

Stay out of trouble!

Clinical Pearls for doing kids for the non Pediatric anesthesiologist



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- Newborns
- Airway
- Pre-Op assessment
- Intra-op
- Recovery
- Other topics



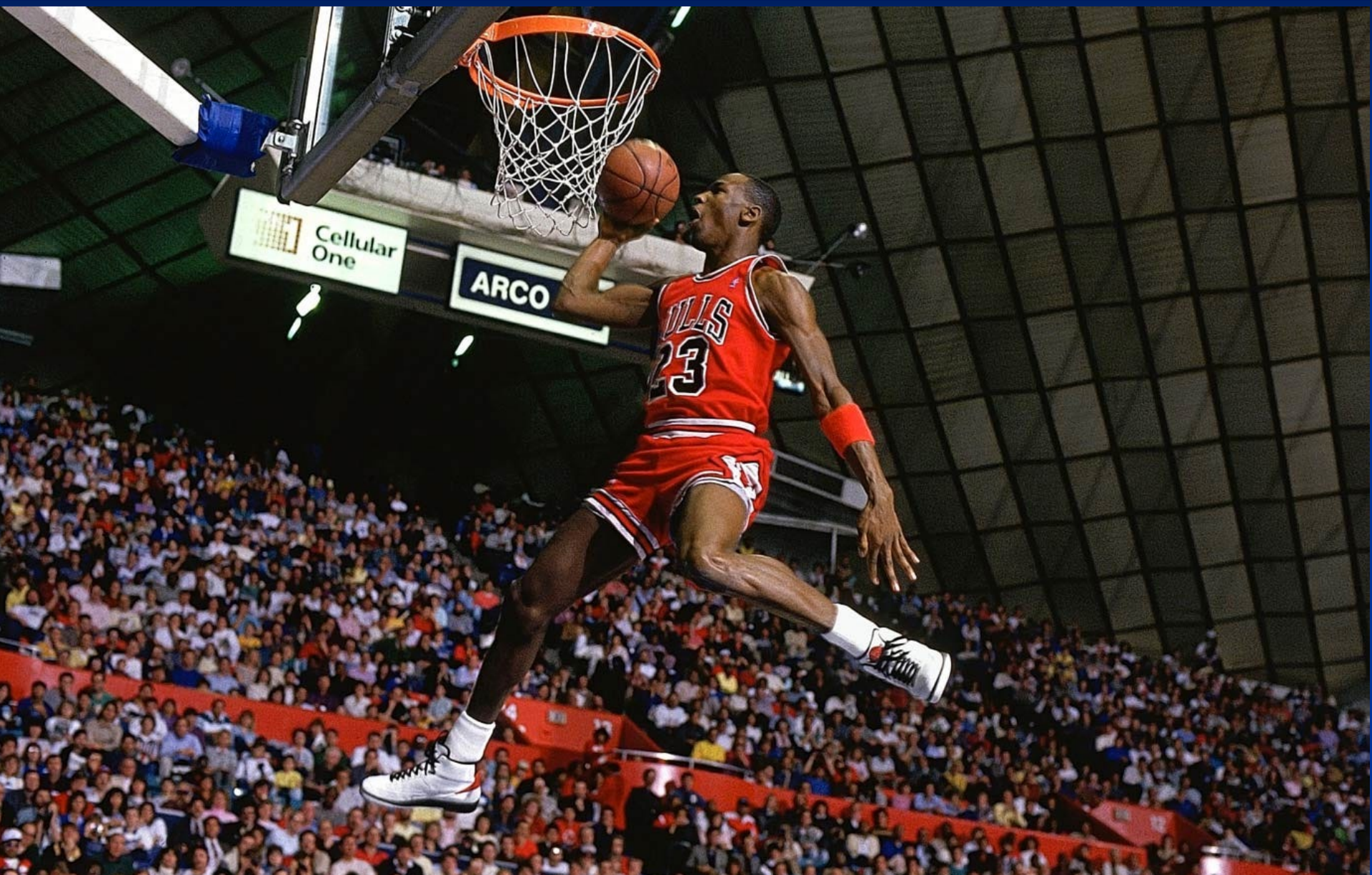
Challenges working with children



- Specific co-morbidities may require modifications to standard induction processes; e.g. difficult IV access, syndromes
- The uncooperative child
- the un-fasted child
- The un-well child

Stay out of trouble!

