

# Urinary Incontinence

## (Involuntary Passage of Urine)

### Basics

#### OVERVIEW

- Loss of voluntary control of urination, usually observed as involuntary urine leakage while resting

#### SIGNALMENT/DESCRIPTION OF PET

##### Species

- Dogs
- Cats—rare

##### Breed Predispositions

- Medium- to large-breed dogs most often affected

##### Mean Age and Range

- Most common in middle-aged to old, spayed female dogs; also observed in juvenile females and (rarely) cats or neutered male dogs

##### Predominant Sex

- May affect more than 20% of spayed female dogs, especially large-breed dogs (sometimes called “Hormonal Incontinence”)



#### SIGNS/OBSERVED CHANGES IN THE PET

- Urine dribbling without the pet's control
- Wet hair coat on lower abdomen, area between rear legs and onto rear legs; inflammation of skin (known as “dermatitis”) in these areas; pet may lick affected areas
- Evidence of urine wet spots or puddles in bedding, where pet was sleeping or sitting, other locations in house
- May have signs of urinary tract infection (such as straining to urinate, blood in the urine, painful urination)
- Urine scald (skin condition that looks like a burn due to the irritation of urine on the skin)
- Inflammation of the skin and moist tissues of the vulva or the prepuce (around the penis)
- Leakage may be worse after the pet drinks lots of water or exercises strenuously

#### CAUSES

##### Nervous-System Disorders

- Disruption of nerves involved in storage of urine in the bladder or act of urination
- Lesions of the sacral spinal cord, such as a birth defects; cauda equina syndrome, a group of disorders in which the lumbosacral vertebral canal is narrowed, resulting in pressure on the nerve roots as they leave the spinal cord; lumbosacral intervertebral disk disease; or traumatic fractures or dislocation can result in a flabby, overdistended urinary bladder; urine retention and overflow incontinence develop
- Lesions in the brain may affect voluntary control of voiding, usually resulting in frequent, involuntary urination or in leakage of small volumes of urine

##### Urinary Bladder-Storage Disorders

- Poor accommodation of urine during storage or urinary bladder overactivity (so-called “overactive bladder” or

“detrusor instability”) leads to frequent leakage of small amounts of urine

- Urinary tract infections; chronic inflammatory disorders, such as “chronic cystitis”; cancer involving the bladder; pressure on the bladder from masses or fat; and chronic partial obstruction of the urethra (the tube from the bladder to the outside, through which urine flows out of the body)
- Underdevelopment of the bladder (known as “congenital urinary bladder hypoplasia”) may accompany other congenital (present at birth) developmental disorders of the urinary and reproductive tracts
- The detrusor muscle acts to squeeze the bladder to expel urine; disorders of this muscle (known as “idiopathic detrusor instability”) has been associated with feline leukemia virus (FeLV) infection in cats and unknown causes in dogs

### **Urethral Disorders**

- The urethra is the tube from the bladder to the outside, through which urine flows out of the body
- Intermittent urinary incontinence is observed if urethral closure provided by urethral smooth muscle, striated muscle, and connective tissue does not prevent leakage of urine during storage
- Examples—underdevelopment of the bladder (congenital urinary bladder hypoplasia); acquired (develops during life/after birth) urethral incompetence (such as reproductive hormone–responsive urinary incontinence); urinary tract infection or inflammation; prostatic disease or prostatic surgery (male dogs)

### **Anatomic or Structural Disorders**

- Developmental or acquired anatomic abnormalities that divert urine from normal storage mechanisms or interfere with urinary bladder or urethral function
- The ureters are the tubes from the kidneys to the bladder; during development, they may not attach to the bladder properly or may attach to reproductive organs instead; when this occurs, they are called “ectopic ureters” and one or both can terminate in the distal urethra, uterus, or vagina
- Patent urachal remnants divert urine outflow to the umbilicus
- Abnormalities of the vagina, bladder or urethra
- Intrapelvic bladder neck location may contribute to urine leakage due to urethral incompetence (the inability of the urethra to prevent urine flow)
- Conformation abnormalities of the vulva or tissues around the vulva may contribute to urine pooling and intermittent urine leakage

### **Urine Retention**

- Overflow observed when pressure within the bladder exceeds the ability of the sphincter and urethra to prevent urine flow

### **Mixed Urinary Incontinence**

- Mixed or multiple causes of urinary incontinence are observed in people and probably occur in dogs and cats; combinations of urethral and bladder-storage disorders and combinations of anatomic or structural and functional disorders are most likely

