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Surgical management of a digital mast cell tumor in a geriatric mixed-breed female dog

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ABSTRACT: Digital mast cell tumours (MCTs) in dogs present a surgical challenge because their acral location often limits the achievement of adequate oncologic margins. This report describes the clinical presentation, surgical management, and histopathological confirmation of a digital MCT in an geriatric dog. A 15-year-old mixed-breed female dog weighing 7.6 kg was presented with a mass in the interdigital region of the limb. Clinical examination revealed that the dog remained active, with no obvious abnormalities in posture or gait. Because digital mast cell tumors (MCTs) are difficult to manage surgically owing to limited tissue for adequate margins, surgical excision was selected. Intraoperatively, the mass was found to extend around digit IV, requiring complete excision with digit amputation. Histopathological examination confirmed the presence of a mast cell tumour with infiltrative neoplastic mast cell proliferation. Postoperative management included wound cleansing, modified Robert Jones bandaging, amoxicillin-clavulanate, prednisolone, and topical hypochlorous acid-based wound care.

Keywords:
dog, geriatric, digital mast cell tumor, digit amputation, surgery

■ INTRODUCTION

Mast cell tumor (MCT) is one of the most common cutaneous neoplasms in dogs and shows marked biological variability, ranging from relatively indolent lesions to aggressive tumors with metastatic potential. Clinically, canine MCTs may present with diverse gross appearances, making definitive diagnosis dependent on cytology or histopathology. Histopathologic evaluation is also important for prognostic interpretation because tumor behavior is influenced by grade, proliferative activity, and margin status (Scase *et al*. 2006; Klahn *et al*. 2022).

Digital MCTs represent a particular clinical challenge because the anatomy of the digit limits the ability to obtain adequate surgical margins while preserving function. For this reason, digit amputation is often considered the most practical option when local infiltration prevents conservative excision (Grassinger *et al*. 2021, Abrams *et al*. 2020). This report describes the surgical management of a digital/interdigital MCT in a geriatric mixed-breed female dog.

■ CASE

History: A dog named Bobby was presented to Windsor Animal Hospital, with a complaint of a mass located in the interdigital region of the limb. The lesion raised concerns because of its distal location and the possibility of progressive local involvement. **Signalment**: The patient was a 15-year-old mixed-breed female dog weighing 7.6 kg. **Presenting status**: The dog was alert and active. No obvious abnormalities in posture or gait were observed. **Clinical findings**: A mass was identified in the interdigital region of the limb. Grossly, after excision, the mass was spherical, firm, and reddish-yellow. During surgery, the lesion was strongly associated with the tissues surrounding digit IV (Figure 1). **Clinical examination**: The patient was active and in a stable general condition, with no apparent locomotor impairment despite the presence of an interdigital mass. Based on the lesion's distal location and concern for local progression, surgical removal was elected. **Additional examination**: The excised tissue was subjected to histopathological examination in an external laboratory. Microscopically, the lesion comprised a dense population of neoplastic mast cells with an infiltrative growth pattern. **Differential diagnoses**: mast cell tumour, inflammatory mass, abscess, and other soft tissue neoplasms of the digit/interdigital region. **Diagnosis**: The final diagnosis was a mast cell tumour (MCT). **Prognosis**: The prognosis was considered favourable (fausta) based on the treatment course. **Therapy**: Surgical excision was performed under Zoletil anaesthesia, as recorded in the case notes. The procedure used a minor surgical set, bone scissors, and a

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Figure 1. A 15-year-old mixed-breed female dog presented with a digital/interdigital mass (A) and surgical findings of the digital mass: (B) preoperative appearance; (C) gross appearance after excision; (D) postoperative wound appearance.

laser. A laser made a circumferential incision around the mass. The mass extended deep around digit IV; therefore, digit IV was amputated using bone scissors for complete excision. The wound bed was checked for haemorrhage, treated with Hydrocyn spray, and bandaged. After surgery, the wound was cleaned with sterile saline and protected with a modified Robert Jones dressing.

■ RESULTS AND DISCUSSION

This case illustrates the practical challenges of managing digital MCTs in dogs. Although the patient showed no obvious gait abnormality, the lesion had infiltrated the tissues surrounding digit IV, demonstrating that digital tumors may appear clinically limited while already being locally invasive. This supports careful surgical planning even when clinical signs are mild (Grassinger *et al*. 2021, Abrams *et al*. 2020).

Histopathology confirmed that digital masses in dogs can mimic other lesions. In canine MCT, pathology aids in the diagnosis and prognosis with details, such as grade and margins (Scase *et al*. 2006, Klahn *et al*. 2022). Here, infiltrative growth indicated surgery. Digit amputation was justified because wide excision is difficult in digits, where the tissue is limited, and preserving function may hinder tumour control. Amputation ensures better complete removal than conservative excision (Grassinger *et al*. 2021, Abrams *et al*. 2020).

Although molecular evaluation was not performed in this case, KIT-related abnormalities are recognized in canine MCT and may be relevant in more advanced, recurrent, or incompletely excised tumors. Such information may guide targeted therapy in selected patients, although it was not required for the present localized lesion (Halsey *et al*. 2017; Macedo *et al*. 2022).

Postoperative care focused on wound protection, inflammation control, and prevention of secondary infection. The patient received amoxicillin-clavulanate, prednisolone, topical Hydrocyn spray and gel, and regular bandage changes. In distal limb surgery, especially after digit amputation, careful wound management is essential because of limited soft tissue coverage and mechanical stress during ambulation.

■ CONCLUSION

Histopathology confirmed a digital/interdigital mast cell tumour in a geriatric female mixed-breed dog. As the lesion infiltrated the tissues around digit IV, digit amputation was necessary for complete excision, supporting it as an effective local control strategy for digital masses.

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