Foreign Bodies

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Nasal Foreign Bodies

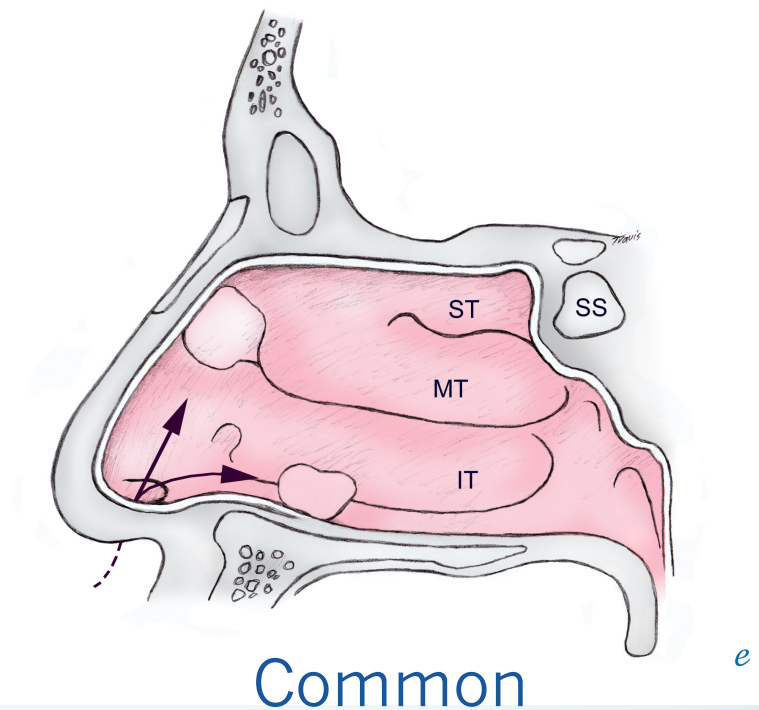
- Preschoolers
  - < 18 months less common – not enough manual dexterity
- Slight F > M (beads)
- Beads, toy parts, wads of paper, food (corn kernels, seeds, beans, peas), disc batteries, crayons

Toronto's Hospital for Sick Children

www.thestar.com

Nasal Foreign Bodies

- Symptoms: pain (23-55%), odor, nasal discharge (14-36%), bleeding uncommon
  - Occult nasal FB: suspect in unilateral foul-smelling nasal discharge even if no h/o FB given
- Xrays not often diagnostic
  - Most radiolucent
  - Consider in nonvisible FB or unilateral foul nasal discharge to r/o disc battery. Always do if suspect disc battery FB