We make it look easy!



Listen to the parents

>>Proceeding without listening to the parents will be at your own RISK



Parent inductions can be helpful!

I hate Koalas



The newborn*



*A physiologic sub-species of Homo sapiens

Newborns



- Poikilothermic
- Not good at breathing
- Desaturate almost immediately
- Will get sick when you least expect it
- Require a constant source of glucose
- Can get acidemic very quickly and don't like it
- Are heart rate dependent
- Do NOT like high concentrations of volatile anesthetic agents

Don't let the baby get cold



The Neonatal Airway



ETT Size and Depth of Insertion

Distance of ETT insertion

• 1 2 3 4

• 7 8 9 10

Select the appropriate-sized tube

Tube Size (mm) (inside diameter)	Weight (grams)	Gest. Age (weeks)
2.5	Below 1000	Below 28
3.0	1000-2000	28-34
3.5	2000-3000	34-38
3.5-4.0	Above 3000	Above 38

Proper Mask Ventilation Technique



Laryngoscopic Technique



How to stabilize the head on transport



Wrong



Right

Syndromes



Video Laryngoscopy



Blade Shape	MILLER Laryngoscope Blade		
Size	2	1	0
Wt (kg)	> 10	5-10	0-4

- GVL 0 for < 1.5 kg
- GVL 1 for 1.5–3.6 kg
- GVL 2 for 1.8–10 kg
- GVL 2.5: 10-28 kg

