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1



The Spectrum of Gastroesophageal Reflux Disease: Beyond the Purple Pill



Arizona Osteopathic Medical Association, Fall Meeting, November 2023



2

Disclosures

- **I have no actual or potential conflict of interest in relation to this presentation.**
 - **I have no financial relationships that would have any bearing on my presentation**
 - **I do not intend to discuss the off-label use of any drugs or devices**
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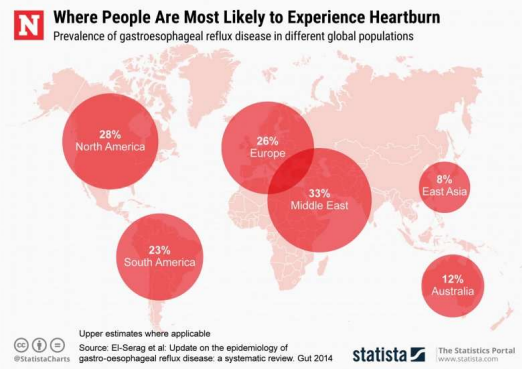
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Outline

- Importance/Relevance of the problem
 - Episodic Reflux versus Gastroesophageal Reflux Disease
 - Pathophysiologic Basis
 - Current Management of Gastroesophageal Reflux Disease
 - Limitations to long-term use of Proton Pump Inhibitors
 - The Holistic Approach to Gastroesophageal Disease in 2023
 - Surgical Options in the Management of Gastroesophageal Reflux Disease
 - Gastroesophageal Reflux Disease in the Obese and Post Bariatric Surgery
 - Take Home Message: Whom to refer for surgical evaluation
-

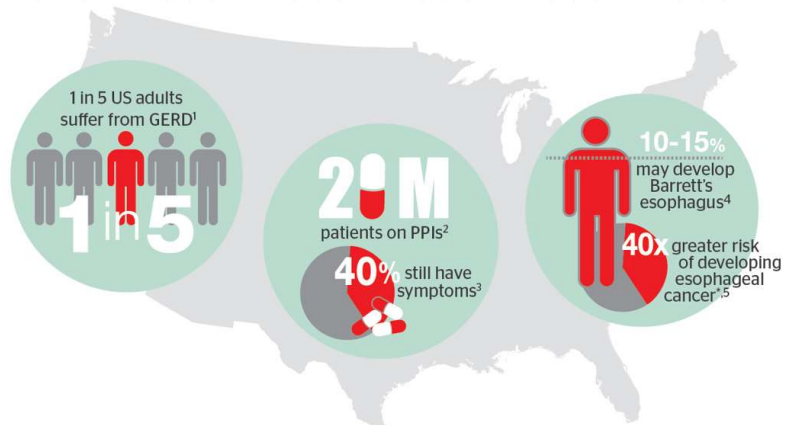
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Geographic Variability in Prevalence of GERD



5

Epidemiology



LINX[®] is not intended to treat, cure, prevent, mitigate or diagnose cancer or Barrett's esophagus.
¹ The risk of esophageal cancer in patients with Barrett's Esophagus is approximately 0.5%, which is roughly 40x greater than the risk for those without Barrett's Esophagus. The diagnosis of Barrett's esophagus should not be a reason for alarm

6

Quality of Life Impairment in Patients with GERD

ORIGINAL INVESTIGATION

The Impact of Nocturnal Symptoms Associated With Gastroesophageal Reflux Disease on Health-Related Quality of Life

Christina Farup, MD; Leah Kleinman, DrPH; Sheldon Sloan, MD; Dara Ganoczy, MPH; Elsbeth Chee, ScD; Clara Lee, MPH; Dennis Revicki, PhD

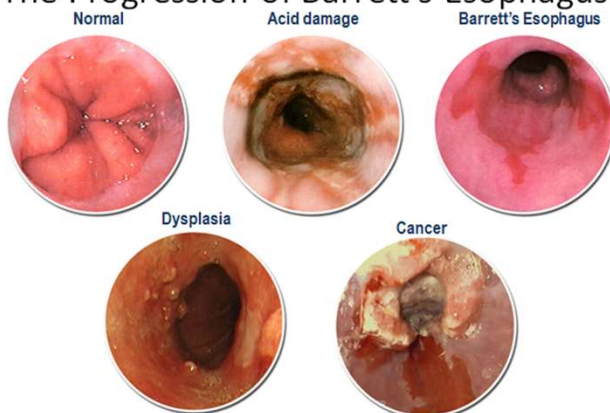
Table 4. Mean Medical Outcomes Study Short-Form 36 Health Survey Scores for Nocturnal Gastroesophageal Reflux Disease (GERD), Hypertension, Type 2 Diabetes, Congestive Heart Failure, Clinical Depression, and Angina Groups*

Scale	Nocturnal GERD (n = 945)	Hypertension (n = 2089)	Type 2 Diabetes (n = 541)	Congestive Heart Failure (n = 216)	Clinical Depression (n = 592)	Angina (n = 255)
Physical functioning	75.5	73.4	67.7†	47.5†	71.6†	63.2†
Role limitations-physical	68.6	62.0†	56.8†	34.4†	44.4†	44.2†
Bodily pain	62.1	72.3†	66.5†	62.7	58.6	61.6
General health	62.5	63.3	56.1†	47.1†	52.9†	52.0†
Vitality	48.9	58.3†	53.7†	44.3	40.1†	46.5
Social functioning	79.2	86.7†	82.0	71.3	57.2†	60.3
Role limitations-emotional	75.2	76.7	75.6	63.7†	38.9†	70.2
Mental health	70.7	77.9†	76.7†	74.7	46.3†	73.0
Physical component summary	45.1	44.3	41.5†	34.8†	45.0	38.6†
Mental component summary	48.2	52.2†	51.9†	50.4	34.8†	50.4

* Norms for hypertension, type 2 diabetes mellitus, congestive heart failure, clinical depression, and angina were obtained from the SF-36 Health Survey: Manual and Interpretation Guide.¹⁸
† P < .001 compared with nocturnal GERD.