Common locations

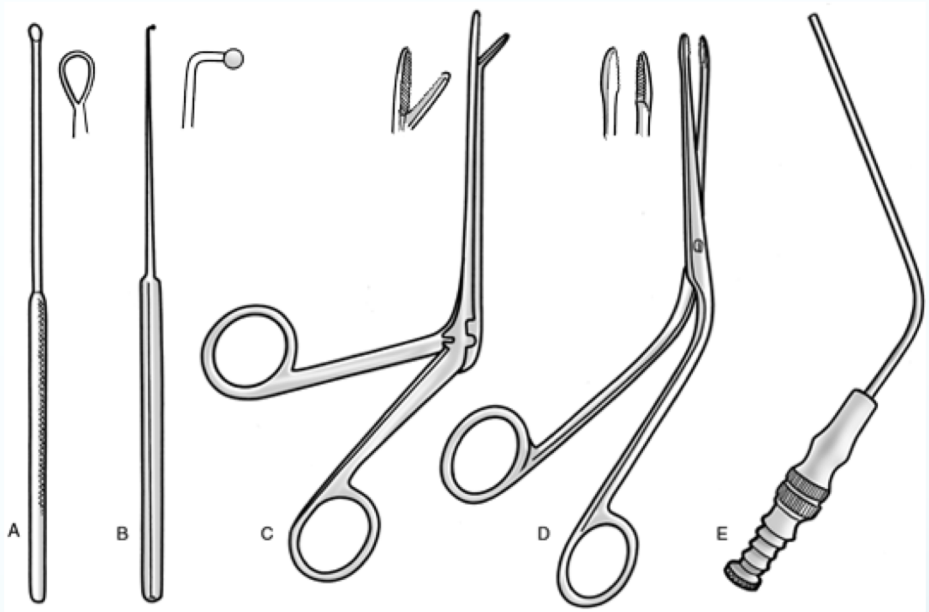
www.emedicine.medscape.com

Nasal FB Removal Tips

- EM / office practitioners > 90% successful
- Multiple attempts in 25%, multiple techniques in 15%
- If can't get it out, OK to leave in and refer to ENT next day EXCEPT disc battery, magnets stuck across septum (pressure necrosis)
  - If you don't see anything but family/kid says the kid put something up there, don't assume there's no FB; refer to ENT
- Gather tools: topical phenylephrine + tetracaine or decongestant nasal spray, nebulized lidocaine may help, good lighting, nasal speculum, bulb suction, lighted curette, forceps/hooks, catheters
  - May need sedation, but usually can do without
- After removed, if was in for several days / mucosal edema, Rx antibiotics prophylactic for sinusitis (sinus ostia obstructed by FB and edema)

Forceps and Hooks

- Alligator forceps, right angle hook most common
- Can try regular forceps from suture removal kit
- Can make right angle hook from calgiswab bent to 90 degree angle near the tip
- Best for anterior FB, not round, don't fall apart easily
- Complications: mucosal damage, bleeding, pushing FB in further (potential for aspiration)



Source: Reichman EF, Simon RR: *Emergency Medicine Procedures*: http://www.accessemergencymedicine.com.

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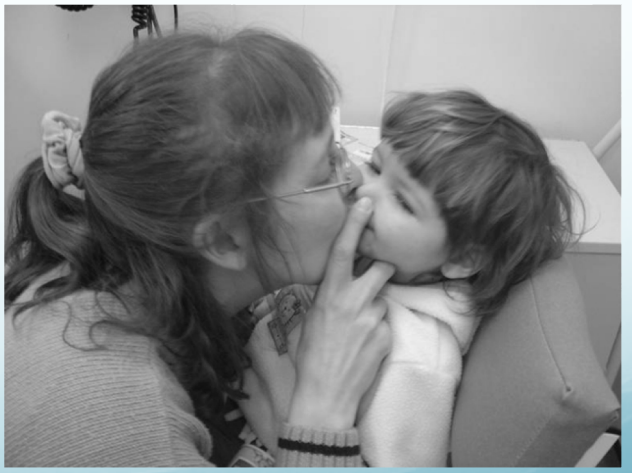
Beso Grande (Positive Pressure, Parent's Kiss)

- Ask child to blow nose
- Occlude other nostril, blow air into patient's mouth (parent or BVM)
- Modified – straw or tube in child's mouth + child makes seal around it
- Success rate in case series 50-75%
- May at least move FB forward enough to then grab with forceps or hook
- Best for posterior, large objects that completely or nearly completely occlude
  - Beads
  - Rocks
  - Beans
- Potential complication: barotrauma

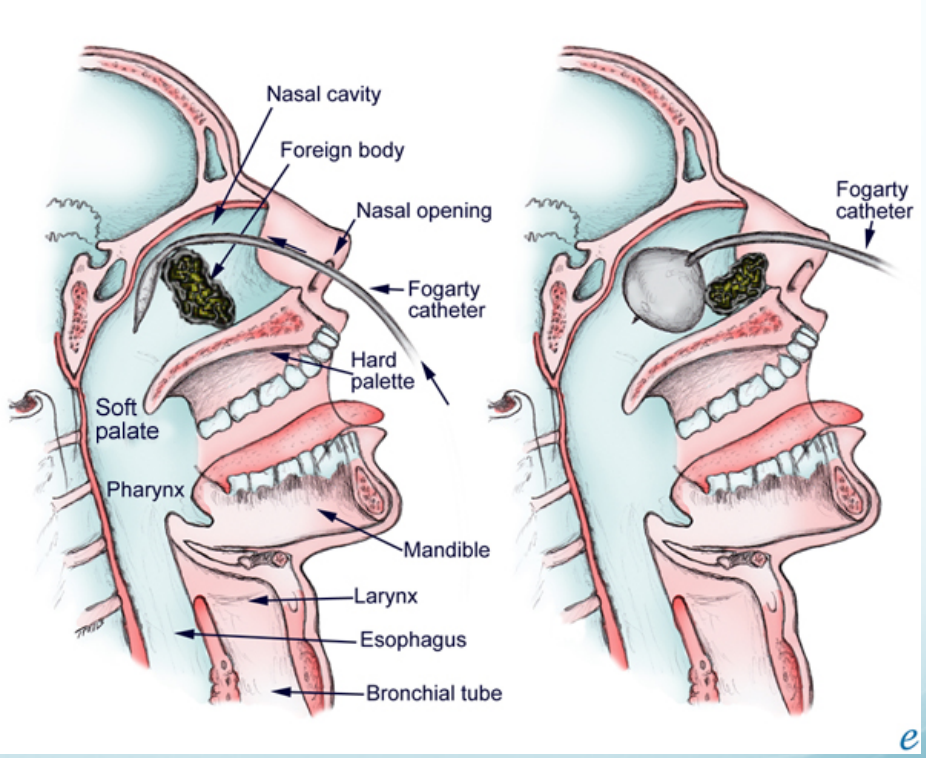
Benjamin & Harcourt *Clin Otolaryngology* 2007;32:120-135



