



A Novel J-Maneuver Withdrawal Method During Gastroscopy to Dilate the Benign Distal Esophageal Stenosis

Putut Bayupurnama^{*}, Neneng Ratnasari, Catharina Triwikatmani, Fahmi Indrarti, Sutanto Maduseno

Division of Gastroenterology & Hepatology, Department of Internal Medicine, Dr. Sardjito General Hospital, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

Email address:

pututby@yahoo.com (P. Bayupurnama)

^{*}Corresponding author

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Abstract: *Background:* Bouginage and pneumatic dilation are the first treatments for benign esophageal stenosis or stricture. Aim of the study was to develop the simpler method to treat the benign distal esophageal stenosis. *Methods:* Five benign distal esophageal stenosis cases were included in the study. A standard videogastroscope was inserted into the gastric antrum of the patient and then the gastroscope tip was deflected 210° and rotated it until the gastroscope tip adhered to the gastric minor curvature in the mid of the corpus above the angular incisure. While retained that position, the gastroscope was withdrew slowly until the endoscopist felt the resistant of the minor curvature gastric wall and the scope could not be withdrew anymore, however the withdrawal process was continued for a few more milimeters and kept that position for a few seconds. This maneuver dilated the distal esophageal stenosis. *Results:* All benign distal esophageal stenosis patients (*case 1:* female, 49 years old; *case 2:* male, 75 years old; *case 3:* female, 72 years old; *case 4:* female, 32 years old; *case 5:* male 55 years old) were successfully dilated. Three patients (*case 1, 2, and 3*) have been 7 months after first dilation without further deglutition problem. *Case 4* was relapsed after 6 months and redilated successfully. *Case 5* has been 4 months observation period after first dilation and without any deglutition problem. *Conclusion:* J-maneuver withdrawal method during gastroscopy looked promising method to dilate benign distal esophageal stenosis, which can be performed by basic endoscopists. Further studies are needed to determine to what extent this method can treat distal esophageal stenosis.

Keywords: J-Maneuver Withdrawal Method, Gastroscopy, Benign Distal Esophageal Stenosis

1. Introduction

Benign esophageal stenosis or stricture will disturb patient deglutition process and may reduced the body weight due to lack of nutrition absorption. Esophageal stricture may occur on upper, mid, or lower esophagus [1]. Achalasia is a well recognized benign esophageal motility disorder characterized by dysphagia and regurgitation symptoms due to esophageal aperistalsis and impaired relaxation of the lower esophageal sphincter with unclear etiology which shape distal esophageal stenosis appearance with barium esophagram. Pneumatic dilation and bougienage are the first line of

esophageal stenosis or stricture treatments [2, 3]. In this study we introduce a novel method to dilate the the benign distal esophageal stenosis.

2. Patients and Method

Five eligible benign distal esophageal stenosis cases were included in this study and informed consent was signed by each patient before started the J-maneuver withdrawal (J-MW) method procedure during gastroscopy. All patients were diagnosed as achalasia radiographically (barium esophagram) and esophagogastroduodenoscopy (EGD)

examination showed normal esophageal mucosa with distal esophageal stenosis. The definite achalasia diagnosis can not be confirmed because the high-resolution manometry (HRM) was not available in our hospital [4]. The standard videogastroscope was inserted into the esophagus only with oropharyngeal xylocaine spray sedation as we performed EGD examination, and pushed the tip of the gastroscope into the narrowed lumen of the esophagogastric junction (EGJ) so that the distal part of the gastroscope finally enter the gastric lumen. When the tip of the gastroscope reached the antrum area, the distal part of the gastroscope was deflected maximally (210°) to make the J-shape pattern and then rotated the gastroscope until the J-shape part of the gastroscope adhered to the minor curvature in the middle part of gaster above the angular incisura so that the gastric lumen can not be viewed. While retained that position, the gastroscope was withdrew slowly and carefully until the endoscopist felt the resistance of the minor curvature gastric wall and the scope could not be withdrew anymore, however the withdrawal process was continued for a few more millimeters and kept that position for a few seconds. This maneuver stretched and dilated the EGJ (Figure 1). At last,

the J- shape of the distal part of gastroscope was straightened again and evaluated the dilation result of the EGJ. The procedure can be repeated as needed during one session of EGD examination.

