

# Negative pressure wound therapy for cervical esophageal perforation with abscess



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## ABSTRACT

Perforation of the cervical esophagus is a rare but life-threatening condition. Cervical esophageal perforation with abscess formation can be usually treated with conservative treatments of simple drainage and antibiotics. Aggressive surgical treatments are considered if conservative treatments fail. But the aggressive treatments have low success rate and high morbidity in cervical esophageal perforation. Negative pressure wound therapy (NPWT) was widely used in various complicated wounds, such as diabetic foot ulcers, open abdomen, pressure ulcers, open fractures, sterna wounds, grafts, and flaps since it had been introduced in 1997. NPWT is known to be a valuable tool in the management of various complicated wounds. In this report, we described a case of intractable cervical esophageal perforation with abscess, which was successfully treated with NPWT after the failure of conservative management.

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## 1. Introduction

Perforation of the cervical esophagus is an uncommon but life-threatening condition because of the rapid spreading inflammation around esophagus and the possibility of mediastinitis or mediastinal abscess. The most common cause of esophageal perforation is instrumentation. But in cervical esophageal perforation, foreign bodies account for 80% [1].

Cervical esophageal perforation with abscess formation can be usually treated with simple drainage [2]. When conservative treatments of drainage, antibiotics and nutritional support fail in cervical esophageal perforation, individualized treatments such as primary repair, reinforced repair, debridement, esophageal resection and esophago-gastro-anastomosis could be considered. But the aggressive treatments mentioned above have low success rate and high morbidity [3].

Negative pressure wound therapy (NPWT) was widely used in various complicated wounds, such as diabetic foot ulcers, open abdomen, pressure ulcers, open fractures, sterna wounds, grafts, and flaps since it had been introduced in 1997 [4,5]. And NPWT is

known to be a valuable tool in the management of complicated head and neck wounds [6].

Herein, we report a case of intractable cervical esophageal perforation with retropharyngeal abscess, which was successfully treated with NPWT after the failure of conservative managements.

