

Esophageal stricture due to corrosive substance ingested and delayed management: A case report

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ABSTRACT

Corrosive substance ingestion is a medical emergency that can lead to poor outcomes, though prompt and adequate treatment has been carried out, particularly in cases of delayed management. An Indonesian man, 36 years old, complained of continually vomiting after meals caused by ingesting a corrosive substance 3 months earlier, which had an impact weight loss of 25 kg. Besides, he also experienced tenderness in the epigastric and left hypochondriac areas. The first endoscopic examination revealed esophageal stricture. In the second endoscopy, dilation was performed with balloon-controlled radial expansion (CRE) and showed a stricture in the pyloric sphincter and corrosive damage IIIA, according to Zargar's classification. Despite 14 times of endoscopic performed combined with dilation and Triamcinolone Acetonide injection, the esophageal and pyloric strictures recurrence occurred several times. Therefore, he was stenting into esophageal patent to keep the lumen diameter constant. Esophageal stricture is a complication of corrosive substance ingestion that requires lengthy treatment. Local steroids are less likely to cause challenges during esophageal dilatation than systemic or oral steroids. Corrosive substance ingestion negatively impacts the upper gastrointestinal system; one of the case is esophageal stricture, which requires lengthy management of lumen narrowing recurrence.

Introduction

A corrosive substance ingestion was a medical emergency that could lead to serious consequences, whereas prompt and appropriate treatment was required [1]. This substance might cause immediate and long-term implications as it passes through the gastrointestinal tract. Direct consequences included laryngospasm, perforation, necrosis, and mediastinitis, which were frequently fatal impacts. Meanwhile, long-term consequences could consist of esophageal stricture and cancer [1,2]. A previous study reported that most cases of corrosive substance ingestion were caused by accident, approximately 83.8 % [3]. Besides, corrosive substance ingestion was predominantly detected in adults (71.2 %) [4] and women (60%) [21]. Furthermore, Indonesia's dataset on corrosive substance ingestion is currently scarce [5]. The study reported an accidental corrosive substance ingested by an Indonesian male with delayed

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management.

Presentation of case

An Indonesian man, 36 years old, complained of vomiting after ingesting a liquid of a non-specific substance (Sodium Lauryl Sulfate combined with alcohol, possibly) three months earlier. The patient drank the beverage after losing a game together with his friends. Then, the patient struggled to intake nutrients cause he always vomited after taking meals approximately 10–60 min. The vomit stuff was brownish in hue and contained food. Furthermore, his Weight loss was approximately 25 kg in the past three months, from 66 kg to 41 kg. Additionally, his medical history reported that he does not prior suicide attempt, alcoholism, anxiety, or depression. Marriage problem or parenting disorder were also not experienced, according to the family report.

On physical examination, he revealed decreased peristaltic sound, epigastric and left hypochondriac area soreness, and a pain scale of 6 on a numeric rating scale. Laboratory examination revealed hemoglobin of 12.9 g/dL, mean corpus volume (MCV) of 92.6 fL, mean corpus hemoglobin (MCH) of 29.8 pg, erythrocyte of 6760/ μ L, platelet of 379,000/ μ L, Neutrofil of 58 %, Limfosi oft 29.6 %, Natrium of 157 mg/dL, Kalium of 3.3 mg/dL, Klorida of 109 mg/dL, blood urea nitrogen of 8 mg/dL, Kreatinin of 0.97 mg/dL, random blood glucose of 64 mg/dL, C-reactive protein (CRP) of 10.7 mg/L, Albumin of 3.54 g/L, aspartate transaminase (AST) of 20 mg/dL, alanine aminotransferase (ALT) of 12 mg/dL, partial thromboplastin time (PTT) of 15.6 s, activated partial thromboplastin time (APTT) of 33.6 s, Bilirubin Total of 0.94 mg/dL, Bilirubin Direk of 0.51 mg/dL, hepatitis B surface antigen (HBsAg) non-reactive, and Human Immunodeficiency Virus (HIV) Rapid non-reactive. Moreover, blood gas analysis obtained pH of 7.39, pCO₂ of 32, pO₂ of 160, HCO₃ of 19.4, BE of −5.6, SO₂ of 99 %. Additional examination showed normal, especially chest x-ray and computer tomography (CT) colonography with kontras. The first endoscopy revealed a web and narrowing of the lumen at the proximal sphincter and the front of the esophagogastric junction (EGJ). Therefore, this is confirming a complicated esophageal stricture (Fig. 1).

