**Urinary Incontinence in Bitches**

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I see a regular flow of these cases at Rosemary Lodge, both young animals with presumed congenital causes, and older bitches with acquired incontinence. These are referred because a surgical solution is sought, to address an anatomical abnormality or when empirical medical management has failed.

We are fortunate to have the most useful of the diagnostic aids available, notably urethroscopy for bitches of all sizes and CT. The latter has replaced conventional intravenous radiography. IVU with CT imaging gives excellent anatomical information on the ureters and kidneys. It is not required in all cases, and I use it in a selective way, for animals with particularly complicated issues. In other instances, urethroscopy together with ultrasonography and retrograde vaginourethrography are often sufficient to confirm diagnosis. This is because it does add significant cost to the investigation, and I am aware that financial circumstances do not allow us always to apply every test in every case.

The two most common diagnoses in incontinent bitches are urethral sphincter mechanism incompetence (USMI) and ectopic ureter (EU). Although USMI is most common in adult bitches, and EU most common in juveniles, either can occur in bitches of any age, and this is why investigations are required in each case.

Figure 1. Retrograde vaginourethrogram of a bitch with urethral sphincter mechanism incompetence. The bladder neck is clearly intrapelvic in position.

Prior to referral, I would always suggest urine bacteriology on a sample by cystocentesis. Not only is infection a common complicating factor, but if no infection is present on the day of my consultation, I may be able to complete the investigations and appropriate surgery on the same day if the owners wish.
Urinary incontinence in bitches cont

Although radiographs have often been undertaken prior to referral, there has rarely been a useful vaginourethrogram taken, and this is something I always require. Details on how to do this in the way I recommend are in the BSAVA Manual of Abdominal Imaging, in which I wrote the relevant chapter.

Following my consultation with the client, I will typically plan cystocentesis for urine bacteriology, urethroscopy, ultrasonography of the kidneys and a retrograde vaginourethrogram. CT is used in cases where ectopic ureter is suspected but complicating features are present (and in males and cats, when urethroscopy may not be possible).

Urethroscopy is a very reliable way of diagnosing EU. Compared to trying to identify ureteral termination on radiographs, it is fast and efficient. It is also the best way of investigating other urethral abnormalities, such as urethral carcinoma.

Retrograde vaginourethography is a key tool to diagnose USMI. In most affected bitches, this investigation reveals a shorter urethra than normal (admittedly a subjective assessment) and an intrapelvic bladder neck. Readers should note that this assessment cannot be made on Ultrasonography or pneumocystography.

Various medical and surgical options are available for USMI in adult bitches. Those referred are usually where medical management has failed (Incurin, Propalin, Urolin etc.) or has been rejected by the owners. In these cases I usually offer colposuspension, a well tried surgical procedure. Other reported surgical procedures include urethropexy and artificial urethral sphincter (AUS) placement. The published outcomes of these appear similar to colposuspension: a good or excellent outcome in 90%. Complications are rare after colposuspension. I keep them in hospital overnight for analgesia and to observe normal urination before discharge. A three week period of restricted activity is advised.

In other cases, ureteral transplantation is performed. I perform this at open surgery, again a tried and tested technique. Although laparoscopic surgery and transurethral surgery have been described recently, no large series of cases have been published and each have significant reported problems.

The prognosis for continence after management of EU by any technique is similar: 50% cured, 25% improved and the remainder unchanged.

Persistant incontinence is usually attributed to concurrent USMI, although technical failure occasionally occurs. It is critical that urinary tract infection is eliminated before ureteral surgery, else a high rate of complications is expected.

Details of colposuspension and ureteral transplantation are found in the relevant chapter of the BSAVA Manual of Abdominal Surgery, authored by myself.

Other causes of incontinence are occasionally encountered and other treatments required. For example urethral hypoplasia, intersexuality, male USMI and ureterovaginal fistulation. The author has extensive experience with this range of causes and is always happy to offer advice on cases, radiographs and to accept cases for referral.

Figure 3. Retrograde vaginourethrogram showing a unilateral ectopic ureter terminating at the urethral papilla, with moderate ureteral distension.

Figure 2. Endoscopic image of a ureterovaginal opening in the normal position (at the trigone)

Ectopic ureter is managed surgically. If investigations reveal secondary changes in the kidney (severe hydronephrosis, pyelonephritis), then ureteronephrectomy is recommended.
Urolithiasis is an important disease condition in many small mammals and particularly guinea pigs. This disease most commonly affects middle aged to older guinea pigs (over 2.5 years old) and stones may be found anywhere along the urinary tract (bladder, urethra, ureter, and kidneys). Calcium-containing stones such as calcium carbonate and calcium oxalate are most commonly reported. The exact cause of urolithiasis in guinea pigs remain unclear. Diet seems to play a role as calcium and oxalate seems to be the main risk factors in stone formation. Infections and mechanical factors may also predispose to calculus formation. Signs generally depend on the size and location of the stone(s). Some patients may present with stranguria and/or haematuria.

