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International Congress of the Italian Association of Companion Animal Veterinarians

29 - 31 May, 2009
Rimini, Italy



Società Culturale Italiana Veterinari per Animali da Compagnia

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**65th SCIVAC International Congress
May 28-30, 2010 - Rimini, Italy**

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Mammary tumors in dogs, marginal versus wide excision

Jolle Kirpensteijn

DVM, PhD, Dipl ACVS, Dipl ECVS, Utrecht, NL



CANINE MAMMARY TUMOURS

Incidence

Mammary tumours occur commonly in companion animals. In the bitch, the incidence of malignant mammary tumours is higher than that of any other cancer. Studies in California estimated the annual incidence to be about 260 per 100,000 in intact bitches (a lifetime risk of about 2.5%). Recent studies, however, indicate for intact bitches a much higher lifetime risk of up to 25%. The incidence of benign tumours is estimated to be 2-5 times higher than that for malignant lesions. The risk in male dogs is much lower; however, at 1%.

Ovari(ohyster)ectomy in young bitches significantly reduces the risk of mammary tumours. Where ovari(ohyster)ectomy is uncommon, injectable progestogens may be used to prevent oestrus. The use of injectable progesterons will lead to an increased risk of neoplasia. Mammary tumours are rare before the age of 2 years, although fibroadenomatous lesions occur in dogs and cats as young as 1 year of age. The incidence of mammary tumours increases slowly after the age of 4 years, rises steeply between 6 and 10 years, and then appears to decrease again.

Clinical signs

Mammary tumours may present as a solitary nodule and more commonly as multiple masses. The caudal mammary glands are more often affected than the cranial ones, probably because of their greater mass. Malignant tumours often grow more rapidly, are less circumscribed, may be fixed to underlying tissues and may be ulcerated more commonly. The presence of one or more of these signs is associated with an increased risk for malignancy, but this is not excluded by their absence. Large size may be the result of rapid growth or merely the result of a long delay before seeking veterinary care. Rapid growth can also occur in cystic lesions without necessarily being a grave sign.

Diagnosis

It is impossible to differentiate benign from malignant mammary tumours in the dog by physical examination alone. In some cases cytology of fine needle aspirates, preferably from a solid mass rather than fluid from cysts or secretions, may provide the diagnosis. Nodules that remained indolent for a long time may suddenly change, and a 'wait-until-it-grows' policy may turn an operable condition into an inoperable one, due to local invasion or metas-

tasis. If surgical excision of the primary mammary tumour seems possible, regional metastasis should be checked for. Radiographs of the chest and FNAB of the draining lymph nodes are indicated.

Surgery

Many different surgical options have been described for the removal of mammary tumours. Per definition nodulectomy is the removal of the tumour nodule with adequate surgical margins (2-3 cm). A regional mastectomy is the removal of more than 1 mammary gland and an en bloc resection is the removal of mammary glands and the associated lymph node. Regional mastectomy does not result in higher survival times compared to nodulectomy as long as sufficient margins are obtained. As a guideline you can use table 1.

Table 1. Guidelines for mammary tumour removal in the dog

<i>Tumour location or characteristic</i>	<i>Recommended treatment</i>
Tumours < 5 cm	Nodulectomy
Tumours > 5 cm	Regional mastectomy
Multiple tumours in one region	Regional mastectomy
Tumours with signs of malignancy (e.g. fixation to underlying tissue)	Regional mastectomy including fascia/muscle layer
Tumours in the first two (cranial and caudal thoracic) mammary glands	En bloc resection of glands 1, 2 and 3. Remove axillary lymph nodes if tumour involvement is likely or certain
Tumours in the third (cranial abdominal) mammary gland	Nodulectomy/regional mastectomy
Tumours in the fourth (caudal abdominal) or fifth (inguinal) mammary glands	Resection of glands 3-5 plus removal of the superficial inguinal lymph node
Multiple tumours in non-adjacent glands	Complete chain (unilateral) resection
Contraindicated in the dog	Bilateral chain resection

Regional mastectomy is indicated in dogs with multiple mammary masses. Multiple nodulectomies are often more time-consuming than either a regional or unilateral mastectomy. In a recent study (Stratmann 2008),

60% of the evaluated dogs developed a new tumor in the same mammary chain after a previous nodulectomy. The histologic classification of the new tumor was likely to be malignant if it was located close to the side where the initial tumor had been removed.

