

Complicated Benign Peptic Stricture of the Esophagus

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ABSTRACT

Peptic esophageal stricture secondary to gastroesophageal reflux is an important cause of esophageal stenosis and dysphagia. Symptoms of peptic strictures are usually insidious but progressive beginning with dysphagia to solids followed by dysphagia to liquids. It was estimated to occur in up to 20% of untreated patients, which has decreased significantly since the era of proton pump inhibitor therapy. The presence of esophageal reflux stricture is typically diagnosed by means of a barium esophagogram, although endoscopy may have both diagnostic and therapeutic value. Treatment usually involves dilation combined with acid-suppressive therapy. We reported a 43-year-old patient with complicated benign peptic stricture of the esophagus that finally underwent esophageal resection, a rarely therapeutic option.

Keywords: gastroesophageal reflux disease, benign peptic esophageal stricture, dysphagia, esophageal dilatation, surgical treatment

INTRODUCTION

The clinical spectrum of gastroesophageal reflux disease (GERD) is diverse. Peptic esophageal stricture, which is one of the most frequent sequelae of long-standing severe esophagitis, was estimated to occur in 7-23% of patients with untreated reflux esophagitis.¹ The incidence, however, has decreased significantly since the era of proton pump inhibitor (PPI) therapy.² Symptoms of peptic strictures are usually insidious but progressive beginning with dysphagia to solids followed by dysphagia to liquids. Since the treatment of these conditions may involve esophageal dilation and the specific technique used differs among them, accurate diagnosis by means of barium esophagogram and endoscopy as well as planning of the appropriate treatment strategy is required prior to embarking upon dilation. The strategy for dilation of esophageal strictures depends upon characteristics of the stricture and familiarity with the available systems. Most benign

peptic stricture can be managed by dilatation and long-term PPIs treatment may reduce the need for subsequent dilation; while, esophageal resection is a rarely therapeutic option. We reported a case with complicated benign peptic stricture of the esophagus that finally underwent surgery.

CASE ILLUSTRATION

A 43-year-old man was admitted with chief complaint of difficulty in swallowing since 5½ years before admission. He initially complained difficulty in swallowing solid food that accompanied with a sensation of foods sticking that localized to the neck every time he ate. He got neither nausea nor vomiting, and denied symptoms of chest pain or heart burn. These symptoms increased gradually in frequency and severity, causing him had to change his diet to porridge. After months to years, he became difficult to swallow a softer diet, while he kept feeling the same sensation of food sticking on his neck. Since then, he altered his diet by only drinking milk. Sometimes he also complained his saliva mixed with a little blood. He denied abdominal pain, pain during swallowing, chronic cough and vomiting of blood. He lost approximately 15 kg of weight in the first 3½ years of his disease.

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One and a half years before hospitalization, he underwent endoscopy at a private hospital and was told by his doctor that he had a narrowing food pipe. A nasogastric tube was inserted to maintain his intake with a blended diet. No information of what therapeutic planning he would have, he was discharged from the hospital on his own wish due to financial problem. He had been on a nasogastric tube for almost 1½ years, and during that time he had never had his tube changed neither seen by a doctor. He regained his weight and complained no other symptoms.

One week before admission, after obtaining his government health coverage, he went to Gastroenterology outpatient clinic at Cipto Mangunkusumo hospital for investigating his disease. He had barium esophagogram and endoscopy procedure which showed a stricture of his esophagus. He was then advised to be hospitalized for further management. There was no history of drinking any caustic agent in the past. He had never taken a regular medicine, and never received radiation therapy. He denied any history of systemic diseases.

On physical examination, he was fully alert. Blood pressure 110/70 mmHg, pulse rate 80 beats per minute (bpm), respiratory rate 20/minute and body temperature 36.8°C. He was 165 cm tall and 55 kg of weight, with body mass index 20 kg/m². Further examination results were normal. The results of routine laboratory tests including complete blood count, liver- and renal-function test, random blood glucose, and levels of serum electrolytes were normal. Chest X-ray and electrocardiography (ECG) examination were also normal.

