



Susan Reddan RVN, Dip AVN Surgery, Cert Exotics

Susan qualified as a veterinary nurse in 2001. Since then she has completed a Certificate in Veterinary Nursing in Exotics & Wildlife and achieved her Diploma in Advanced Veterinary Nursing. She currently works as head nurse in Crescent Veterinary Clinic in Limerick. Susan enjoys all aspects of nursing and has two dogs and a cat.

To cite this article use either
DOI: 10.1111/vnj.12101 or Veterinary Nursing
Journal VOL 29 pp14-16

Figure 1. The patient aseptically prepared and positioned for surgery



Herniorrhaphy of a unilateral perineal hernia and castration

Susan Reddan RVN, Dip AVN Surgery, Cert Exotics
76 Springfields, Dooradoyle, Limerick, Ireland

Clinical history

'Jack', an eight-year-old Jack Russell terrier, was presented at the clinic with constipation of three to four days duration and signs of faecal tenesmus.

He had also started vomiting during the past 48 hours and was inappetent. He was drinking and showed no signs of dysuria. The owner informed us that he had been presented at another veterinary clinic a few months previously and was prescribed liquid paraffin. A perineal hernia had been suggested to the owner as the cause at that time.

On physical examination, a perineal swelling on the right side, lateral to the anus, was noticed. A rectal examination revealed a separation of the muscles and the original diagnosis was confirmed. The prostate gland was also assessed and did not appear to be inflamed.

Surgery was scheduled for the following morning.

Diagnostic tests and findings

During the consultation, blood samples were taken for analysis. These included routine haematology and biochemistry tests. We routinely check the kidney and liver function of our geriatric patients before surgery. All results were within the normal ranges.

Pre-operative preparation

The patient had been fasted for 12 hours and water was only withheld for two hours. Once he was admitted, a 22 gauge catheter was placed aseptically in the left cephalic vein and secured. This was

carried out before pre-medication owing to the patients' age, and the tendency for ACP to precipitate hypotension which may collapse the veins, making them more difficult to catheterise.

A pre-anaesthetic check was carried out and was unremarkable. A prophylactic injection of 75mg amoxicillin (Clamoxyl, Pfizer) was administered subcutaneously along with 2.5mg meloxicam (Metacam, Boehringer).

Pre-medication comprised acepromazine (Acepromazine maleate, Novartis) and pethidine (Antigen Pharmaceuticals) administered together, intramuscularly.

Approximately 25 minutes later, the patient was induced with 50mg of propofol (Rapinivet, Schering-Plough) and successfully intubated with a size 7.5mm ET tube. The intravenous catheter was flushed with heparinised saline and crystalloid fluids in the form of compound sodium lactate (CSL) (Isolec, Ivex) were connected. These were infused at a rate of 5ml/kg/hr for maintenance.

The entire perineal region was clipped from the base of the tail, to below the level of the ischial tuberosity (**Figure 1**). The scrotal and pre-scrotal regions were also clipped for castration and this area was prepared as in (**Figure 2a**).

The patient was then transferred to the theatre and a sterile scrub carried out as described in (**Figure 2b**).

Surgery

Once in theatre, the patient was placed in sternal recumbency. A foam support was placed under his pelvis to elevate the perineum and provide support. The patient was draped using four 75cm x

Figure 2a. Preparation of the patient in the prep room

- The surgical site is verified and the hair is clipped over an area of at least 15cm around the incision site using a size 40 clipper blade.
- The loose hair is cleared and the finer hair is removed with a vacuum.
- Gloves are worn and the area is cleaned with gauze swabs and 4% chlorhexidine solution. This removes debris and reduces bacterial population. This is continued until no dirt is visible on the swabs.
- Ophthalmic lubricant is placed in the eyes and the patient is transported to the operating theatre.

Figure 2b. Preparation of the patient in the operating theatre

- The patient is positioned and tied out sufficiently to maintain stability and access.
- Sterile, surgical gloves are worn by the nurse carrying out the sterile skin preparation.
- The scrub begins at the intended incision site and works outwards in a circular motion. Once the periphery is reached the sterile swab is discarded. This is repeated three times.
- Isopropyl alcohol is then applied to the area. This removes any lather and has a drying effect on the skin.
- The area is then ready for draping.

90cm pre-sterilised, waterproof drapes (Unidrape, Vygon).

Sterile 'vetwrap' was placed over the tail to cover the hair and avoid contamination of the surgical site. The tail was held up vertically and secured in that position with the aid of ties. This provided the surgeon with a better view and improved access to the hernia.

