Button Battery Ingestion

Patient and family information, brought to you by the Education Committee of APSA

Overview – "What is it?"

Ingestion of button batteries are exceptionally dangerous because not only are the majority unwitnessed leading to delay in recognition, but the battery itself can cause significant damage to the esophagus within hours of being swallowed. Greater than 3,000 button batteries are ingested in the United States annually. If not removed promptly, button batteries can lead to perforation (hole) of the esophagus, injury to the trachea (windpipe), both, or death.

Signs & Symptoms – "What symptoms will my child have?"

Early signs: If button battery ingestion is witnessed, your child should be brought to the emergency department immediately so removal may be performed emergently to prevent progressive damage to the esophagus.

Unwitnessed button battery ingestion may result in symptoms either from blockage of the esophagus, or more commonly, from the chemical burn caused by the battery on the esophagus, as well as the trachea (windpipe) as it erodes through the esophagus. The esophagus and trachea are right next to each other.

These signs & symptoms may include:

- Drooling
- Gagging, choking, or coughing
- Neck or chest pain
- Blood in the saliva or phlegm
- Wheezing or difficulty breathing
- Retching or vomiting with or without blood

Later signs/symptoms: As the button battery erodes through the esophagus and surrounding structures including the trachea, your child may get progressively sicker, especially if the esophagus develops a hole in it.

These signs & symptoms may include:

- Fever
- Chills

- Racing heart rate
- Decreased energy
- Difficulty awakening or unconsciousness
- Vomiting with blood
- Difficulty breathing, or stopping breathing

"What should I do right away at home?"

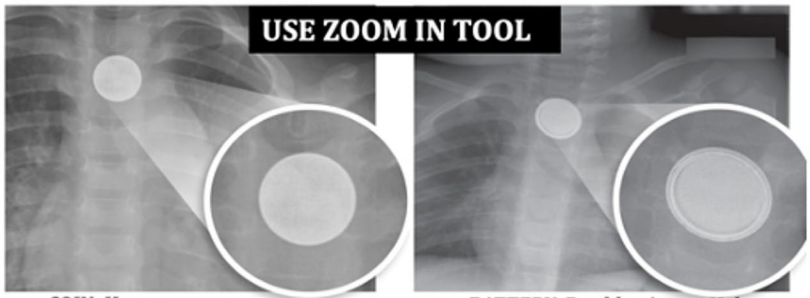
BRING YOUR CHILD TO THE EMERGENCY ROOM IMMEDIATELY.
DO NOT GIVE THEM ANYTHING TO EAT OR DRINK.
DO NOT GIVE YOUR CHILD ANYTHING TO MAKE THEM THROW UP THE BATTERY.
Throwing up may cause further damage to the esophagus.

Diagnosis – "What tests are done to find out what my child has?"

If the button battery ingestion was witnessed, upon arrival in the emergency department inform the triage nurse immediately so your child's needs are addressed quickly and intervention arranged.

Labs and Tests:

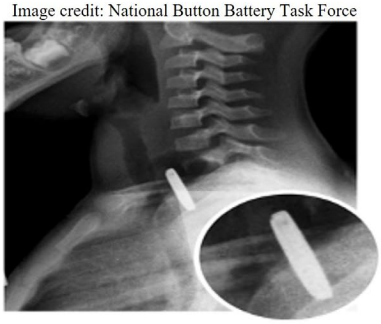
- X-ray is usually the first test done. If there is a button battery in the esophagus or stomach, the x-ray should show this. If there is fluid in the right or left chest cavity on the x-ray, there may be a hole in the esophagus which is a surgical emergency. Button batteries appear different on x-rays than coins and are important for doctors to recognize because batteries require emergent removal.



COIN: Homogenous appearance

BATTERY: Double-ring or Halo

Image credit: National Button Battery Task Force



BATTERY: Step-off sometimes present on lateral view- Negative Narrow Necrotic Anticipate max damage on narrow side

- Esophagram is a test where the patient is made to drink a special liquid, and x-rays are taken during the swallowing process. This may show whether there is a hole in the esophagus.

- If your child has had fevers or has been vomiting, bloodwork may be needed to help the doctors decide what other care your child needs.

Treatment – "What might be done to make my child better?"

Observation: If the x-ray shows that the battery is in your child's stomach or intestine and NOT the esophagus, it may be safe for them to go home without any procedures because they will likely pass the battery in a bowel movement. You will be given instructions on what to check on at home, and when you would need to call the pediatrician or return to the emergency room.

Medicine:

- Pain medication may be given.
- If your child is over the age of 1 year, honey or a medication called sucralfate (Carafate) may be given to try and decrease the amount of tissue burning from the battery until it can be removed.
- Antibiotics may be given if there is concern for a tear in the esophagus.
- If there is wheezing, your child may need inhalers.
- **MEDICINES TO MAKE THE CHILD VOMIT (IPECAC) ARE NOT RECOMMENDED FOR THIS.**

Esophagoscopy/upper endoscopy: Endoscopy is when a thin camera is placed in the mouth and is gently pushed through the esophagus, stomach, and if needed, part of the small intestine. This procedure is done under sedation or anesthesia. The doctor can remove the button battery as well as look at evidence of damage or injury directly. The telescope used can be flexible or rigid, depending on what the child needs.

Bronchoscopy: In this procedure, a telescope is used to look at the airway—the vocal cords, voice box, windpipe, and bronchi to assess for damage. Even if the battery was in the esophagus, the burn from the battery can potentially cause injury to the airway as well.

Surgery: While uncommon to require emergent surgery for button battery ingestion, there is a possibility your child may need surgery if the battery has created a hole in the esophagus and your child is becoming life-threateningly sick. More than one operation may also be needed, and your surgeon will talk to you about this if your child needs this.

Postoperative care:

- The care depends on the severity of injury:
    - Patients with mild injuries may be discharged soon after battery removal
    - Patients with moderate injuries may require hospitalization for a few days with a follow-up esophagram or esophagoscopy
    - Those with severe injuries will require hospitalization, likely for some time in the intensive care unit (ICU) until the extent of the injury is known.

- Holes or perforation of the esophagus may require placement of drainage tubes or operations on the chest.
- Severe bleeding may require endoscopic or surgical procedures to stop the bleeding. Bleeding can be life-threatening.
- Scarring of the esophagus can cause blockage requiring future endoscopic or surgical procedures.

Home Care – "What do I need to do once my child goes home?"

Diet: If the button battery was removed quickly, and there is minimal damage to the esophagus, children will often return to their normal diet. For more severe esophageal injuries, your child may require feeding through a tube or only be allowed clear liquids or soft foods.

Activity: Typically, activity can return to normal.

Wound care: There will not be wounds for endoscopic procedures. Wound care for surgery will depend on the type of surgery your child had, and your team will review this with you.

Medicines: Your child may be given prescription medicines for pain. Typically acetaminophen (Tylenol®) or ibuprofen provide excellent pain control.

What to call the doctor for: Call your surgeon for any difficulty swallowing, vomiting, fevers, or for any wound problems.

Follow-up care: Follow-up depends on the degree of damage to the esophagus or trachea. The more severe the damage, the more intense and longer the follow-up would be.

Long-Term Outcome – "Are there future conditions to worry about?"

Scarring or narrowing of the esophagus is the most common long-term complication associated with moderate to severe esophageal injury. These may require dilations (procedures to widen the area of esophagus injury) or in severe cases, surgical replacement of the involved area.

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