

Cementoblastoma of the Maxilla – Case Report

Stanimirov P.¹, Gateva N.², Dimitrov M.³, Mihaylova Hr.⁴

¹Department of Oral and Maxillofacial surgery; St. Anna Hospital, Maxillofacial surgery clinic

²Department of pediatric dentistry, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

³Department of Oral and Maxillofacial surgery; Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

⁴Department of Oral Diagnostics and Imaging, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

Correspondence: Pavel Kirilov Stanimirov, Department of Oral and Maxillofacial surgery, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria; e-mail: stanimirov.p@gmail.com

Abstract: *Cementoblastoma is a relatively rare benign odontogenic tumour which is characterized with a slow growth and is connected with the root of a vital tooth. We present a case of cementoblastoma of the upper jaw in a 13- year old girl. Clinical, radiological and histopathological findings are discussed as well as the surgical approach.*

Keywords: Cementoblastoma, cementoma, odontogenic tumour

1. Introduction

Cementoblastoma is a relatively rare benign odontogenic tumor, originating from the odontogenic mesenchymal cells [3, 8, 13]. The frequency of the tumor is between 1 and 6% amongst all odontogenic tumors [9, 11]. It is classified as a real benign neoplasm with infinite growth potential [3, 5, 8]. It is suggested that cementoblastoma, periapical cemental dysplasia and cementifying fibroma originate from the mesenchymal cells of the PDL, which are capable of differentiation into bone, cement and fibrous connective tissue [6, 17]. The lesion is found mostly around the first mandibular permanent molar [3] and rarely in the upper jaw [15]. The tumor rarely occurs in children under 10 years of age [15].

The purpose of this article is to present a rare case of cementoblastoma affecting first upper premolar; to discuss the clinical situation, the radiographic findings, differential diagnosis and surgical treatment in the context of the contemporary literature.

2. Case Report

The patient, female, 13 years old, was undergoing orthodontic treatment for 3 years. After the completion of the treatment, the orthodontist requires OPG for evaluation of the third molars. The x-ray showed pathological changes in the region of the first upper left premolar.

The clinical examination reveals mild expansion of the buccal cortical plate apically to the tooth 14. The tooth is vital, without any cavities and in normal position. An oval shaped, dense, uniform lesion with well-defined borders, measuring 1-1,5 cm is found on the OPG. The lesion is merging with the apical third of the root, which in turn can't be identified (fig. 1).

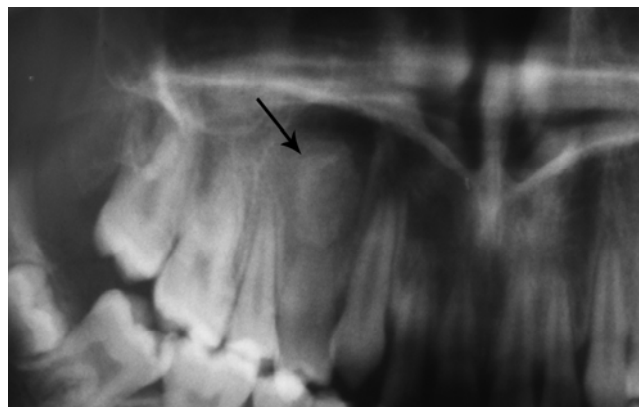


Figure 1: OPG showing well defined lesion at the apical third of the root of tooth 14

Review of the previous OPG from the orthodontic file of the patient doesn't show any changes in the area (fig.2). The tooth 14 is in the appropriate developmental stage and position according to the age of the patient. The growth zone doesn't show any pathological changes.

