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# Esophageal Button Battery Ingestion: A Delayed Diagnosis

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**Abstract**

A 5-month-old girl has been presented with a button battery ingestion, in whom a severe mucosal burn of the proximal esophagus was diagnosed 21 days after impaction. In spite of 21 days before diagnosis, no perforation had occured and severe mucosal burn of the proximal esophagus was diagnosed. The patient was treated succesfully.

**Keywords:** foreign body, esophagus, button battery, total parenteral nutrition

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## INTRODUCTION

Foreign body ingestion is a common complaint in the pediatric emergency department. In their 2002 Annual Report, the American Association of Poison Control Centers reported 119.323 cases of foreign body ingestions [1]. Batteries represents less than 2% of foreign bodies ingested by children, but in the last 2 decades, the frequency has continuously increased [2]. Button battery impaction in the esophagus may lead to serious, sometimes fatal complications. Endoscopic removal should be attempted immediately in all cases. Here , we report an interesting case of button battery ingestion by a 5-month-old girl, in whom a severe mucosal burn of the proximal esophagus was diagnosed 21 days after impaction.

## CASE

A 5-month-old girl was admitted to our hospital with coughing and making a retching sound while feeding. While she was playing at home She had taken a button battery and had swallowed it. After 2 days she had nonspecific symptoms such as fever, coughing and making a retching sound while feeding. Her parents took her to the emergency department of local hospital. She was misdiagnosed as pneumonia and discharged home with medical treatment. No radiological methods were used in diagnosis.

She underwent medical therapy for 20 days and continued breast feeding. Symptoms continued without any recovery. She was again admitted to a local hospital. A chest x-ray confirmed the presence of metallic foreign body in the proximal portion of the esophagus. Then she was referred to our hospital emergency department of our hospital.

Anteroposterior (AP), lateral chest and AP abdominal radiographs were obtained. The chest radiographs revealed a 1cm, round metallic density visualized at the level T3 (Figure 1). The mother informed of the foreign body being a button battery which was swallowed 21 days before.

Breast feeding was stopped and esophagoscopy was performed under general anesthesia to extract the foreign body. The button battery and severe mucosal damage due to battery irritation were seen at the proximal portion of the esophagus. But two attempts at removal were unsuccessful by endoscopic forceps. The button battery slided to distal esophagus, then to stomach. A nasogastric tube was inserted. Total parenteral nutrition (TPN) and parenteral antibiotics were begun. Mucosal falling down sign and no radio-opaque solution escaping out of esophagus, were seen in esophagography (Fig 2, top). The battery passed spontaneously through the gastrointestinal tract and got out on the 3rd day. Fever, body weight, complete blood count values were noted daily and they were stable for a week.

Second esophagography was obtained on the 8th day. It showed normal esophageal passage and no signs of mucosal burning (Figure 2, bottom). Breast milk was added to patient's feding via nasogastric tube, four time a day. Nasogastric tube was removed on the 9th day. Parenteral nutrition was continued for a week more. After 2 weeks of follow up, she was stable. Antibiotics were ended. Then breast feeding was started and she was discharged. She was healthy at the 3rd month of follow up control.

## DISCUSSION

The activities of children to recognize surrounding world sometimes cause unavoidable ingestion of foreign bodies. Making the diagnosis of a gastrointestinal foreign body may be straightforward if a caretaker actually witnesses a child placing an object in her/his mouth. However, if an ingestion is not observed, there is often a delay in discovering the diagnosis because the signs and symptoms of gastrointestinal foreign body ingestion are nonspecific [1]. There were several reasons for the delay: In some cases

