

Surgical management of a complicated case of benign cementoblastoma impeding normal occlusion : A case report

Case
Report

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ABSTRACT

True Cementoma or benign Cementoblastoma is a rare odontogenic tumor that represents less than 1% of all reported odontogenic tumors. It was first described as a benign tumour that forms cementum or cementum like tissue mass around the teeth roots and that the only true cemental neoplasms are benign cementoblastoma and cementifying fibroma. Its most common site is the posterior mandible mostly associated with molar and premolar teeth, and it rarely occurs in anterior teeth. It has a higher prevalence in male population and usually occurs before the third decade of life. The literature highlights that the treatment of choice for benign cementoblastoma is surgical removal of both the tumor and associated teeth.

In this case report, a case of a 29-year-old male patient with a benign cementoblastoma (true cementoma) in the posterior mandible impeding the path of normal occlusion is presented. Whereby surgical removal of the mass and its histological examination was done to confirm its nature. Although it is a rare neoplasm constituting to less than 1% of benign odontogenic neoplasms, oral and maxillofacial surgeons should be aware of its diagnosis, clinical picture, histopathological features, treatment and prognosis as it may pose a risk to the patient's dentition and bony structures.

Key Words: Benign cementoblastoma, case report, mandibular neoplasm, odontogenic tumors, true cementoma.

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INTRODUCTION

Norberg (1930) first described the benign cementoblastoma as a benign tumour that forms cementum or cementum like tissue mass around the teeth roots^[1]. The WHO (World Health Organization) in 1993 stated that the only true cemental neoplasms are benign cementoblastoma and cementifying fibroma^[2]. Later the WHO classified the benign cementoblastoma as an odontogenic mesenchymal (ectomesenchymal) tumor^[3].

True Cementoma or benign Cementoblastoma is a rare odontogenic tumor that represents less than 1% of all reported odontogenic tumors. Its most common site is the posterior mandible mostly associated with molar and premolar teeth, and it rarely occurs in anterior teeth^[2, 4-6]. It has a higher prevalence in male population and usually occurs before the third decade of life^[7].

Benign cementoblastoma is a slowly growing^[6-8], painless lesions, although it was reported that it may be symptomatic and swelling may occur in some cases^[5, 7, 10-15]. Radiographically, it appears as a well-defined radiopaque mass related to the vital tooth root

and is surrounded by a thin radiolucent rim^[3, 6-9, 13, 16-18]. Histopathological examination of benign cementoblastoma reports proliferating plump cells resembling cementoblasts. These cementoblasts are embedded in variable amounts of eosinophilic matrix (cementoid), which shows patchy calcifications in many areas forming cellular cementum^[9, 16, 17]. To reach final diagnosis clinical, histopathological and radiological findings must be thoroughly reviewed to exclude osteoblastoma, osteosarcoma and focal sclerosing osteomyelitis^[6, 15].

Brannon *et. al.* (2002) mentioned that the treatment of choice for benign cementoblastoma is surgical removal of both the tumor and associated teeth^[10].

CASE REPORT

A 29-year-old male was presented to Misr International University dental clinic complex with a painless intraoral mild swelling related to the mandibular second right molar. The soft tissue was of normal condition and tooth was vital, however in a tilted position causing malocclusion.

Tooth vitality was confirmed using electric pulp testing. Oral examination revealed good oral health and

hygiene with exception to mesial shifting of lower right second molar and malposition of lower right third molar. Radiographic findings showed radio-opaque mass with a diameter of 5mm x 5mm surrounding the root of second mandibular molar. Cone beam Computed Tomography (CBCT) showed the radiopaque mass to obliterate the anatomy of the root and was surrounded by a uniform radiolucent halo. (Figure 1, 2).

The patient was scheduled for surgery under local anesthesia to remove both right mandibular second molar with associated mass and third molar (Figure 3). The patient approved the proposed treatment plan and signed an informed consent.

