

Case Report
10.32707/ercivet.1770427

Imprint:

Volume: 23(2)
Year: 2026
Page: 243-248

 Duygu SEZER^a
 Kübra GERBAGA ÖZSEMİR^{b*}
 Özge ERDOĞAN BAMAÇ^c
 Sinem Yaren GÜZELBAKAN^d

^aDr., Vethouse Pet Health Center,
m.duygu.sezer@gmail.com

^bAsst. Prof., Ondokuz Mayıs
University,
kubra.ozsemir@omu.edu.tr

^cAssoc. Prof., Istanbul University,
oerdogan@iuc.edu.tr

^dRes. Asst., Istanbul University,
sinem.guzelbakan@iuc.edu.tr

* Corresponding Author

Received: 8/22/2025

Accepted: 6/5/2026

Citation:

Sezer D, Gerbaga Özsemir K,
Erdoğan Bamaç Ö, Güzelbakan SY.
Surgical resection of a
hemangiosarcoma in a Northern
White- Breasted Hedgehog
(*Erinaceus roumanicus*). Erciyes
Univ Vet Fak Derg 2026;23(2),
243-248. <https://doi.org/10.32707/ercivet.1770427>

Screened by

 iThenticate[®]
for Authors & Researchers



Except where otherwise noted, content
in this article is licensed under a
Creative Commons 4.0 International
license. Icons by Font Awesome.

Surgical Resection of a Hemangiosarcoma in a Northern White- Breasted Hedgehog (*Erinaceus roumanicus*)

Abstract

This study illustrates a successful surgical resection and histopathological diagnosis of a hemangiosarcoma in a Northern white-breasted hedgehog (*Erinaceus roumanicus*). A 2.5 kg adult female hedgehog was presented with a painless, subcutaneous mass on the medial aspect of the right femur. Surgical excision was performed under general anesthesia, and recovery was uneventful. At the 9-month follow-up, the hedgehog was able to use its affected limb without any problems, and there was no recurrence of the tumor. Histopathological evaluation revealed features consistent with hemangiosarcoma. To our knowledge, this is the first case report of surgical resection of a hemangiosarcoma in Northern white-breasted hedgehog (*Erinaceus roumanicus*).

Keywords: *Erinaceus roumanicus*, hedgehog, hemangiosarcoma, resection, tumors



Bir Balkan Kirpisinde (*Erinaceus roumanicus*) Hemangiosarkomun Cerrahi Rezeksiyonu

Öz

Bu çalışma, bir Balkan kirpisinde (*Erinaceus roumanicus*) hemanjiyosarkomun başarılı cerrahi rezeksiyonunu ve histopatolojik tanısını göstermektedir. 2.5 kg ağırlığındaki yetişkin bir dişi kirpi, sağ femurun medial yüzünde ağrısız, deri altı bir kitle şikayeti ile getirildi. Genel anestezi altında cerrahi eksizyon yapıldı ve iyileşme sorunsuz gerçekleşti. Dokuz aylık takipte, kirpinin ayağını sorunsuz bir şekilde kullanabildiği ve tümörde herhangi bir nüks olmadığı gözlemlendi. Histopatolojik değerlendirme, hemanjiyosarkom ile uyumlu özellikler ortaya koydu. Bilgilerimize göre, Balkan kirpisinde (*Erinaceus roumanicus*) hemanjiyosarkomun cerrahi rezeksiyonuna ilişkin ilk olgu sunumudur.

Anahtar kelimeler: *Erinaceus roumanicus*, hemanjiyosarkom, kirpi, rezeksiyon, tümörler



Introduction

Hedgehogs are members of the family *Erinaceidae* within the order Insectivora. In recent years, hedgehogs have become popular as domestic pets worldwide. Retrospective studies have shown that neoplasia is among the most prevalent diseases in hedgehogs. (Silva et al., 2022; Vučinić et al., 2024). Neoplasia has been reported in all body systems, and the integument is the most common site of tumor localization in the hedgehogs. Oral squamous cell carcinoma is also a common tumor in the hedgehogs. Mesenchymal, endocrine system, and hemolymphatic cancers are reportedly less common in

hedgehogs. Additionally, the most common neoplasias are reproductive system neoplasias, which most malignant in females (Heatley et al., 2005; Okada et al., 2018; Nestorović et al., 2025). Clinical signs of neoplastic disease in addition to observation of masses, include weight loss, anorexia, lethargy, diarrhea, dyspnea and ascites (Ivey and Carpenter, 2012). Early diagnosis is essential for developing targeted treatment plans and curative intent surgery. The occurrence of tumors was unrelated to gender, and the median age at time of tumor diagnosis was 3.5 years (range 2-5.5 years) more than %80 of the tumors in this survey were malignant, and they usually carried a poor prognosis (Ivey and Carpenter, 2012; Okada et al., 2018).