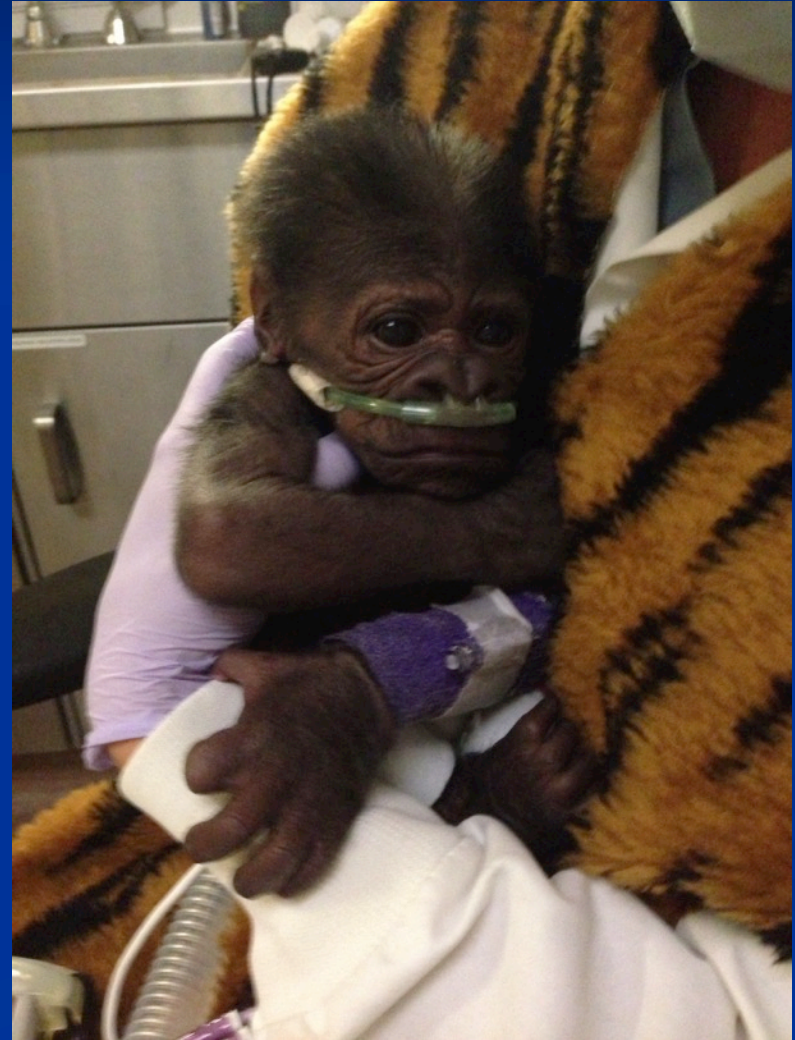
Pediatric Anesthesia

Beyond the newborn



Pre-Op Assessment

- History
- Physical
- Parents
- NPO



Weight for age

<i>0</i>	<i>1</i>	<i>2</i>	<i>5</i>	<i>10</i>	<i>12</i>
<i>3</i>	<i>10</i>	<i>12</i>	<i>20</i>	<i>30</i>	<i>40</i>

Look at the kid



Look at the kid





“Again? You just had a glass of water 12 days ago.”

NPO Guidelines

Clears 2 hr

Breast milk 4 hr

Solids 6-8 hr



Ucsd pediatric Anesthesia

URI



Should I cancel the case



Induction



Ways kids try to avoid the mask



- It's a 3 step process
 - 1st step is to try and pull the mask off the face
 - 2nd step is to shake the head
 - 3rd step is to kick the person holding the arms
- The kid will be successful if the assistants are not restraining the kid
- *Room air is the enemy of the mask induction*

Look at the kid, listen to the monitor

Don't worry so much about looking at the blood pressure.

>> If the pulse ox is picking up the BP is probably ok

Most problems occur because the the child is not getting oxygen

>The feel of gas exchange at the mask or the bag is very reassuring

>Don't waste time changing pulse ox probes or bp cuffs when the kid is hypotensive. Fix the blood pressure



