Introduction

The term odontoma has evolved since its introduction in 1868 from being applied to several odontogenic tumours to its current usage for a hamartomatous odontogenic lesion that matures to the point of producing calcified dental tissue. Odontoma is known as benign mixed odontogenic tumor, because it is composed of tissue resulting from the budding of extra odontogenic epithelial cells of dental lamina. These tissues may be deposited in an abnormal arrangement, but consist of normal enamel, dentin, cementum, and pulp tissue.

The morphologic criteria for sub-classification of odontomas into complex and compound types are listed by the World Health Organization (WHO) in 1992. The WHO classification defines these lesions as follows: Complex odontoma; “A malformation in which all dental tissues are represented, individual tissues being mainly well formed but occurring in disorderly pattern”. Compound odontoma; “A malformation in which all dental tissues are represented in a structured and more orderly pattern than in the complex odontoma, so that the lesion consist of many tooth-like structures. Most of these structures do not morphologically resemble the teeth in the normal dentition, but in each one, enamel, dentine, cementum and pulp are arranged as in the normal tooth”.

Odontomas tend to form during odontogenesis, but may rarely be discovered late in life because they are characterized by their slow growth and non-aggressive behaviour. They may be detected by chance in a routine radiograph or when they are large enough to cause a swelling of the jaw1-10.

SUMMARY

Odontomas are reported among the most common odontogenic tumors, and they are classified as either compound or complex lesions. Complex odontomas are less frequently seen than compound odontomas, but they are not uncommon; in extremely rare instances, they may erupt into the oral cavity.

In this report, cases of erupted odontoma are described, and their clinical, radiological and histological findings and complications are discussed.

Key Words: Erupted Odontoma; Odontomas, Complex and Compound

Case Presentations

Case 1

A 21-year-old healthy female was referred to the Department of Oral and Maxillofacial Surgery, School of Dentistry in Ege University with complaints of pain and expansion in the maxillary right canine region, increasing mouth odour, and luxation of the fixed prosthetic restoration in the area. The patient stated that the prosthetic restoration was placed 2 years ago. The expansion was present prior to the instalment of the prosthesis, and she told that there was a tooth-like structure with poor aesthetic appearance in the area. The symptoms had begun 3 months after placement of the fixed restoration, but no radiographical examination was performed then. Consequently, her dentist noticed the appearance of a small, bone-like mass in the area and mobility of the restoration, and referred the patient to our clinic. The patient’s general medical history was non-contributory, and she was not under any medication.

Intraorally, buccal expansive enlargement was observed in the region medial to the maxillary right canine with intact overlying oral mucosa (Fig. 1a). In order to
obtain a full observation of the lesion, the fixed prosthetic restoration was removed and a large bone-like mass under the prosthesis was disclosed (Fig. 1b). The panoramic radiograph of the patient revealed a well-circumscribed radiopaque mass with density similar to that of calcified dental tissue. A radiolucent border surrounded the mass, which in turn, was encompassed by a thin radiopaque line. The maxillary right lateral incisor was absent, and maxillary right canine was impacted within the bone (Fig. 2). Considering all clinical, radiographical and adjunct tests’ findings, an initial clinical diagnosis was made as complex odontoma of maxilla.

At the time of admission, urinanalysis and hematologic examinations were performed, revealing normal values. Chest radiographs and the SMA12 profile were normal, as well. After local anaesthesia was administered, a 45-degree relieving incision was performed toward midline and a full thickness mucoperiosteal flap was elevated toward the buccal aspect of the maxilla. A soft tissue was identified, and conservative removal was carried out with a surgical drill to gain border access to remainder of the lesion. Through careful blunt dissection, the cystic capsule containing the tumour mass was gently enucleated in toto. After cavity was curetted, the maxillary defect was packed with hydroxyl apatite/tricalciumphosphate granules - purified type I bovine collagen (Collagraft®), and primary closure of the mucoperiosteum was obtained. The impacted maxillary right canine was left within the bone in order to perform further orthodontic treatment.

Macroscopically, 2.0 x 2.0 x 3.0 cm specimen consisted of a yellowish grey coloured piece of bony tissue (Fig. 3). Histological examination of decalcified specimen revealed a haphazard configuration of tissues made of unorganised mass of dentin, enamel, cementum, pulp tissue, and some fragments of enamel epithelium. The histological appearance was that of a complex odontoma with cystic involvement (Fig. 4).
Case 2

A 20-year-old male patient was admitted to the Department of Maxillofacial Surgery, School of Dentistry in Ege University, reporting the eruption of a tooth-like mass between his mandibular anterior teeth. The patient stated that the mass appeared within the last 18 months, without any change in its position. The patient’s medical history was non-contributory, and he was not under any medication.

Clinical examination revealed that his left mandibular central incisor was missing, and there was an irregular mass with tooth-like appearance and consistency between his left mandibular central and right lateral incisors (Fig. 5). Periapical and panoramic views disclosed the presence of many tooth-like masses varying in size under a tooth-like bigger piece, surrounded by a radiolucent area with clearly corticated rim, and impaction of left central incisor (Fig. 6).

