

Bilateral rostral hemimaxillectomy for oral tumor in a dog – A case report

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Abstract

An eight-year-old intact male non-descript dog weighing 15 kgs was presented with the history of soft mass growing on premaxilla region. On clinical examination, the mass was firmly attached to the upper incisor was along with ulceration. Physiological and hemato-biochemical parameters were within the normal range except for the decreased haemoglobin. Thoracic radiograph showed evidence of no pulmonary metastasis. Biopsy sample was suggestive of basal cell carcinoma. Surgical intervention was carried out by premedication with inj. diazepam @ 0.5 mg/kg b. wt and induction with propofol @ 4 mg/kg b. wt administered intravenously and was maintained with 3% isoflurane anaesthesia. Bilateral rostral hemimaxillectomy was performed by resecting the tumor mass and the labia was closed by double layer suture pattern using polyglactin 910 size 1-0. Routine post-operative management was advised, and the animal had an uneventful recovery. Normal prehension was noticed after two weeks of surgery with uneventful recovery.

Keywords: Basal cell carcinoma, Canine oral tumor, Hemi-maxillectomy

Highlights

- Oral tumor possess a higher risk to the animals.
- Basal Cell Carcinoma is rare in dogs.
- Hemi-maxillectomy is the primary treatment for oral tumor.
- Histopathology examination is essential to make a confirmatory diagnosis.

Oral tumor possess a threat due to a higher risk of rapid development before being diagnosed, potentially leading to severe health complications that may impair a dog's normal ability to masticate (Jafari et al., 2013; Eva et al., 2024). Occurrence of oral neoplasia ranges from benign to highly aggressive malignancies with unique histological and clinical implications accounting for 6-7% in dogs (Gardner et al., 2015). Diagnosis of oral tumor is based on clinical signs, imaging technique such as radiography, computed tomography, magnetic resonance imaging for better evaluation of local, regional and distant extent of disease. Other technique like cytology and histopathology can also be used to identify the type of tumor (Ramos-Vara et al., 2000).

According to Gardner et al. (2015), treatment of oral tumors often requires complex interventions, which may be costly and challenging to owners as well veterinarians at advanced stages and more caudally positioned tumors. Ramos-Vara et al. (2000) and Guzu et al. (2021), reported that conventional surgical excision is generally ineffective in eliminating local

disease for primary malignant or invasive benign maxillary-palatine tumors, resulting in rapid tumor re-growth.

This paper describes about the bilateral rostral hemimaxillectomy for an oral tumor and its successful management.

An eight-year-old non-descript intact male dog weighing around 15 kgs was presented to Veterinary Surgery and Radiology, Veterinary Clinical Complex, RIVER, Puducherry with a history of mass on the premaxilla since two months which hindered the normal prehension with excessive drooling of saliva (Fig. 1). On clinical examination, the mass was firmly attached to the upper incisor which was ulcerated and bleeding. On Physical examination, heart rate, respiratory rate and rectal temperature were found within normal range. Hemato-biochemical values were within normal range except for reduced haemoglobin level to 10 g/dL. Thoracic radiography revealed no evidence of pulmonary metastasis. The tumor was found to be attached to the premaxilla, hence bilateral rostral hemimaxillectomy was chosen as modality of treatment.

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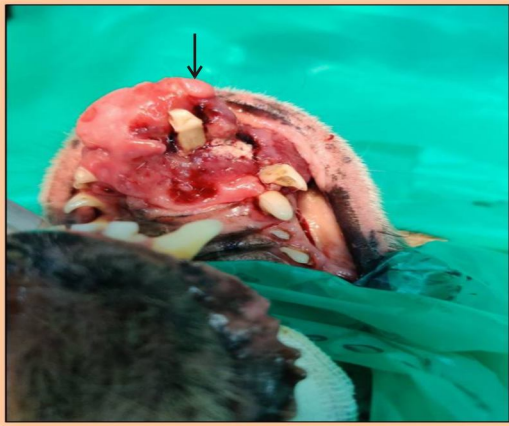


Fig. 1. Black arrow indicating the oral tumor on premaxilla



Fig. 2. A perpendicular incision was made on the labial mucosa



Fig. 3. Bilateral hemimaxillectomy was performed by en bloc resection



Fig. 4. Two to four holes were placed on the rostral edge of the bony hard palate



