

Is the Detection of Odontoma Always Comfortable? A Case Report

Fatemeh Mashhadiabbas¹, Nafise Shamloo², Hasan Mirmohamad Sadeghi³,
Samane Ahmadi⁴

¹Associated Professor, Department of Oral and Maxillofacial Pathology, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

²Assistant Professor, Department of Oral and Maxillofacial Pathology, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

³Associated Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁴Post Graduate Student, Department of Endodontics, School of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

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Abstract

Odontomas are the most common type of odontogenic tumors, which are often discovered by routine radiographic images or after taking films to determine the main cause of the tooth failure eruption or malocclusion. The present study aimed to describe a case of misdiagnosis and similarity of foreign body density in the radiographic appearance to odontoma in a 13-year-old male.

Keywords: Odontoma, Foreign Body, Radiographic Appearance.

Introduction

Odontomas are the most common type of odontogenic tumors, which mostly occur in children and adolescents (1). Odontomas are classified as complex and compound according to the definition proposed by the World Health Organization (WHO) (2). Complex odontomas are the lesions wherein all the dental tissues are visible, while the arrangement of the tissues is disordered; consequently, the enamel and dentin are not able to form an actual tooth. Radiographically, complex odontomas are irregular lesions with no similarity to normal dental structures. The radiological features of these tumors could be considered to evaluate the developmental stage based on the calcification process (3). The most common site of complex odontoma is the posterior mandible (2).

Compound odontomas are the lesions with variable tooth-like elements (odontoid), which often occur in a more orderly pattern than complex odontomas and are referred to as hamartoma. In these tumors, the enamel, dentine, cementum, and pulp are arranged similar to normal teeth (4). The most common site of compound odontomas is the anterior maxilla. The radiographic features of these lesions show several small, well-defined, immature teeth, with a radiolucent rim composed of a fibrous capsule. These small teeth manifest as malformed, simple root teeth (5).

The tissue of odontomas is normal although these tumors are not well organized since the extracellular

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matrix in the dental mesenchyme is expressed in a disorderly manner and is not well localized (4, 6). The etiology of odontomas remains unknown, while some potential causes have been suggested, such as inflammation, injury during odontogenesis, and genetic disorders (e.g., Gardner's syndrome and Herrmann syndrome) (7). Furthermore, odontomas most frequently affect permanent dentition (8).

Case Presentation

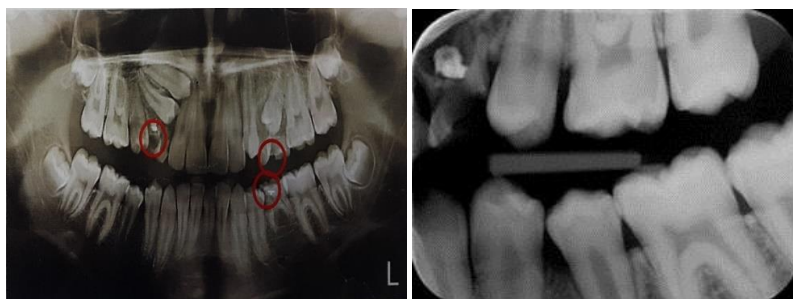
A 13-year-old male patient was admitted to the Department of Oral and Maxillofacial Surgery at Shahid Beheshti University of Medical Sciences in Tehran, Iran for the examination of a painless radiopaque lesion on the right maxilla in terms of the radiographic features. The cause for the visit to the first dentist was misalignment in the permanent teeth. In March 2018, a panoramic view was obtained from the patient, and bitewing radiography was performed, which revealed an odontoma-like change localized in the alveolar process of the maxilla at the upper-right D area (Figs. 1, 2). The patient had no history of trauma or medical problems.

Physical examination showed no externally visible changes. In the intraoral examination, the overlying mucosa was intact and pink. The upper-right D area was subjected to pulpotomy, the upper-right E area was extracted, and the adjacent permanent teeth were vital.

A lesion was removed under local anesthesia and excised completely via an intraoral passage, along with the incision of the alveolar process. The gross was an irregular, light-brown, soft and hard tissue, which was measured to be 0.6*0.5*0.4 centimeters. In addition, the hard tissue was placed in acid.

The histopathologic sections demonstrated the aggregation of foreign bodies, mixed inflammatory cell infiltration, foreign body giant cells, curetted bone, and hemorrhage (Fig. 3). Moreover, a cystic lesion was observed, which was covered by non-keratinized stratified squamous epithelium with variable thickness in some areas. The lesion was arch shaped, appearing as spongiosis and exocytosis. Mixed inflammatory cell infiltration, Russell body, and hemorrhage were also detected in the connective tissue of the cyst wall (Fig. 4). Another lesion was observed in the pathologic examination and diagnosed as an inflammatory odontogenic cyst, which could not be recognized by the clinician and radiologist. It seems that this radiolucency was related to the upper-right C area.