To our knowledge, this is the first case report of surgical resection of a hemangiosarcoma in Northern white-breasted hedgehog (*Erinaceus roumanicus*). The significance of this case report is that it will enable veterinary clinicians and rehabilitators to familiarize with the surgical resection and histopathological of hemangiosarcoma in a wildlife species.

Case History

An adult, female Northern white-breasted hedgehog (*Erinaceus roumanicus*) weighing 2.5 kg was presented to the Istanbul University-Cerrahpaşa Veterinary Faculty, Small Animal Clinics, with a complaint of a firm swelling on the medial side of the right femur. The mass had been noticed by the owner one month prior. Initial treatment at another clinic included a one-week course of antibiotics. The hedgehog had been living outdoors but was regularly fed dry cat food for the past three years. Body temperature was 35.9°C within the normal range. Palpation of the mass suggested a cutaneous location without adhesion to the underlying tissues, and it was approximately 4 cm in diameter, painless, and has smooth surface. For differential diagnosis with an abscess or hematoma puncture was performed. X-rays were taken to evaluate if the bone tissue was affected (Figure 1).

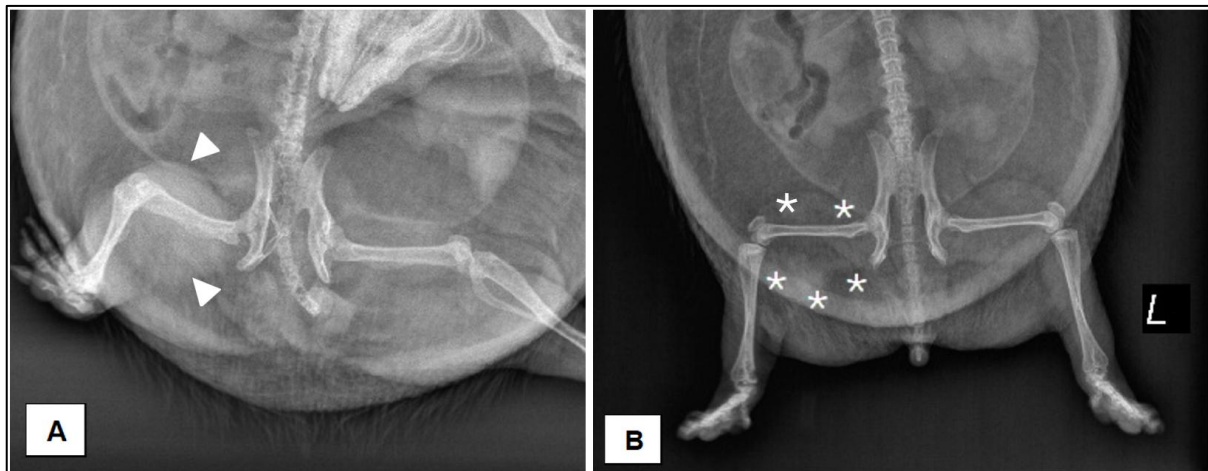


Figure 1. Preoperative appearance of the radiopaque mass on the medial aspect of the right femur (A). Postoperative control on day 8, showing the healing incision line. Radiographic evaluations confirmed that the mass had no involvement or connection with the femoral bone tissue (B).

Anesthesia was induced using 3.5% isoflurane (Forane®, Baxter) in oxygen (2 L/min) via an induction chamber and maintained with 2.5% isoflurane through a face mask. Preanesthetic medication included intramuscular medetomidine, 0.1 mg/kg (Domitor®, Orion) and analgesia were provided with subcutaneous meloxicam 0.5 mg/kg (Melox, Nobel) 20 minutes prior to induction. A portable veterinary monitor recorded vital signs every 10 minutes. After the surgical area was shaved and prepared antiseptically with povidone-iodine and 70% alcohol, elliptical surgical excision was performed with a 1 cm margin using electrocautery (Figure 2). The mass was separated from the surrounding tissues and removed without any complications (Figure 3). The hedgehog recovered uneventfully, and no postoperative complications were observed. Received intramuscular

administration of enrofloxacin (Baytril®, Bayer) at a dose of 20 mg/kg twice daily for 7 days postoperatively. Additionally, pain management was ensured by administering orally at a dose of 0.5 mg/kg meloxicam (Metacam®, Boehringer) for three days. In the follow-up examinations on the 7th and 30th days postoperatively, it was observed that the hedgehog used its foot comfortably. Information provided by the owner on the 270th postoperative days indicated that the hedgehog used its feet normally and exhibited no issues, no recurrence on operation site.