7

The Progression of Barrett's Esophagus

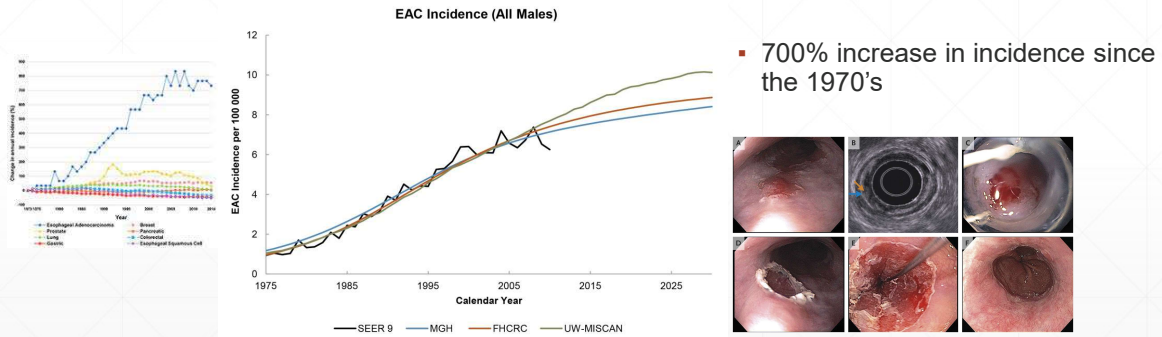


Predisposes to the Development of Barrett's Esophagus

X 40 increased risk of the development of Esophageal Adenocarcinoma

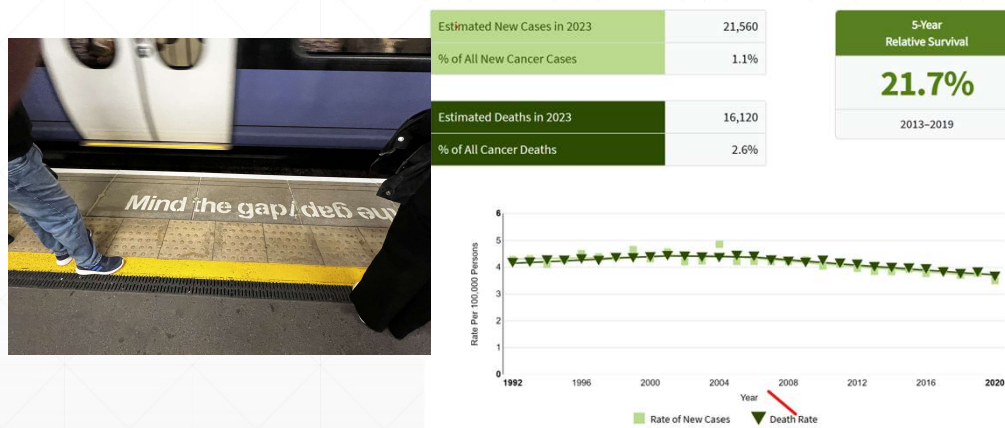
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Rising Incidence of Esophageal Adenocarcinoma



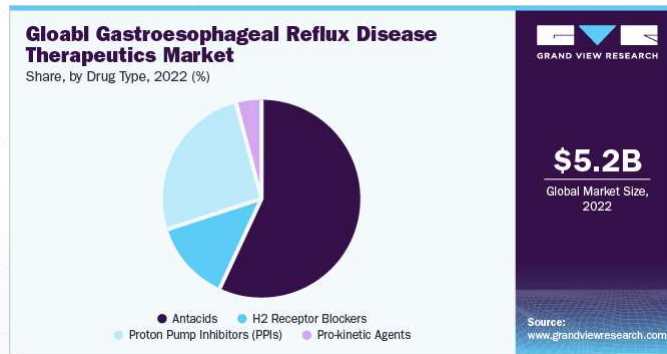
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Annual Incidence and Mortality of Esophageal Cancer



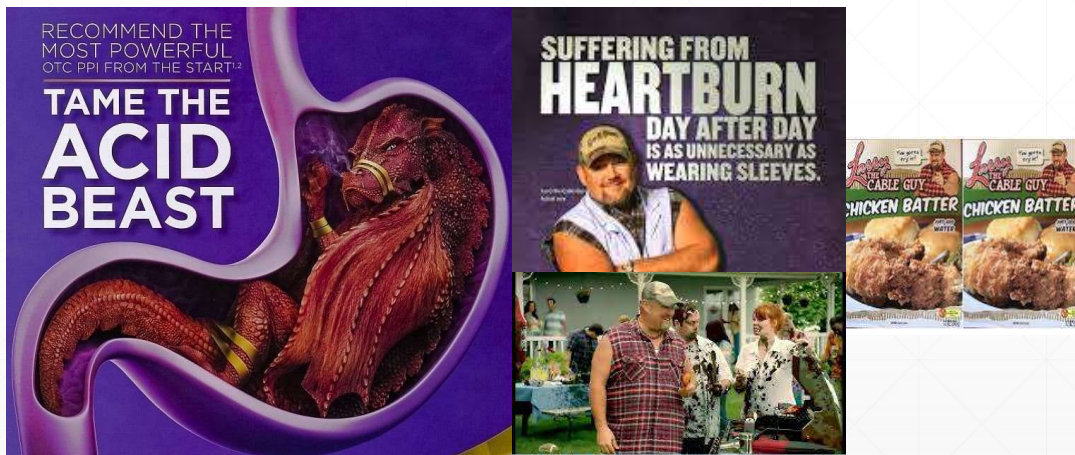
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Healthcare Costs



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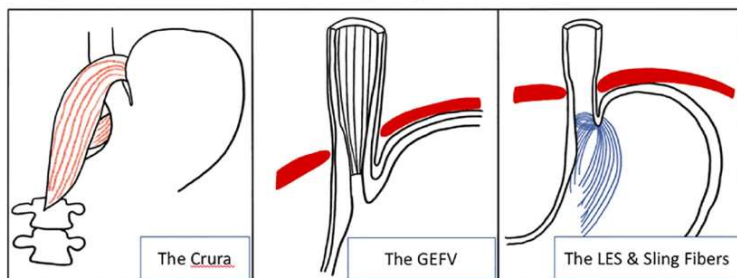
Direct to Consumer Marketing Self-Medication



12

AFS Position Statement on Components of ARB

Components of the Anti-Reflux Barrier (ARB)



Physiologic
Mechanical

Mechanical

Physiologic

What Normally Prevents Reflux:
The Anti-reflux
Barrier

13

Episodic Reflux vs. Gastroesophageal Reflux Disease

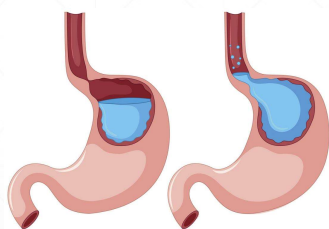
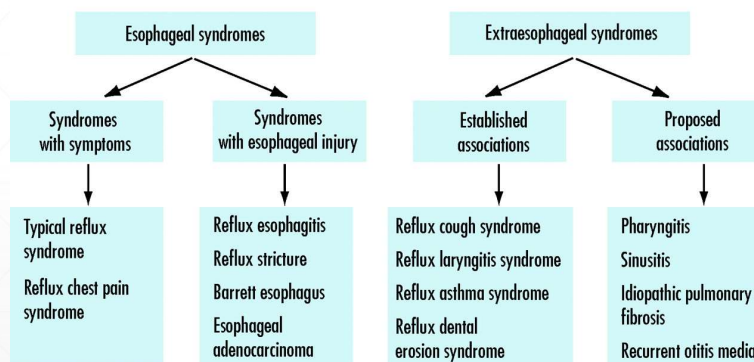


Figure 1. The Montreal definition of gastroesophageal reflux disease and its constituent syndromes: *Gastroesophageal reflux disease is a condition that develops when the reflux of gastric content causes troublesome symptoms or complications.*

