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Case Report

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Tracheoesophageal fistula after intubation due to COVID-19: Endoscopic treatment

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ABSTRACT

Acquired non-malignant tracheoesophageal fistula (TEF) is a rare disease that has high levels of morbidity and mortality, and the etiology of TEF remains unclear. Better knowledge of predisposing factors such as traumatic intubation, highendotracheal tube cuff pressure, inflammation, and infection of COVID-19 could reduce the number of cases of acquired TEF. In this case report, a 36-year-old male patient who developed a TEF after intubation as a result of COVID-19 is presented. After short-term intubation, the TEF detected by neck CT and fluoroscopy wassuccessfully closed with an endoscopic intervention using an over-the-scope clip and no leak was detected at the 6-month follow-up.

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Introduction

COVID-19 became an epidemic in the Chinese city of Wuhan in late 2019, often with atypical viral pneumonia. It may also present with a severe clinical condition that causes severe respiratoryfailure requiring intubation. The mechanical ventilation process is a difficult process to manage, which can cause many complications. TEF is one of the rare complications we encounter in this process.

As first described by Flege,[1] the most prevalent cause of tracheoesophageal fistula (TEF) is mechanical ventilation. [2,3,4,5,6,7,8]

Acquired TEF is a rare complication, developing and becoming symptomatic within 1-5 days after surgery, 5-15 days after trauma, 15-21 days after local infection, and 21-30 days after tracheal cuff-related injury.[9] TEF is rarely encountered upon short-term intubation in cases without trauma or surgery.[10]

Both cuff pressure and cuff volume (6-8 mL) should be monitored closely to minimize tracheoesophageal injuries in intubated patients. In this case report, we present a successful case of endoscopic TEF closure.

Written informed consent was obtained from the patient for publication of this text and accompanying images.

Case Presentation

A 36-year-old male patient who was admitted to the service with COVID-19 PCR positivity and low oxygen saturation on 15.08.2021 developed acute respiratory failure due to COVID-19 pneumonia (Figure 1).

After 10 days of intubation, the patient was extubated and taken to the service from the intensivecare unit. Recurrent aspiration attacks that particularly occurred after meals were noted in his follow-up appointments. The results of oral contrast-enhanced neck tomography were suspiciousfor TEF (Figure 2).

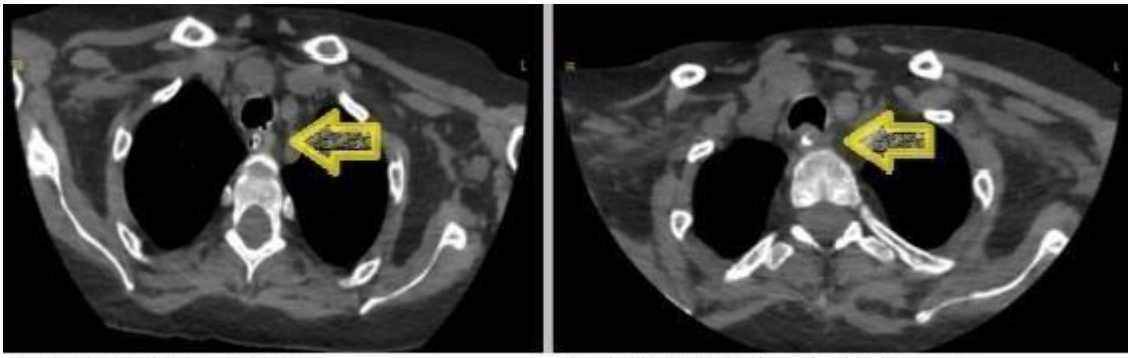

Figure 2. Neck CT 16.09.2021 Post Treatment Neck CT 27.09.2021

Figure 1.Torax CT Image (15.08.2021)

Fluoroscopy was therefore performed and TEF was detected (Figure 3).

