

EFFECTIVE APPROACHES TO MANAGING THE BLOCKED CAT IN EMERGENCY CARE

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INTRODUCTION

Feline urethral obstruction (**UO**), commonly known as the "*blocked cat*," represents a significant portion of feline emergency cases encountered in veterinary practice. This condition is characterized by a mechanical blockage within the urethra, often due to feline lower urinary tract disease (**FLUTD**). Prompt recognition and management are critical, as delayed treatment can lead to severe complications, including acute kidney injury, severe electrolyte imbalances, cardiac arrhythmias, and death.

INCIDENCE AND ETIOLOGY

Urethral obstruction is a relatively common syndrome, predominantly affecting indoor, overweight, neutered male cats. Obstructions typically result from idiopathic cystitis, mucus plugs, urethral spasm, blood clots, or calculi. Less commonly, obstructions may be due to neoplasia, urethral strictures, or precipitated by infections. Recognizing signalment can guide clinicians in prioritizing diagnostic considerations, with idiopathic cystitis and related urethral plugs as the most frequent etiologies.

CLINICAL SIGNS

Cats typically present with a history of dysuria, stranguria, hematuria, or pollakiuria. Owners may confuse dysuria with constipation, making thorough questioning important. Excessive genital grooming is another common clinical sign. During initial assessment, rapid abdominal palpation should focus on bladder size, distension, pain, and expressibility. A large, firm, painful bladder strongly suggests UO. In very obese patients, accurate palpation of the bladder may be challenging; in these cases, point-of-care ultrasound (**POCUS**) can quickly and reliably confirm bladder distension, guiding rapid diagnosis and intervention.

EMERGENCY STABILIZATION

Emergency stabilization must precede catheterization. Assessment of airway, breathing, and circulation (ABCs) should occur immediately. Key diagnostic steps include evaluating serum electrolytes, particularly potassium levels, due to the potential for hyperkalemia to induce life-threatening cardiac arrhythmias. Below are other key parameters that can be measured (non-exhaustive list):

Test	Purpose / Information Provided	Comments
Electrolytes	Identifies electrolyte imbalances, especially hyperkalemia	Prioritize potassium levels
Blood Urea Nitrogen, Creatinine	Assesses severity of azotemia; screens for renal injury or chronic kidney disease	Obtain before fluid therapy when possible
Complete Blood Count, chemistry panel	Screens for infection, inflammation, anemia, or underlying conditions	Helpful for identifying concurrent disease
Venous Blood Gas	Detects metabolic acidosis, commonly seen with prolonged obstruction	Guides fluid and supportive therapy
Urinalysis	Evaluates specific gravity, crystals, sediment, pH, presence of blood, and mucus	Crucial for understanding the cause and management
Urine Culture and Susceptibility	Confirms or excludes bacterial infections, particularly with recurrent obstructions or abnormal urinalysis	Obtain aseptically via catheter or cystocentesis

Hyperkalemia (serum potassium >5 mmol/L) necessitates urgent intervention, especially in the presence of electrocardiographic changes such as bradycardia, absent or flattened P waves, widened QRS complexes, or peaked T waves. Below is a summary of drugs commonly used:

Drug	Dose	Mechanism	Comments
Dextrose	0.5 g/kg IV diluted	Stimulates insulin release	Monitor blood glucose
Regular insulin	0.1-0.25 IU/kg IV	Activates Na-K ATPase	Administer with dextrose infusion
Calcium gluconate	0.5-1 mL/kg IV slowly	Stabilizes cardiac membrane potential	Does not lower potassium levels
Calcium chloride	0.2-0.3 mL/kg IV slowly	Stabilizes cardiac membrane potential	Does not lower potassium levels
Sodium bicarbonate	1-3 mEq/kg IV over 15-30 min	Facilitates intracellular K ⁺ shift	Monitor CO ₂ , caution if hypocalcemia
Terbutaline	0.01 mg/kg IV	Increases Na-K ATPase activity	Easy to deliver

URETHRAL CATHETER PLACEMENT

Ideally, patient care should follow a sequence of stabilization, radiographic imaging to identify radiopaque calculi or structural abnormalities, epidural analgesia, and then urethral catheter placement; however, in clinically unstable cats or those presenting critical urgency, the sequence may need adjustment to stabilization, immediate catheterization, followed by radiographs, with epidural analgesia considered optional based on patient status and clinician expertise.

