

Me-ouch! Trials and Tribulations of Feline Urinary Blockage

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Presenting Case





"Captain"

- Male Neutered
- Domestic Long Hair
- 4 years old
- Presenting Complaint
 - Acting dazed at home
 - Shaking
 - Lethargy
 - Inappetance
- History
 - No prior medical history
 - Recently saw referral partner for empirical treatment of constipation
 - Normally fractious and needs sedation for vet visits





"Captain"

Exam

- Mentation: Dull, lethargic
- Heart rate: 170bpm
- Respiratory rate: 32rpm
- Mucous Membranes: Pink
- CRT: 2 secs
- Temp: 97.9 F
- Abdominal palpation revealed painful abdomen and large, firm bladder
- Owner was asked if she had seen "Captain" urinate; owner was unable to recall



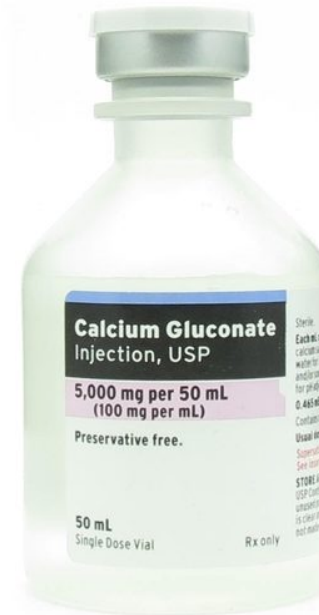
Initial Intervention

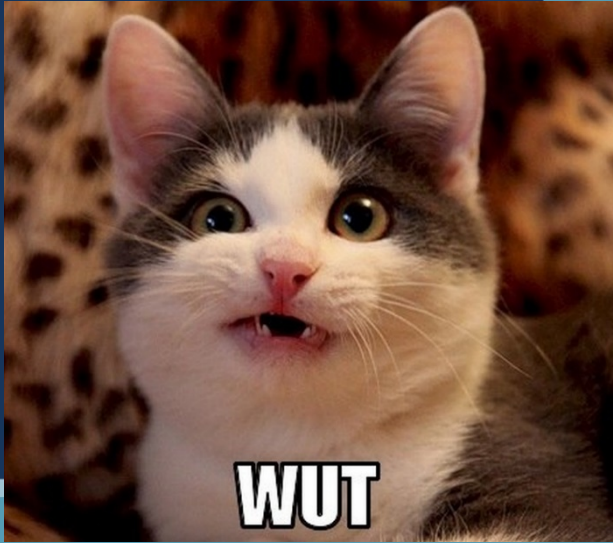
- IV Catheter placed
- Blood obtained for a chemistry
 - PHOS >16.1 (3.1-7.5)
 - K+ 7.9 (2.9-4.2)
 - Ion CA 1.04 (1.20-1.32)
 - BUN 241 (16-36)
 - CRE 25.6 (0.8-2.4)
 - PCV 34% (24-40%)
 - TP 9.6 (5.4-8.2)
- Diastolic blood pressure: 108mmHg



Initial Intervention

- Pain medication given
 - Methadone 0.1mg/kg
- Started on 0.9% NaCl IV
 - Relatively low concentration of potassium
- ECG Monitoring
 - Consistently bradycardic
 - Depressed P wave amplitude
 - Due to hyperkalemia
- Calcium Gluconate given
- Humulin R and dextrose given
- Started on a 2.5% Dextrose CRI





Pause!

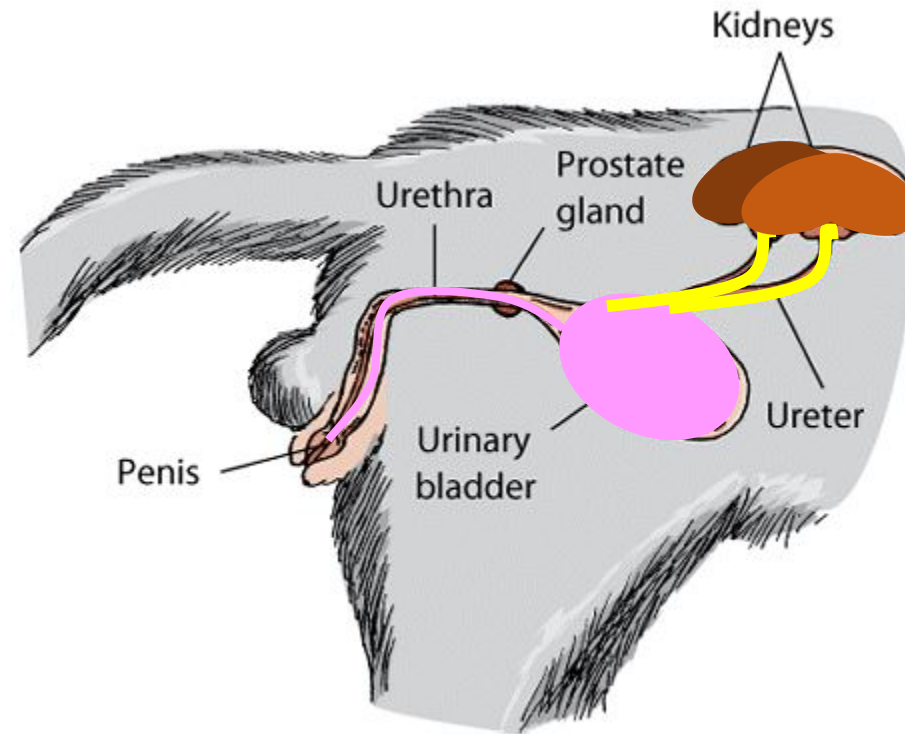


Physical Exam

- Large, firm bladder
- Painful abdomen
- Bradycardia
- Signs of dehydration
 - Tacky mucous membranes
 - Increased skin turgor