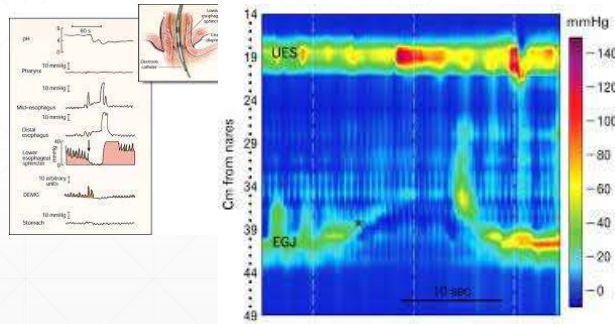


Reprinted with permission from Vakili et al.¹

14

Pathophysiology of Episodic Reflux

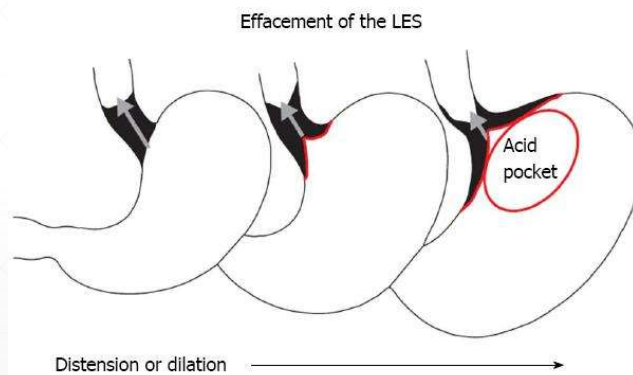
- Transient Lower Esophageal Sphincter Relaxation



- Alcohol
- Mint
- Chocolate
- Smoking
- Antispasmodics
- Calcium Channel Blockers
- Benzodiazepines
- β -2 Agonists
- Xanthines

15

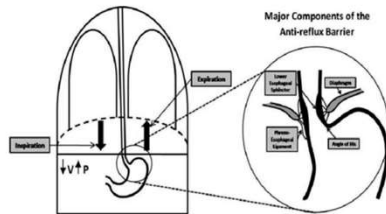
Pathophysiology



- Volume of Gastric Contents
- Delayed Gastric Emptying
- Smaller Meals
- Well Chewed food
- Low fat

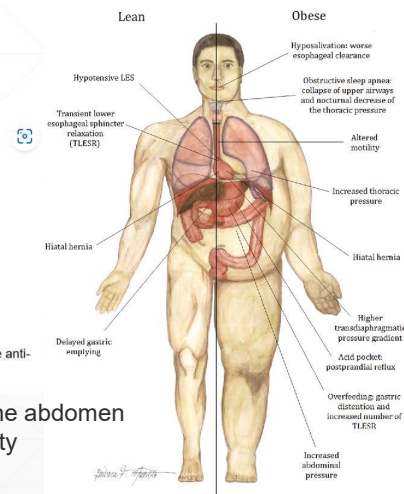
16

Pathophysiology



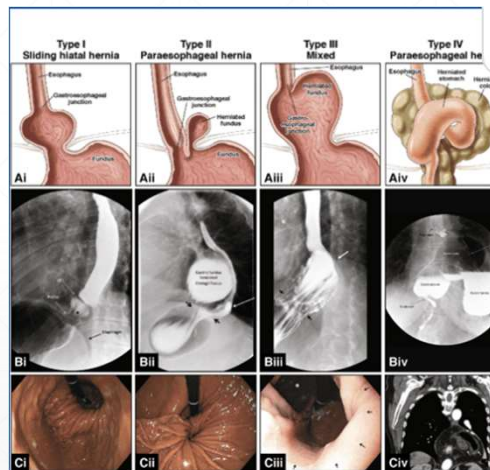
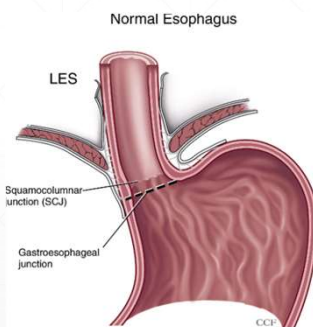
Boyle's Law predicts how increased intra-abdominal pressure during inspiration might adversely affect the anti-reflux barrier.

- Pressure Differentials between the thorax and the abdomen
- Increased Intra-abdominal Pressure: treat obesity
- Avoid Tight Clothes
- Avoid Big Meals
- Avoid Weight-lifting after a heavy meal



17

Anatomic Basis for Gastroesophageal Reflux Disease in the presence of a Hiatal Hernia



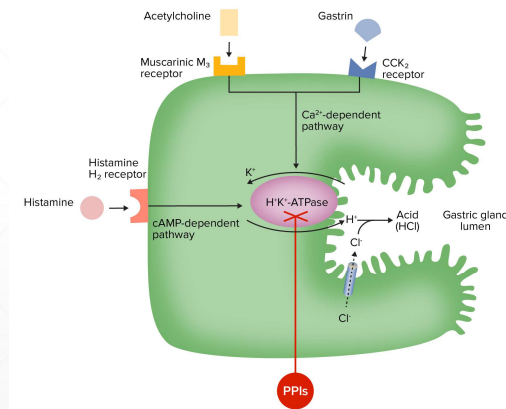
18

Reflux in the Presence of a Hiatal Hernia



19

Main Stay in Current Management of Gastroesophageal Reflux Disease: Acid Suppression



20

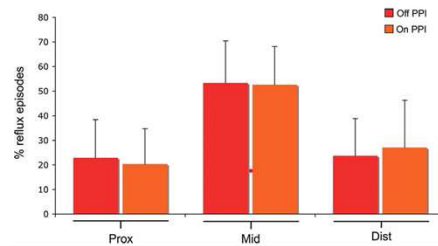
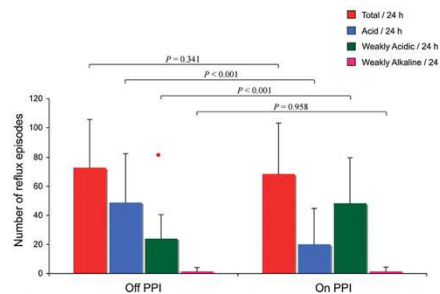
Limitations of Proton Pump Inhibitors Beyond Short Term Use

American Journal of Gastroenterology
© 2009 by Am. Coll. of Gastroenterology
Published by Blackwell Publishing

