

Acquired Tracheoesophageal Fistula Due to Corrosive Action of an Impacted Button Battery

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ABSTRACT

Here we report a case of tracheoesophageal fistula in eighteen month old boy due to corrosive action of button-battery ingestion and delayed diagnosis. Late diagnosis was due to misinterpretation of foreign body as locket. The battery was removed by a rigid oesophagoscope and the patient was referred for surgical management.

KEY WORDS: acquired tracheoesophageal fistula, button battery ingestion, foreign body

INTRODUCTION:

Tracheoesophageal fistula due to foreign body impaction is a rare entity in Paediatric population.^[1] Although accidental ingestion of various household chemicals and medicines are well described in children, ingestion of button batteries is less published in Indian literature^[2] and dangers are less understood by both parents and health care providers. The largest series of cases reported in American National button battery ingestion (NBBI) survey; in which 2320 cases of battery ingestion were collected and reviewed.^[3] Studies had shown that 51% of the ingestion were unwitnessed. This partly explains the delay in presentation and diagnosis.^[4,5] Complications of oesophageal button battery impacted have included tracheoesophageal fistula, vocal cord paralysis, oesophageal burns with or without perforation and aortoesophageal fistula.^[6,7] We present a case consequence to an unrecognised button battery impaction in oesophagus, which resulted in tracheoesophageal Fistula formation.

CASE REPORT:

An eighteen month old male child was taken

to a private hospital 1 month back with complains of high grade fever, cough, breathlessness, decreased intake of food, vomiting, and drooling of saliva for last 3 days. The patient was admitted, assessed clinically and investigated including chest skiagram, which showed features suggestive of pneumonia along with the presence of two radio-opaque shadows which were considered to be artefacts (shadows of tabiz). The patient was managed with oxygen inhalation, intravenous fluid and antibiotics for over a month without any improvement in the clinical status and was referred to our institute.

On examination child had severe acute malnutrition (weight 8 kg, height 79.8 cm, weight for height below 3 standard deviation of the median WHO growth reference, mid upper arm circumference 11.3 cm), tachycardia, tachypnoea, bilateral crepts, nasal flaring, subcostal and intercostals retractions. Clinical examination of cardiovascular and other systems was within normal limits.

Investigation including blood investigations, Mantoux test and repeat chest-skiagram was ordered. Skiagram chest revealed presence of two radio-opaque shadows and pulmonary infiltrates. Blood investigation revealed mild anaemia with leucocytosis. Mantoux test was negative.

Out of two radio-opaque shadows one was an artefact (tabiz) as against the misinterpretation of two artefacts (Figure 1). The second radio-opaque shadow

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was actually a button battery which was accidentally ingested by child. An oesophagoscopy was done which found an impacted button battery (20 mm diameter) and it was removed. In oesophagoscopy tracheoesophageal fistula was suspected. This was confirmed by computed tomography scan chest (Figure 2) at T1-T2 level of approximately 1 mm in diameter. A diagnosis of acquired tracheoesophageal fistula secondary to corrosive action of an impacted button-battery was made. The patient was referred to surgery department. Feeding jejunostomy was done as primary procedure, later after six weeks surgical repair of fistula was done and patient recovered uneventfully.

DISCUSSION:

The American National button-battery ingestion (NBBI) survey revealed that children less than five year of age were the most frequently affected group accounting for 61.8% cases.^[3]

In our patient a tracheoesophageal fistula was developed due to unwitnessed ingestion and delayed diagnosis of impacted button battery for about a month. The oesophagus is especially susceptible to foreign body retention due to its several anatomic area of narrowing and weak peristalsis.^[8,9] Commonly ingested foreign bodies include pins, coins, pieces from toys, stones, solid seeds and plastic button, but the most notorious of all are disc batteries. Tissue damage that results from contact with charged battery is a chemical burn caused by production of sodium hydroxide (cathode) and hydrochloric acid (anode) generated from electric current passing through physiologic electrolyte solution.^[10] Failure to recognize or appropriately manage a foreign body in the oesophagus may lead to various serious complications and occasional mortality.



Figure 1: Chest skiagram of patient revealing two radiopaque shadows. One is tabiz (artefact) and other is disc battery in oesophagus.

Ingestion of foreign body is common in young children and can cause serious problems. Early recognition and immediate removal can reduce morbidity and mortality, but prevention by increasing public awareness is necessary. Parents should avoid buying toys with small parts and adult supervision is essential when children play with toys.



Figure 2: Computed tomography of thorax showing tracheoesophageal fistula at T1-T2 level.

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