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Case Report

A rare case of acquired tracheo-esophageal fistula in adult

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ABSTRACT

Acquired trachea-esophageal fistula (TEF) is a rare condition caused by cuffed tracheal tube, surgical trauma and blunt injuries. Surgical approach for the treatment is successful in surgical units with specialized TEF surgery. Herein, we presented such a rare case of post intubation acquired TEF in a 23 year old female patient who presented with cough and regurgitation of food 7 days after extubation. Patient had history of organophosphate poison ingestion after which she was intubated in emergency room and kept on mechanical ventilation for 11 days. Upper gastrointestinal endoscopy, fibre optic bronchoscopy and computed tomography scan of neck and chest revealed the presence of TEF, 2.5 cm below glottis. Patient was managed with elective single step surgical approach after which patient recovered well. Fistula resection with crico-tracheal anastomosis with primary closure of esophageal defect and suture line buttressed using strap muscle flap cover was done.

Keywords: Acquired, Tracheo-esophageal fistula, Post intubation

INTRODUCTION

Acquired TEF is a rare condition caused by cuffed tracheal tube, surgical trauma and blunt injuries.[1] It is a serious complication in patients requiring prolong intubation. It usually occurs after 15-200 days of mechanical ventilation.[2] The main cause of TEF is hyperinflation of tracheal cuff. So monitoring the cuff pressures to ensure low cuff pressures routinely especially in long term ventilator dependent patient may reduce the risk.[3] Surgical approach for the treatment is successful in surgical units with specialized tracheal and esophageal surgery.[4]

CASE REPORT

A 23 year old female patient, presented with chief complains of cough and regurgitation of food since 1 week. There was history of organophosphate poisoning 1 month back for which patient had prolonged intubation (for 11 days). She was extubated successfully and discharged after 7 days. After 2-3 days of discharge patient developed regurgitation of food and cough on food ingestion. There were no abnormalities on clinical examination. All the routine blood investigations were normal. Patient was evaluated further. Investigations were done. Upper GI scopy showed e/o 2.5 cm defect at anterior wall of esophagus, 17-20 cm from incisor tooth with visualization of tracheal rings through defect s/o TEF. Fibre optic bronchoscopy showed e/o 2.5 cm defect at posterior wall of trachea (Figure 1). Computed tomography scan of neck and chest showed e/o 2.5 cm defect at posterior wall of trachea communicating with similar defect at anterior wall of upper esophageal wall s/o tracheoesophageal fistula.

Ryle's tube was inserted and patient was planned for elective surgery for TEF excision with crico-tracheal anastomosis with repair of esophageal defect though cervical approach. Patient was built up nutritionally 15 days before surgery with high protein diet.

Figure 1: Bronchoscopy showing site of TEF.

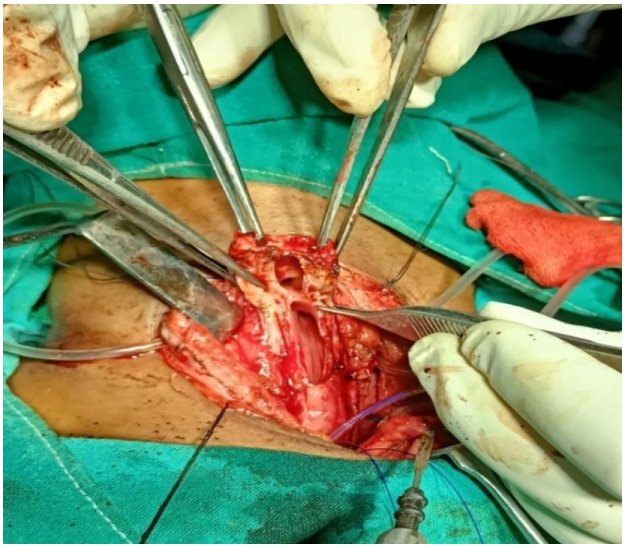

Figure 2: Intraoperative photo showing TEF.

