

**FAST FACTS AND CONCEPTS #337
PALLIATION OF BLADDER SPASMS**

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Background: Bladder spasms induced by involuntary bladder contractions are a distressing symptom affecting 7-27% of men and 9-43% of women (1). Seriously ill patients may develop bladder spasms as a complication from genitourinary malignancies, indwelling catheters, or other medical issues. For some, these contractions may be imperceptible and only appreciated on urodynamic testing; for others, they can be incapacitating and associated with urinary incontinence.

Differential Diagnosis: Common etiologies of bladder spasms include a urinary tract infection (UTI), ingestion of chemical irritants like diet soda or caffeine, constipation, obstruction of the bladder outflow tract (e.g. non-emptying catheter from blood clots), disinhibition from interruption of upper motor neurons, or irritation of the detrusor muscle from a tumor, catheter, or intramural stone (2). Medications can also lead to spasms either by bladder irritation (e.g. diuretics) or disruption of the detrusor muscle or bladder outlet (e.g. opioids, anticholinergics, benzodiazepines, NSAIDs) (3,4). See *Fast Fact #287*.

Clinical Evaluation of Bladder Spasms:

1. Determine if the bladder is emptying properly. If not, consider urethral catheterization (see below).
 - In the inpatient setting, a portable ultrasound can be used to check the post-void residual (PVR) urine in the bladder. Of note, PVRs obtained by portable ultrasounds can be difficult to interpret. In general, clinicians should look for an acute increase in PVR values (e.g. from 200 mL to 450 mL) in the setting of acute bladder spasm(s), rather than an arbitrary threshold volume (5).
 - In the home or hospice setting, physical examination of the suprapubic area for bladder fullness and patient report can guide the non-hospital clinician in evaluating bladder emptying.
2. Evaluate for easily reversible causes – e.g. stop offending agents, treat constipation.
3. Exclude UTI with a urinalysis (UA). If an indwelling catheter is in place, it should be changed, and the culture sent from the new catheter as soon as it is placed.

Clinical Management: Multiple non-pharmacologic and pharmacologic therapies exist and may be used in combination. In general, start with the least invasive approach. Diagnostic imaging and/or a urology referral may be warranted in refractory cases, especially when acute urinary retention is encountered (6).

Urethral catheterization: most experts prefer intermittent catheterization for ambulatory patients with longer prognoses to minimize infection risk. In moribund patients who are dying, indwelling catheterization is often preferred by patients, clinicians, and caregivers (1,7). Caregivers should be informed of the following catheter management tips:

- Pull gently on the tubing so the tip is not pushing against the bladder wall.
- Ensure appropriate catheter drainage by irrigating with saline, elevating and dropping the tubing to minimize airlocks, and avoiding large uphill loops which may impede drainage by gravity.
- Consider upsizing catheter to improve drainage.
- Palpate the catheter for hardness and consider changing to a softer catheter with a shorter tip.
- Use securing devices or tape to prevent pulling of the tubing against the bladder neck (7,8).

<u>Medication Class</u>	<u>Examples</u>	<u>Side effects</u>
Bladder Muscle Relaxants		

Oral anticholinergics <i>1st line pharmacologic agent</i> (9,10)	<ul style="list-style-type: none"> • Oxybutynin 5-15 mg TID or ER qday • Tolterodine 2-4 mg IR BID • Solifenacin 5-10 mg daily • Dicyclomine 20 mg up to QID 	<ul style="list-style-type: none"> • Dry mouth • Dry eyes • Constipation • Delirium
Beta-3 agonist (10)	<ul style="list-style-type: none"> • Mirabegron 25 to 50 mg daily 	<ul style="list-style-type: none"> • Hypertension • Potentiation of metoprolol
Bladder Emptying Agents		
Oral Alpha blockers	<ul style="list-style-type: none"> • Tamsulosin 0.4 mg daily • Terazosin 2-10 mg daily 	<ul style="list-style-type: none"> • Orthostatic hypotension • Terazosin requires titration
Medications that Calm Surface Irritation		
Phenazopyridine. <i>1st line; often used in conjunction with anticholinergics</i> (11)	<ul style="list-style-type: none"> • 100 to 200 mg PO TID as needed (may stain clothing) 	<ul style="list-style-type: none"> • Check UA and culture before initiating • Methemoglobinemia • Skin pigmentation changes with prolonged use
Rectal Opioids	<ul style="list-style-type: none"> • Belladonna extract 16.2 mg daily • Opium 60mg suppository daily 	<ul style="list-style-type: none"> • Opioid side effect profile
Benzodiazepines	<ul style="list-style-type: none"> • Diazepam 5-10 mg via rectum or intravaginally q8 hours prn 	<ul style="list-style-type: none"> • Few systemic side effects
Other	<ul style="list-style-type: none"> • Anti-inflammatories (NSAIDS/steroids) • Systemic opioids • Cannabinoids (12) 	<ul style="list-style-type: none"> • Anecdotal and emerging evidence only

Interventional Procedures:

- Onabotulinum toxin injection to the detrusor muscle may improve spasms even in the setting of an indwelling catheter (13). Urinary retention is a known side effect.
- Surgical resection of bladder tumors or lithotripsy of stones.
- Pelvic physical therapy: consider when hypertonic levator muscle dysfunction is source of discomfort.
- Other: use of intravesical baclofen or bupivacaine infused via an indwelling catheter has been reported, as have nerve blocks (14). A pessary can be considered if anterior vaginal wall prolapse is present (requires trained fitter).

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