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## Scientific Report

# An unusual case of oropharyngeal mature teratoma in a kitten

Yuzbasioglu-Ozturk, G.<sup>1\*</sup>; Gulcubuk, A.<sup>1</sup>; Ozturk-Gurgen, H.<sup>1</sup>; Demirutku, A.<sup>2</sup>;  
Akcasiz, Z. N.<sup>2</sup> and Ozkul, S.<sup>3</sup>

<sup>1</sup>Department of Pathology, Faculty of Veterinary Medicine, Istanbul University-Cerrahpasa, Istanbul, Turkey; <sup>2</sup>Department of Surgery, Faculty of Veterinary Medicine, Istanbul University-Cerrahpasa, Istanbul, Turkey; <sup>3</sup>Ph.D. Student in Surgery, Department of Surgery, Faculty of Veterinary Medicine, Afyon Kocatepe University-Afyonkarahisar, Turkey

\*Correspondence: G. Yuzbasioglu-Ozturk, Department of Pathology, Faculty of Veterinary Medicine, Istanbul University-Cerrahpasa, Istanbul, Turkey. E-mail: gulayoz@iuc.edu.tr

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## Abstract

**Background:** Extragenital teratoma in the head and neck region is unusual in veterinary medicine. So far, only one case of oropharyngeal teratoma has been reported in a cat. **Case description:** In this report, a 5-month-old kitten was brought to the clinic with the complaint of difficulty breathing, food intake, and oropharyngeal mass. In clinical examination, there was a large mass, protruding from the localization included left buccal mucosa, soft palate, and extending into the oropharynx but no cranial extension was observed in CT scans. The mass was completely resected. Macroscopically, the mass measured  $4.5 \times 6.5$  cm<sup>2</sup> and contained solid and cystic areas associated with soft and hard tissue components. **Findings/treatment and outcome:** Histopathology revealed an extragenital solid-cystic (grade 0) oropharyngeal mature teratoma containing structures from endoderm, mesoderm, and ectoderm. After an 8-month follow-up control period, no signs of recurrence were observed. **Conclusion:** The case was deemed worthy of being presented with its clinical, radiological, and pathological findings, and complete resection was curative for mature teratoma.

**Key words:** CT scan, Feline, Mature, Oropharyngeal, Teratoma

## Introduction

Teratomas arise due to the differentiation of pluripotent germ cells and are composed of two or three embryonic germ layers: the ectoderm, the mesoderm, and the endoderm. Extragenital teratomas in the head and neck region are unusual for domestic animals. There is only a case report of oropharyngeal teratoma in cats in veterinary literature (Namiki *et al.*, 2023). This case report aimed to describe the clinical and radiological findings, surgical intervention, and pathological descriptions of oropharyngeal teratoma in a 5-month-old kitten.

## Case description

A 5-month-old British shorthair male cat was referred to the faculty clinics with complaints of difficulty in breathing and food intake, and constantly growing swelling on the left side of the patient's throat. In routine clinical examination, a mass covering the left buccal mucosa, palate, and pharynx was observed in the oral cavity (Fig. 1A).

A computed tomography scan of the head and neck region was performed. It revealed a multiloculated, dense, non-tumoral cystic lesion measuring  $4.5 \times 6.5$  cm<sup>2</sup>, filling the maxillary region, destructing the orbital ventral wall and dislocating the globe dorsally (Fig. 1B). As a next step, the patient was referred for an operation to remove the mass.

The patient received sedation using Xylazine HCl (Alfazine<sup>®</sup>, 20 mg/ml, Alfasan; 1 mg/kg IV) and Ketamine HCl (Alfamime<sup>®</sup>, 100 mg/ml, Alfasan; 5 mg/kg IV), followed by Isoflurane (Isoflurane-Usp<sup>®</sup>, Adeka) for general anesthesia. A horizontal incision was made from the level of the ventral edge of the arcus zygomaticus to 2-3 cm ventral to the pinna. The cystic lesion was reached through blunt dissection. The arcus zygomaticus was removed for total extirpation of the mass by separating it from the surrounding tissues. After the extirpation, a collagen sponge (Gelfix Collagen, Isse International) was placed into the pouch formed in the area, and the subcutaneous tissues and the skin were closed using 3/0 polydioxanone and 3/0 prolene thread, respectively, by the operation wound method. Post-operative treatment proceeded with ceftriaxone (30 mg/kg/day, IM) for 10 days, sucralfate (250 mg/day, PO)