## **RISK FACTORS**

- Neutering is the main risk factor for urinary incontinence; however, most spayed female dogs do not develop incontinence
- Early spay (surgical procedure is removal of ovaries and uterus; known as an “ovariohysterectomy”) in puppies less than 3 months of age has been shown to increase the risk of urinary incontinence in female dogs
- Conformational characteristics (such as bladder neck position, urethral length, and vaginal abnormalities) may increase the risk of urinary incontinence in female dogs
- Obesity may increase the risk of urinary incontinence in spayed female dogs
- Other possible risk factors for urethral incompetence include breed, large body size, increased urination (known as a “polyuria”) and early tail docking

## **Treatment**

### **HEALTH CARE**

- Your pet's veterinarian will assess your pet for potential causes of urinary incontinence and contributing factors
- Most cases will be managed successfully with medication
- Some cases will require surgical correction of anatomic problems, or injection of bulking material (such as

collagen) into the urethra to prevent leakage

- Usually as outpatient
- Address partial obstructive disorders and primary nervous system disorders specifically, if possible
- Identify urinary tract infection and treat appropriately

## DIET

- Weight management to prevent or treat obesity may decrease risk of urinary incontinence

## SURGERY

- Developmental urinary tract disorders (such as ectopic ureters and congenital urethral hypoplasia) often can be corrected surgically; functional abnormalities of urethral competence or urinary bladder storage function may accompany the anatomic or structural disorder and require medical treatment
- Surgical procedures and prosthetic sphincter implantation have been described for the treatment of incontinence that is poorly responsive to medical treatment; however, poor improvement has been seen in long-term follow-up

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

## URETHRAL INCOMPETENCE

- Manage with reproductive hormones (such as stilbestrol, diethylstilbestrol, conjugated estrogens, estriol, and testosterone) or  $\alpha$ -adrenergic agents (such as phenylpropanolamine, phenylephrine, pseudoephedrine)
- Reproductive hormones and  $\alpha$ -adrenergic agents can be administered in combination for a synergistic therapeutic effect, where multiple medications have a better effect than the single medications alone
- Imipramine, a tricyclic antidepressant (TCA) with anticholinergic and  $\alpha$ -agonist actions, provides an alternative method of treatment
- Deslorelin also has been used in cases that respond poorly to other medications

## DETRUSOR INSTABILITY

- Manage with anticholinergic or antispasmodic agents (such as oxybutynin, propantheline, imipramine, flavoxate, and dicyclomine)
- Tolterodine—has not been used widely in dogs

## PROSTATIC DISEASE

- Antibiotics for the treatment of infection/inflammation of the prostate (known as “prostatitis”) or prostatic abscesses
- Drugs to treat benign prostatic hyperplasia (“enlarged prostate”) and to cause enlarged prostate gland to return toward normal size, such as finasteride

## Follow-Up Care

### PATIENT MONITORING

- Pets receiving  $\alpha$ -adrenergic agents—observe during initial treatment period for adverse effects of the drug, including rapid heart rate, anxiety, and high blood pressure (known as “hypertension”)
- Pets receiving long-term estrogen—initial, 1 month, and periodic complete blood counts
- Periodic urinalysis and urine bacterial culture (to check for possible urinary tract infection)
- Take your pet to the veterinarian if you notice an increase in frequency of urination, an increase in urine leaking, or blood in the urine
- Once a therapeutic effect has been observed, slowly reduce the dosage and frequency of administration of medications to the minimum required to control signs of incontinence; dosage and frequency of administration should be changed under the direction of your pet's veterinarian
- Consider combination treatment ( $\alpha$ -adrenergic agents with reproductive hormones or anticholinergic agents), deslorelin or surgical options, if poor response to single-agent medication

## **POSSIBLE COMPLICATIONS**

- Recurrent and ascending urinary tract infection
- Urine scald (skin condition that looks like a burn due to the irritation of urine on the skin)
- Inflammation of the skin (dermatitis) and moist tissues of the vulva
- Inflammation of the skin (dermatitis) on lower abdomen, area between rear legs and rear legs
- Unmanageable incontinence

## **EXPECTED COURSE AND PROGNOSIS**

- Most dogs with urinary incontinence will respond well to medications and have complete resolution of incontinence (with rare lapses)
- Expect excellent response to medical treatment in 60–90% of treated pets
- Some dogs will require an adjustment in medication dose or type over time (years)
- A smaller percentage of dogs will not respond well to medication and will require combination medications, collagen injections or surgical procedures to improve continence; these dogs usually will be “improved,” but not “cured”
- The prognosis for improvement is less optimistic for cats and for male dogs

## **Key Points**

- Loss of voluntary control of urination, usually observed as involuntary urine leakage
- Medium- to large-breed dogs most often affected
- Most common in middle-aged to old, spayed female dogs
- Obesity may increase the risk of urinary incontinence in spayed female dogs
- Urinary tract infection is a possible complication of urinary incontinence