

CASE REPORT

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Early treatment with esophageal stenting in trauma-induced esophageal perforation- a case report and literature review

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Abstract

Esophageal perforation is a life-threatening clinical condition that was usually treated with surgical intervention in the past. There is no definite consensus on the ideal treatment that is controversial. Early diagnosis and treatment are very important. So, this condition improves treatment success. Nowadays, with the use of clips and self-expandable removable stents, it becomes an entity that facilitates conservative treatment. Here, we present 37-year-old male patient who was admitted to the emergency department after being assaulted with a knife in his right upper chest. He Healed in a short time after esophageal stent placement in early esophageal perforation.

Keywords: Esophageal perforation, esophageal stenting, trauma

Introduction

Esophageal perforation due to any cause such as iatrogenic, trauma spontaneous and foreign bodies is a clinical condition that requiring urgent surgical treatment that is difficult to treat [1,2]. If early diagnosis and treatment are performed within the first 24 hours after perforation, the success rate of treatment increases [2]. Radiologic imaging and endoscopy are the most basic approach for the diagnosis and treatment of esophageal perforation and its complications[3]. Although not a definite consensus in treatment, both surgical and conservative treatments have significant morbidity and mortality [1-3]. Especially in patients with risk for surgical treatment, self-expandable covered metallic stents are offered as alternative treatment. Major disadvantage of metallic stents is complications that occur during removal [1]. This report describes a case of a short-term recovery with a covered metallic stent used in the treatment of esophageal perforation caused by trauma and includes a review of the relevant literature.

Case

The patient was a 37-year-old male who was admitted to the emergency department after being assaulted with a knife in his right

upper chest. In the examination, an entrance wound of 3 x 3 cm in size was detected in the second intercostal space, 3 cm lateral to the right side of the sternum, about 5 cm above the right nipple. WBC was 16100/µl (neutrophils 82%), Hb 13,1 g/dl, PLT 237000/µl, serum glucose 146 mg/dl, serum amylase 127 U/L and LDH 311 IU/L. The patient is being operated the pericardial injury with primary repair by the cardiovascular surgeon. At the same time a chest tube is inserted for hemopneumothorax. A gastroenterology consultation was requested after the bloody material appeared in the nasogastric (NG) tube inserted postoperatively. On the upper GIS endoscopy, two 2 cm esophageal perforation areas with cross-over, 36 cm from the incisor teeth (figure 1A) were recognized at the lower part of the esophagus, covering one in eight of the esophageal circumference. Gastroesophageal junction was at 40 cm from the incisor teeth. The perforation was treated with placement of a 10 cm long full-covered metal stent (Neotech, Healt Microport Medical Device Co.,Ltd., Jiangsu, Chine) 20 hours after its the estimated creation period (figure 1B,C). The patient was treated conservatively with Intravenous (IV) Fluid, IV antibiotics (imipenem, teicoplanin and metronidazole for 15 days), appropriate wound care and nutrition. Then, the patient who was intubated due to respiratory insufficiency was transferred to the reanimation unit. The patient who was extubated was observed to have a stent in place (figure 1D) in the control chest X-ray at 2 weeks later.

On the control upper GIS endoscopy performed to start orally feeding 2 days later and was observed, the stent that migrated

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to the stomach was not in the esophagus, and perforation areas were closed (figure 1E). Despite pressure contrast with the ERCP catheter, there was no leakage in the fluoroscopy (figure 1F). It was removed (figure 2) and oral intake started. The patient was discharged with suggestions after clinical and laboratory improvement in very good condition. There was no problem in control the outpatient clinic.