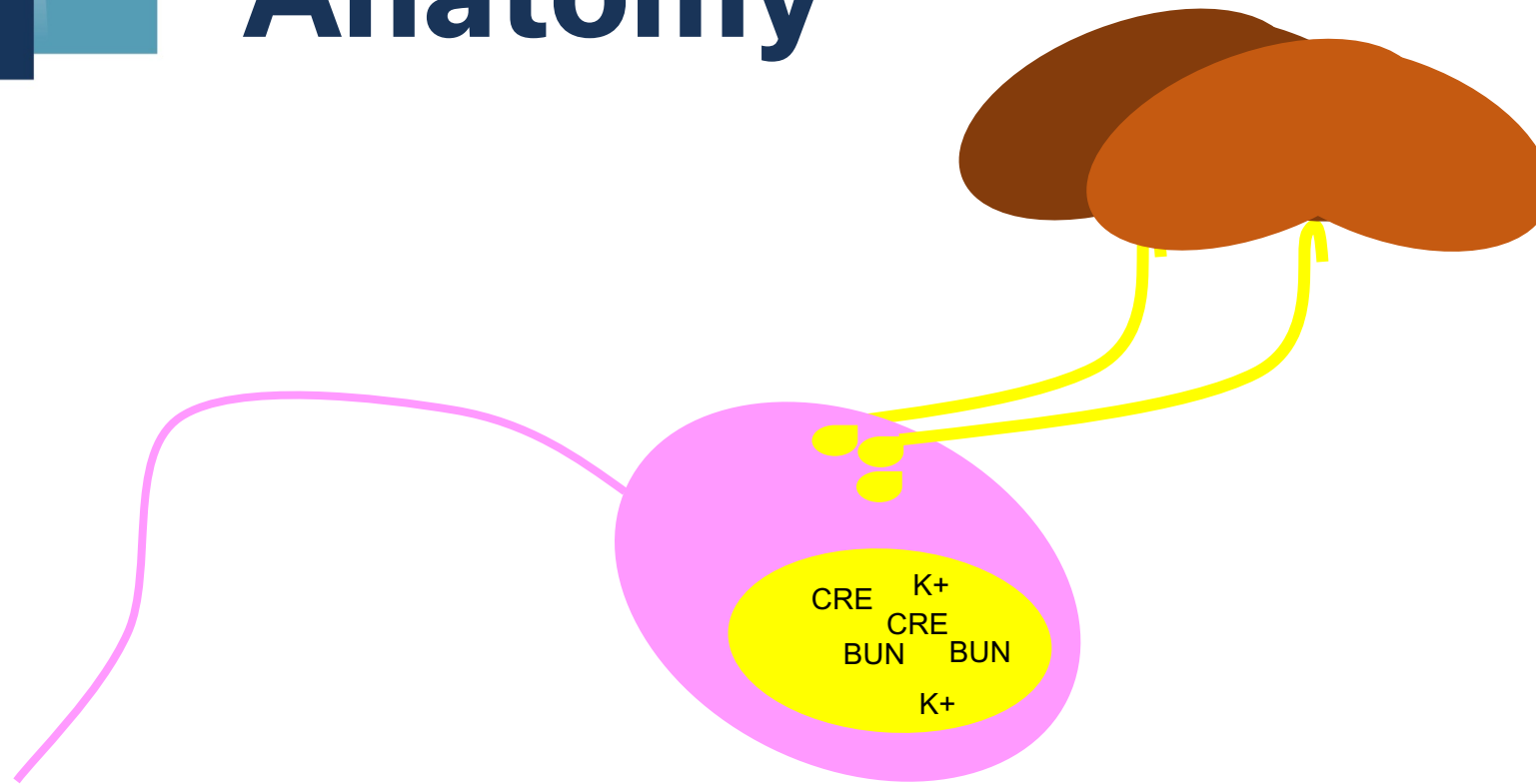
Anatomy



Merckvetmanual.com



Anatomy



Review

- Bloodwork
 - K+ 7.9 (2.9-4.2)
 - BUN 241 (16-36)
 - CRE 25.6 (0.8-2.4)
- Hyperkalemia
 - Life-threatening when causing bradycardia
 - Goals are:
 - Protect Heart
 - Reduce serum potassium

