Urinary Incontinence

Urinary incontinence is a common condition in older female dogs. It is less common in cats and male dogs. Some dogs are aware of their incontinence and find it distressing. For owners, managing a pet's incontinence in the home can be difficult, and for some it can disrupt the relationship with their pet. Fortunately, there are medical and surgical treatment options available for incontinence.

Potential causes of incontinence include:

- Urethral sphincter mechanism incompetence (USMI)
- Urinary tract infection
- Bladder stones
- Urge incontinence/detrusor instability/urinary dyssynergia
- Excessive thirst (as large volumes of urine are produced)
- Prostate disease (usually in uncastrated dogs)
- Neurological disease e.g. slipped disc
- Behavioural problem
- Ectopic ureter (congenital abnormality)
- Partial urethral obstruction e.g. tumours, partially voided bladder stones
- Complex congenital disorders

Based on the breed and age of your pet, and the pattern of incontinence, we are able to determine which is the most likely cause of the incontinence. Investigations are then carried out to confirm the underlying cause, and then we will discuss treatment options and prognosis for improving or even curing the incontinence. To investigate incontinence, we can use:

- Blood and urine tests: especially in animals with suspected urinary tract infection or systemic medical disease
- Ultrasound: this can usually be performed in conscious or sedated animals without undue stress
- Advanced imaging: including contrast CT or radiographic studies of the urinary tract
- Cystoscopy: minimally invasive examination of the urinary tract with an endoscope to look for anatomical abnormalities, such as ectopic ureters. Cystoscopy can also be used to take biopsy samples of the urinary tract.

How can we help your pet?

Anderson Moores are able to investigate all causes of urinary incontinence, using diagnostic tools such as cystoscopy (using a camera passed non-invasively into the urethra and bladder), ultrasound and computed tomography (CT) scans. We are able to offer a complete range of medical and surgical treatment options for urinary incontinence, including: colposuspension, urethropexy, artificial urethral sphincter placement, ectopic ureter correction via abdominal surgery, and cystoscopic treatment of ectopic ureters.

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Urethral sphincter mechanism incompetence (USMI)

What is USMI?

There is no true urethral sphincter in the urethra, so continence is maintained by the tissues in the urethral wall. The term urethral sphincter mechanism incompetence is used to define weakness of the urethral 'sphincter' leading to urine leakage. It is comparable to stress incontinence in women, but the condition is not completely understood, and is not related to pregnancy or giving birth as in women.

Clinical signs are usually of a slowly progressive incontinence, characterised by leaving puddles of urine where the dog has been lying or sleeping. Most dogs also urinate normally and don't have 'accidents' in the house (as seen with urge incontinence or excessive thirst).

Acquired USMI in the bitch is by far the most common presentation of USMI. Urinary incontinence may affect from 5 to 20% of neutered female dogs, and most cases of urinary incontinence are due to acquired USMI. It is also occasionally seen in male dogs, often after neutering, but it is rare in cats of either sex. Reported risk factors for incontinence include poor urethral tone, short urethral length, intrapelvic bladder neck position, breed, hormones and obesity. Large and giant breed dogs are seven times more likely to develop USMI than smaller dogs and over-represented breeds in the UK are Dobermans, Old English sheepdogs, Rottweilers, Weimeraners, Springer spaniels and Irish setters. Obesity does not cause USMI but will make the incontinence worse, so weight loss will help affected dogs.

Congenital incontinence may occur in dogs of either sex and approximately half become continent after the first season. Neutering these dogs after the first season is inadvisable even if they appear to have become fully continent. Congenital USMI is also sometimes seen in young patients in conjunction with ectopic ureters and may contribute to continence problems after surgical or endoscopic management of the ectopic ureters.

Does neutering affect continence?

It is not currently possible for veterinary surgeons to make firm recommendations on the age at neutering or its effect on the risk of urinary incontinence. However urinary incontinence may affect from 5 to 20% of neutered female dogs, within 2-5 years of neutering. A study published in 2017 looked at 163 bitches with acquired USMI. It found that neutering bitches expected to be >25 kg adult weight later in their first year may decrease the risk of developing USMI, whereas age at neutering of bitches <25 kg may not impact whether or not they develop incontinence. Owners of larger breed dogs may therefore choose to neuter after one year of age.

How is USMI diagnosed?

Diagnosis relies on a thorough work up of the urinary tract to rule out other causes e.g. excessive thirst and urge incontinence are ruled out based on history and clinical signs and a urine culture is needed to rule out urinary tract infection (UTI). UTI is a rare cause of incontinence and it will resolve with antibiotics if it is the single underlying cause. Ectopic ureter can be ruled out by ultrasound or cystoscopy. Finally, a diagnosis of USMI is made based on history and ruling out all other causes.

How is USMI treated?

