Food Bolus Impaction Secondary to Reflux Strictures: A Rural Surgical Experience

John Alfred Carr, MD, FCCP, FACS, James A Drennan, MD†

BACKGROUND: Benign esophageal strictures at the gastroesophageal (GE) junction secondary to acid reflux have an unknown altered natural history after dilation.

STUDY DESIGN: We carried out a 7-year retrospective investigation from 2001 to 2007.

RESULTS: Sixty-four patients presented with food bolus impaction at the GE junction. Reflux strictures were the cause in 42 (66%), neuromuscular disease or dysmotility in 2 (3%), esophageal cancer in 1 (2%), and no underlying pathology could be identified in 19 (29%). Duration of dilation-induced relief from impaction recurrence decreased with each subsequent dilation: first 30 ± 21 months, second 27 ± 15 months, and third 8 ± 6 months. Patients taking proton pump inhibitors (PPIs) had a longer interval between dilations (25 ± 9 months) compared with those who were not (20 ± 12 months, $p = 0.06$). PPIs also decreased the number of subsequent dilations needed during the course of the study (1 ± 1 versus 2 ± 1 dilations, $p = 0.02$). Reflux strictures were more likely to cause another episode of impaction than no underlying pathology (relative risk, 2.7; 95% CI, 1.8−4.1; $p < 0.0001$). Mean followup was 38 months (range 2 to 120 months).

CONCLUSIONS: Reflux strictures are well treated with dilation and PPIs. Although food bolus impaction can occur without an underlying pathology, patients with relux strictures are likely to have a recurrence and should be treated aggressively. Addition of PPIs appears to decrease the number of dilations that a patient will require and lengthen the interval between dilations. Patients requiring more than two dilations after initiation of PPI therapy are unlikely to have durable relief. (J Am Coll Surg 2008;207:745–750. © 2008 by the American College of Surgeons)

Patients living in urban areas with quick access to medical care often report dysphagia and reflux symptoms to a physician and are evaluated for gastroesophageal reflux disease (GERD). More than 15 million Americans were diagnosed with reflux-esophagitis last year and treated with proton pump inhibitors (PPIs).[1] PPIs have had a dramatic impact on GERD, reducing the incidence of esophagitis and, potentially, Barrett's metaplasia, and almost eliminating what was once a common complication of GERD, strictures at the gastroesophageal (GE) junction.[2]

Most of our knowledge of treatment of strictures at the GE junction comes from older literature, before the era of PPIs, which were introduced in 1989.[3-6] Because PPIs have been so effective in relieving the chronic manifestations of GERD, strictures have become uncommon and very little data have been published concerning the effects of PPIs on patients who already have a stricture. In fact, PPIs have had such an impact on GERD that recent surgical textbooks now limit their discussion of fundoplication as a treatment for the symptoms of GERD (eg, silent aspiration, Barrett's changes, failure of medical therapy, chronic esophagitis, anticipated longterm medical therapy in a young patient) and do not focus on the surgical techniques to manage chronic scarring and fibrosis of the GE junction.[7-9]

Strictures at the GE junction are notoriously difficult to manage because of their propensity to recur after dilation and cause food bolus impaction, their tendency to harbor Barrett's metaplasia or dysplastic tissue, and elicit persistent and unrelenting symptoms despite dilation.[10,11]

The rural surgeon (we have discovered) is often called to manage the patient in the emergency room with food bolus impaction within the esophagus, because gastroenterologists are often not available in rural areas.[12] In addition, the rural population is less likely to seek medical attention for their reflux symptoms, self-treat with antacids, and generally present later in the disease process.[13-15] Because the late stages of this disease are no longer seen frequently, and after having treated many patients with substantial reflux-

Disclosure Information: Nothing to disclose.
†Dr Drennan is deceased.

