Tracheo-Esophageal Fistula from Disk Battery Ingestion

Julia Rosenbloom MD, Alison R. Perate MD
Department of Anesthesiology and Critical Care Medicine
The Children’s Hospital of Philadelphia

Introduction:
Ingestion of a disk battery is a known danger for pediatric patients. Damage can occur within two hours and can evolve over subsequent days, even after removal, into a tracheoesophageal fistula (TEF). Ingestion of a disk battery thus requires emergent treatment.

Case Report:
Pre-operative: A 21-month old male with no past medical history presented six days after ingestion of a button battery.

Intra-operative: A rapid sequence induction with and placed an endotracheal tube via direct laryngoscopy. After removing the disk battery from the upper esophagus, an esophagoscopy was performed found the esophagus to be perforated and severely edematous (Figures 1). A bronchoscopy revealed a blackened area along the lateral wall of the trachea.

Post-operative: On post-operative day three, flexible bronchoscopy identified a tracheal perforation approximately 3.5 centimeters above the carina where the previously thinned wall had been visualized. The patient developed progressive respiratory distress necessitating veno-venous extracorporeal membrane oxygenation (ECMO) to allow the effective ventilation and oxygenation. After 17 days post removal, a slide tracheoplasty was performed on cardio-pulmonary bypass. Ten days after repair, the child was weaned off of ECMO. Five months post initial presentation, the child was discharged.

Discussion:
• Injury associated usually occurs in the upper portion of the esophagus where the lumen is narrowest.
• Damage is due to a completed circuit between the battery and human tissue, leading to both an electric burn and accumulation of hydroxide at the site.
• Esophageal perforation, TEF, AEF, or nerve injuries can result.
• The extent of injury depends on: battery size, voltage, and time to removal.
• Treatment necessitates rapid mobilization of an operating room and its staff.
• Our case emphasizes the evolving morbidity associated with ingestion of a disk battery.

References:
Gan RWC, Nasher O, Jackson PB, Singh SJ. Diagnosis of button battery ingestion by ‘halo’ radiographic sign: an exception to the rule. BMJ Case Rep Published online: 25 Sept 2015 doi: 10.1136/bcr-2015-209908