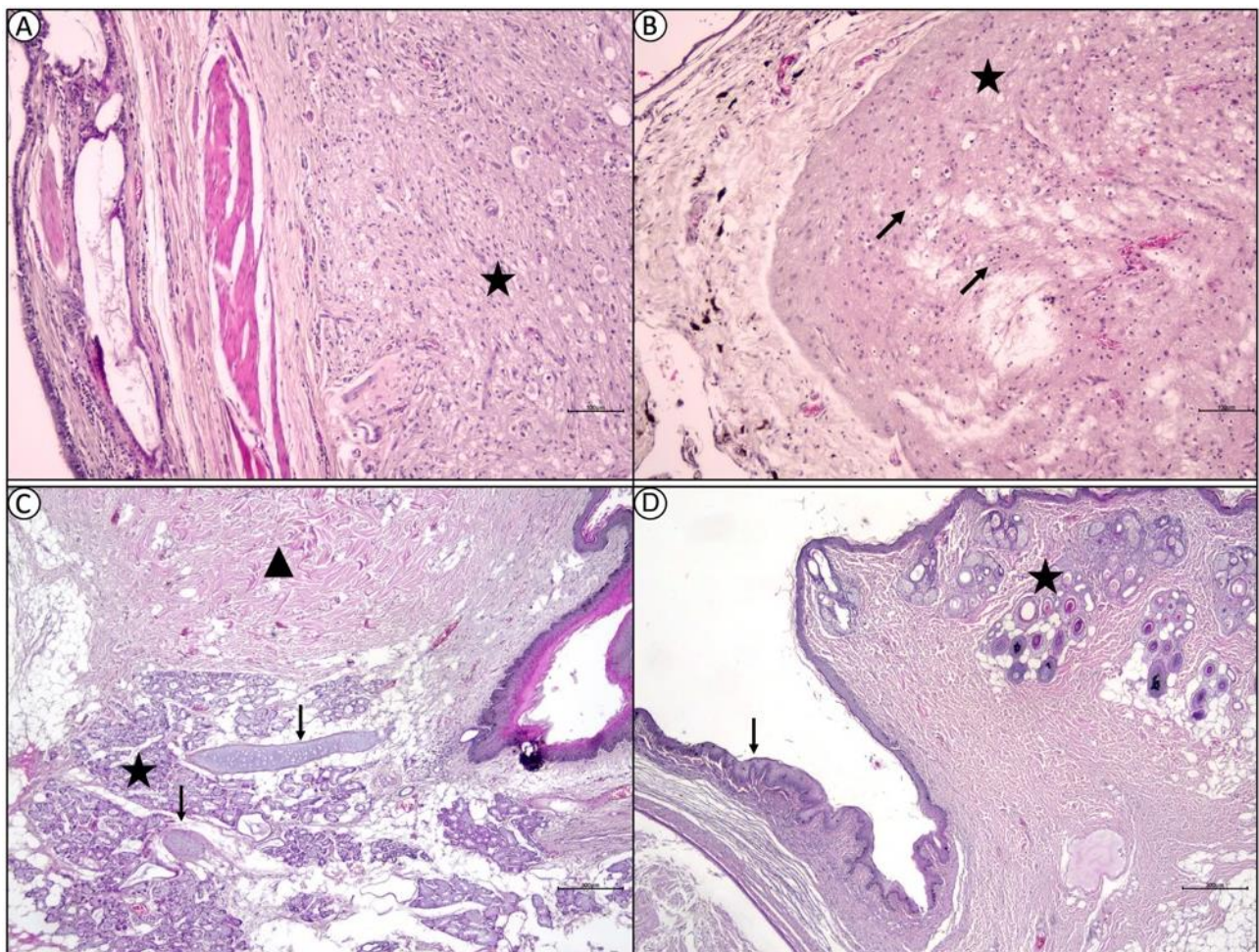
for 7 days, and meloxicam (0.1 mg/kg/day, PO) for 7 days. The removed mass was sent to pathology department for histopathological examination.

