

# Study sheds light on determining surgical margins for feline tumors

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Researchers at Oregon State University are paving the way for more precision in determining surgical margins for an aggressive tumor common in cats by analyzing tissue contraction at various stages of the post-operative examination process.

The findings are important because inaccuracy in feline injection-site sarcoma surgical margins—the tissue cut out along with the tumor to try to ensure all cancerous cells are removed—can have a negative effect on the patient's health, whether the margin is bigger or smaller than necessary.

Understanding how margin length decreases from surgery to pathology - because of how the removed tissue shrinks and tumor cells invade surrounding tissues—can lead to better surgical margin planning and in turn a better prognosis, said corresponding author Milan Milovancev, a board-certified veterinary surgeon at OSU's College of Veterinary Medicine.

"If we can understand the relationship between what the pathologist sees on a slide under a microscope and what the surgeon is taking out in the operating room, and what accounts for the differences between the two, then we can work backward and figure out how much surgical margin to take," he said.

The pilot study looked at 35- to 55-millimeter surgical margins from five cats with feline injection site sarcoma, or FISS, and found the greatest

margin decreases occurred right after excision. It also found the margins tended to be larger than necessary.

"Older studies showed that if you had bigger margins, cats would live longer," Milovancev said. "The previous margin guidelines of 2 to 3 centimeters had been found to be inadequate, and the new guidelines were 5, which seemed like a big jump and in some of these cats may cause a lot of unnecessary suffering.

"The net take-home is that yes, 2 to 3 centimeters is indeed inadequate, but we didn't find any tumors getting close to 5 centimeters. We can reduce morbidity by surgically removing what we need to take out and leaving what doesn't need to be taken out."

Milovancev notes that future, larger studies that categorize results by factors that might influence tumor-free margin length - such as tumor grade and location—are likely to lead to more refined preoperative surgical planning.

This pilot research builds on an earlier study by Milovancev and collaborators that examined the ability of MRIs and CT angiograms to detect [cancerous lesions](#) related to FISS, and another study that looked at three methods for assessing margins for canine mast cell tumors and soft [tissue](#) sarcomas.

In the imaging study, neither method definitely determined cancerous lesions from noncancerous ones and, surprisingly to the researchers, more than half the lesions thought to be cancerous on imaging turned out to be benign changes.

In the margin assessment research that involved more than 70 dogs, there was little agreement between the three techniques: imprint cytology, shaved margin histopathology and radial section histopathology.

"We'll follow up on the dogs and figure out which method best predicted [tumor](#) regrowth," he said. "The methods weren't aligned in their results, so one of them is better than the other two."

**More information:** Jesse L. Terry et al, Quantification of surgical margin length changes after excision of feline injection site sarcomas-A pilot study, *Veterinary Surgery* (2017). DOI: [10.1111/vsu.12602](https://doi.org/10.1111/vsu.12602)

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