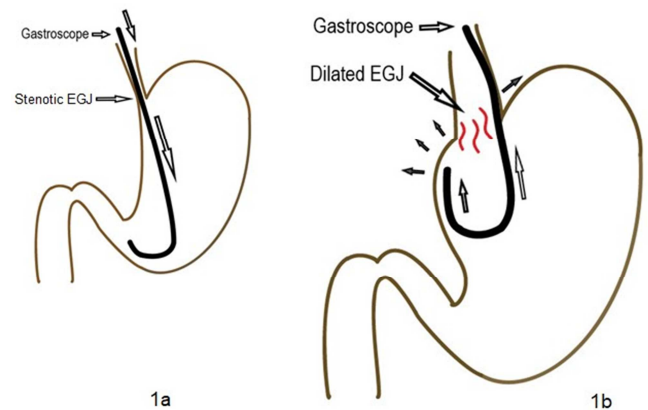


Figure 1. Graphic illustration of J-manuever withdrawal method, 1a. Gastroscope insertion through stenotic EGJ, 1b. J-manuever withdrawal method during gastroscopy to dilate the stenotic EGJ. (Note: red lines indicate the mucosal breaks).

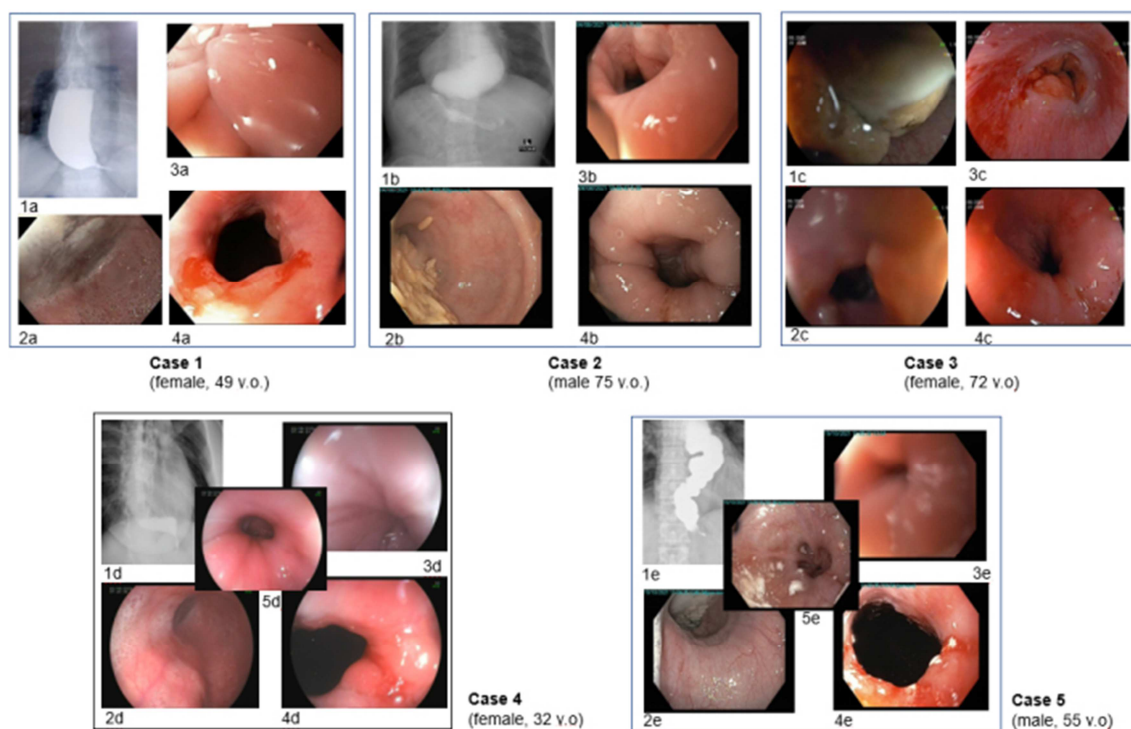


Figure 2. Case 1: 1a. Barium esophagram, 2a. and 3a. distal esophageal appearance before dilation, 4a. EGJ was dilated (2a-4a: EGD pictures). Case 2: 1b. Barium esophagram (prone position), 2b. distal esophageal appearance before dilation (rice in the esophagus), 3b. and 4b. EGJ was dilated (2b-4b: EGD pictures). Case 3: 1c. Meatballs in the stenotic esophagus of patient, 2c. narrowed distal esophagus, 3c. and 4c. EGJ was dilated (1c-4c: EGD pictures). Case 4: 1d. Barium esophagram, 2d. and 3d. stenotic EGJ appearances, 4d. and 5d. dilated stenotic EGJ appearances (2d-5d: EGD pictures). Case 5: 1e. Barium esophagram, 2e. and 3e. stenotic EGJ appearances, 4e. and 5e. dilated stenotic EGJ appearances (2e-5e: EGD pictures).

