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Mandibular Odontoma in a Cow: A Rare Case and Its Surgical Management

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Abstract
Odontomas are rare, benign dental tumors that arise from abnormal development of tooth-forming tissues. Though more commonly seen in humans and small animals, odontomas can also occur in cattle, often going unnoticed until the growth becomes large enough to cause clinical signs. A case of cow was presented with odontoma involving lower jaw, sized approximately of a melon hence needed surgical excision. Surgery was performed using Butorphanol @ 0.02mg/kg IM and Diazepam @ 0. 2mg/kg IV as preanesthetic and thiopentone sodium @ 10mg/kg till effect was used for induction and maintenance. Entire mass was excised and mucosal flaps were apposed using horizontal mattress sutures. The animal showed uneventful recovery on 14th post-operative day.

Keywords: Odontoma, Cow

Introduction
Odontomas are benign, rare tumors resulting from aberrant development of tooth-forming tissues. Odontomas are rare benign dental tumors composed of dental tissues that primarily affect young cattle, typically occurring in the mandibular incisor region (Gardner, 1996; Chalmers & Shacklady, 1991) [3, 2]. These tumors can present as ameloblastic fibromas, ameloblastic fibro-odontomas, or ameloblastic fibro-odontosarcomas (Gardner, 1996) [3]. Clinical signs may include mandibular swelling, difficulty in prehension, and weight loss (Pooniya *et al*., 2020; Berón *et al*., 2019) [6, 1]. Histologically, odontomas consist of odontogenic epithelium and mesenchymal tissue, which can form enamel and dentin (Berón *et al*., 2019) [1]. Surgical excision is the preferred treatment method, with wide margins recommended to prevent recurrence (Pooniya *et al*., 2020; Berón *et al*., 2019) [6, 1]. Post-operative care may include antibiotics, anti-inflammatory drugs, and fluid therapy (Pooniya *et al*., 2020) [6]. While generally responsive to enucleation, careful examination of tumor margins is advised to confirm non-invasiveness (Gardner, 1996). Differential diagnosis should consider other odontogenic neoplasms, inflammatory lesions, and congenital abnormalities (Berón *et al*., 2019) [1].

2. History and Clinical Observations
H.F. cross cattle in her 1st lactation was rescued by Gaushala volunteers showed difficulty in feeding and drinking water for the past 40 days. On clinical examination, mass involving lower jaw, approximately of a melon sized with swollen gums and disrupted and loose teeth was found (Fig. 1). Animal appeared mildly depressed with presence of hypersalivation and dysphagia. On palpation the mass was firm without any pain. Conjunctival mucous membranes were pink, heart rate was 70 beats per minute, and the respiration rate was 25 breaths per minute. Considering these signs and symptoms it was diagnosed as odontoma and decided to remove surgically.

3. Treatment
Therapeutic intervention consisted of surgical excision of the identified mass. As part of the pre-operative protocol, the animal was subjected to a 48-hour fasting period for feed and a 24-hour withdrawal of water to reduce the risk of intraoperative regurgitation and aspiration. Butorphanol @ 0.2 mg/kg IM and Diazepam @ 0. 2 mg/kg IV were given as preanesthetic and the anaesthesia was induced using 10% thiopentone sodium @ 10 mg/kg IV till effect and anaesthesia was maintained using the same @ 5 mg/kg body weight as and when required. The animal was positioned in right lateral recumbency to minimize ruminal compression and

thereby decrease the likelihood of regurgitation during the surgical procedure. Following appropriate pre-operative preparation and induction of general anaesthesia, a precise elliptical incision was made, encompassing the full circumference of the tumor margins to ensure complete excision. Dorsal and ventral flaps were carefully undermined and reflected to allow sufficient exposure of the underlying tumor mass. Partial mandibulectomy was performed to remove the tumorous growth attached to the mandible. Haemorrhage during the surgery was controlled by using thermocauteriation. After thorough inspection of the surgical site for haemorrhage or residual tissue, the previously reflected skin flaps were re-apposed over the cauterized bed by horizontal mattress suture pattern using non-absorbable suture material (Fig. 2). Post-operatively, antibiotics (Inj. Penicillin G Procaine 10 ml @ 48 hrs.), analgesics (Meloxicam @ 0.2 mg/kg IM) and 10 litres of 5% Dextrose normal saline were given for 7 days. The owner was advised to clean the suture line using chlorhexidine-based mouthwash solution and provide chaffed green grass to the animal till healing of the wound. The animal showed uneventful recovery on 14th post-operative day (Fig. 3).

4. Discussion

Odontogenic neoplasms in bovines represent an uncommon subset of benign tumors, predominantly affecting juvenile animals and demonstrating a marked predilection for the mandibular anatomical region. These lesions exhibit a broad spectrum of morphometric variability, with reported diameters ranging from subcentimetric nodules (<10 mm) to extensive proliferative masses surpassing 12 cm in diameter (Berón *et al*., 2019 and Levi-Duque & Ardila, 2019) [1, 5]. Similarly, in the present study, melon size odontogenic mass in the mandibular region causing displacement of incisors was diagnosed in a cow. Among the odontogenic tumor variants, ameloblastic fibro-odontoma is characterized by the proliferation of odontogenic epithelium in conjunction with ectomesenchymal tissue, often exhibiting inductive interaction leading to the formation of dental hard tissues, including enamel and dentin. These tumors typically manifest as progressively enlarging lesions in the rostral mandibular region of young cattle (Berón *et al*., 2019) [1]. Tetens *et al*. (1995) [7] stated that odontogenic tumours can be manged surgically by chiselling or curetting out tumorous growth and closing cavity in maximum possible manner to oppose mucosal surfaces. However; he recommended radiation therapy, thermocautery and cryotherapy in conjunction with surgery to prevent tumor regrowth in the oral cavity. Similarly, Kumar *et al*. (2019) [4] treated 8 cases of odontoma using vincristine sulphate and anthiomaline as chemotherapeutic agent and recommended that vincristine sulphate along with anthiomaline as a chemotherapeutic agent may give promising result in small size oral tumorous growth in bovine but large tumorous growth must be surgically removed before chemotherapy. Similarly, in the present case odontoma was successfully manged by partial mandibulectomy along with removal of the growth.

5. Conclusion

A case of odontoma in a cow was successfully managed.

Fig 1: Odontogenic growth in the rostral mandibular region causing displacement of incisors

Fig 2: Suturing of mucosal flap after removal of growth

Fig 3: Recovered animal

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