Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Surgery

Successful Endoscopic Extraction of a Retained Esophageal Button Battery in a Child with Esophageal Stenosis after Six Months of Retention

Fatima Ezzahra Rizkou[1*], Youssef Lakhdar[1], Chehbouni Mohammed[1], Omar Oulghoul[1], Othmane Benhoummad[2], Youssef Rochdi[1], Abdelaziz Raji[1]

[1]ENT and Neck and Head Surgery Department, University Medical Center Mohammed VI, Marrakech, Morocco
[2]ENT and Neck and Head Surgery Department, University Hospital of Agadir, Faculty of Medicine and Pharmacy of Agadir, Morocco

DOI: https://doi.org/10.36347/sjmcr.2025.v13i10.045 | **Received:** 17.07.2025 | **Accepted:** 29.09.2025 | **Published:** 18.10.2025

***Corresponding author:** Fatima Ezzahra Rizkou
ENT and Neck and Head Surgery Department, University Medical Center Mohammed VI, Marrakech, Morocco

Abstract | **Case Report**

Background: Button battery ingestion is a medical emergency, often requiring urgent removal to prevent severe complications such as mucosal burns, perforation, and esophageal stenosis. Delayed diagnosis, especially in cases of unwitnessed ingestion, can lead to prolonged retention and increased morbidity. ***Case Presentation:*** We report the case of a 4-year-old child who remained asymptomatic for six months after accidentally ingesting a button battery. The child later developed progressive dysphagia and weight loss, leading to radiographic confirmation of a retained corroded button battery lodged in the cervical esophagus with significant stenosis. Despite the long retention time, the battery was successfully extracted via rigid esophagoscopy. ***Conclusion:*** This case highlights the challenges of delayed button battery ingestion, the critical importance of maintaining a high index of suspicion in pediatric dysphagia, and the success of endoscopic retrieval even in cases of severe esophageal stenosis. Increased public awareness, improved battery safety mechanisms, and prompt clinical evaluation are key to reducing morbidity and mortality from button battery ingestion.

Keywords: Button Battery Ingestion, Esophageal Stenosis, Foreign Body Retention, Delayed Diagnosis, Pediatric Dysphagia, Endoscopic Removal.

INTRODUCTION

Foreign body ingestion is common in pediatric patients, with button batteries posing a particularly serious risk due to their chemical composition, electrical properties, and mechanical effects. When lodged in the esophagus, button batteries can cause rapid and severe tissue damage within hours [1].

Foreign body ingestion is a common occurrence in pediatrics, particularly in children younger than five years old [1]. Among foreign bodies, button batteries are especially dangerous due to their alkaline composition and ability to generate an electrical current. If impacted in the esophagus, these batteries rapidly induce tissue necrosis, leading to ulceration, perforation, or stricture formation [1].

Rapid diagnosis and removal are critical because severe tissue damage can occur within 2–3 hours (*Severe Esophageal Damage Caused by Button Battery Ingestion in a 10-Month-Old Infant*, Lasrado *et al*., 2015). Ingestions that go undetected for more than 24 hours pose a high risk of complications, including esophageal perforation, mediastinitis, tracheoesophageal fistula, and vascular erosion [2].

Most reported cases of button battery ingestion involve acute management, with batteries being removed within hours or days. Retained batteries beyond four weeks are exceedingly rare, as they typically result in catastrophic complications such as perforation, fistula formation, or fatal hemorrhage [3].

To date, there have been no documented cases of successful endoscopic removal of a button battery retained in the esophagus for six months. Prolonged retention would typically result in extensive fibrosis, making removal technically difficult and increasing the risk of esophageal rupture.

This case represents an exceptional instance where a child remained asymptomatic for months, and despite the presence of severe esophageal stenosis, rigid

esophagoscopy enabled safe retrieval of the battery. This report aims to highlight the importance of clinical suspicion in children with unexplained dysphagia, as well as the feasibility of endoscopic retrieval even in cases of long-standing foreign bodies.

Case Report

A 4-year-old child was brought to medical attention with a history of button battery ingestion six months prior, which was not extracted at the time. During an initial consultation with a general practitioner, the physician suspected spontaneous expulsion of the foreign body. However, after four months, the child began experiencing early postprandial vomiting, followed by progressive dysphagia, poor oral intake, and weight loss. These symptoms were initially misdiagnosed and treated for one month as gastroesophageal reflux disease (GERD).

