Surgical Margins for Cutaneous Mast Cell Tumors

In dogs, mast cell tumors (MCTs) comprise 7% to 21% of all cutaneous tumors and 11% to 27% of all malignant cutaneous tumors. Surgery is the treatment of choice for MCTs located in areas amenable to wide excision. Histologic grade of the tumor and completeness of surgical margins after excision aid in prognostication and selection of adjuvant treatment. Excision of 3 cm has historically been recommended, but Simpson and colleagues could not locate the original source of this recommendation. In a prospective study of 21 client-owned dogs with 1 or more cutaneous MCTs, their objective was to determine whether neoplastic mast cells penetrated 1, 2, or 3 cm laterally or deeper than 1 fascial plane from the visible edge of the tumor. Dogs being prepared for surgery had their skin marked at 1, 2, and 3 cm from the tumor edge (at 0°, 90°, 180°, and 270°), and deep fascia was exposed and sutured to the skin at each 3-cm mark. Tumors were excised routinely, fixed in formalin, graded, and histologically examined for neoplastic mast cells in the margins. All grade 1 tumors were completely excised at all margins. Seventy-five percent of all grade 2 tumors were completely excised at the 1-cm margin, and 100% were completely excised at the 2-cm margin. Grade 2 tumors located on the hind limbs of 2 dogs were excised with a complete but close (within 1-mm) deep margin. Their results suggested that a 2-cm lateral margin with a deep margin of 1 fascial plane is sufficient for complete excision of grade 1 and grade 2 MCTs.

In another retrospective study evaluating the success of surgical treatment for 70 MCTs affecting the trunk and limbs of 56 dogs (head or neck tumors were not included in either study), Baker-Gabb and coworkers found that the most significant risk factor for local recurrence was histologic tumor grade. Fine-needle biopsy yielded correct MCT diagnosis in 96% of the cases (histologic tumor grade can be expected to be consistent regardless of MCT size and location). In this study, grade 3 tumors were significantly more likely to be incompletely excised than grade 1 or 2 tumors; however, wide margins were not significantly more likely to achieve complete removal of grade 3 tumors, hence the authors’ recommendation that the invasiveness of surgery be decided on the basis of histologic or cytologic examination.

COMMENTARY: Current recommendations for surgical management of MCTs include resection of at least a 3-cm margin of normal tissue surrounding the tumor and inclusion of 1 fascial plane. As Simpson and colleagues point out, the basis for this recommendation could not be verified, and depending on location, margins of this size can result in significant morbidity. The results of both papers imply that extensive margins do not reduce the risk for recurrence of grade 1 or grade 2 MCTs. Baker-Gabb and coworkers reported that grade 3 tumors were significantly more likely to be incompletely excised, therefore wider margins should be strongly considered. Both studies indicate that establishing tumor grade with preexcision biopsy may be important for planning, especially when extensive margins might require more extensive reconstructive surgical procedures.—Eric R. Pope, DVM, MS, Diplomate ACVS