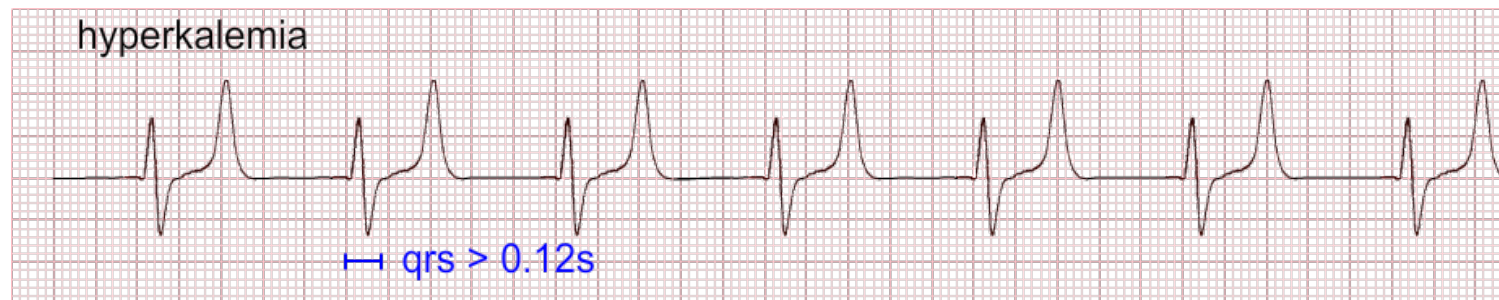
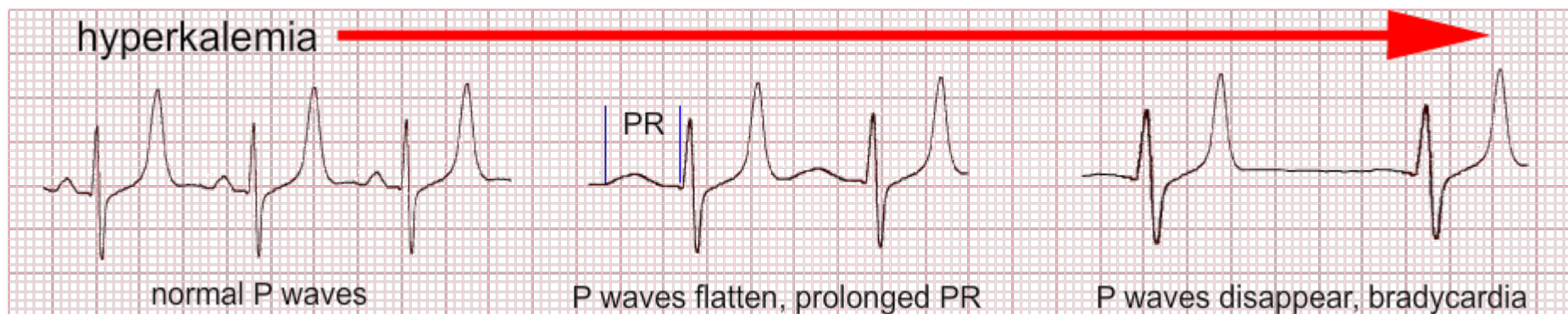
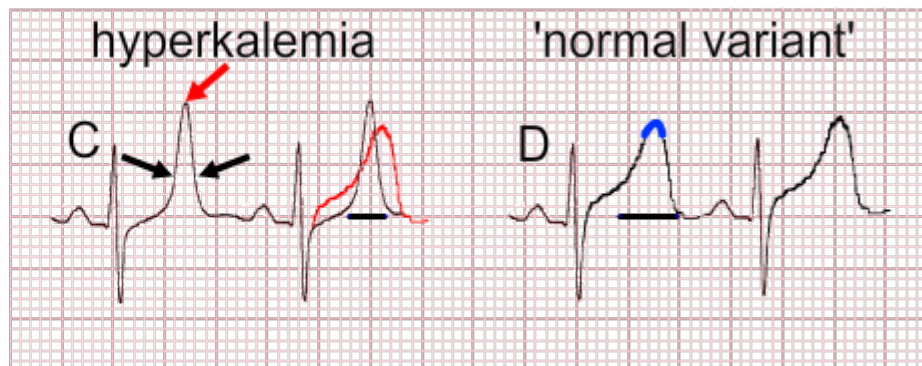
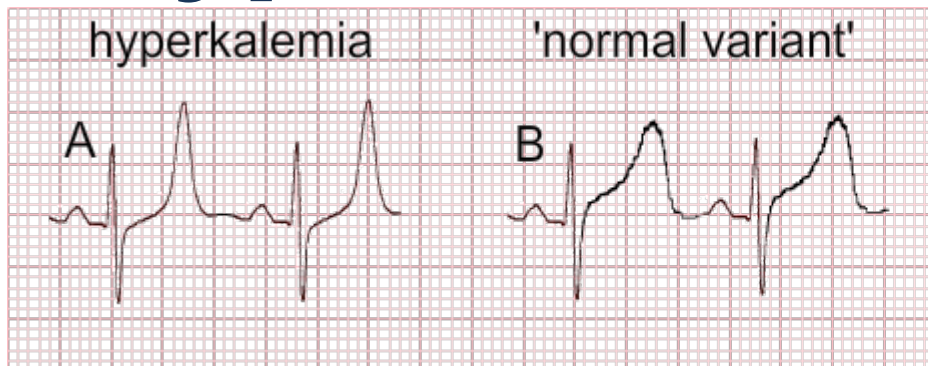


Review

- Protecting the heart
 - Calcium gluconate
 - Reduces impact of high serum potassium on myocardial conduction
 - Give IV Slow
 - Monitor ECG while administering calcium gluconate
 - Monitoring for worsening bradycardia
 - Worsening arrhythmia
- Reduce Serum Potassium
 - Dextrose
 - Can be given alone
 - Increases glucose presence extracellularly which triggers body to increase insulin secretion and drives potassium intracellularly
 - Can happen over an hour
 - Regular Insulin
 - Encourages cellular potassium uptake which reduces serum potassium
 - Glucose will also move into cells
 - Dextrose is typically added to fluids to help continue decrease of



Hyperkalemia ECG



Back to Captain!