Pediatric bags



Psychological Induction



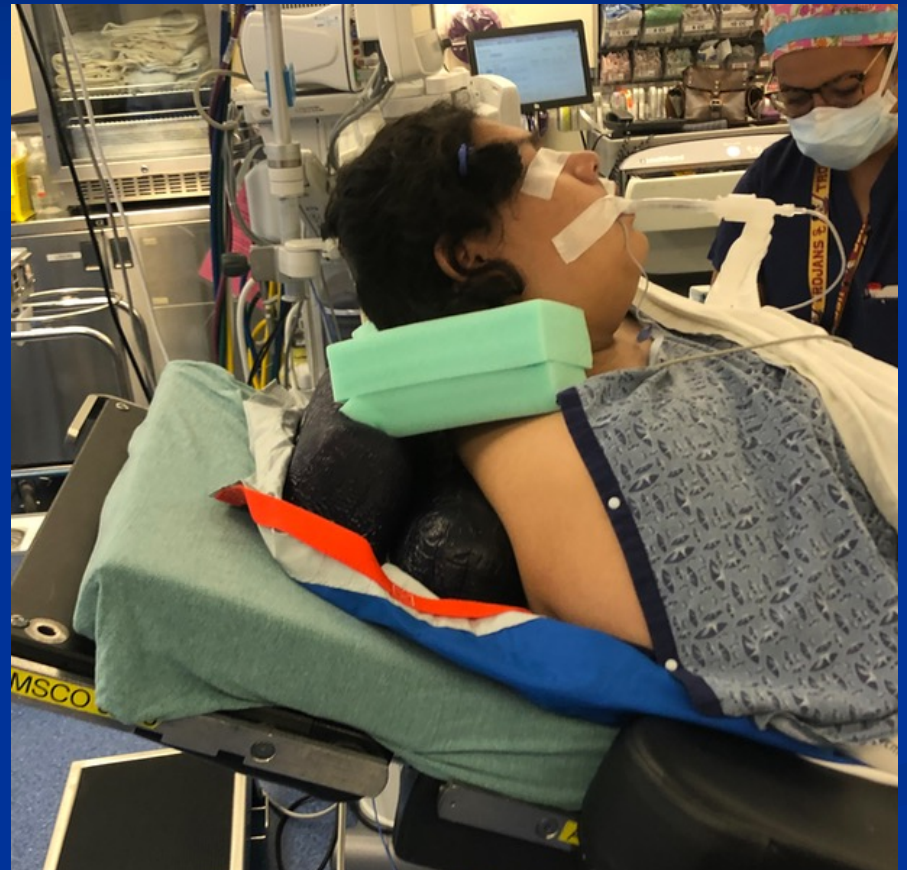
Laryngo-tracheal anesthesia



Positioning



May need to get creative



Look for tube kinking



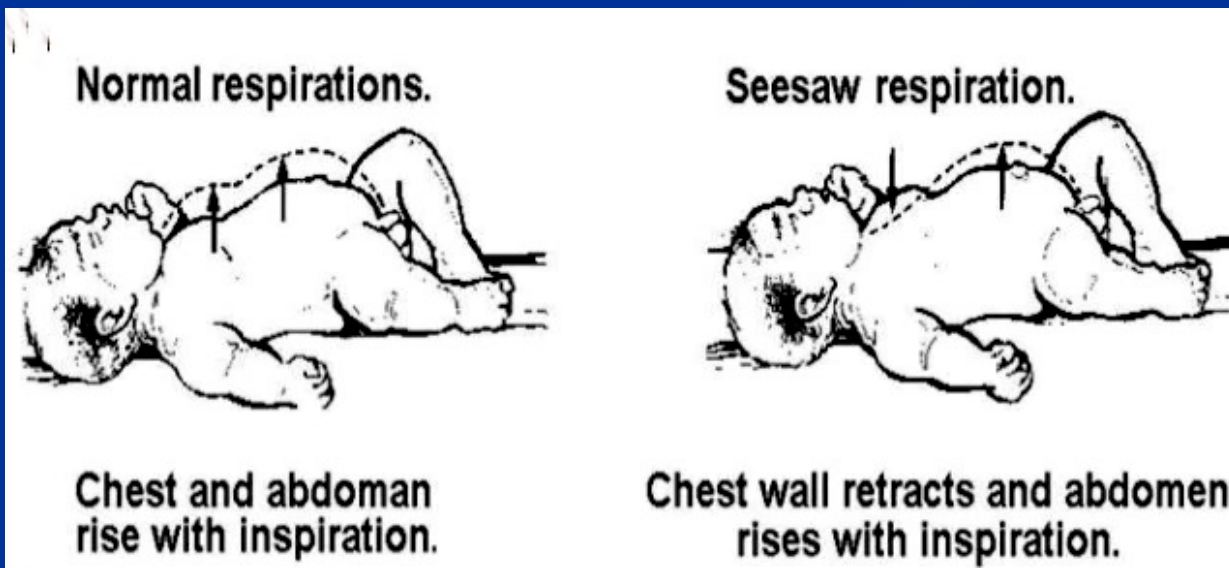


Reversal

Once again, look at the kid

TOF is good but a baby can be very weak
with 4 strong twitches and reversal given
Adding a respiratory stimulant (caffeine) can
be very helpful in neonates

LOOK FOR PARADOXICAL BREATHING



Recovery

- Laryngospasm happens. Know how you are going to fix it
- Be very mindful of the airway on transport.
- Use electronic monitoring if there is any question about the patency of the airway





For a delirious child emerging

White is the answer...



CPR



Downs Syndrome



- Very common to anesthesia providers
- Do NOT have difficult airways
- Can be very difficult to start IV's (especially as newborns)
- Many have associated CHD
- Bradycardia with induction is VERY common
- Neck issues are NOT a big concern
- Autism in older children is an associated issue

MH Quiz

If you work on kids you need to know:

- Who's at risk
- What it looks like in kids
- What dose of Dantrolene
- What else to do during a crisis
- What labs to draw
- What to do post op



MH Quiz

If you work on kids you need to know:



■ Who's at risk

- Anyone but Relatives inherited an Autosomal Dominant fashion, some myopathies, Central core and KDS, *Duchenes muscular dystrophy is not*

