Case report
Maxillary Acanthomatous Ameloblastoma in Dog: Case Report

ABSTRACT

This report aims to describe a case of acanthomatous ameloblastoma in the central region of the left maxilla in a dog that had a history of sialorrhea and hyporexia.A 12-year-old Shih Tzu dog weighing 5 kg was treated at a veterinary clinic specializing in veterinary dentistry. The animal had an increase in volume in the left maxilla caused by a pink mass with irregular contours. The animal had difficulty eating and was progressively losing weight.Imaging tests revealed a neoplastic growth anddisplacement of the teeth affected by the tumor mass, without bone involvement. In the histopathological examination the gingival cells were polygonal in shape with broad, eosinophilic cytoplasm, with distinct borders and evident desmosomal junctions, arranged in a palisade or perpendicular to the basement membrane, being compatible with acanthomatous ameloblastoma.The treatment of choice was surgical removal.In the postoperative evaluation the dog presented dehiscence of the suture and underwent reintervention to perform a new suture. In the immediate postoperative period, the animal remained active. Although adult dogs, of medium to large size, are the most affected by this type of tumor, this work demonstrates that small breeds can also develop the disease.The location of the tumor reported here also differs from that commonly reported in the literature. The full recovery of patients affected by acanthomatous ameloblastoma will depend on the ability to perform an appropriate clinical-surgical approach, seeking excision of the tumor with free margins and correct postoperative follow-up.

Keywords: Odontogenic Tumors; Oral Neoplasms; Oral Surgical Procedures; Veterinary Surgery.

1. INTRODUCTION

The oral cavity is the fourth most common site of neoplasia in dogs, accounting for 6% of all tumors affecting these species [1], and generally affects animals over 7 years of age [2], with no racial predilection [3]. Canine acanthomatous ameloblastoma (CAA) is an odontogenic tumor with high prevalence in dogs [4,5]. Although it is a common oral lesion, CAA can become a serious condition, behaving in a locally infiltrative and disfiguring manner [6].

Its emergence may occur peripherally from within the gingival tissue (more common), or arise centrally from the periodontal ligament tissues adjacent to the tooth and bone (less common) [7]. Although technically a benign lesion with non-metastatic behavior, AAC can behave in a locally aggressive manner, often requiring a surgical block resection involving bone and soft tissues [8, 9, 10].

CAA can occur in any region, but a prevalence of 50% is observed in the rostral region of the oral cavity [11]. Macroscopically, it behaves as an irregular, gray to pink, exophytic or verrucous mass that appears immediately adjacent to the teeth, and may vary markedly in other cases, being confused with other common oral lesions in dogs such as squamous cell carcinoma, amyloid-producing ameloblastoma, fibromatous epulis of periodontal ligament

origin, proliferative gingivitis, odontogenic cysts or gingival hyperplasia [7, 11].In histopathological examination, CAA manifests itself with odontogenic and polygonal epithelial cells, forming islands that are supported by a myoepithelial stroma. Epithelial cells have evident desmosomal junctions and are organized sometimes in palisades and sometimes perpendicular to the basement membrane [12].

When affected, dogs may present clinical signs such as halitosis, hemorrhage (spontaneous or postprandial, ingestion of beverages, chewing or playing with objects), sialorrhea, maxillofacial deformity, difficulty or pain when opening the mouth and progressive weight loss [13, 14]. Diagnosis is based on the animal's history, clinical signs and complementary exams such as imaging exams, either through radiography that helps detect local bone involvement or through computed tomography, which reveals a tumor image through volumetric acquisition. The fine needle aspiration aims to track the cell type involved in neoplastic growth. Definitive diagnosis is achieved through histopathological examination [15, 16].

As conservative clinical treatment, radiotherapy is described, although its use is still very restricted in Brazil's veterinary medicine, and intralesional bleomycin application,which has inconsistent results. Surgical excision with a gross surgical margin of 1 cm is preferred and provides a better chance of cure without recurrence, with surgical treatment being the most recommended [17, 18]. Even though treatment options such as radiotherapy and intralesional bleomycin have been described, surgical excision with a gross margin of 1 cm is preferred and provides a better chance of cure without recurrence [17, 18].