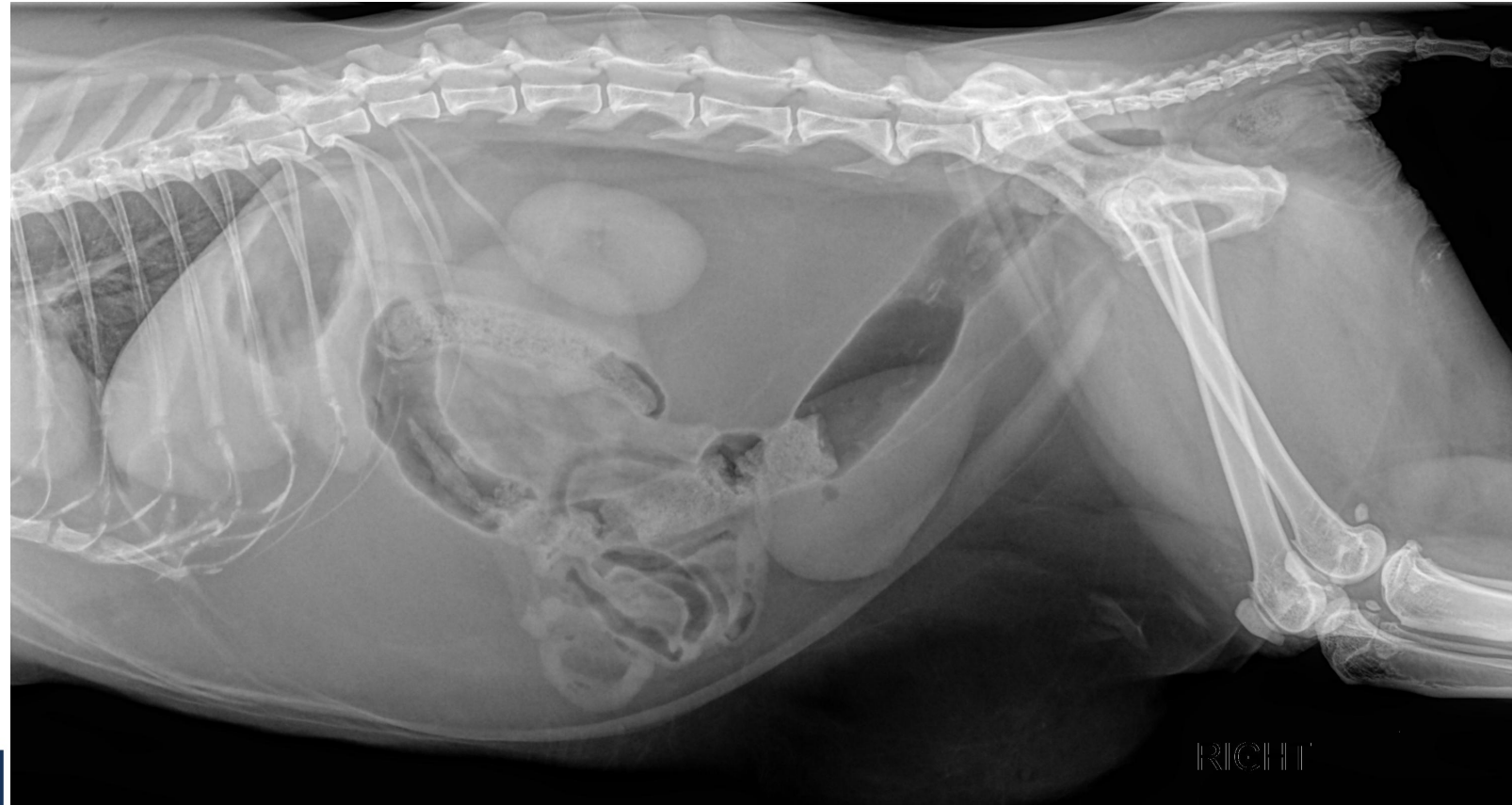


Further Intervention

- Sedated with diazepam and ketamine
- Monitored ECG, SpO2, BP during sedation
- Prepuce clipped and cleaned with alternating chlorhexidine and alcohol scrub
- Was de-obstructed by veterinarian, followed by placement of a 5fr red rubber catheter
- Radiographs taken to confirm placement, catheter secured via suture, catheter connected to a collection set