On physical examination, the child appeared malnourished but had no respiratory distress. A chest X-ray identified a radiopaque foreign body lodged in the esophagus, suggestive of a button battery (Figure 1). A cervicothoracic CT scan confirmed the presence of a foreign body with metallic density (250 HU) in the thoracic esophagus, generating a large artifact extending from the D2-D3 intervertebral disc to the D5 vertebral body. The battery measured approximately 6.5 × 20 × 24.7 mm. In addition, there was significant esophageal wall thickening, with mucosal contrast enhancement and infiltration of posterior mediastinal fat, extending down to D9. A mild mass effect on the thoracic trachea was noted, though the airway remained sufficiently patent, with no evidence of pneumomediastinum (Figure 2).

The child was admitted to the operating room for the placement of a feeding gastrostomy due to persistent dysphagia and for endoscopic exploration. Endoscopic exploration revealed circumferential mucosal necrosis of the upper cervical esophagus, along with a small mucosal ulceration (0.5 cm) (Figure 3). Given the significant retention time of six months, an urgent rigid esophagoscopy was performed under general anesthesia. An initial endoscopic radial superficial incision of the esophageal stenosis was carried out, allowing gentle introduction of the rigid esophagoscope. The battery was embedded within the stenosis and adherent to the anterior esophageal wall. It was dissected from its adhesions using a laryngeal elevator and metallic suction. Dissection was performed in direct contact with the battery to avoid mucosal perforation, under 0° endoscopic visualization. Once freed, the battery was extracted using crocodile forceps. Rigid bronchoscopy showed tracheomalacia involving the mid-trachea extending to the carina (Figure 4).

Post-extraction, granulation tissue and early stricture formation were noted, necessitating planned esophageal dilation therapy. The postoperative management included proton pump inhibitors (PPIs) to reduce acid-induced inflammation, a liquid diet to minimize further irritation, and serial esophageal dilations to manage post-extraction stenosis. At follow-up, the child demonstrated gradual improvement in oral intake, with continued monitoring planned to assess esophageal healing and prevent recurrent stenosis.

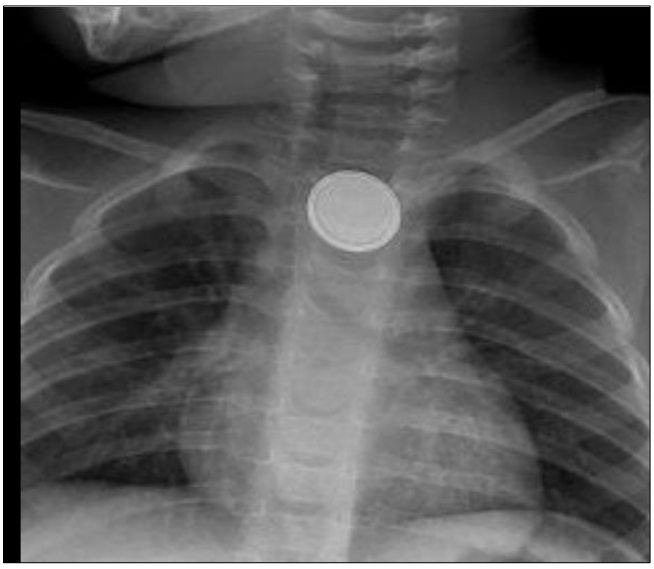

Figure 1: Chest X-ray showing a radiopaque foreign body in the esophagus, suggestive of a button battery

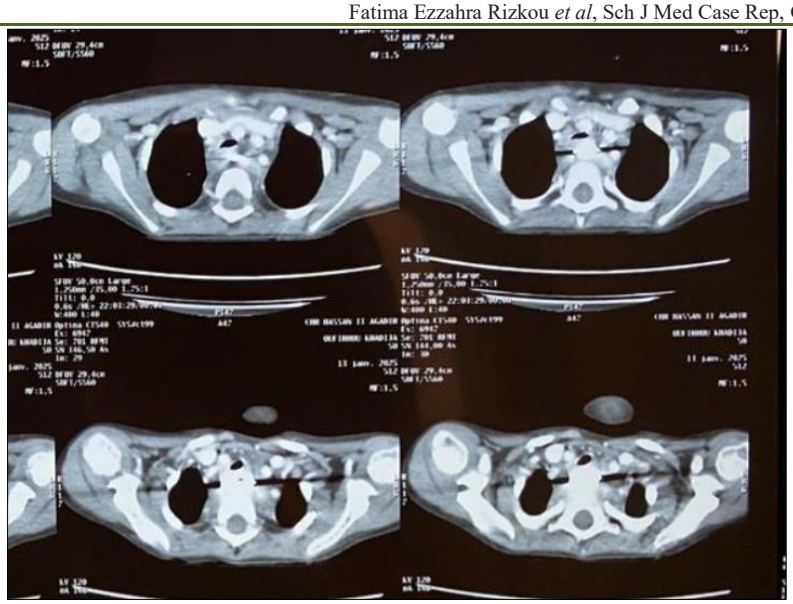

Figure 2: Cervicothoracic CT scan confirming the presence of a metallic-density foreign body in the thoracic esophagus, with esophageal wall thickening and posterior mediastinal fat infiltration