➤ What it looks like in kids

- Hypercarbia, tachycardia tachypnea and then hyperthermia

■ What dose of Dantrolene

- 2.5/kg up to 10/kg

■ What else to do during a crisis

- Stop agent, 100%O₂, cool, foley, aline, bicarb

■ What labs to draw

- CPK, ABG

■ What to do post op

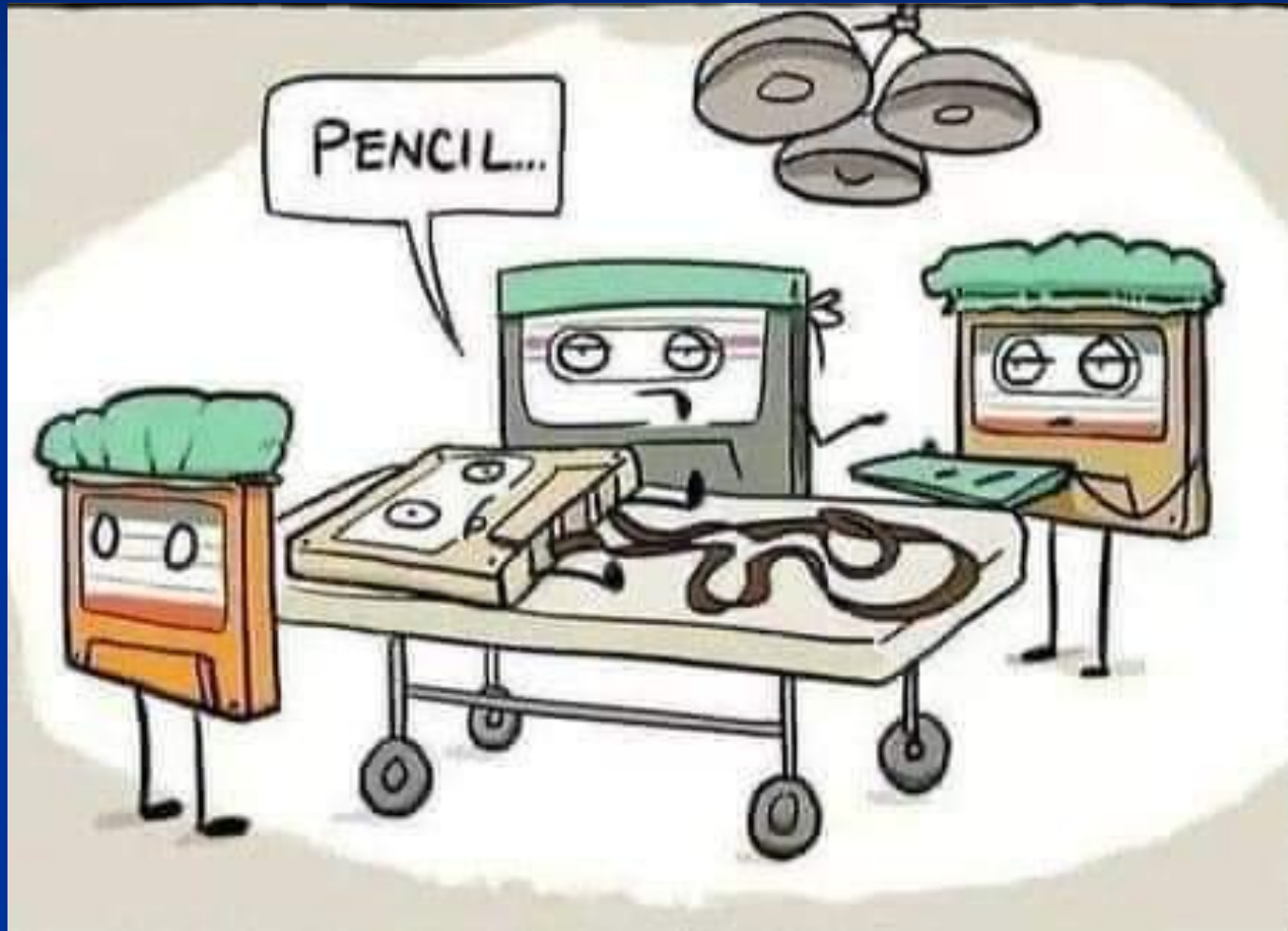
- Admit to ICU, Call MHAUS, Repeat Dantrolene for up to 24 hr

