

Feline Lower Urinary Tract Disease (FLUTD)

Extended Version

Classic Case: Strain often, vocalize, painful → small amounts urine → drops of blood/bloody urine
→ inside/outside litter pan → +/- obstruction

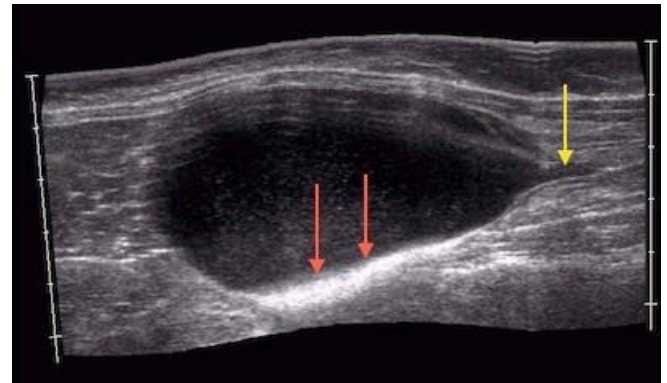
VERY, VERY COMMON REASON CATS ARE RELINQUISHED TO SHELTERS

Presentation: FLUTD is an umbrella term

- **MANY possible underlying causes**, including
 - Urolithiasis, urethral plugs, urinary tract infection, neoplasia, neurologic abnormalities, feline idiopathic cystitis (FIC), and anatomic defects.
 - **Underlying cause of FLUTD must be determined** because treatment for one cause may be contraindicated for other causes.
 - **Most common cause of FLUTD is cystitis followed by urolithiasis.**
- Males = Females (2 - 6 yo)
- NEUTERED
- Subacute to acute onset:
 - Stranguria (client thinks cat is constipated?)
 - Periuria (urination in inappropriate areas)
 - Pollakiuria
 - Hematuria
 - Vocalization
 - Excessive licking
- **2 scenarios**
 - **Not obstructed**
 - Small, contracted bladder, +/- difficult to palpate, +/- empty, +/- painful
 - **Obstructed**
 - **Life Threatening Medical Emergency**
 - MALES >>> Females
 - Narrow penile urethra
 - Large, firm bladder palpable (feels like a baseball)
 - Depression, dehydration, weakness (occas. extreme), vomiting, hypothermia
 - +/- Cardiac arrhythmias, tachycardia or bradycardia
 - Rx: pass urinary catheter under anesthesia, drain/flush and IV fluids



Image courtesy of [Wikimedia Commons](#)



Ultrasound, obstructed male cat. Note dilated urethra (yellow arrow) and hyperechoic mineralized sediment in bladder (green arrows).

Image courtesy Dr. Kalumet

Differential Dx:

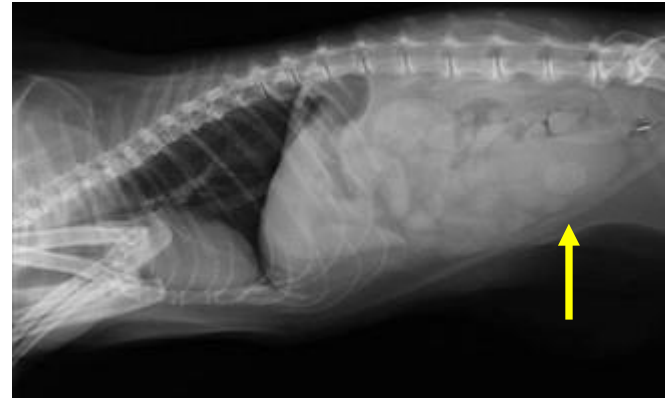
Urolithiasis, urinary tract infection, behavioral disorder, neurologic dysfunction, anatomic urinary tract defect, bladder neoplasia (uncommon, but transitional cell carcinoma most likely)

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Test(s) of choice:

- No test specific for FLUTD - **Diagnosis of exclusion**
- Dx often based on **Hx**, **PE** and **UA**, esp. at first presentation
- Urinalysis:
 - Routine and sediment exam
 - Often ↑ **USG** and protein
 - Hematuria, +/- crystalluria
- Urine culture & sensitivity:
 - **Infection rare in true FLUTD cases in US**
 - Infection more common in Europe
- With recurrence, atypical presentation, or obstruction, further workup recommended:
 - CBC and Chemistry
 - FIV/FelV test
 - Radiographs: Entire lower urinary tract, include entire urethra!
 - See only radiopaque stones > 3mm
 - Occasionally need:
 - Contrast cystography
 - Double contrast cystography - to image stones < 3mm
 - Ultrasound of lower urinary tract
 - Cystoscopy +/- biopsies



Feline radiograph, radio-opaque urolith in bladder.

