Case Report

SURGICAL TREATMENT OF A COMPOUND ODONTOMA ASSOCIATED WITH LOWER SECOND MOLAR GERM: A CASE REPORT

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ABSTRACT

Among the mixed odontogenic tumors, i.e. with both epithelial and mesenchymal components, are the odontomas. These neoformations are basically classified into two types, complex and compound. The aim of this report is to present a case of a small size compound odontoma associated with the germ of a lower second molar in an 8-year-old child. The initial diagnosis was based on the radiological aspect of the lesion and the treatment choice was the conservative surgical removal of the neoformation, performed in the Clinic of Odontostomatology of San Sebastiano Hospital, Frascati (Rome). The histopathological examination gave the confirm of initial diagnosis of compound odontoma. The excision of the lesion was chosen to ensure the right eruption path of the lower second molar.

KEYWORDS: *compound odontoma, odontogenic tumor, child, surgery*

INTRODUCTION

In 1869, a French physician and professor of pathology and clinical surgery, Pierre Paul Broca, wrote a monograph where he introduced various classifications of tumors, including odontogenic tumors. He coined the term “odontome” for tumors arising from the dental formative tissues and suggested classifying the lesions according to the stage of development of the tooth when abnormal growth commenced (1). After Broca's initial attempt, many classifications have been published and focused on the structural tissues which tumors grew from (2, 3)

According to Robinson, in 1952, he limited the term odontoma to those tumors that arose from both epithelial and mesenchymal dental forming tissues (4). Nowadays, this term is mainly used to define only tumors that involve tooth-hard tissues (2).

In 1971, the World Health Organization proposed to differentiate odontomas only into two main types: complex and compound (5).

Odontomas could be considered the most common type of odontogenic tumor, composed of mixed epithelial and ectomesenchymal tissues, encompassing both dental hard and soft components. Odontomas were generally considered as malformations or hamartomas rather than true neoplasms. Complex odontomas consist of a conglomeration of dentin, enamel, and cementum. Meanwhile compound odontomas is formed by small tooth-like structures (5, 6).

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The aim of this case report was to describe the surgical removal of a compound odontoma in the mandible of an 8-year-old child.

CASE REPORT

An 8-year-old male with no relevant medical history presented in the Clinic of Odontostomatology of San Sebastiano Hospital, Frascati (Rome) in occasion of a first visit. The young patient had no previous dental consultations. The parents wanted to know how the processes of growth and teeth changes was progressing. The clinical examination did not highlight any pathological aspects related to hard and soft tissues. (Fig.1).

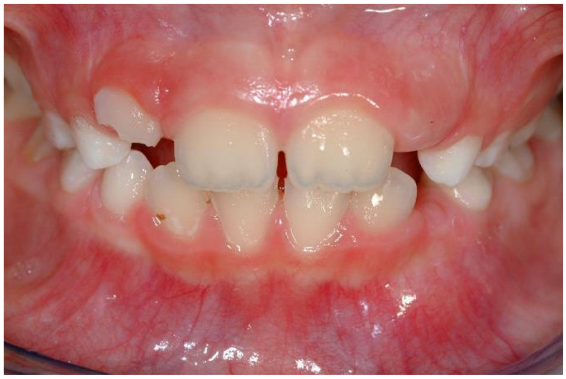

Fig. 1. *Intraoral frontal photograph of the patient.*

On the radiographic examination the attention has fallen on the gem of the left second molar. There were two small size radiopaque formations over the crown of the unerupted tooth (Fig. 2).