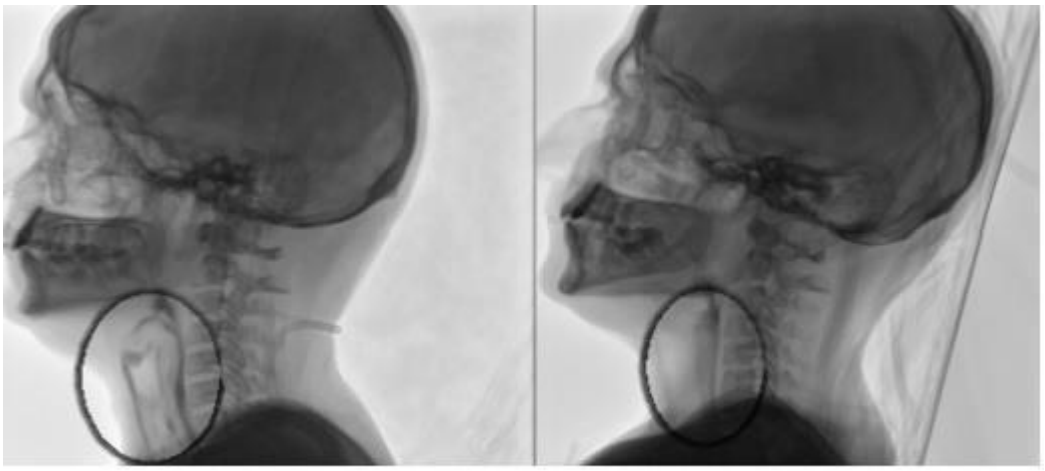

Figure 3 . Fluoroscopy 16.09.2021 *Post Treatment Fluoroscopy 29.09.2021*

Figure 4.Endoscopy 22.09.2021(11mm. OTSC)

An operation of approximately 30 minutes was formed on the patient by the endoscopist using an over-the-scope clip (OTSC) (Figure 4).

Subsequently, when the patient was checked by fluoroscopy and neck CT, no leakage was observed (Figure 2-3). He was transitioned to oral feeding and aspiration was not observed. The patient had no complaints at the 6-month follow-up visit.

Discussion

TEFs are epithelialized canals between the trachea and the esophagus. The causes of non-malignant acquired TEF include trauma, granulomatous infection, inflammation, previous trachea or esophageal operation, HIV infection,[12,13,14] poisoning and inhalation burns, tracheal tubesand intubation, and percutaneous tracheostomy.[15] In addition, intense inflammation caused bySARS-CoV-2 causes weakness in the tracheal wall structure because of mucosa and submucosa damage (16). Mucosal necrosis due to inflammatory infiltrates may result in a fistula between thetracheal tube cuff and the nasogastric tube.

Excessive movement of endotracheal tubes, diabetes, hypotension, malnutrition, steroid therapy, and long-term mechanical ventilation can be counted among the risk factors. The incidence of TEF has decreased, however, due to the advent of high-volume low-pressure cuffs.[17,18]

Many difficulties are encountered in the intraoperative and postoperative treatment of TEF in ENTand thoracic surgery clinics, and these cases come with possible complications along with high costs. There are studies showing the success of the use of OTSCs after failed stents and after operations in long-term follow-up.[11]

TEF is a situation in which many difficulties are encountered by otolaryngologists, gastroenterologists, and thoracic surgeons in the process of diagnosis and treatment. The use of OTSCs is a prominent and very comfortable method for treating TEF. It is predicted that OTSCs will be used more widely in the future for closure of perforations and fistulas that occur in the gastrointestinal system.[7,8]

In the management of TEF cases, there is a great lack of experience about the anatomy of the airway and digestive system, the size of the fistulas, and stent characteristics and types. When thedual stenting procedure is selected, both experience and knowledge are very important when combining an esophageal stent with an airway stent.

We hope that this case report will contribute to the literature on risk factors, clinical symptoms, diagnostic approaches, treatment methods, and prognosis in the context of TEF diagnosis and treatment.

Declaration

The authors have no conflicts of interest to declare.

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