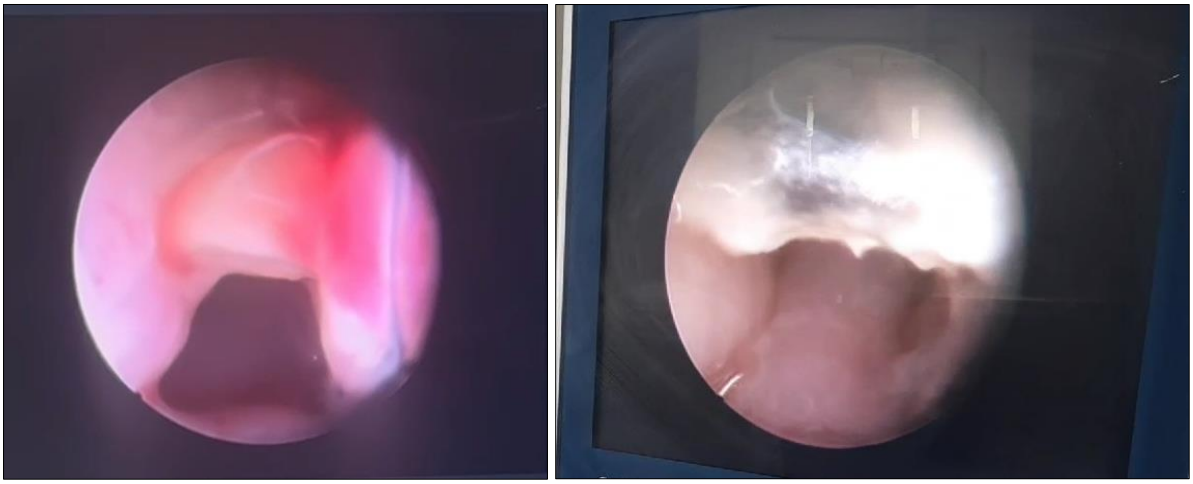

Figure 3: Rigid endoscopy revealing a button battery embedded in a circumferential esophageal stricture with mucosal ulceration

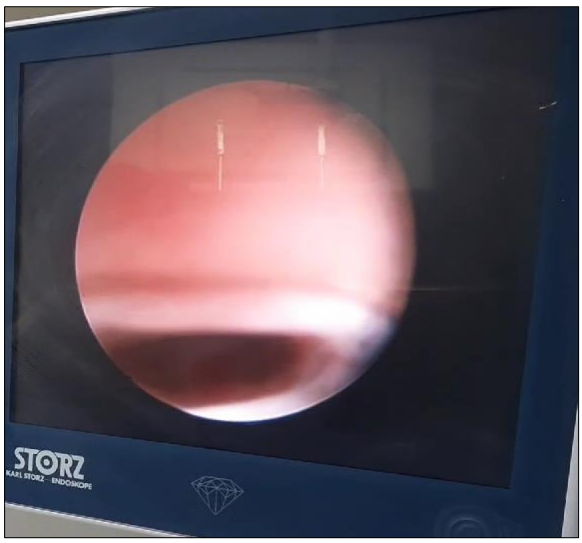

Figure 4: Rigid bronchoscopy demonstrating associated tracheomalacia

DISCUSSION

Button battery ingestion remains a significant pediatric emergency, with potentially life-threatening complications, especially when the battery remains retained in the esophagus for an extended period [1]. The alkaline leakage, local electrical current, and mechanical compression contribute to rapid tissue destruction, leading to necrosis, ulceration, perforation, and strictures [1].

The damage caused by an impacted button battery is multifactorial:

1. Electrolytic Reaction: When lodged in the esophagus, the battery generates an electrical current between the positive and negative poles, causing hydrolysis of water in the tissue and leading to the formation of hydroxide ions (OH-), which induce liquefactive necrosis [2].
2. Alkaline Leakage: The alkaline contents (often lithium hydroxide or potassium hydroxide) leak from the battery casing, further damaging the mucosa and potentially leading to full-thickness esophageal injury [3].
3. Mechanical Compression: The battery exerts direct pressure on the esophageal wall, compromising local circulation and exacerbating tissue ischemia and necrosis [4].
4. Thermal Effect: Electrical discharge may cause localized heating, further contributing to mucosal damage [5].

When battery retention exceeds 24 hours, tissue injury can be extensive and may progress to perforation, fistula formation, or stenosis, as seen in our case. Delayed cases, such as the one reported here, have an increased risk of developing chronic strictures requiring dilation therapy [1].