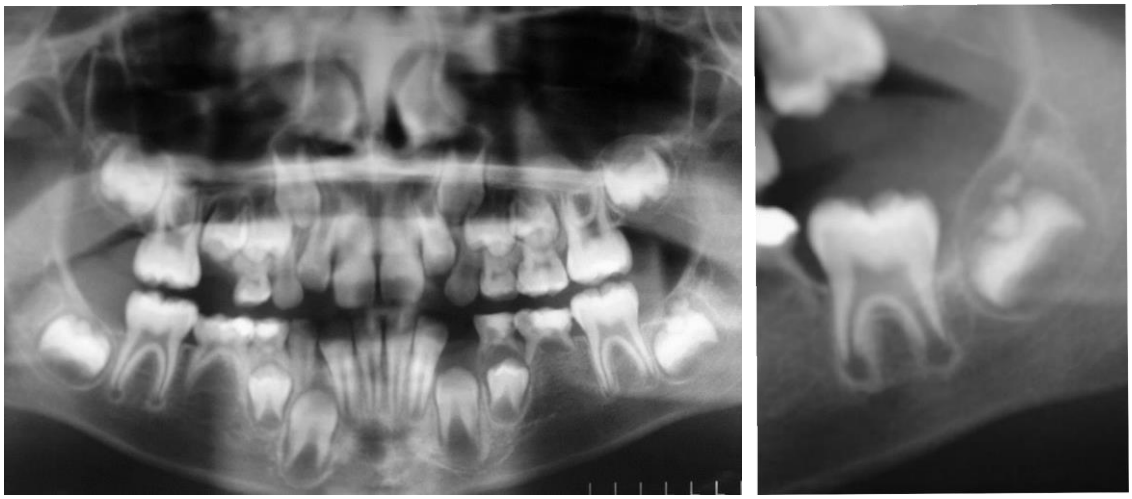

Fig. 2. *Orthopantomography of the patient. The neoformation is visible over the crown of the left lower second molar germ.*

These radiopaque formations had anatomical similarities to small normal teeth surrounded by a radiotransparent zone. The diagnosis was immediately oriented towards the compound odontoma. Hence, the treatment chosen was the surgical enucleation, to prevent eruption disturbances. After an inferior alveolar nerve block and a local anesthesia injection, a mucogingival incision was made with reflection of mucoperiosteal flap (Fig. 3).

Fig. 3. *Triangular flap design to access the neoformation.*

The lesion was removed, divided into two small denticules, keeping intact the germ of the second molar (Fig. 4). The primary wound closure was realized using 3-0 silk suture material. The following histopathological examination gave the confirm of initial diagnosis hypothesis of compound odontoma.

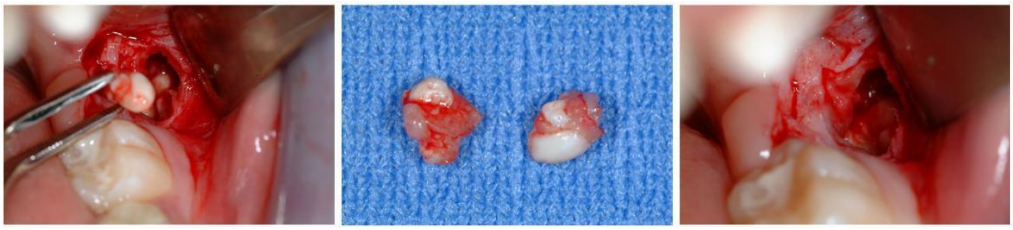

Fig. 4. *The odontoma removal.*

DISCUSSION

Odontomas are benign mixed odontogenic tumors that occur during development, due to the growth of completely differentiated epithelial and mesenchymal cells, forming ameloblasts and odontoblasts. These neoformation consist mainly of enamel and dentin, but can also contain varying amounts of cement and pulp tissue (7). These lesions are characterized by slow growth and non-aggressive behaviour (8-10). These tumors may be found at any age and with no gender predilection; however, as the case presented in this paper, most are detected in the first two decades of life (11).

When enamel and dentin are arranged in a way that resembles normal teeth, the condition is called a compound odontoma. In contrast, if the dental tissues form an irregular mass without a specific pattern, it is termed a complex odontoma (12). Compound odontomas are more common than complex odontomas (13-15).

