

# The Proper Management of the Short Esophagus

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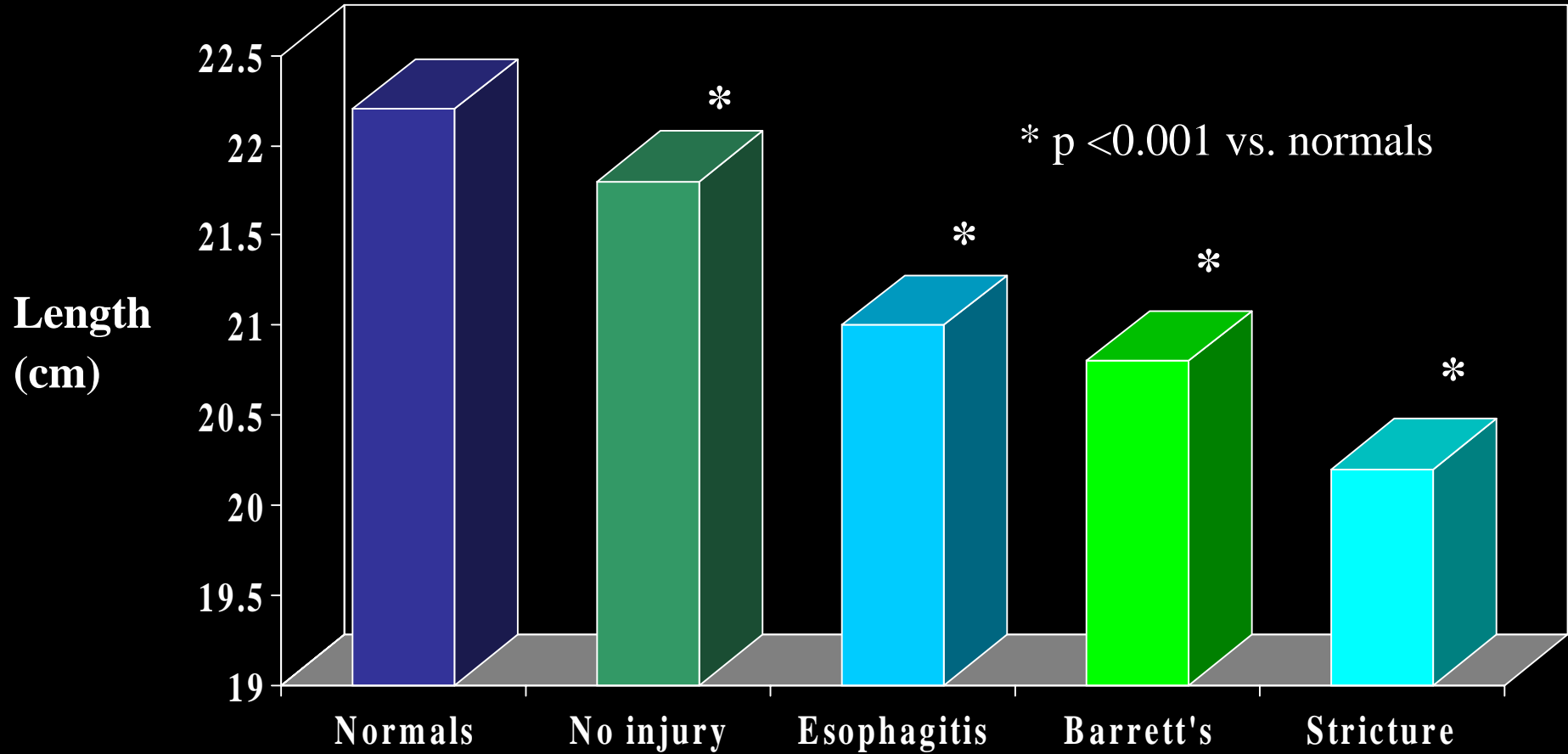


# What is the Short Esophagus?

- An acquired condition due to chronic, transmural esophageal inflammation and fibrosis that results from GERD



# Esophageal Length



# Risk Factors for Esophageal Shortening

- Patient History
  - Long history of GERD symptoms
  - Previously slipped or herniated fundoplication

