Acquired Tracheo-oesophageal Fistula: A Challenging Complication of Tracheostomy

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ABSTRACT
Acquired tracheo-oesophageal fistula (TEF) after tracheostomy is a life threatening complication and can occur in about 1% of cases of tracheostomy. Percutaneous tracheostomy was performed in intensive care unit on a 40 years male patient for long-term mechanical ventilation. Subsequently patient developed TEF as the complication of tracheostomy. He was initially managed with endoscopically inserted self expanding plastic stent but later on required surgery for definitive repair. The problems associated with acquired TEF and its management are discussed hereby.

Key Words: Tracheostomy. Tracheo-oesophageal fistula. Self expanding plastic stent.

INTRODUCTION
Acquired tracheo-oesophageal fistula (TEF) is a rare entity and malignancy of either trachea or oesophagus is the most common cause in adults. Other causes include infection, oesophageal diverticula, trauma, prolonged intubation, and airway instrumentation like rigid bronchoscopy and tracheostomy.1 Tracheostomy (percutaneous and surgical) is a common bedside invasive procedures performed in an intensive care units (ICU). TEF can occur during or upto 72 hours after performing the procedure.

Here the authors report a case of post-tracheostomy TEF and its management.

CASE REPORT
A 40-year male patient who was a chronic alcoholic was admitted to our institute in gasping condition. On examination, the patient was unconscious with no palpable peripheral pulses. On auscultation of the respiratory system, bilateral coarse crept were heard. Patient was intubated with 8.0 mm cuffed endotracheal tube and taken on mechanical ventilation. Vasopressor infusion was started along with other supportive care. Routine investigations revealed raised leucocytes count (15,000/mm3), raised liver enzymes (SGOT: 4588 U/L and SGPT: 4728 U/L) along with deranged renal functions (BUN 70 mg/dl and serum creatinine 4 mg/dl). A provisional diagnosis of aspiration pneumonitis with hepatic encephalopathy and sepsis was made. His course in the ICU deteriorated over time and a bedside percutaneous tracheostomy (PCT) was planned in view of need for prolonged mechanical ventilation. The procedure was uneventful. After 10 days of ICU admission, patient showed signs of recovery with improvement in Glasgow Coma Scale and decreased liver enzyme levels. But as the patient had poor cough reflex and muscle power, he continued requiring tracheostomy. After 2 weeks of tracheostomy, patient had paroxysmal cough immediately every time enteral feed was administered. Food particles were noticed to come out from sides of tracheostomy tube while coughing and were also present in tracheal suction. Oral feeding was stopped and a larger tracheostomy tube of size 8 mm was placed to prevent possible leak around the tracheostomy tube cuff. Upper gastrointestinal endoscopy was performed and a fistula was detected 4 - 5 cm below cricopharynx in anterior part of the oesophagus communicating with trachea. An oesophageal Self Expanding Plastic Stent (SEPS) was placed endoscopically and enteral feeding was resumed. After a fortnight, patient required endoscopic repositioning of stent as it was migrated into the lower oesophagus. Over next 4 weeks, patient's general condition improved and he was subsequently discharged from the hospital with advice for regular follow-up and surgical correction.

After about 10 weeks of discharge, patient got readmitted to our institute with history of cough associated with oral intake. Upper GI endoscopy revealed remigration of stent into the stomach which could not be retrieved this time and patient was advised for surgical repair. Bronchoscopy revealed sub-glottic stenosis 2 cm below the vocal cords. Transcervical repair of TEF along with tracheal resection anastomosis was done under general anaesthesia which was uneventful. Postoperatively barium swallow showed no residual defect.
DISCUSSION

Acquired TEF is a rare entity and can occur as a complication in about 1% of cases of prolonged intubation and tracheostomy. It occurs either due to the perforation of posterior tracheal wall while performing tracheostomy, or because of mucosal ischemia due to prolonged intubation. Erosion of posterior tracheal wall due to excessive cuff pressures (> 30 cm H₂O), abrasion by tracheostomy tube, infection, prolonged hypotension and excessive motion of tracheal tube are other possible reasons. The incidence of TEF is comparable in both percutaneous and surgical techniques of tracheostomy. This patient probably had a trivial injury while performing PCT which later developed into a TEF. Prolonged and repeated episodes of hypotension could have caused mucosal ischemia which aggravated the condition.

The hallmark of TEF is the presence of tube feed in the trachea. Usual manifestations include copious tracheal secretions, paroxysmal cough during feed, dyspnœa, signs and symptoms of aspiration while swallowing, cuff leak, gastric distension and recurrent aspiration pneumonia. Diagnosis of TEF can be confirmed by computed tomography or barium swallow. Chest X-ray reveals signs of aspiration pneumonia. Upper gastrointestinal endoscopy is the best bedside diagnostic tool for the detection of TEF. It can be performed in awake patients as well as under conscious sedation. Management is almost always initially supportive followed by definitive surgical correction. Small fistulae may heal spontaneously and only conservative management is needed. Surgical repair is required for larger fistulae. Depending on the size and location of the fistula, surgical correction includes primary repair and if needed, resection anastomosis of the trachea. Patients incapable of tolerating surgery are managed with oesophageal or double (trachea-oesophageal) stent using SEPS.

This patient was managed initially with oesophageal SEPS as the patient was too sick to undergo corrective surgery. SEPS are considered as standard of care in palliative management of TEF. Immediate occlusion of anastomotic leakage, early healing, prevention of further contamination, and early initiation of enteral or oral feeding are the added advantages which can decrease overall hospital stay. Bleeding, perforation, stent migration and difficulty in retrieval, are the various complications reported in the literature with the use of SEPS. Dai et al. reported that up to 80% of patients' required repeat endoscopic intervention for migration and displacement of the stent.

One should be vigilant for various complications of tracheostomy including TEF. Timely detection of these avoidable complications can decrease patient's morbidity and mortality and improve their outcome.

REFERENCES


