

Two diagnostically challenging hemangiosarcomas growing inside of blood vessels in dogs

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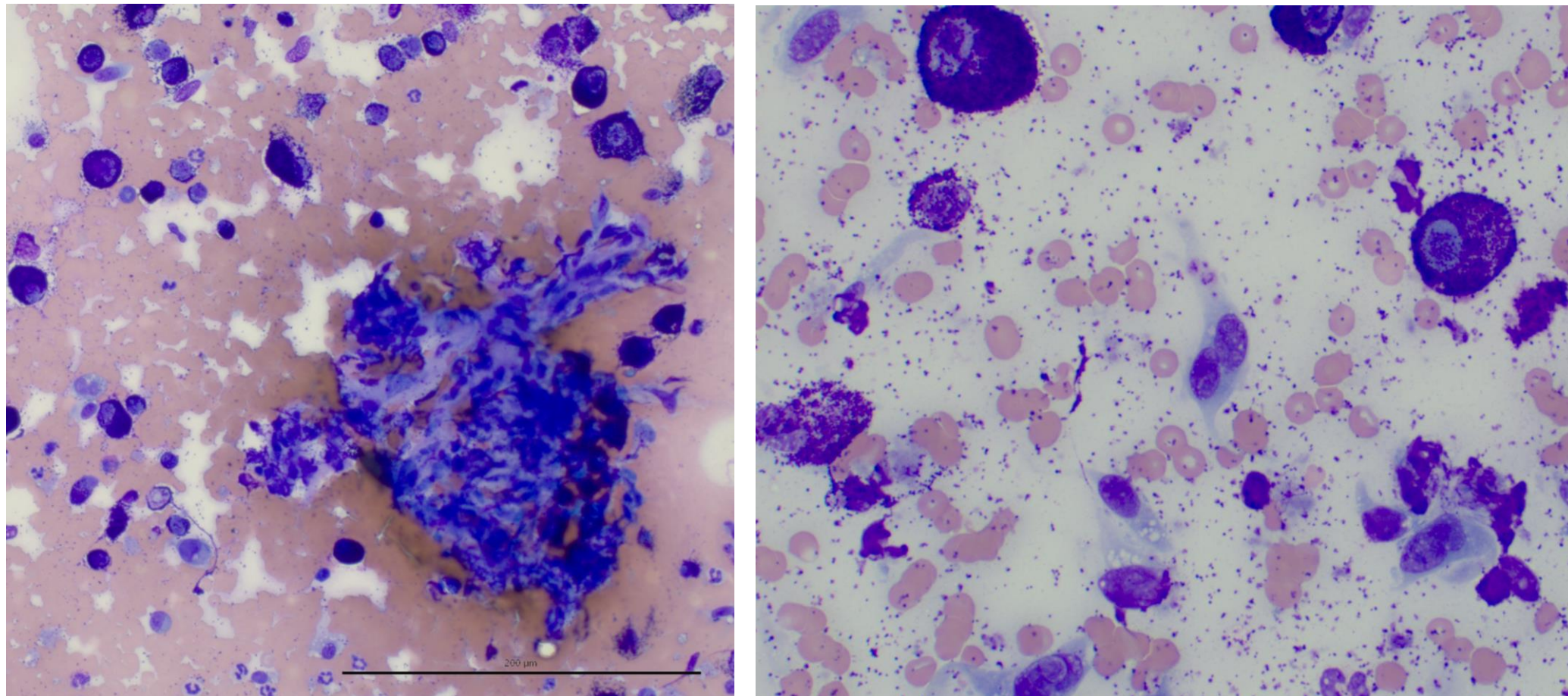
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Introduction: Hemangiosarcomas are frequent malignant tumours in dogs usually affecting the parenchyma of solid organs. Here, we are presenting two clinically and morphologically distinct canine intravascular hemangiosarcomas.

Case 1

10-year-old Staffordshire Bull Terrier dog with a subcutaneous elongated mass laterally on the neck.