Incision was done using a Bard Parker Blade #15 and a Pyramidal full thickness flap was reflected buccally using mucoperiosteal elevator and the flap was

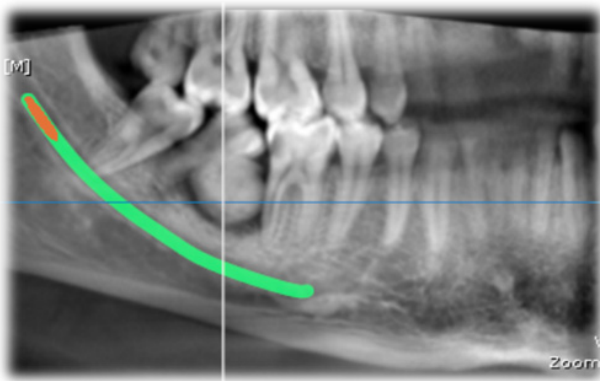


Fig. 1: Panoramic View of CBCT showing radio-opaque mass surrounded by radiolucent halo related to mandibular right second molar

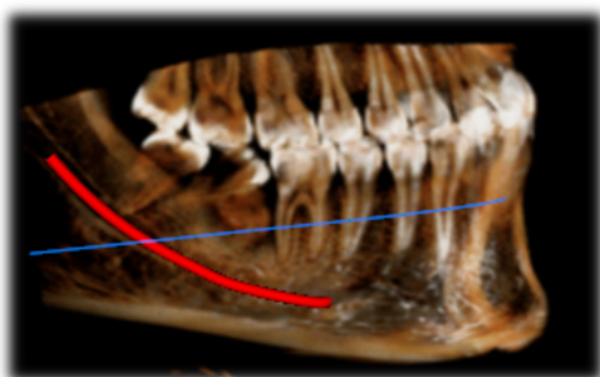


Fig. 2: 3-D reconstruction view of CBCT showing lesion obliterating mesial root of mandibular right second molar.

retracted using Minnesota retractor (Figure 4). The third mandibular molar was first removed using mandibular forceps (Figure 5), then the second molar was luxated first then delivered buccally with the associated lesion using mandibular forceps (Figure 6). Thorough and extensive curettage and debridement of the second molar's bony socket was performed (Figure 7). The wound was closed primarily using 3-0 silk suture (Figure 8). The lesion with associated tooth (second molar) and third molar (Figure 9 a, b, c) were sent for histopathological evaluation to MIU histopathological research lab.

Patient was given postoperative antibiotics for 5 days (Amoxillin 1g – twice daily), an analgesic for pain control (Ibuprofen 600 mg – three times daily) for 3 days when needed, and intramuscular corticosteroids (Dexamethasone 4mg IM) for their antiedematous effect.



Fig. 3: Intraoral preoperative view of surgical site



Fig. 4: Flap reflected buccally and retracted using minnesota retractor



Fig. 5: Surgical site after removal of lower third molar.



Fig. 7: surgical site after extensive curettage and wound debridement



Fig. 6: Delivering of second molar with associated mass using mandibular molar forceps



Fig. 8: Suturing of surgical site

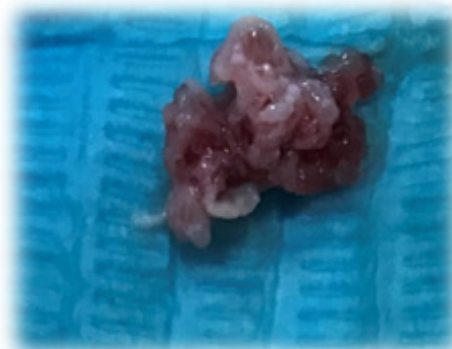


Fig. 9a: Mandibular Second right molar with associated mass ; **Fig. 9b:** Soft tissue curettaged from bony socket of mandibular right second molar ; **Fig. 9c:** Mandibular right third molar

Gross examination of the specimen showed a non-carious mandibular molar with the mesial root embedded in a spherical mass of hard tissue. The results of histopathological evaluation revealed proliferating plump cells resembling cementoblasts. In some areas, these cementoblasts are embedded in variable amounts of eosinophilic matrix (cementoid). In many areas, this cementoid is showing patchy calcifications forming areas of cellular cementum (Figure 10 a and b). The definitive diagnosis was true cementoma (benign cementoblastoma).

No complications were recorded postoperatively, and a follow up period of 12 months showed no signs of recurrence (Figure 11 and 12).