Reports of ACC in the canine maxillary region, especially in the central/caudal region of the oral cavity, are less frequent, especially when taking into account the relevant details of a clinical-surgical approach. This study aims to report a case of canine acanthomatous ameloblastoma in the central region of the maxilla, highlighting its diagnosis, treatment and resolution of post-surgical complications.

2. PRESENTATION OF CASE

A 12-year-old Shih Tzu dog weighing 5 kg was admitted to a veterinary clinic specializing in veterinary dentistry. The animal had an increase in volume in the left maxilla caused by a pink mass with irregular contours (figure 1A), causing the animal difficulty in eating, sialorrhea and progressive weight loss.

On physical examination, the animal presented vital parameters within normal limits for the species and age. On palpation, the anatomical structures of the head appeared symmetrical, the superficial lymph nodes, especially the mandibular ones, were of normal size and consistency and showed no signs of discomfort to the touch. On inspection of the oral cavity, an increase in volume was observed in the central region of the left maxilla near the palatine surface of tooth 208, corresponding to the 4th premolar, which was already displaced to the vestibular region and extended rostrally to teeth 206, 207, corresponding to the 2nd and 3rd premolar teeth respectively, and caudally to tooth 209, corresponding to the 1st molar, affecting 4 teeth in total.

Since surgical treatment was chosen, preoperative tests were requested, such as a complete blood count, serum biochemical tests (urea, creatinine, alanine aminotransferase, alkaline phosphatase, glucose), face and chest radiographs, computed tomography (CT), electrocardiography and echocardiography, for planning the left central maxillectomy. The facial radiograph showed the displacement of the teeth affected by the tumor mass, without

bone involvement, as well as the absence of metastases in thoracic structures on chest radiograph.

Surgical excision of the mass was initiated by taking digital intraoral radiographs. To perform the left central maxillectomy, the patient was positioned in the right lateral decubitus position. The soft tissues (gingiva, oral mucosa, and palatine) were incised with a No. 15 scalpel, surrounding the entire tumor mass, with a safety margin of 1 cm. The oral mucosa was dissected and then the bone was sectioned with a No. 701 dental drill. Bleeding was controlled by vessels ligation (arteries and veins), such as the left greater palatine and the left infraorbital plexus, using a No. 4.0 synthetic monofilament absorbable suture (poliglecaprone 25). After tumor excision, reconstructive surgery was performed to close the surgical wound with an advancement flap using the jugal mucosa, sutured to the palatine mucosa in a simple isolated pattern (figure 1B) with the same thread used to ligate the vessels. The resected portion of the maxilla, together with the mass, were placed in 10% formalin and sent to the histopathology laboratory. The neoplastic mass was routinely processed and stained with hematoxylin and eosin for reading under an optical microscope. The maxillary portion was decalcified with 5% nitric acid for histopathological processing.

In the post-surgical period, the animal presented suture dehiscence. During the correction, the edges of the surgical wound were debrided and a new suture was performed, in two layers, using isolated stitches in a swift and simple continuous pattern. At this time, it was decided to place a pharyngostomy tube for food and medication management, initially for a period of 10 days. In the following weeks, the patient presented good clinical evolution, with adequate healing of the suture, and the tube was removed. The histopathological examination report confirmed the diagnosis of acanthomatous ameloblastoma (figure 2) without bone tissue involvement and with free margins.

3. DISCUSSION

Medium to large adult dogs are most frequently affected by ACC. Although it is a common tumor in dogs of these breeds and sizes, the animal reported here does not follow the same characteristics, showing that it is possible for small breeds to be affected. There is no consensus in the literature regarding a predilection for sex [10, 14].

Regarding the age at which dogs are diagnosed, the literature reports a variation between 7 and 10 years of age [1], compatible with the age presented by the patient at the time of clinical-surgical care, although it is possible for the disease to occur at younger ages [5, 11].