Fig. 5. Full-thickness labial mucosal-submucosal flap

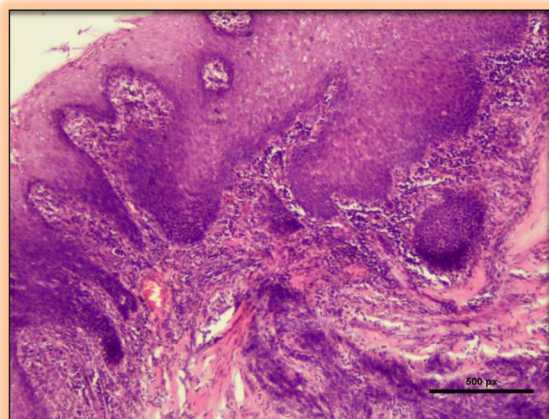


Fig. 6. H & E 40X - Proliferation of basal layer of epidermis with basophilic neoplastic cell confirming - Basal cell carcinoma

The anaesthesia was achieved by intravenous inj. diazepam @ 0.5 mg/kg b. wt and inj. propofol @ 4 mg/kg b. wt were monitored using a Welch Allyn multiparameter monitor (Vigneswari et al., 2023).

After aseptic preparation, the animal was kept on a dorsal recumbency. Maxillectomy was performed by en bloc resection using thermo electrocautery behind the canine tooth. The defect was closed with full thickness labial mucosal-submucosal flap by making a perpendicular incision on the labial mucosa extending towards the lip margin (Fig. 2). Both sides of the labial mucosa were undermined and two to four holes were placed in the rostral edge of the hard palate (Fig. 3). Deep layer of simple interrupted sutures was passed through predrilled holes in the bony hard palate to attach the sub-mucosa to the hard palate (Fig. 4). Superficial layer was sutured by opposing palatal mucosa to labial mucosa using simple interrupted pattern using polyglactin 910 size 1-0 (Fig. 5). Excised mass was sent for histopathology examination.

Post-operatively, the animal was maintained under intravenous fluid and antibiotic therapy for five days and analgesics for three days, followed by liquid diet on 6th day and the animal returned to normal prehension after two weeks of surgery. Histopathology examination on 40x magnifications revealed proliferation of basal layer of epidermis with basophilic neoplastic cell confirming - Basal cell carcinoma (Fig. 6).

Basal Cell Carcinoma (BCC) is a malignant epithelial tumor of the skin which is entirely composed of basal cells and invasion of tumor cells to the surrounding tissues depends on their location and in dogs the usual occurrence of the tumor is head and neck where it is majorly exposed to sunlight while at the other parts, these cells cannot invade (Goldschmidt & Hendrick, 2002). In the present case, the tumor was invading the pre-maxilla and was having difficulty in opening the mouth with ulceration and bleeding and this concurs with the findings of Goldschmidt and Hendrick (2002) who asserted that, basal cell carcinoma usually occurred at head and neck region. The etiology of the tumor in the present case was exactly unknown but it could be attributed to solar damage based on the locations of the tumor as well as the history of the animal that they usually leave the dog outside the house in a small kennel where there is

no proper shade and this is in accordance with findings of Saridomichelakis et al. (2013), where the authors reported that the exposure of skin to excess sunlight might cause basal cell carcinoma.

Bilateral rostral hemimaxillectomy was very effective in the present case as there was no pulmonary metastasis, the animal had no recurrence for past one-year post-surgery which concurs with the findings of Goldschmidt and Hendrick (2002), and Villalobos (2014), where the authors also reported that hemimaxillectomy aided in eliminating the disease, effective in decreasing the possibility of metastasis or local recurrence and prolongs the survival rate for oral tumors in dogs. Complications like swelling of the face, wound dehiscence and oro-nasal fistula were not observed in the present case and the animal returned to normal prehension after two weeks of surgery (Wingo, 2018).

To conclude, hemi maxillectomy procedure is one of the primary treatments for premaxilla tumor which has good cosmetic outcome and occurrence of oral tumor which in mostly in geriatric animal without any sex predisposition. Due to wide variety of tumor and macroscopic similarities of the tumor is challenging hence histopathological examination is essential to make a confirmatory diagnosis.

Conflict of interest: Authors have no conflict of interest in the study.

Author's contributions: HE: Writing the original draft; MV: Conceptualization, methodology, investigation, writing, review and editing; STR, NG, NA, SU: Writing, review and editing.

Data availability statement: All data analyzed during this study are included in the article.

Use of artificial intelligence tools: No artificial intelligence tool has been used in this study.

ACKNOWLEDGEMENT

Authors are thankful to the Dean and Department of Veterinary Surgery and Radiology, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry for providing all the facilities and permission to publish this article.

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