3. Results

The J-MW method to dilate benign distal esophageal stenosis was performed on five outpatient cases, only with oropharynx local sedation. Figure 2 showed the patients with

stenotic distal esophagus before and after dilation with J-MW method. Barium esophagram of three patients showed achalasia-like appearance. Benign distal esophageal stenosis of all patients were successfully dilated. Three of five patients (case 2, case 3, and case 4) have been dilated with bougienage 6 months before this study but relapsed and then

underwent this J-MW method.

The first three cases (case 1, case 2 and case 3) did not need further dilation until 7 months observation period and still continuing. The fourth case (case 4) also swallowed food better and her body weight is increasing. EGD examination was performed to evaluate this patient 2 months after dilation. Endoscopy evaluation showed her EGJ was dilated, however there was still esophageal spasm in the distal part of the esophagus proximal of the EGJ that probably influenced her deglutition capability to swallow the meat. The patient felt no need for further dilation. Sixth months later after first dilation episode her esophageal stenosis relapsed. EGD examination showed restenosis of the distal esophagus, however without lower esophageal spasm anymore and dilated successfully once again with this J-MW method.

The case 5 had no deglutition problem at all one week after dilation and until now (4 months observation period). Erosion on the gastric mucosa was the only adverse event in all cases and treated with proton pump inhibitor orally. The dilated procedure time was very quick, around five minutes in each case.

4. Discussion

Based on the result of this study, the J-MW method during gastroscopy successfully dilated the benign distal esophageal stenosis and improved deglutition performance in 4 cases and partial response in one case. This dilation method was very simple and only needed a gastroscope without any other tool so that it was low cost procedure and the basic endoscopist can perform this method easily. HRM is the gold standard of achalasia diagnosis [5, 6]. Achalasia diagnosis can not be established in this study because the HRM was not available in our hospital, even though there were cases (case 1, case 4, and case 5) showed achalasia-like appearance with barium esophagram and EGD examination.

The dilation of the benign esophageal stenosis with normal mucosa is usually the first choice of treatment [7, 8]. A study showed that more than 60% of benign esophageal stenosis remain free of esophageal re-dilation after one year of follow up [9].

A retrospective study showed that the pneumatic dilation resulted durable treatment for achalasia and persisted for years [10]. POEM is the most advance endoscopy method to treat achalasia and as a rescue treatment for patients who have undergone previous failed intervention. A meta-analysis study also showed that POEM was better than pneumatic dilation albeit with the higher risk of acid and non-inferior compared to laparoscopic heller myotomy (LHM), however the reflux esophagitis adverse event was higher in POEM (57%) than LHM (20%) after 3 months [11, 12]. A recent article about the management of achalasia did not mention this kind of J-MW method [13].

The patient's safety is also our concern when we perform this J-MW method, because we can not see the dilated area directly during dilation process by withdrew the J-shape gastroscope so that we only trust our hand when the dilated

process is underway. Based on our experience during this study, the short tracted movement during withdrawal of the J-shape gastroscope after a gastric wall resistance was the sign of the dilation process and caused mucosal breaks on the esophagogastric junction area. Iatrogenic mild erosive gastritis was the only side effect of the procedure without any serious bleeding in all cases. The use of contrast agents such as barium or diatrizoate under x-ray examination during J-MW method procedure may be helpful to view the maneuver, however further study is needed to reveal the exact role of this contrast agents [14].

The other advantage of this J-MW method is that this procedure only need very short time and can be performed ambulatory with oropharynx local sedation and patients can eat everything they want after the procedure without any food restriction. The aim of this no food restriction advice after the procedure is to know the progress of the deglutition improvement after the procedure and during the follow up period. Long term follow up is needed to confirm the durability of the therapeutic response of this J-MW method.

Further study is needed to confirm the efficacy of this J-MW method during gastroscopy with more samples, long-term observation after dilation, and establish the best indication of this procedure including post operative benign stenosis and other benign lesions besides achalasia-like lesion [15].

5. Conclusions

This initial study showed that the J-MW method could dilate benign distal esophageal stenosis and improved patient deglutition process in most of the patients more than six months and continuing. This method is easy and low cost method which can be performed by most of basic endoscopists only with gastroscope without any other tool.

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