The barium esophagogram on one week before admission showed an irregular narrowing lumen with gradation of the esophagus at the level slightly below the carina suggesting esophageal stricture (figure 1). Endoscopy on day 2 before admission showed stricture at the middle third of the esophagus (30 cm from the incivus), the mucosa of the esophagus was edematous and hyperemic with mosaic pattern, and the scope could not pass through the stenosis of the esophagus (figure 2). Biopsies were taken.

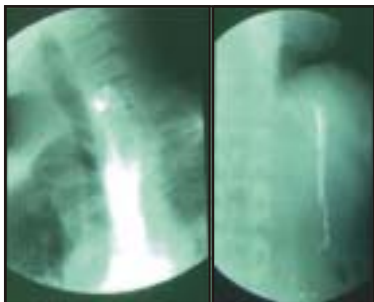


Figure 1. Esophagogram showed an irregular narrowing lumen with gradation of esophagus at the level slightly below the carina, suggesting esophageal stricture

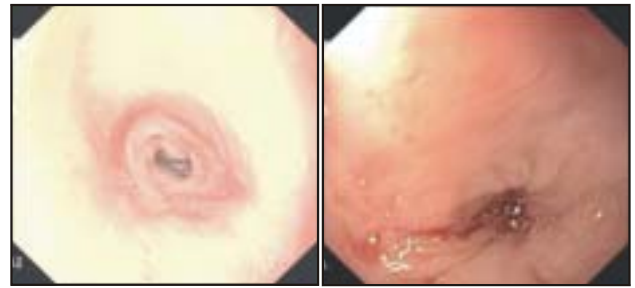


Figure 2. Endoscopy showed esophagitis with stricture at the middle third of the esophagus with benign appearance

The endoscopy concluded an esophagitis with stricture at the middle third of the esophagus with benign appearance.

Based on history, physical examination, barium esophagogram and endoscopy findings of the patient, the assessment was: long benign esophageal stricture and reflux esophagitis, with malignancy as a differential diagnosis. The diagnostic planning was waiting for the biopsy result. Meanwhile, patient was treated with milk diet 250 mL six times daily and omeperazole 40 mg IV once daily. He was then scheduled for wire guided Savary-Gilliard bougie dilatation.

On day 6 of hospitalization, patient underwent dilatation procedure with wire guided Savary-Gilliard bougie dilator with fluoroscopy positioning. However, the procedure was failed because the tip of guide wire could only reach as far as 30 cm from the incivus, in which the guide wire could not be passed through the tight stenosis (figure 3). Patient then was consulted to

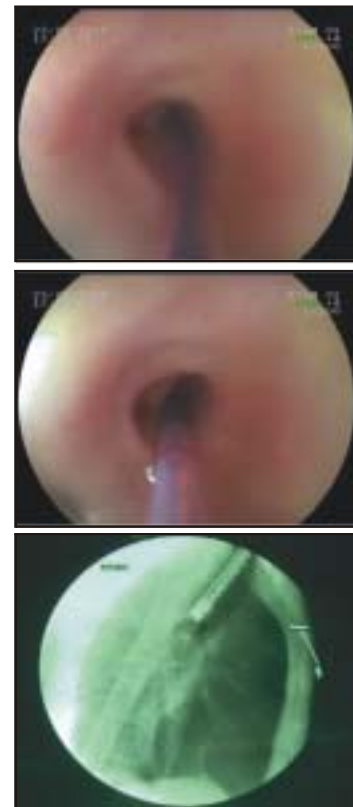


Figure 3. Wire-guided Savary-Gilliard bougie dilatation under fluoroscopy positioning

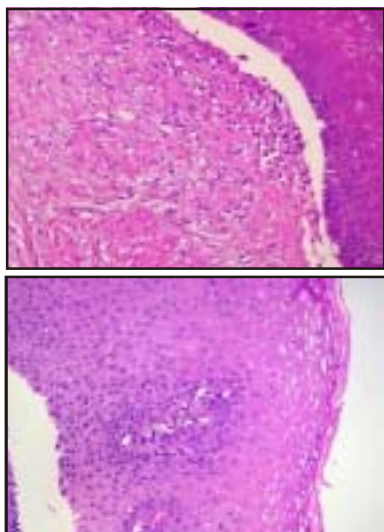


Figure 4. The biopsy showed reflux esophagitis

the division of digestive surgery. The result of the biopsies revealed reflux esophagitis (figure 4).