Nodulectomy

Nodulectomy with sufficient margins (2-3 cm) may be considered for single, well circumscribed lesions that are not fixed to underlying tissues, provided that detectable distant metastases are absent. After resection, the tumour is classified as benign or malignant, and the completeness of excision is evaluated. Incomplete resection should be followed by a second, more aggressive, surgery.

Surgical principles:

- Dogs have usually 5 pairs of mammary glands
- The surgical method (nodulectomy versus mastectomy) is not important. However the technique is.
- Remove fascia, if the tumour is fixed to the underlying fascia and muscles
- Bilateral mastectomy are always staged (6 weeks apart)
- The inguinal lymph nodes is usually automatically removed with the fifth gland

STEP BY STEP DESCRIPTION OF A NODULECTOMY

The surgical site is clipped and all mammary glands & lymph nodes on both sides are palpated. Tumours and their location are described and measured. After aseptic preparation and draping of the surgery site all tumors and the margins to be obtained are marked and drawn. The skin is incised using an elliptical incision with #10 scalpel blade. Be sure only to incise skin and not to lacerate the subcutaneous vessels. It is easier to start your incision from left to right (for right-handed surgeons; left handed surgeons should perform the incision from right to left). The incision is completed on both sides of the tumour. Use either scissors or electrocoagulation to extend incision in subcutis while paying attention not to lacerate the larger vessels. The next step is to locate the fascia plane in the midline of the incision. After location this fascia plane the incision is extended using curved scissors or electrocoagulation sur-

rounding the tumour. All mammary tissue and fat tissue between the fascia plane and the skin should be removed 'en bloc'. Additional haemorrhage can be stopped using electrocoagulation, clamps or suture material (3-0 or 4-0 monofilament absorbable). After the cranial and caudal superficial epigastric artery & vein are located, these vessels should be ligated. For lesions in the cranial two glands it is recommended to include the fascia of the superficial pectoral muscle. It is easy to locate this fascia plane and remove it with the tumour, allowing a 2-3 cm deep margin. After removal of the tumour, bleeders are coagulated or ligated and the wound bed is lavaged. The skin is closed skin-tension-free using an inverted sliding tacking suture technique. Always use monofilament absorbable suture material. The subcutis is closed with 3-0 resorbable material in a continuous horizontal pattern. The skin is closed with 4-0 monofilament nonresorbable suture material in cruciate sutures. The use of drains is neither indicated nor recommended in most cases.

OVE

Adjunctive ovariectomy may be considered in bitches, not as a means of preventing metastatic growth, but in the hope that some inhibition of new benign tumours may be obtained. Furthermore, regression of active mammary tissue allows easier recognition of new lesions in remaining glands. Also, future surgeries are much easier in mammary glands that are inactive.

Adjunctive therapy

Neither chemotherapy nor radiation therapy has been reported effective in prolonging disease free interval and survival in dogs with malignant mammary tumours.

Follow up

Follow-up of all cases of malignant mammary tumour is advised at 1 month after surgery and then at 3? monthly intervals for the first year.

Reference

- Rutteman GR, Kirpensteijn J. Tumors of the mammary gland. In Dobson JM, Lascelles BD. BSAVA Manual of Canine & Feline Oncology 2003 2nd ed, Replika Press, India: 196-206.
- Stratman et al. Mammary tumor recurrence in bitches after regional mastectomy. Vet Surg. 2008 Jan; 37(1):82-6.

Address for correspondence:

Jolle Kirpensteijn
Department of Clinical Sciences of Companion Animals,
Faculty of Veterinary Medicine, Utrecht University, PO Box 80154,
NL-3508 TD Utrecht, The Netherlands, j.kirpensteijn@uu.nl