The tissue samples were fixed in 10% neutral

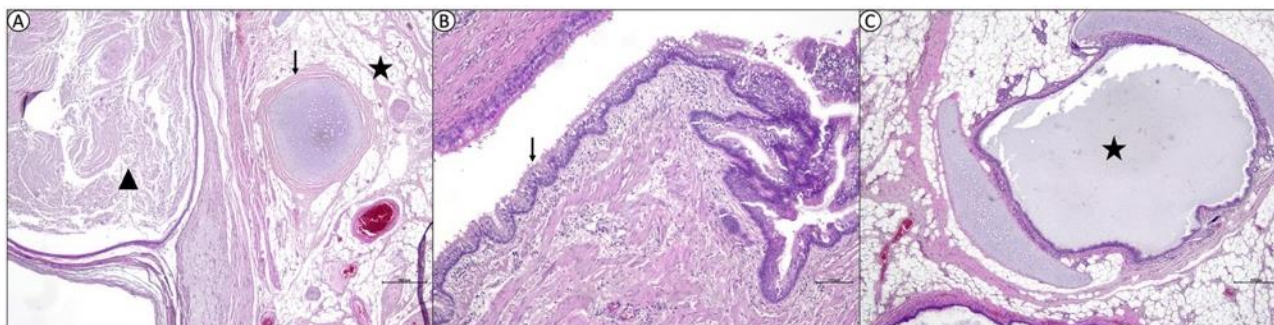
buffered formalin for histopathological examination. The samples were routinely processed, cut at 4 μm, and stained with hematoxylin and eosin (H&E) to be evaluated by light microscopy.



**Fig. 1:** Oropharyngeal teratoma observed in a cat. (A) A mass seen in the left buccal mucosa (arrow), palate, and pharynx was observed in the oral cavity, (B) In BT scan, the mass is seen as multiloculated, dense, non-tumoral cystic lesion, measuring 4.5 × 6.5 cm<sup>2</sup>, filling the maxillary region, destructing the orbital ventral wall, and dislocating the globe dorsally, and (C) On gross examination, the mass is observed as red to gray in color, round to oval with multiple cysts filled with serous fluid, and contained cartilage, haired skin within the inner surface



**Fig. 2:** Histopathological findings of oropharyngeal teratoma in a cat. (A) Peripheral nerve bundle (star) surrounded by smooth muscle tissue, and dilated lymphatics are visible (H&E, scale bar: 100 μm), (B) Central nervous tissue consists of neuropil (star) and neuroglial cells (arrow). Melanin pigments are seen on the left side of the photo (H&E, scale bar: 100 μm), (C) Lining epidermal layer, smooth muscle cells (arrowhead), salivary glands (star), and hyaline cartilage (arrows) are seen with one another (H&E, scale bar: 300 μm), and (D) The lining of the epidermal layer (arrow) with accessory structures of skin within the dermis (star) (H&E, scale bar: 300 μm)



**Fig. 3:** Histopathological findings of oropharyngeal teratoma in a cat. (A) A large keratinous cyst, filled with lamellar keratin circumscribed by stratified squamous (arrowhead), adipose tissue (star) surrounding the hyaline cartilage (arrow) (H&E, scale bar: 300  $\mu$ m), (B) Ciliated columnar epithelial linings of the respiratory system are seen (arrow) (H&E, scale bar: 100  $\mu$ m), and (C) A structure of the bronchus (star), filled with serous transudate, is located adjacent to the smooth muscle, and adipose tissue that extending to widespread areas (H&E, scale bar: 300  $\mu$ m)

## Results

### Gross and histopathological findings

On gross examination, the mass comprised multiple solid and cystic areas. The cysts filled with serous fluid, and cartilage, haired skin within the inner surface. It was red to gray in color, round to oval, measuring  $4.5 \times 6.5$   $\text{cm}^2$  (Fig. 1C).

Histopathology revealed a well-defined histologic structure of the peripheral nerve bundle (visible structures of perineurium, endoneurium, myelin, and axon), surrounded by well-defined smooth muscle tissue and dilated lymphatics (Fig. 2A). Central nervous tissue composed of neuropil, neuroglia, and melanin pigments (Fig. 2B). Additionally, the epidermal layer, muscle tissue, several salivary glands, and foci of hyaline cartilage (Fig. 2C) were seen. Skin tissue composed of epidermis and dermis with adnexa (including hair follicles, sebaceous, and apocrine glands) were seen in different areas of the tumor (Fig. 2D). Moreover, there was a stratified squamous epithelium layer surrounding a large keratinous cyst that was filled with lamellar keratin (Fig. 3A), ciliated columnar epithelial linings of the respiratory system (Fig. 3B). Also, structures of airways such as bronchioles and bronchi, and muscle and adipose tissue extending to widespread areas (Fig. 3C) were seen. Regarding these histopathological findings, the case was diagnosed as mature extragonadal teratoma of the oropharynx, derived from well-differentiated components of the ectoderm, mesoderm, and endoderm germ layers, grade 0. The patient was called for a follow-up examination on the 12th postoperative day for the dressing of the operation and removal of the sutures. In the following period, the patient owner reported no complications related to the operation site, and the areas were completely healed.