A standard surgical kit was prepared (**Figure 3**). A curvilinear incision was made over the hernia, one to two centimetres lateral to the anus on the right side and diathermy was used to aid haemostasis. The subcutaneous tissue and hernial sac were incised next.

Inspection of the sac revealed evidence of peritoneal fat and atrophy of the pelvic muscles (**Figure 4**). The muscles of interest were identified and a Gelpi self-retaining retractor was used to retract

Figure 3. Standard surgical kit

- 3 X Spencer Wells forceps, curved and straight.
- 2 X Halstead Mosquito forceps.
- 1 X Metzenbaum, straight.
- 1 X Metzenbaum, curved.
- 2 X Allis tissue forceps.
- 1 X Mayo Hegar needle holders.
- 1 X Size 3 scalpel handle.
- 1 X Size 4 scalpel handle.
- 1 X Plain dissecting forceps.
- 1 X End Toothed dissecting forceps.
- 4 X Backhaus towel clamps.
- 10 X Sterile swabs.
- 5 X Selection of cutting and round bodied suture needles.
- 1 X size 15 blade.
- 1 X size 24 blade.

Additional equipment required for this case included:

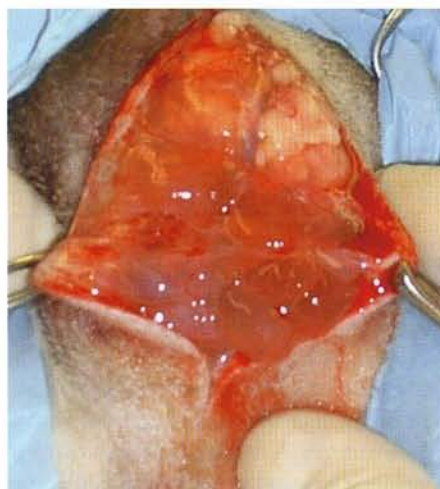
- Gelpi self-retaining retractors
- Periosteal elevator
- Diathermy unit and heads.

them. The prolapsed fat was gently, digitally manipulated and replaced.

The internal obturator muscle was elevated with the aid of a periosteal elevator and the muscles of the sphincter wall and the sacrotuberous ligament were initially re-apposed. Next the elevated internal obturator was sutured to the external anal sphincter muscle and the sacrotuberous ligament. This was achieved using polydioxanone (Serasynth 2/0), with a simple interrupted pattern.

This material and pattern were also used for the subcutaneous closure. The skin was closed using 3/0 Supramid and a cruciate mattress pattern. Once this was

Figure 4. Prolapsed fat in the hernia sac



finished, the patient was castrated using a pre-scrotal approach. A standard surgical kit was used for this procedure (**Figure 3**).

Anaesthesia and intra-operative management

Anaesthesia was maintained on 2% isoflurane (Isoflurane, Merial) and 2.1L/min O₂. A Magill non-re-breathing system was used. Surgery lasted 1 hour 20 minutes and intravenous fluids were continued throughout surgery. Minimal blood loss was recorded.

A pulse oximeter was incorporated to assist monitoring and recorded normal readings of heart rate, respiratory rate, temperature and SpO₂.

Recovery and postoperative care

In the immediate postoperative period, the patient's endotracheal tube was deflated and gently removed. The operation site was cleaned and he was placed in a warm kennel with a heat lamp and blankets (**Figure 5**).

Figure 5. The patient in recovery



Regular checks were carried out to assess the patient and examine the surgical sites for any swelling or irritation. That evening the patient ate some chicken and drank some water.

The following morning the patient was much brighter and passed normal faeces. He was attempting to lick his wound, so a size 15 Elizabethan collar was used to prevent interference. He was started on a high fibre diet.

Analgesia, in the form of oral meloxicam was continued at a dose rate of 1.2mg once daily with food to minimise discomfort and possible straining.

Antibiotic cover was continued for five days postoperatively in the form of 200mg amoxicillin (Betamox, Norbrook) twice daily.

The patient was discharged the following day and a re-visit scheduled for five days, with suture removal in 10 days. A prescription diet, Royal Canin Fibre Response, was advised because of its high fibre content.

The owner was told to carefully observe 'Jack' for any signs of dyschezia or re-herniation.

Discussion points

- Perineal hernias usually occur as a consequence of atrophy of the pelvic diaphragm, the muscular sheet which separates the pelvic cavity from the perineum and provides support to the pelvic organs, such as the bladder and intestines. The subsequent weakness allows the protrusion of fat or organs.

