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Management of Cylindrical Battery Ingestion

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Abstract

Presentation

A female presented to the Emergency Department following ingestion of an unknown number of cylindrical batteries.

Diagnosis

Abdominal X-ray confirmed the presence of multiple batteries located throughout the abdomen.

Treatment

A trial of conservative management was pursued, and five AA batteries were successfully passed per rectum. Serial X-rays over three weeks revealed that the majority of batteries failed to pass. A decision was made to perform a laparotomy, and 46 cylindrical batteries were removed from the stomach through a small gastrotomy. Four batteries located in the colon were milked into the rectum and removed via the transanal route.

Discussion

Using daily clinical exams and weekly plain films of the abdomen, conservative management is possible if a small number of batteries are ingested and make it to the stomach. However, the potential of cylindrical batteries to result in acute surgical emergencies should not be underestimated.

Keywords **-** foreign body, ingested batteries, abdominal surgery

Introduction

Ingestion of cylindrical batteries is a rare method of deliberate self-harm that has the potential for several serious complications, including mucosal injury, perforation, obstruction, and ST segment elevation. Reported cases suggest that the incidence of severe and fatal battery ingestions are increasing and current treatment paradigms may be inadequate[1]. Many of these cases pertain to the paediatric population and relate to button battery ingestion[1, 2].

Ingestion of the larger cylindrical batteries is less frequently encountered; hence no clear practice guidelines have been developed[3]. Potential options for dealing with cylindrical battery ingestion include conservative management, endoscopic extraction, or surgical retrieval. The modality chosen is determined based on variables such as the type and number of batteries, location, structural integrity of each battery case and the overall clinical picture. This report describes the case of a patient who presented following the ingestion of a large number of cylindrical batteries as a method of deliberate self-harm.

Case Report

A 66-year-old female presented to the Emergency Department following ingestion of an unknown number of cylindrical batteries. An abdominal X-ray confirmed the presence of multiple batteries located throughout her abdomen (Figure 1). There were no features of obstruction, perforation, or suggestion of damage to the structural integrity of the batteries. A trial of conservative management was pursued, and five AA batteries successfully passed per rectum over a one week period. The patient underwent daily clinical examination and weekly abdominal X-rays. Serial X-rays over three weeks revealed that the remaining batteries had failed to progress. Furthermore, the patient began to complain of diffuse abdominal pain and anorexia. A decision was made to perform a laparotomy where we identified a distended stomach pulled down into the suprapubic area. 46 cylindrical batteries were removed from the stomach through a small gastrostomy and four batteries located in the colon were milked into the rectum and removed via the transanal route, using an anal retractor and long forceps (Figure 2). Intra-operative X-ray confirmed retrieval of all batteries and the patient made an uneventful recovery.

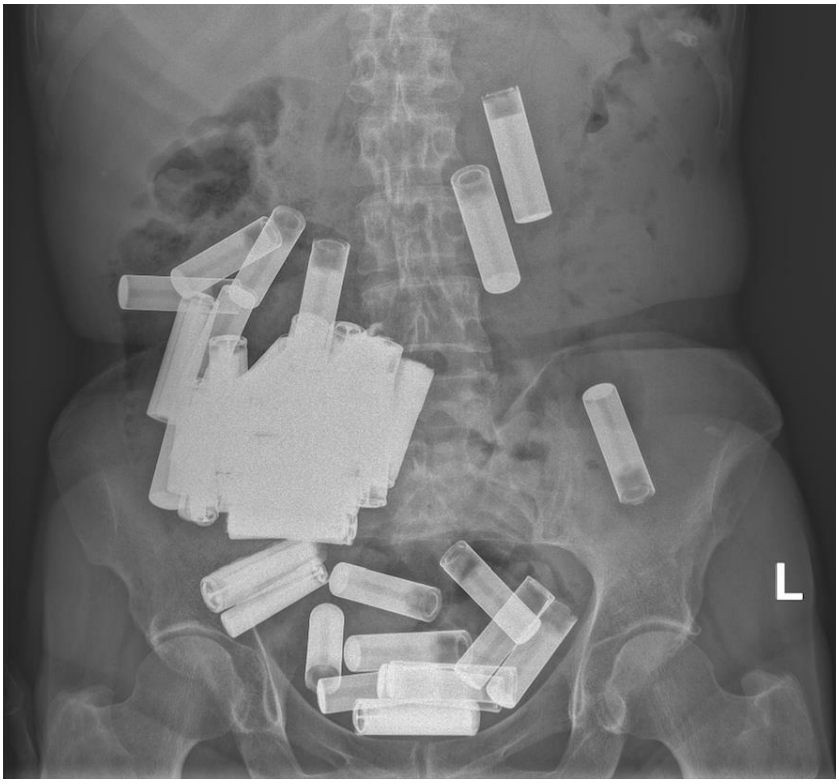

Figure 1: *Plain film abdomen showing numerous cylindrical batteries throughout the gastrointestinal tract.*

Figure 2: *Extracted cylindrical batteries.*

Discussion

The deliberate ingestion of multiple large AA batteries as a form of deliberate self-harm is an unusual presentation[4]. Conservative management and endoscopic retrieval can be considered in cases of cylindrical battery ingestion[3]. Signs of airway compromise, oesophageal obstruction or perforation are an indication for emergency endoscopy. Endoscopic extraction of food impaction and foreign bodies from the upper digestive tract is successful in 95% of cases[5]. In this case, given the large number of batteries, endoscopic retrieval was not feasible. Conservative management is possible if a small number of cylindrical batteries are ingested and make it to the stomach. Daily clinical exams and weekly plain films of the abdomen are necessary. In this case 9 batteries passed through the pylorus and ileocaecal valve into the colon. Some of these were the larger AA sized batteries. The potential of cylindrical batteries to result in acute surgical emergencies should not be underestimated.

When using an open approach to retrieve batteries that are believed to be stuck at the ileocaecal valve, consider a midline incision as this can easily be enlarged to allow access to foreign bodies in unexpected locations. A smaller transverse incision, which may offer reduced post-operative pain, risks limiting access to batteries in unanticipated locations in the gastrointestinal tract. On table X-ray is recommended prior to closure. To the best of our knowledge, this case represents the highest reported number of batteries ingested at a single point in time.

Declaration of Conflicts of Interest:
There are no competing interests to declare. All authors have completed and submitted a ICIME Conflict of Interest (COI) form.

Patient Consent:
Informed consent was gained from the patient. Available upon request.

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