

Short reports

Unusual case of benign tracheo-oesophageal fistula

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Benign acquired tracheo-oesophageal fistula is an uncommon lesion. Trauma and infection have been the most common causes noted in several series.¹⁻³ Traumatic causes include oesophagoscopy or bronchoscopy; complications of tracheostomy; and blunt, crushing, or penetrating injuries to the neck or chest. Foreign body ingestion or aspiration and lye ingestion are other reported causes.⁴ We have recently cared for a patient with benign tracheo-oesophageal fistula resulting from ingestion of a camera battery.

Case report

A previously healthy, active 3 year old boy was admitted to a local hospital on 6 July 1980 with a five day history of chest infection not responding to antibiotic treatment. A chest radiograph showed a disc shaped metallic foreign body just below the level of the clavicles. This had probably been ingested three weeks before admission. The patient never experienced dysphagia. The battery, which contained sodium hydroxide, was withdrawn from the oesophagus at oesophagoscopy under general anaesthesia. Some leakage of the contents was observed at that time and 4 cm of the posterior wall of the upper oesophagus were noted to be "murky and inflamed." After removal of the battery the patient had constant drooling and refused to swallow; any attempt at swallowing resulted in coughing. On 13 July an oesophagogram showed a tracheo-oesophageal fistula. A plain chest radiograph showed lower zone haziness and considerable gaseous distension was noticed on an abdominal radiograph (fig 1). A repeat oesophagoscopy was performed and a 3 mm tracheo-oesophageal fistula surrounded by very inflamed tissues was seen. A Stamm gastrostomy was then performed. After transfer to our unit oesophagoscopy showed a fistula 2 cm long and 0.5 cm wide; its lower margin was 4 cm above the carina. The mucosa adjacent to the fistula was hypertrophied and friable.

The child was treated with antibiotics and intensive chest physiotherapy. He coughed effectively during the day; at night secretions were aspirated with a Reglogle tube. Nutrition was maintained with a transpyloric duodenal tube.

The gastrostomy tube was left open for drainage to avoid any regurgitation of gastric contents. Over the next few days the fever subsided, the chest radiograph improved, and weight gain was noted.

Operation was performed one month after admission. After induction of general endotracheal anaesthesia endoscopy was carried out. The diameter of the fistula was the same as before, but the edges appeared less inflamed. The trachea was exposed through a supraclavicular collar incision and mobilised with dissection close to its lateral margins to avoid injury to the recurrent laryngeal nerves. In the area of the fistula the trachea and oesophagus were densely adherent. The tissue surrounding the defect was still very friable. The defects were closed—first in the trachea and then in the oesophagus—with single 4-0 Dexon sutures. An attempt was made to close the longitudinal defect transversely to avoid the subsequent development of a stricture. In fact, oblique suture was achieved. The sternothyroid muscle flap was interposed between the trachea and the oesophagus to separate the two suture lines. The wound was closed in layers, two Redivac drains being left in position. The patient was extubated in the operating room. His postoperative course was uneventful. A contrast study performed before discharge gave normal results (fig 2). The patient has remained symptom free, but one month after discharge a barium swallow showed mild narrowing of the oesophagus. This required two dilatations, after which the oesophagogram was normal and he remains symptom free 36 months after operation.

Discussion

Bisgard and Kerr⁵ described oesophageal injury resulting from ingestion of foreign bodies varying from minimal mucosal tears to major rupture of surrounding tissues. Tracheo-oesophageal fistula may occur as a complication of the use of high pressure, low volume contact tracheostomy cuff tubes, which may exert lateral pressure against the tracheal wall.^{6,7} Adjacent structures may be damaged. Our patient developed tracheo-oesophageal fistula probably as a result of a combination of pressure erosion necrosis caused by a foreign body and caustic injury from direct contact with an alkali containing battery.

