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WHY CONSIDER A PARAESOPHAGEAL HERNIA GIANT AND A LONG ESOPHAGUS SHORT? DEFINITIONS AND RESULTS OF SURGERY FOR

PARAESOPHAGEAL HIATAL HERNIAS

To the Editor:

I read with much interest the article by Stringham and colleagues¹ published in the August 2017 issue of the *Journal*. I was intrigued by some of their interpretations of the terminology, which clash with what I had been taught about gastric hiatal hernias in my residency years, in fact many years ago.

First, I disagree with the definition of the term *giant paraesophageal hernia* provided by Stringham and colleagues,¹ according to whom a giant paraesophageal hernia is initially seen with more than 30% of the stomach above the diaphragm. Since the first hiatal hernia classification,² paraesophageal hiatal hernia has been characterized by the placement of the esophagogastric junction in the abdomen without esophageal shortening. As a direct consequence, the esophagus has a normal length,³ and only the gastric fundus is displaced into the chest. I thus find it difficult to define any paraesophageal hiatal hernia as giant. In turn, the interpretation of the paraesophageal hernia short esophagus concept adopted by Stringham and colleagues¹ is to some extent in conflict with the surgical procedures that they performed. Indeed, they reported that an esophageal lengthening procedure was done in 66% of cases to correct a concomitant short esophagus.¹ These gastropasty frequency data are homogeneous with the data displayed in the table summarizing their series, in which type III and IV hiatal hernias, as rightfully categorized according to the Landreneau classification of hiatal hernias⁴ (in which paraesophageal hiatal hernia is grouped in type II), constituted the overwhelming majority of their cases (100/106). Again, this classification is in contrast with the inclusion of all cases under the term *giant paraesophageal hernia*.

Second, I am puzzled by the approach of Stringham and colleagues¹ to the recurrence of small (smaller than 2 cm) hernias. In my opinion, one of the merits of this article is that it focuses the clinician's attention on the surgical treatment of nonaxial hiatal hernias, which can be associated with a very significant

recurrence rate (as great as 40%).⁵ I do agree with Stringham and colleagues¹ that patients with these small hiatal hernia recurrences should undergo a strict follow-up protocol. In fact, in 2016, my own group published our experience with the surgical management of 108 types III and IV hiatal hernias followed up with barium esophagograms at a median of 96 months after surgery.⁶ We considered recurrences of hiatal hernias 2 cm or smaller to be poor results even if the patient was symptoms free. We reported a 5% global hiatal hernia recurrence rate in our open surgery group, whereas the rate was only 3% among the patients subjected to minimally invasive procedures. Interestingly, all hiatal hernia recurrences were within 1 year after surgery.⁶

In conclusion, surgery for nonaxial, type III to IV hiatal hernias is challenging and fraught with risks of recurrence. For a correct interpretation and comparison of postsurgical results, both the use of commonly accepted definitions of the clinical features of this condition and a thorough revision of the literature remain of paramount importance.

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SHORT ESOPHAGUS IS A DISEASE OF THE PAST AND THE PREVENTION OF RECURRENT HIATAL HERNIA IS THE CHALLENGE OF THE

FUTURE

Reply to the Editor:

I read with interest the letter written by Dr Mattioli commenting on the article recently published by Stringham and colleagues.¹

The Editor welcomes submissions for possible publication in the Letters to the Editor section that consist of commentary on an article published in the *Journal* or other relevant issues. Authors should: • Include no more than 500 words of text, three authors, and five references. • Type with double-spacing. • See <http://jtcvs.ctsnetjournals.org/misc/fora.shtml> for detailed submission instructions. • Submit the letter electronically via jtcvs.editorialmanager.com. Letters commenting on an article published in the JTCVS will be considered if they are received within 6 weeks of the time the article was published. Authors of the article being commented on will be given an opportunity to offer a timely response (2 weeks) to the letter. Authors of letters will be notified that the letter has been received. Unpublished letters cannot be returned.

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Dr Mattioli discusses 3 important sources of debate among experts in the treatment of gastroesophageal disease: (1) shortened esophagus; (2) definition of “giant” hiatal hernia; and (3) the clinical significance of small recurrent hiatal hernia.

Shortened esophagus, with peptic stricture as its most common predictor,² was traditionally one of the most common manifestations of gastroesophageal disease. Thus, Collis gastroplasty was an integral part of antireflux surgery and hiatal hernia repair.³⁻⁵ Now with the widespread use of proton pump inhibitors and near eradication of peptic strictures, esophageal stricture is a rare finding. However, Collis gastroplasty remains a common procedure in many esophageal centers with a reported prevalence as high as 40% to 66%.^{1,6,7} In a pure paraesophageal hiatal hernia, by definition, the gastroesophageal junction is located intra-abdominally; therefore, short esophagus is not associated with type II hiatal hernia as previously reported by Lugaesi and colleagues⁸ in 34 cases with type II to IV hiatal hernia, in which none of the patients with type II had a short esophagus.