Purohit N et al. The 'parent's kiss': an effective way to remove paediatric nasal foreign bodies. *Ann R Coll Surg Engl* 2008;90(5):420-422

Balloon Catheter

- Fogarty catheter (used for cardiac procedures, $55-65) or Foley catheter 5-6 Fr or commercial Katz extractor ($50 each)
- Good for FB that are round and solid and not easily grasped with forceps
- FB needs to not completely occlude (can slip catheter past)
- Do not blindly pass catheter as a diagnostic tool – FB can be wedged in around turbinates
- Complication: epistaxis

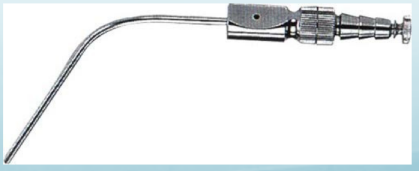


www.emedicine.medscape.com

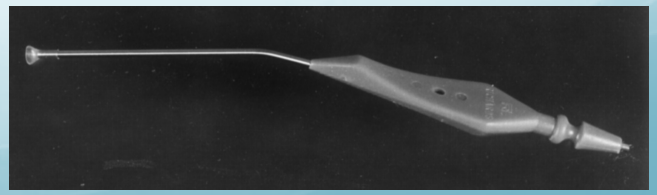
Nasal FB Other Methods

- Nasal wash – bulb syringe with 7cc sterile saline into unaffected nostril
  - Complication: aspiration of fluid or FB
  - Do NOT irrigate beans, vegetable matter, disc batteries
- Plastic swab stick + cyanoacrylate for bead
  - Complication: glue to mucosa
  - Use speculum to protect mucosa
- Suction
  - Frazier suction catheter
  - Schuknecht catheter

www.umem.org



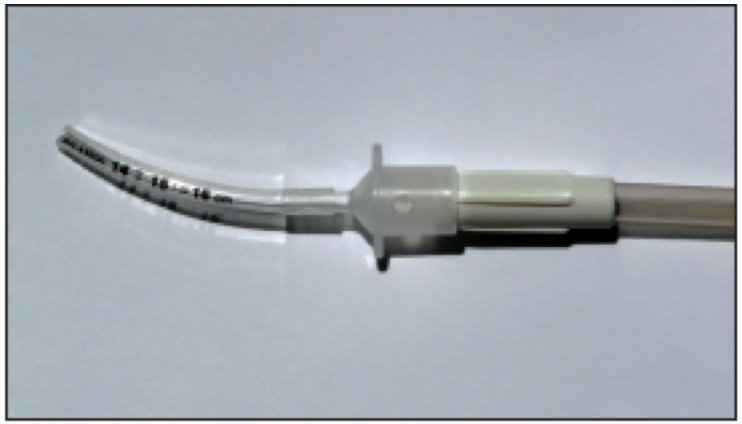
hnmmedical.com



Pediatrics 1998;101(4):638

Nasal FB Other Methods

- Suction
  - Can make a semi-rigid suction catheter from cutoff pediatric endotracheal tube attached to wall suction
- Nasal magnets
  - Used to make appear ears or nose pierced
  - If stuck across septum, can cause necrosis and perforation
  - May attract one magnet to metal forceps
  - Heavy-duty pocket magnet pickup from auto supply stores – introduce laterally to avoid septum



EM News Tricks of the Trade
Timothy McGuirk, DO

www.clinicaljunior.com

Nasal FB Summary

Method	FB type best for	Location best for	Degree of obstruction
Forceps	Soft	Anterior	Incomplete
Right angle hook	Hard	Anterior	Incomplete
Positive pressure	Any	Ant/Post	Complete
Catheter	Any	Ant/Post	Incomplete
Washout	Friable	Ant/Post	Complete
Magnet	Metallic/magnet	Anterior	Complete or incomplete
Suction	Any	Anterior	Incomplete
Plastic swab + cyanoacrylate	Hard bead	Ant/Post	Complete but not wedged