On hospitalization day 20, the chest computed tomography (CT) scan with and without contrast showed a dilation of the proximal of esophagus with a narrowing lumen of the esophagus from the level of carina with no periesophageal mass (figure 5). After discussing this case with the division of digestive surgery, patient was suggested to undergo esophageal resection with gastric pull-up.



Figure 5. Chest CT scan showed a narrowing lumen of the esophagus from the level of carina with no periesophageal mass

On hospitalization day 36, patient underwent esophagectomy with gastric pull-up operation. Post surgery and after staying 3 days in intensive care unit,

he was moved to high care unit and then to surgery ward after had stable condition. During post surgery care, he was complicated by nosocomial pneumonia. The division of Pulmonary and Respiratory Medicine was also involved in managing this patient. He was given 6 L/minute of oxygen with simple mask, meropenem 1 g eight hourly, inhalation of combination of ventolin – bisolvon – normal saline six hourly and chest physiotherapy. After having a course of antibiotics, his condition improved. He was initially on total parenteral nutrition, then partial parenteral nutrition via a nasogastric tube. Later, he was on milk diet per mouth then increased gradually to a soft diet. The histopathology result of the resected esophagus showed stricture with extensive fibrosis and reflux esophagitis (figure 6). He was discharged on day 56 of hospitalization with omeperazole 20 mg twice daily, and was advised to visit the out-patient clinic.

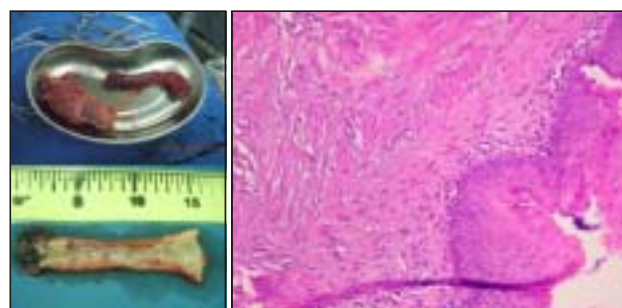


Figure 6. Histopathology result of the resected esophagus showed stricture with extensive fibrosis and reflux esophagitis

DISCUSSION

The presence of GERD is a sine qua non for the development of a peptic esophageal stricture. Contact between acid and the esophageal mucosa is required to injure the mucosa, leading to erosive esophagitis, and the most severe end of the spectrum is esophageal stricture with or without Barrett's esophagus. Stricture, itself, is a result of the healing process of ulcerative esophagitis. Collagen is deposited during this phase and, with time, the collagen fibers contract, narrowing the esophageal lumen. Two major factors involved in the development of a peptic esophageal stricture are dysfunctional lower esophageal sphincter (LES) and motility disorder. A study has shown that mean LES pressures are lower in patients with peptic strictures compared to healthy controls or patients with milder degrees of reflux disease.³ Many patients with peptic strictures have been associated with esophageal motility disorders, further prolonging abnormal acid contact time.³ Hiatal hernias are found in 85% of patients with peptic esophageal strictures, suggesting that it may play a significant role.⁴ In this case, the patient did not have

a hiatal hernia as shown in his barium esophagogram and chest CT scan. Acid and pepsin secretion do not appear to be major factors, while no good evidence suggests that delayed gastric emptying plays a role in peptic esophageal strictures. Prolonged nasogastric intubation for almost 1½ years in this patient was thought to be the further predisposing condition for the development of long tight esophageal stricture. It interferes LES function and prolongs contact time between acid and the esophageal mucosa.⁵

