

## **SURGERY OF THE “NETHER REGIONS”**

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### **Introduction**

*The topic “Nether Regions” is by no means a medical term. The author used a certain amount of poetic licence to create a talk that encompasses the surgery of the mammary glands, external genitalia of the female and male dog and cat, as well as the perineal and anal regions. Internal organs such as the uterus, bladder and prostate were not within the scope of this presentation.*

*The talk describes the various conditions and explains the surgical techniques that are used to correct the problem. Where possible, the author will provide practical tips that may increase the chance of success in these techniques.*

### **Surgery of the Female Genitalia**

#### **1. Mammary Neoplasia**

This is one of the most common tumour presentations in older dogs and cats and accounts for 70% of all tumours in dogs and for 17% of all feline tumours. In cats, mammary tumours tend to be much more aggressive. Both male dogs and cats can also develop mammary tumours, but incidence is significantly lower than in females. The highest incidence is usually in the range of 7-11 years old and there are certain breeds predisposed to the condition. It has been shown that neutering female dogs before their first heat reduces the incidence of mammary tumour development by 26%. Spaying the bitch after one season, is also still beneficial, but after she has had two seasons this benefit is lost, especially when referring to the incidence of malignant mammary tumours.

Dogs have 5 pairs of mammary glands, two thoracic, two abdominal and one inguinal set. In cats the inguinal glands are either absent or rudimentary, leaving them with only 4 pairs. The glands are tubular-alveolar structures surrounded by a fibroelastic capsule and have a single teat duct exiting them.

The blood supply of the mammary glands originates from the lateral and internal thoracic arteries (which supply the cranial three sets of glands) and the external pudendal artery which becomes the cranial superficial epigastric vessel and supplies the caudal two glands.

Animals may present with more than one lump and it is important to remember that each tumour may be a completely different histological cell type. Benign and malignant tumours may occur simultaneously. This has important implications and the recommendations for resection of mammary tumours are that all lumps are removed and all lumps should be sent

off individually for histopathology. Mixed mammary tumours refer to tumours that consist of both tubular and glandular structures and does not mean a mixture of benign and malignant cell types.

Treatment of choice in mammary tumours is surgical resection. The various categories of this are: lumpectomy (nodulectomy), simple mastectomy, regional mastectomy (en bloc resection of 2-3 glands based on their known blood and lymphatic supply) and chain mastectomy which includes the resection of all glands down one side of the mammary chain. If all glandular tissue requires resection, then staged procedures 4- 6 weeks apart are advised. Both radiation therapy, chemotherapy and anti-oestrogen therapy have been used for incompletely removed tumours. Sometimes it is most appropriate to monitor for recurrence with periodic chest radiographs

Prognosis is determined by the type of tumour, size of the tumour. Tumours with a diameter larger than 3cm in dogs (2cm in cats) have a worse prognosis than smaller tumours. Evidence of spread to the lymphatic system, adherence to deeper tissue structures, ulceration of the tumour surface and rapid growth of the mass, are other indications of a poor prognosis.

### **Common types of mammary tumour**

#### Benign Tumours:

Adenoma/fibroadenoma - A benign glandular tumour for which surgical resection is curative. No follow up treatment is required. .

Benign mixed mammary tumour - a combination of epithelial cells that line the glandular tissue and mesenchymal cells that make up the non-glandular portion, both occur in these tumours.

Papilloma/myeloepitheliomas and mammary hyperplasia - all benign changes for which surgical resection is curative.

#### Malignant Tumours:

Carcinomas (complex or simple), sarcomas and carcinosarcoma.

Adenocarcinoma - These can be “tubular” or “papillary” depending on that gland cells the tumour arises from. Adenocarcinomas behave malignantly but how aggressively malignant they are, depends the cellular characteristics described by the pathologist. Solid and anaplastic carcinomas tend to be much more aggressive than the tubular varieties.

Inflammatory carcinoma - These are highly malignant tumours that generate tremendous inflammation locally with ulceration, pus and discomfort. This type of tumour tends to spread early in its course and is difficult to treat. Fortunately, this tumour type accounts for less than 5% of mammary tumours.