More commonly, clinical signs may reflect abdominal pain, such as a hunched posture or teeth grinding, or animals may show non-specific signs of disease such as anorexia, lethargy, and weight loss. Although presentation may be acute, it is common for signs to progress over days to weeks in affected guinea pigs. A complete history, including dietary history, is extremely important.

Urolithiasis should be considered in any rodent with changes in their urinary output or with non-specific signs of illness. A blood and urine sample should be collected to rule out kidney involvement and the presence of infection. Laboratory findings may reflect a hypercalcemia or evidence of cystitis. Abdominal radiographs are also valuable in detecting sludge within the bladder or stones along the urinary tract.

Abdominal ultrasound can help to confirm a presumptive diagnosis made using radiographs or it may be necessary to diagnose the presence of uroliths within the urethra, ureter, or kidneys. Medical treatment has been unrewarding and there is a high risk of recurrence once the calculi have been surgically removed. Because the exact mechanism of stone formation is not known in guinea pigs, dissolution and prevention of calculi has not been possible in this species. The following recommendations are suggested:

1. Dietary modification: There are no effective stone dissolution diets in guinea pigs.

   However, reducing dietary calcium and oxalate levels (i.e. switch to a grass-hay or timothy hay and pellets based diet rather than alfalfa because of the lower calcium and higher fibre content) may be of help. Food containing high levels of oxalate (e.g. spinach, celery, parsley, strawberry) should be limited, especially in conjunction with a low calcium diet. Any mineral blocks or supplements should be removed from the diet.

2. Vitamin C supplementation is extremely important in guinea pigs and when limited to 25-100 mg/kg per day is unlikely to result in excess oxalate levels.

3. Diuresis: the daily fluid intake should be increased to promote flushing of the bladder.

4. Concurrent antibiotic therapy may be indicated in selected cases where infection has been identified along with adequate pain control.

5. Surgery: if the guinea pig is not obstructed, supportive care, including fluids should be provided, and then surgery scheduled for removal and analysis of the stone. Culture/sensitivity testing should be considered as this can be valuable for a targeted medical therapy.

Figure 1. Radiographic latero-lateral image of the total body of a female guinea pig showing a radiopaque urolith within the distal urethra. Analysis showed the stone was made of calcium carbonate (83%) and struvite (20%).

**Future CPD Date 2016**

**Wednesday 5th October 2016 -**

Respiratory tract medicine and surgery

**Topics covered:**

Investigation of nasal disease, Upper airway surgery, Thoracic imaging and Management of chronic airway disease.

ZERO Referral Consultation FEES for any UK forces staff
Cases recently seen
Complex vascular anomaly with multiple acquired shunts and an arterioportal fistula in a young Cocker spaniel; metastatic carcinoma of unknown primary affecting sublumbar lymph node, lungs and brain in an 8 year old Labrador; interscapular sarcoma in a cat; hepatocellular carcinoma in a Cushingoid dog; intracranial haemorrhage due to a coagulopathy caused by longworm; a bearded dragon for tail amputation; septic egg yolk peritonitis in a duck; a cat with a medial tarsal shear injury, skin defect, hip dislocation and pelvic fracture secondary to RTA and an adrenal tumour in a rabbit.

Types of referral seen
- Internal medicine
- Soft tissue surgery
- Endoscopy/laparoscopy
- Medical and surgical oncology
- Ophthalmology
- Neurology
- Cardiology
- Orthopaedic and fracture repair
- Onsite MRI/CT scanning
- Hydro/physiotherapy
- Rabbits, small mammals and exotics

Why Choose Bath Veterinary Referrals?
We pride ourselves on giving you the highest level of service. We strive to enhance your reputation looking after your clients and their pets in a way you would be proud of. We offer a caring friendly and personalised service and keep clients and referring vets informed at all times. We have a superb team of night nurses and night vets, a flagship hospital and the very latest equipment.

Meet the clinicians...

Alex Gough
MA VetMB CertSAM
certifcations: Neuroradiology
MRCVS
Head of Medical Referrals
Alex qualified from Cambridge in 1990 and worked in mixed and small animal practice in 2002, when he opened a referral centre in Bristol. For five years he ran the medical referral service, serving owners in internal medicine, cardiology and neurology. He is the author of different diagnoses in Small Animal Medicine, published in 2017, and co-author of Expert Preparation to Disease which is currently being revised for a second edition. He is a frequent contributor to University Referral and Veterinary Times and a editor of the Blackwell Science Veterinary Sympoim on internal medicine, and a veterinary public information officer. Alex has a strong interest in radiology and completed a one-year postgraduate diploma in radiology in 2003, which he completed during a research, which he was awarded a grant by Edinburgh University with honours. On occasion he has been known to have some spare time during which he plays drums and guitar.