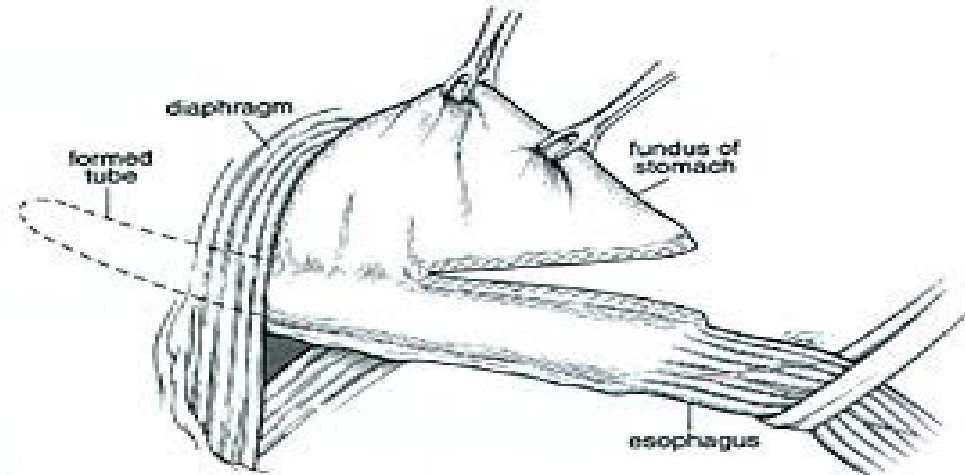
# Risk Factors for Esophageal Shortening

- Preoperative Investigations
  - **Manometry:** Short distance between UES and LES
  - **EGD:** GE junction 5 cm or more above hiatus, Barrett's, stricture, severe erosive esophagitis
  - **UGI:** Large Type I hiatal hernia, Type III PEH, stricture

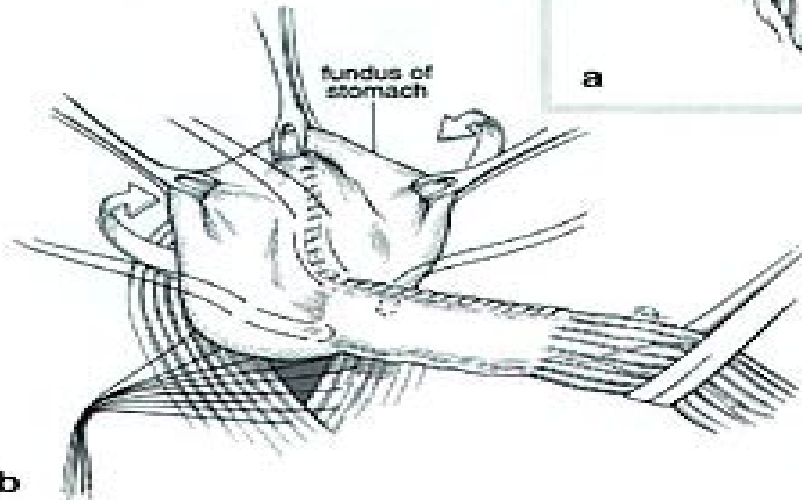
# Issues with the “Short Esophagus”

- Preoperative studies are only predictors of shortening
- True shortening is determined intraoperatively
- Should be called the “**Non-reducible Esophagus**”
- The incidence of shortening varies with the observer and the operative approach
- The “short esophagus” linked to the “wide hiatus”

## Collis Belsey Procedure

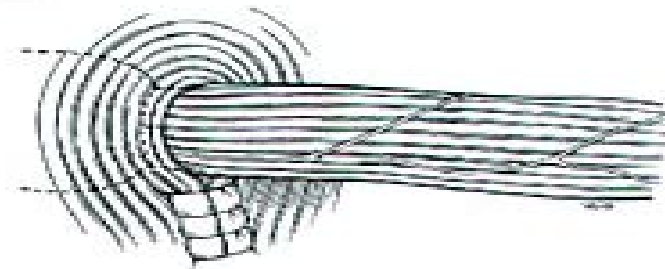


a



b

*The Collis Belsey procedure uses part of the stomach to add length to the esophagus by cutting the upper stomach (a), and using it to construct a valve (b), then placing the repair into the abdomen (c).*



c

# Potential Pitfalls of the Collis Gastroplasty

- Leaks / fistulae!
- Acid secreting mucosa within neoesophagus
- Lack of motility within neoesophagus
- Improper tailoring leading to stenosis or dilation
- Difficulty in revision
- Gastric deformity/fibrosis compromising use of stomach as an esophageal substitute

# Operative Approaches for Managing the Short Esophagus

- Thoracic
- Open Abdominal
- Laparoscopic

# Thoracic Fundoplication for the Short Esophagus

## Advantages

- Esophageal mobilization
- Assessment of esophageal tension
- Palpation/visualization/dissection of vagus nerves
- Facilitation of Collis gastroplasty
- Obese patient

## Disadvantages

- Pain
- Need for one-lung ventilation
- Increased morbidity?
- Patient / referring doctor satisfaction?

