

Button Battery Ingestions

A variety of household items (clocks, toys, hearing aids, cameras, watches, remote controls, musical greeting cards, calculators, etc.) contain button (disc) batteries in different sizes and chemical compositions. Most batteries that are ingested pass through the gastrointestinal tract without harm; however, batteries that become lodged may result in severe injury. A recent study suggests that ingestions of button batteries are becoming more severe. The last 3 years (2007 - 2009) have demonstrated a 6.7 fold increase in the rate of major or fatal outcomes compared to 1985 - 1987. This is thought to be due to increased use, larger size, differences in composition and delays in removal of the batteries (*Pediatrics* 2010;125(6):1168-1177).



Batteries lodged in the esophagus can cause severe burns, strictures, stenosis, perforations, tracheoesophageal fistulas, bilateral vocal cord paralysis and death. There are three possible mechanisms for injury: creation of an external electrolytic current which hydrolyzes tissue fluids, leakage of alkaline electrolytes, and physical pressure on adjacent tissues. Clinically significant (moderate, major or fatal) outcome predictors include: battery diameter ≥ 20 mm, children younger than 4 years of age, and ingestion of more than 1 battery.

All children less than 12 years of age who are suspected of having ingested any size battery, and older children and adults thought to have ingested a battery that is ≥ 12 mm, require an immediate radiograph even if asymptomatic. If located in the esophagus, serious damage may occur within 2 - 2.5 hours; therefore, immediate removal of the battery is warranted. If the patient is asymptomatic and the battery is in the stomach or lower in the GI tract, the battery can be left to pass on its own, which could take up to 14 days. The patient or their caregivers should be instructed to inspect the stools for the battery. If passage of the battery cannot be confirmed, a repeat x-ray should be obtained 7 days after the ingestion.

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DID YOU KNOW THAT... the chemical contents of button batteries do not cause systemic toxicity?

Button batteries that are currently available contain manganese dioxide, zinc-air, silver oxide or lithium. The metals contained in all of these batteries have not been reported to cause toxicity from systemic absorption after ingestion. Lithium batteries are larger (>20 mm) than most other button batteries and they generate more current, leading to a greater chance of lodging in the esophagus and causing necrosis. These larger lithium cells are responsible for most of the major outcomes and deaths following ingestion.



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