Further Intervention



Further Intervention

Started on IV fluids

Started on 40mL/hr

Eventually increased to 50mL/hr based on dehydration of 8%

Urine output every 4 hours

Urine production 1-2mL/kg/hr

"Captain" only producing 10-30mL in a 2 hour period

Eventually need another round of insulin and dextrose

Potassium increased to 8.2

Weight was monitored every 6 hours

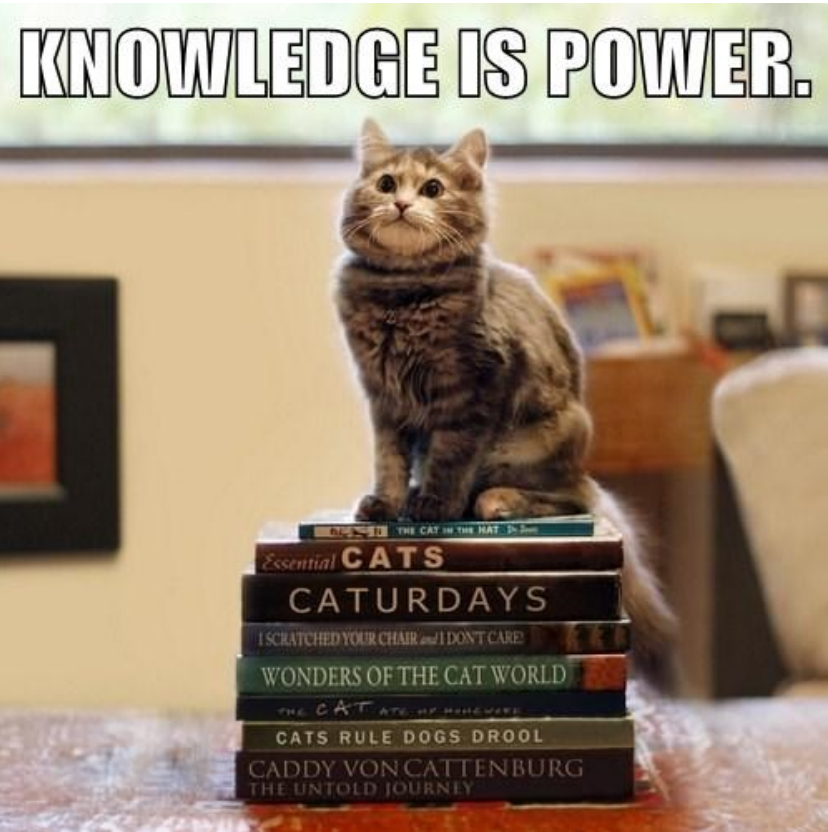


Outcome

- Weight increased
 - Admit weight 7.9kg; end weight 8.3kg
- Developed pulmonary edema
 - Took thoracic radiographs when starting to have increased respiratory rate and effort
 - Started on furosemide therapy
- Owners opted to stop treatment



Recap!



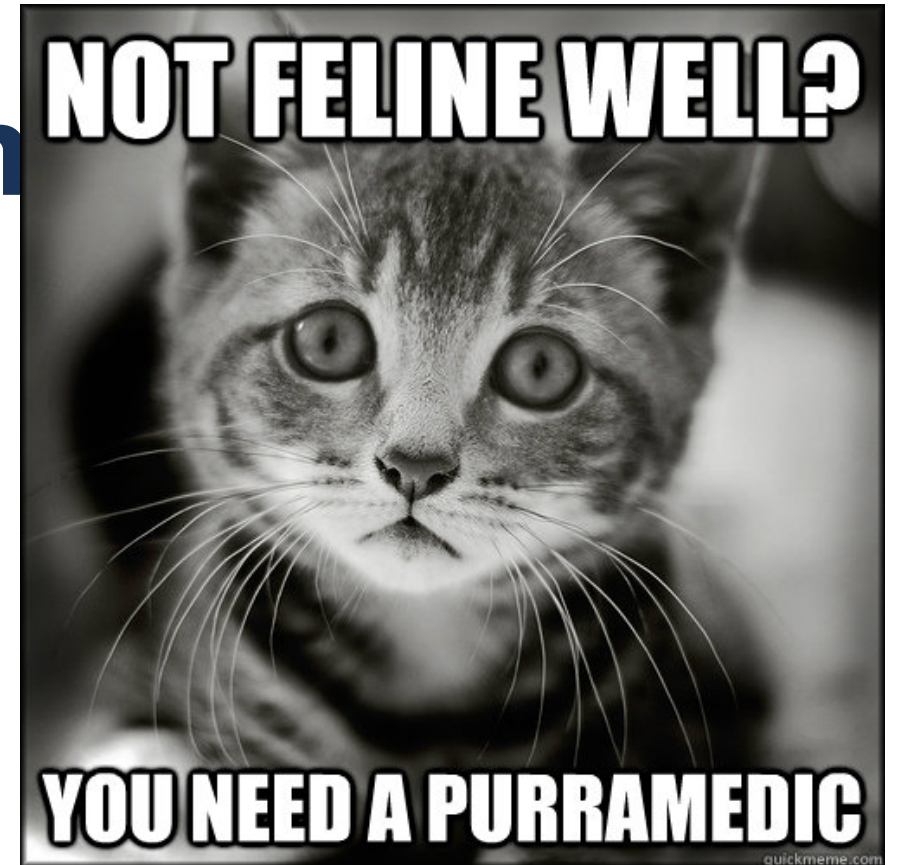
Outcome

- FLUTD
 - Variety of conditions that affect the bladder and urethra of cats
- Can occur at any age
- Usually seen in middle age cats



Clinical Signs

- Straining to urinate
- Vocalizing when urinating
- Inappropriate urination
- Going in and out of the litter box
- Persistently licking at penis
- Blood in urine
- Inappetence
- Vomiting



Clinical Signs

- Firm bladder
 - Could be large or feel “normal” sized. Big piece is firm and not able to easily express bladder
- Swollen/spasming penis
 - Sometimes when lifting up the tail can see a red swollen penis or spasming
- Dehydrated
 - Increased skin turgor, tacky mucous membranes
- Bradycardic
 - If bradycardic a good indicator that patient is hyperkalemic
 - “Toxic”
- Dull mentation