However, the prevalence of a pure type II hiatal hernia is rare. In our report of 131 large hiatal hernias, a pure type II hiatal hernia was seen in only 4 of 131 (3.1%).⁹ Others have reported a rate of 8 of 100 (8%).¹⁰ As the result of the rarity of a pure type II hiatal hernia, the term “paraesophageal hernia” is often loosely used to describe type III and IV. This use leads to confusion in disentangling the relationship between paraesophageal hiatal hernia and short esophagus in the esophageal literature. Type II paraesophageal hiatal hernia was found only in 6 of 106 (6%)¹ in the article by Stringham and colleagues¹ and type III and IV in 100 of 106 (94%). Therefore, the use of Collis gastroplasty in that series is similar to that reported from other esophageal centers. Reporting the prevalence of stricture in the series would have been informative to clarify the need for Collis gastroplasty in 66% of patients. The use of Collis gastroplasty may be a reflection of an institutional tradition, but it is clear that the use of Collis gastroplasty has decreased over time.⁷ In our report of 131 large hiatal hernias, none had stricture and Collis gastroplasty was required in none.⁹ We further reported a series of 101 type IV hiatal hernias, and none had stricture or a Collis gastroplasty.¹¹ Therefore, short esophagus, once a common manifestation of gastroesophageal reflux disease, may become the disease of the past, and Collis gastroplasty, once a basic component of antireflux surgery, may become a historical procedure. Dr Mattioli and I are in agreement that pure type II hiatal hernias are definitely not associated with a short esophagus, and this clear distinction should be emphasized when we discuss paraesophageal hiatal hernias as a whole.

“Giant” paraesophageal hiatal hernia is commonly used to describe the condition in which more than 30% of the stomach extends into the chest. For the surgeon, the term may be not only a definition of the size but also a marker of the complexity of paraesophageal hiatal hernias as they get larger. As more stomach herniates into the chest, the risk of mechanical complications such as perforation, volvulus, and bleeding increases. In parallel, there is an increase in the degree of complexity of the case, with more mediastinal dissection and longer duration of operation, which in the past required open procedures via laparotomy, thoracotomy, or even a thoracoabdominal approach. In addition, larger hernias tend to occur in older patients with more associated comorbidities, and performing a laparotomy or thoracotomy resulted in higher morbidity in this group of patients.

Now, with the development and refinements of laparoscopic techniques, many centers report the safe laparoscopic repair of these large hernias with good outcomes even in an aging population. Therefore, the large hernia and the corresponding surgical repair may not seem as gigantic as the name once implied.

Although it was previously believed that the majority of patients with small recurrent hiatal hernia are asymptomatic,¹² and even the recurrent hiatal hernia was defined as transdiaphragmatic herniation of stomach of more than 2 cm,¹³ more recent reports suggest that recurrent hiatal hernia of any size should be considered as a poor result. The reports of Stringham and colleagues¹ and Lugaesi and colleagues¹⁴ add weight to this emerging consensus. I agree with Dr Mattioli that the merit of the article is its focus on small hiatal hernia of less than 2 cm, because they are more symptomatic as we previously thought and they should be followed closely.

The repair of large paraesophageal hiatal hernia has shifted from management of a short esophagus and complications of open procedures to a laparoscopic approach, without the need for Collis gastroplasty, with low morbidity and short length of stay. The prevention of recurrent hiatal hernia of any size remains an important challenge and should be the main goal in the refinement of hiatal hernia repair.

We may need to shift our thinking and realize that paraesophageal hiatal hernias may not be as giant, the esophagus may not be as short, and small recurrent hiatal hernias may not be as asymptomatic as we once believed.

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PARAESOPHAGEAL HERNIAS: "YOU SAY POTATO, I SAY POTATO" **Reply to the Editor:**

We greatly appreciate the commentary and questions raised by Dr Mattioli in regard to our recently published study on the 1-year follow-up of giant paraesophageal hernia repairs.¹ The first issue is with our use of the term "giant paraesophageal hernia." We defined the condition in our study as "gastric herniation of 30% or more through the diaphragmatic hiatus on preoperative imaging." This definition has been widely used over the past decade, most notably by Dr James Luketich and colleagues² as published in the *Journal*. In addition, a search of the PubMed database using the term "giant paraesophageal hernia" shows 10 publications using this term from 2017.³ The hernias that we described, which are predominantly type III and IV hiatal hernias, are commonly referred to as "paraesophageal hernias" because the stomach herniates beside some of the esophagus. Many of our patients had very large hernias

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denoted by the term "giant." Of note, the classic type II hernia with a gastroesophageal junction below the diaphragm and fundus herniating along the esophagus is rare and is not the definition being used in the literature when referring to paraesophageal hernias. We appreciate your reference to Landreneau and colleagues⁴ classification and hope our answer is satisfactory. We agree that the current definition has evolved and were careful to define the condition in our study.

Your second point has to do with the definition of recurrence and the risks of operating on large hiatal hernias. We are aware of your outstanding published results and your careful long-term follow-up for a median of 96 months. We used an experienced study coordinator to help with the 1-year follow-up. She (JVP) had to persuade many of our patients, particularly those are feeling well, to return for a 1-year follow-up or to undergo any further diagnostic imaging. Our group was also troubled by the commonly used definition of a recurrence after laparoscopic hernia repair, defined as a gastroesophageal junction greater than 2 cm above the hiatus. We all know that the gastroesophageal junction should be below the hiatus, and we wanted to highlight this point in our study. We also wanted our results to be interpreted fairly compared with other contemporary series, so we reported both recurrence rates (any recurrence and small recurrences not always reported in other series). We appreciate your comments and hope that future studies of giant paraesophageal hernias, or large type III and IV hernias, use a more accurate definition of recurrence.

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