Adapted from Kiger JR, Brenkert TE, Losek JD: Nasal foreign body removal in children. *Ped Emerg Care* 2008;24(11):785-789

Ear Foreign Bodies

- Older age than nasal
  - Median 7 years in one study
- Most common: beads, wads of papers, cockroaches and other insects, plastic toy parts, earring fasteners, fruit seeds, disc battery
- Symptoms: pain 90%, decreased hearing in < 1/3, bleeding uncommon
  - Occasionally presents as persistent cough or hiccups
  - May have otitis externa symptoms
  - Live bug = sounds, sense of bug moving

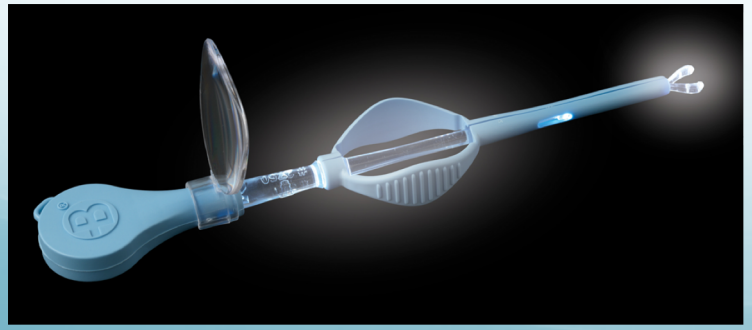
Ear Foreign Bodies

- EM/office practitioner success rate 80% or less
- May require operating microscope and sedation
- If unable to remove, OK to refer to ENT next day EXCEPT disc battery, sharp (risk of TM perf, middle ear damage), live insect
- First do no harm – refer straight to ENT if: already multiple attempts elsewhere, pushed up against TM, attempts are starting to traumatize ear canal
- After removal
  - Check for a second foreign body (same or other side)
    - Check the nose while you're at it
  - Prescribe otic antibiotic drops if trauma/abrasions to EAC

Ear FB Removal

Scoop or Grab the FB

- Alligator forceps (small size) and right angle hooks (similar to nasal FB)
  - Complications: trauma and bleeding to EAC, TM perforation if push FB farther in
- Can also try ear curettes to scoop out
- Bionix lighted curette / forcep

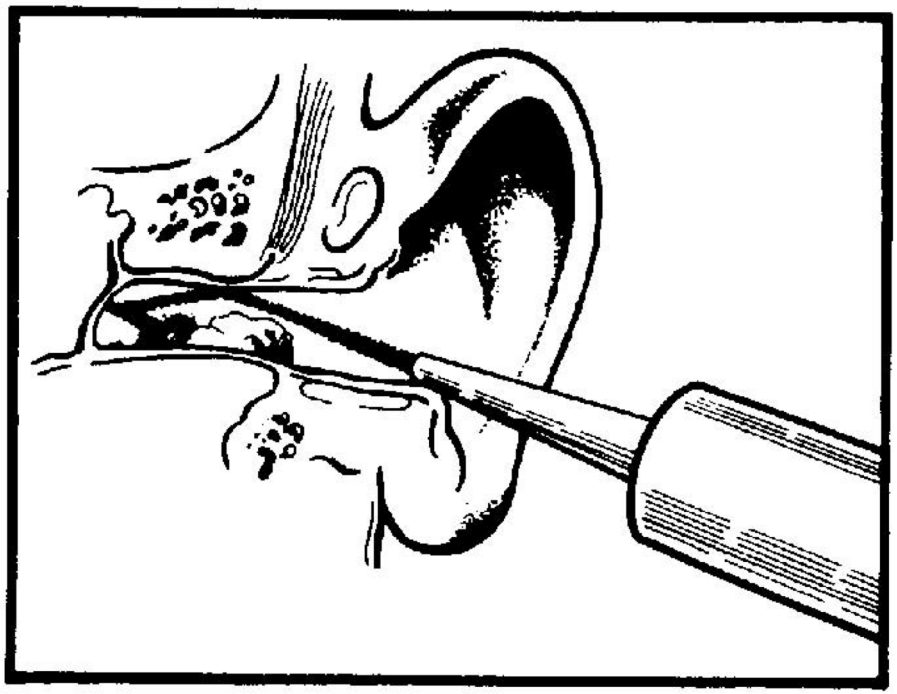


Bugs in the Ear

- Kill live bugs for patient comfort (need intact TM)
  - Alcohol
  - Mineral oil
    - If at home and haven't instrumented ear, baby oil or vegetable oil
  - Microscope immersion oil
  - Lidocaine (no epi)
    - May crawl out on own
- Remove with forceps or irrigation
- Complication: incomplete removal of bug parts = inflammatory reaction