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In female dogs, medical treatment should be tried as a first line of treatment. The most common treatment is the α-adrenergic agonist phenylpropanolamine which increases urethral resistance. This is available as an oral veterinary licensed medication. 85-90% of bitches are cured or improved with medical therapy, but treatment is life-long. If phenylpropanolamine fails to work, or if it causes side effects such as behavioural changes, oestrogens e.g. estriol (also available as an oral veterinary licensed medication) can be used in addition to phenylpropanolamine. Oestrogens are best used in together with phenylpropanolamine as they improve smooth muscle contractility and the sensitivity to α-adrenergic stimulation, so that phenylpropanolamine works better. As with most medications, contraindications and complications of drug use exist, and you should read the data sheet or discuss these issues with your veterinary surgeon.

Potential problems with medical therapy are that some animals do not respond, there may be insufficient response, there may be side effects or owners may not wish to medicate long term (especially young bitches). Over time the effects of the drugs may diminish so that responsive bitches may lose continence. In these cases, surgical therapy is considered.

What surgical options are available?

The most common goals of different surgical treatment options are to either:

- move the bladder neck into the abdomen e.g. colposuspension, urethropexy
- increase urethral resistance e.g. artificial urethral sphincter, intraurethral bulking agent e.g. collagen, transvaginal tape/sling, artificial urethral sphincter

Colposuspension

Traditionally USMI was treated surgically by colposuspension. Urethropexy works similarly, with similar success rates, and is preferred by some surgeons. For owners wanting to choose a surgery without implants, we recommend colposuspension. It can only be performed in females. During colposuspension, an abdominal surgery is performed and the vagina is pushed forwards in the abdomen, where it is sutured on either side of the urethra to the prepubic tendon, a strong tendon at the front of the pelvis. As the vagina is adherent to the urethra, this procedure works by also moving the bladder and urethra into a more abdominal position and creating a sling around the urethra, both of which will contribute to improved continence. Serious complications are uncommon, although occasionally bitches need urinary catheterization for a few days. Surgery of any kind can lead to a temporary worsening of incontinence. A study of 150 dogs showed 50% of dogs are cured and 40% improved after colposuspension, of which the latter may become continent with concurrent medical management. Over time, gradual stretching of tissues can lead to a recurrence of incontinence. Dogs may then respond to medication, even if it hadn't worked prior to surgery, or colposuspension can be repeated, or other techniques used.

Artificial urethral sphincters

More recently a percutaneously adjustable artificial urethral sphincter (AUS, Infiniti Medical) has been developed and this is likely to be the future of USMI surgical therapy, although there are not yet any long-term studies. It can be used in male and female dogs and cats with congenital or acquired USMI as well as animals with ongoing incontinence after ectopic ureter surgery. It can also be used if other techniques have failed. An abdominal surgery is performed to place an AUS around the urethra. It is attached to a small injection port placed under the skin. After 6 weeks, when the urinary tract has recovered from the surgery, animals are assessed for continence. About 40% of patients are continent with placement of the AUS alone. If they are still incontinent at 6 weeks, fluid can be added incrementally to the AUS via the injection port, using specially

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designed needles, until continence is achieved. Dogs and cats tolerate this injection, which is performed without sedation. Significant improvements in continence scores are obtained and it is comparable, or possibly better than, colposuspension. In one published study more than 90% of dogs achieved functional continence (continence score ≥9/10). Some of these dogs required additional injections into the port or medication as well as the AUS, but it is still a better result than colposuspension. Surgery of any kind can lead to a temporary worsening of incontinence. Serious complications are uncommon but late urethral obstruction or infection may require removal of the device.

The AUS is a revolution in the management of late onset USMI in male dogs. Previously this condition has been considered largely untreatable, as the response to medical therapy or urethropexy is disappointing. Implantation of the AUS in an older incontinent male dog may mean the difference between a happy household pet and one that has to be banished to an outdoor kennel in his later years. Similarly, it offers an option for the male dogs who remain incontinent after treatment of ectopic ureters.

Are there any other options, avoiding surgery?

Intraurethral bulking agents e.g. collagen, can be injected in a submucosal location at several sites around the circumference of the proximal urethra via a cystoscope. The main advantage over abdominal surgery is that it can be performed on an outpatient basis and can be repeated as often as is needed. The procedure has good short-term efficacy with up to 70% of bitches continent and 25% having improved continence. Further improvements in bitches not fully continent can be achieved by adding medication or repeating the injection. As the procedure is carried out via the cystoscope, there is no surgical incision involved and recovery is painless and very quick. However, the collagen injection does not last very long; in most dogs there is flattening of the collagen over 10-12 months and repeat treatment is needed. For older bitches, however, this simple procedure is ideal. Serious complications are uncommon.