Photomicrograph of a fine-needle aspirate from the mass

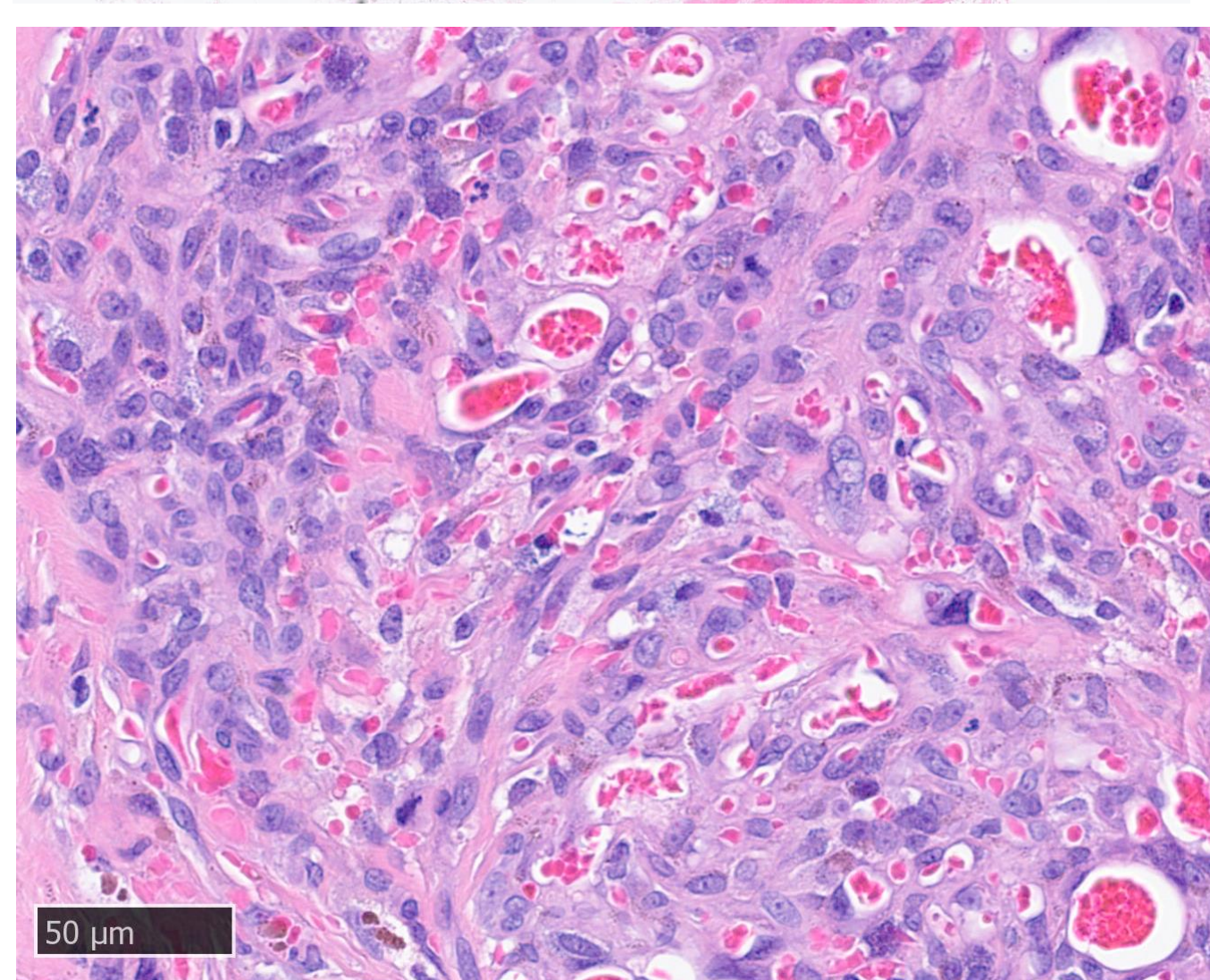
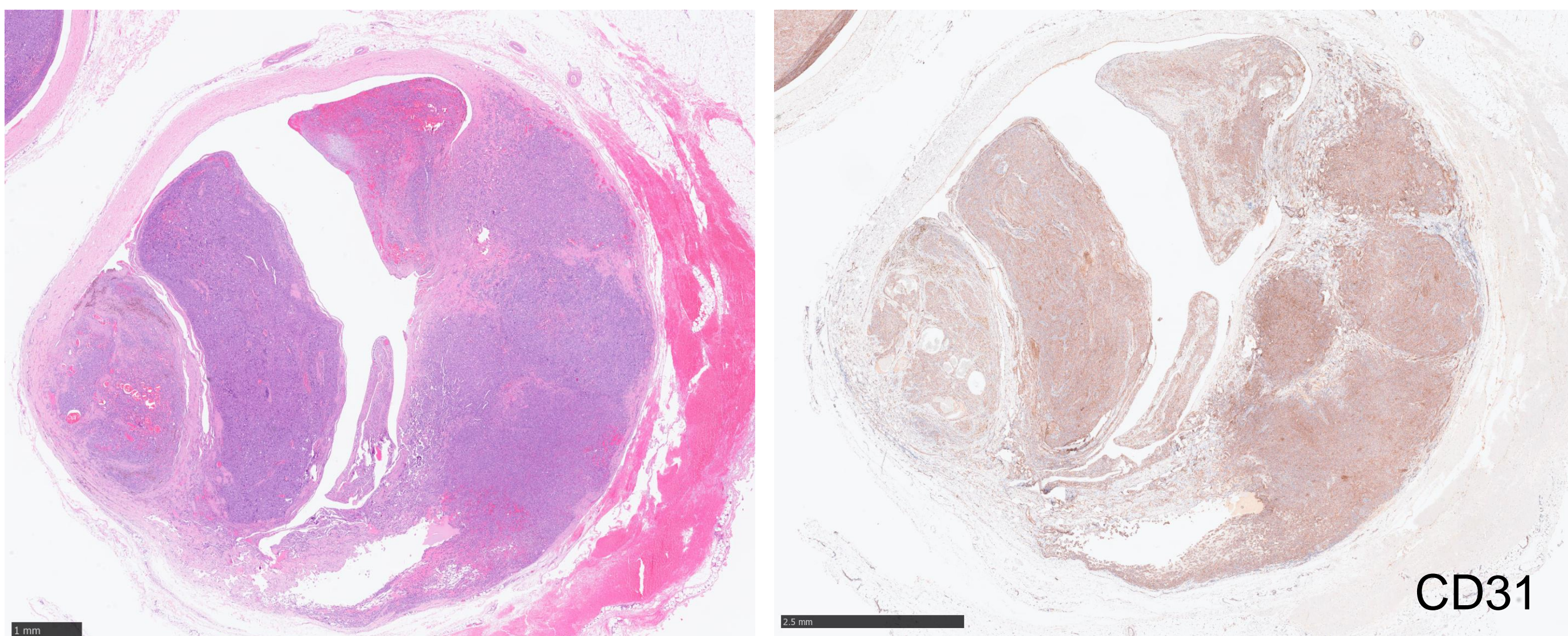


