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Laura gained her BSc in Veterinary Nursing in 2012. She has worked in a mixed practice for 8 years and has now taken the opportunity to begin a new career as a lecturer in animal management.

Nursing the canine patient undergoing mammary neoplastic mass removal

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ABSTRACT: The aim of this article is to give a brief overview of mammary neoplasia and the nursing care required for patients with the condition, following the removal of neoplastic tissue. An understanding of what is happening to the patient is vital in order to facilitate the provision of excellent support for both the animal and the veterinary surgeon, whether it be during the recovery period or palliatively.

Approximately 50 per cent of mammary tumours are malignant as discussed by Baba (2007) and they are considered to be the second most common tumour in dogs, after skin tumours.^{1,2}

It has been demonstrated that ovarian steroids, as well as many synthetic derivatives, may enhance canine mammary tumour formation.³ This is supported by Alenza et al. (2000) who state that following ovariectomy the risk is greatly reduced.⁴

Malignant mammary tissue may arise from a variety of tissue types, including connective tissue, ducts and myoepithelium. The nomenclature of the subsequent tumours will differ accordingly and includes carcinosarcoma, carcinoma, complex adenocarcinoma and malignant mixed tumour.

Tumours that only contain myoepithelium or connective tissue are called sarcomas.⁵

Predisposing factors for the condition include hormonal influence and age. Therefore, un-neutered bitches of six years of age or older are at greatest risk of developing mammary tumours.

In the bitch, mammary tumours can occur in one or more glands. The canine patient usually adapts well after undergoing excisional surgery either for the removal of a single tumour or a 'mammary strip' – the removal of

multiple masses on neighbouring glands. The surgical option is generally successful if the patient has been staged and screened prior to surgical removal.

Staging and screening involves the checking of systemic, as well as local, involvement. In other words, how far the tumour has infiltrated into the various body systems at the current time. It involves blood tests and thoracic radiographs to check for distant metastasis.

Screening identifies how aggressive the tumour is and whether the cells have infiltrated the local lymph nodes or reached the thorax. There are various stages according to a classification by England (2013) presented in **Table 1**.⁶

Table 1. Classification of the stages of tumour development [Source: England (2013)⁶]

Stage 1	less than 3cm diameter with no metastasis and no lymph node involvement.
Stage 2	3-5cm in diameter and as above.
Stage 3	over 5 cm in diameter and as above.
Stage 4	any size with metastasis to local lymph nodes but has not yet metastasized to distant areas
Stage 5	any size with distant metastasis.

Pre-operative nursing considerations

The process of admitting a patient for surgery should be thorough and detailed to enable the veterinary nurse to build up a picture of the individual's normal routine. Obtaining information about the animal's normal behaviour and habits, such as diet and exercise regimens, are vital information when the patient is hospitalised.

It can be useful to check the position and appearance of the mass to be removed, as well as gently asking the owner if the tumour has increased in size or shape. The position of the tumour may cause the patient to walk with an abnormal gait.

This may be exacerbated owing to the fact that a mammary tumour often develops in the groin as this is the largest gland. The mass can also ulcerate and bleed causing soft tissue disruption and the potential for infection.

Radiography

The veterinary surgeon may require a radiograph of the thorax to check for metastasis. The lungs are often implicated because cells invade via the pelvic lymph nodes, spreading haematogenously, as they are the initial site of capillary beds encountered post-systemic circulation.⁷

Three views are required of the thorax – a left and right lateral and a ventro-dorsal view. It is important to take both lateral views; as the non-dependent lung fields are well-aerated and closer to the radiography cassette this provides a clearer radiograph and magnification of metastatic lesions.

Patient preparation

When preparing the patient surgically, a full abdominal clip is necessary if it is a mammary strip removal. This involves removal of the hair from the end of the sternum to the vulva and then a wide margin extending from the midline to well past the nipples.

Whilst the preparation area does depend on the size of the mass being removed, full excision is important for these patients; so clipping a wide margin, therefore, is key.

The abdomen is then scrubbed with a chlorohexidine solution, but be mindful

that vigorous skin scrubbing can cause neoplastic cells to migrate within the tissues to the surrounding area.⁸

Increased healing times and susceptibility to infection in these patients may be a problem because of the following factors:

- age (reduced metabolism)
- nutritional status
- obesity
- corticosteroid treatment that can interfere with the body's immune response
- poor blood supply to the surgical field giving rise to reduced white cell presence.⁹

All of these parameters must be considered because part of the nursing process as the patient's condition can hinder recovery time and reduce drug metabolism.

Analgesia

Apart from the normal welfare issues, additional benefits of analgesia include preventing postoperative pain and allowing a shorter recovery period.

This type of surgery will be painful, particularly if a 'strip' has been performed. However, the use of a multimodal approach to analgesia will minimize this. Some analgesic drugs, such as partial agonists, can cause respiratory depression which may need to be taken into consideration given the potential for lung involvement.

Postoperative considerations

Nursing Care

Signs of pain must be identified – making a note of the patient's demeanor and temperament pre-operatively can be a good aid in monitoring pain postoperatively. Indications of pain can include tachycardia, tachypnoea, aggression and depression.¹⁰

Intravenous fluid therapy will have been administered preoperatively to support the circulation as significant blood loss during surgery should be anticipated.

If this is continued into the postoperative period, it should be monitored along with signs of haemorrhage. Provided that the patient's pain is managed well,

it is important to ensure that it becomes ambulant at the earliest opportunity to prevent fluid build up at the surgical site.

Wound healing

Normally the skin incision will have sealed within six to 12 hours after the procedure, unless it is impeded by factors such as the administration of certain drugs, or the presence of infection in a previously ulcerated tumour.