According to the findings, the odontoma-like change in the radiography could have been due to the material used in pulpotomy or reinforced zinc oxide eugenol (ZOE) used in the upper-right D area. The tooth had internal and external resorption, which cause the materials to come out.



Figures 1-2. Radiographic Features Showing Radiopaque Lesion (odontoma-like change) Localized in Alveolar Process of Maxilla in Upper-right D Area

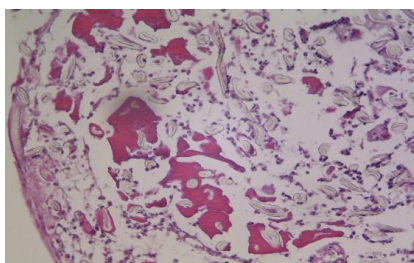


Figure 3. Microscopic Sections Showing Aggregation of Foreign Bodies with Mixed Inflammatory Cell Infiltration, Curetted Bone, and Hemorrhage (H & E Stain; $\times 400$ magnification)

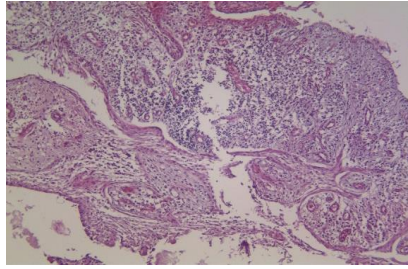


Figure 4. Microscopic Sections Showing Cystic Lesion Lined by Nonkeratinized Stratified Squamous Epithelium with Arch Shaped Appearance, Spongiosis, and Exocytosis (×200 magnification)

Discussion

The pathological changes in odontoma are mainly painless and might be accompanied by the swelling of the jaw or adjacent tooth displacement. These lesions are often detected by the radiographs that are captured accidentally in tooth eruption or swelling, which highlights the utmost importance of regular oral examination (2). Odontomas could be removed with intraoral incisions, which facilitate the tooth eruption that has been previously blocked (9).

According to a literature review in this regard, the most common manifestations of odontomas include permanent delay in tooth eruption, swelling, persistence of temporal teeth in the mouth, agenesis of the permanent teeth, pain, infections, inflammation, and malpositioning in dentition (7). The treatment is based on the excision of the lesion through the curettage of the surrounding tissue.

In the current research, the patient had an odontoma-like lesion that was asymptomatic, which has been described as the most common feature of odontoma. This highlights the utmost importance of regular internal oral cavity examination, especially in children and adolescents, in order to prevent failures in tooth development and eruption.

Odontoma radiography consists of well-defined radiopaque lesions in the bone with higher density than the bone and equal to or greater than the tooth. Furthermore, the foci of variable density could be detected in such cases. The radiolucent halo encircles the lesion and is often surrounded by a thin sclerotic line. The radiolucent area is the connective tissue that is observed in normal tooth follicle and the thin sclerotic line in a normal tooth crypt. The radiographic features of the patient in the present study indicated the presence of odontoma, while the histopathologic sections had no similarity to odontoma and foreign bodies as an inflammatory process was observed (10).

Some of the differential diagnoses in this regard should be ameloblastic fibroma, ameloblastic fibro-odontoma, and ontoameloblastoma (7). When the ZOE sets in a dense mass, resistance to resorption has been

reported in the studies in this regard. According to the literature, ZOE is highly irritating to the periapical tissues, and its contact with the bone and cementum may cause necrosis in these tissues.

The periodontal ligament infiltration may reveal polymorphonuclear leukocyte, and ZOE might be encapsulated by the fibrous tissue and loose connective tissue. In addition, cell infiltration could be between the ZOE mass and capsule. Osteoclastic resorption could also be detected with the origin of the periodontal ligament in several cases (11), which may be considered as the radiolucent halo around the radiopaque mass in odontoma-like lesions.

Conclusion

In conclusion, foreign body reaction may resemble an odontogenic lesion. Therefore, oral health practitioners should be aware of the various radiographic features of such lesions. Moreover, the microscopic examination of odontogenic lesions and foreign body reaction is of diagnostic significance.

Conflicts of interest

None declared.

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Corresponding Author

Nafise Shamloo

Dept. of Oral and Maxillofacial Pathology,

School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Tell: 09122506399

Email: n_shamloo@yahoo.com