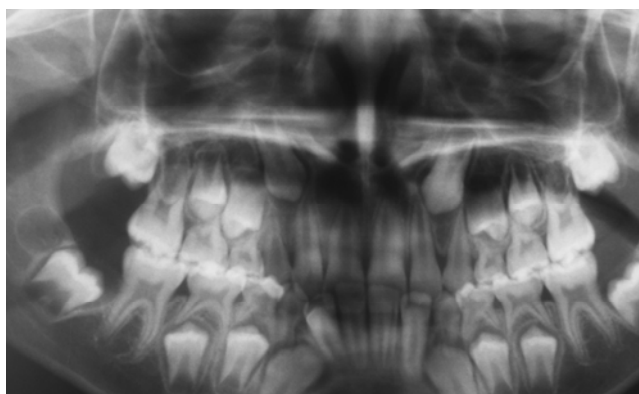


Figure 2: OPG made two years before the cementoblastoma discovery

The analysis of the clinical and radiographic findings points to the preliminary diagnosis of cementoblastoma. Periapical cemento-osseous dysplasia, ossifying fibroma and odontoma were discussed as differential diagnosis. The parents were

informed about the nature of the disease and the proposed treatment and after obtaining informed consent an operation under general anesthesia was scheduled.

3. Surgical Protocol

After raising a trapezoid mucoperiosteal flap, the buccal cortical plate was removed over the tumor. We were cautious not to damage the roots of the adjacent teeth. We found a lesion periapically to tooth 14 with tooth (cement) alike structure, fused with the root and projecting buccally (fig. 3). The macroscopic findings revealed a mass with dense osseous central core surrounded by less mineralized fibrous connective tissue. We did not find well defined capsule, but nevertheless the lesion was well circumscribed from the surrounding healthy bone. We found that the margin between the pathological tissues and the normal cancellous bone is ill defined in some sections in conjunction to the maxillary sinus. The neoplastic lesion was originating from and comprising the apical third of the root, which undoubtedly lead to extraction of the affected tooth together with the tumor removal. After curettage and additional osteotomy of the socket and the tumor site, (fig 4.) the wound was irrigated with saline and the flap was repositioned and sutured.



Figure 3: Intraoperative view



Figure 4: After tumor removal

Histopathological examination confirmed the diagnosis of cementoblastoma.

4. Discussion

Cementoblastoma is found predominantly amongst younger patients in the second or third decade of life. Almost half of the cases are patients under 20 years of age [1, 14, 15]. The

youngest patient is 5-years old boy and the oldest 72-years old woman [12]. Although it is a rare occurrence, it is possible for the tumor to develop in conjunction with deciduous teeth [7, 10]. The true cementoma is affecting both sexes equally [14, 15]. It is characteristic for the cementoblastoma always to be connected to the root of the affected tooth [1, 13, 14, 15], most commonly the first mandibular molar [1, 14, 15]. Besides the swelling of the buccal and lingual cortical bone, pain is a common clinical sign [1, 14, 15].

Radiographic image of the cementoblastoma is of a homogenous round dense formation with well-defined borders, surrounded by a zone of decreased density, resembling capsule [1, 13, 14, 15]. The most important characteristic pointing to the diagnosis is the relation of the lesion with the root of a tooth [4, 14, 15]. Histopathologically cementoblastoma is presented by dense masses of acellular cement-like matter surrounded by fibrovascular stroma with multinucleated cells.

Treatment of the cementoblastoma includes extraction of the affected teeth [14, 15], and removal of the tumor with curettage and peripheral osteotomy of the adjacent bone [4]. In the presented case we have two x-ray images, from which we can define the period of the tumor development. On the first OPG (fig. 2) there is no sign of pathology. Only slight widening of the tooth growth zone is visible. On the next image (fig. 1) the lesion is readily visible. In this case cementoblastoma has developed in a period of 4 years. It is considered that the tumor is growing some 0,5 cm yearly [2, 16] which is in accordance with our clinical findings.

It is worth mentioning that in the beginning the affected tooth is awaiting the physiological eruption time. By the time of the tumor diagnosis, the tooth has erupted in normal position in the arch. In the presented case we find development of cementoblastoma in erupting, vital maxillary premolar. From the radiographic image it is obvious that the tumor is spreading over the apical third of the root and is attached to it. From a pathogenetic standpoint the question about the beginning of the tumor development in relation to the developmental stage of the growing tooth remains open. In our case the root formation is not finished, and the reasons can be: 1. The tumor has developed at this stage of root formation; 2. The tumor has invaded and destructed the root.

From the literature review the question whether cementoblastoma can develop in adult patients with completed root formation and whether the tumor has developed after the completion of root formation remains unclear.