High numbers of well-granulated mast cells and thick aggregates of spindle cells with frequent binucleation. Wright-Giemsa stain, bar= 200um

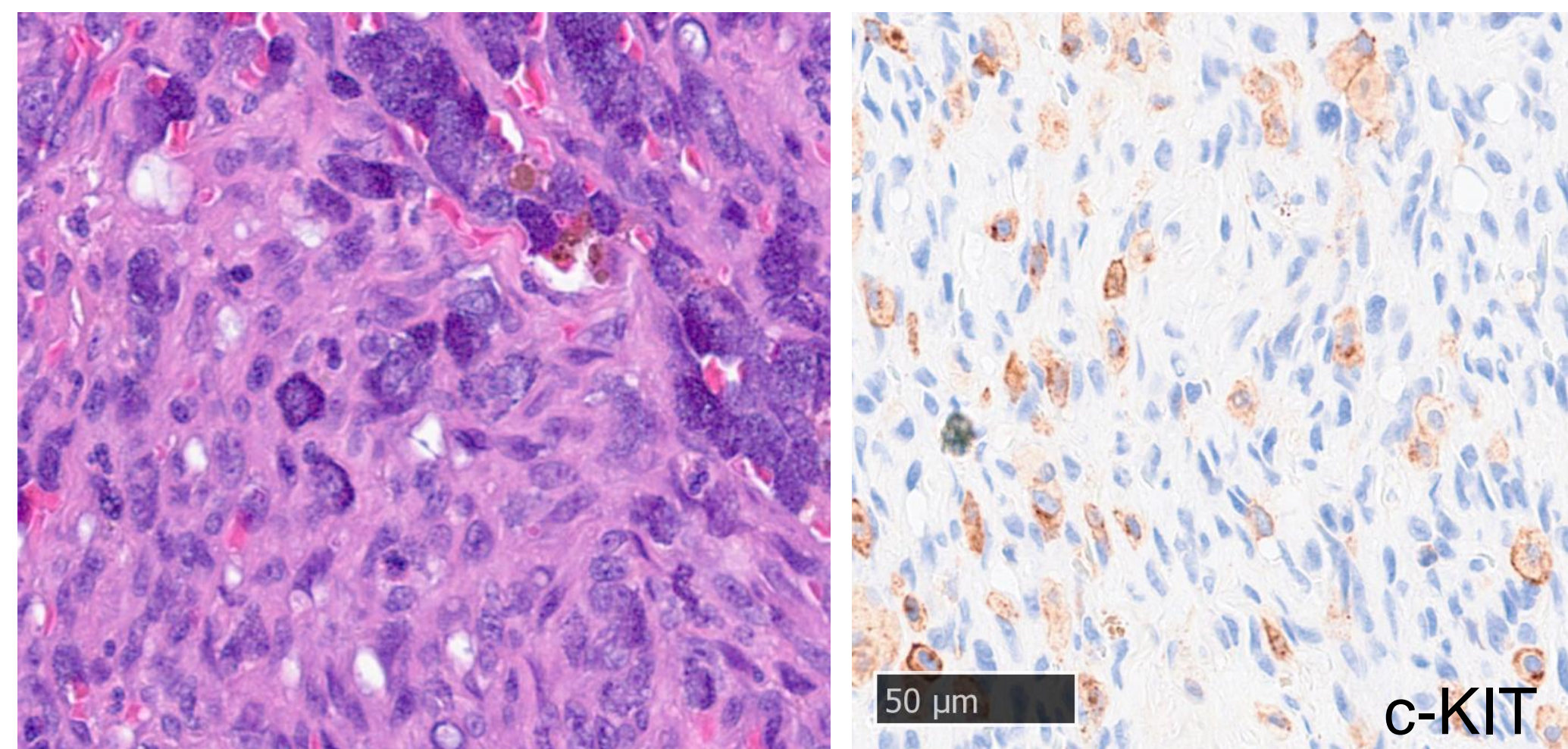
Based on FNA the tumor was diagnosed as a mast cell tumor with a reactive fibroblast proliferation.

Histopathology and immunohistochemistry

The submitted sample was compatible with a medium sized blood vessel with a central mass.



Intraluminal and intraluminal infiltrative tumor in a blood vessel consisting of plump spindle cells forming blood filled spaces and solid areas. The neoplastic cells have moderate anisocytosis and anisokaryosis with 4 mitoses in 10 HPF. They are CD31 positive.



Moderate numbers of mast cells in some areas of the tumor displaying a homogeneous cytoplasmic c-KIT stain (right)

In contrast to the cytologic diagnosis, the histopathological features are compatible with a hemangiosarcoma. Based on the scattered distribution of the mast cells and their c-KIT stain, a hemangiosarcoma-mast cell collision tumor was excluded, and the mast cells were interpreted as reactive. Seven months after excision the dog was clinically stable.