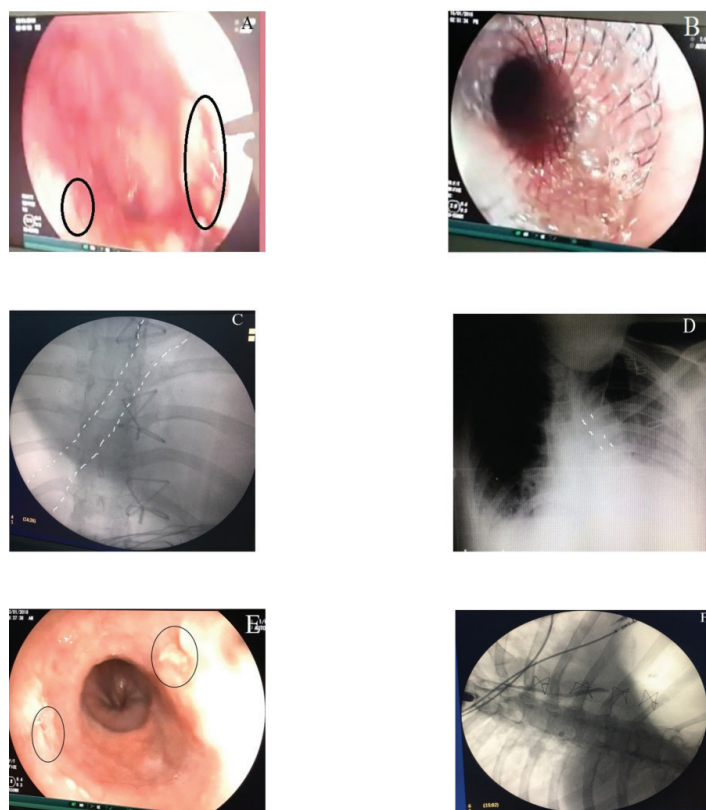


Figure 1. (A) Endoscopic appearance of perforation seen at two different sites distal to esophagus (circled) (B) Full-covered metallic esophagus stent placed in the esophagus, (C) The fluoroscopic appearance of the placed esophagus stent(dashed lines), (D) Appearance of the esophagus stent in the control chest X-ray taken 2 weeks later(dashed lines), (E) Esophageal perforation areas appear to be closed in the endoscopic control(circled), (F) Fluoroscopic view of the esophagus without leakage after pressure contrast with catheter

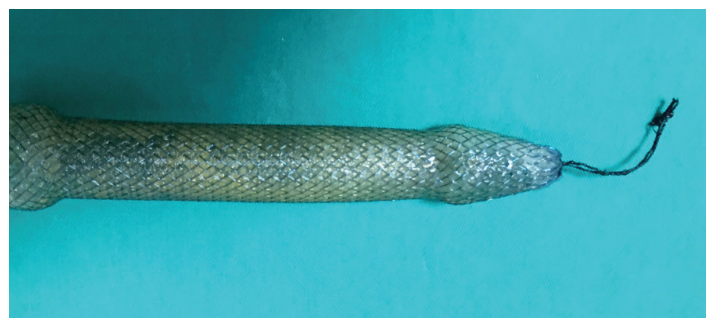


Figure 2. Removed esophagus stent

Discussion

Esophageal perforations are one of the rare but most serious clinical problems of GIS and are an increasingly common problem due to developing invasive procedures and a high mortality rate if not diagnosed early[4]. Iatrogenic injuries are the most

common cause of esophageal perforations as well as it also may occur spontaneously and trauma [5]. In the present case, the esophageal perforation was formed as a result of injury due to knife injury.

It is often seen symptoms and signs such as pain, fever, swallowing difficulty, shortness of breath and subcutaneous emphysema in the esophageal perforation. Also tachycardia, hydropneumothorax, mediastinal emphysema and shock signs can also be seen [6]. Rarely can manifest themselves with other GIS bleeding findings, such as hematemesis and melana[7]. In present case, it had fever, sweating, chest pain, and swallowing difficulties. It also had mediastinitis and pleural effusion. However, main reason of the gastroenterological consultation is blood material from the nasogastric tube. The presence of symptoms and signs depends entirely to the location and size of the perforation and whether the patient is hungry.

Early diagnosis of esophageal perforation is very important and emergency treatment should be planned. Even if, chest X-ray, chest CT, radiopaque the passage graphy helps in diagnosis. The last two technics can also show whether there is a leak [8]. Although endoscopy is controversial, definite diagnosis put on endoscopy[9]. In the present case, definite diagnosis was established with endoscopy.

In the treatment of esophageal perforation, there is no a standard approach. The treatment option is depending the reason, localization of perforation, presence of esophageal disease, time of diagnosis, environmental injury, general condition of the patient and age[3]. The main treatment is surgery, but recently trend has been shifted towards non-operative treatment options[10]. Conservative treatment can be selected in the some situations including not taken orally, early diagnosis. In addition, the use of transient endoscopic esophageal stents as a less invasive procedure is increasing[11]. In present case, it is placed endoscopic covered metallic esophagus stent. We did not choose surgical procedure due to the general condition of the patient was very bad. On the contrary, we chose faster and less invasive endoscopic procedure. Endoscopic closure with metallic clips wasn't chosen. Because it is suitable only for selected patients with small (≤ 1.5 cm) clean perforation and minimal infection[12]. Whereas the perforation size of our patient was bigger than 1.5 centimeters.

There are many different studies on the duration of stenting. In a study conducted, the mean duration of stent was 39 days[13] whereas in another study was 4–6 weeks[14]. In the present case, stent explantation was the 15th day. However, this stent explantation was caused by a necessity arising from migration. The migration is a very significant problem in the esophagus stents.

The most important problem of metallic stents is complications that arise when they are removed[14]. But, in the presented case, there were no complications when removing the stent.

Conclusion

As a result, early diagnosis and treatment in esophageal perforations is life saving especially in selected cases. Use of esophageal stent

in the treatment reduces morbidity and mortality and decrease need for surgery. Esophageal stent placement is a safe and effective endoscopic procedure in the thumping majority of esophageal perforation. It should be kept in mind that the duration of stenting may varies according to patients. And patients may recover earlier.

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