Original Article

Clinical and Histopathological Evaluation of Odontomes

Evaluation of Odontomes

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ABSTRACT

Objective: To evaluate the epidemiological features, assess clinical manifestations and histopathological features of odontomes.

Study Design: Descriptive case series

Place and Duration of Study: This study was conducted at the Department of Oral Pathology, Bacha Khan Medical College Mardan from November 2015 to June 2020.

Materials and Methods: Seventeen patients of odontomes were observed. Patients detail medical and dental history, clinical features, radiographic findings on the panoramic radiographs and pathological reports were investigated.

Results: 52.9 percent patients were males. Majority of the patients were males with age range 13-17 years. The common chief complaint was bony and soft tissue swelling and 41.2% of the cases the odontomes were associated with unerupted tooth. Anterior maxilla was involved in 35.3% cases followed by posterior mandible which was involved in 17.6% cases. Radiographically 70.6% odontoma appeared as a tooth like structures surrounded by a narrow radiolucent zone and histolopathologically diagnosed as compound odontomes.

Conclusion: Odontomes are rare tumors comprising of various dental tissues. The most common form diagnosed is compound odontomes both radiographically and histopathologically. It predominantly involves young males, presenting as swelling in anterior maxilla and most commonly associated with unerupted tooth.

Key Words: Epidemiological features, Clinical manifestations, Histopathological features, Odontomes

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INTRODUCTION

Odontomas are considered to be developmental anomalies resulting from the growth of differentiated epithelial and mesenchymal cells. Odontomas are the most common odontogenic tumors, in which all structures that form dental tissues are represented.[1] Odontomes are divided in two forma complex and compound. In Complex odontoma the tissues are well formed with disordered pattern and in compound form the dental structures are arranged in more orderly pattern.[2]

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Odontomas are mostly associated with permanent teeth, and they are rarely associated with deciduous teeth.[3] The etiology of odontomas remains unknown, although local trauma, infection, and genetic factors have been suggested. Their growth is typically slow and asymptomatic. Therefore, odontomas are generally diagnosed by routine radiological examination in the second and third decades of the life.[4] Histologically, they are composed of different dental tissues, including enamel, dentine, and cementum and, in some cases, pulp tissue.[5] Radiographically, the complex odontoma appears as a more or less amorphous, solitary mass of calcified material, and in compound odontoma it reveals tooth-like radiopaque structures.[6] Odontomas should be removed by conservative surgery because they have very low growth potential and enucleation or surgical excision is curative. Recurrence is unusual.[7]

The present study was therefore designed to evaluate the epidemiological features of odontomas, i.e., age and gender distribution, and location, and to assess clinical manifestations and histopathological evaluation, with the purpose of offering more reliable information for diagnosing these tumors.

MATERIALS AND METHODS

This descriptive case series was conducted in Bacha Khan Medical College, Mardan from 1st November 2015 to 30th June 2020. A total of 17 patients of

odontomes were observed retrospectively from OPD Department of Oral and Maxillofacial Surgery, Mardan Medical Complex and Bacha Khan College of Dentistry, Mardan. Patients detail medical and dental history, clinical features, radiographic findings on the panoramic radiographs and pathological reports were investigated. The data was entered and analyzed through SPSS-22.

RESULTS

23.5% patients were in age range 8-12 years. 35.3% patients were in age range 13-17 years, 17.6% lied in the age range of 18-22 years, 17.6% were in between 23-27 years and 5.9% were in age range 28-32 years. The odontomas were diagnosed most frequently at 13-17 years of age. 52.9% patients were males and 47.1% patients were females with male to female of 2:1. Bony and soft tissue oral swelling was the chief presenting complaint and was found in 17.6% and 11.8% of cases while pain was the presenting complaint in only 5.9% of cases. 11.8% cases the odontomes were found on routine radiographic examination. It was interesting to note that in 41.2% of the cases the odontomes were associated with unerupted tooth (Table 1)

Anterior maxilla was involved in 35.3% cases followed by posterior mandible which was involved in 17.6% cases. Beside from these two sites, posterior maxilla and anterior mandible were less frequently involved (Table 2). Radiographically, 70.6% odontoma appeared as a tooth like structures surrounded by a narrow radiolucent zone while 29.4% appeared as an amorphous, solitary mass of calcified material. This lesion was of considerable size and was associated to the permanent tooth which had failed to erupt in the dental arch. Histologically70.6 percent odontomas were compound while 29.4 percent were complex type (Table 3).

