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Oesotracheal Fistula Complicating Prolonged Tracheal Intubation

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Abstract **Case Report**

Esophageal fistula is a rare complication of tracheal intubation. Its mechanisms of occurrence are multiple, suggesting ischaemia of the tracheo-oesophageal wall. Diagnosis is difficult and sometimes delayed, and tracheoesophageal endoscopy remains the examination of choice. Imaging, particularly cervico-thoracic CT scans, can confirm a positive diagnosis by showing communication between the tracheal and oesophageal lumina. Treatment depends on the clinical picture and the severity of associated pulmonary lesions. Prognosis is correlated with the extent and nature of secondary complications. We report an exceptional case of an oesotracheal ¬fistula complicating a prolonged tracheostomy.

Keywords: Esophageal fistula, mechanism, ischaemia, tracheo-oesophageal, CT scans.

INTRODUCTION

Oesotracheal ¬fistula (OTF) is a rare complication of prolonged tracheal intubation, with an incidence of 0.5% and a non-negligible mortality of 6-12% [1, 2]. This complication poses a dual diagnostic and therapeutic problem. We report the case of a patient with an oesotracheal fistula complicated by inhalation bronchopneumonia, and discuss the risk factors as well as preventive and therapeutic measures.

OBSERVATION

A 44-year-old patient admitted to intensive care for management of tetanus. An uneventful tracheotomy was performed on day 10 of his admission. Weaning from artificial ventilation took place on day 28 of hospitalisation and decanulation on day 32. After decanulation, the patient presented with a permanent cough that was aggravated by feeding, with fluid coming out via the tracheostomy orifice. The clinical picture was one of inhalation pneumopathy.

A cervico-thoracic CT scan (Figure 1) followed by an oesophageal ¬broscopy revealed a tracheal fi¬stula in the posterior wall communicating with the oesophagus opposite D2, associated with inhalation pneumopathy. The collegial decision was to perform a surgical myoplasty to occlude the posterior wall of the trachea. The patient rapidly developed nosocomial bronchopneumonia caused by pseudomonas aeruginosa, complicated by septic shock, requiring mechanical ventilation.

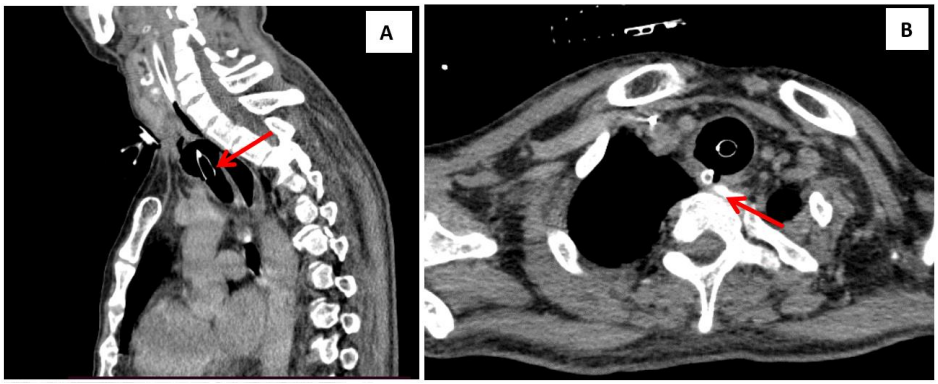

Figure 1: Cervico-thoracic CT scan:
In the mediastinal window (A, B): fistula communicating the tracheal lumen with the oesophageal lumen at the level of D2 (arrow)