Clinical and radiographical appearance suggested that the lesion was compound odontoma that had erupted into the oral cavity. After local anaesthesia had been induced, intraoral incision was made and mucoperiosteal flap, which included the interdental papillae, was reflected from the right canine toward the left lateral incisor. Cortical bone was removed conservatively with surgical drill to reveal multiple tooth-like structures. The odontoma and impacted tooth were removed meticulously. After the cavity was curetted and irrigated, operation site was closed primarily.

Macroscopically, the first surgical specimen that had erupted into the oral cavity was 0.5 x 0.75 cm in size, and was a crown-like hard tissue piece, with subsequent embedded miniature tooth-like components (Fig. 7). The histological examination of these specimens revealed normal appearing dental tissue composed of enamel, dentin, cementum, and pulp tissue, with an orderly pattern and normal tooth relationships (Fig. 8).

Figure 5. Clinical intraoral appearance of the erupted compound odontoma, resembling a tooth-like hard mass

Figure 6. Panoramic view of the patient. Insert: periapical image of the lesion

Figure 7. Surgical specimen. Insert: Erupted part of the lesion observed during operation

Figure 8. Microscopic appearance of the compound odontoma. The decalcified specimen reveals 2 rudimentary teeth with pulp tissue; and also, photomicrograph showing thin fibrous tissue (HE; Original magnification x 44)
Discussion

Complex odontoma represents further histological differentiation of odontogenic pluripotential epithelium. It contains a mixture of hard and soft dental tissues but the dental tissues are irregularly disposed through the lesion, simply forming an irregular shaped mass whose arrangement does not share any morphologic similarity to the anatomical form of teeth, and frequently forming a cauliflower-like mass. Generally, it is located in posterior part of the mandible, or less often in the anterior part of the maxilla. As observed in our case, approximately 68% of complex odontomas occur in females. The lesion is usually seen in young persons, but may escape diagnosis until late in life. Typically, a hard painless swelling is present, but the mass may start to erupt and infection follows, which causes pain. The mass may also undergo cystic change or resorption.

Radiographically, the lesion appears as a more or less amorphous, solitary mass of calcified material varying in size, and may represent sunburst radiopacities surrounded by a thin, uniform, radiolucent rim. They are usually found adjacent to an unerupted tooth (10-44%), separated by thin radiolucent line. This radiolucency may, in turn, be surrounded by a radiopaque line in the periphery bone, as disclosed in our case. Tooth-like radiopaque structures are usually not detectable in complex odontomas, and resorption of neighbouring teeth is rarely seen.

The suggested treatment is removal of the lesion by conservative surgery. The complex odontoma is a benign lesion, and does not recur after enucleation. However, because of its radiographic resemblance to both the ameloblastic odontoma and the ameloblastic fibro-odontoma, all odontomas should be examined microscopically. Histologically, this lesion consists primarily of a well-delineated, roughly spherical mass of a haphazard conglomerate of mature hard dental tissues. A thin fibrous capsule and, in some cases, a cyst wall is seen surrounding the lesions. This characteristic was also observed in our complex odontoma case.

Compound odontoma is a more common odontogenic malformation, representing as a product of both histo-differentiation and morpho-differentiation of odontogenic tissues, and results in what appears as a cluster of multiple abortive teeth. Compound odontoma is approximately equally distributed between the genders, and usually forms in anterior part of the maxilla. It is a painless, non-aggressive lesion and has a more limited growth potential than the complex odontoma. As observed in all our cases, a more frequent result of the compound odontoma is impaction of a supernumerary or permanent tooth regardless the persistence of the primary tooth, and prevention of normal tooth eruption. Therefore, they are usually discovered during adolescence. Alternatively, the lesion may be discovered incidentally on routine radiographic examination of jaws. Radiographically, compound odontoma appears as a radiopaque mass of calcified structures with anatomical similarity to normal teeth, though the teeth are dwarfed and deformed. It is usually surrounded by a narrow radiolucent zone.

The main future separating the 2 types of odontomas is that the compound odontoma shows a high degree of morpho-differentiation, resulting in a lesion consisting of many tooth-like structures (denticles) which are composed of enamel, dentin, cementum, and pulp tissue arranged regularly on the whole. However, these tissues show many small divergences from the normal pattern, and are generally enclosed in a fibrous capsule. This characteristic of the lesion may be clearly observed on radiographs, as well.

Occasionally, odontomas may be multiple, may form peripheral or soft tissue lesions, and very rarely, may arise outside the alveolar bone, and may exfoliate/erupt. We think that our cases had clinical importance due to the eruptive pattern of the lesions.

In both odontoma types, the treatment of choice is conservative surgical enucleation of the lesion, as performed in our cases. Our first case was representing an unusual clinical course of complex odontoma, on which a prosthetic restoration was placed. Unfortunately, this was not the proper treatment of the lesion, and as expected, the patient had serious clinical complaints due to inappropriate dental care she had received.

Both lesions, because of their sizes, interfered with the normal eruption of teeth. Since the dental follicles are common sites for development of hamartomas, it may be emphasised that in our first case, the complex odontoma might have originated from the dental follicle of maxillary lateral incisor, which was absent in our patient.

In conclusion; the prompt diagnosis and proper treatment are vital to provide optimal oral care of the patients, and therefore practitioners should keep in mind that, although very infrequently, odontomas can erupt in to the oral cavity.

References


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