Figure 2. Appearance of the firm mass on the medial side of the right femur before surgery (A). Postoperative appearance of the incision line (B).

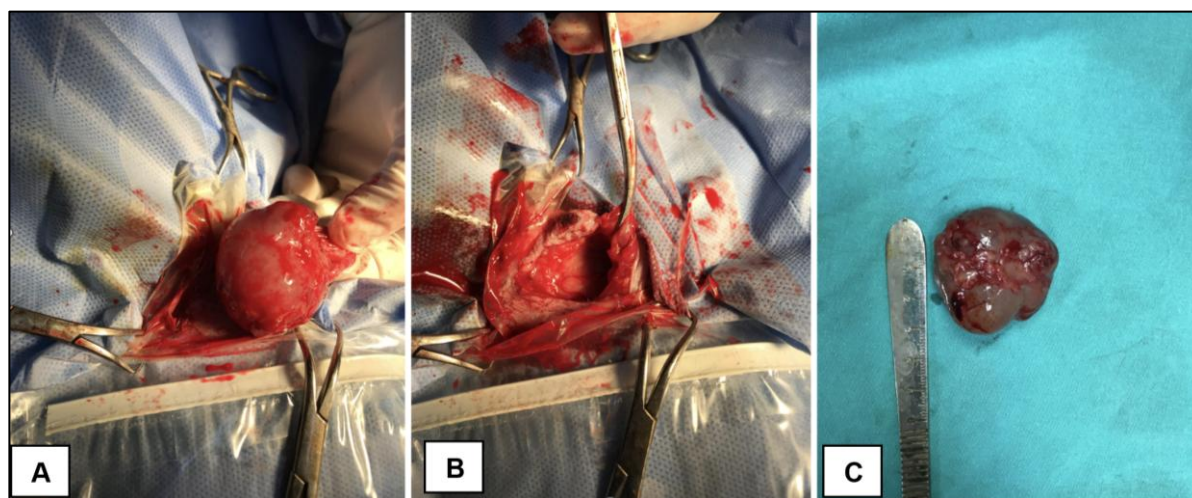


Figure 3. Intraoperative views of the surgical procedure. (A) Exposure and dissection of the firm mass; (B) appearance of the surgical site during excision; (C) macroscopic view of the completely excised mass.

Microscopic evaluation of the excised mass revealed a non-encapsulated, infiltrative neoplastic lesion composed of polygonal to epithelioid neoplastic cells arranged in sheets and variably vascular channels (Figure 4A). The neoplastic cells prominently formed rudimentary vascular channels, indicating endothelial differentiation (Figure 4B). The cells exhibited abundant eosinophilic cytoplasm, large round nuclei with prominent nucleoli, and displayed moderate degrees of anisocytosis and anisokaryosis (Figure 4C). Based on the histological features, the tumor was classified as a well-differentiated, low-grade hemangiosarcoma.

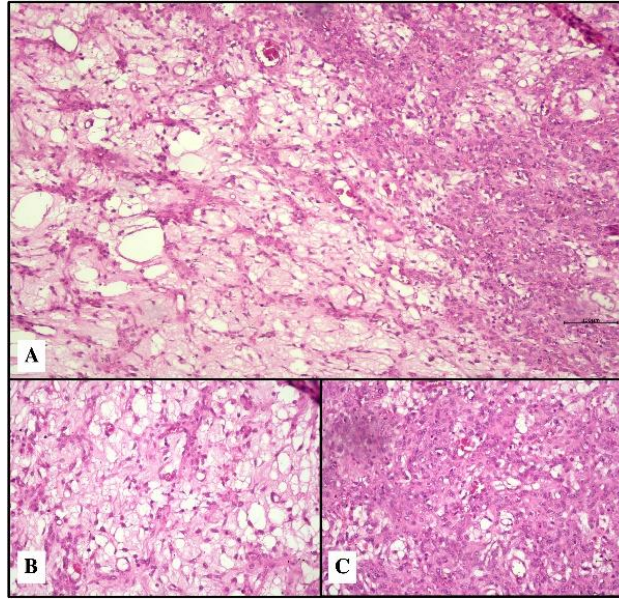


Figure 4. Histological sections of the excised tumor stained with Hematoxylin and eosin. (A) Low magnification showing vascular pattern and infiltrative growth (Scale bar=100 µm). (B) Prominent vascular channels, indicating endothelial differentiation (Scale bar=50 µm). (C) Neoplastic cells with large, round nuclei and prominent nucleoli, exhibiting moderate anisocytosis and anisokaryosis (Scale bar=50 µm).