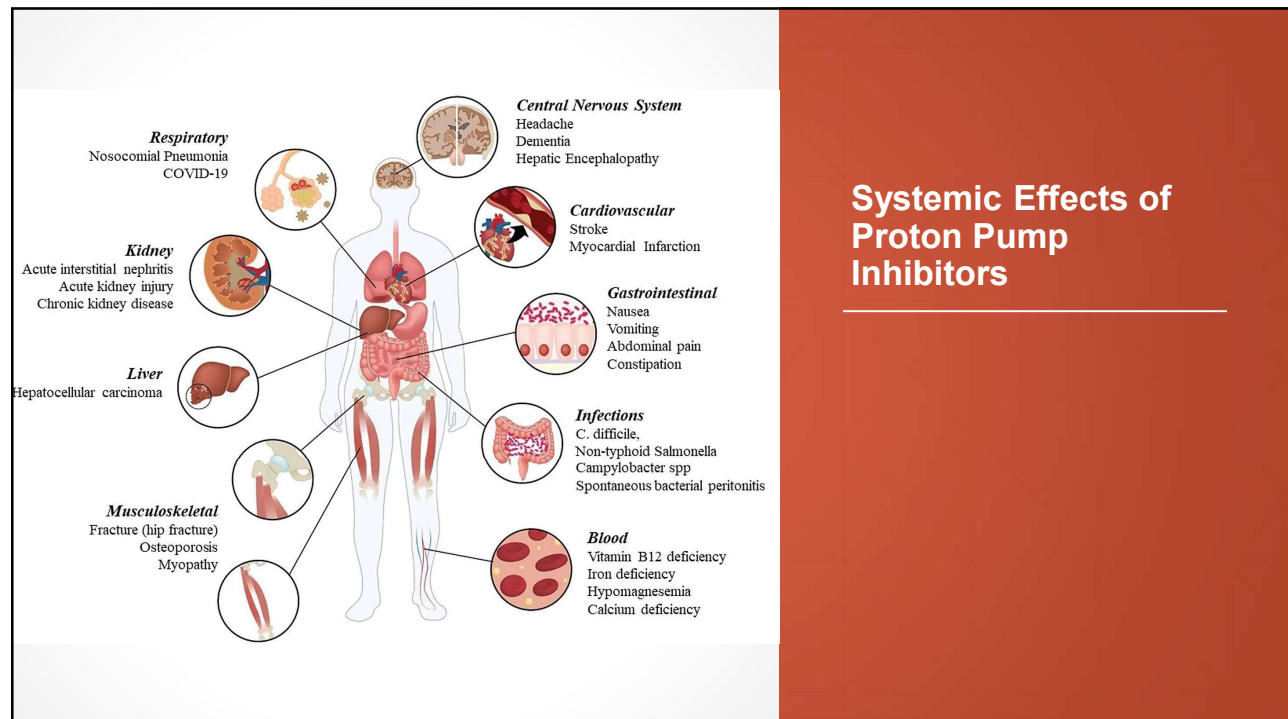
ISSN 0003-477X
doi:10.1111/j.1177-4241.2009.02033.x

Esophageal pH-Impedance Monitoring in Patients With Therapy-Resistant Reflux Symptoms: 'On' or 'Off' Proton Pump Inhibitor?

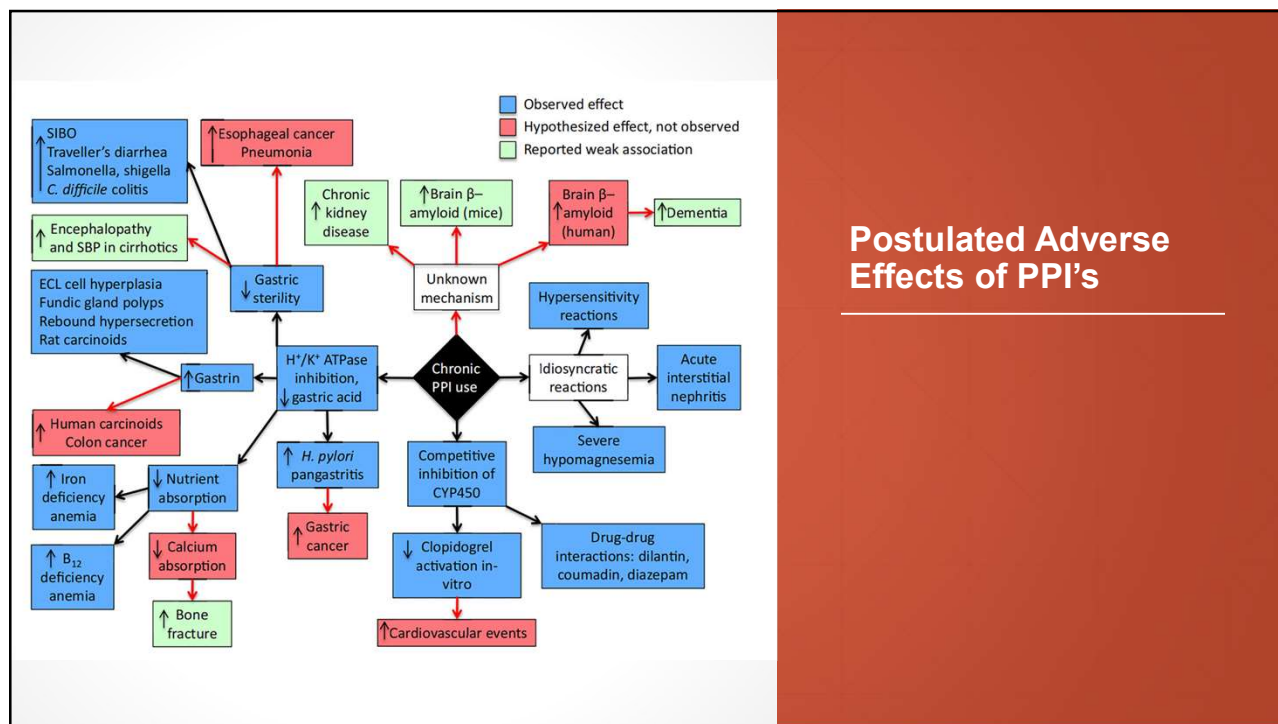
Gerrit J.M. Hemmink, M.D.,^{1,2} Albert J. Brederoord, M.D., Ph.D.,¹ Bas L.A.M. Weusten, M.D., Ph.D.,¹
Jan F. Monkelbaan, M.D.,² Robin Timmer, M.D., Ph.D.,¹ and André J.P.M. Simout, M.D., Ph.D.²
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21



22



23



FDA Drug Safety Communication: Clostridium difficile-associated diarrhea can be associated with stomach acid drugs known as proton pump inhibitors (PPIs)
 February 8, 2012
 Safety Announcement
 The U.S. Food and Drug Administration (FDA) is informing the public that the use of stomach acid drugs known as proton pump inhibitors (PPIs) may be associated with an increased risk of Clostridium difficile-associated diarrhea (CDAD).

FDA: Possible Fracture Risk with High Dose, Long-term Use of Proton Pump Inhibitors
 May 25, 2010
 Labeling changes will include new safety information
 The U.S. Food and Drug Administration today warned consumers and health care professionals about a possible increased risk of fractures of the hip, wrist, and spine with high doses or long-term use of proton pump inhibitors (PPIs).