Ear FB Irrigation

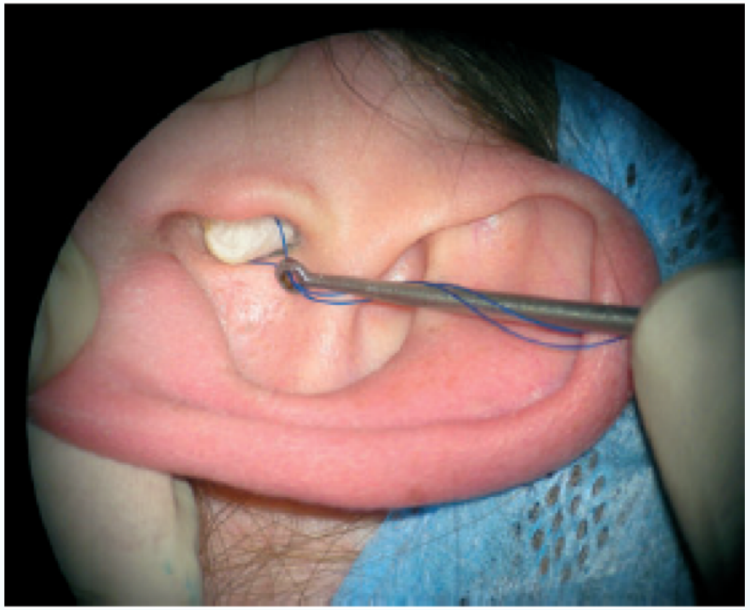
- Irrigation: warm water or saline, 14-16 gauge angiocath, direct stream toward roof of canal
  - Used more often than nasal FB since blind end to EAC
  - Need reasonable expectation TM intact (TM seen, or object not sharp, no bleeding or dried blood, no parental or PMD attempts at removal)
  - Do NOT irrigate beans, vegetable matter, soft foods, disc batteries



nursing411.org

Ear FB Removal

- Plastic swab stick + cyanoacrylate
  - Requires patient cooperation
- Suction
  - Small Frazier suction catheters
  - Schuknecht catheter for small round FBs
- Lasso technique: suture + Jobson-Horne probe (metal ear curette)
- Dissolve with chemicals
  - Styrofoam peanuts – small amount ethyl choride or 0.1mL pure acetone, follow with irrigation
  - Need intact TM
  - Acetone can also soften gum for better grasping



Letter to the Editor Crockett A, Haslegrave C, Trinidade A, Andreou Z, Kothari P. *Clinical Otolaryngology* 2011;36:180

Ear FB Summary

Method	FB type best for	Location best for	Degree of obstruction
Forceps, Lasso	Soft	Anterior	Incomplete
Right angle hook or curette	Hard	Anterior	Incomplete
Oil or lidocaine	Live insect	Ant/Post	N/A
Catheter	Any	Ant/Post	Incomplete
Irrigate	Friable, not vegetable	Ant/Post	Incomplete
Magnet	Metallic/magnet	Ant/Post	Complete or incomplete
Suction	Any	Anterior	Incomplete
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Gastrointestinal FB

- Common: coins, fish/chicken bones, metallic objects (screws, needles, safety pins, tacks), disc batteries
  - One study coins: 62% pennies, 16% quarters, 16% nickels, 5% dimes
  - Pennies 1982 or later are 96.7% zinc = more corrosive than copper

