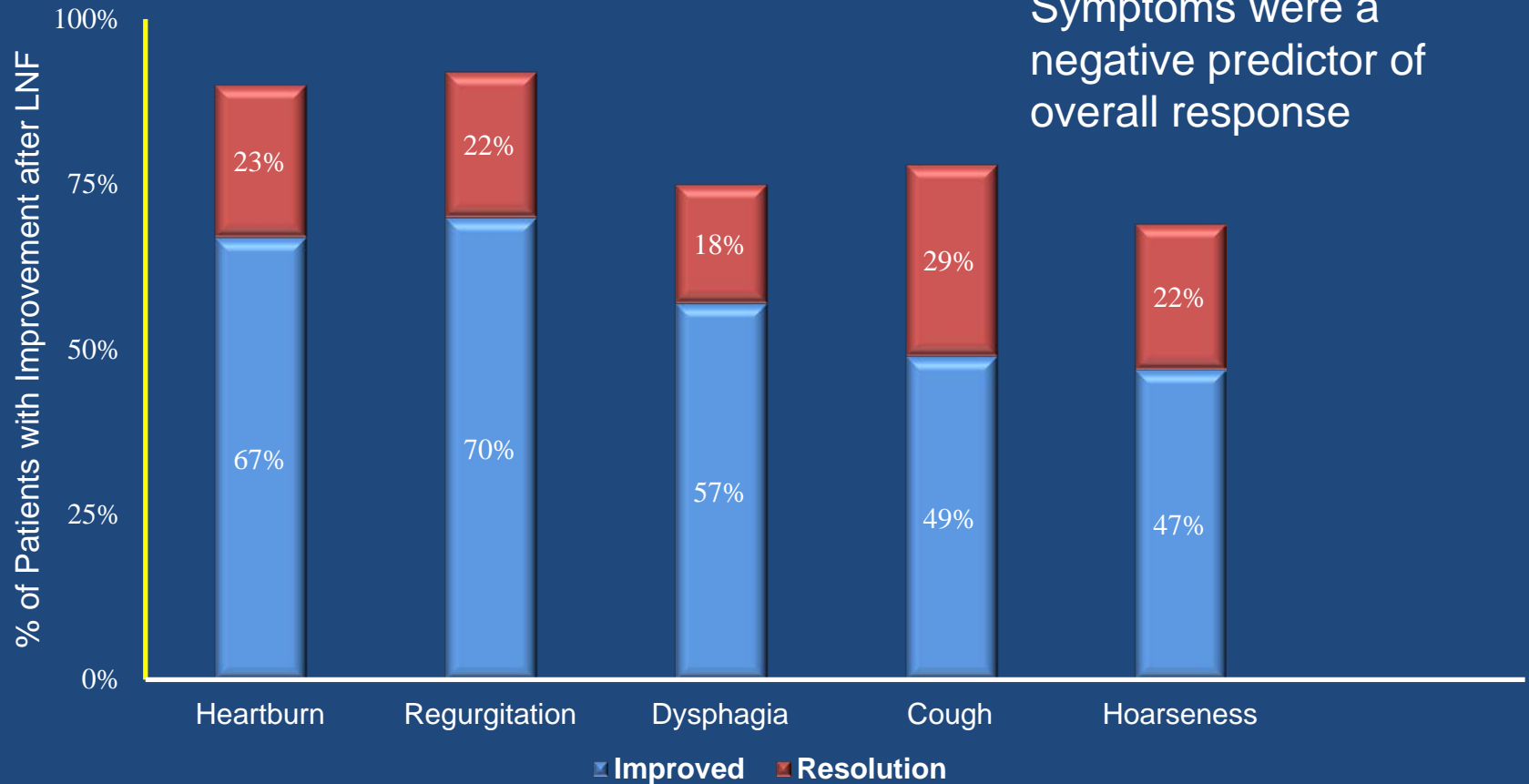


McGlashan et al. Eur Arch Otorhinolaryngol 2009



LPR Symptoms and Response to LNF for GERD

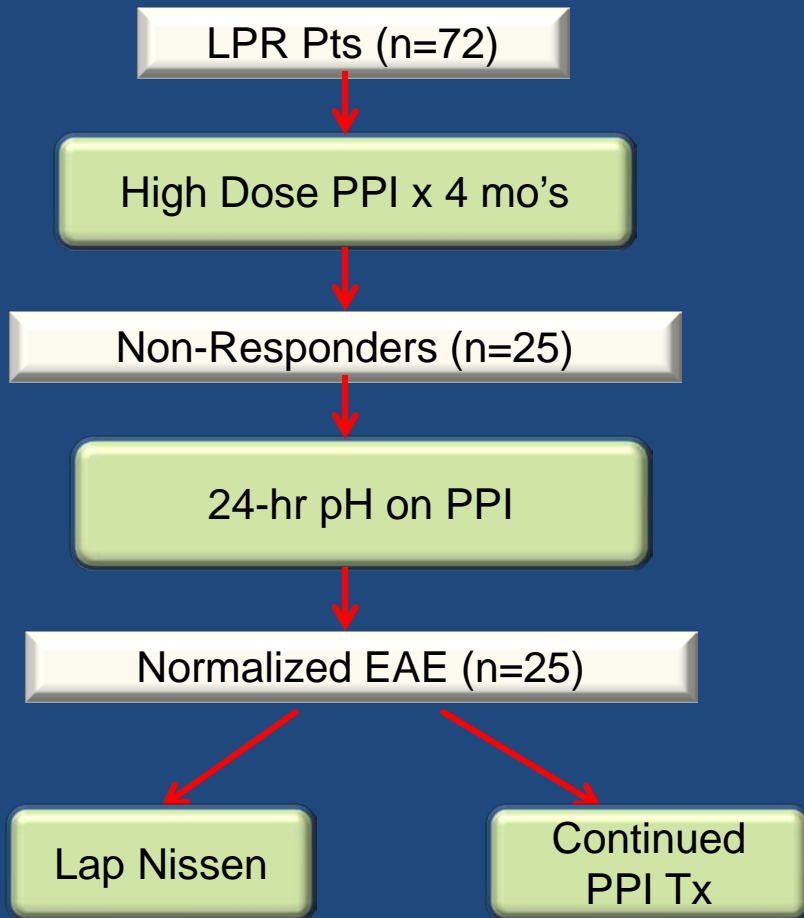
