Diagnosis and Treatment of Cementoblastoma: A Case Report

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INTRODUCTION

Cementoblastoma has been classified by the World Health Organization as a benign odontogenic tumor that originates from the ectomesenchyme or mesenchyme, with or without odontogenic epithelium.[1] Cementoblastoma is the only true neoplasm originating from the cementum, and its pathognomonic feature is its physical fusion to the root of a tooth.[2]

EPIDEMIOLOGY

Cementoblastomas occur rarely, comprising less than 1% of all diagnosed odontogenic tumors.[1] They are most commonly found in young adults, with a majority affecting patients younger than 20 years old, and 75% occurring prior to age 30.[1] A 2.1:1 ratio of occurrence in males to females has been reported, although many sources do not report a true predilection for either gender. [1,2] This lesion is most associated with mandibular first permanent molars, and the tooth usually remains vital. [2] There is an 11.8% recurrence rate, with 687% higher probability of recurrence if the tumor was associated with bony expansion. [3]

DIAGNOSIS AND MANAGEMENT

The typical clinical presentation of a cementoblastoma is a slow growing tumor that is commonly asymptomatic. However, these lesions can also be associated with bony expansion, swelling, trismus, displacement/mobility of adjacent teeth, and may become painful. [4,5] Radiographically, cementoblastomas present as a well-defined radiopaque lesion, surrounded by a radiolucent zone. Cementoblastomas and are most commonly seen fused to the apical or lateral aspect of the associated tooth's root [3]. This lesion has unlimited growth potential, may resorb the roots of the associated tooth, and can destroy the PDL space. [1,4] A differential diagnosis for cementoblastomas may include the following: osteoblastoma, osteosarcoma, osteoma, odontoma, periapical cemental dysplasia, hypercementosis, condensing osteitis, osteosclerosis and fibrous dysplasia.

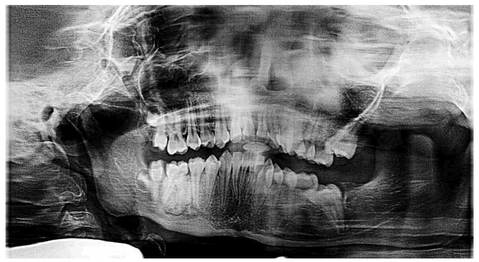
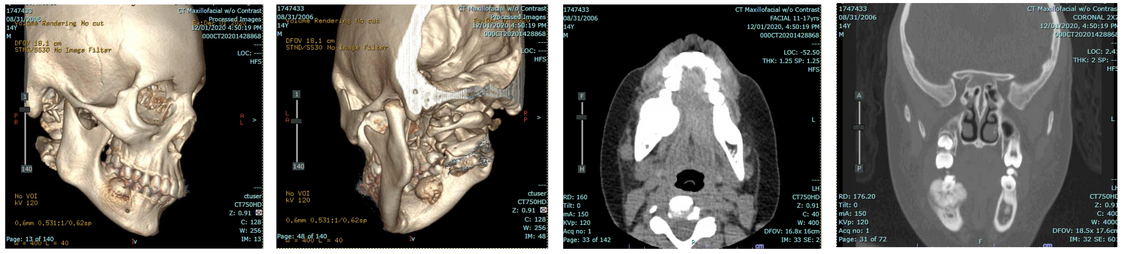


Figure 1: Panoramic radiograph obtained at recall exam. Distortion of image due to patient movement during imaging. Radiopaque mass surrounding roots of tooth #30 observed.

