

20 mm lithium button battery causing an oesophageal perforation in a toddler: lessons in diagnosis and treatment

Giampiero Soccorso,¹ Ole Grossman,¹ Massimo Martinelli,² Sean S Marven,¹ Kirtik Patel,³ Mike Thomson,⁴ Julian P Roberts¹

¹Paediatric Surgery Unit, Sheffield Children's NHS Foundation Trust, Sheffield, UK

²Department of Paediatrics, University of Naples Federico II, Napoli, Italy

³Adult Upper GI Surgery, Sheffield Teaching Hospitals NHS Trust, Sheffield, UK

⁴Centre for Paediatric Gastroenterology, Sheffield Children's NHS Foundation Trust, Sheffield, UK

Correspondence to

Dr Giampiero Soccorso, Paediatric Surgery Unit, Sheffield Children's NHS Foundation Trust, Western Bank, Sheffield, South Yorkshire S10 2TH, UK; giampsoccorso@doctors.org.uk

Accepted 29 February 2012

Published Online First

1 May 2012

ABSTRACT

Swallowed button batteries (BB) which remain lodged in the oesophagus are at risk of serious complications, particularly in young children. The authors report a 3-year-old child, who rapidly developed an oesophageal perforation, following the ingestion of a 20-mm lithium BB which was initially mistaken for a coin. A thoracotomy and T-tube management of the perforation led to a positive outcome. BBs (20 mm) in children should be removed quickly and close observation is required as the damage initiated by the battery can lead to a significant injury within a few hours.

INTRODUCTION

Button battery (BB) ingestion is a common complaint in toddlers. Increased use of lithium BB that are 20 mm in diameter has brought new challenges since they appear more dangerous than earlier types of batteries.¹

CASE REPORT

A 3-year-old boy, with an ingested BB, whose radiographic appearance was presumed to be a coin lodged in the oesophagus, was transferred to our institution for further management after overnight observation (figure 1). A BB impacted in the

distal oesophagus was retrieved by an oesophagoscopy 20 h after ingestion: moderate damage to the mucosa was noted. This eventually perforated and became clinically evident on the following day (figure 2). Management was right thoracotomy and latex rubber T-tube insertion into the perforation to create a controlled oesophago-pleura-cutaneous fistula for secondary intention healing.² A mini-laparotomy allowed gastro-jejunal tube insertion. Two weeks postoperatively the child went home with the T-tube in situ. Three weeks later, the T-tube was removed by flexible oesophagoscopy, and the internal opening of the fistula was filled with Tissel.³ Three days later, a swallow contrast study showed a normal oesophagus with no leak and stricture. The child is on normal oral diet at 6 months follow-up.

DISCUSSION

Signs of BB should be carefully checked on the antero-posterior (AP) (double-rim) and lateral (step off) x-ray.⁴ To prevent morbidity and mortality, in case of an unwitnessed ingestion, coin-like foreign bodies should be assumed BB until proven otherwise. T-tube insertion is a simple and effective method and avoids the postoperative complications associated with primary closure of severely inflamed oesophageal perforations.

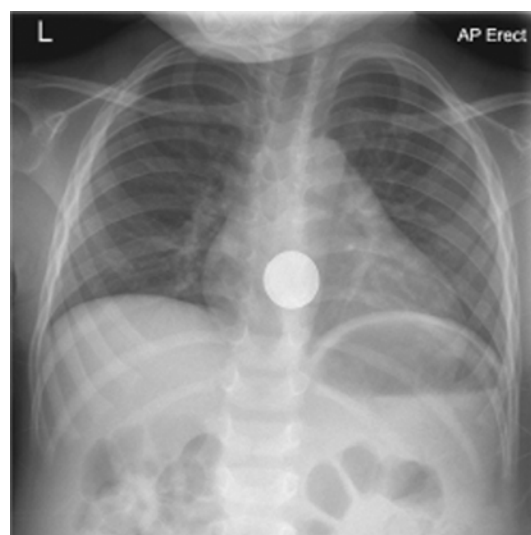


Figure 1 The chest radiograph revealed the button battery (BB) as a circular radio-opaque shadow with a peripheral double rim (pathognomonic of BB).

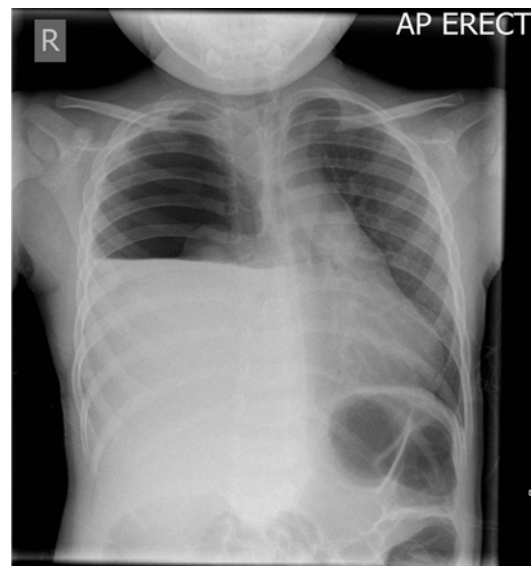


Figure 2 One day after the button battery retrieval, the child developed respiratory distress. The chest radiograph revealed a large hydro-pneumothorax, a sign of oesophageal perforation.

Contributors GS designed the study, provided clinical input, and contributed to the analysis and writing the paper. OG wrote the first draft of the paper. MM assisted with the design of the study. SSM and MT provided clinical input to the study and contributed to the analysis and writing of the paper. JPR provided clinical input to the study, assisted with the design of the study and contributed to the analysis and writing of the paper.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

1. **Litovitz T**, Whitaker N, Clark L. Preventing battery ingestions: an analysis of 8648 cases. *Paediatrics* 2010;**125**:1168–77.
2. **Linden PA**, Bueno R, Mentzer SJ, *et al*. Modified T-tube repair of delayed esophageal perforation results in a low mortality rate similar to that seen with acute perforations. *Ann Thorac Surg*. 2007;**83**:1129–33.
3. **Huang CS**, Hess DT, Lichtenstein DR. Successful endoscopic management of postoperative GI fistula with fibrin glue injection: Report of two cases. *Gastrointest Endosc* 2004;**60**:460–3.
4. **Kuhns DW**, Dire DJ. Button battery ingestions. *Ann Emerg Med* 1989;**18**:293–300.