Table 1: Demographic information of the patients (n=17)

Variable	No.	%
Age (years)		
8-12	4	23.5
13-17	6	35.3
18-22	3	17.6
23-27	3	17.6
28-32	1	5.9
Gender		
Female	8	47.1
Male	9	52.9
Complaints		
Bony swelling	3	17.6
Pain	1	5.9
Soft tissue swelling	2	11.8
Routine radiograph examination	3	11.8
Underlying erupting tooth	8	41.2

Table 2: Site of distribution of odontomas (n=17)

Site of odontoma	No.	%
MandLT-3,4	1	5.9
MandLT-5,6	2	11.8
MandLT-7,8	1	5.9
MandRT-5,6	1	5.9
MandRT-7,8	3	17.6
MaxLT-3,4	1	5.9
MaxRT-1,2	1	5.9
MaxRT-3,4	6	35.3
MaxRT-5,6	1	5.9

Table No. 3: Radiographic and histologic findings of odontomas (n=17)

Findings	No.	%
Radiographic appearance		
Amorphous, solitary mass of calcified material	5	29.4
Radiolucency with tooth like structures	12	70.6
Histologic diagnosis		
Complex	5	29.4
Compound	12	70.6

DISCUSSION

Odontogenic tumours constitute an important aspect of jaw pathology that shows variation of frequency in different populations of the world. This study describes their relative frequency and appearance of tumors in our population and their clinicopathological spectrum in comparison with other studies conducted on various populations of the world. Regarding patient age most odontomas can be identified in the first two decades of life in coincidence with our own observations.[1-4] There is no significant differences between males and females.[2,5,6] Tekkesin et al[7] found that out of 160 odontomas, 80 were male (50%) and 80 were female (50%). In the present study, 52.9% patients were males and 47.1% patients were females. Philipsen, et al[6] also showed more males are involved as compared to females (1.2:1).

According to our result the commonest site for odontomas was anterior maxilla (47.1% cases) followed by posterior mandible (23.4% cases). Beside from these two sites, middle mandible involved 17.7% cases and only 5.9% of the cases were present in anterior mandible and middle maxilla each. While in a study carried out by Sanchez et al[14] stated that most of the lesions (56%) were located in the upper maxilla, with 44% in the mandible differentiating the series in an anterior zone (region of the incisors and canines), middle zone (premolars) and posterior zone (molars). Among the lesions found in the upper maxilla, 72.8% were located in the anterior region, 18.3% in the posterior region, and 8.9% in the middle zone. In the mandible, 44.4% were located in the anterior region, 40.6% in the posterior region, and 15% in the middle

sector. Khan et al[13] found that posterior mandible was the predominant site for odontomes of the jaw. Our study revealed that total number of cases were 53% in maxilla while 47% in mandible with was in contrary to study done by Tekkesin et al[7] showing that mandible was more commonly involved than the maxilla with all odontomas. Similarly, another study by Lee et al[15] revealed that of all the odontomas 45% were located in the mandible and 55% in the maxilla.

In the present study bony tissue oral swelling was the chief presenting complaint and was found in 17.6% cases while soft tissue swelling account for 11.8%. Pain was the presenting complaint in only 5.9% of cases. 11.8% cases the odontomes were found on routine radiographic examination. It was interesting to note that in 41.2% of the cases the odontomes were associated with unerupted tooth. Khan et al[13] reported that the most frequent presenting complaint was extra or intra oral swelling which was noted in 47.37% of the cases. While in 26.32% of the cases, pain was the presenting complaint of patients and 21.05% of the cases odontomes were a chance finding on radiographic examination. Similar presenting complaints were reported by Hidalgo-Sánchez[14], Haishima et al[16] and Owens et al.[17]

In this study radiograph revealed 29.4% compound odontoma appeared as a tooth like structures surrounded by a narrow radiolucent zone while 70.6% appeared as an amorphous, solitary mass of calcified material with varying levels of radiodensity. This lesion was of considerable size and was associated to the permanent tooth which had failed to erupt in the dental arch. Lee and Park[15] in their study revealed that radiographically compound odontomes appear with unilocular and multiple radio opaque mini teeth surrounded by defined radiolucency whereas complex odontoma showed unilocular undistinguished radioopaque mass surrounded by radiolucent zone and a distinct radioopaque border.

In the present study among the two histological types of odontomes, compound odontomes were more common i.e. 70.6% while 29.4% were complex odontomes. These findings match with the findings of the study done by de Andrade Santos et al[9] revealing that62.5% were compound and 37.5% were complex. Hidalgo-Sánchez et al[14] observed the same clear predominance of compound odontomes over complex odontomes. The opposite was reported by Khan et al[13] showed that complex odontomes were more common accounting for 58% while 42% were compound odontomes. In a study carried out by Tekkesin et al[7] also showed that out of 160 cases, 99 were complex, 57 were compound and 4 were mixed odontomas.

CONCLUSION

Odontomes are rare benign tumours and its occurrence varies from region to region. Majority of the patients in this were maleswith age range 13-17 years. The common radiologically and histoplathologically diagnosed form of tumour presented was compound form. The common chief complaint was bony and soft tissue swelling. The tumour appeared more commonly in anterior maxilla. Interestingly most of the cases were associated with unerupted tooth. Therefore, diagnosis of odontomes requires thorough clinical and radiographical examination with histopathological evaluation as the gold standard. Routine findings if missed may complicate the treatment plan.

Author's Contribution:

Concept & Design of Study:	Waqar-Un-Nisa
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Data Analysis:	Sertaj Khan, Ahmad Shah, Sofia Haider Durrani
Revisiting Critically:	Waqar-Un-Nisa, Sabreen Hassan
Final Approval of version:	Waqar-Un-Nisa

Conflict of Interest: The study has no conflict of interest to declare by any author.

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