

Endoscopic vacuum therapy in the late diagnosed iatrogenic esophageal perforation: The convenience of using fluoroscopy

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Dear Editor,

The attempted endotracheal intubation(s) may cause esophageal perforation and such perforations mainly occur in the cervical segment (1,2). Perforation of the esophagus can have catastrophic consequences, and the mortality rate is approximately 20%, despite the recent medical developments (2). Surgery is the treatment choice, but it also has high morbidity and mortality rates. Various endoscopic minimal invasive treatment methods, such as fibrin glue injection, clipping, stenting, and endoscopic suturing devices, have been developed for the treatment of gut perforations (2). The time of diagnosis after perforation plays a critical role in the choice of treatment. The application of the mentioned endoscopic methods is extremely challenging in the cervical segment and may not be a definitive therapy for the late diagnosed perforations due to abscess formation. If the perforation does heal, abscess requires a second attempt. In recent years, endoscopic vacuum therapy (EVT) has been introduced and successfully used in esophageal perforations. (2-5). EVT is effective both in abscess treatment and perforation.

A 61-year-old man was referred to our department with the complaints of fever, chest and neck pain, and odynophagia. The patient was operated 2 days ago due to lumbar disk hernia under general anesthesia. On laboratory examination, the white blood cell count of 18.800/μL (neutrophil count of 16.900/μL) and C-reactive protein level of 21.3 mg/dL were noted (standard range: 0-0.8). A thorax computed tomography (CT) scan showed a large abscess cavity in the mediastinum (Figure 1a). Upper gastrointestinal endoscopy was performed with a suspicion of iatrogenic esophageal perforation. Approximate-

ly 17 cm from the incisive teeth, a perforation site with a diameter of 1.5 cm was observed (Figure 1b). Under a fluoroscopic and endoscopic control, a standard ERCP guidewire (0.035 mm, 450 cm, Boston Scientific, Natick, MA, USA) was inserted into the abscess cavity via the therapeutic channel (Figure 1c) of the gastroscope, and the external part of the guidewire was moved from the mouth to the nose, similar to a nasobiliary drain placement procedure. A polyurethane foam sponge (V.A.C. Granufoam, KCI USA Inc., San Antonio, Texas, USA) was cut to 8 cm in length, arranged according to the abscess cavity depth, and sutured to the tip of 14 F stomach tube (Jiangsu Kaishou Medical Apparatus Co., Ltd.-PROC; Figure 1d). The stomach tube was inserted to the abscess cavity over the guidewire and placed to the abscess cavity using grasping forceps because the guidewire was not sufficient to carry the endosponge alone. Hence, this process was performed under the endoscopic and fluoroscopic control (Figure 1e). After placement of the sponge, a vacuum device (V.A.C ATS, KCI USA Inc., San Antonio, Texas, USA) was connected and set to continuous 125 mm Hg sub-atmospheric high-intensity pressure (Figure 1f). Five days later, under a fluoroscopic control, an Amplatz Type Super Stiff J-Tip (EMERALD™ Guidewire, Cordis Corporation, Miami Lakes, Florida, USA) guidewire sized 0.035 mm, 260 cm in length was inserted into the previously placed stomach tube and sent to the abscess cavity. The stomach tube was extracted gently, and the new endosponge sutured stomach tube was placed to the abscess cavity over the Amplatz type super stiff guidewire without endoscopic guidance. Within the next 15 days, three consecutive procedures were performed as described without endoscopic control. In each process, the abscess size was controlled with radio-opaque medium injections via the stomach tube channel (Figure