Oral neoplasms are usually diagnosed late, when they are already at an advanced stage [1, 7], often making a more conservative approach and less invasive surgical interventions impossible. Because the lesion was in stage I, the clinical-surgical approach in this animal occurred without major complications, resulting in a resection with free margins, thus preventing the occurrence of local recurrences [7].

Surgical wound dehiscence is a postoperative complication that can occur in 7-33% of maxillectomy cases [4], and is caused by systemic or local factors, infection, suture rupture, ischemia or tension in the wound, and worsens with age, inadequate nutritional conditions, and concomitant diseases such as diabetes or cardiovascular diseases [19]. To correct the dehiscence, it is important to cover the area with a flap of buccal mucosa, divulsing enough to juxtapose the edges of the wound, which should come together without tension.

The edges must be debrided so that they can be coapted [18]. In a surgical reintervention, especially when performed in the immediate post-surgical period, the tissue must be handled

with greater care, since the presence of granulation tissue at the site makes it more friable [7, 8]. At the time of the surgical reintervention in the reported case, it was decided to suture in two layers, one in a swift pattern, with the aim of avoiding contact of the tongue with the surgical knot, and the other in a simple continuous pattern, to provide greater stability.

Aesthetically, maxillectomy, in most circumstances, causes minor maxillofacial abnormality. In the present case, the patient presented with an acceptable cosmetic standard, without visual asymmetry of the head, good adaptation and minimal functional alteration, which allowed the gradual return of chewing. The animal continued to be monitored after removal of the neoplasm and until the last evaluation, and showed no signs of recurrences or metastases.

While the literature reports a higher incidence of AAC in the rostral region of the mandible of dogs, in this study the tumor was located in the central region of the left maxilla. Though the patient presented an adherent mass, pink in color and with irregular contours, suggestive of acanthomatous ameloblastoma, histopathological diagnosis should be requested for the effective diagnosis of ACC [10, 20].

4. CONCLUSION

Canine acanthomatous ameloblastoma is a non-metastatic odontogenic tumor that can occur in small dogs. Its diagnosis should be made through histopathological examinations, with immunohistochemical examination being appropriate to confirm the nature of the tumor tissue. Accurate diagnosis and adequate surgical technique of central maxillectomy with adequate margins, as well as resolution of post-surgical complications, allow for a better prognosis and reduce the possibility of recurrence. Although it occurs most frequently in the rostral and mandibular regions, ACC is also seen in more central or caudal areas of the oral cavity.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors declare that there are no conflicts of interest.

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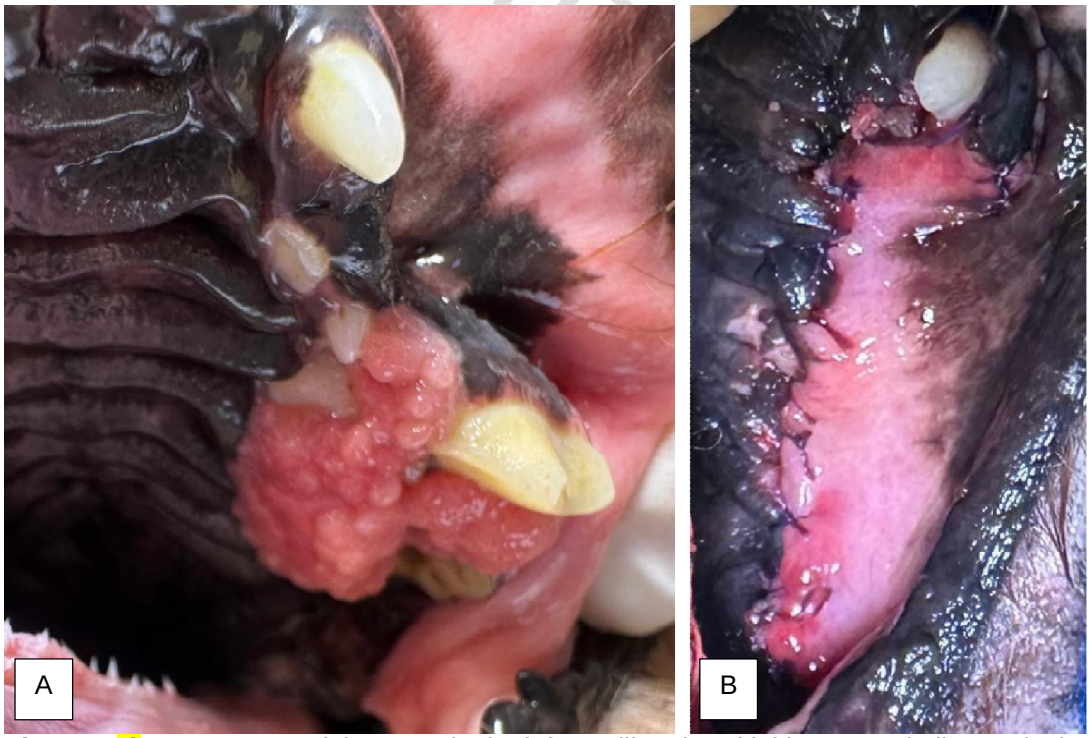