Cats typically require sedation, doses and types should be adjusted based on patient status and clinicians' comfort level with each drug. Below is a non-exhaustive list of options (combine 2-3 agents):

Drug	Dose	Comments
Buprenorphine	0.01–0.02 mg/kg	Excellent analgesic; minimal sedation alone
Midazolam	0.1–0.3 mg/kg	Sedation, muscle relaxation, minimal cardiovascular impact
Ketamine	2–5 mg/kg	Effective sedation; may increase sympathetic tone, useful if hypotensive
Alfaxalone	1–3 mg/kg (titrate slowly to effect)	Smooth sedation, minimal cardiovascular depression
Methadone	0.1-0.3 mg/kg	Potent analgesia, moderate sedation; monitor respiratory function

Severe depression or obtundation might necessitate reduced or no sedative doses or analgesia only.

Epidural Analgesia Before Catheterization

Epidural analgesia provides effective, targeted pain relief and urethral muscle relaxation, making subsequent catheter placement significantly easier. Below is a step-by-step, practical guide to epidural analgesia:

1. Patient Preparation

- Ensure the patient is appropriately stabilized regarding cardiovascular and electrolyte abnormalities before epidural administration.
- Mild sedation or analgesia will ease patient handling.

2. Positioning

- Position the cat in sternal recumbency with the pelvic limbs flexed cranially under the abdomen to enlarge the lumbosacral (L7-S1) intervertebral space. Alternatively, lateral recumbency with the hind limbs flexed can be used, though visualization of landmarks is slightly more challenging.

3. Identification of Landmarks

- Locate the lumbosacral junction by palpating the dorsal spinous processes. The L7 spinous process is typically prominent.
- The epidural space is between the dorsal processes of L7 and S1 vertebrae, which can be palpated as a depression immediately caudal to the L7 spinous process.

4. Aseptic Preparation

- Clip a 5x5 cm area centered around the identified intervertebral space.
- Perform an aseptic surgical scrub

5. Epidural Needle Selection

- Use a sterile spinal needle (22–25 gauge, typically 1–1.5 inches in length for most cats).

6. Needle Placement Technique

- Wearing sterile gloves, position the spinal needle perpendicular to the skin surface at the midpoint of the L7-S1 space.
- Slowly advance the needle, maintaining midline orientation, through skin and subcutaneous tissues toward the intervertebral ligament.
- Once contact with the ligamentum flavum is achieved, slight resistance may be felt.

- Carefully advance the needle slightly further (in 1-2 mm increments) while applying gentle negative pressure with a syringe containing 0.2 mL of air or sterile saline.
- Upon reaching the epidural space, loss of resistance will be felt, and the fluid or air will inject easily.

7. Drug Administration

- After confirmation, gently aspirate to ensure no blood or cerebrospinal fluid is obtained.
- Inject the analgesic solution slowly over 30–60 seconds.

Recommended Epidural Drugs and Dosages:

Drug Option	Dose	Duration of Effect
Preservative-free Morphine	0.1 mg/kg diluted to 0.2 mL/kg in sterile saline	8–12 hours
Bupivacaine (0.5%)	0.1–0.2 mL/kg (usually ~0.1 mL total for average adult cat)	4–6 hours
Lidocaine (2%)	0.1–0.2 mL/kg (usually ~0.1 mL total for average adult cat)	1–1.5 hours

Urinary Catheter Placement

The perineal region should be clipped and aseptically prepared using dilute chlorhexidine solution (6.25 mL chlorhexidine in 250 mL sterile water). The prepuce is flushed with this solution. Lubricate a sterile urinary catheter generously and, while retracting the prepuce caudally to straighten the penis, introduce it gently into the urethra. Sterile saline flushes (0.9%) can help dislodge plugs or debris. Following successful catheterization, connect the catheter immediately to a sterile, closed collection system to reduce infection risks. Obtain urine for analysis, culture, and susceptibility testing. Secure the urinary catheter to the skin.

POST-CATHETERIZATION CARE

Post-catheterization, monitor patients closely for hypothermia, hypotension, fluid overload, and electrolyte disturbances. Fluid therapy should accommodate post-obstructive diuresis, a common phenomenon, particularly in patients with azotemia. Urine output may initially be far above usual (e.g., exceeding 250 mL/hour), necessitating vigilant fluid management. Frequent electrolyte reassessment, notably potassium, is essential to detect residual hyperkalemia or emerging hypokalemia.