FDA Drug Safety Communication: Low magnesium levels can be associated with long-term use of Proton Pump Inhibitor drugs (PPIs)
 March 2, 2011
 Safety Announcement
 The U.S. Food and Drug Administration (FDA) is informing the public that prescription proton pump inhibitor (PPI) drugs may cause low serum magnesium levels (hypomagnesemia) if taken for long-term use.

Adverse Publicity

24

Perception is Reality



25

Reluctance Towards Surgical Treatments of Gastroesophageal Reflux Disease

- One Operation for all forms of GERD: The Nissen Fundoplication
- Significant Side Effects
- Maximally invasive
- Morbid abdominal/thoracic incisions
- Failure to understand durability issues

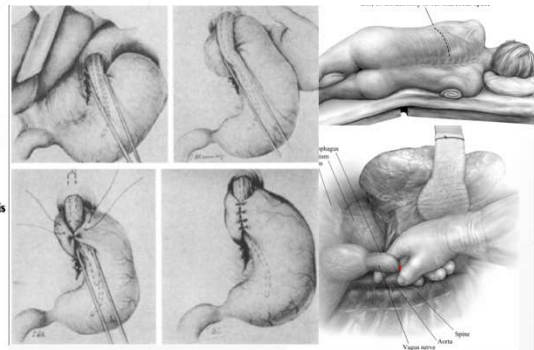
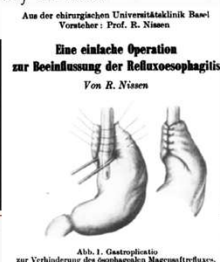
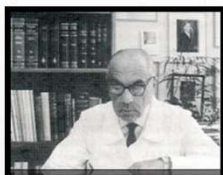
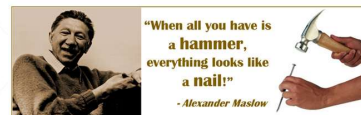
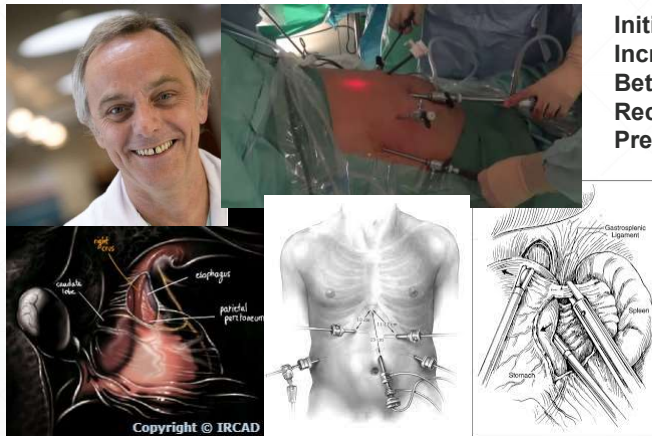


Abb. 1. Gastropexie zur Verhinderung des ösophagealen Magenrefluxes.

26

Resurgence During the Early Laparoscopic Era



Initial Modest Adoption
Increased Collaboration
Better understanding of the Pathophysiology
Recognition of Phenotypes of GERD
Precision Medicine

27

Screening Tool: The GERD-HRQL

- Screens for at risk patients
- Quantitative measure of symptom severity
- Patients scoring ≥ 7 should be considered for further evaluation
- Shows the objective outcomes of operative interventions

Sample Intake Form
If you are being seen for Heartburn, GERD, Hiatal Hernia for the first time

Please Print
Name: _____
Phone/Email: _____
Date: _____
City of Residence: _____

My Doctor Referred Me (please write his/her name): _____

Please circle the number that best reflects your symptoms using the scoring scale provided below.

	0	1	2	3	4	5
1. How bad is your heartburn (if not taking medications)?	0	1	2	3	4	5
2. Heartburn when lying down (if not taking medications)?	0	1	2	3	4	5
3. Heartburn when standing up (if not taking medications)?	0	1	2	3	4	5
4. Heartburn after meals (if not taking medications)?	0	1	2	3	4	5
5. Does heartburn change your diet (if not taking medications)?	0	1	2	3	4	5
6. Does heartburn wake you from sleep (if not taking medications)?	0	1	2	3	4	5
7. Do you have difficulty swallowing (if not taking medications)?	0	1	2	3	4	5
8. Do you have bloating or gassy feelings (if not taking medications)?	0	1	2	3	4	5
9. Do you have pain with swallowing (if not taking medications)?	0	1	2	3	4	5
10. If you take medication, does this affect your daily life?	0	1	2	3	4	5

11. Are you experiencing frequent regurgitation following meals? Yes No
12. How satisfied are you with your present condition? (Please Circle) Satisfied Neutral Dissatisfied

Office staff: Please fax form to Esophageal and Lung Institute central fax line at 724.260.7310

28

Approach to Gastroesophageal Reflux Disease 2023



29

Management Strategies

- Prevent Transient Lower Esophageal Sphincter Relaxation
 - Smoking cessation
 - Reduction/Elimination of Alcohol Use
 - Dietary Modifications: avoidance of mint, chocolate
 - Review of medications to eliminate potential triggers
 - Avoidance of Gastric Distention
 - Smaller meals, eaten more slowly, well chewed
 - Low fat diet
 - Not laying down for at least 3 hours after the last meal
 - Avoid carbonated beverages
-

30

Management Strategies

- Address mind-body issues
 - Stress reduction techniques
 - Address anxiety, treat depression
 - Prevention of Increased Intraabdominal Pressure
 - Avoid tight clothes
 - Treat obesity
 - Avoid weightlifting soon after eating a meal
 - Positioning during sleeping
 - Raise head of bed by 1.5 inches
 - Sleep left side down
 - Avoidance of Irritants
 - Orange Juice, Tomato Sauce, Spices, Coffee, Tea
-

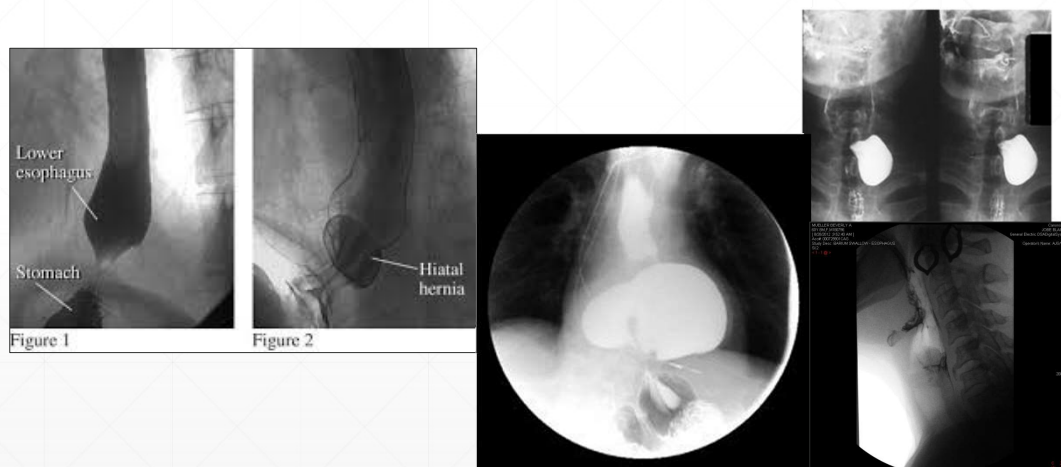
31

Consideration for Surgical Management

- Anatomic Disruption of the Reflux Barrier: Hiatal Hernia
 - Predominant Symptom: Regurgitation
 - On PPI, But:
 - Failure to respond
 - Adverse effects
 - Cost
 - Compliance
 - Severe Esophagitis, LA Grade C or D
 - Esophageal Stricture, Shatzki's Ring
 - Barrett's Esophagus
 - Early Esophageal Adenocarcinoma
 - Worsening Pulmonary Function
 - Recurrent Aspiration Pneumonia
 - Recurrent Dental Erosions
-