Presence of Airway Symptoms were a negative predictor of overall response



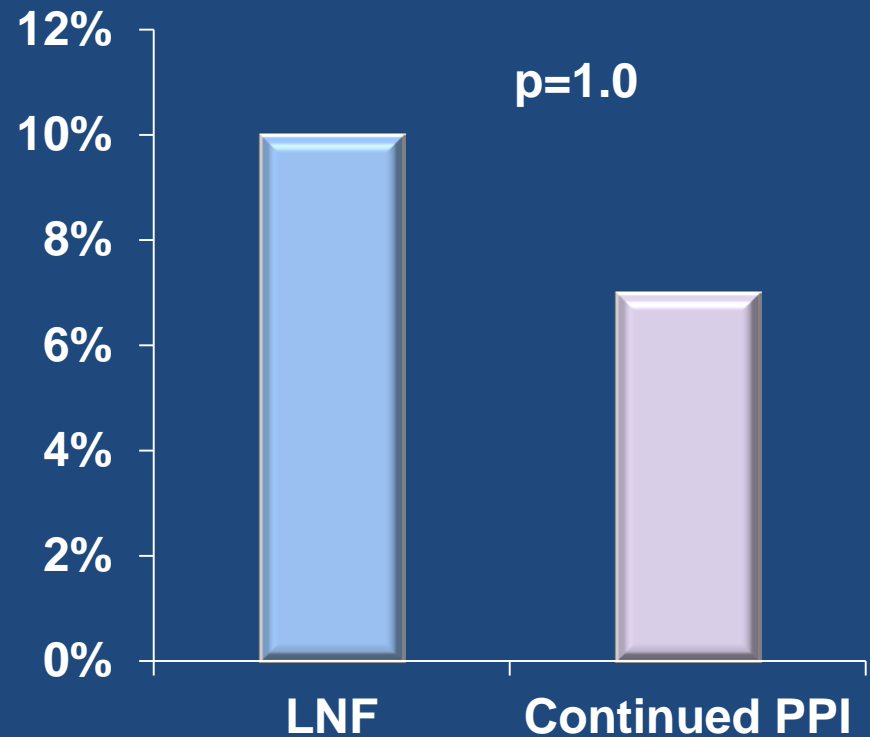
Oelschalger et al. Am J Gastroenterol 2008