## **2. Vulval Fold Episioplasty**

This is a condition often diagnosed in Pugs and Bulldogs. Boerboels also seem to account for a high number of cases. The condition is acutely linked to obesity and is also known as a “recessed vulva”. Peri-vulvar dermatitis, pyoderma and recurrent urinary tract infections are

associated with the condition. Surgical correction involves a simple elliptical, full thickness incision of the skin fold dorsal to the vulva. Monofilament absorbable sutures are placed at evenly spaced intervals in the subcutaneous layers and a simple interrupted skin suture layer is used to complete the repair. An Elizabethan collar should be used in the immediate post-operative period to avoid self mutilation by the patient. Prognosis is excellent, especially if repair is coupled with a strict weight reduction diet.

### **3. Vaginal Hyperplasia**

This is a very distinctive, although not terribly common condition, seen in young, female dogs during oestrus or proestrus. It results from hormonal stimulation causing oedematous swelling of the ventral floor of the vagina. It differs from vaginal prolapse, which is more likely to occur during partus or straining secondary to constipation, and involves a 360 degree protrusion of vaginal mucosa from the vaginal opening.

Vaginal hyperplasia is more common in large breed dogs that are under 2 years old. It has a familial origin and clients should be advised not to breed with these dogs. Treatment of choice includes reducing swelling of the mass using castor sugar soaked abdominal swabs and preventing self mutilation and drying out. Transvulval sutures can be used temporarily to help manually reduce the mass. Definitive treatment is to perform an ovariohysterectomy in the bitch as soon as possible and this gives complete resolution of the condition.

### **4. Episiotomy**

In many instances the vulval opening severely hinders examination of the vaginal region and the urethral opening. One means of gaining better visualisation is to perform an episiotomy. This is a full thickness incision through the caudal vaginal wall. Large haemostats or Doyen atraumatic forceps are placed vertically up the vaginal vestibule and then the incision is made between these two instruments.

Episiotomy serves the surgeon many possibilities like the removal of vaginal tumours under direct visualisation, aiding in dystocias and visualisation of the urethral papilla in cases of urinary outflow obstruction.

Repair of the episiotomy incision is done in a 3 layers closure using a monofilament absorbable suture material and a simple interrupted suture pattern.

### **5. Vaginal Tumours**

Vaginal masses are not an uncommon finding in female dogs, fortunately most are benign and often they are pedunculated and intraluminal, which makes resection easier than initially anticipated. The most commonly encountered vulval-vaginal tumour type are fibroleiomyomas, lipomas, leiomyosarcomas, squamous cell carcinomas and transmissible venereal tumours (TVT). Fibroleiomyomas tend to be smooth, firm and white, often pedunculated and easy to remove. TVT's on the other hand are diffuse, friable and bleed easily.

Excisional biopsies are the treatment of choice and episiotomies can make a surgeon's life much easier by providing direct visualisation. Where tumours are more extensive, removal of the entire mass via a vulvovaginectomy or even complete resection of the reproductive tract via a ventral celiotomy and pelvic Osteotomy may be required. Good quality of life can be maintained, especially if the surgeon manages to resect the entire neoplastic mass. In the case of TVT's, medical treatment with a chemotherapeutic agent like Vincristine is the treatment advocated.

## **Surgery of the Male Genitalia**

### **1. Testicular Neoplasia**

An interesting study revealed that 27% of intact, male dogs showed signs of testicular neoplasia at time of necropsy (Grieco et al, 2008). Usually this involved older dogs with an average of greater than 10 years old. Most testicular neoplasms are likely benign and hence metastasis is rare. This does not include the cryptorchid testicles, which transform to malignant tumours at a very early stage.

Scrotal tumours, which are most commonly mast cell tumours and melanomas, must be differentiated from testicular neoplasia. Testicular neoplasms are usually Sertoli cell tumours (which produce oestrogen) and Leydig or interstitial cell tumours (which produce excessive testosterone). Others include Seminomas and mixed germ cells stromal tumours. Multiple tumours of completely different cell types may be present within the same testicle. Testicular tumours in cats are extremely uncommon. Castration is the surgical treatment of choice and is curative in most cases.