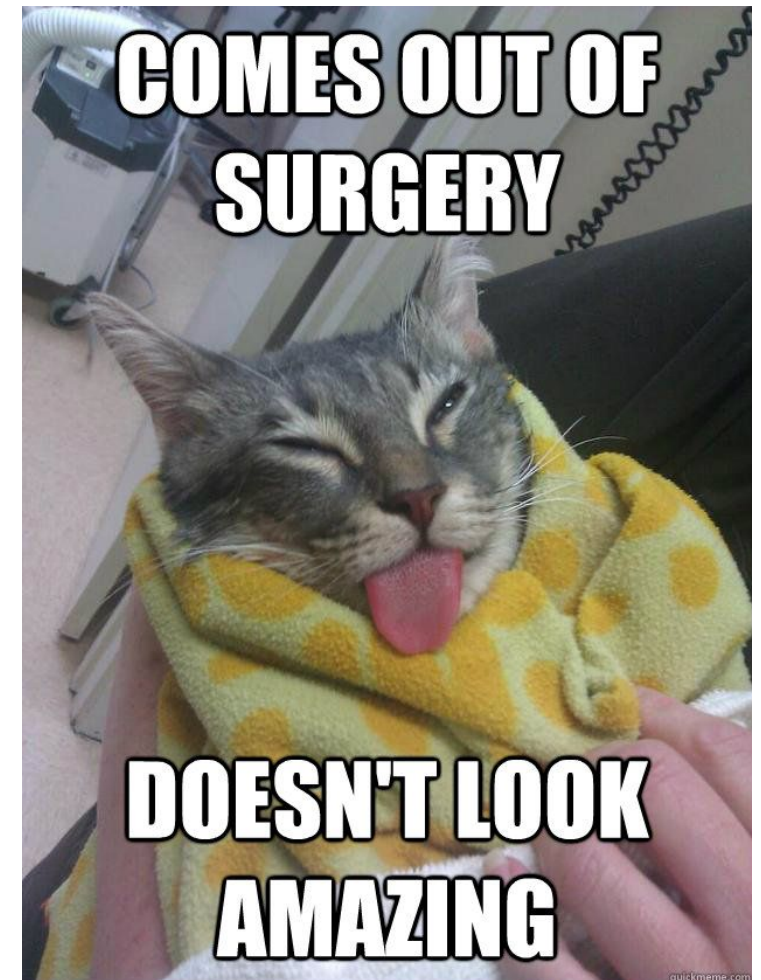
Treatment

- De-obstruction of urethra
- Placement of indwelling urinary catheter
 - 24-48 hours
- IV fluid therapy
- Pain medication
 - We usually give gabapentin in hospital and send home
- Anti-spasm medication
 - Prazosin in hospital and sent home
- Urinating after removing urinary catheter
 - Remove when:
 - Urine production is adequate
 - Urine looks normal
 - Kidney values normal



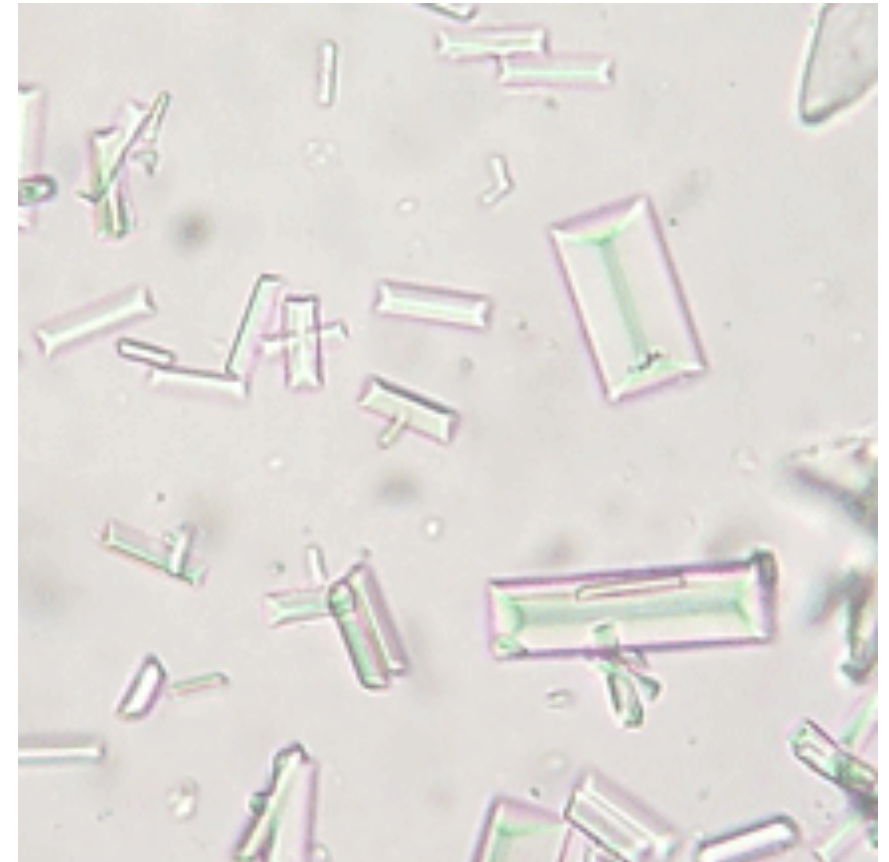
Treatment

- Recurrence of urinary obstruction
- Next step is perineal urethrostomy (PU)
 - Surgical procedure that is performed on males to create a permanent opening into the urethra through an incision in the skin of the perineum
- Not 100% cure but recurrence rate is low after procedure
- Still chance of reobstruction



Diagnostics

- Point of care ultrasound
 - Also known as FAST scan
 - Scan abdomen to check for large bladder
 - Can see irritation of bladder wall
 - Sometimes can see material
- Abdominal radiographs
 - Check for stones in bladder and urethra
- Urinalysis
 - pH of urine
 - Presence of crystals
 - Presence of bacteria
 - Signs of inflammation
 - Presence of blood
- Bloodwork
 - Electrolytes
 - Potassium and Phosphorous
 - Kidney values
 - BUN and Creatnine



