Clinical and Histopathological Investigation of Odontomas: Review of the Literature and Presentation of 160 Cases

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Purpose: The purpose of the present study was to evaluate the clinical and histopathologic aspects of different types of odontomas.

Materials and Methods: One hundred sixty odontoma cases sent to the Institute of Oncology, Department of Tumor Pathology, Istanbul University from 1971 through 2010 were investigated. These tumors were compared by age of patient, gender of patient, localization, histopathologic type, clinical diagnosis, and clinical and microscopic features.

Results: Odontomas were classified histopathologically as complex, compound, or mixed. Of all investigated cases, 99 were complex, 57 were compound, and 4 were mixed odontomas. The mean age at diagnosis was 27.9 years, and odontomas were diagnosed most frequently at 10 to 19 years of age.

Conclusions: From the perspective of community health, the presence of odontomas within the jaws is important because these constitute 21% to 67% of all odontogenic tumors. The present study showed 2 interesting findings that differed from previous studies. These are the lower incidence rate of odontomas within the category of odontogenic tumors and the higher incidence of complex odontomas over compound odontomas.

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The World Health Organization classifies odontomas as a benign odontogenic tumor composed of odontogenic epithelium and odontogenic ectomesenchyme with dental hard tissue formation.[1] Odontomas are the most common odontogenic tumors. They are lesions of children and young adults, especially in the second decade of life. There is no significant gender predilection.[2]

Histologically, 2 main types of odontomas are recognized: complex and compound. Compound odontomas consist of many separate, small, toothlike structures and usually form in the anterior part of the jaws and may give rise to a painless swelling. Complex odontomas tend to appear in the posterior part of the jaws and consist of a disorganized mass of hard and soft dental tissues with no morphologic resemblance to a tooth.[3] There have also been complex odontoma cases involving the maxillary sinus reported in the literature.[4,5]

Clinically, 3 types of odontomas are recognized in the literature: intraosseous, extraosseous (soft tissue), and erupted.[6] Radiologically, the appearances vary from radiolucent to radiodense, depending on the presence of dentin and enamel in the lesion. Compound odontomas typically appear as separate,

Table 1. DISTRIBUTION OF AGE AND GENDER

Gender	Age (yrs)								
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	>70	Total
Female	3	26	24	12	4	7	3	1	80
Male	4	25	20	16	3	8	3	1	80
Total	7	51	44	28	7	15	6	2	160

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densely calcified bodies in a single focus, whereas complex odontomas appear as an irregular amorphous radiopaque mass when calcification is complete. These may appear radiolucent during the early stages of tumor development.[2,7]

The pathogenesis is not clear, but trauma during primary dentition, heredity, and genetic mutations are accepted possible etiologic factors.[8] Odontomas can also manifest as part of some syndromes: Gardner syndrome, Hermann syndrome, familial colonic adenomatosis, and basal cell nevus syndrome.[8,9]

Odontomas should be removed by conservative surgery because they have very low growth potential and enucleation or surgical excision is curative. Recurrence is unusual.

The present study was designed to present the epidemiologic features of odontomas in Istanbul and discuss findings from the literature.

Materials and Methods

Biopsies sent for diagnosis to the Oncology Institute, Department of Tumor Pathology, Istanbul University from 1971 through 2010 were investigated. Among 40,999 oral cases, 160 odontomas were detected, and these tumors were compared by age of patient, gender of patient, localization, histopathologic type, clinical diagnosis, and clinical and microscopic features.

Odontomas were classified histopathologically as complex, compound, or mixed and divided into 10 groups according to clinical diagnosis: odontoma, mesiodens/fusion, calcified mass/tooth root, osteoid osteoma/osteoma/torus, cementum tumors, ameloblastomas,

ameloblastic fibroma, dentinoblastoma, odontogenic tumor, or radicular cyst.

Histopathologic diagnosis was compared with clinical and microscopic features: analysis of the presence of symptoms and histopathologic findings, tumor found with a buried tooth, missing tooth, malformed tooth/fusion, adhesion to a root, erupted, paresthesia, follicle, odontogenic cyst, odontogenic epithelium, ameloblastic epithelium, odontogenic mesenchyme, ghost cells, cementicle, ameloblastic odonto-fibroma/fibroma, infection, or inflammation. To determine the localization of odontomas, the upper and lower jaws were divided into anatomic regions: maxillary anterior, premolar, and molar and mandibular anterior, premolar, and molar.

This was a retrospective study and thus exempt from approval by the local institutional review board. All data analysis and graphs were performed using Microsoft Office Excel 2007 (Microsoft, Redmond, WA).

Results

In total, 40,999 oral cases were received from 1971 through 2010. Of all oral specimens, 160 odontomas were diagnosed (0.4%). Of the patients with these odontomas, 80 were male (50%) and 80 were female (50%). Table 1 summarizes the data for odontomas by age and gender. Patients' ages ranged from 3 to 81 years (mean age, 27.9 years). At diagnosis, patients most frequently were 10 to 19 years of age. The distribution of age groups according to diagnosis is presented in Table 2.

Table 2. DISTRIBUTION OF AGE GROUPS ACCORDING TO HISTOPATHOLOGIC TYPE

Diagnosis	Age (yrs)								
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	>70	Total
Complex	1	28	31	19	5	10	4	2	99
Compound	5	20	13	9	2	5	2	0	57
Mix	1	3	0	0	0	0	0	0	4
Total	7 (4.4%)	51 (31.9%)	44 (27.5%)	28 (17.5%)	7 (4.4%)	15 (9.4%)	6 (3.7%)	2 (1.2%)	160

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