Analgesic administration, typically buprenorphine (0.01 mg/kg IV q8h), is crucial for patient comfort and mitigating urethral spasms. Spasmolytic medications (prazosin 0.25-0.5 mg/cat PO q12h or phenoxybenzamine 2.5 mg/cat PO q12h) can be considered; however, clinical evidence of their efficacy is mixed, and their use is diminishing.

Urinary catheters should remain indwelling until urine is clear and the patient demonstrates consistent urinary outflow. Routine catheter care, employing aseptic technique and regular cleaning with a dilute chlorhexidine solution, significantly reduces the risk of infection.

SURGICAL INDICATIONS

Perineal urethrostomy is indicated in cases of recurrent obstruction or urethral strictures recurring despite medical management. Clients must be informed that urethrostomy procedures, while effective, can lead to complications such as urinary incontinence or persistent urinary tract infections. There is no consensus as to when perineal urethrostomy should be performed; some consider it after the first UO, while others wait for two or more episodes to occur. If perineal urethrostomy is elected for after the first episode, the urinary catheter should remain in place until surgery is performed.

TIMING OF DISCHARGE AFTER URINARY CATHETER REMOVAL

A common clinical dilemma arises regarding whether a patient should remain hospitalized until spontaneous urination is observed or be discharged immediately following urinary catheter removal. Keeping the patient hospitalized allows immediate intervention if re-obstruction occurs, providing greater safety and rapid medical attention. However, some cats may experience increased stress from hospitalization, which can potentially hinder normal urination and recovery. Alternatively, allowing the patient to return home may reduce anxiety and facilitate normal micturition behaviors. The decision should be individualized and involve a thorough discussion with the owner, clearly outlining the risks and benefits of both approaches, as well as recognizing the importance of vigilant home monitoring and prompt veterinary attention if re-obstruction is suspected.

HOME MANAGEMENT AFTER DISCHARGE

Successful home management is crucial for minimizing the risk of recurrence and maintaining the cat's overall urinary health after discharge. Clear owner instructions have a significant impact on long-term outcomes and patient comfort.

Dietary Recommendations

- Transition to a therapeutic urinary diet specifically formulated to prevent crystal formation and promote bladder health.
- Encourage canned (wet) food to increase water intake and dilute urine concentration.

Water Intake

- Promote increased water consumption by offering multiple fresh water sources and pet fountains.
- Consider flavoring water with low-sodium broth if needed to encourage drinking.

Environmental Enrichment and Stress Reduction

- Provide multiple litter boxes (one per cat plus one extra) in quiet, low-traffic areas.
- Clean litter boxes daily; use unscented clumping litter.
- Maintain predictable routines to minimize stress.
- Introduce environmental enrichments, such as scratching posts, toys, climbing structures, and quiet hiding spots.

Medications at Home

- Continue analgesia as prescribed for initial pain management (e.g., Buprenorphine 0.01–0.02 mg/kg transmucosally every 8–12 hours for the first few days post-discharge).
- Anti-spasmodic medications (e.g., prazosin 0.25–0.5 mg/cat orally every 8–12 hours) may be prescribed initially post-discharge; efficacy should be monitored closely.

Monitoring at Home

Educate owners on recognizing early signs of recurrence: straining or vocalizing while urinating, frequent trips to the litter box, excessive grooming around the genital area, urine discoloration (pink, red), signs of distress, hiding, or lethargy. Prompt re-evaluation should be recommended if these signs are observed.

Effective client education and compliance with these home-care strategies significantly reduce the likelihood of recurrence and ensure optimal patient outcomes.

CHECKLIST: KEY STEPS IN MANAGING BLOCKED CATS

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| • Rapid triage assessment (ABC's) | • Monitor fluid balance and electrolytes closely post-catheterization |
| • Confirm obstruction (palpation, POCUS) | • Administer analgesia routinely |
| • Stabilize the patient (address hyperkalemia immediately) | • Epidural analgesia for refractory pain or spasm |
| • Catheterize the urethra using a sterile technique | • Detailed client communication about prognosis, recurrence risk, surgical options, and home care |
| • Connect the catheter to a closed collection system | |

SUMMARY AND CLINICAL PEARLS

Urethral obstruction in cats demands prompt, accurate assessment and swift stabilization. Effective emergency management, careful monitoring, appropriate analgesia, and vigilant communication with clients significantly enhance patient outcomes. Understanding nuances, including indications for epidural analgesia and surgical considerations, ensures comprehensive patient care.

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