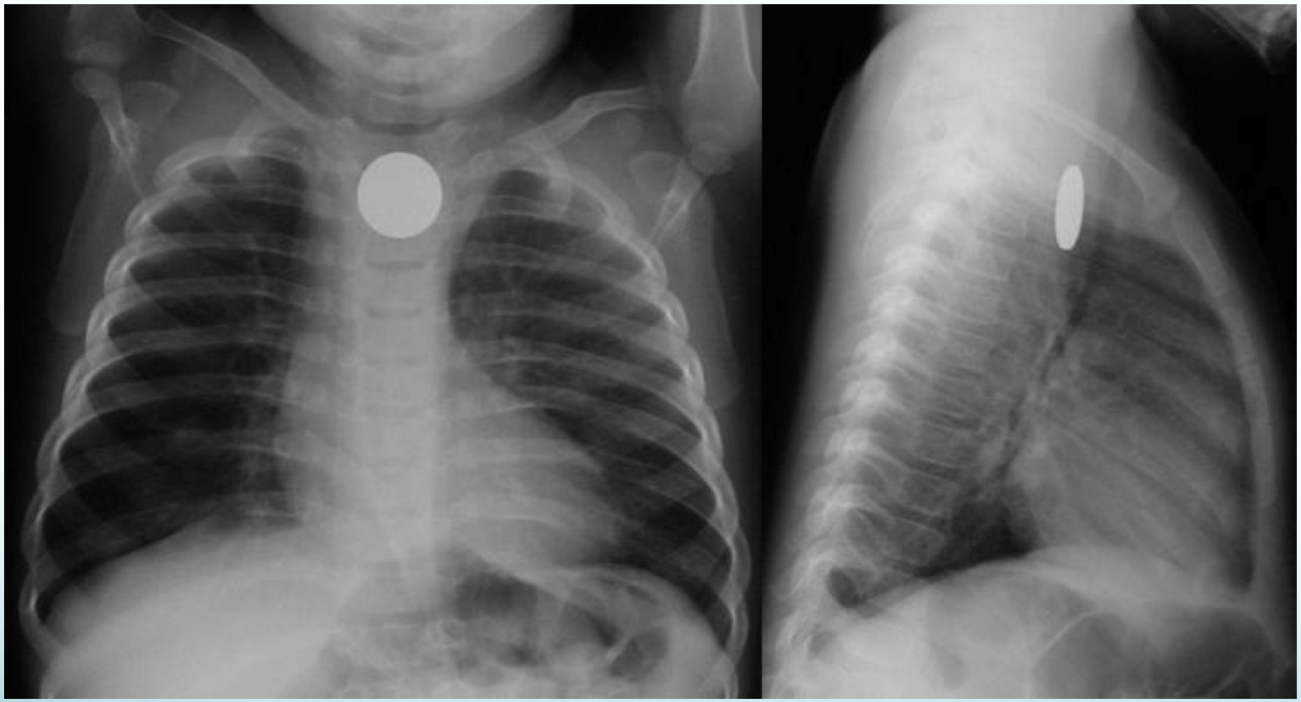
http://www.viridiangold.com/jewelry-size-comparison.html

Gastrointestinal FB

- Most common presenting complaint: child fesses up to it or is witnessed
- Symptoms: pain, dysphagia, drooling, symptoms when try to eat, vomiting or retching
  - About 25% of upper esophagus FB are asymptomatic
- Developmentally delayed children may present atypically and have more complications
- Plain radiographs show radioopaque FB
  - Up to 2/3 radio-opaque because coins so common
  - Aluminum pull-tops from soda cans are NOT radio-opaque
- Contrast enhanced radiographs help to see impacted food boluses, radiolucent FB
- Handheld metal detectors for coins 99.4% sensitive, 100% specific
  - Use to confirm location below diaphragm also
  - Meta-analysis of 11 studies: Lee JB et al Emerg Med J 2005;22(12):839
  - Doesn't differentiate coins from other metallic objects, eg batteries

Esophageal Coins on X-ray: Classic Alignment

Ddx from Coin in Airway



www.hawaii.edu

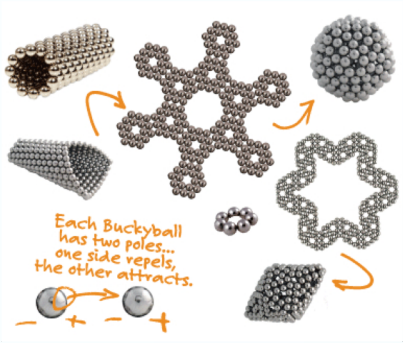
- Case reports of esophageal coins with non-classical alignment
  - Particularly 8yo and older
  - Particularly quarters

Gastrointestinal FB

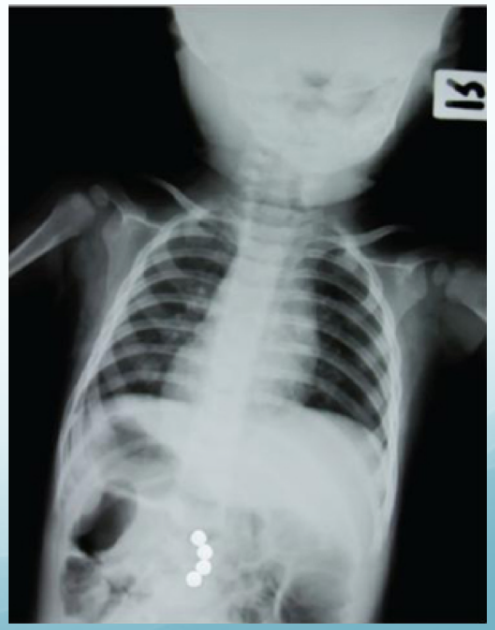
- FB in stomach or intestines usually will pass spontaneously
- Esophagus: only 14% proximal 1/3, 43% middle 1/3, 67% distal 1/3 pass spontaneously into stomach
  - If certain not a disc battery and patient asymptomatic, for coin, consider observation x 8-16 hours and repeat radiograph
  - If hasn't passed into stomach within 8-16 hours, unlikely to pass
- Locations tends to lodge: cricopharyngeus, GE junction, Ligament of Treitz, ileocecal valve
- Less likely to pass spontaneously: h/o pyloromyotomy, FB wider than 2cm (can't pass pylorus), longer than 5cm (gets caught up in duodenal sweeps)
- Endoscopic removal by GI or ENT specialist
  - If hours have passed since last radiograph, recheck for spontaneous passage into stomach before endoscopy

When to consult GI, even if past esophagus

- High risk objects: especially button (disc) batteries, magnet(s) – even if appears to be just one magnet; sharp objects, leaded objects
- For leaded objects in stomach/intestine (e.g. fishing weight, musket ball), concern for lead toxicity = give Go-lytely until expelled
- Sharp objects: 15-35% perforation rate; remove or observe with daily X-ray
- Remove if symptomatic, no movement x 3 days, fever, vomiting, abdominal pain, blood in urine or stool
- Magnets: can trap and necrose bowel between magnets



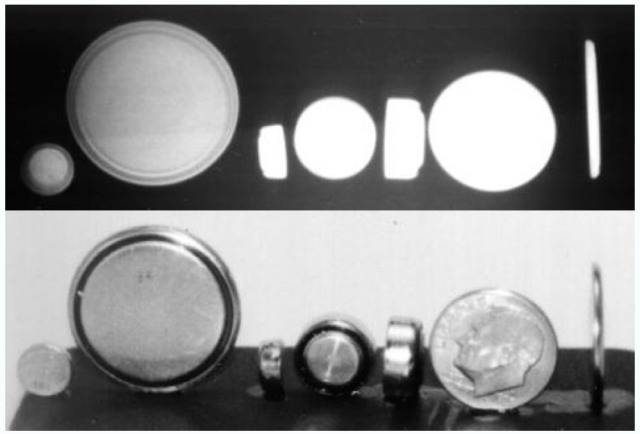
www.tealco.net



www.cpsc.gov

Swallowed disc battery

- Esophageal: urgent removal
  - Burns can occur within 2 hours, perforation within 6 hours
  - Lithium 20mm+ worst, eg CR 2032, 2025, 2016
  - New batteries are worse than spent ones
  - Hearing aid batteries usually < 12mm
- Double density on radiograph = ddx from coin
- Mechanisms of injury
  - Generate an electrolyte current
  - Leak alkaline electrolyte
  - Physical pressure necrosis
- Do not use ipecac
- Complications: TE fistula, fistulization into artery (can occur 9-18 days after removal)



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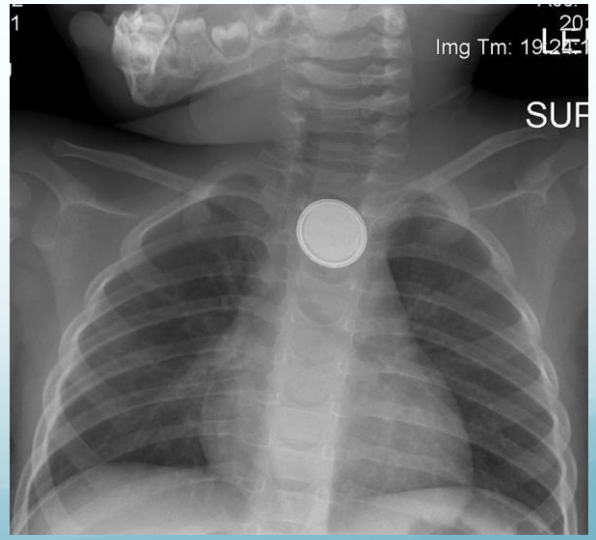
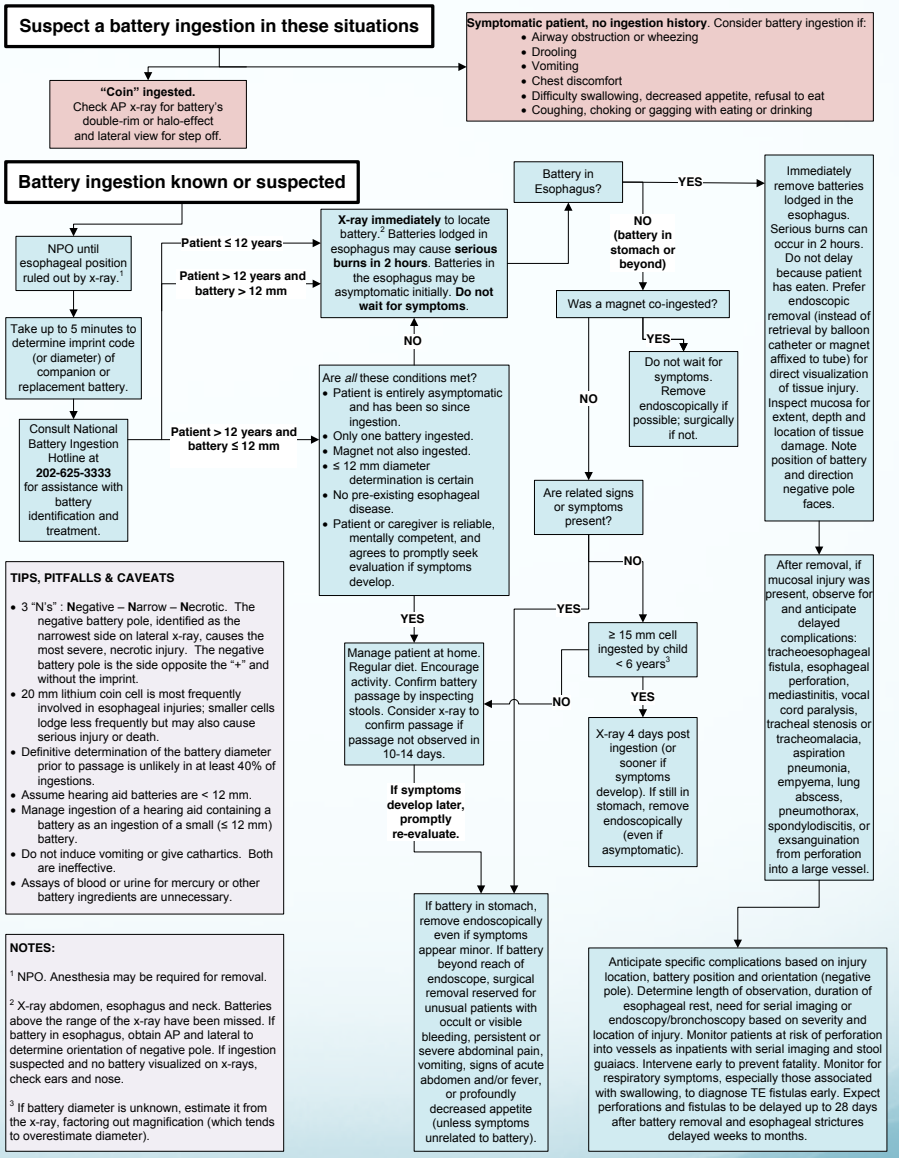


jennstrathman.com

Disc battery

- If below diaphragm, most will pass spontaneously
  - Larger than 15mm (dime-sized) in < 6yo, co-ingested magnet, previous esophageal disease, symptomatic, unreliable caregiver = remove immediately
- Follow with serial xrays
  - 4 days if > 15mm in < 6yo, 10-14 days otherwise
  - Remove if no movement in 4 days for > 15mm in < 6yo, if becomes symptomatic



National Battery Hotline
202-625-3333

Vaginal FB

- Presents with malodorous discharge, pain, bleeding
- Most common for pre-pubertal = toilet paper
- Exam
  - Knee-chest position
  - Sitting on parent's lap in lithotomy position
  - Analgesics, anxiolytics, procedural sedation as needed
- Removal
  - Forceps or cotton swab
    - Be careful to not touch sensitive hymenal edges
  - Saline irrigation

Skin FB

- Imaging
  - Not needed if FB visible
  - Radioopaque: metal, teeth, glass, some plastic, pencil graphite, stone, some wood, some aluminum
  - Ultrasound (operator-dependent)
- Removal, usually with forceps
  - Local anesthesia, hemostasis
  - Bright lighting, magnification
  - May have to extend incision from wound edge
- If unable to remove
  - Inert (metal, glass) can be left in; will work it's way to surface
  - Refer to surgeon if organic material, pencil lead (will tattoo)

https://www.aafp.org/afp/2001/0601/p2231.html

3 Fish Hook Techniques