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CASE REPORT

UNUSUAL EARLY FINDING OF ABDOMINAL DISTENTION AND GASTRIC CONTENT ASPIRATION AFTER TRACHEOSTOMY: CASE REPORT

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ABSTRACT

Acquired tracheoesophageal fistula (TEF) is a rare and severe complication of intubation and tracheostomy, which can lead to serious comorbidities and high mortality. In this case report, we present a case with TEF in addition to multiple systemic diseases and infections, the patient's clinical fetures, diagnosis, and management. This case highlights the importance of considering acquired TEF as a potential sequelle of prolonged intubation and the need for prompt detection and treatment to prevent potentially life-threatening complications, including death.

KEY WORDS: Acquired tracheoesophageal fistula; Prolonged Intubation; Complications; Tracheostomy; Case report.

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INTRODUCTION

One of the most frequent surgical operations carried out in the contemporary intensive care unit (ICU) for severely ill patients requiring protracted artificial ventilation is elective tracheostomy. However, there are some issues with it.[1] A tracheoesophageal fistula (TEF) is one of the tracheostomy complications and can occur either due to a posterior tracheal wall perforation during tracheostomy or due to the consequence of mucosal violation and ulceration in case of mucosal ischemia due to prolonged intubation or erosion by excessive cuff pressure[1], infection, prolonged hypotension, hypoxemia, metabolic acidosis, malnutrition, steroid therapy, diabetes mellitus, anemia, and gastroesophageal reflux.[2] An iatrogenic TEF is manifested during the procedure in half of the patients, whereas in the remaining it takes up to 72 hours following the procedure to be detected.[3] The ulcerative type of TEF usually gets symptomatic in 4–8 weeks.[1,2,4] In this case report, we present a case of early ulcerative TEF with an unusual presentation in a ventilator-dependent patient with tracheostomy.

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CASE PRESENTATION

A 62-year-old female, diabetic, hypertensive, with ischemic heart disease, deep vein thrombosis, cerebrovascular accident, and end-stage renal disease on hemodialysis, was admitted to the critical care unit as a case of congestive heart failure. On admission, the patient had cardiac arrest, she was resesitated resuscitated and then got intubated for 3 weeks. During this period, the patient developed aspiration pneumonia as reveald on chest xray of right lungh upper lobe showing homogenous infiltrations (Figure 1).

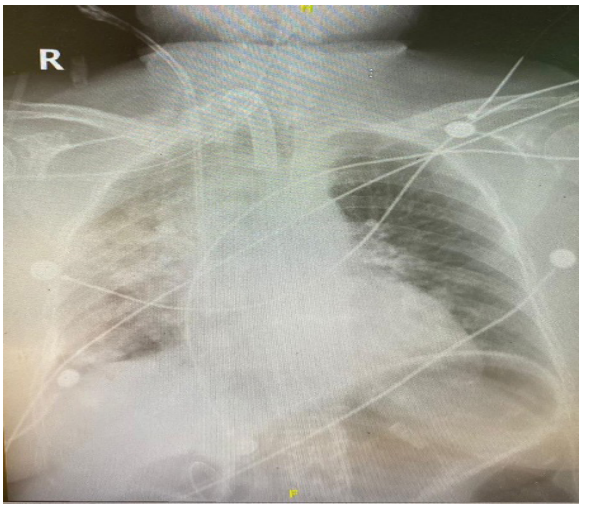

Fig. 1. Chest x-ray showing aspiration pneumonia and a homogenous infiltration

Therefore, the patient underwent elective surgical tracheostomy, and a size 8 cuffed tube was inserted, and a mechanical ventilation assistance was started without any obvious intraoperative complications. Unfortunately, during 48 hours post tracheostomy, the patient developed an abdominal distention and recurrent aspiration of food through the tracheostomy tube, increasing dyspnea, and persistent cuff leak. The assessment revealed no neck emphysema, and the cuffed tube was over-inflated. The patient had abdominal distension (Figure 2) and tympanic on palpation, and the chest x-ray showed the tube was still in place, with no perforation and no pneumo-mediastinum.

Figure 2: Massive abdominal distension

After consulting general surgery, thoracic surgery, and gastroenterology teams, the upper gastrointestinal tract (GIT) endoscopy revealed a TEF (3 cm communication between the trachea and esophagus) in the posterior tracheal wall (Figure 3). Therefore, we placed a cuffed endotracheal tube and positioned it near the carina to replace the tracheal cannula. After slight improvement, the patient deteriorated, and unfortunately, she died due to septic shock.