### **2. Phimosis/ Paramphimosis/ Hypospadias**

Phimosis is the inability to extrude the penis from the sheath or prepuce. It is a rare condition in which the Preputial opening is too small or completely absent. It may be developmental, but can also be caused by trauma to the preputial sheath or secondary to preputial neoplasia or cellulitis. It results in secondary infection, self-mutilation and pooling of urine which causes cystitis.

Paramphimosis, in contrast, is the inability to retract the penis back into the prepuce. It may be associated with trauma, neurogenic abnormalities, copulation, penile haematomas, neoplasia or foreign bodies. Once retracted, a normal preputial sheath should cover the penis with an excess of at least 1cm. Acute paramphimosis is usually managed conservatively. In cases where this is not sufficient, either a preputiomy is performed, a partial penile amputation, or cranial advancement of the prepuce using imbrication of the cranial preputial muscles.

Hypospadias is the last condition discussed in this group. It is a developmental abnormality in which the urethra opens ventral and caudal to the usual urethral orifice. It is also a rare condition and is often associated with other congenital abnormalities like incomplete preputial development, persistent frenulum, hermaphroditism and penile hypoplasia. Treatment

of choice is a multilayer closure of the primary defect and castration of the individual to prevent this familial trait being passed on to offspring

### **Perineal surgery**

Patient preparation for most surgical procedures of the anus and perineal region involves good clipping and cleaning of the affected area. Placing a purse-string suture to prevent faecal contamination of the surgery site and correct positioning of the patient in sternal recumbency with the hind limbs hanging off the end of a preferably tilted theatre table.

#### **1. Anal saccullectomy**

The indications for unilateral or bilateral anal saccullectomy are chronic infection, impaction and sinus tract development or neoplasia. The technique is performed using either an open technique, in which the anal sphincter is severed to gain full access for dissection of the anal duct, or a closed technique in which blunt probes or cavity fillers are utilised and this allows the anal sacs to be removed without any damage to the anal sphincter. The second technique is the preferred method as it is less invasive, but requires better instrumentation and a certain degree of surgical skill. Faecal incontinence is a possible complication with any technique for removing the anal glands. Monofilament absorbable suture material should always be used to close dead space after these type of surgeries and contamination should be kept at a minimum.

#### **2. Feline perineal urethrosotomy**

A common presentation (almost 10% of feline hospital admissions) is that of cats showing signs of feline lower urinary tract obstruction (FLUTOS). The cause of this may be due to the production of uroliths that end up blocking the very narrow penile urethra or, more commonly, by a condition called Feline Idiopathic Cystitis (FIC). This condition is often initiated by stress or environmental conditions. Obesity is strong predisposing factors and female cats are affected by this condition with the same frequency as male cats. The difference is that female cats are unlikely to block due to the difference in anatomy.

In most cases these patients can be successfully managed medically using careful catheterisation of the penile urethra and massage. Flushing the urethra with saline and the administration of anxiolytics or sedatives have also been used successfully.

In cases where recurrent blockage occurs, a definitive treatment would be performing a preineal urethrosotomy.

### **Conclusion**

The surgery of the “Nether Regions” is an interesting and very practical chapter of veterinary surgery. Many of the procedures are simple and as long as the correct diagnosis is made and the physiology of the condition is understood, a successful outcome is easily attained. The blood supply to this region is profuse and conditions tend to develop rapidly and look worse than they are. Oedema and self trauma to the area also tend to make the conditions look more serious. Tumours progress rapidly and although resection of these often appears daunting,

they are usually benign, often “shell out” and in most cases carry a good prognosis, so excisional biopsies are recommended. Reconstruction of the existing anatomy post resection may also appear difficult, but if approached systematically, using a monofilament absorbable type suture material, very satisfactory and functional results can be attained.

### **Recommended Reading**

Chang S C 2005 Prognostic Factors associated with survival two years after surgery in dogs with malignant mammary tumours. *JAVMA* 227: 1625.

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