Autism

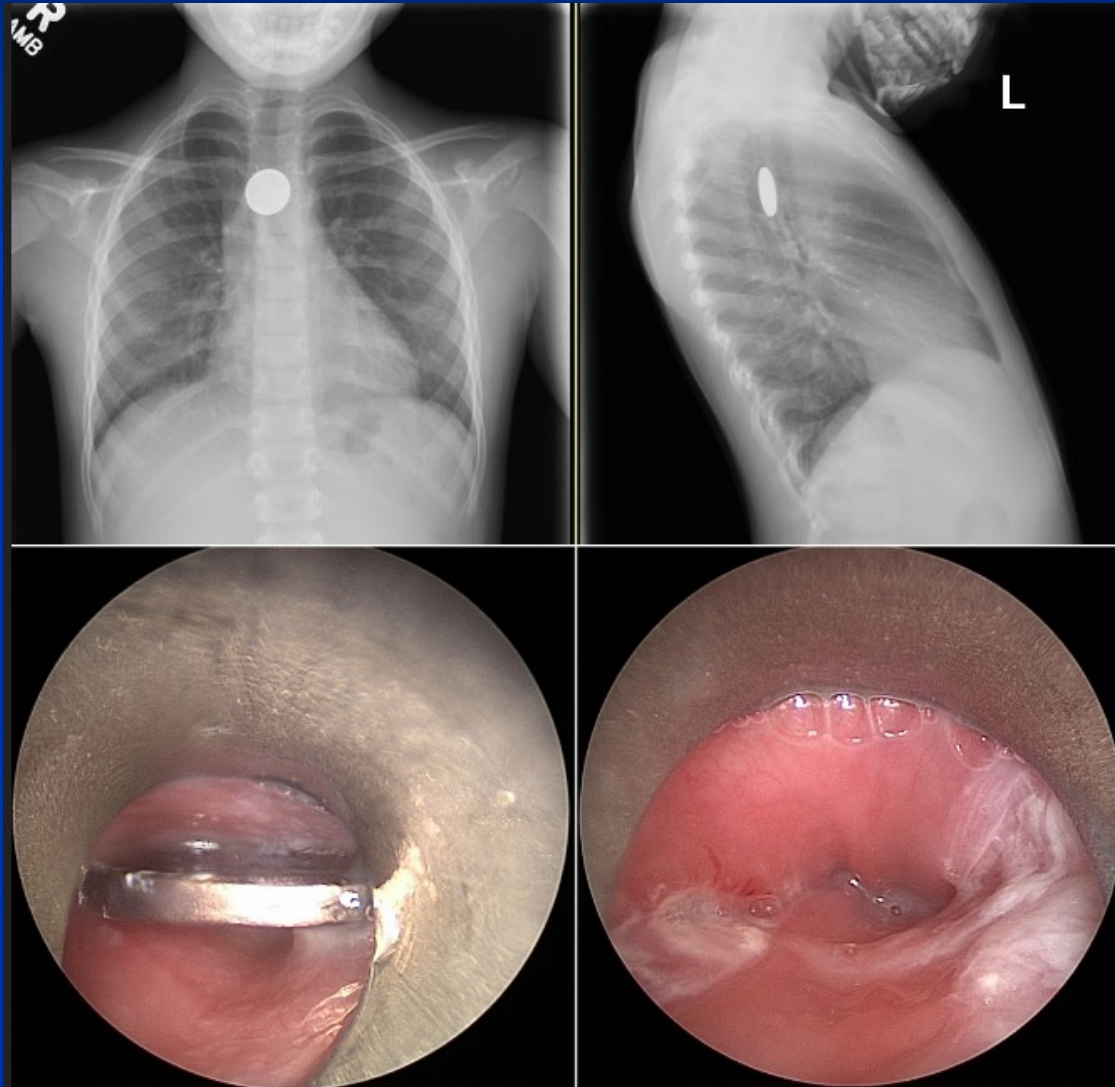


- Can be a big challenge
- Best advice is to heavily involve the parents as they know the kid best
- Ask the parents what works best
- Child life is definitely helpful if available
- Parent inductions can be helpful!
- Good PO pre-op sedation is super helpful
 - >Dexmedetomidine/ Ketamine/ Midazolam<