The second endoscopic was performed using a controlled radial expansion (CRE) balloon to allow the endoscopic scope to pass through the EGJ, the proximal and distal esophaguses were dilated. Then, after passing through the EGJ, it revealed a gastric surface with fragile mucosa from the cardia, fundus, corpus, angulus, to the antrum, and accompanied by spontaneous bleeding. Fibrotic tissue containing yellowish pus was also found (Fig. 2). The diagnosis was complex esophageal stricture with pyloric stricture and corrosive damage IIIA, according to Zargar's classification. On the third endoscopy, this esophageal showed refractory narrowing of the lumen accompanied by web. Therefore, dilatation was performed with a CRE balloon and Triamcinolone acetonide injection with entry points determined at 3, 6, 9, and 12 o'clock positions until the lumen widened and a larger scope could enter. Furthermore, the corpus, pylorus, and antrum mucosa were presented as edematous and fragile, accompanied by extensive fibrotic tissue in the gastric lumen. Moreover, the antrum and pylorus lumens were also restricted accordingly; dilatation must be performed using CRE balloon and Triamcinolone acetonide injection.

Dilatation with a CRE balloon and Triamcinolone acetonide injection in the area of esophageal and pyloric strictures were repeated between the fourth and sixth endoscopies, with a 1–2 week interval between sessions. The sixth endoscopy revealed improvement in the esophageal and pyloric strictures. About 30 days later, the patient had his seventh endoscopy, and the narrowing was discovered about 30 cm from the cavum oris. The esophageal stricture was dilated for 3 min using a metal wire and Savary Gilliard no. 15. A stricture in the pyloric sphincter was also discovered, and a CRE balloon was used to dilate it. Although the 7th endoscopy revealed that the complex esophageal and pyloric strictures had improved, dilatation was required to maintain lumen diameter.

The patient was then assessed, and dilated evaluation endoscopy was conducted every two weeks for up to seven sessions utilizing the CRE balloon and Savary Gilliard, accompanied by Triamcinolone acetonide injection, until significant clinical improvement was found after the 14th endoscopy. Due to recurring swallowing issues, the patient had dilatation endoscopy with Savary Gilliard nearly every week for the past year. Finally, a stent was implanted because the earlier dilatation was ineffective in maintaining the esophageal lumen (Fig. 3).

Discussion

The goal of esophageal stricture management is to alleviate dysphagia symptoms while also preventing strictures from recurring. Esophageal dilatation, temporary stenting, intralesional steroid injection, and incisional therapy are all alternatives for treating benign

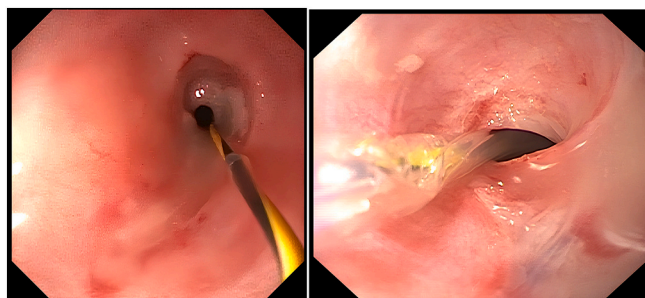


Fig. 1. The first esophageal endoscopy showed a complex stricture esophageal.

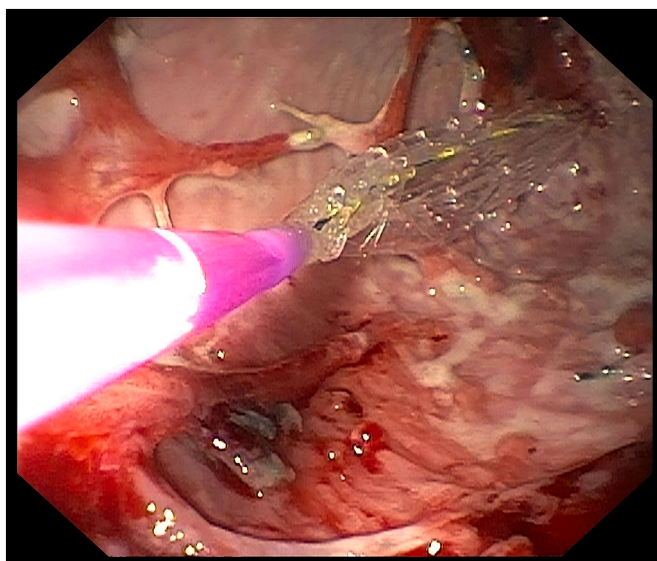


Fig. 2. The second esophageal endoscopy showed a complex esophageal stricture with pyloric stricture and corrosive injury IIIA based on Zargar's classification.