Treatment options for cementoblastoma include root amputation and endodontic treatment, excision of the lesion and extraction of the affected tooth, marginal resection, and segmental resection. An analysis of the literature reveals that recurrence only occurs with enucleation, and a zero percent recurrence rate after resection is performed. [3]

CASE REPORT

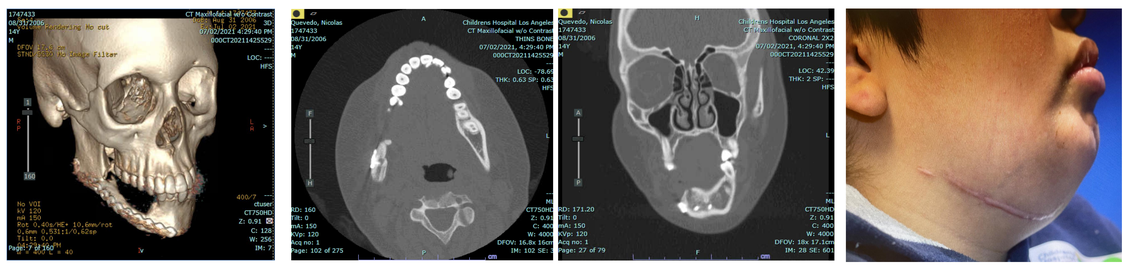
A 14-year-old non-verbal male with a medical history significant for Fragile X syndrome, global developmental delay, hearing loss, microcephaly, cerebral palsy, scoliosis, chronic lung disease, and obstructive sleep apnea, presented with his mother and siblings to Children's Hospital Los Angeles for an emergency exam. The mother's chief complaint was "a marble sized bump under his tongue and on the cheek side of his mouth has been bothering him when eating and toothbrushing for the last three weeks. Upon examination, a firm, unilateral swelling (3 cm in diameter) was palpated on the buccal and lingual alveolar ridge.. The swelling appeared intraorally localized to tooth #30, and a slightly extraoral swelling could be visualized. A panoramic radiograph was obtained, and a radiopaque circular mass surrounding the roots of tooth #30 was documented (Figure 1). The patient was referred to the Division of Maxillofacial Surgery. Five days later, the patient's mother called the hospital concerned that the mass was now significantly visible extraorally, and she felt it was growing at a rapid pace and surrounding multiple molars. A CT scan was ordered and reviewed (Figure 2).



A. B. C. D.

Figure 2 (above) : Pre-operative CT Scan. **A)** 3D Volume rendering, buccal view **B)** P 3D Volume rendering, lingual view **C)** Sagittal view **D)** Coronal view.

Given the aggressive and rapidly growing nature of the tumor, the surgical team was concerned the most likely differential diagnosis included osteoblastoma and osteosarcoma. Therefore, a recommendation was made for surgical resection with 1.5 cm margins along with rigid fixation and a rib graft. The surgery was completed successfully one week later (Figures 3). The pathology report described a cementoblastoma, with no signs of malignancy (Figure 4). The patient is currently being monitored post-operatively for healing and any signs of recurrence. The dental team fabricated a removable splint that the patient wears daily to prevent supraeruption of the maxillary molars and increase the likelihood the patient may tolerate prosthetic treatment in the future. Eventually, the family may consider graft augmentation and fixed or removable prosthetic treatment.



A. B. C. D.

Figure 3 (above): Post-operative Imaging. **A)** CT Scan, 3D Volume rendering **B)** CT Scan, Sagittal view **C)** CT Scan, Coronal view. **D)** Extra-oral photo six months post-op.

HISTOLOGIC FEATURES

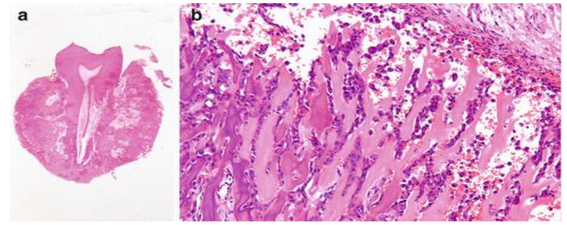


Figure 4: Gross specimen and histopathologic isolation of a cementoblastoma[7].

The histology demonstrated a sclerotic mineralized material intermixed with foci of fibroconnective tissue, and epitheliod cells resembling cementoblasts (Figure 4).

CONCLUSION

Cementoblastoma is a benign tumor of cementum that can present itself in a variety of ways. The patient's unique medical history, the clinical and radiologic features of the tumor, and the likelihood of recurrence should all be considered in reaching the most successful treatment outcome. This case report presents the management and treatment of a large cementoblastoma with a complex medical history.

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