Image courtesy Dr A Stambaugh

If idiopathic FLUTD - **NO abnormalities expected**

Rx of choice:

- **Many cats better w/in a few (5 –10) days regardless of Rx**
- **Relieve obstruction if indicated** and correct electrolytes
- **Goals of Tx:**
 - ↓ Severity & duration of clinical signs
 - ↑ Interval between episodes
- Antibiotics **not** indicated w/ **negative** bacterial culture
- Management of feeding, water, litter, environment as below:

Environmental enrichment	Feeding	Litter
= Stress reduction <ul style="list-style-type: none"> • Separate cats if needed • Provide hiding places • Scratching posts • Perches at windows • Views of outdoors • Climbing areas • Designated play time <ul style="list-style-type: none"> ▪ 10 minutes a day 	<ul style="list-style-type: none"> • ↑ H₂O content of diet • Canned food • One food bowl per cat • Separate locations <hr/> Encourage water drinking: <ul style="list-style-type: none"> • Separate locations • Multiple bowls • <u>Fresh</u> water • Wide-brimmed bowls <ul style="list-style-type: none"> ▪ Whiskers can't touch ▪ Glass, ceramic, metal 	Rule = 'One box per cat, + 1' <ul style="list-style-type: none"> • Deep-sided w/ LOTS of litter <ul style="list-style-type: none"> ▪ for digging, covering • +/- Cover • Non-scented clumping litter • 'Safe', private location • Scoop clean 1X daily • Thorough cleaning weekly • Older / arthritic cats <ul style="list-style-type: none"> ▪ Shallow/ open boxes



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Rx of choice: (continued)

- Analgesics
 - NSAIDs: Onsior® (robenacoxib), meloxicam
 - Opioids: Buprenorphine
- If above Rx are not enough, may add the following:

1) Feline facial pheromone (Feliway™)	2) Behaviour modifying drugs **
<ul style="list-style-type: none"> • Decreases perception of threat • Increases feeling of safety • Diffuser - Constant delivery <ul style="list-style-type: none"> ▪ Social stresses • Spray – for specific locations 	Amitriptyline (Amitriptyline™) or Clomipramine (Clomicalm™) <ul style="list-style-type: none"> • Tricyclic antidepressants • 4 weeks for full benefits • Liver enzymes prior to Rx & q 6 mos • Use lowest effective dose • Taper dose over 2 wks before stopping
3) Glycosaminoglycan (GAG) supplement:	
<ul style="list-style-type: none"> • Benefits some cats w/ Idiopathic cystitis • GAG deficiency in uroepithelium • 125 mg of N-acetyl glucosamine PO q 24 hrs (Cystease™, Ceva Animal Health) 	** Possible adverse effects: sedation, weight gain, cardiac arrhythmias, urinary retention, anorexia, neutropenia, thrombocytopenia, vomiting, increased liver enzymes

Prognosis:

- Prognosis depends on cat, environment, & client
- Good to excellent with diligent therapy, can be lifelong problems with some cats
- **Recurrence common, risk of obstruction increases with multiple episodes**

Prevention:

- **PATIENCE** (both DVM and client!) - **Excellent client communication is KEY**
- **ALL indoor cats need enriched environments**; this is often sufficient to suppress clinical signs



Radiograph, urethral obstruction in a male dog, caused by three urinary calculi (blue arrows).
(Yes, it's a dog in feline notes, but it's a good image to emphasize how little it takes to obstruct urinary outflow)

Image courtesy Dr. Kalumet



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Pearls:

- RISK FACTORS:**

Housing <ul style="list-style-type: none"> ▪ Indoors only ▪ Litter box management 	Diet <ul style="list-style-type: none"> ▪ Dry food ▪ Low water intake 	Environment / STRESS <ul style="list-style-type: none"> ▪ Multi-cat household ▪ Inter-cat conflict ▪ LACK of routine ▪ Recent move ▪ Big change in household <ul style="list-style-type: none"> ▪ Renovations ▪ New pet ▪ New baby
Breed <ul style="list-style-type: none"> ▪ ↑ Risk: <ul style="list-style-type: none"> ▪ Persians ▪ Long-haired breeds ▪ ↓ Risk <ul style="list-style-type: none"> ▪ Siamese 	Season <ul style="list-style-type: none"> ▪ Fall / Winter 	
	Other <ul style="list-style-type: none"> ▪ ↑ weight ▪ Low activity level ▪ Neutered animals 	

- Successful Rx relies heavily on client's bond w/ cat & commitment to follow recommendations
- Cause unknown
- Associated conditions:
 - Behavior disorders (fear, aggression, anxiety)
 - Dilated cardiomyopathy
 - Obesity

References: Cote's Vet Clinical Advisor, Dog and Cat, 2nd ed. pp. 387-8, 1131-2, 1138-46, Hostutler, Chew, and DiBartola - review of FLUTD, Merck Vet Manual 10th Ed.: Obstructive Uropathy in Small Animals, Urolithiasis in Small Animals, Nutrition in Disease Management in Small Animals, Ettinger's Vet Int Med, 6th ed, pp.1828-1850, Feline lower urinary tract disease (FLUTD). Proceedings of Intl Congress, Italian Assoc. of Companion Animal Vets 2008

My Notes: