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CASE REPORT
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Hemangiosarcoma Associated with Polypropylene Suture in a Cat

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ABSTRACT

***Background*:** Sutures plays an important role in wound repair by providing hemostasis and support for healing suture. Synthetic non-absorbable like polypropylene suture materials induce minimal tissue reaction. Polypropylene has not been associated to neoplasms in domestic animals. The aim this study is to describe the first case of polypropylene suture induced hemangiosarcoma in an abdominal wall of a feline.

***Case*:** A 13-year-old female domestic shorthair cat was presented with a ventral abdominal subcutaneous mass. Clinical examination revealed a firm, rough, and irregular, approximately 6 x 4 cm subcutaneous mass involving the caudal ventral abdomen. A complete blood (cell) count (CBC) was within normal limits. Leukemia and FIV tests were negative; and the results of a chemistry panel revealed elevated creatinine (valor: 2.0 reference range: 0.5-1.9). Abdominal ultrasound revealed a large mass of mixed echogenicity in the mid-ventral abdomen cranial to the bladder, measuring approximately 6 x 4 cm in the middle line with suture deeply embedded within mass suggesting foreign body reaction or neoplasm. There was evidence of sutures (hyperechoic lines) along the caudal abdominal wall extending into the mass. Records indicated that ovariohysterectomy procedure was performed 12 years previously at the same clinic and the closure of the abdominal wall was made with polypropylene sutures. No other abdominal surgery was performed in this cat. A fine-needle aspirate of the mass and contrast-enhanced computed tomography was not performed due to owner's finance restrains. The cat was referred to surgery and the mass was excised. No evidence of metastasis was noted during surgery. Histologically, the neoplastic cells were oval to round with granular cytoplasm and vesicular nucleus and exhibited moderate cellular and nuclear pleomorphism. A diagnosis of abdominal wall hemangiosarcoma was made with suture deeply embedded within mass. Surgical margins were clear. Chemotherapy was indicated, but the owner declined due to financial reasons. This is the first polypropylene suture mass associated hemangiosarcoma in cats.

***Discussion*:** Hemangiosarcoma is a malignant neoplasm of vascular endothelial cells origin and it may be associated with chronic inflammation and neoplastic transformation. It was reported in previous studies, and it could be a hypothesis for the presented clinical case. There are two cases described in the literature of abdominal wall tumor associated with foreign body and exuberant inflammatory response in cats using different types of suture; one case is a steel staple developing hemangiosarcoma and the other is polyester sutures developed fibrosarcoma. The present study shows a primary hemangiosarcoma diagnosed several years after closure of abdominal wall using polypropylene sutures in a female cat. Polypropylene is a monofilament suture that create less tissue-drag and induces less inflammation than multifilament sutures and is the preferred suture to close abdominal wall. Cats demonstrate a peculiar predisposition to neoplasms at the site of injury. Although the pathogenesis is still unclear, the introduction a "foreign body" may cause inflammatory process that act as a stimulus to neoplasia formation. We believe that polypropylene was the foreign material that may have played a role in tumor development in this case and it has not been reported before. Polypropylene sutures were found on gross examination of excised material. Any uncoated braided non-absorbable material located deeply in tissues may evoke a chronic inflammatory response (granuloma). A granuloma may evolve to malignancy in some cats. Despite polypropylene materials induce minimal tissue reaction, it may be associated to neoplasm.

Keywords: polypropylene suture, hemangiosarcoma, cat, tumor induced by foreign body.

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INTRODUCTION

Sutures plays an important role in wound repair by providing hemostasis and support for healing suture. Monofilament sutures are made of a single strand of material. They have less tissue drag than multifilament sutures and do not have interstices that may harbor bacteria. Synthetic nonabsorbable like polypropylene suture materials typically are strong, induce minimal tissue reaction and were not associated with development of neoplasms [3].

Cats demonstrate a peculiar predisposition to neoplasms at the site of injury. Although the pathogenesis is still unclear, the introduction a "foreign body" like suture may cause inflammatory process that act as a stimulus to neoplasia formation [1,4-6].