## “Quality of Life and Perceptions after Nissen Fundoplication are Independent of the Surgical Approach”

- Lap. Nissen (LN) in 72 pts.; thoracic Nissen (TN) in 33 pts.
- Need for postop acid-suppression: LN=24% , TN=9%
- Satisfaction with surgery: LN=92% , TN=97%
- **Conclusion:** “Long-term QOL was independent of the surgical approach, but significantly dependent upon successful elimination of reflux symptoms and need for acid-suppression medication.”

Streets, DeMeester, *et al.* Abstract presented at STS Meeting, January, 2002.

# Abdominal Fundoplication for the Short Esophagus

## Advantages

- Less painful than thoracotomy
- Palpation / visualization of mid-distal vagus nerves
- Expeditious for the fragile or elderly patient

## Disadvantages

- Difficult to assess esophageal tension
- Esophageal mobilization more difficult / limited
- Patient / referring doctor satisfaction?

# Laparoscopic Fundoplication for the Short Esophagus

## Advantages

- Quicker recovery, less pain, better cosmesis,...
- Excellent low/mid mediastinal exposure
- Obese patient

## Disadvantages

- Technically challenging
- Difficult to assess esophageal tension
- Esophageal mobilization more difficult / limited
- Unable to palpate vagi
- Obese patient (if converted to open)
- Adequacy of crural closure?

## Options for Laparoscopic Collis Gastroplasty

- Combined laparoscopic / thoracoscopic utilizing endoscopic linear stapler (Swanstrom, 1996<sup>1</sup>)
- Laparoscopic utilizing circular and linear staplers (Hunter, 1998<sup>2</sup>)

<sup>1</sup>Swanstrom, Marcus and Galloway. Am J Surg 1996;171:477-481.

<sup>2</sup>Johnson, Oddsdottir and Hunter. Surg Endosc 1998;12:1055-1060.

# Outcomes After Repair of PEH

## *Limitations of the Current Data...*

- Many series report only symptomatic outcome analyses and/or short term follow-up
- Results confounded by the inclusion of patients with pure Type II hernias.

# Massive Hiatus Hernia: Evaluation and Surgical Management

*University of Toronto Experience*

- 94 pts. with paraesophageal hernias over 36 years (1960-1996)
- 97% underwent transthoracic repair with fundoplication
- 80% underwent Collis gastroplasty
- 5 pts. required re-operation, 2 for leaks
- 2 additional contained leaks
- 93% excellent / good results

Maziak, Todd and Pearson. JTCVS 1998;115:53-62

# Massive Hiatal Hernias: The Anatomic Basis of Repair

- 52 patients with giant PEH
- Transthoracic repair
- No need for Collis gastroplasty
- Excellent/good clinical results in 90%

Altorki NK, *et al.* JTCVS 1998;115:828-35

# Recurrent Herniation after Laparoscopic Repair of Paraesophageal Hernias

<u>Lead Author</u>	<u>Patients</u>	<u>Recurrence</u>
Hinder	46	15%
Swanstrom	52	8%
Peters	21	42%
Jobe	34	32%
Hunter	42	33%

## Laparoscopic Repair of Large Type III Hiatal Hernia: Objective Followup Reveals High Recurrence Rate

- 42% recurrence rate after laparoscopic repair
- 15% recurrence rate after open (thoracic/abdominal) repair
- Most reherniations were asymptomatic
- Collis gastroplasty used infrequently (one patient; open)

Hashemi, Peters, DeMeester, *et al.* J Am Coll Surg 2000;190:553-561.