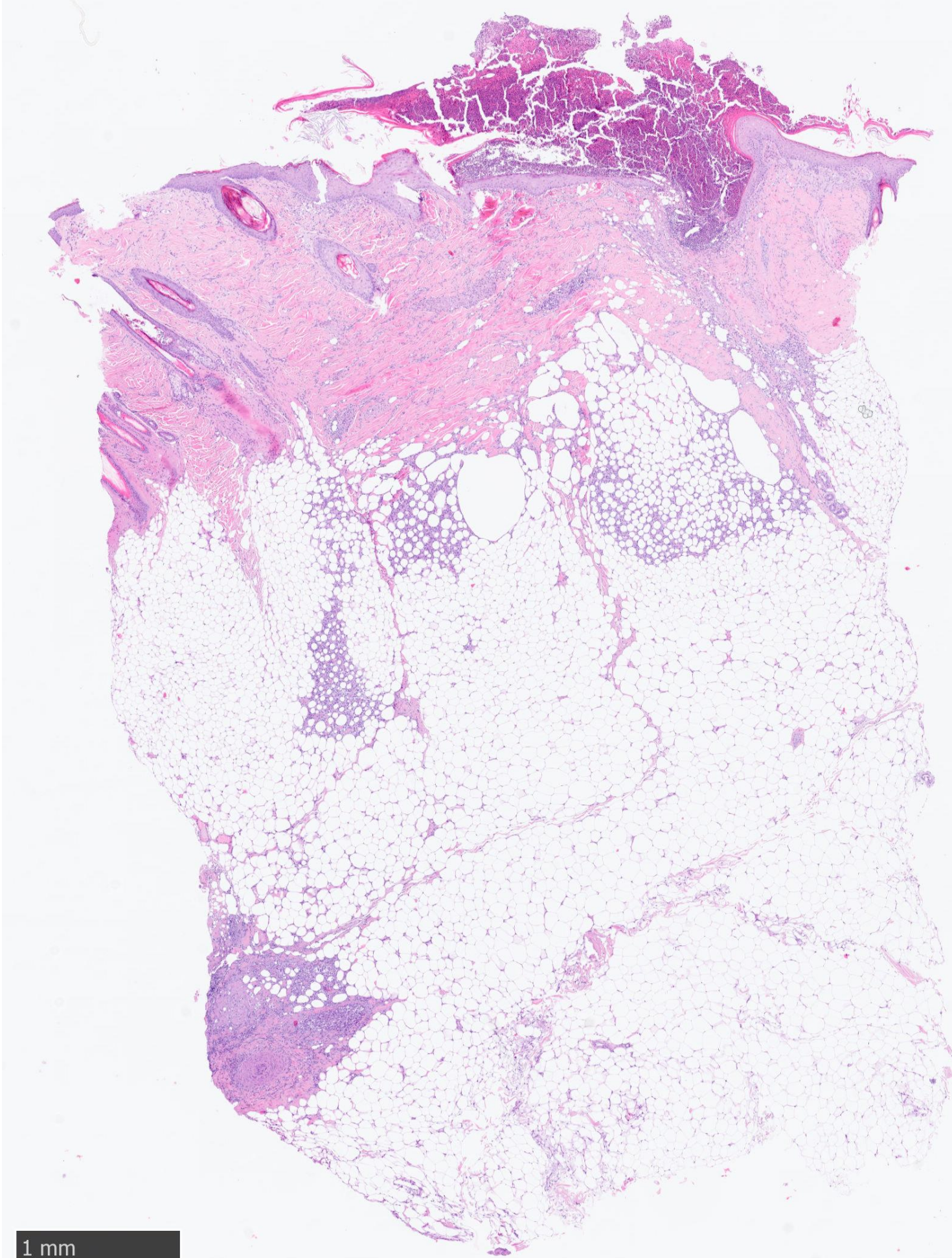
Case 2

8-year-old Labrador Retriever dog with multifocal ulcerative skin lesions on the flank and lower back.