5. Conclusion

Cementoblastoma is a benign tumor evolving from neoplastic cementoblasts. Most of the tumors present on radiographic examination as rounded homogenous dense or heterogenous image. Because of this the differential diagnose includes many pathological conditions with similar radiographic appearance: the periapical cemento-osseous

dysplasia, ossifying fibroma, periapical condensing osteitis, odontoma etc.

We conducted the surgical operation in compliance with the guidelines described in the literature. During the four years follow up there is no sign of recurrence. High levels of local recurrence are associated with cementoblastoma treatment in previous studies. They are attributed to the removal of the tumor and attempt to save the teeth. It is shown that cementoblastoma has propensity for recurrence and tumor remnants can overgrow. The recommended surgical treatment includes removal of the tumor together with extraction of the affected teeth, curettage and peripheral osteotomy.

References

- [1] Ackermann GL, Altini M. The cementomas-a clinicopathological reappraisal. *J Dent Assoc S Afr.* 1992;47:187-94.
- [2] Anneroth G, Isacson G, Sigurdsson A. Benign cementoblastoma (true cementoma). *Oral Surg Oral Med Oral Pathol.* 1975;40:141-146.
- [3] Barnes L, Eveson JW, Reichart P, Sidransky D, editors. World Health Organization classification of tumors. Pathology and genetics of head and neck tumours. Lyons: IARC Press; 2005. p. 318.
- [4] Brannon RB, Fowler CB, Carpenter WM, Corio RL (2002). Cementoblastoma: an innocuous neoplasm? A clinicopathologic study of 44 cases and review of the literature with special emphasis on recurrence. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 93: 311-320.
- [5] Cherrick HM, King OH, Lucartoto FM, Suggs DM. Benign cementoblastoma: a clinicopathologic evaluation. *Oral Surg Oral Med Oral Pathol* 37:54-63, 1974.
- [6] Hanuner JE, Scolfield HH, Cornyn J, Benign fibro-osseous jaw lesions of periodontal membrane origin. An analysis of 239 cases. *Cancer* 22:861-878. 1968.
- [7] Waldron CA. Fibro-osseous lesions of the jaws. *J Oral Surg* 28:58-64. 1970.
- [8] Herzog S. Benign cementoblastoma associated with the primary dentition. *J Oral Med.* 1987;42:106-108.
- [9] Kramer IRH, Pindborg JJ, Shear M (1992) Histological typing of odontogenic tumours, 2nd edn. Springer, Berlin Heidelberg New York, pp 10-42.
- [10] Lu Y, Xuan M, Takata T, Wang C, He Z, Zhou Z, et al. Odontogenic tumors. A demographic study of 759 cases in a Chinese population. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:707-714.
- [11] Maria P, Edmund C. Cementoblastoma involving multiple deciduous teeth. *Oral Surg, Oral Med Oral Pathol* 1987; 63:602-05.
- [12] Mosqueda-Taylor A, Ledesma-Montes C, Caballero-Sandoval S, Portilla-Robertson J, Ruiz-Godoy Rivera LM, Meneses-García A. Odontogenic tumors in Mexico. A collaborative retrospective study of 349 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 1997;84:672-675.
- [13] Nortje CL. Roentgenologische diagnose. *Journal of dental association of South Africa* 1973;28.
- [14] Sloopweg PJ. Cementoblastoma and osteoblastoma: a comparison of histological features. *J Oral Pathol Med.* 1992;21:385-9.
- [15] Sumer M, Gunduz K, Sumer AP, et al. Benign cementoblastoma: a case report. *Med Oral Patol Oral Cir Bucal.* 2006;11:E483-5.
- [16] Ulmansky M, Hjortig-Hansen E, Praetorius F, et al. Benign cementoblastoma. A review and five new cases. *Oral Surg Oral Med Oral Pathol.* 1994;77:48-55.
- [17] Vindenes H, Nilsen R, Gilhuus-Moe O. Benign cementoblastoma. *Int J Oral Surg.* 1979;8:318-324.
- [18] Waldron CA. Fibro-osseous lesions of the jaws. *J Oral Surg* 28:58-64. 1970.