Georgia Poison Center

GUIDELINE FOR DISC (BUTTON) BATTERY INGESTIONS

This document is written to describe our guidelines for the management of button battery ingestions in typical situations, although we recognize that extenuating circumstances may make a different approach preferable in certain cases.

Background

There has been a dramatic increase in the incidence of severe injuries related to button batteries in the pediatric population over the last 10 years in United States. Children may be asymptomatic or have non-specific symptoms before the injury is identified.

Batteries with higher power, particularly those powered with lithium-based chemistry, pose a higher risk of significant injury. Batteries smaller than 20 mm in size pose less risk than those of size 20 mm or greater. Batteries smaller than 12 mm in a larger child pose little risk, but not zero risk. These principles guide the following management strategy:

1. **Obtain an initial history.**
   a. Time of ingestion
   b. Current symptoms, duration of symptoms
   c. Size and type of disc battery (e.g., lithium, alkaline, 1.5V, 3V, etc.), if known, or what the battery powers
   d. Patient's usual medications, past medical history, and therapies provided prior to the phone call to GPC.

2. **If caller is a layman:**
   a. Ascertain size of battery. If **all** of the following apply, the patient may be observed at home:
      1. a single battery of definite size less than 12 mm has been ingested, and
      2. patient is > 6 years old and without history of previous esophageal abnormalities, and
      3. patient is totally asymptomatic,.
   b. If battery is of uncertain size or if more than one battery may have been ingested or if patient has any symptoms, refer to the nearest emergency facility for immediate evaluation.
      - Batteries lodged in the esophagus may cause serious burns in as little as 30 minutes – 2 hours, and the patient might be asymptomatic initially.
      - **Do not wait for symptoms to develop before sending to the nearest emergency department.**
   c. If sucralfate is immediately available, give 10 mL sucralfate. Do not delay transport to obtain sucralfate. Otherwise keep the patient NPO. Do not attempt to induce vomiting or give cathartics.
   d. If patient is >=12 months old and honey is immediately available, give 10 mL honey (approximately 2 spoonfuls), then repeat honey every 10 minutes

while in transport up to a maximum of 6 doses. Do not waste time to obtain honey if not immediately available. Do not waste time exactly measuring honey. Otherwise keep the patient NPO. Do not attempt to induce vomiting or give cathartics.

e. In a symptomatic patient, but no ingestion history, consider battery ingestion if:
   - Airway obstruction or wheezing
   - Drooling
   - Vomiting
   - Chest discomfort
   - Difficulty swallowing, decreased appetite, refusal to eat
   - Coughing, choking, or gagging, especially when trying to eat or drink

f. Alert the emergency department that the patient is en route. Explain special hazards of disc batteries (as compared to other small foreign bodies) to the nurse or physician.

3. If caller is a medical provider:

a. Explain the special hazards of disc batteries (as compared to other small foreign bodies) to the nurse or physician.
   - May become impacted in the esophagus with potential for esophageal perforation
   - Potential for airway injury

b. Give sucralfate and/or honey, as above. Otherwise keep the patient NPO. Do not give charcoal or cathartics.

c. If the battery is definitely <u>< 12mm</u> in an <u>asymptomatic</u> child <u>6 years of age or older</u>, he/she can be watched at home until it passes in the stool, unless child starts to develop symptoms.

d. If any of the following apply, determine the location of the battery by X-ray:
1. **the child is younger than 6 years of age, or**
2. **if the battery is ≥12mm in an asymptomatic child ≥6 years of age, or**
3. **if the battery is of undetermined size, or**
4. **if multiple batteries <u>may</u> have been ingested**

If radiographic evaluation is indicated, obtain both AP and lateral neck and chest X-rays. Look for the "double shadow" or "halo" appearance on X-ray. These findings strongly support the diagnosis of disc battery ingestion, though the absence of a "halo" *does not rule out* battery ingestion.

e. If the battery is arrested in the esophagus:
   - Immediate endoscopic removal is warranted.
   - Note position of battery and direction of the negative pole during removal. The most severe tissue injury occurs at the negative pole of the battery.

- DO NOT attempt to place a nasogastric tube, unless the tube is placed under direct visualization during endoscopy.
- Endoscopy is preferred over balloon catheter or magnet retrieval mechanisms because endoscopy allows a direct assessment of injury severity and placement of a nasogastric tube under direct visualization.
- Do not delay procedural intervention (endoscopy, surgery) even if the child has recently eaten.
- Delayed complications such as tracheo-esophageal fistulas, aorto-esophageal fistulas, perforations, and strictures may occur hours to weeks after battery removal. Anticipate specific complications based on injury location, battery position, and extent of injury.

f. If the battery is in the stomach, observation is appropriate.
- Batteries ≥12mm *should* have a repeat X-ray in 4 days, unless the battery is confirmed to have passed in the stool.
- Batteries <12mm may have a repeat X-ray in 10-14 days, unless the battery is confirmed to have passed in the stool.
- If the battery is still in the stomach after the appropriate observation period, remove it endoscopically, even if the patient is asymptomatic or has only mild symptoms.
- If the patient develops symptoms (such as abdominal pain, vomiting, bleeding, fever, or decreased appetite) at any time, remove the battery endoscopically.

g. Analysis of the blood or urine for mercury, lithium, or other battery ingredients is unnecessary.

h. When in doubt, contact the Toxicologist on backup.

4. FOLLOW-UP

a. If a battery has been discovered via xray in the stomach and not removed, SPIs should schedule a home follow-up in 5-10 days to see whether the battery passed through the GI tract.
- Referral back to the ER for a repeat x-ray should be suggested by the SPI if the battery did not pass or if unknown if the battery passed, or if there are symptoms.

- Batteries ≥12mm *should* have a repeat X-ray in 4 days, unless the battery is confirmed to have passed in the stool.
- Batteries <12mm may have a repeat X-ray in 10-14 days, unless the battery is confirmed to have passed in the stool.

National Battery Ingestion Hotline (NBIH)

The National Battery Ingestion Hotline (NBIH) at (202) 625-3333, a project of the National Capital Poison Center, is available to discuss or report a case.

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