Several interesting points are illustrated by this case. Respiratory symptoms were the presenting features in the child, who apparently initially continued to swallow normally. Children with chronic foreign body perforations

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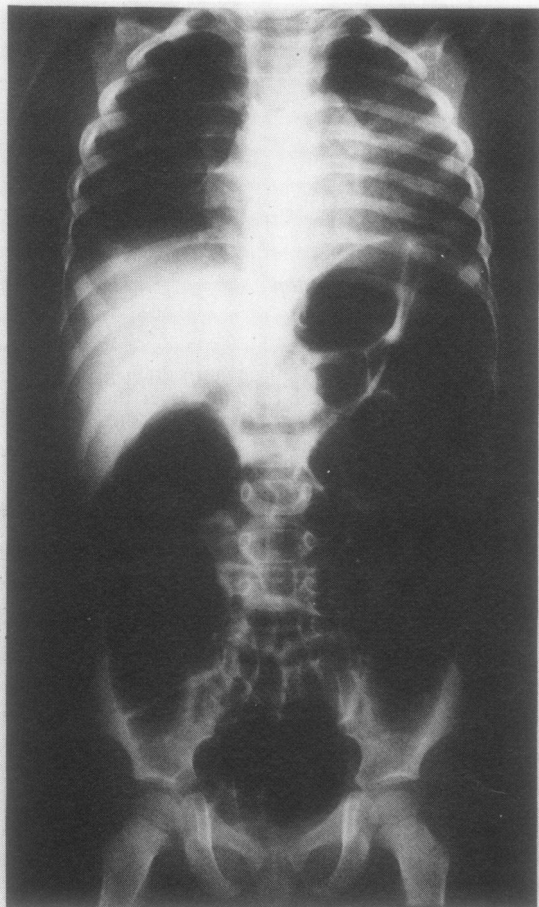


Fig 1 Plain radiograph of the chest and abdomen showing considerable gaseous distension of the gastrointestinal tract and patchy consolidation in the left lower lobe.

frequently develop respiratory symptoms rather than dysphagia. Foreign body ingestion must be suspected and appropriate investigations performed in children with such symptoms.

The timing of surgical intervention depends on the condition of the patient and of the tissues surrounding the fistula. Vigorous chest physiotherapy and specific antibiotics were necessary to clear pulmonary infection in our patient. Because of the patient's ability to control his oral secretions oesophagostomy was avoided. Gastrostomy initially was unsuccessful because of reflux into the oesophagus, with resultant aspirations. This cleared only after the gastrostomy had been left open for gravity drainage, nutrition being maintained via a transpyloric duodenal tube. Total parenteral nutrition was not necessary. Time was allowed to permit resolution of the inflammatory process surrounding the fistula.

The surgical approach may be through a right posterolateral thoracotomy or by the anterior approach through a low collar incision.⁸ We selected the latter and

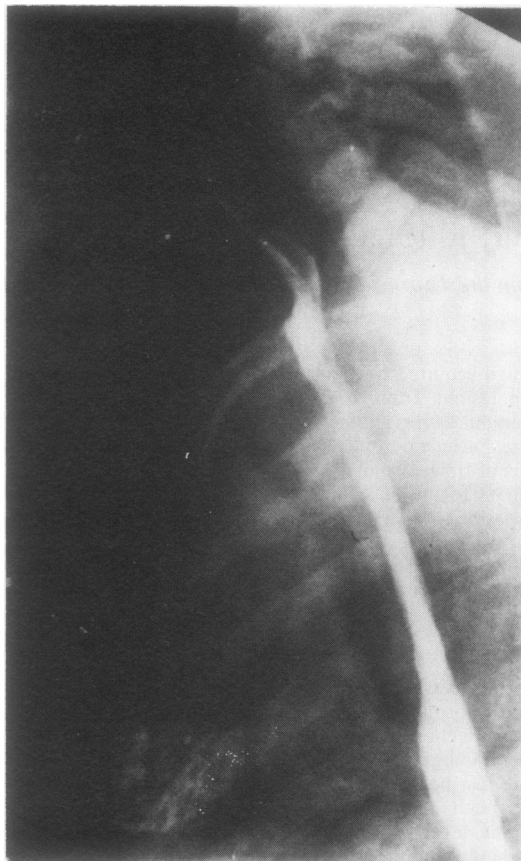


Fig 2 Contrast oesophagogram performed after surgery before the patient's discharge. The oesophagus appears to be normal, with only minimal narrowing at the level of the clavicles. There is no evidence of a tracheo-oesophageal fistula.

this provided excellent exposure of both the trachea and the oesophagus.

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