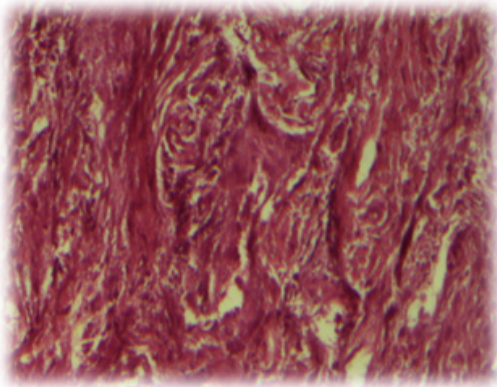


Fig. 10a: H.E. magnification 10x showing calcified tissue with numerous gaps and cementocytes.

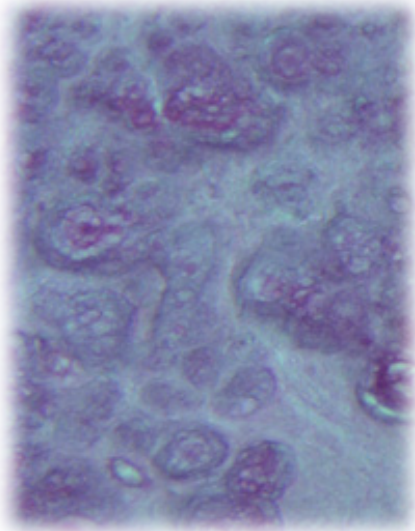


Fig. 10b: H.E. magnification 40x showing plump cells resembling cementoblasts embedded in eosinophilic matrix

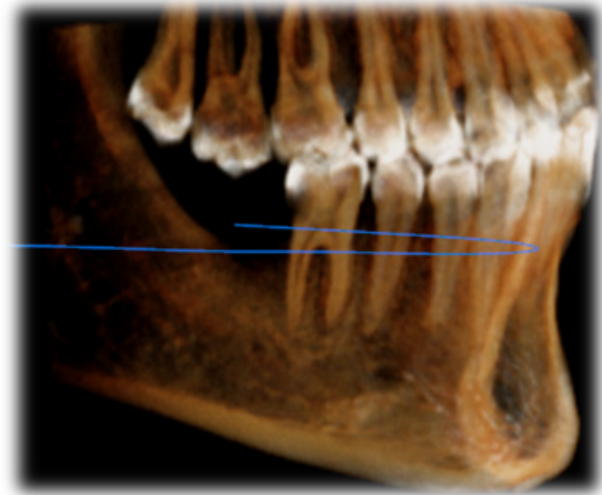


Fig. 11: 3-D reconstruction view of CBCT showing surgical site 12 months postoperatively with no signs of recurrence

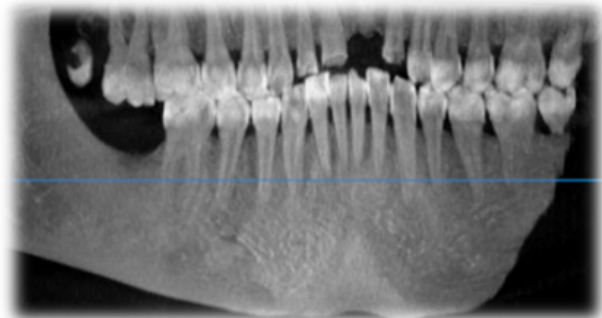


Fig. 12: Reconstructed Panoramic image showing surgical site 12 months postoperatively with no signs of recurrence.

DISCUSSION

Benign Cementoblastoma is a rare benign mesenchymal odontogenic tumor that was first described by Norberg in 1930^[1]. It is a solitary slowly growing benign tumor, but it was reported that it may exhibit aggressive behavior^[19,20] Baart *et. al.* reported that it has an occurrence rate of less than 1 case per million people per year^[14]. Pynn *et. al.* in 2001 stated that there were less than 100 reported cases in literature^[21].

Malhotra *et. al.* concluded that benign cementoblastoma is more common in young male adults^[22]. Ulmansky *et. al.* and Berwick *et. al.* stated that more than half of the patients are less than 20 years and three quarters of them are under the age of 30^[18, 23]. Brannon *et. al.*, Ohki *et. al.* and Zaitoun *et. al.* also supported that it has a higher prevalence in male patients^[7, 10, 11].

