

Pharmacology for the Lower Urinary Tract

Storage Disorders: Ectopic Ureter, Urethral Sphincter Mechanism Incompetence, Detrusor Instability (should not be first differential)

Drug	Phenylpropanolamine (PPA) <i>Proin</i>	Estrogens Estrinol (Incurin)	Oxybutynin
Mechanism of Action	Alpha adrenergic agonist Sympathomimetic Causes norepinephrine release and inhibits NE reuptake Contraction of the bladder neck	Estradiol receptors are located in the urethra (mainly proximal urethra) Increases alpha receptor sensitivity – NE binds to the alpha receptors	Anticholinergic
Side Effects	Restlessness Anxiety, Aggression Increased BP and HR Vomiting and diarrhea *Monitor BP while on drug		Dry mouth
Indication	Urethral Sphincter Mechanism Incompetence May also be used as a part of medical tx for ectopic ureters after surgery	Urethral Sphincter Mechanism Incompetence May also be used as a part of medical tx for ectopic ureters after surgery	Detrusor muscle instability Sometimes used in refractory USMI *Prior to treatment ensure there was not another etiology identified: bacterial cystitis, urolith, polyp, neoplasia, foreign body etc.

* urethral bulking agents (collagen) are also used to help manage storage disorders

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Voiding Disorders: Mechanical vs Functional vs Neurological

Drug	Prazosin or Tamsulosin (Flomax)	Bethanechol
Mechanism of Action	Alpha adrenergic antagonist	Parasympathomimetic
Side Effects	Weakness, lethargy, hypotension	Salivation, diarrhea “SLUD”
Indication	Functional urethral obstruction	Detrusor atony