Dysphagia is the most common presenting symptom in patients with benign esophageal stricture; and the cornerstone of evaluation of these patients is a careful history taking.⁶ In this case, the patient experienced dysphagia for solid to softer diet with slow and insidious progression (months to years) of frequency and severity that suggested a benign stricture. Although losing a significant of weight initially, he regained his weight after having adequate intake via a nasogastric tube. Malignant esophageal strictures result in a rapid progression (weeks to months) of symptom of dysphagia which are associated frequently with significant weight loss. Dysphagia for solids and liquids simultaneously should alert us to the possibility of a motility disorder such as achalasia or collagen vascular disorders. However, dysphagia secondary to a Schatzki ring is usually intermittent and non progressive. Furthermore, this patient had never had radiation therapy, and denied a history of drinking any caustic agent in the past. History taking also revealed no any other systemic diseases, and he had never taken a regular medicine; indicating these possible causes of benign esophageal stricture was unlikely.

A majority of patients with peptic esophageal strictures also complain a symptom of heartburn. Such symptom, however, may resolve with worsening of a peptic stricture as a result of decreased acid refluxate into the esophagus through the obstructed lumen. Interestingly, about 25% of patients with peptic esophageal strictures have no previous history of heartburn.⁷ The patient in this report had never had this symptom, making the diagnosis of ongoing reflux esophagitis was lately established.

The presence of an esophageal reflux stricture is typically diagnosed by means of a barium esophagogram. Although endoscopy may be both diagnostic and therapeutic; barium esophagogram provides valuable anatomic information about the esophagus that may help direct therapy extent and shows the degree of narrowing of the stricture which may be helpful in selecting the best method of dilatation. The barium esophagogram also appears to be more sensitive than endoscopy for the detection of subtle narrowing of the esophagus that is less than

10 mm in diameter. Furthermore, it provides an objective baseline record of the esophagus that can be used to assess the treatment response or progression of disease.⁸ In this case, the patient had both barium esophagogram and endoscopy to confirm the diagnosis. CT scan should be used as an adjunct if extrinsic compression is considered a possible etiology of esophageal stricture. This modality can also exclude underlying malignancy as the cause of stricture.⁸ The chest CT-scan of this patient revealed no periesophageal mass.

The goals of therapy for benign esophageal strictures are the relief of dysphagia and the prevention of stricture. However, prevention treatment of esophageal reflux strictures is hampered by the fact that many patients remain relatively asymptomatic as their esophageal inflammation progresses through the initial pathologic and endoscopic stages of reflux esophagitis. It has been demonstrated that chronic, aggressive acid-suppression therapy with PPI both improves dysphagia and decreases the need for subsequent esophageal dilatation.^{9,10}

The choice of dilator and technique is dependent on many factors, and the most important is the stricture characteristics. It is also based on patient tolerance, operator preference, and experience. No clear consensus on the optimal end point exists. Most simple strictures can be dilated with mercury-filled rubber dilators such as Maloney and Hurst dilators that are usually passed blindly without fluoroscopy. These dilators tend to curl up when passed in patients with tight strictures, increasing the risk of perforation. Patient in this report was initially scheduled for wire guided Savary-Gilliard bougie dilator with fluoroscopy positioning because the stricture was considered a complex one. A complex or complicated stricture is characterized by a long (> 2 cm), tortuous, or associated with a severely compromised luminal diameter.¹¹ The through-the-scope (TTS) balloon dilator is an alternative, it is used through the endoscope and allow for direct visualization. This procedure is not requiring fluoroscopy, but the balloon is not reusable and is expensive. Randomized control trials comparing the latter two dilators generally found no important clinical differences.^{12,13} The dilation procedure of this patient was failed because the guide wire could not be passed through the tight stricture. A complicated stricture is one of the risk factors for esophageal perforation when dilating the stricture; therefore, this patient was consulted to the division of digestive surgery.