Figure 1.a) Gross aspect of the mass in the left maxilla. Firm, friable mass, similar to gingival tissue, pink to red in color, multilobulated in appearance, with irregular contours, non-

ulcerative, measuring approximately 1.5 x 1.5 cm.**b)** Final appearance of the surgical procedure after tumor excision and mucosal suturing with isolated simple pattern.

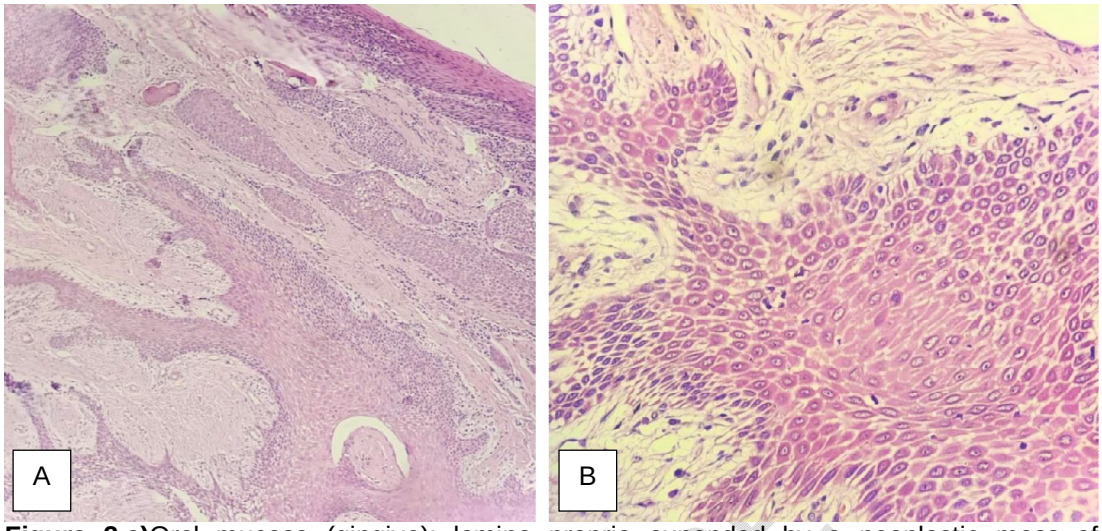

Figura 2.a) Oral mucosa (gingiva): lamina propria expanded by a neoplastic mass of odontogenic epithelial cells, densely cellular, non-encapsulated, with inconspicuous margins, forming islands supported by thin myoepithelial stroma. H&E. Obj. 10x. **b)** Oral mucosa (gingiva): polygonal-shaped neoplastic cells, with broad eosinophilic cytoplasm, distinct borders and evident desmosomal junctions, sometimes arranged in a palisade and sometimes perpendicular to the basement membrane. Round nuclei, with finely granular chromatin and single evident nucleoli. Moderate anisocytosis and anisokaryosis with one mitotic figure per 40x field.H&E. Obj. 40x.