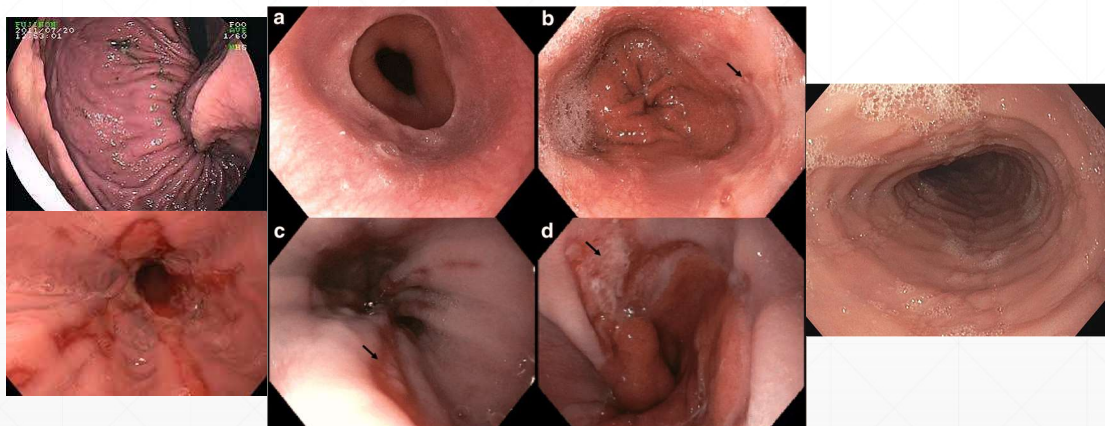
32

Work-up to Personalize Surgical Treatment: Esophagogram



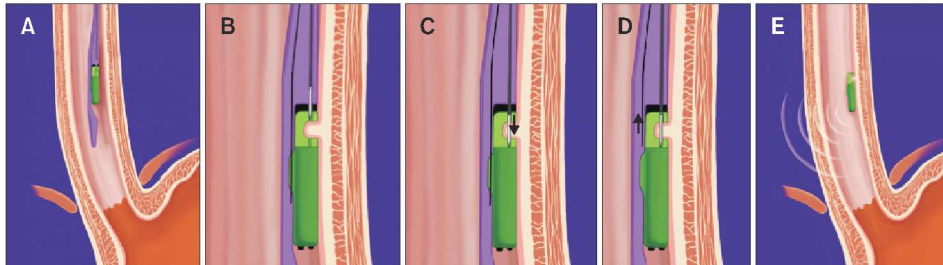
33

Esophagogastroduodenoscopy



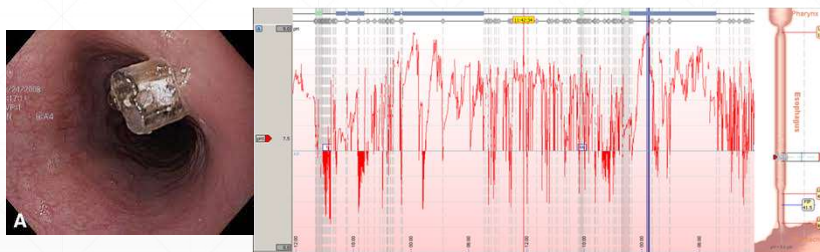
34

Bravo Wireless pH Monitoring



35

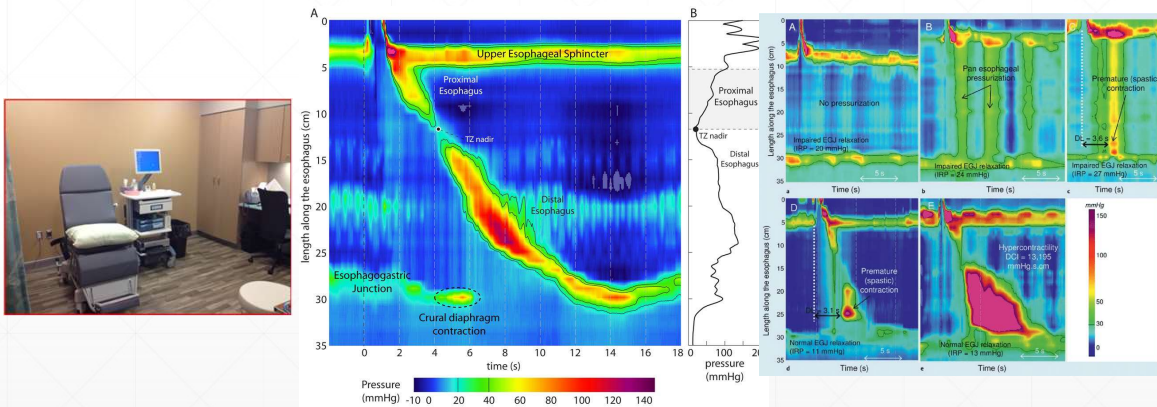
Bravo Wireless pH Monitoring



DeMeester Score ≥ 14.7 = Abnormal Proximal Acid Exposure

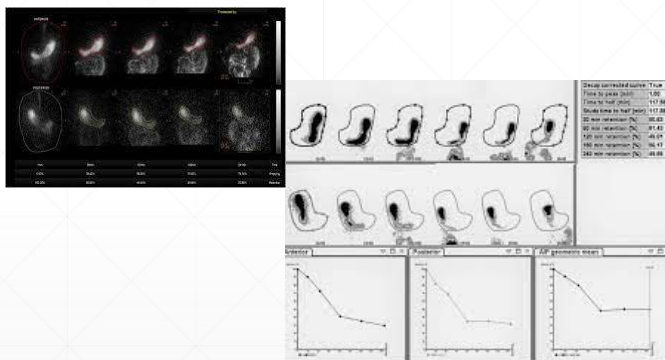
36

High Resolution Manometry

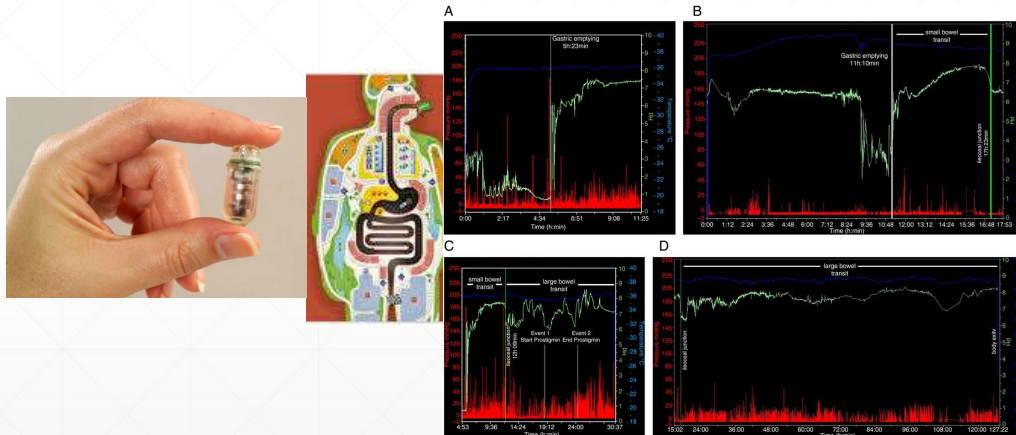


37

4-hour Solid Meal Gastric Emptying Study: If Nausea, Bloating, Early Satiety, Prior Hiatal Surgery