Foreign Bodies



Foreign Bodies

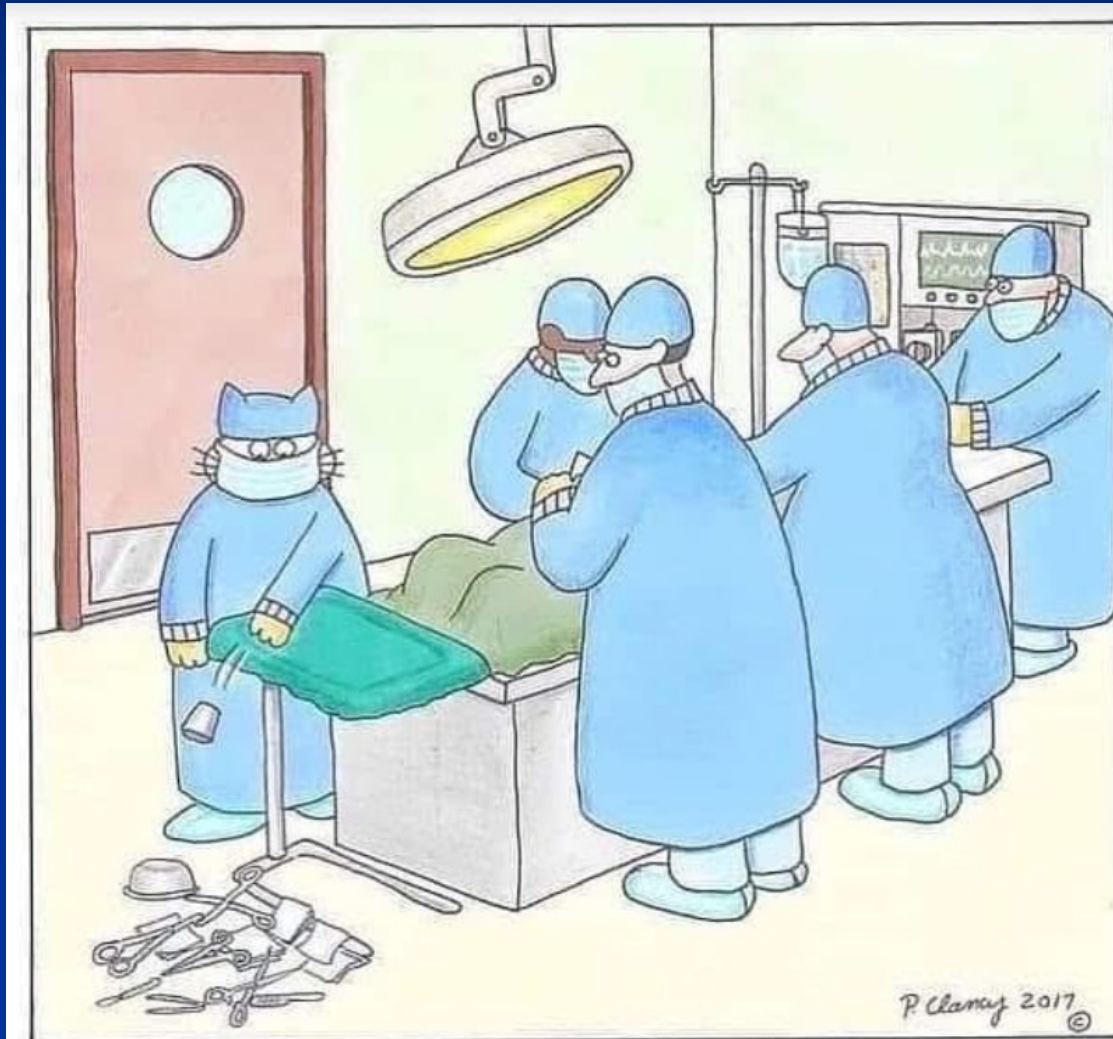


Vagal Nerve stimulators and Epilepsy



- Patients with vagal nerve stimulators are often on multiple anticonvulsants
- They may have a somewhat slower heart
- Extreme bradycardia or arrest may develop during mask or IV induction
- Early use of atropine and avoiding agents causing bradycardia is indicated
- Turning it off (with a magnet) during the case and back on may be helpful

Thank you for listening



Why cats are not allowed in the operating room.