Received May 2, 2008; Accepted May 28, 2008.
From Passavant Surgical Associates, Jacksonville, IL (Carr) and Passavant Area Hospital, Jacksonville, IL (Drennan).
Correspondence address: John Alfred Carr, MD, Passavant Surgical Associates, 2nd Floor, East Wing, 1600 West Walnut St, Jacksonville, IL 62650. email: heartandbones@yahoo.com

ISSN 1072-7515/08/$34.00
doi:10.1016/j.jamcollsurg.2008.05.028

Abbreviations and Acronyms
GE = gastroesophageal
GERD = gastroesophageal reflux disease
PPI = proton pump inhibitors

induced strictures at the GE junction, we decided to retrospectively review our local population to determine their longterm outcomes after initiation of treatment with PPIs and their quality of life after induction of therapy.

METHODS

We retrospectively reviewed all patients presenting to the emergency room with food bolus impaction at the GE junction from 2001 to 2007. Searching the medical records in this way allowed us to filter out those patients who might have "mild" or "moderate" strictures (from various causes) based on the endoscopist's opinion or the radiologist's opinion. Because the definition of, and criteria for, what constitutes a mild or moderate stricture is unknown, we collected a more pure sample of patients with substantial strictures by searching for only those who have had food become lodged within the esophagus. Granted, not all patients with food bolus impaction had reflux or reflux-induced strictures; it is difficult to quantify (or believe) the significance of a "moderate" stricture if the patient has never had a problem swallowing.

Medical records were reviewed to determine the patient's demographics, the substance causing the impaction, the method of clearance, the underlying pathology that caused the impaction, biopsy results, endoscopic findings, treatment recommended, treatment followed, and outcomes. All patients were contacted by phone or brought back to the office for followup. Most patients were routinely seen for persistent dysphagia and had numerous followup visits. When possible, patients underwent a followup endoscopy, with or without biopsies, or barium swallow while asymptomatic to determine treatment success or disease progression.

Because a substantial percentage of patients were unable to afford or were not willing to buy PPIs, recurrence rates and outcomes of these two populations (taking PPIs or not) were examined in detail. We also compared outcomes and recurrence rates (second or third trip to the emergency room with food impaction) of those with reflux strictures versus those with no underlying pathology identified.

Our approach was to remove the obstruction in the operating room using general anesthesia with endotracheal intubation and flexible or rigid esophagoscopy. We would then commonly perform dilation from 48F to 60F (until substantial resistance was met) using wire-guided polyvinyl dilators (Savary-Gilliard) under fluoroscopic guidance. Biopsies were then taken at and above the GE junction. Occasionally, dilation and biopsy were postponed until a later date if the GE junction appeared especially friable or edematous. All patients with biopsy-proven, endoscopic, or radiologic evidence of a reflux etiology were started on PPIs postoperatively, although not all complied. Because our experience taught us that patients with tight strictures do tend to recur, we did not routinely dilate and then perform a fundoplication to avoid worsening their dysphagia with a tight wrap. Rather, we relied on the PPIs to protect against additional inflammation at the GE junction after dilation.

Results are presented as mean with standard deviation. Statistical analysis was performed using the MedCalc statistical software package (version 9.4; MedCalc Software). Student's *t*-test with 2-tailed distribution and equal variance and the relative risk with 95% confidence intervals were calculated as appropriate. Significance was assumed for a p value < 0.05.

Table 1. Substance Causing Impaction

Substance	n	%
Meat	59	92
Steak, beef	38	59
Chicken	11	17
Ham, pork	6	10
Liver	2	3
Turkey	1	1.5
Corn dog	1	1.5
Nonmeat	5	8
Orange	1	1.5
Vegetables	1	1.5
Pills	2	3
Bagel	1	1.5

RESULTS

From 2001 to 2007, 64 patients presented to the emergency department with food bolus impaction at the GE junction. Men comprised 55% (n = 35) and women 45% (n = 29), with a mean age of 65 years (range 22 to 95; SD ± 20 years). Complete obstruction occurred in 53 (83%) and partial in 11 (17%). The vast majority of impactions were caused by meat (92%), with the remainder caused by vegetables, fruit, bread, or pills (Table 1). Diagnosis was confirmed by barium swallow in 41 (64%) and made on clinical grounds based on appropriate history and inability to swallow saliva or sips of water in 23 (36%).