To the best of our knowledge, this is the first case of polypropylene suture induced hemangiosarcoma in abdominal wall in a cat.

CASE

A 13-year-old female shorthair cat was presented with a ventral abdominal subcutaneous mass. Owner reports she was eating and acting well. The ventro-abdominal volume increased was noted for an unknown period of time (Figure 1).

Clinical examination revealed a firm, rough, and irregular, approximately 6 x 4 cm subcutaneous mass involving the caudal ventral abdomen.

Abdominal ultrasound revealed a large mass of mixed echogenicity in the mid-ventral abdomen just cranial to the bladder, measuring approximately 6 x 4 cm in the middle line with suture deeply embedded within mass suggesting foreign body reaction or neoplasm. There was evidence of sutures (hyperechoic lines) along the caudal abdominal wall extending into the mass.

Figure 1. A 13-year-old female shorthair cat with a ventral abdominal subcutaneous mass. Notice a ventro-abdominal volume.

Records indicated that ovariohysterectomy procedure was performed 12 years previously at the same clinic and the closure of the abdominal wall was made with polypropylene (Prolene)[1] sutures. No other abdominal surgery was performed in this cat.

Thoracic x-rays showed no metastasis. A fine-needle aspirate of the mass and contrast-enhanced computed tomography were not performed due to owner's finance restrains.

A complete blood (cell) count (CBC) was normal. Leukemia and FIV tests were negative; and the results of a chemistry panel revealed creatinine elevated (valor: 2.0 reference range: 0.5-1.9).

During surgery, the abdominal wall was incised cranial to the mass, and an elliptical incision was made around the mass through the body wall with approximately 1 cm margin of normal tissue surrounding the mass. The mass had small adhesion of omentum in the center, but otherwise was unassociated with any abdominal structures (Figure 2). Bleeding was controlled with sutures. No evidence of metastasis was noted during surgery. The incision was closed with 2-0 polycaprone (Monocryl®)[1] suture in a routine fashion with a routine subcuticular (SQ) and skin closure. The cat recovery of the anesthesia uneventfully and was discharged.

Histologically, the neoplastic cells were oval to round with granular cytoplasm and vesicular nucleus and exhibited moderate cellular and nuclear pleomorphism. A diagnosis of abdominal wall hemangiosarcoma was made with suture deeply embedded within mass. Surgical margins were free.

Owner declined chemotherapy.

DISCUSSION

Hemangiosarcoma is a malignant neoplasm of vascular endothelial cells origin and it may be associated to chronic inflammation and neoplastic transformation. It was reported in previous studies [2,6], and it could be a hypothesis for the presented clinical case. There are two cases described in the literature of abdominal wall tumor associated with foreign body and exuberant inflammatory response in cats using different types of suture; one case is a steel staple developing hemangiosarcoma [6] and the