If the bougie dilator were passed successfully, in general, one should follow the “rule of threes” pass no more than three consecutive dilators that meet moderate resistance during a single dilation session.

Although there is no objective evidence supporting this approach, it makes good sense not to overstretch a fibrotic stricture at one sitting because this is a chronic problem. Generally, patients are dilated to 18 mm (54 F) or larger since such esophageal diameter is necessary for taking a regular diet.^{7,14}

Esophageal dilation effectively relieves dysphagia with an initial response rate of greater than 80%. Approximately 30% of patients with reflux strictures, however, require repeat dilation within one year of successful treatment despite optimal acid suppressive therapy.¹⁵ Complications of esophageal dilations include esophageal perforation, bacteremia, pulmonary aspiration, bleeding, intubation of the trachea, and chest pain. The perforation rate after esophageal dilation is about 0.25% per procedure, and the risk is higher in complicated strictures.¹⁶

If there were no endoscopic improvement in 1-2 sessions, intralesional steroid injections may be considered. It reduces inflammation and delays or prevents fibrosis, thereby improving peptic strictures. In a longitudinal study of 71 patients treated with four-quadrant injections of triamcinolone, it was found that the patients required dilation less frequently after starting treatment.¹⁷ However, no randomized-blinded studies to test the efficacy and safety of intralesional steroid injection have been performed.

A silicone coated expandable stent has already been approved for use in patients with refractory benign strictures (when there were no improvements seen after five sessions). However, clinical experience with this stent in benign strictures suggests that migration has been a problem.¹⁴

There are two general approaches to the surgical treatment of the esophageal strictures: antireflux surgery with intraoperative stricture dilation and esophageal resection with reconstruction. The Nissen fundoplication is the gold standard of antireflux surgery. The specific indications for antireflux surgery include persistent or recurrent symptoms despite medical therapy, severe esophagitis by endoscopy, benign stricture, Barrett's columnar-lined epithelium (without severe dysplasia or carcinoma), and recurrent pulmonary symptoms in association with GERD.¹⁸ One percent to 43% of patients required repeat dilation after surgery, but this is usually confined to one or two sessions. Mortality rate is less than 0.5%, with morbidity less than 20% when performed in major medical centers.¹⁹ Currently, no well-controlled trials exist comparing the efficacy, outcome, and safety of surgery with aggressive medical management that includes proton pump inhibitor (PPI) and dilatation.

In some situations patient with esophageal reflux stricture is best treated with esophageal resection.

Such situations include extremely long non-dilatable strictures, strictures with associated Barrett's mucosa with high grade dysplasia, and strictures after multiple failures of antireflux operations. Esophagectomy for non-dilatable strictures was necessary in 22% of the patients with benign strictures from reflux disease reported by Bonavina et al.²⁰ A "non-dilatable" stricture is generally define as: (1) one through which a dilator cannot be passed because of luminal narrowing or tortuosity; (2) one that causes persistent dysphagia despite dilatation; (3) one with a previous perforation during dilatation.²¹ The patient in this case met the first definition above. He finally underwent esophagectomy with gastric pull-up operation. The operation had considerable magnitude and technically demanding. Patients who undergo esophagectomy at hospitals that perform large numbers of procedures have lower perioperative mortality rates, better early clinical outcomes, and shorter hospital stay than those who undergo resection at lower volume institutions.^{22,23} The long period of hospital stay in this patient was due to technical problems.

Although low perioperative mortality rate can be achieved in high-volume centers, esophageal resection is still associated with substantial morbidity. Rates of early postoperative complications, which range from minor to major problems (major respiratory and cardiovascular/thromboembolic complications, mediastinitis associated with anastomotic leak, ischemic gastric conduit, gastrostomy dehiscence, postsurgical bleeding, recurrent laryngeal nerve injury, infection/sepsis, chylothorax, and visceral injury) vary from 40-80%, depending on the patient population, the presence of associated comorbidity and the extent of resection.²² Finally, regardless of the extent of surgery, esophagectomy entails at least a temporary detrimental impact on health-related quality of life.²²

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