One of the major challenges in button battery ingestion cases is the delay in diagnosis, particularly in unwitnessed ingestions. Studies indicate that. Nearly 50% of button battery ingestions are asymptomatic initially, leading to missed diagnoses [3]. Common misdiagnoses include viral pharyngitis, gastroesophageal reflux disease (GERD), or feeding aversion, further delaying appropriate intervention [2-6]. In this case, the child remained asymptomatic for six months, likely due to partial esophageal patency and gradual compensatory mechanisms such as liquid adaptation and slow esophageal remodeling. Delayed intervention significantly increases the risk of esophageal stenosis, necessitating serial dilatation post-extraction [4].

Several reports highlight the risks of prolonged button battery retention. Kimball *et al*., [1], reported that 80% of retained button batteries beyond 24 hours resulted in moderate to severe esophageal injury, with strictures in 30% of cases. Lasrado *et al*., [5], emphasized the need for immediate removal, as damage progression occurs within 2–3 hours, with full-thickness necrosis observed within 12 hours. Gao *et al*., [2], documented a case series where 10 out of 14 cases had button batteries lodged in esophageal stenoses, leading to tracheoesophageal fistula or aortoesophageal fistula, highlighting the deadly potential of delayed extraction. Lahmar *et al.,* [4], examined French pediatric cases and identified that batteries larger than 20 mm had a higher risk of impaction in the esophagus.

While most cases of button battery ingestion present acutely, delayed cases with six months of retention are exceedingly rare. Most batteries cause significant injury within hours, but long-term impaction results in fibrosis rather than perforation [1]. Despite multiple studies documenting severe complications from delayed button battery removal, there have been no previous reports describing successful endoscopic retrieval after six months. Our case is exceptional due to the prolonged retention period, where the battery did not lead to perforation but resulted in severe esophageal stenosis.

While the gold standard for removal remains rigid esophagoscopy, several challenges arise when esophageal stenosis is present [3]:

1. Navigating Through Stenosis: In our case, the presence of fibrotic narrowing around the battery required meticulous maneuvering to avoid perforation.
2. Minimizing Mucosal Trauma: Excessive force during retrieval can exacerbate existing ulceration and increase the risk of iatrogenic perforation.
3. Use of Protective Sheaths: In cases of prolonged retention, deploying a silicone sheath or overtube can help minimize mucosal shearing during extraction.

Post-extraction complications remain a major concern, particularly in delayed cases:

- Esophageal Strictures: Up to 40% of patients with retained button batteries require serial dilations to maintain esophageal patency [4].
- Reflux Esophagitis: Due to persistent mucosal irritation, acid suppression therapy (e.g., PPIs) is crucial in preventing secondary injury [3].
- Fistula Formation: In some cases, delayed onset tracheoesophageal or aortoesophageal fistulas may occur, necessitating surgical repair [2].

This case highlights the urgent need for preventive measures to reduce button battery ingestion in children. Recommendations include:

1. Improved Battery Packaging [3].
2. Secure Battery Compartments [1].
3. Parental Education [2].
4. Legislative Action [4].

Management Considerations

- Early Recognition: Pediatric dysphagia should always raise suspicion for retained foreign bodies.
- Urgent Endoscopic Removal: Avoids progressive mucosal injury and chronic complications.
- Post-Extraction Surveillance: Barium swallow studies and endoscopic follow-up are critical in cases with esophageal damage.

CONCLUSION

To our knowledge, this is the first documented case of successful endoscopic retrieval of a button battery retained in the esophagus for six months. This report underscores the importance of early diagnosis, prompt removal, and long-term monitoring in button battery ingestions.

REFERENCES

1. Kimball SJ, *et al., A Review of Esophageal Disc Battery Ingestions and a Protocol for Management*. Arch Otolaryngol Head Neck Surg. 2010.
2. Lasrado S, *et al., Severe Esophageal Damage Caused by Button Battery Ingestion in a 10-Month-Old Infant*. Egypt J Otolaryngol. 2015.
3. Lahmar JJ, *et al., Lésions de l'œsophage provoquées par l'ingestion de pile bouton chez l'enfant*. Annales françaises d'oto-rhino-laryngologie. 2018.
4. Gao Y, *et al., Management of Button Batteries in the Upper Gastrointestinal Tract of Children: A Case-Series Study*. Medicine. 2020.
5. AbdollahiFakhim S, *et al., Neglected Esophageal Button Battery Ingestion: Local Protocol for Management*. Egypt J ENT Sci. 2012.
6. Krom H, Visser M, Hulst JM, *et al.,* Serious complications after button battery ingestion in children. Eur J Pediatr 2018;177:1063–70.