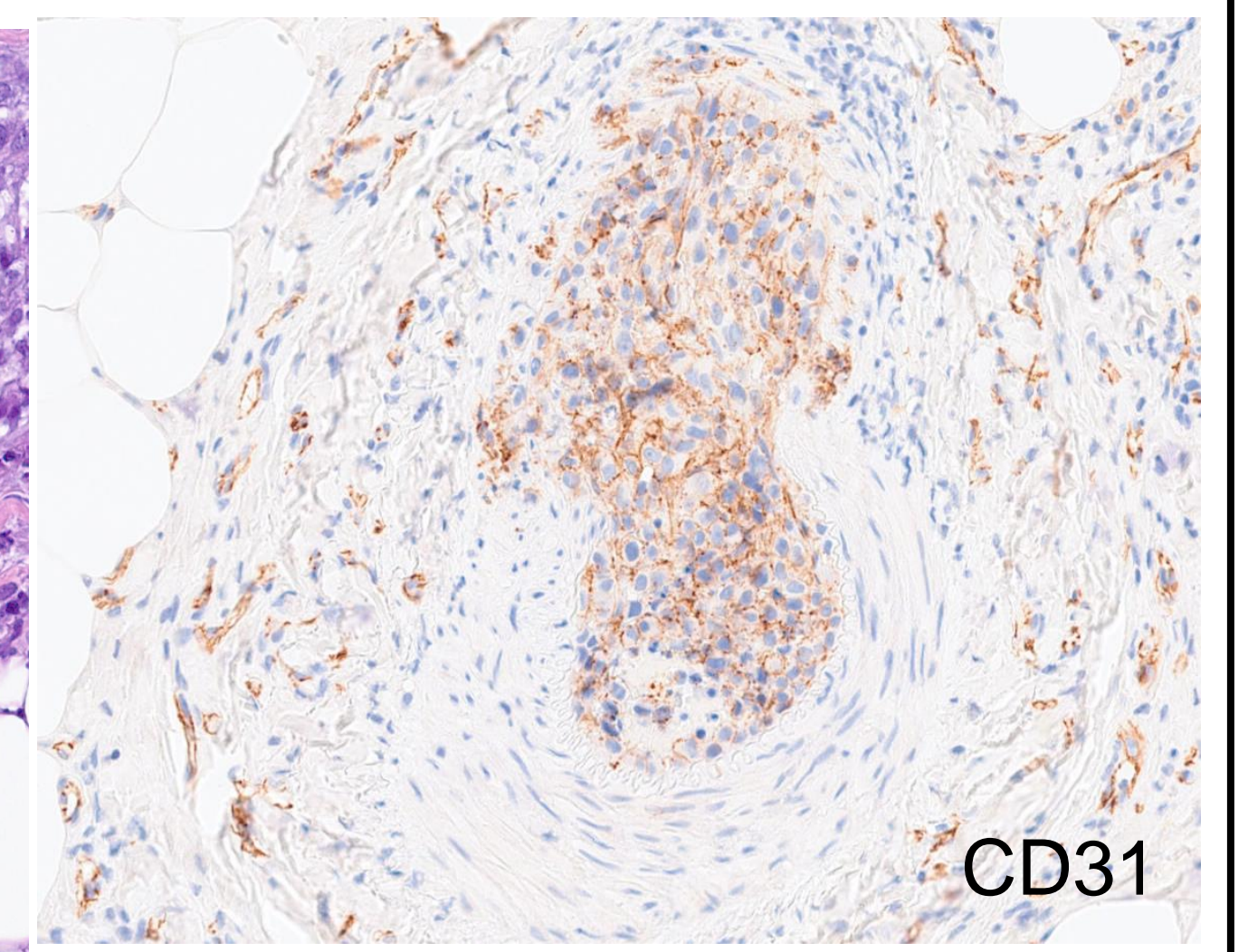