LNF Not Effective for PPI Non-Responders



Symptom Improvement At 1 Year



Swoger et al. Clin Gastroenterol and Hep 2006



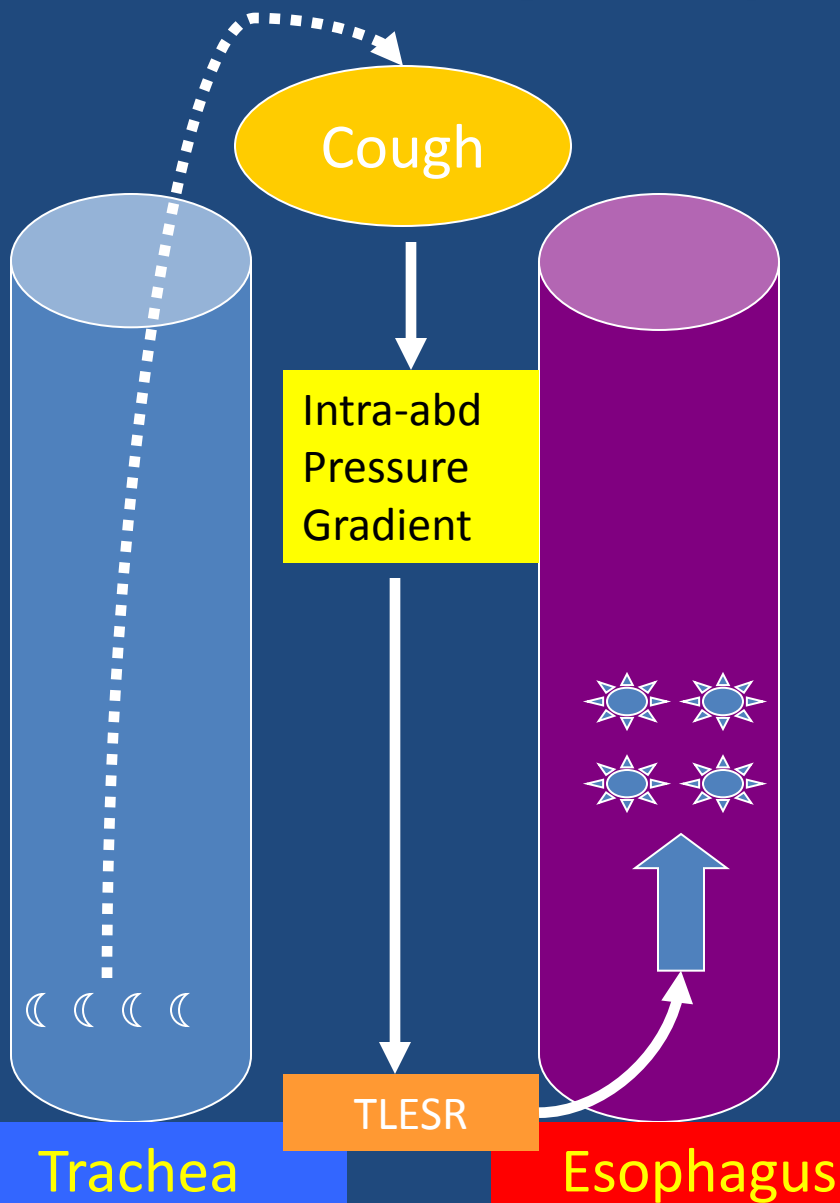
Alternative Explanation for Cough

- **Chronic Cough Patients**
 - 24-hr pH/Impedance Testing
 - Acoustic recording of cough
 - Calculation of symptom correlation (SAP) for Cough
- **48% had + SAP for cough preceded by reflux**
 - Normal levels of EAE (3.6%)
 - High level of airway sensitivity to citric acid

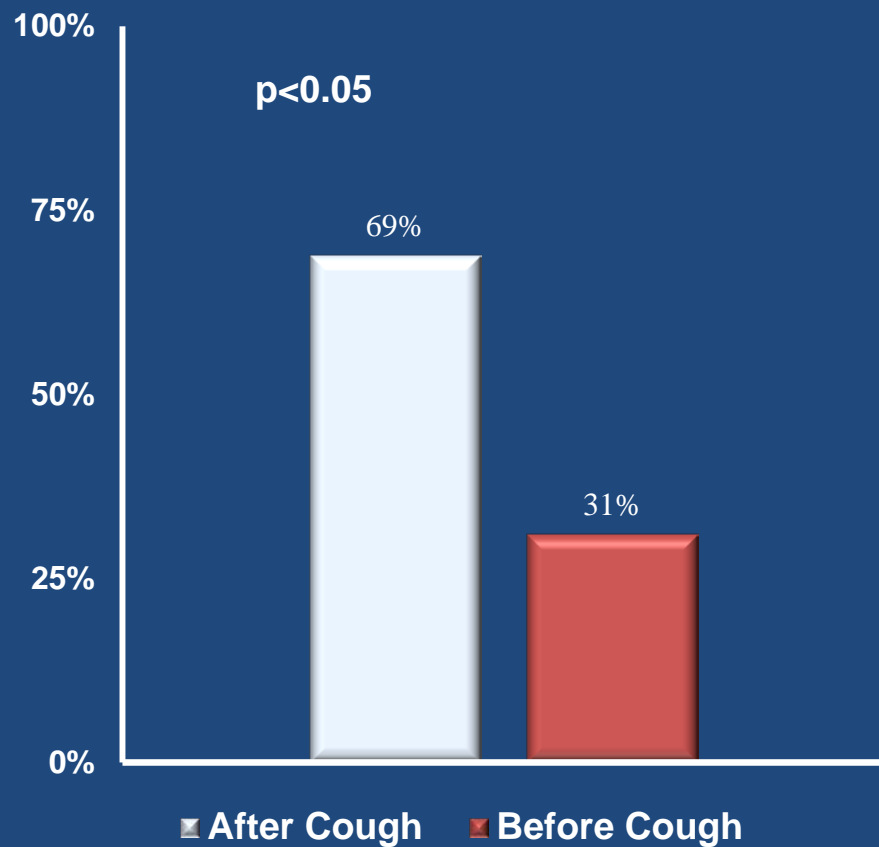
Smith et al. *Gastroenterology* 2010



Cough May Lead to GERD



Cough Related Reflux Events



Conclusions

- **Non-Cardiac Chest Pain**
 - GERD statistically is most common cause
 - pH testing prior to initiation of PPI therapy
 - Abnormal pH predicts response to PPI and LNF
 - Visceral Hypersensitivity may be alternative cause



Conclusions (2)

- **Cough and Throat Symptoms**
 - Epidemiologic link with GERD
 - GI GERD + LPR symptoms warrant trial of empiric PPI Therapy
 - LPR symptoms alone ➤ pH testing
 - Abnormal pH and response to PPI predict LNF outcomes
 - Airway hypersensitivity may be an alternative cause