The compound odontoma presented in this case had a peculiar radiological aspect: two small denticules with a radiolucent rim, leaving not many doubts on the diagnosis. Usually these lesions are asymptomatic, so in most cases the diagnosis is occasional, unless they are large enough to cause a swelling of the jaw (10). In the case presented in this paper the diagnosis was done during a visit to control teeth changes.

However, an affected patient may present when a permanent tooth or multiple teeth that fail to erupt (11, 16). To avoid future problems in dental eruption, in this clinical case it was decided to surgically remove the tumor. Compound odontomas are lesions primarily found within the bone, although there have been rare cases reported in the soft tissues. Instances of odontomas occurring in primary teeth are scarce in the literature. Typically, these growths are more common in permanent teeth. They are usually found between the roots of erupted teeth or between deciduous and permanent teeth. The most common locations for compound odontomas are the anterior maxilla, followed by the anterior mandible, and the postero-inferior areas (10, 11). Hence, the localization of the compound odontoma in this article is therefore unusual. In the patient's anamnesis of this case, there were not relevant elements that suggest a possible aetiology of this lesion.

Usually, the aetiology of odontomas is unknown, but it could be due to trauma during primary dentition, as well as to inflammatory and infectious processes, hereditary anomalies (Gardner's syndrome, Hermann's syndrome), odontoblastic hyperactivity, or alteration of the genetic components responsible for controlling dental development (10, 17-19).

Just as the present case was approached, the treatment of choice for compound odontomas is surgical removal, followed by histopathological analysis to confirm the diagnosis (20-25).

CONCLUSIONS

Compound odontomas are common amartomatose benign tumors with non-aggressive growth pattern and a peculiar radiological aspect. In the present case the conservative surgical removal of the lesion, even if it was of modest dimensions, it was crucial for ensuring the right eruption path of the lower second molar.