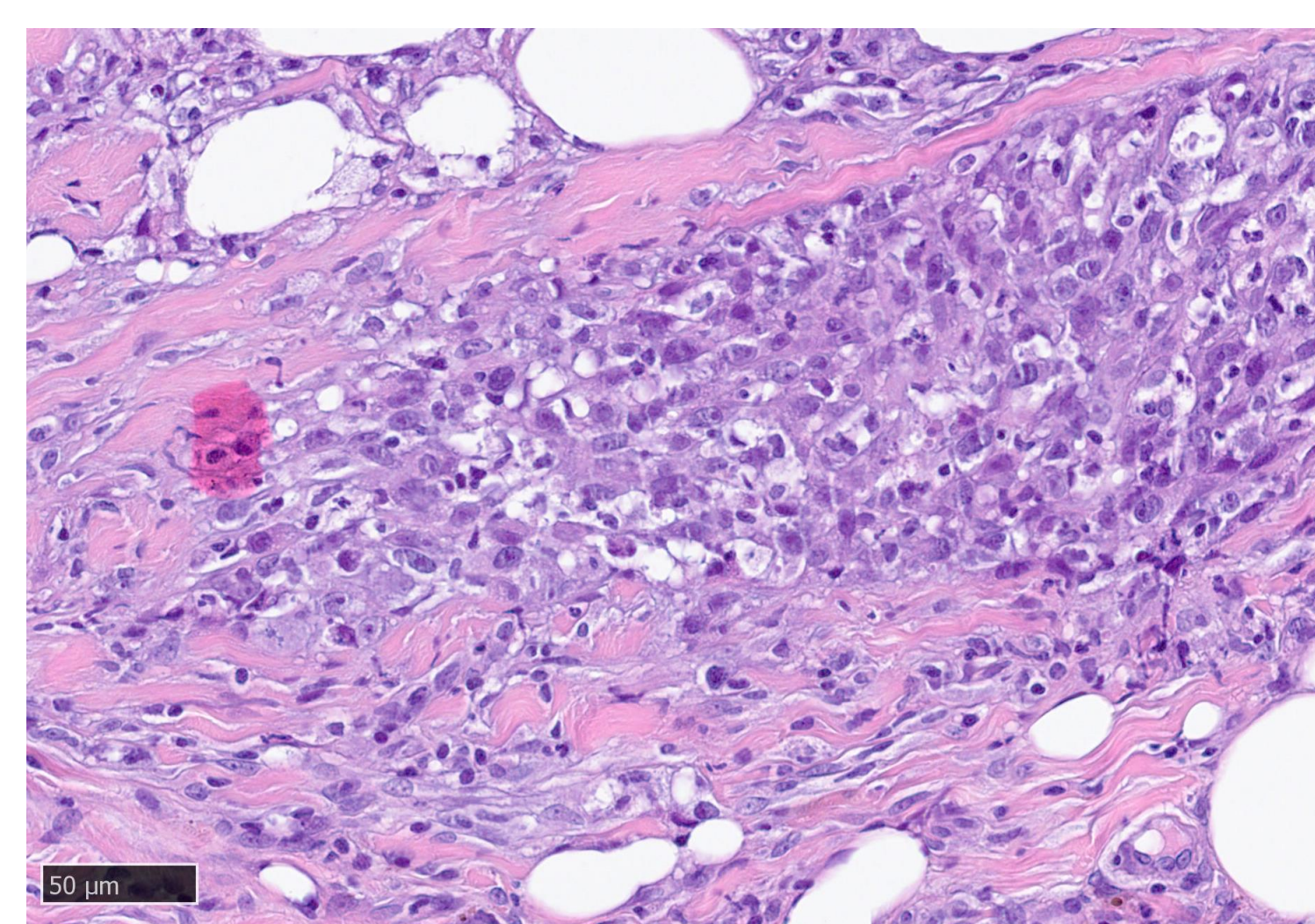