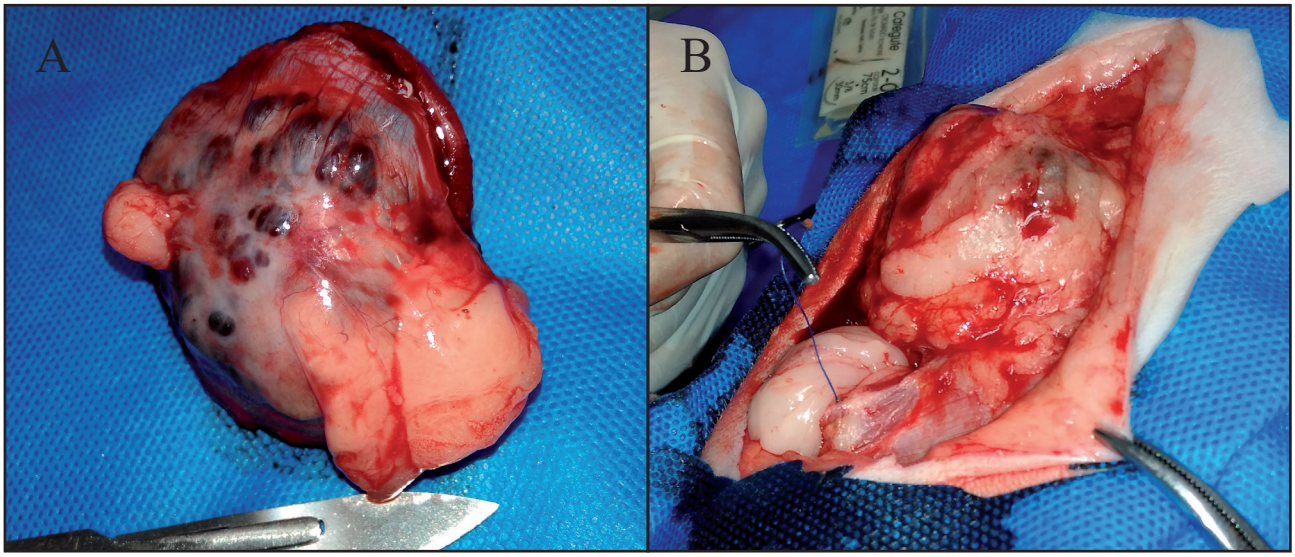

Figure 2. A- Tumor excised. B- After tumor removing. No evidence of metastasis was noted. It was unassociated with any abdominal structures.

other is polyester sutures developed fibrosarcoma [1]. The present study shows a primary hemangiosarcoma diagnosed several years after closure of abdominal wall using polypropylene sutures in a female cat.

Polypropylene is a monofilament suture that create less tissue-drag and induce less inflammation than multifilament sutures and is the preferred suture to close abdominal wall. Cats demonstrate a peculiar predisposition to neoplasms at the site of injury. Although the pathogenesis is still unclear, the introduction a "foreign body" may cause inflammatory process that act as a stimulus to neoplasia formation [1,4-6].

We believe that polypropylene was the foreign material that may have played a role in tumor development in this case and it has not been reported before. Polypropylene sutures were found on gross examination of excised material. Any uncoated braided non-absorbable material located deeply in tissues may evoke a chronic inflammatory response (granuloma). A granuloma may evolve to malignancy in some cats [1,6]. Despite polypropylene materials induce minimal tissue reaction, it may be associated to neoplasm in cats.

MANUFACTURER

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Declaration of interest. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

REFERENCES

1 **Buracco P., Martano M., Morello E. & Ratto A. 2002.** Vaccine-associated-like Fibrosarcoma at the Site of a Deep Nonabsorbable Suture in a Cat. *The Veterinary Journal*. 163(1): 105-107.

2 **Cazalot G., Regnier A., Deviers A., Serra F., Lucas M.N., Etienne C.L. & Letron I.R. 2011.** Corneal hemangiosarcoma in a cat. *Veterinary Ophthalmology*. 14(Supplement 1): 117-121.

3 **Fossum T.W. 2007.** Biomaterials, suturing and hemostasis. In: Fossum T.W. (Ed). *Small Animal Surgery*. 3rd edn. St. Louis: Mosby, pp.57-78.

4 **Hartmann K., Day M.J., Thiry E., Lloret A., Frymus T., Addie D., Boucraut-Baralon C., Egberink H., Gruffydd-Jones T., Horzinek M.C., Hosie M.J., Lutz H., Marsilio F., Pennisi M.G., Radford A.D., Truyen U. & Möstl K. 2015.** Feline injection-site sarcoma ABCD guidelines on prevention and management. *Journal of Feline Medicine and Surgery*. 17(7): 606-613.

5 **Robat C., Bemelmans I. & Marescaux L. 2016.** Retrobulbar lymphoma associated with a ballistic foreign body in a cat. *Journal of Small Animal Practice*. 57(4): 217-219.

6 **Tan R.M., Singh K. & Sandman K. 2013.** Subcutaneous hemangiosarcoma induced by a foreign body (steel staple) in a cat. *Canadian Veterinary Journal.* 54(4): 377-380.