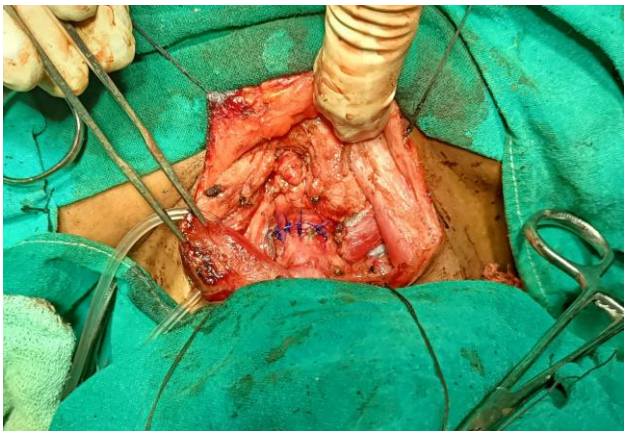

Figure 3: Intraoperative photo of crico-tracheal anastomosis.

Under general anesthesia, Kocher's incision was taken and deepened in layers till trachea was reached, intraoperative bronchoscopy was done to confirm the site of TEF as it was not visible due to its posterior location. Bilateral recurrent laryngeal nerves were identified and preserved. Trachea was incised below the level of fistula and there was visible fistula involving posterior wall of trachea and anterior wall of esophagus (Figure 2). Fistulous track was excised and primary closure of esophageal defect of approximately 3 cm was done in single layer using 4-0 PDS. Part of trachea involved in fistula formation and stenosed segment just above it was excised. Strap muscle flap was raised on right side and used to cover esophageal repair site. Later crico-tracheal anastomosis was done using 3-0 prolene (Figure 3). Incision was closed with suction drain *in situ*. Mentosternal stitch was taken to maintain the position of constant flexion of neck to avoid tension on tracheal anastomosis.

Patient was extubated successfully on table and shifted to intensive care unit for further postoperative care. She was able to phonate properly. Patient was mobilized on postoperative day 3. Clear liquid were started on postoperative day 7 and soft diet on day 10 and Ryle's tube was removed postoperative day 14. Mento-sternal stitch removed on postoperative day 21. Patient had uneventful course throughout the hospital stay and discharged on postoperative day 21. In subsequent follow up visits, there were no signs of any distress or anastomotic leak. Patient's voice was normal. Patient continued to follow the routine day to day activities.

DISCUSSION

Most of the acquired non-malignant TEFs result from complications of prolonged mechanical ventilation with cuffed endotracheal tube. Other causes include laryngotracheal trauma, post radiation therapy, foreign body impaction. Diagnosis was made by history, X-ray studies and endoscopies. When it was recognized while patient was still on mechanical ventilation, conservative approaches were preferred and simple maneuvers like placement of new tracheostomy tube with cuff pressure kept minimal, elevation of head end of the bed, regular suctioning of the oral and tracheal secretions, esophageal diversion with feeding jejunostomy was be used until patient were weaned off from ventilatory support and able to sustain surgical procedure.

Most important initial decision was to determine whether fistula could be resected and closed or tracheal resection and anastomosis was required. Small fistula with normal trachea can be simply resected and tracheal and esophageal defects closed. Large defects with circumferential tracheal damage or stenosis of tracheal segment required resection of damaged part of trachea with end to end tracheal anastomosis with closure of esophageal defect over nasogastric tube with interposition of strap muscles with or without tracheostomy tube. Larger tracheal defects which were not possible to approximate may require tracheal T tube. Mechanical ventilation after tracheal resection was contraindicated due to high risk of tracheal dehiscence.[5]

CONCLUSION

Acquired TEF after prolonged intubation is a rare complication. High index of suspicion is required for diagnosis. Single step surgical management in specialized centres can provide better patient outcome in such cases.

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