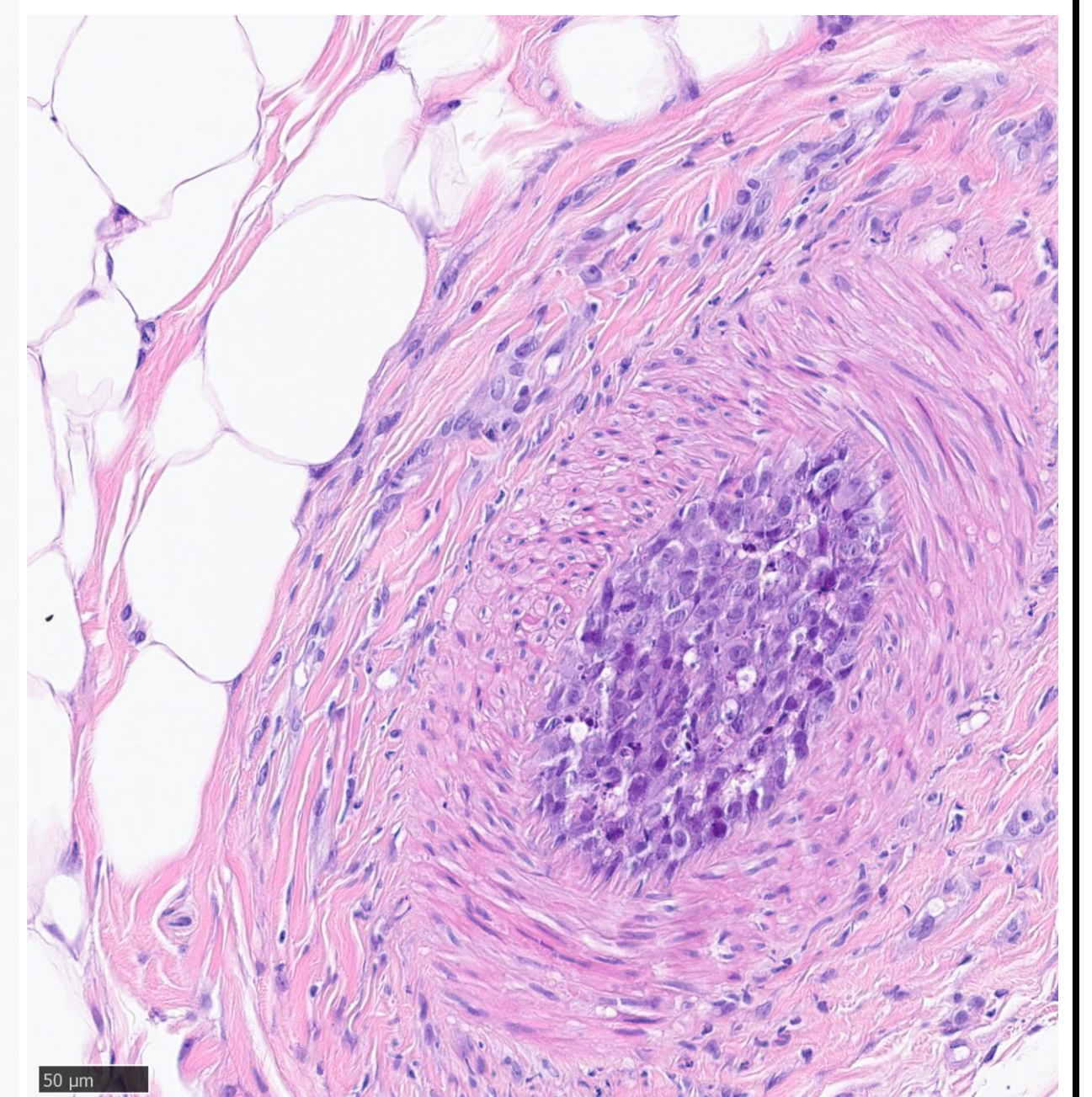
Clinical pictures