## Discussion

Teratomas are uncommon tumors in cats that have a low incidence rate (Klein, 2007). Most of the teratoma cases observed in cats are reported as gonadal teratomas

(Gelberg and McEntee, 1985; Basaraba *et al.*, 1998; Miyoshi *et al.*, 2001; Sato *et al.*, 2003; Gulcubuk *et al.*, 2012) but some reports describe teratomas in extragonadal localizations as well (Chénier *et al.*, 1998; Wray *et al.*, 2008; Van Goethem *et al.*, 2010; Kegler *et al.*, 2015; Ober *et al.*, 2017; Sirivisoot *et al.*, 2022). There is only one reported case of oropharyngeal immature teratoma in a female cat in the veterinary literature (Namiki *et al.*, 2023). Namiki *et al.* (2023) reported the tumor was an immature teratoma with nephroblastic component. However, to the authors' knowledge, mature oropharyngeal teratoma has not been previously reported in cats. This case report described an unusual oropharyngeal mature teratoma found in a kitten.

In humans, oropharyngeal teratoma is usually found in the sphenoid region on the palate or pharynx, called Rathke's pouch (Gull *et al.*, 1999). One of the suggesting theories of this specific localization is explained with the embryonic cell theory (Stevens, 1968). According to the theory, pluripotent blastomeres that separate from the primordial line during early embryonic development migrate to the midline during the development of the head, tail, and lateral body folds, where they may develop into teratomas (Lambrechts and Pearson, 2001). Regarding the localization of the tumor in the presented case, the origin of the teratoma showed similarities with the oropharyngeal teratomas described in human medicine (Kolekar *et al.*, 2016; Singhvi and Pawar, 2017).

In humans, extragonadal oropharyngeal teratoma is a rare congenital tumor of neonates with a high prevalence rate in female patients (Lopes *et al.*, 2005; Celik *et al.*, 2006; Kolekar *et al.*, 2016; Singhvi and Pawar, 2017). However, an exceptional case for an oral teratoma has been reported in a boy (Yacoob *et al.*, 2011). In domestic animals, only two case reports have been reported, including a cervical teratoma in a male dog and an oropharyngeal teratoma in a female cat at a young age (Lambrechts and Pearson, 2001; Namiki *et al.*, 2023). Due to few cases reported in the veterinary literature, it is impossible to compare with the human literature. However, the young age and male gender in the presented case were not compatible with the general

descriptions given in human medicine.

Teratomas are classified as mature and immature, and both may macroscopically contain solid, solid-cystic, or cystic areas. Mature teratomas are benign tumors and histologically consist of well-developed tissue components mostly derived from mesoderm and ectoderm. In contrast, immature teratomas contain at least one of the immature embryonic tissue components and have the potential to be malignant (Rossai, 1996). The histopathological grading system for teratomas is established as grade 0 (all tissue components are well differentiated) and 1 (a small amount of incomplete tissue component occurs) for mature/benign teratomas, and grade 2 (contains %10-50 undifferentiated tissue components) and 3 (contains >%50 undifferentiated tissue components) for immature/malignant teratomas (Gonzalez-Crussi, 1982). In the histopathological findings of the presented case, well-differentiated embryonic tissue components belonging to 3 germ layers were detected and the case was diagnosed as extragonadal mature solid-cystic teratoma, grade 0. The benign features of the tumor were compatible with the cervical case report described in veterinary medicine (Lambrechts and Pearson, 2001).

Complete surgical resection of the mass is necessary because remnants of the tumoral mass may cause a recurrence. In the presented case, the tumor margins were visualized by CT scan. No intracranial extension was observed, and surgical intervention was the therapy of choice. No tumor recurrence occurred following clinical controls, nor any disease associated with the tumor entity was observed during 8 months following the onset. In addition, no adjuvant therapy for the patient was needed, according to the histopathological findings.

In conclusion, this report contributes to the literature by presenting the clinical, radiological, and pathological findings of an unusual case of extragonadal type mature teratoma in a male cat. Complete surgical resection of the tumor was considered curative in mature teratoma. The condition of the cat has remained stable since the termination of the treatment.