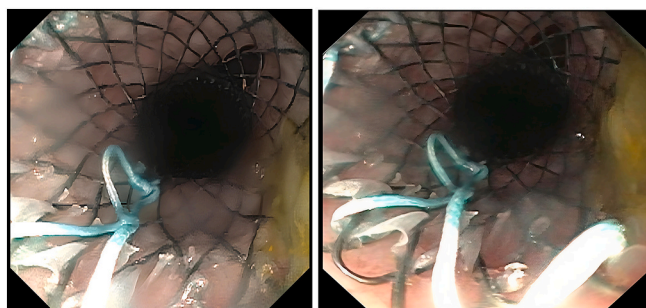


Fig. 3. The stenting was successful in the esophageal.

strictures [6]. Endoscopy can be used to examine the degree and extent of gastrointestinal injury in the first 48 h, as well as to treat strictures that develop in the esophagus and stomach. Corrosive injuries caused by esophageal strictures can be efficiently and safely treated with endoscopic balloon dilation (EBD) [7]. EBD is recommended for patients with dysphagia caused by benign strictures that are too large for a standard-sized endoscope (≥ 9 mm). However, dysphagia persists in some patients even after recurrent EBD, and failure to maintain dysphagia-free status after more than five dilations in the last two weeks is characterized as a refractory benign stricture. During the informed consent procedure, patients should be told about the risk of perforation and the potential need for surgery if it occurs [8].

The role of systemic steroids has been debated, particularly in patients suffering from caustic ingestion [8]. However, intralesional steroid injection is an additional therapy option for esophageal strictures [9]. Intralesional steroid injections have been found to reduce stricture formation by interfering with collagen synthesis, fibrosis, and chronic scarring. Triamcinolone produces collagen cross-linking, which causes the scar to contract; hence, if the scar is stretched and steroids are injected into it, contracture is improbable. Steroids also reduce fibrotic healing following dilatation. Corticosteroid injection and dilatation cause longer corrosive esophageal strictures to shorten over time, making them more susceptible to nonsurgical treatment. Intralesional steroid injection also minimizes the requirement for dilation in caustic esophageal strictures, and longer strictures (>3 cm) yield better results. Furthermore, the successful use of intralesional steroids in pyloric stenosis with steroids and balloon dilatation has been observed [10].

The primary treatment for strictures is gradual dilatation at 10–14-day intervals for 6 to 12 months after the initial occurrence, or until the fibrosis stops progressing. If a stricture is detected, therapeutic dilatation should begin promptly [11]. Chronic patients require repeated dilatation to maintain an acceptable lumen diameter. Esophageal dilatation often includes esophageal bougienation, balloon dilatation, and stenting. Endoscopic balloon dilatation can be accomplished via direct endoscopy, and the risk of perforation is lower than that of esophageal bougienation since pressure is not given to the stricture zone's longitudinal axis while radial pressure is fully applied [12].

Stenting can be performed using metal, plastic, or biodegradable stents. However, the outcomes are regarded as less effective, with

<50 % success [13,14]. Stent complications include stent migration, tissue development, which can induce recurrent dysphagia and impede stent removal, fistula formation, and tumor growth. Plastic stenting is superior to metal stenting because it has a reduced incidence of recurrent dysphagia and fewer complications from stent migration. Stenting typically lasts 12–16 weeks, although the optimal duration is uncertain and is assumed to be determined by a variety of factors including the type of stricture, the presence of inflammation, and the type of stent utilized. More prospective trials with high sample sizes are required to examine the effectiveness, safety, cost, and patient satisfaction of managing with metal, plastic, and biodegradable stents [15,16].

When endoscopic dilatation fails, other options include self-bougienage or surgery [17]. Self-bougienage is a safe treatment that effectively eliminates dysphagia complaints, reduces the frequency of endoscopic dilatation, and increases patient weight. The frequency of problems from the self-bougienage method is extremely low, with only 0.14 % of perforations ever documented [18]. Meanwhile, surgery is the final alternative, which might take the form of esophageal resection or colon interposition [19,20].

Conclusion

Esophageal stricture is a complication of corrosive substance ingestion that requires lengthy treatment. Local steroids are less likely to cause challenges during esophageal dilatation than systemic or oral steroids. Although, endoscopic dilatation combined with local steroids is performed 14 times, each conducted with a 1-2 week rest, recurrent narrowing of the esophageal lumen occurred. Therefore, stenting should be considered to maintain the lumen diameter.

CRediT authorship contribution statement

Arival Yanuar Riswanto: Conceptualization, Data curation, Investigation, Project administration, Writing – original draft. **Budi Widodo:** Formal analysis, Methodology, Visualization, Writing – review & editing. **Titong Sugihartono:** Resources, Software, Visualization. **Nurike Setiyari Mudjari:** Data curation, Supervision, Validation.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Ethical approval is exempt/waived at Dr. Soetomo General Academic Hospital, Surabaya, Indonesia because the report only has one patient.

Guarantor

Budi Widodo is the person in charge of the publication of our manuscript.

Registration of research studies

Not applicable.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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