Histopathology and immunohistochemistry



Necrotic areas and inflammation in the subcutis and dermis with ulceration. The lumen of rare vessels are occluded by cells.



Intraluminal round to polygonal cells with moderate anisocytosis and anisokaryosis, rarely infiltrating the vessel walls and surrounding tissue. An intravascular round cell tumor was suspected based on HE. The neoplastic cells are CD18, CD3, CD20, CD79a, PAX-5, granzyme-B, synaptophysin, melan-A, PNL-2 and MNF116 negative. The neoplastic cells are vimentin and CD31 positive.

A diagnosis of a hemangiosarcoma was made. As no primary tumor was detected, it was interpreted as an intravascular hemangiosarcoma. Vascular emboli of a metastatic hemangiosarcoma cannot be excluded, however. The dog was euthanized without option of necropsy.

Conclusion: These two diagnostically challenging cases show that hemangiosarcomas can grow exclusively within blood vessels.

As in case 1, intravascular hemangiosarcomas may occur as a single mass in medium to large blood vessels. This is an unusual presentation, that has been described in humans¹ and rarely in dogs². The presence of reactive mast cells has also been published in similar tumors in dogs³. In case 2, the neoplastic endothelial cells proliferate within smaller vessels, occluding them and causing ischemic necrosis of the skin instead of a mass lesion. Intravascular disseminated growth of a hemangiosarcoma, similar to this case, has been described in the lung of a cat⁴.

1. Seelig et al., "Angiosarcoma of the aorta: report of a case and review of the literature." J Vasc Surg 1998;28:732-737.
2. Ranck, R S et al. "Primary intimal aortic angiosarcoma in a dog." Veterinary pathology vol. 45,3 (2008): 361-4.
3. Woldemeskel, et al., "Mast cells in canine cutaneous hemangioma, hemangiosarcoma and mammary tumors." Veterinary research communications vol. 34,2 (2010): 153-60.
4. Yamagami, et al. "Pulmonary intravascular hemangiosarcoma in a cat." The Journal of veterinary medical science vol. 68,7 (2006): 731-3.