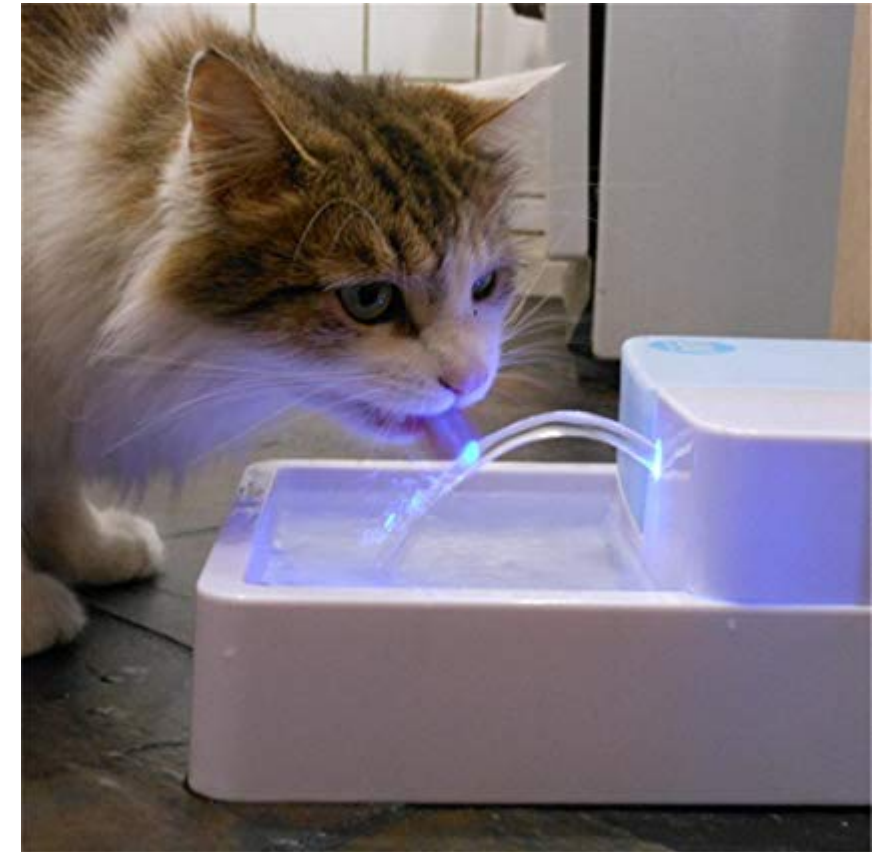
Causes

- Uroliths
 - Urinary stones
 - Present in bladder or urethra
 - If in urethra can cause full or partial blockage
- Urinary Infection
 - Presence of bacteria, fungi, parasites or possibly viruses
 - Bacteria most common
 - Other factors can cause increased risk for urinary infections
 - Diabetes
 - Uroliths
 - Bladder infections less likely
 - Cause FLUTD in less than 5% of cats
 - Acid content and concentration of urine prevents bladder infections
- Feline idiopathic cystitis
 - Most common diagnosis
 - Diagnosis of exclusion
- Urethral Obstruction
 - Males at great risk due to longer and narrower urethra
 - Can be caused by stones, crystals, or plugs
- Other causes
 - Diseases such as diabetes, hyperthyroidism
 - Less common; tumors of urinary tract, congenital abnormalities, injury to urinary tract or spinal cord



Prevention

- Prescription diet
 - High moisture content
 - S/O or C/D are main diets however there are others available
- Clean fresh water at all times
 - Cat may prefer different types of bowls
 - May prefer running water
- Adequate number of litter boxes
 - Good rule of thumb is usually 1 extra litter box than cat
- Litter boxes in quiet, safe spaces
- Litter boxes are kept clean
- Reduce stress
 - <https://indoorpet.osu.edu/cats> is a good resource for owners
- Minimize major changes in routine