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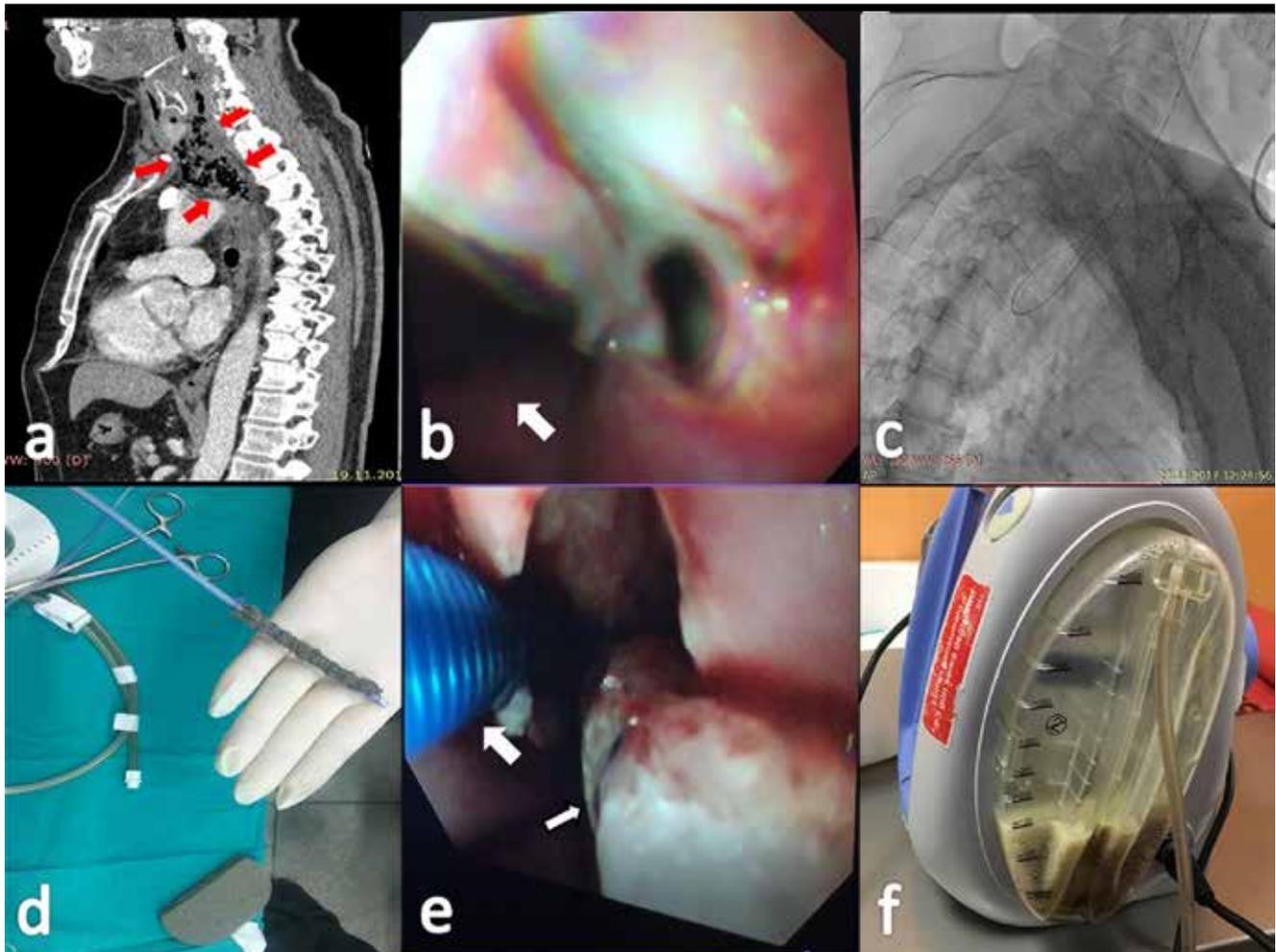


Figure 1. a-f. Upon a computed tomography (CT) scan, a large abscess cavity extending from the anterior, upper, and middle mediastinum (arrows) was seen (a). A 1.5 cm in diameter perforation site was observed on upper gastrointestinal endoscopy. The arrow shows the esophageal lumen (b). A standard ERCP guidewire was inserted to the abscess cavity (c). A polyurethane foam sponge cut to 8 cm in length, which is arranged according to the abscess cavity depth and sutured to the tip of the 14 F stomach tube (d). The stomach tube (right arrow) inserted to the abscess cavity over the guidewire and placed into the abscess cavity using grasping forceps (left arrow) (e). A vacuum device was used between the first and second procedure, and approximately 150 cc pus was suctioned (f)

2a, b), and the endosponge size was shortened according to the abscess size. At the end of the 20 days, upon a thorax CT scan, only the endosponge sutured stomach tube was seen in the mediastinum without abscess cavity (Figure 2c), and the stomach tube was extracted. Five days later, the abscess cavity had completely disappeared (Figure 2d), as seen under a CT control, and a small granulation tissue was seen at the site of perforation (Figure 2e). During this treatment period, the patient's general status and blood parameters had gradually improved. After endoscopic control, oral nutrition was started; the patient had no difficulty in swallowing and was discharged.

Endoscopic vacuum therapy is an effective, safe and minimally invasive method in the treatment of esophageal defect, especially in the late diagnosed perforations. Not only EVT can accelerate the healing of mucosal defect, but also can allow abscess resolution due to the suction effect. To our knowledge, this is the first case of esophageal perforation treated with EVT wherein consecutive procedures were performed under purely fluoroscopy control using the amplatz type super stiff guidewire. This method is convenient and may be more comfortable for both the endoscopist and patient compared with the purely endoscopic method.