Benign Cementoblastoma more commonly occur in the mandible (around 70%) and usually involves premolars or molar roots. According to Malhotra *et al.* its most common site is first molar and second premolar^[22]. When it occurs in the maxilla, it may affect the maxillary sinus as reported by Ohki *et al.* and Infante-Cossio *et al.*^[11, 13]. It rarely affects multiple teeth, impacted or deciduous teeth. Papageorge *et al.* in 1987 reported a case involving multiple deciduous teeth^[24]. Cannell *et al.* also reported a true cementoma in deciduous teeth in 1991^[25] and in 1998 Piattelli *et al.* reported a benign cementoblastoma related to an impacted third molar^[9].

Clinically Milani *et al.* stated that the lesion may be asymptomatic, but it was reported that benign cementoblastoma can cause pain due to bone expansion, trismus, adjacent tooth mobility and affected tooth displacement^[26]. True Cementoma has a characteristic radiographic appearance. It presents as a well-defined round radiopaque mass surrounded by a uniform radiolucent rim or halo, which is associated with the root of affected tooth or teeth^[27]. Root resorption, loss of lamina dura and obliteration of periodontal space have been reported^[26].

Histologically, the benign cementoblastoma is characterized by cementum or cementum like tissue, its appearance varies from secondary cellular cementum to gaint cementicles (when deposited in globular pattern)^[22]. In this case report, H&E stained section of the specimen showed proliferating plump cells resembling cementoblasts. In some areas, these cementoblasts are embedded in variable amounts of eosinophilic matrix (cementoid). In many areas, this cementoid is showing patchy calcifications forming areas of cellular cementum. After evaluation of the clinical, radiographical and histopathological findings, the definitive diagnosis of this lesion was benign cementoblastoma (Figure 10 a and b).

To reach the definitive diagnosis, the benign cementoblastoma must be differentiated from other periapical radiopaque lesions which include osteoblastoma, osteosarcoma, osteoma, odontoma, periapical cemental dysplasia, condensing osteitis and hypercementosis^[21]. Pynn *et al.* summarized the differential diagnosis of those lesions mentioning that although osteoblastoma and cementoblastoma are both histologically similar, cementoblastoma must be related to a root, while osteoblastoma occurs in the medulla of the bone and is usually separated from the root by a thin radiolucent line. He added that odontomes are not associated or even related to the roots of teeth and show several dental tissues histologically. While periapical cemental dysplasia shows radiographical variation ranging from radiolucent to radiopaque findings over a period of time. Furthermore, condensing osteitis lacks a well defined radiolucent halo around its lesion differentiating it from benign cementoblastoma. While hypercementosis is an asymptomatic small lesion that does not cause swelling^[21].

Due to the location and non-self-limiting nature of the benign cementoblastoma which can lead to the destruction of affected site, treatment is mandatory. The treatment of choice is surgical removal of the tooth or teeth with the associated lesion, wound debridement and extensive curettage of the bony socket and surgical site^[6- 8, 10, 14, 28, 29].

Goerig *et al.* in 1984 suggested that involved tooth could be salvaged if the lesion is diagnosed early. The tumor is removed surgically by excision, while the tooth undergoes endodontic treatment^[28]. Hirai *et al.* in 2009 supported preserving the tooth specially if it is strategic^[15]. Keyes *et al.* in 1987 had suggested apicoectomy as a treatment modality (along with excision of the lesion)^[29] and was supported by Biggs *et al.* in 1995, with the condition that after apicoectomy does not compromise the crown root ratio^[30].

The prognosis is usually excellent and recurrence of true cementoma is rare following complete excision of the lesion^[30].

CONCLUSION

Benign Cementoblastoma is a rare odontogenic tumor that occur predominately in young male adults. It has unlimited growth potential and therefore the recommended treatment is complete excision with the affected tooth, after the proper diagnostic measures had been undertaken. Recurrence is rare, and the prognosis is excellent.

CONFLICT OF INTEREST

There are no conflicts of interest.

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