Adasale Adesola Obafaeke
MA VetMB CertSAM
certifcations: Neurosurgery
MRCVS
Head of Surgical Referrals
Adasale graduated from Cambridge vet school in 1990 and his first position was an intern in small animal medicine at Bristol vet school. This was followed by a residency in small animal soft tissue surgery during which time he gained the RCVS Certificate in Small Animal Cardiology and Veterinary Neurology. At the end of his residency, Adasale worked for three years in Aberdeen and then returned to Langford as a surgeon and senior surgeon. He has spent his entire career in small animal surgery and has considerable experience in all areas of soft tissue surgery but has particular interests in surgery of the head and neck, urinary tract surgery and soft tissue surgery. Adasale enjoys life in rural Somerset with his family and chocolate Labrador, "Coco". He tries to find time each week for mountain biking on the Mendips.

Jon Shipman
BVSc CertSAM MRCVS
Jon graduated from the Liverpool vet school in 1988. After 2 years in mixed practice he moved to a small animal practice and in 2004, he was awarded the RCVS Certificate in Small Animal Surgery. Jon became a surgeon for a busy small animal hospital in Gloucestershire where he treated first opinion and internal and externally referred surgical cases. He also ran referral centres in Bristol. Jon has a wide range of surgical experience including joint surgery, fracture stabilization, wound reconstruction, abdominal and thoracic surgery (including thoracoscopy and laparoscopy) and airway surgery. In 2005, he started performing the TLA procedure and in 2009, he began performing arthroscopy and has made stifle arthroscopy and meniscal treatment part of his routine for managing cruciate cases. In 2016, he became one of the first in the UK to be accredited to perform PanHep-

Lisa Garshausen
DVM Med CertSAM
MRCVS
Lisa has an interest in internal medicine and surgery. She graduated from the Royal Veterinary College, London in 1983. She then worked in a busy mixed practice and later as a partner in a referral hospital in London and gained the RCVS certificate in small animal medicine in 1989. Since then she has worked in a number of practices including practices in Australia and Indonesia, where she also worked as a partner in a referral hospital. Outside of work Lisa is a keen runner, swimmer and cyclist and enjoys the outdoors especially cycling and hiking in mountainous areas where she has been known to have some spare time during which she plays drums and guitar.

Sabelia Amsalu
DVM Med SAM
Sabelia graduated from Complutense University, Madrid, in 2008 with a degree in Veterinary Medicine. After graduation, she worked in general practice in the UK and subsequently completed a small animal internship in private practice. Sabelia then joined the Small Animal Internal Medicine referral team at the University of Edinburgh in 2010, and completed a three-year residency program in 2014. She is currently completing a Masters degree in the subject of muscular dystrophy in the Japanese SLC7a1 breed, and is preparing for the European College of Veterinary Internal Medicine examination in Small Animal Medicine. Sabelia has an interest in all areas of small animal internal medicine but particularly enjoys endocrinology, genetics, oncology, and other minimally invasive techniques.

Elisabetta Mancinelli
DVM Med CertSAM Del ECIZM (Small Mammals)
MRCVS
Elisabetta graduated with honours from the University of Naples “Federico II” in 2007. Her research topic was clarifying the functions of nocioception during adult development, during which time she worked in Italy where she initially worked in private practice and wildlife. With the help of the RMW (Rabbit Welfare Association & Fund) Elisabetta started the first European College of Zoological Medicine (ECIZM) residency for Small Mammal Medicine, which she completed at The Royal (Dick) School of Veterinary Studies, Edinburgh. In September 2010 she completed the RCVS Certificate in Zoological Medicine. In 2014, she obtained the ECIZM Diploma, speciality “Small Mammals”. The ECIZM Diploma has only been awarded to veterinary surgeons who have achieved a high level of expertise in their field. However, Elisabetta is the first ever ECIZM, diplomat, speciality “Small Mammals”, to have gained this title by examination. Elisabetta has a keen interest and a great passion for small furries. She regularly writes on “Squirrels” and “The Veterinary Times” as well as lecturing in the UK and abroad.

CRP by Bath Veterinary Referrals
Our next LOW COST CRP course is titled: Medicine and surgery of the kidney and urinary tract
Wednesday 8th June 2016 9.30am – 4.30pm at Coombe Lodge, Blagdon, BS40 7RE
Course Fee – £100 per delegate
Lectures will include: Management of proteinuria, Medical aspects of urolithiasis, Lab investigation of kidney disease and incontinence investigations.

Organising a Referral is simple
Just phone Rosemary Lodge Veterinary Hospital on 01225 832521 and book with one of our receptionists.
One of our clinicians will be very happy to discuss the case details prior to arranging the referral. Once you have made contact we will normally ask to speak directly to the pet’s owner to swiftly arrange an appointment that fits in to their timetable. We do ask you to fax or post us any relevant history with a supporting referral letter.
We will always do our best to fit in any emergency cases immediately and see them on the day you call us.

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