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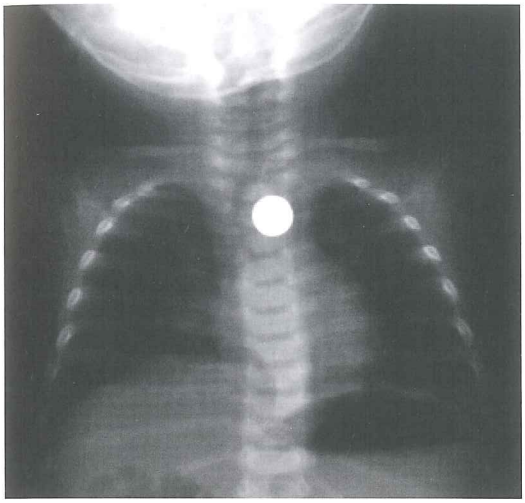

**Figure 1.** Chest radiography showing foreign body (button battery) in the proksimal esophagus.

a clear history of ingestion was not obtained or the symptoms and clinical signs were not sufficient to warrant suspicion [2]. Although these nonspecific symptoms generate a very large differential diagnosis, foreign body ingestion must be considered, especially in patients who repeatedly visit the physician when not improving with standard treatment of the other suspected diagnoses. It should be pointed out that up to 35% of the pediatric population may be asymptomatic after gastrointestinal foreign body ingestion [3]. Early symptoms were often nonspecific and were mistakenly associated with more common illnesses, such as pneumonia. Ingestion cases, with a typical peak incidence in 1- and 2-year-olds [4].

The diagnostic approach to investigate an ingested foreign body should begin with frontal and lateral plain radiographs of the chest and abdomen in an attempt to both localize and identify the object. Metallic foreign bodies (with the notable exception of aluminum) are radiopaque and are usually recognizable [5]. Like coins, button batteries located in the esophagus will also appear enfaced on the AP films and have smooth edges. However, unlike coins, they often do not have a homogenous radiographic density. Instead, a double density is often observed, which has been described. When viewed in the lateral plane, a step-off may also be visualized, which represents the anode-cathode junction [6].

Yardeni et al. reported the data batteries less than 15mm in diameters almost never lodged in the esophagus [2]. But in our case 12mm battery lodged in esophagus for 21 days in our 5-month-old patient. Batteries lodged in the esophagus should be removed emergently. Burns due to esophageal lodgment have occured as early as 4 hours after ingestion, and perforation has occurred as soon as 6 hours after ingestion. In our case there was mucosal burning but no perforation in the past 21 days. Removal should be done under direct visualization especially with rigid endoscopy [7].

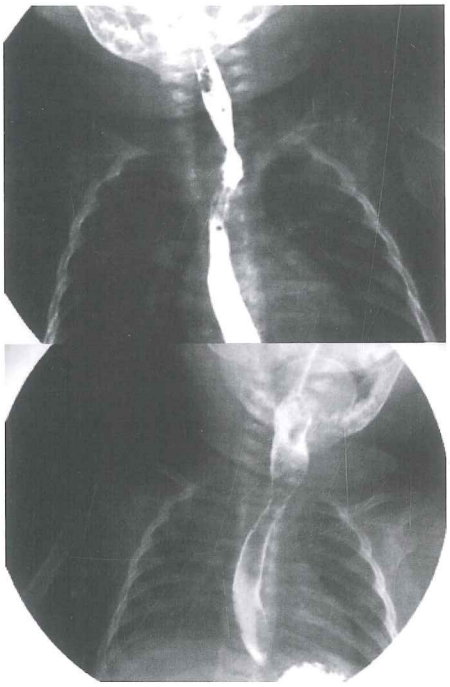

**Figure 2.** Esophagography showing mucosal falling down sign (top), and normal esophageal passage (bottom).

If there is a significant esophageal burn, the child should not be fed, and antibiotics should be administered until perforation has been ruled out. A contrast esophagogram or esophagoscopy should be done before allowing the child to eat. These studies can be repeated in 3-6 weeks to evaluate for the presence of a stricture.

In conclusion, ingestion of a foreign body is a well-known clinical problem. Surgical procedures have priorities in the treatment of alkaline foreign bodies. Urgent treatment is essential when taking into consideration the potantial hazards of those kinds of materials. There is a need for public education about the danger of alkaline button battery ingestions.

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