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## Conflict of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## References

Basaraba, RJ; Kraft, SL; Andrews, GA; Leipold, HW and

- Small, D (1998). An ovarian teratoma in a cat. *Vet. Pathol.*, 35: 141-144.
- Celik, M; Akkaya, H; Arda, İS and Hicsonmez, A (2006). Congenital teratoma of the tongue: a case report and review of the literature. *J. Pediatr. Surg.*, 41: e25-e28.
- Chénier, S; Quesnel, A and Girard, C (1998). Intracranial teratoma and dermoid cyst in a kitten. *J. Vet. Diagn. Invest.*, 10: 381-384.
- Gelberg, HB and McEntee, K (1985). Feline ovarian neoplasms. *Vet. Pathol.*, 22: 572-576.
- Gonzalez-Crussi, F (1982). Teratomas of the neck. *Atlas of tumor pathology: Extra-gonadal teratomas.* (2nd Edn.), Armed Forces Institute of Pathology, Washington D.C., PP: 118-127.
- Gulcubuk, A; Altun, ED; Bozkurt, ER; Sontas, BH and Haktanir, D (2012). Ovarian teratoma in a dog. *Turk. J. Vet. Anim. Sci.*, 36: 573-576.
- Gull, I; Wolman, I; Har-Toov, J; Amster, R; Schreiber, L; Lessing, JB and Jaffa, A (1999). Antenatal sonographic diagnosis of epignathus at 15 weeks of pregnancy. *ISUOG.* 13: 271-273.
- Kegler, K; Kröner, B; Baumgartner, W and Wohlsein, P (2015). Feline coccygeal teratoma: Immunohistochemical characterization of mature and immature tissue components. *J. Comp. Pathol.*, 152: 65.
- Klein, MK (2007). Tumors of the female reproductive system. In: Withrow, SJ and Vail, DM (Eds.), *Small animal clinical oncology.* (4th Edn.), St. Louis, Saunders. PP: 610-618.
- Kolekar, SS; Chincholi, T; Nangare, N and Patankar, R (2016). Oral teratoma. *Int. J. Appl. Basic Med.*, 6: 54-56.
- Lopes, MA; Pereira, CM; da Cruz Perez, DE; Vargas, PA and de Almeida, OP (2005). Benign teratoma of the buccal mucosa in a 9-year-old girl: report of case and review of the literature. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol.*, 100: 598-602.
- Miyoshi, N; Yasuda, N; Kamimura, Y; Shinozaki, M and Shimizu, T (2001). Teratoma in a feline unilateral cryptorchid testis. *Vet. Pathol.*, 38: 729-730.
- Namiki, K; Okada, K; Shindo, R and Kagawa, Y (2023). A case of immature teratoma with nephroblastic components in the oral cavity of a cat. *J. Vet. Med. Sci.*, 85: 420-424.
- Ober, CA; Taulescu, M; Oana, L; Bel, L; Cătoi, C; Fărcaș, L and Pesteș, C (2013). An unusual case of a mature teratoma on the left perineal region of a young cat: surgical treatment and pathological description. *Acta Vet. Scand.*, 55: 1-5.
- Rossai, J (1996). Female reproductive system. In: Rossai, J (Ed.), *Ackerman's surgical pathology.* (8th Edn.), St. Louis, Mosby. PP: 1274-1277, 1499-1505.
- Sato, T; Hontake, S; Shibuya, H; Shirai, W and Yamaguchi, T (2003). A solid mature teratoma of a feline ovary. *J. Feline Med. Surg.*, 5: 349-351.
- Singhvi, IC and Pawar, JG (2017). Oral teratoma-the devil's curse: a case report. *Int. Surg.*, 4: 3783-3784.
- Sirivisoot, S; Siripara, N; Arya, N; Techangamsuwan, S; Rungsipat, A and Kasantikul, T (2022). Case Report: Mature extragonadal teratoma at the proximal part of the tail in a kitten. *Front. Vet. Sci.*, 9: 1003673.
- Van Goethem, B; Bosmans, T and Chiers, K (2010). Surgical resection of a mature teratoma on the head of a young cat. *J. Am. Anim. Hosp. Assoc.*, 46: 121-126.
- Wray, JD; Doust, RT; McConnell, F; Dennis, RT and Blunden, AS (2008). Retrobulbar teratoma causing exophthalmos in a cat. *J. Feline Med. Surg.*, 10: 175-180.