Releasing appendages entrapped in unusual metal objects

A Pediatric Case Presentation

Authors: Breanna Durbin, MD, Justin Faulkner, MD, Timothy Weiner, MD, Novant Health, Wilmington, NC

Background:

• Toddlers being curious beings often interact with their surroundings via tactile stimulation.[1]

• Occasionally this results in appendages becoming entrapped in objects that are difficult to remove.

Case Report:

• A five-year-old female presented to the emergency department (ED) with the third digit of her right hand entrapped in a brass candlestick holder.

• Attempts for removal in the pre-hospital setting were unsuccessful given the amount of swelling.

• A family member had purchased a Dremel saw for use in removal of the candlestick holder however the patient was unable to remain still for safe removal and the patient was brought to the ED.

• Pediatric surgery was notified of the patient. Upon initial assessment, there was a significant amount of edema in the digit hindering removal of the object at bedside.

• The configuration of the object as a unique funnel precluded the usual compression maneuver for removal.

• This combined with the inability of the patient to remain still and the desire for adequate analgesia, the patient was taken to the operating room suite for object removal under general anesthesia.

•After general anesthesia was induced, a thin pediatric hernia retractor was well lubricated and placed between the digit and the brass as a barrier and soft tissue guard.

• Eye protection was donned by all within the operating suite.

• In spite of the marked swelling and tightness, this instrument was easily levered across the neck of the object much like one would use a right angle clamp.

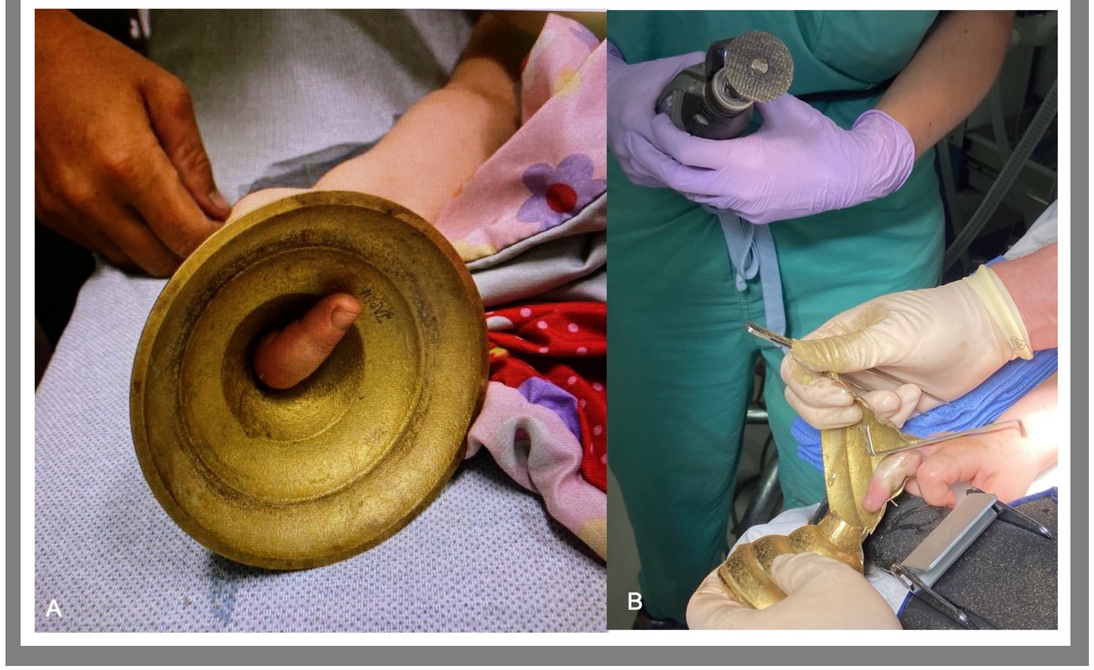
• A Dremel saw was used to cut the brass utilizing a water drip technique on the metal to cool and prevent metal spray.

• The brass was not pliable and thus required a second cut through the opposite site of the metal ring.

• The candlestick holder was then able to be removed from the digit without significant injury noted other than previously documented edema and remained neurovascularly intact.

• The patient was awakened from anesthesia without incident and was discharged home the same day.

Fig 1. A Photograph showing a child's third finger entrapped in a brass candlestick holder. B Photograph showing the method of removal using a metal pediatric hernia retractor as a barrier to patient's finger as well as a handheld Dremel saw used to cut the brass into two parts across the circumference of the object



Discussion:

• In instances where curiosity results in appendages becoming entrapped within an object, our experience supports intervention in a controlled setting such as the operating room where patient's pain and anxiety can be managed by anesthesiology colleagues while the operating surgeon can more safely work upon on a still patient.

• In our experience, lubrication alone, brute force, and metal cutters were other described ring removal methods that were inadequate to safely remove the brass object without damaging the finger.

• The particular Dremel saw used in this case has a broad description for intended use on various surfaces including wood, plastic, laminate, steel, aluminum, brass, copper, shell, stone, and glass.[2]

• Our operating room now keeps one available in the event a similar case were to present.

Conclusion:

• Toddlers' development is largely based upon tactile stimulation to determine their outside world.

•In the inevitable event that an appendage becomes entrapped in a durable structure that is unable to be easily and safely removed, it is important to have a protocol for safe removal.

• In our experience with this case, we recommend a couple of key points.

- All cases should be taken to the operating room.
- A thin pediatric hernia retractor works well for a protection barrier.
- Eye protection is key.
- A water drip technique on metal decreases metallic fragment spray.
- Two cuts are necessary to remove nonmalleable objects.
- As surgeons, we must advocate to maintain adequate surgical tools for safe removal of foreign objects from children's appendages.
- Focusing on patient safety and anxiolysis is key.

References:

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New Hanover Regional Medical Center

For more information contact:
Breanna Durbin, MD, PGY IV • breanna.durbin@novanthealth.org
Justin Faulkner, MD, PGY V • justin.faulkner@novanthealth.org

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