Discussion and Result

In recent years, hedgehogs have become popular as pets worldwide. Retrospective studies have shown that hedgehog's priority diseases are neoplasias (Silva et al., 2022; Vućinić et al., 2024).

Hemangiosarcoma (HSA) is a malignant mesenchymal tumor of endothelial origin. It is categorized into visceral and non-visceral forms. While visceral HSA affects organs such as the spleen, liver, heart, or kidney, cutaneous forms are less common and usually affect the skin or subcutaneous tissues. Although HSA is commonly reported in dogs, its occurrence in wildlife species such as hedgehogs is rare (Heatley et al., 2005; Kim et al., 2015). Previous case reports have documented hemangiosarcoma in African hedgehogs (*Atelerix albiventris*) (Raymond and Garner, 2001; Finkelstein et al., 2008). To our knowledge, this is the first report of *Erinaceus roumanicus*.

Possible contributing factors include UV exposure, trauma, or metabolic imbalance. In this case, although the hedgehog was free-living, long-term feeding with cat food may have contributed to obesity, a potential tumor-promoting factor (Pei-Chi et al., 2015). However, the direct cause remains uncertain. Surgical excision remains the primary treatment in such cases. While chemotherapy or radiotherapy may be considered in recurrent or aggressive cases, these are not routinely applied in hedgehogs due to limited data on efficacy and tolerance (Heatley et al., 2005; Okada et al., 2018).

This case illustrates a successful surgical resection of a hemangiosarcoma in a Northern white-breasted hedgehog. Early diagnosis and complete excision can result in a favorable outcome. Greater awareness of neoplastic diseases in hedgehogs is warranted as their popularity as pets increases.



Peer-review: External, Independent.

Acknowledgements:

-

Declarations:

1. Statement of Originality:

This work is original.

2. Author Contributions:

Concept: KGÖ,DS; **Conceptualization:** ÖEB,DS; **Literature Search:** DS,KGÖ; **Data Collection:** SYG,ÖEB; **Data Processing:** SYG,ÖEB; **Analysis:** KGÖ,DS; **Writing – original draft:** DS,KGÖ; **Writing – review & editing:** ÖEB.

3. Ethics approval:

Not applicable.

4. Funding/Support:

This work has not received any funding or support.

5. Competing Interests:

The authors declare no competing interests.

6. GenAI Usage Statement:

No GenAI tools were used at any stage of the study.

7. Sustainable Development Goals:**REFERENCES**

- Finkelstein A, Hoover JP, Caudell D, Confer AW. Cutaneous epithelioid variant hemangiosarcoma in a captive African hedgehog (*Atelerix albiventris*). J Exot Pet Med 2008; 17(1):49-53.
- Heatley J, Mauldin G, Cha DY. Review of neoplasia in the captive African hedgehog (*Atelerix albiventris*). Semin Avian Exot Pet Med 2005; 14(3):182-92.
- Ivey E and Carpenter JW. African Hedgehogs. Quesenberry KE, Carpenter JW. eds. I.: Ferrets, Rabbits and Rodents Clinical Medicine and Surgery, Saunders, 2012; pp. 411-25.
- Kim JH, Graef AJ, Dickerson EB, Modiano JF. Pathobiology of hemangiosarcoma in dogs: research advances and future perspectives. Vet Sci 2015; 2(4):388-405.
- Nestorović I, Đurić M, Aničić M, Pešić A, Marinković D, Krstić, Vučićević M. The importance of elective ovariectomy and progesterone level in African pygmy hedgehogs (*Atelerix albiventris*). Vet Arh 2025; 95(3): 319-26.
- Okada K, Kondo H, Sumi A, Kapawa Y. A retrospective study of disease incidence in African pygmy hedgehogs (*Atelerix albiventris*). J Vet Med Sci 2018; 80(10):1504-10.
- Pei-Chi H, Jane-Fang Y, Lih-Chiann W. A retrospective study of the medical status on 63 African hedgehogs (*Atelerix albiventris*) at the Taipei zoo from 2003 to 2011. J Exot Pet Med 2015; 24(1):105-11.
- Raymond JT, Garner M. Spontaneous tumours in captive African hedgehogs (*Atelerix albiventris*): A retrospective study. J Comp Pathol 2001;124(2):128-33.

Silva GF, Rêma A, Teixeira S, Pires MA, Taulescu M, Amorim I. Pathological findings in African pygmy hedgehogs admitted into a Portuguese rehabilitation center. *Animals* 2022; 12(11): 1361.

Vučinić M, Nenadović K, Došenović M, Pešić A, Vučićević M. Assessment of owner investment in African pygmy hedgehog (*Atelerix albiventris*) welfare by feeding, housing, enrichment, hygiene, and health practice. *J Vet Behav* 2024; 73(2):23-30.