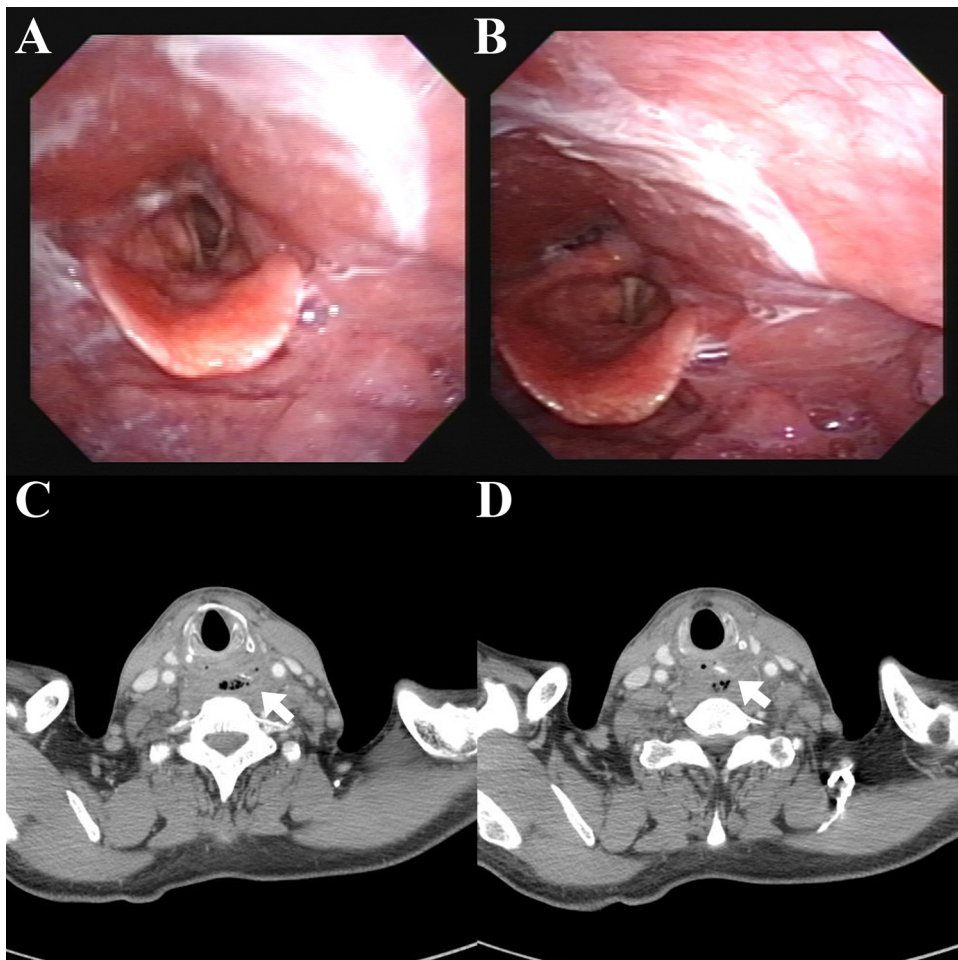
## 2. Case report

A 69-year old male patient visited to our emergency center with the symptoms of foreign body sensation and painful neck. He had recent travel history to China and ate a steamed fish 7 days before admission. At that time, he visited a district hospital in China but nothing could be detected in laryngoscopic exam. And he felt hoarseness and halitosis 2 days before admission.

He had no previous medical history of diabetes mellitus, hypertension and liver disease. Initial work-up revealed that white blood cell count, C-reactive protein concentration and erythrocyte sedimentation rate were 17,080/ $\mu$ l, 23.51 mg/dl and 79. Indirect laryngoscopic exam showed left vocal fold palsy with paramedian position and bulging of posterior pharyngeal wall (Fig. 1A and B). Computed tomography revealed a 3 cm foreign body with bone density penetrating the posterior wall of the upper esophagus and abscess formation in retropharyngeal space (Fig. 1C and D). The emergency operation was planned on the diagnosis of esophageal perforation with retropharyngeal abscess due to foreign body.

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**Fig. 1.** Fiberscopic examination showing left vocal fold palsy with paramedian position and bulging of posterior pharyngeal wall (A: abduction; B: adduction). Computed tomography revealed a 3 cm foreign body with bone density penetrating the posterior wall of the upper esophagus and abscess formation in retropharyngeal space (C, D, white arrows: foreign body suspected as a fish bone).

The operation was performed under general anesthesia. The transverse incision was made between inferior border of cricoid cartilage and left posterior margin of sternocleidomastoid muscle. The retropharyngeal abscess pocket was approached between the carotid sheath and cricotracheal complex. The abscess was drained with greenish color and foul odor. The pus was cultured and saline irrigation followed in the wound. The 3 cm long fish bone penetrating cervical esophagus was found and removed completely (Fig. 2A and B). The tissue around the perforated esophagus was fragile and inflammatory. But primary closure of the perforation site was performed and a Jack-Pratt drain was inserted.

At postoperative day (POD) 2, vital sign was stable and the symptoms of dysphagia and odynophagia were subsided but hoarseness was not resolved. In postoperative laryngoscopic exam, left vocal fold palsy remained. Tube feeding started and ampicillin-sulbactam and metronidazole were empirically administered. At POD 7, all laboratory results returned to normal. But the accumulation of saliva in closed drain continued. At POD 14, esophagography and follow-up CT showed that the fish bone was completely removed but esophageal fistula was not closed. We decided to treat the remained esophageal fistula with conservative management of a closed drain and broad-spectrum antibiotics as possible because there was no evidence of infection sign and



**Fig. 2.** A 3 cm-sized fish bone penetrating cervical esophagus was found and removed (A, B, black arrow: fish bone) and V.A.C.<sup>®</sup> Granufoam<sup>™</sup> dressing (Kinetic Concepts, Inc., San Antonio, TX, USA) was applied. (C) The V.A.C. dressing was connected to the vacuum pump and negative pressure ranged from 70 to 100 mm Hg.

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