Wireless pH/Temperature Capsule: If Significant Constipation



39

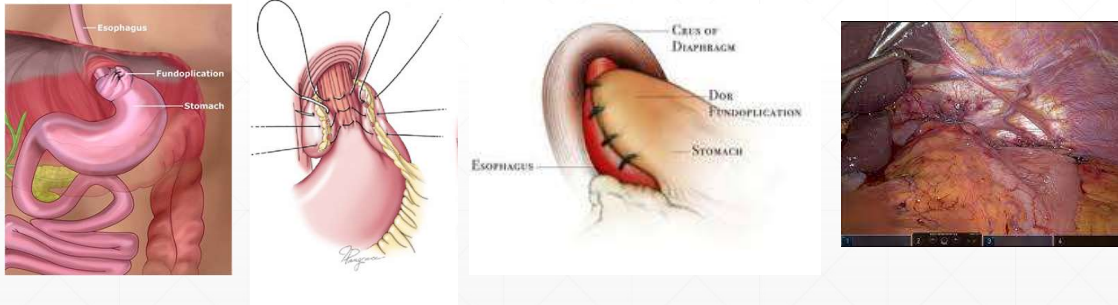
Surgical Approach

- ❖ Reestablish Normal Hiatal Anatomy
 - ❖ Return 3-4 cm of intra-abdominal esophagus
 - ❖ Reapproximate the Crura
 - ❖ Accentuate the Angle of His
 - ❖ Fundoplication to reestablish the flap valve

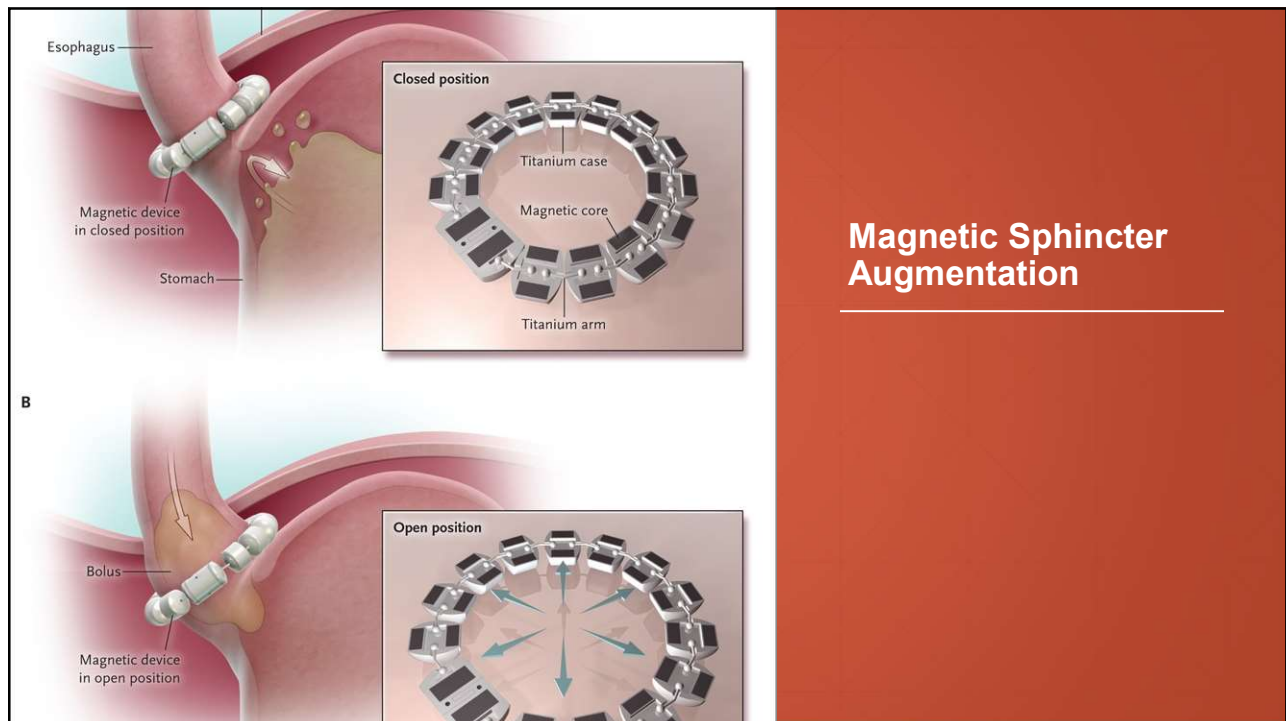
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Tailored Fundoplication vs. Gastropexy

- ❖ 360 Degree Circumferential Nissen Fundoplication
- ❖ 270 Degree Posterior Toupet Fundoplication
- ❖ 180 Degree Anterior Dor Fundoplication