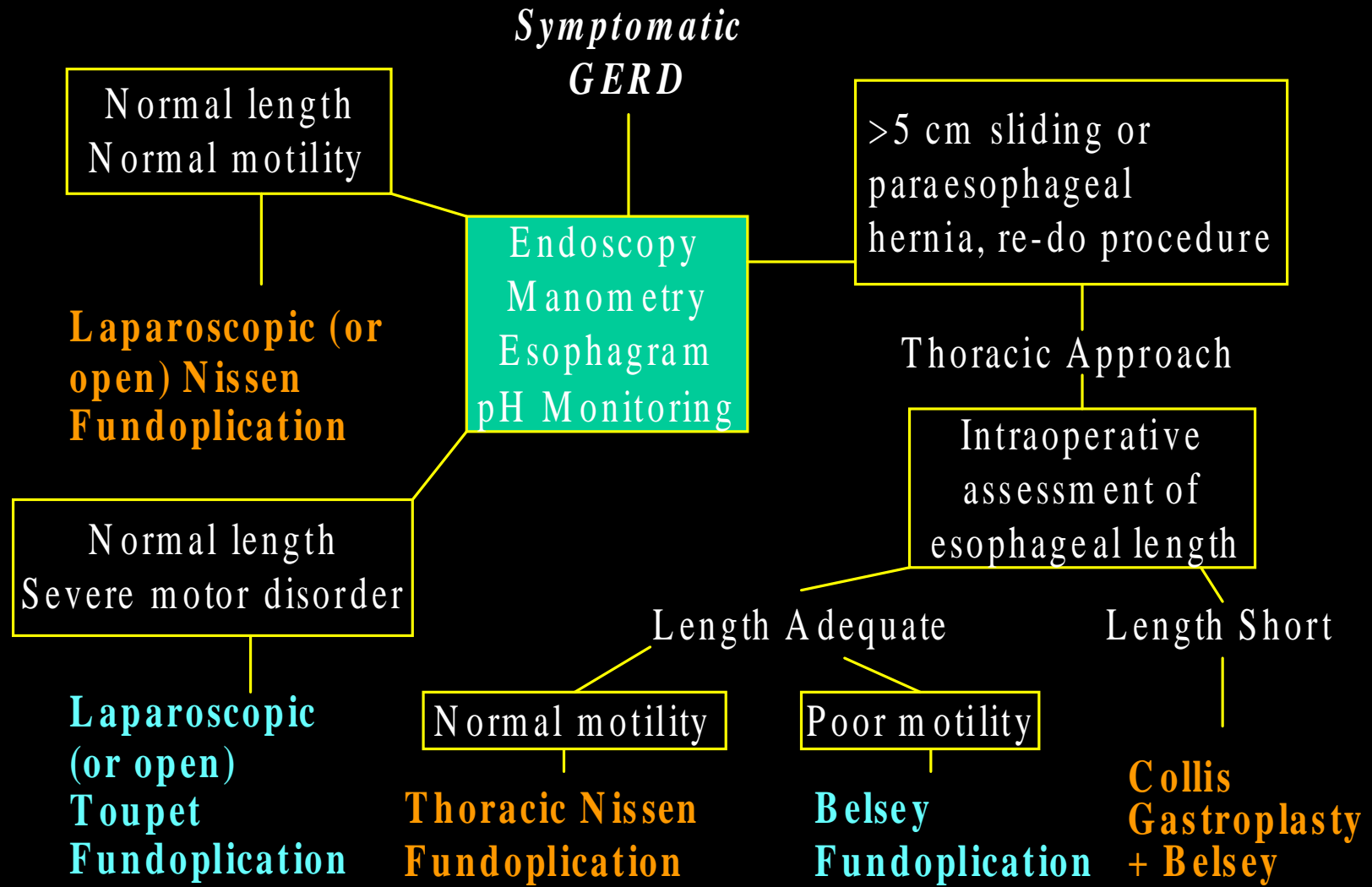
# Laparoscopic Repair of Giant Paraesophageal Hernias: 100 Consecutive Cases

- 72 Nissen, 27 Collis-Nissen
- Increasing utilization of Collis over time as esophageal shortening increasingly recognized
- 2 post-operative leaks (one from Collis)
- 91% satisfied with outcome (median F/U 12 mos.)
- No follow-up UGI data

Luketich, *et al.* Ann Surg 2000;232:608-618.

# Potential Causes of Recurrent Hiatal Herniation after Laparoscopic Repair of PEH

- Insufficient esophageal mobilization
- Underutilization of Collis gastroplasty in patients with true esophageal shortening
- Breakdown of crural repair
- Reduced adhesion formation compared to open surgery