Patient interference may delay the process of primary intention wound healing, and mechanisms to prevent patient interference, such as the fitting of Buster collars, should be implemented as appropriate.

The wound should not require bandaging unless the extent of tissue excision is significant and it should be checked on a frequent basis – from recovery until the patient is discharged.

Diet

During the immediate postoperative period, the patient should be fed a highly digestible diet, such as warmed chicken and rice although Lumbis and Chan (2008) state that the neoplasia patient should be offered foods containing lower carbohydrate levels and an increase in omega-3 fatty acids because these inhibit tumour behaviour and offer the possibility of improving remission.¹¹

Warmed food allows the smell to become more evident to the patient, and it is important to remove stale food. Food left with the patient for long periods must be avoided, particularly if the patient is nauseous because it could develop a food aversion,

On discharge

Client compliance plays a significant role in the recovery of these patients and the veterinary nurse can provide an invaluable connection between the owners and the practice.

Educating the owner on the implications of not adhering closely to recovery plans can prove invaluable as, with all patients that have received major surgery, the recovery process can be demanding on both pet and owner.

It is important that communication lines are kept open to ensure that any concerns are dealt with by the nurse or veterinary surgeon at the earliest opportunity.

Clients are understandably deeply concerned by the prospect of dealing with 'cancer' in their pets and the empathetic veterinary nurse can help to allay many of these fears.

Key points

Intensive postoperative nursing care is essential for bitches that have undergone mammary tumour excision, especially mammary strips. This should include managing pain and monitoring for wound healing and patient interference, as well as encouraging the patient to eat a suitable diet as soon as possible.

The introduction of a return to gentle ambulation once the patient has recovered from surgery is also important, as is close liaison with the owners to ensure that they receive appropriate support; which may need to be ongoing

if the eventual outcome and prognosis is not as favorable as anticipated at the outset. [vni](#)

References

1. Baba, A. & Catoi, C. (2007) *Comparative Oncology*. Available from <http://www.ncbi.nlm.nih.gov/books/NBK9557/> (Accessed on 29/09/2013)
2. Moores, A., Beck, A. & Baker, J. (2003) High-grade surface osteosarcoma in a dog *Journal of Small Animal Practice* **44**: 218-220.
3. Rutteman, G. (1990) Hormones and mammary tumour disease in the female dog: an update. Available from <http://www.ncbi.nlm.nih.gov/pubmed/2103839> (Accessed on 14/09/2013)
4. Alenza, M., Pena, L., Castillo, N. & Nieto, A. (2000) Factors influencing the incidence and prognosis of canine mammary tumours. Available from http://www.bsv.ulg.ac.be/formulaires/vete1002/PerezAlenza_2000.pdf (Accessed 29/09/2013)
5. VCA Hospital (2013) *Mammary tumours in dogs* Available from : <http://www.vcahospitals.com/main/pet-health-information/article/animal-health/mammary-tumors-in-dogs-malignant/412> (Accessed on 15/09/2013)
6. England, G. (2013) *Abnormalities in the bitch in England, G. Dog breeding, whelping and puppy care*. Wiley Blackwell: Hong Kong
7. Dunlop, R. & Malbot, C. (2004) *Pathophysiology of cellular regulation, cell death and cancer* Dunlop, R. & Malbot, C. *Veterinary Pathophysiology*. Blackwell Publishing: Oxford
8. Lascelles, D. & White, D. (1999) *Principles of oncological surgery: Preoperative preparation In Practice* **21**: 163-175.
9. Lascelles, D. (2003) *Principles of oncological surgery in: Dobson, J. & Lascelles, B. BSAVA Manual of Canine and Feline Oncology*. 2nd ed. BSAVA: Gloucester
10. Hofmeister, E., King, J., Read, M. & Budsberg, S. (2007) Sample size and statistical power in the small animal analgesia literature *Journal of Small Animal Practice*. **48**: 76-79.
11. Lumbis, R & Chan, D. (2008) *Clinical nutrition in: Hotston Moore, A. & Rudd, S. BSAVA Manual of Canine and Feline Advanced Veterinary Nursing*. BSAVA: Gloucester

Additional reading

Ackerman, N. (2008) *Food and feeding: feeding behaviours in: Ackerman, N. Companion Animal Nutrition*. Butterworth Heinemann: Oxford

NEWS REVIEW by Jean Turner

Harper Adams students train abandoned dogs

Students at Shropshire's Harper Adams University are hoping that training dogs from a county rescue kennels will help boost the chances of the animals being re-homed.

Twenty-one students from the university were paired with dogs from Hilbrae Kennels in Cold Hatton, Telford, for a five-day intensive training course dubbed Hilbrae Doggy Boot Camp 2013.

The students and their four-legged friends were put through their paces by dog trainer, John Rogerson, assisted by three volunteer dog trainers.

Dr Louise Buckley, a lecturer in veterinary nursing at Harper Adams, hopes the partnership between the university and Hilbrae will not only benefit the students, but also help the dogs to find new homes.

"The aim of the course is to provide participants with a good theoretical grounding of dog training and lots of practical dog training experience," she said. "The university has had close links with Hilbrae for around three years; with students often visiting the kennels and helping to walk and exercise the dogs.

"I also wanted to give the students the experience I wanted to have as an undergraduate. If it's a vocational degree they are doing, they need the practical experience too."

Leanne Breeze, from Shawbirch, Telford, is a kennel assistant at Hilbrae, which currently has around 90 dogs and puppies

in desperate need of new homes, who joined the students on the training course.

The 23-year-old said: "Many of the dogs that come to us have never had any kind of formal training, so the chance to have so many of them properly trained is a fantastic opportunity and will hopefully help attract more prospective owners."

[vni](#) Leanne Breeze with Tizer