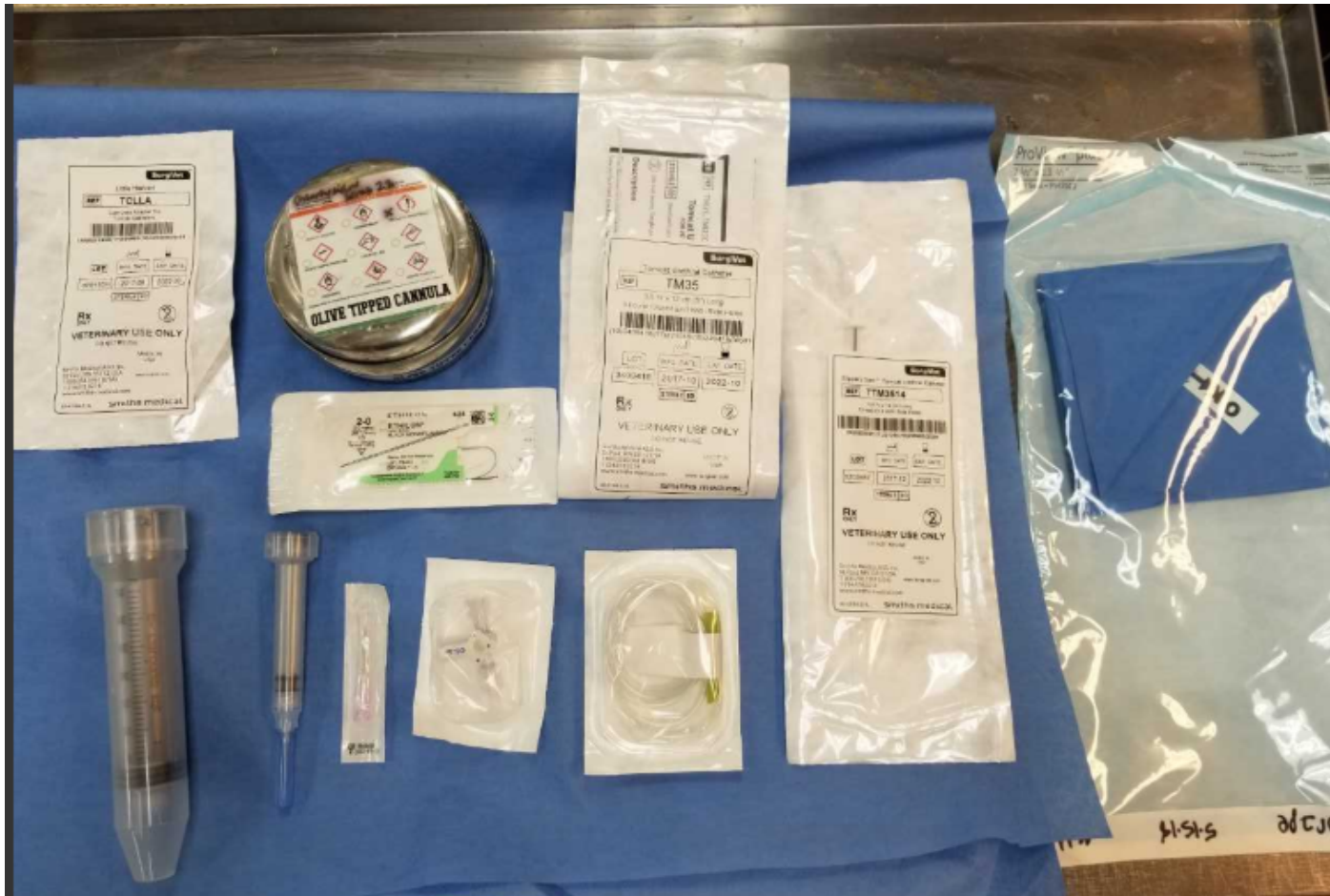


Feline Urinary Catheter Placement

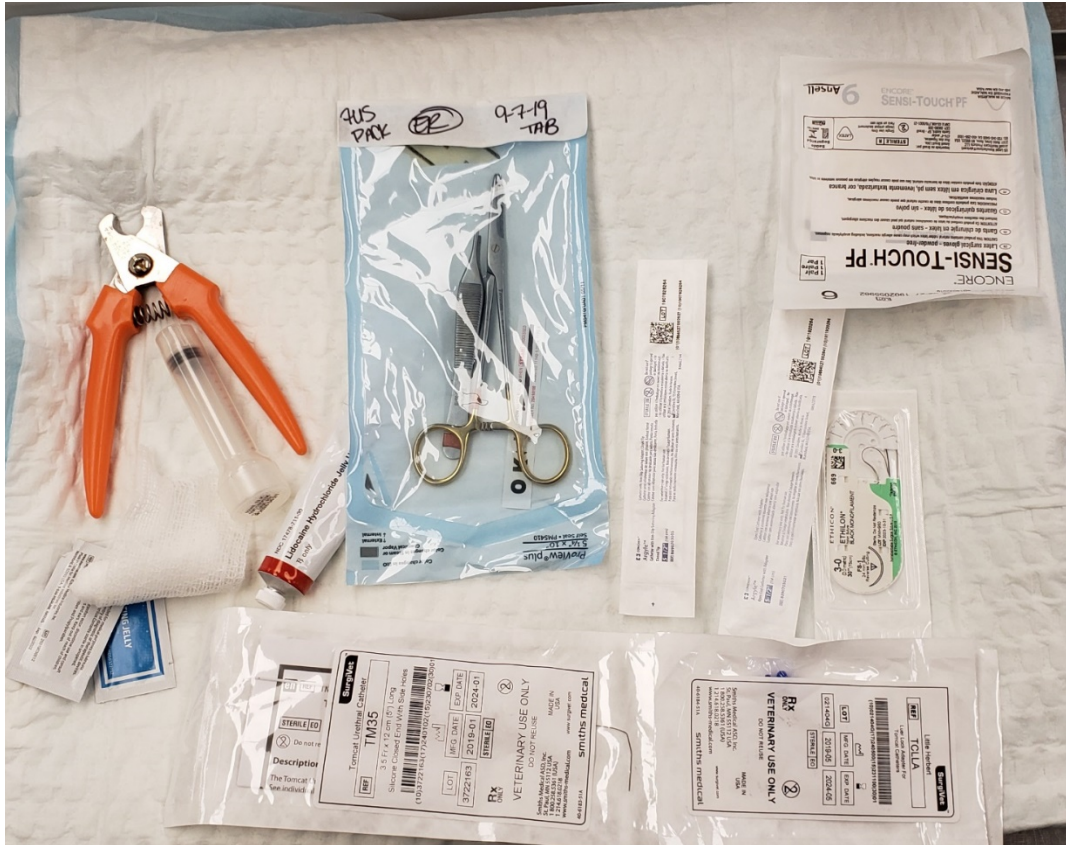
Set up and Procedure



Feline Urinary Catheter Placement



Feline Urinary Catheter Placement



Feline Urinary Catheter Placement



Feline Urinary



Feline Urinary Catheter Placement



Feline Urinary Catheter Placement



Feline Urinary Catheter Placement



Feline Urinary





Questions?