Anderson Moores is able to offer colposuspension, urethropexy, artificial urethral sphincters and intraurethral collagen treatments for patients with USMI. We always discuss the pros and cons of all options with owners and to help them make the most appropriate treatment decision for their pet. Please contact us if you have a case you wish to discuss.

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Ectopic Ureter

What is an ectopic ureter?

Ectopic ureters are an embryological abnormality, occurring due to abnormal positioning of the ureters as they develop in the embryo. It may affect one or both ureters. Normally, ureters open into the bladder, where urine is stored until the animal passes urine. Ectopic ureters open in an abnormal position, usually in an abnormal place in the bladder or in the urethra. Rarely they enter the vagina or uterus. The degree of incontinence is often related to the position of the ureter (with worse incontinence the further it is from the bladder) and internal sphincter abnormalities (concurrent USMI – see above). Many dogs have a concurrent urinary tract infection that must be treated with antibiotics before the ectopic ureter can be treated. Some dogs have other anomalies e.g. absent or small kidneys, dilated ureter/kidney, underdeveloped bladder.

Ectopic ureter is not a common presenting complaint within referral practice but accounts for 50% of incontinence in young animals. Most ectopic ureters are seen in female dogs, partly because affected males are less likely to be incontinent due to a long urethra. It is a rare condition in cats. Whilst often incontinent from a young age, the median age at diagnosis is 10 months with males being older. It also occasionally presents late in life, so should remain a differential for incontinence in older animals. There is a breed predisposition for Labrador and Golden Retrievers, Skye Terriers, Siberian Huskies, West Highland White Terriers, Wirehaired Fox Terrier, Newfoundland, Soft-coated Wheaten Terriers and Miniature/Toy Poodles, and may affect more than one littermate. Urinary tract infection is concurrent in 2/3 cases.

Dripping urine, often since birth or weaning, is the most typical presentation of ectopic ureter(s). Dogs may have urine scalding (brown staining) of the perineum and back legs.

How is an ectopic ureter(s) diagnosed?

Diagnosis rests on imaging findings. Ultrasound is usually the first diagnostic tool used, looking for the entry site of a normal ureter into the bladder, and can usually be performed conscious or with sedation. Cystoscopy is particularly useful for final diagnosis, as the position of the ureters can be easily seen and the urethra can be examined for multiple ectopic openings or abnormal jets of urine. Cystoscopy is preferred over radiography (X-ray studies). Sometimes CT is used for very challenging cases or in very large or small male dogs where cystoscopy may not be possible.

How are ectopic ureters treated?

Ectopic ureters can be treated surgically via an abdominal approach or via a cystoscope (see below for which animals this technique is suitable). Urinary tract infections have to be ruled out with a urine test, and if present treated with antibiotics, prior to treatment of the ectopic ureter. Full resolution of incontinence, without the need for additional medications, occurs in approximately 50% of dogs and is unrelated to age, whether one or both ureters are ectopic, or the presence of urinary tract infection at diagnosis. There is a similar success rate for achieving continence for both surgical and cystoscopic treatments. Dogs that remain incontinent following ectopic ureter treatment may have also USMI (see above) and may be considered candidates for medical therapy or any of the surgical treatment options of USMI.

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Cystoscopic Ablation

A less invasive treatment is removal of the common wall between the ectopic part of the ureter and the bladder/urethra via cystoscopy. This moves the opening of the ureter from its abnormal position to the correct anatomical position in the bladder. Treatment is performed by passing the cystoscope up the urethra and cutting the wall using tiny scissors passed up the endoscope. This is achieved (via the vagina) in female dogs and does not require a surgical approach. Male dogs can have cystoscopic treatment but require a small surgical approach in the perineum to enter the urethra. Very small dogs can unfortunately not be treated cystoscopically.

The procedure is minimally invasive and dogs will have reduced post-procedure pain and shorter hospitalization times compared to abdominal surgical treatment. Outcomes are similar to surgical correction.

Surgery

Surgical treatment is performed via an abdominal approach. The bladder is opened and a new opening made between the ureter and the bladder at the correct location in the bladder. The ectopic portion of ureter is either removed or tied off so that urine can no longer flow down it to the abnormal opening. This means that urine will flow out of the ureter into the bladder at the correct anatomical location. Ectopic ureter surgery is technically challenging to perform, so it is typically performed by experienced Specialist surgeons. Major complications are rare. Most dogs have some minor urinary bleeding and straining for several weeks. Surgery of any kind can lead to a temporary worsening of incontinence and it may take 4-6 weeks after surgery for the outcome to be apparent.

Terminology:

Incontinence – leaking urine; involuntary passing of urine

Urethra – tube leaving the bladder, through which urination occurs

Ureter – tube carrying urine from the kidney to the bladder

Neutering – removal of reproductive organs; spay; castrate

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