REFERENCES

1. Philipsen HP, Reichart PA. Classification of odontogenic tumours. A historical review. *Journal of Oral Pathology & Medicine: Official Publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology*. 2006;35(9):525-529. doi:https://doi.org/10.1111/j.1600-0714.2006.00470.x
2. Satish V, Prabhadevi MC, Sharma R. Odontome: A Brief Overview. Das UM, ed. *International Journal of Clinical Pediatric Dentistry*. 2011;4:177-185. doi:https://doi.org/10.5005/jp-journals-10005-1106
3. Kharbanda O, C.S S, Renu K. OdontomeA case report. *Journal Indian Association*. 1986;58:269-271.
4. Hamilton B.G. Robinson. Proceedings of the fifth annual meeting of the American academy of oral pathology, Stevens Hotel, Chicago, February 4, 1951. *Oral Surgery, Oral Medicine, Oral Pathology*. 1952;5(2):177-178. doi:https://doi.org/10.1016/0030-4220(52)90031-5
5. Wright JM, Soluk Tekkeşin M. Odontogenic tumors. Where are we in 2017? *Journal of Istanbul University Faculty of Dentistry*. 2017;51(0). doi:https://doi.org/10.17096/jiufd.52886
6. Gedik R, Müftüoğlu S. Compound Odontoma: Differential Diagnosis and Review of the Literature. *West Indian Medical Journal*. 2014;63(7). doi:https://doi.org/10.7727/wimj.2013.272
7. Neville BW, Damm DD, Allen CM, Chi AC. *Oral and Maxillofacial Pathology*. Elsevier Health Sciences; 2023.
8. Vengal M, Arora H, Ghosh S, Pai KM. Large erupting complex odontoma: a case report. *Journal (Canadian Dental Association)*. 2007;73(2):169-173.
9. Ragalli CC, Ferreria JL, Blasco F. Large erupting complex odontoma. *International Journal of Oral and Maxillofacial Surgery*. 2000;29(5):373-374.
10. Salgado H, Mesquita P. Compound odontoma—Case report. *Revista Portuguesa de Estomatologia, Medicina Dentária e Cirurgia Maxilofacial*. 2013;54(3):161-165. doi:https://doi.org/10.1016/j.rpemd.2012.11.001
11. Nelson BL, Thompson LDR. Compound Odontoma. *Head and Neck Pathology*. 2010;4(4):290-291. doi:https://doi.org/10.1007/s12105-010-0186-2
12. Roderick Anthony Cawson, Binnie WH, Eveson JW. *Color Atlas of Oral Disease : Clinical and Pathologic Correlations*. Mosby-Wolfe; 1994.
13. Owens BM, Schuman NJ, Mincer HH, Turner JE, Oliver FM. Dental odontomas: a retrospective study of 104 cases. *The Journal of Clinical Pediatric Dentistry*. 1997;21(3):261-264.
14. Katz RW. An analysis of compound and complex odontomas. *ASDC journal of dentistry for children*. 1989;56(6):445-449.
15. West PD, Colquhoun DM. Three case reports. *Medical Journal of Australia*. 1993;158(7):488-489. doi:https://doi.org/10.5694/j.1326-5377.1993.tb137584.x
16. Nagaraj K, Upadhyay M, Yadav S. Impacted maxillary central incisor, canine, and second molar with 2 supernumerary teeth and an odontoma. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2009;135(3):390-399. doi:https://doi.org/10.1016/j.ajodo.2006.12.023
17. Amado Cuesta S, Gargallo Albiol J, Berini Aytés L, Gay Escoda C. Review of 61 cases of odontoma. Presentation of an erupted complex odontoma. *Medicina Oral: Organo Oficial De La Sociedad Espanola De Medicina Oral Y De La Academia Iberoamericana De Patologia Y Medicina Bucal*. 2003;8(5):366-373.
18. An SY, An CH, Choi KS. Odontoma: a retrospective study of 73 cases. *Imaging Science in Dentistry*. 2012;42(2):77-81. doi:https://doi.org/10.5624/isd.2012.42.2.77
19. Morgan PR. Odontogenic tumors: a review. *Periodontology 2000*. 2011;57(1):160-176. doi:https://doi.org/10.1111/j.1600-0757.2011.00393.x
20. Ioannis Iatrou, Emmanouil Vardas, Theologie-Lygidakis N, Leventis M. A retrospective analysis of the characteristics, treatment and follow-up of 26 odontomas in Greek children. *Journal of Oral Science*. 2010;52(3):439-447. doi:https://doi.org/10.2334/josnusd.52.439
21. Troeltzsch M, Liedtke J, Troeltzsch V, Frankenberger R, Steiner T, Troeltzsch M. Odontoma-Associated Tooth Impaction: Accurate Diagnosis With Simple Methods? Case Report and Literature Review. *Journal of Oral and Maxillofacial Surgery*. 2012;70(10):e516-e520. doi:https://doi.org/10.1016/j.joms.2012.05.030
22. Abdul M, Pragati K, Yusuf C. Compound Composite Odontoma and Its Management. *Case Reports in Dentistry*. 2014;2014:1-4. doi:https://doi.org/10.1155/2014/107089
23. Kannan KS. Composite Compound Odontoma-A Case Report. *Journal of clinical and diagnostic research*. 2013;7(10).

doi:https://doi.org/10.7860/jcdr/2013/7432.3540
24. Angiero F, Benedicenti S, Parker S, et al. Clinical and Surgical Management of Odontoma. *Photomedicine and Laser Surgery*. 2014;32(1):47-53. doi:https://doi.org/10.1089/pho.2013.3587
25. Pacifici A, Carbone D, Marini R, Pacifici L. Surgical Management of Compound Odontoma Associated with Unerupted Tooth. *Case Reports in Dentistry*. 2015;2015:1-6. doi:https://doi.org/10.1155/2015/902618