These hernias are most common in older, male dogs, as the pelvic diaphragm muscles are stronger in females. No single aetiological reason has been found, although certain breeds do appear to be more prone to the condition. Hernias may be congenital, idiopathic or traumatic in nature and may be unilateral or bilateral.

The condition may be managed medically but in the long term, surgery is generally required. Differential diagnosis in this case includes anal sac abscess or neoplasia.

- Radiographs were not taken in this case; however, contrast radiographs (pneumocystogram) and ultrasonography can be of help if a retroflexed bladder is suspected. If this is the case, immediate treatment is required as the patient may become uraemic or hyperkalaemic quite rapidly.
- Ideally a broader spectrum antibiotic, effective against Gram negative and anaerobic organisms should have been given intravenously about 30 minutes, before the operation. This type of surgical procedure is classified as clean contaminated and intravenous clavulanate-potentiated amoxicillin (Augmentin) would have provided maximal tissue concentration during surgery.

Postoperative antibiotics may not have been necessary, but owing to

the location of the incision site and possible infection or dehiscence from soiling, they were prescribed.

- Many sources suggest the use of enemas, stool softeners and a low residue diet pre-operatively (Fossum, 1997). These decrease the amount of faeces in the large intestine and thus reduce the risk of contaminating the operation site.
- The veterinary surgeon who undertook this surgery avoids the use of enemas for this type of procedure as he believes they liquefy the faeces in the rectum, allowing it to infiltrate the surgical site, possibly leading to greater contamination.
- Individual, pre-sterilised, waterproof drapes are used in our practice. While they may be more expensive than reusable cloth drapes, they have the distinct advantage of protection from bacterial strike-through.
- An alternative method is to apply a self-adhesive drape over the cloth drapes and incorporate them as 'sub-drapes.' This increases asepsis by decreasing the surgical field and increases water resistance with the adhesive layer.
- The herniorrhaphy performed on this patient was the traditional method and included transposition of the internal obturator muscle to create a flap. This flap reduces the tension at the surgical site and produces a more secure repair. This technique is understood to give 'the highest reported success rate' (Niles & Williams, 1999).
- With any technique for this procedure, care must be taken to avoid trapping the sciatic nerve and causing long-term damage to the patient. Castration was also performed as there is a theory that there is some hormonal influence on the integrity of the pelvic diaphragm musculature.
- A monofilament polydioxanone (Serasynth 2/0) was the suture material of choice because of its lack of interstitial space and, therefore, reduced tendency to harbour bacteria. This suture material also retains its tensile strength for a suitable length of time and gives rise to minimal tissue reaction.
 - Blood loss was minimal in this case owing to the use of diathermy (Figure 6). Diathermy involves the use of high frequency electrical currents



Figure 6. Diathermy unit used to control haemorrhage.

to cut or cauterise small blood vessels. It is only of use for haemostasis of bleeding from small vessels and, therefore, larger vessels were ligated. Bipolar diathermy was used in this case.

- Diet played an important role in the aftercare of this patient. A diet high in insoluble fibre is required to retain water and increase bulk and weight. This in turn leads to shorter storage of the faeces, allowing less re-absorption of water. This produces easier defecation and stimulates peristaltic movements.

As the patient was not obese, the Royal Canin Fibre Response Diet was chosen for maintenance.

Careful observation of defecation during the immediate postoperative period was very important in this case as a normal defecation pattern would indicate that the sutures were holding and that no damage had been done to nerves or muscles. Tenesmus or any signs of pain would alert nursing staff to a possible problem.

- Potential complications of this procedure include recurrence, infection, nerve damage or blood vessel damage and rectal prolapse.

References

FOSSUM, T.W. (1997). *Small Animal Surgery*. 2nd Ed. Chicago, Mosby.

NILES, J. D. & WILLIAMS, J. M. (1999). Perineal Hernia with Bladder Retroflexion in a Female Cocker Spaniel. *Journal of Small Animal Practice*. **40**(2), pp. 92-94.

Additional reading

NILES, J. (1999). Surgical Haemostasis. *In Practice*. **21**(4), pp. 196-204.

PRATSCHE, K. (2002). Management of Hernias and Ruptures in Small Animals. *In Practice*. **24**(10), pp. 570-581.

TARGETT, M. (1992). The Right Diathermy for You. *In Practice*. **14**(5), pp. 232-236.

Diploma Advanced Veterinary Nursing Notes. (2004). The Royal Veterinary College. 2004