A CASE OF COMPOUND MAXILLARY ODONTOMA AND MANDIBULAR HYPODONTIA

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ABSTRACT:

Odontomas are formations which are still classified as benign tumors by the World Health Organization. They are lesions on any odontogenic tissue – enamel, cement and dentin, which are affected in different proportions and degree. We present a case of compound odontoma on upper jaw, on a 15 year-old girl, causing retention of a permanent canine tooth. After the extirpation 16 tooth-like structures were uncovered. The mandible was diagnosed with hypodontia of both 2nd premolars. Patient’s history showed that there was a trauma in the area of the upper jaw at younger age.

In this article we will present the clinical and radiographic examination, the stages of the complex surgical-orthodontic treatment and a discussion of the etiology of the diagnosis, complications and the treatment itself.

Keywords: compound odontoma, supernumerary teeth, tooth retention, odontogenic tumors, hypodontia, complex treatment

INTRODUCTION:

Odontomas are formations which are still classified as benign tumors by the World Health Organization. They are lesions on any odontogenic tissue – enamel, cement and dentin, which are affected in different proportions and degree. Even though they are similar to hamartomas and malformations, the compound odontoma consists of multiple small tooth-like structures often firmly adapted to one another and covered by more or less continuous connective tissue capsule. Odontomas are usually small in size but when bigger they can contain up to a thousand denticles. The complex odontoma consists of homogenous amorphous mass of mature odontogenic tissues with some kind of structural organization. The degree of morphological differentiation varies for each lesion. A major part of some is calcified matrix, while in other cases there are sections of pulp tissue in association with cords and buds.

Hypodontia is a condition of missing up to six tooth germs, while if there are more than six missing germs, excluding wisdom teeth, it is called oligodontia. Hypodontia is assumed to be a hereditary disease which most often affects wisdom teeth, 2nd premolars and lateral incisors. The absence of permanent teeth is called anodontia.
Orthopantomography and 3D cone beam tomography revealed:

**Fig. 4.** Panorama view and display of retained 23 tooth and 63 tooth

**Fig. 5.** 3D cone beam tomography – showing palatinal location of the odontoma

Radiographic assessment:
- X-ray diagnose
- Hypodontia 35, 45
- Impacted canine 23
- Diagnose of lateral cephalometry
- Hyperdivergent type of growth
- Skeletal Class I
- Radiographic diagnose (3D cone beam tomography) - compound odontoma.
  Presence of a limited by a radiopaque unstructured matter with tooth-like formations on the upper jaw in the area of the right canine, located palatinally and occlusally
from its germ. Missing germs of second mandibular premolars.

The patient was directed to the Department of Oral Surgery for the extraction of the primary canine and extirpation of the formation. Under the effect of local anesthetics tooth 63 was extracted, while a vestibular and palatal flaps were made. A capsulated formation was revealed containing multiple rudimental tooth-like formations which were removed in portions as the capsule was ruptured. There was a total of 16 such "teeth" with irregular form and size at different stage of differentiation. Histological study revealed a compound odontoma

**Fig. 6. Vestibular and palatal mucoperiosteal flap**

**Fig. 7. Tooth-like formation**

**DISCUSSION.**

Odontomas are found at a frequency of 0.24% to 1.12% according to some authors and 0.64% out of all biopsies in maxillo-facial surgery. They account for 30.4% of all diagnosed odontogenic tumors. [4] Complex odontomas are a little more common than the compound ones at a proportion of 1:0.96. Men and women are almost equally likely to be affected, but there is a characteristic gender distribution for some nations (for Egyptians it is 0.37:1 for men/women, while for Japanese it is 1:0.65 for men/women). The complex odontoma is common for people about the age of 19.25±2.9 years, while the compound odontoma is diagnosed at an older age – 25.14±4.8 years old. Maxillary odontomas are most commonly located in the frontal area, while the mandibular ones are usually located in the molar area. [6] The etiology of the odontomas is vaguely known. [4, 7] They can be formed from the tooth germ or the teeth during their growth period induced by a local trauma, infection, odontoblast hyperactivity, genetic mutations. [2, 4, 7, 8, 9, 10] Odontomas are classified as tumors but usually stop growing in size when the tissues they are made of are fully mineralized. Their clinical behavior differs from that of other body tumors as it is characteristic for all non-tumor lesions which have dysplastic, hemartoma and malformation traits.

**Fig. 8. Stitched operative wound**

Hypodontia in the deciduous dentition has a rate of about 0.4-0.9% for the European population. For the permanent dentition it differs for each continent: Europe - men 4.6%, women 6.3%; Australia - men 5.5%, women 7.6%; North American white race - men 3.2%, women 4.6%. Overall tooth agenesis for women is 1.37 times more common than it is for men. [11, 12] Second mandibular premolar is the most often affected, followed by the lateral maxillary incisor and the second maxillary molar. [11, 13, 14, 15] It is often observed as unilateral than it is as bilateral with the exception of the lateral incisors which are usually affected bilaterally. Genetics and environmental factors can influence the development of the tooth germs. Mutations of the homeobox gene MSX 1 leads to hypo-/oligodontia of the premolars and molars. [11] External factors include inflammation, chemotherapeutics or dioxin. However, many cases are caused by genetic factors. Familial predisposition
can be confirmed by the fact that hypodontia is a lot more common for monozygotic twins in comparison to dizygotic ones. [16, 17, 18]

CONCLUSION:
Overall the etiology of the odontomas is unknown. They can be formations of the tooth germ or the tooth itself. In this case there is the tendency of suppression of the development of the dental lamina and a development of hypodontia. The stimulated growth of the maxilla is probably caused by the local trauma during the development period of the tooth germs. The disturbance in the migration, proliferation and differentiation of the neural crest cells and the interaction between the epithelial and mesenchymal cells in the initial stages of the development of the dentition can be a possible cause for the simultaneous appearance of odontoma and hypodontia.

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