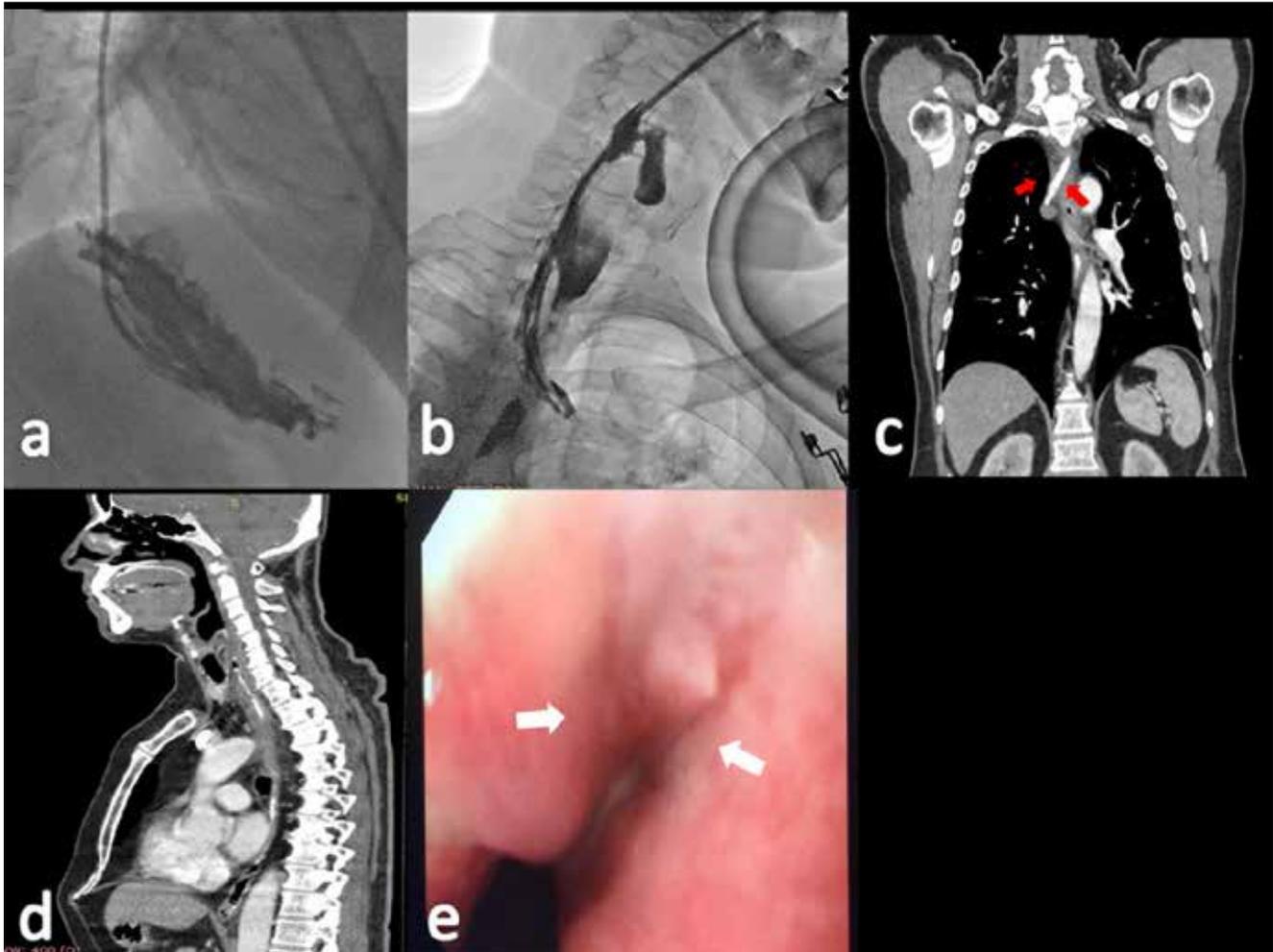


Figure 2. a-e. In the first procedure, the abscess size was controlled with radio-opaque medium injections via the stomach tube channel; a large abscess cavity is seen (a). In the last procedure, using a fluoroscopic control, the abscess cavity was noted to have markedly shrunk (b). Upon thorax CT, only the endosponge sutured gastric tube was seen in the mediastinum (arrows) without the abscess cavity (c). After 5 days, on tomography control, from the totally extracted gastric tube neither the abscess cavity nor radio-opaque medium leakage was seen in the mediastinum (d). Upon an endoscopic examination, a small granulation tissue was seen at the place of perforation (arrows) (e)

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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