Figure 3: Tracheoesophageal fistula distal to tracheostomy tube (arrow).

DISCUSSION

Acquired TEF is an unusual, dangerous complication, developing in about 1% of patients undergoing tracheostomy.[1] It occurs either due to iatrogenic injury of the posterior tracheal wall during tracheostomy or as a consequence of tracheal wall necrosis in the case of mucosal ischemia due to prolonged intubation and excessive tube cuff pressure.[5] When the tracheostomy tube cuff is overinflated, it considerably increases the risks of TEF as the cuff pressure exceeding 30 mm Hg can considerably decrease mucosal capillary blood flow and result in tracheal ischemic necrosis.[5,6] TEF may also occur due to abrasion by tracheostomy tube tip movement during ventilator movements, tracheal suctioning, or excessive neck mobilization.[7] Other risk factors include the use of a rigid wide-bore feeding tube, infection, prolonged hypotension, hypoxemia, and anemia. Our patient was at high risk of ulcerative TEF since she was intubated for 8 weeks, and mechanical erosion caused by excessive cuff pressure of tracheal tubes, either from poor design or improper management, may have exposed her to the TEF. Moreover, she was more likely to have had an infection (another risk factor for TEF) for long because she died of septic shock. The use of a feeding tube for our sedated patient during intubation period could have also increased risks for our patients. The nasogastric tube may also lead to impingement and erosion of the common tracheal and esophageal walls, resulting in ulcerative TEF.[8]

In ventilator-dependent patients, the usual manifestations of TEF include profuse production of tracheal secretions, recurrent aspiration, worsening cough during feeding, persistent air leak, gastric distension, and pneumomediastinum.[9] Our patient developed sudden tympanic abdominal distension, recurrent discharge of food through the tracheostomy tube, persistent cuff leak, and aspiration pneumonia due

to the leakage of food or liquid into the airway, aligning with TEF manifestations in ventilator-dependent patients.

The most surprising finding was the development of TEF 48 hours post-tracheostomy, and this finding differs from the usual presentation of ulcerative TEF, which develops within several weeks after tracheostomy.[1,2,4]

Acquired TEF can be diagnosed by barium swallow or flexible bronchoscopy. Upper GIT endoscopy or computed tomography can confirm the presence of TEF. A chest x-ray reveals signs of aspiration pneumonia.[10]computed tomography (CT The management of TEF varies according to several factors, including the size of the tracheal defect and the stability of the patient. The management of TEF requires a multidisciplinary approach involving different specialties like gastroenterology, pulmonology and thoracic surgery. Patients with TEF may require intensive care support and close monitoring, particularly in cases where the condition is associated with significant respiratory compromise. The surgical intervention is reserved for clinically stable patients and includes repairing the abnormal communication between the trachea and the esophagus[11], recurrent aspiration pneumonia, and severe weight loss. Several acquired conditions may cause TEF. The most common is prolonged orotracheal intubation (75% of the cases in some cases), the surgery may involve the use of a tissue flap or a stent to cover the fistula and promote healing.[12] Critically ill patients are managed conservatively by placing a tracheostomy tube distal to the fistula, a gastrostomy, or a jejunostomy tube for feeding. Our patient was managed by replacing the tracheostomy tube with an extra-length tube below the defect and changing the nasogastric tube to a gastrostomy tube.

Though most patients with TEF can recover,[13] yet it can lead to significant morbidity, particularly in patients with underlying comorbidities like our patient and even mortality, which is what happened to our patient.

Preventive measures for TEF include using high-volume, low-pressure endotracheal tube cuffs and maintaining cuff pressures below 25 mm Hg.[14] Nutrition should be maintained optimally, and the use of soft, small-caliber nasogastric tubes is advised.[15]

CONCLUSION

TEF is a rare but serious medical condition that can have significant consequences for affected patients. Early recognition and appropriate management are critical in achieving good outcomes for patients with this condition, and a multidisciplinary approach involving specialists in gastroenterology, pulmonology, and surgery can help ensure the best possible care for patients with TEF.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	SKK, AAQ
Acquisition, Analysis or Interpretation of Data:	SKK, AAQ, MA, SSAD, ASQAM
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All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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