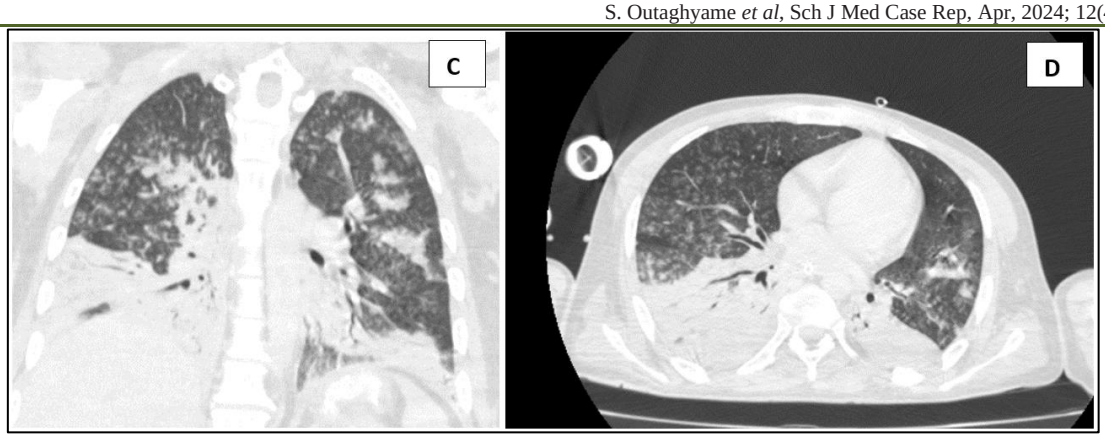

Figure 1: Cervico-thoracic CT scan:
In the parenchymal window (C, D): foci of posterobasal condensation associated with inhalation pneumonitis associated with other foci of condensation and branching micronodules associated with nosocomial infectious bronchopneumonia

DISCUSSION

Esophageal fistula following tracheostomy and prolonged ventilation is a rare complication, but it represents the most frequent form of acquired non-neoplastic FOT, initially described in the 1960s by FLEGE and THOMAS as lesions related to the hyperpressure of the cuff of intubation tubes [3, 4].

There are many possible causes, including direct trauma to the tracheal and oesophageal walls during tracheostomy, prolonged compression of the tracheal mucosa due to incorrect positioning of the cannula and hyperpressure of the cuff, direct injury to the oesophageal mucosa by a large-calibre gastric tube, or fungal infection of the oesophagus. Shock, immunosuppression and malnutrition are also factors favouring the occurrence of this complication [2, 5].

In our case, the factors favouring the development of oesophageal ¬fistula were prolonged mechanical ventilation (> 4 weeks) without regular control of balloon pressureet. The diagnosis is suggested by difficulties in ventilation, gastric fluid or feeding through the tracheostomy orifice, gastrointestinal distension and the occurrence of inhalation pneumopathy. The diagnosis is confirmed by bronchial and oesophageal ¬broscopy, which determines the location of the fistula and the presence of mucosal fibrosis.

Cervico-thoracic computed tomography can be used to visualise the fi¬stula and identify damage to the lung and peri- fi¬stular parenchymal tissues. Opacification of the oesophagus makes the diagnosis in 70% of cases, and is indicated in patients who are conscious and able to swallow [1, 6-8]. Therapeutic management is based initially on preventing inhalation of gastric fluid through the fi¬stula by resting the oesophagus, and combating gastric stasis, as well as treating any bronchopulmonary infection.

Preoperative nutritional preparation via parenteral nutrition or a feeding jejunostomy plays a vital role in these patients, who are malnourished and in a state of hyper-catabolism.

Surgical treatment is indicated at a later stage, with the choice of approach depending on the initial lesion assessment [2, 6, 9, 10]. The surgical technique consists of tracheal resection and anastomosis, with suture of the oesophagus in two planes protected by a myoplasty. The resection encroaches on the oesophagus and not on the trachea, in order to retain sufficient tissue to repair the tracheal membrane. Double stenting of the trachea and oesophagus should be reserved for palliative situations [1, 11-13].

Prevention of this complication is based on controlling the cuff pressure and performing the tracheostomy under continuous bronchoscopy [14]. The course is marked by a high risk of recurrence and a non-negligible mortality rate of 6.3 to 12.5% [1].

CONCLUSION

Although oesotracheal fistula is a rare complication of tracheostomy and prolonged artificial ventilation, its uncertain prognosis means that it must be systematically suspected and investigated in the presence of any difficulty in ventilatory weaning, and in the presence of recurrent pneumopathies.

Cervico-thoracic CT scans play a major role in positive diagnosis and in assessing the severity of the condition after nasofibroscopy. Prevention is essentially based on the non-traumatic nature of tracheostomy and tracheal suctioning, and on controlling cuff pressure.

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