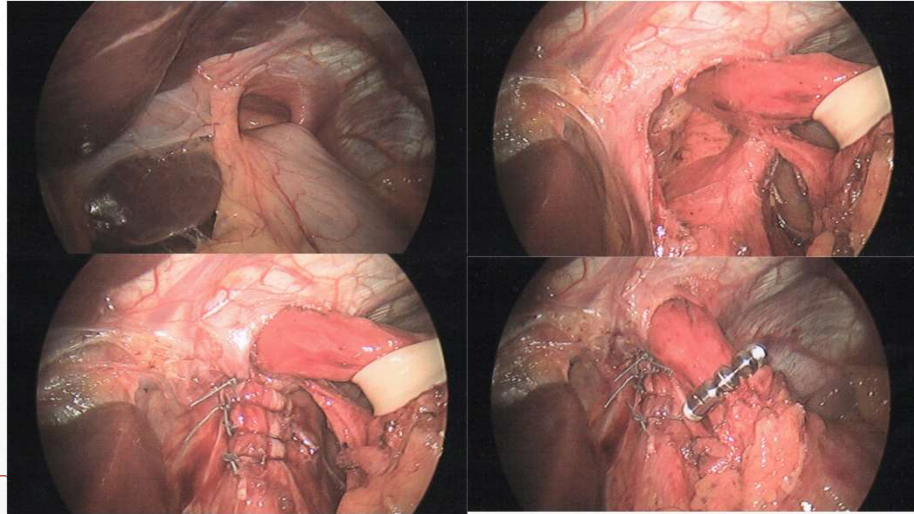


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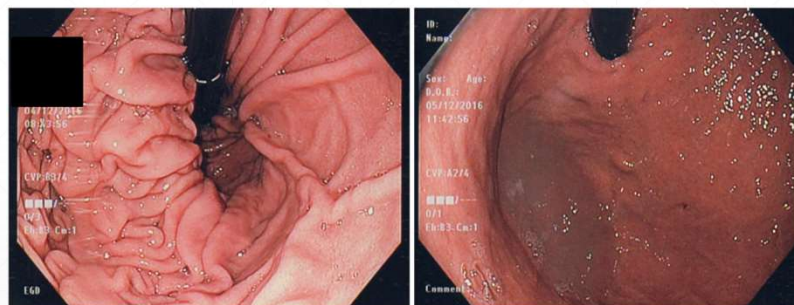
42

Repair of a Paraesophageal Hernia with Magnetic Sphincter Augmentation



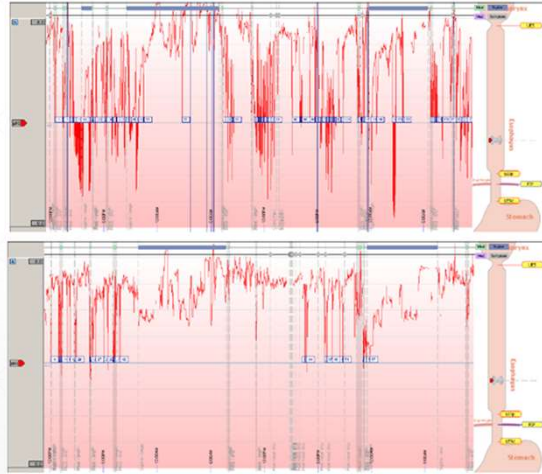
43

Endoscopy: Pre and Post



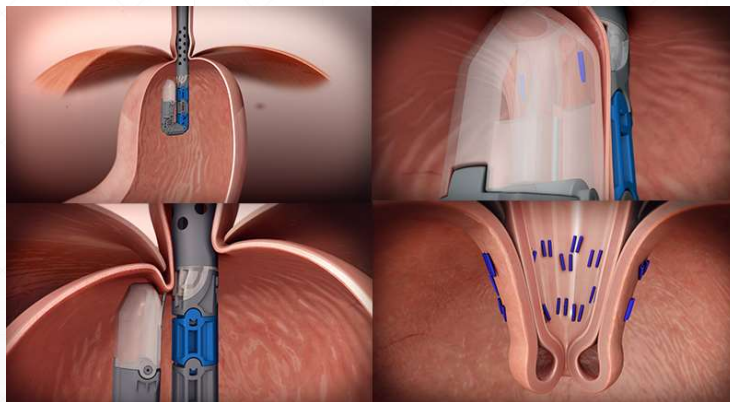
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Ph Monitoring Pre and Post



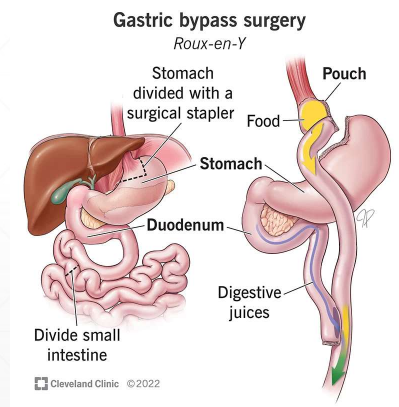
45

Transoral Incisionless Fundoplication



46

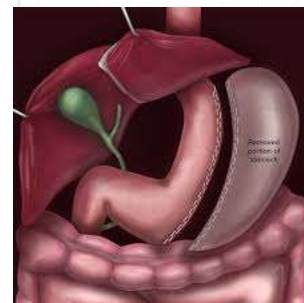
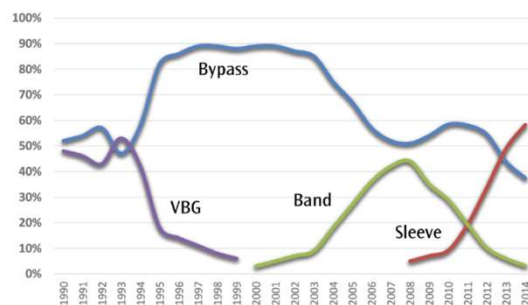
Reflux in the Obese: BMI > 35



47

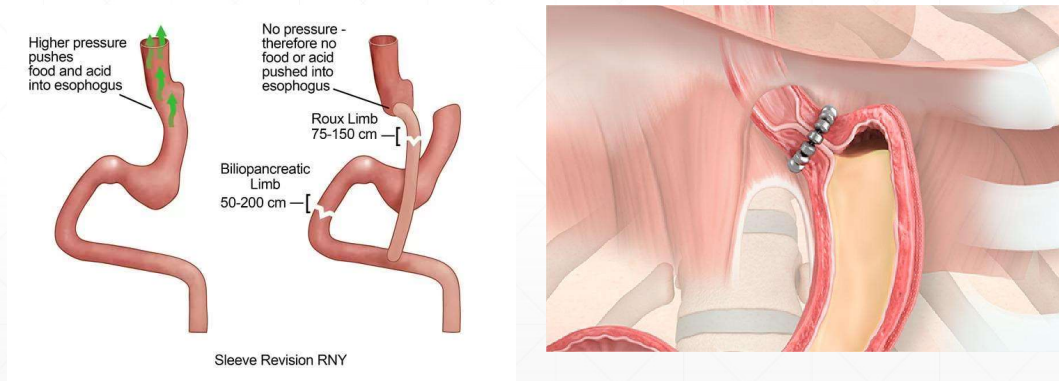
Sleeve Gastrectomy

Figure 1. Trends in bariatric surgery procedures since 1990



48

Post Sleeve Gastrectomy Reflux



49

Take Home Messages

- Not all reflux is created Equal
- Long term use of Proton Pump is best avoided if alternatives are feasible
- Thorough preoperative assessment is key to selecting from the increasing repertoire of treatment options
- Minimally invasive and robotic procedures are generally well tolerated with short hospital stays and early recovery
- Any intervention needs to be coupled with intensive health behavior modifications to prevent recurrences
- Expectation setting is key to a content patient

50

thank
you



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