Modified from Watson and DeMeester. Diseases of the Esophagus 1999;8:222-228

# Tailored Antireflux Surgery: The University of Southern California Experience

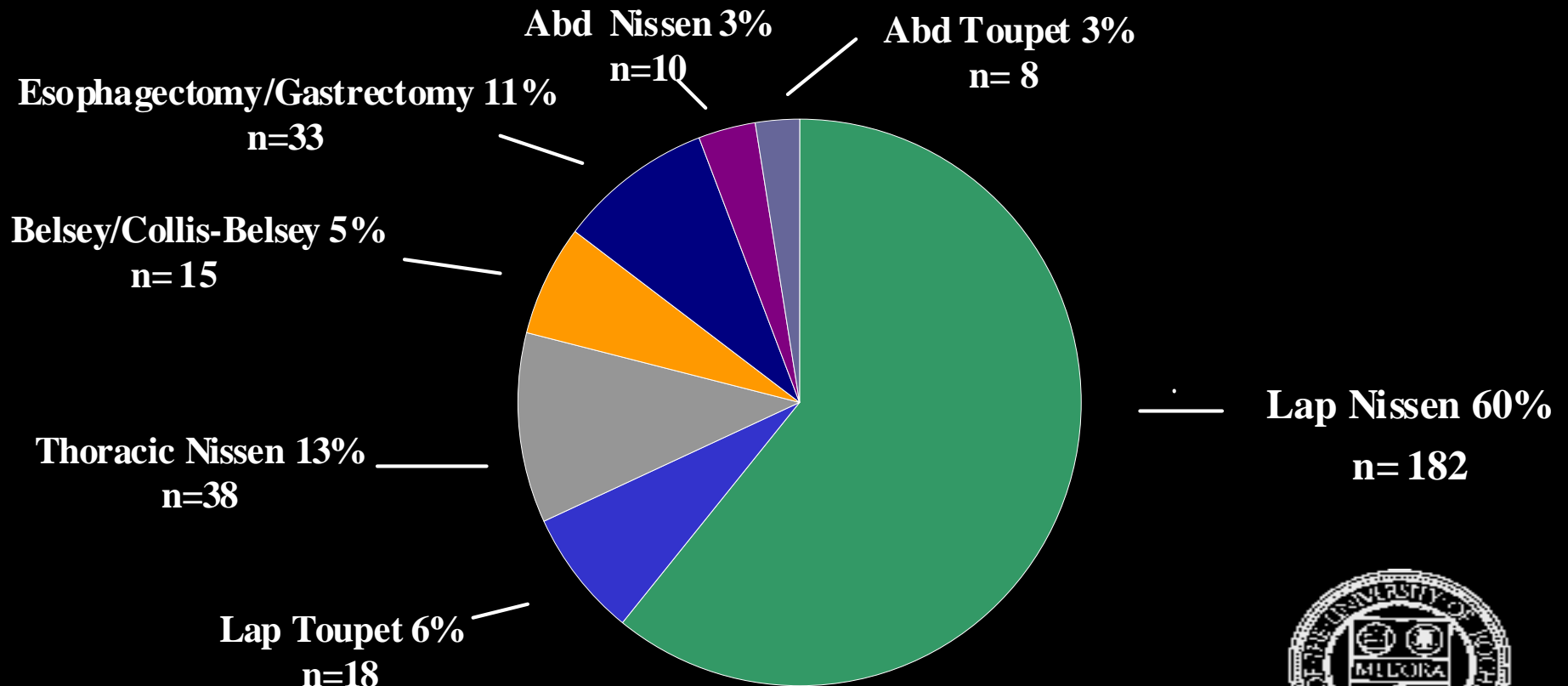
*(104 patients, 1986-1993)*

- Median length of follow-up 4 years
- Surgery cured heartburn in 97%, regurgitation in 91% and dysphagia in 92%
- 98% reported cure of pre-op symptoms
- 93% satisfied with the outcome of surgery

# University of Rochester Thoracic Surgical Service

*Antireflux Procedures, March, 1997 - October, 2002*

*(N = 304)*



Isolated or recurrent non-  
progressive GERD

=

**Acid Suppression**

Medication dependence,  
persistent or recurrent  
progressive GERD

=

**Laparoscopic Nissen  
Fundoplication  
(or Endoscopic Procedure?)**

Complicated GERD  
(Stricture, shortened  
esophagus, large hernia,  
re-do procedure)

=

**Open, Tailored  
Antireflux Procedure**

End-stage disease or Barrett's  
with severe dysplasia

=

**Esophagectomy**

Cancer

# The Proper Management of the Short Esophagus

## *Conclusions*

- The available literature suffers from the non-uniformity of outcome parameters and lack of control groups.
- Laparoscopic repairs appear to be associated with higher rates of recurrent hiatal herniation than open procedures.



# The Proper Management of the Short Esophagus

## *Conclusions*

- Whether minimally invasive techniques will prove superior to traditional open approaches still awaits long term follow-up and well-controlled, prospective trials.



# The Proper Management of the Short Esophagus

## *Recommendations*

- The desire to perform a minimally invasive procedure should not outweigh derangements in esophageal structure and function that are best managed through an open, tailored approach.

# The Proper Management of the Short Esophagus

## *Recommendations*

- Be alert to the potential for acquired esophageal shortening
- Provide adequate esophageal mobilization
- Realistically assess esophageal tension
- Perform Collis gastroplasty if necessary
- Close the hiatus securely



“The battlefields of surgery are strewn with the remains of promising new operations which perished in the light of the follow-up clinic.”

RHR Belsey, c. 1960

