Clinical Commentary

Odontogenic tumours in the horse

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The case outlined in ‘Surgical treatment of a rostral mandibular complex odontoma in a 3-year-old horse’ (Snyder et al. 2008) has subject details typical for complex odontomas reported in this species. The horse presented with a firm, nonpainful swelling located in the mandible. Complex odontoma has more frequently been associated with the maxilla in horses, underscoring the importance for histological confirmation of tumour type. In this report, the horse’s owner declined biopsy before surgical intervention. Biopsy with tumour typing and staging prior to operative planning is currently recommended. Tumour excision without the benefit of prior histological diagnosis is an acceptable treatment, as long as the excision provides the appropriate operative margin necessary to prevent local metastasis and regrowth. Surgical biopsy paired with excision negates the need for multiple procedures and avoids delay of treatment. En bloc surgical excision resulted in failure of regrowth 6.5 months post operatively. This report adds to the collective knowledge regarding tumours of odontogenic origin in horses and reminds practitioners of this rare yet important differential that many times results in a favourable prognosis.

Odontogenic tumours are primary neoplasms arising from dental tissue (Pirie and Dixon 1993). These tumours are rare in the horse and typically manifest as slow growing firm, nonpainful, focal swellings overlying the maxilla and mandible. There is no known breed or sex predilection. Differential diagnoses of firm maxillary or mandibular swellings include other dental diseases such as odontogenic cystic formation and periapical abscessation of the cheek teeth (Dixon et al. 2000a). Firm swellings can also be associated with oral neoplasia not of dental origin including osteoma, osteosarcoma, fibrosarcoma, lymphosarcoma, and squamous cell sarcoma (Head and Dixon 1999) (Fig 1). Histological examination of surgical biopsy is critical to ensuring correct diagnosis.

Odontogenic tumours are classified based on tissue of origin and degree of differentiation evaluated histologically. Major classes reported in horses include ameloblastoma, ameloblastic odontoma, ameloblastic carcinoma, odontoma, and complex or compound odontoma (Table 1). Ameloblastomas are epithelial cell tumours and do not contain enamel (Crabill and Schumacher 1998). Ameloblastic carcinomas are similar to ameloblastomas and are further classified due to high degree of malignancy and greater likelihood of metastasis (De Cock et al. 2003; Benlyazid et al. 2007). Odontomas have both epithelial and mesenchymal cell elements (Brounts et al. 2004). Ameloblastic odontomas contain dentin and enamel and are poorly differentiated (Crabill and Schumacher 1998). Complex odontomas are composed of tissues found in normal teeth arranged at random whereas compound odontomas, composed of similar tissues, have a more organised structure (Debowes and Gaughan 1998). Tumours can localise to both maxilla and mandible, but those found in the mandibular symphysis are considered likely to be of odontogenic origin (Pirie and Dixon 1993). Odontogenic tumours typically do not metastasise to distant tissues but local invasion is common (Peter et al. 1968). If untreated, these tumours can enlarge and impact adjacent structures resulting in altered tooth position, airway diameter, sinus drainage and vascular integrity. Systemic side effects have been reported including weight loss and humoral hypercalcaemia (Rosol et al. 1994; Knottenbelt and Kelly 2005).
Treatment of odontogenic tumours is complete surgical excision. Prognosis following complete excision is good, although this may be difficult in the presence of severe local invasion. Tumours are best treated when small in size, although odontogenic tumours rarely present in the subclinical phase. In the mandible, partial hemimandibulectomy may be required to allow wide excisional margins. In the maxilla, sinus entry is common and staged surgeries may be necessary to remove the tumour completely without undue stress to the patient. Radiographic and computed tomography imaging may be useful in operative planning to ensure complete excision is both possible and likely. Surgeons should plan for operative blood loss and consider oesophagostomy to allow adequate nutrition in the post operative period. If radical excision is elected, this procedure may result in poor cosmetic outcome. Surgical excision can be combined with other therapies to increase success and minimise post operative regrowth. Combination therapies may include surgical incision with cryosurgery, local or systemic chemotherapy, or radiotherapy. Radiotherapy is recommended in man if wide en bloc resection is not possible (Mendenhall et al. 2007). Invasive odontogenic tumours respond poorly to medical management and palliative surgical treatment.

A horse recently presented to Colorado State University for surgical treatment of ameloblastoma with a history of dental abnormality. The horse was an 18-year-old Thoroughbred gelding with a 2 month history of firm nonpainful swelling overlying the right mandible. The 3rd premolar (407) was extracted by the referring veterinarian 10 days prior to presentation. At the time of extraction, the veterinarian noticed that the tooth root looked abnormal and submitted the tooth for histopathological examination. Histopathology confirmed ameloblastoma. Ameloblastomas occur more commonly in the mandible and while the tumour is radiolucent, expansion of the bony cortex and periosteal reaction may result in a surrounding thin shell of bone (Fig 2). The mass involved the tooth roots of both 407 and 406. This horse was treated with a combination of wide surgical excision and cryosurgery similar to previous reports (French et al. 1984). Many oral tumours involve either a loose tooth or a mass that has developed after tooth removal. For this reason, we

![Fig 2: Radiographic appearance of a mandibular ameloblastoma in an 18-year-old Thoroughbred gelding.](image-url)
recommend that all teeth should be examined for abnormalities at the time of removal. Differentials for loose teeth, especially in a young horse, should include odontogenic tumour. In addition, a mass that develops at a site of tooth extraction is highly suggestive of a tooth origin tumour.

References


