

## Characteristic of Odontoma at Oral and Maxillofacial Surgery Department Dr. Hasan Sadikin General Hospital during 2017 – 2022

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### Abstract

**Introduction:** Odontoma is a benign odontogenic tumor that originates from abnormalities in the development of tooth tissue (hamartoma) and is characterized by abnormal calcification of tooth tissue such as enamel, dentin, cementum, and pulp. Odontomas are divided into 2 types, namely compound odontoma and complex odontoma. The epidemiologic characteristics of odontoma in several studies show differences. This study aimed to obtain information and analyze the characteristics of odontoma at Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital for the period January 2017 – December 2022.

**Methods:** This study is a retrospective descriptive study based on the medical data record of a patient who was diagnosed with odontoma and undergoing treatment at Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital for the period January 2017 to December 2022. The variables studied include age, gender, lesion location, diagnosis, and treatment, and.

**Results:** The total participants in this study were 18 patients (9 males and 9 females), with the highest age range at the age of 11-20 years (50%), and the type of compound odontoma as many as 8 patients (44.4%), and complex odontoma as many as 10 patients (56%). Most of the lesions were found in anterior maxilla with 6 patients (33%), 11% in the right maxilla, 5% in the left maxilla, 17% in the anterior mandible, 6% in the right mandible, and 28% in the left mandible. Particularly, based on the treatment received by the patients, all patients went under enucleation treatment (100%).

**Conclusion:** Odontomas are equally common in males and females during the second decade of life. Complex odontoma is more common than compound odontoma. Odontoma occur mainly in the anterior maxilla, especially the compound type. Conservative surgery, such as enucleation, is a common treatment.

**Keywords:** *Odontoma, patients characteristics, treatment*

### Introduction

Odontomas are benign odontogenic tumors that develop from abnormalities in tooth tissue, known as hamartomas.<sup>1,2</sup> Paul Broca invented the name

odontoma in 1867. These tumors are often associated with persistence and impacted teeth. The dental lamina is recognized as the primary

tissue from which odontomas originate.<sup>3</sup> The World Health Organization (WHO) classified odontomas in 2005 into two types: compound odontoma and complex odontoma.<sup>4</sup> Other variations of odontomas have been discovered, that have a mixture of features of compound and complex odontoma. Odontomas are the most common type of odontogenic tumor, accounting for 21-67% of all odontogenic tumors, with ameloblastoma being the second most common.<sup>5,6</sup>

The epidemiologic characteristics of odontoma in different studies show differences. Complex odontoma is more common than compound odontoma, with 191 cases (15.51%) compared to 144 cases (11.7%) out of a total of 335 odontoma cases, as reported by M. Soluk et al. in 2020.<sup>7</sup> Compound odontomas are commonly found in the maxillary incisors and canines (67%), whereas complex odontomas are more commonly found between mandibular molars 2 and molar 3.<sup>4,8</sup> Tumors can develop at any age, with the highest incidence in the second decade of life. They are more common in males (59%) than in females, but the difference is not particularly significant.<sup>1,2</sup> In a meta-analysis study on the epidemiology of odontoma conducted by Sanchez et al in 2008, of a total of 3065 odontoma cases, it was found that based on gender, 49.4% occurred in females and 50.6% occurred in males, based on type 61.3 % are compound odontoma and 37% are complex odontoma, based on the location of occurrence 56% occurred in the maxilla and 44% occurred in the mandible, of which in the maxilla 72.8% occurred in the anterior region<sup>18</sup>. In a study conducted by Boffano et al in 2022 which was carried out in 8 oral surgery departments in Europe, out of 127 cases of odontoma it was found that 70 cases occurred in males and 57 cases in females with an average age of 22 years, 71 cases of odontoma were found in the mandible and 56 cases in the maxilla<sup>19</sup>.

Odontoma is diagnosed by clinical and radiographic examination. This tumor is asymptomatic and slow-growing, often found incidentally during a routine radiographic

examination.<sup>1</sup> Impacted permanent teeth or persistent primary teeth may indicate odontoma, as may jaw swelling in cases of big lesions.<sup>3</sup> Treatment of odontoma involves enucleation surgery to avoid difficulties with eruption of permanent teeth, sometimes followed by orthodontic treatment to realign affected permanent teeth. Odontomas have a favorable therapeutic prognosis with low recurrence rates.<sup>1</sup>

Hasan Sadikin General Hospital serves as a referral hospital for the West Java Province. No previous study has been conducted on the characteristic and treatment of odontoma specifically in the West Java area, especially in Hasan Sadikin General Hospital. This study aimed to collect the characteristics of odontoma at Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital from January 2017 to December 2022.

## Methods

This research is a retrospective descriptive study using medical records of patients who were diagnosed with odontoma at Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital between January 2017 and December 2022. This research includes patients who were histopathologically diagnosed with odontoma and were treated at Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital throughout the study period and had complete medical records. This research used a total sampling approach, where the number of samples is equal to the number of populations. The factors studied consist of age, gender, lesion location, diagnosis, and treatment, including both numerical and categorical data. Numerical data are presented as means of standard deviations. Categorical data will be presented as proportions and percentages (%). Prior to conducting the research, an ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine Universitas Padjadjaran with ethics number 783/UN6.KEP/EC/2023.

## Results

The data used in this research were secondary data collected from the medical records of patients with odontoma who were treated at Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital from January 2017 to December

2022 to determine their characteristics based on age, sex, diagnosis, lesion location, and definitive treatment. This research obtained data from 18 patients who met the inclusion criteria. The characteristics of odontoma in patients at Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital Bandung are presented below.

**Table 1: Distribution of genders among patients with odontoma**

Gender	Number (%)
Males	9 (50%)
Females	9 (50%)

**Table 2: Distribution of ages among patient with odontoma**

Age	Number (%)
1-10	3 (16,6%)
11-20	9 (50%)
21-30	4 (22,2%)
31-40	1 (5.5%)
41-50	0 (0%)
>50	1 (5.5%)

Odontoma were found in up to 18 patients. Based on the data in Table 1 and Table 2, 9 were females (50%) and 9 were males (50%). The age of the patients varied from 11 to over 50 years, with the majority falling between 11 and 20 years (50%).

**Table 3: Distribution of types of odontoma based on the diagnosis of Anatomical Pathology**

Diagnosis	Number (%)
Compound Odontoma	8 (44%)
Complex Odontoma	10 (56%)

Table 3 shows the distribution of odontoma based on anatomic pathology examination, the data collected showed that 8 patients (44%) had compound odontoma, and 10 patients (56%) had complex odontoma.

**Table 4: The location predilection of odontoma**

Predilction Location	Number (%)
Anterior Maxilla	6 (33%)
Right Maxilla	2 (11%)
Left Maxilla	1 (5%)
Anterior Mandible	3 (17%)
Right Mandible	1 (6%)
Left Mandible	5 (28%)

Table 4 illustrates the distribution of odontomas from the total patients, 33% had tumors in the anterior maxilla, 11% in the right maxilla, 5% in the left maxilla, 17% in the anterior mandible, 6% in the right mandible, and 28% in the left mandible.

**Table 5: Definitive treatment of odontoma**

Treatment	Number (%)
Intraoral enucleation	3 (16,6%)
Extraoral enucleation	9 (50%)
Segmental resection	4 (22,2%)

Odontoma treatment includes intraoral enucleation, extraoral enucleation, and segmental resection. Based on the data in Table 5, all the surgical treatment of odontoma used intraoral enucleation procedure in 18 patients (100%).

### Discussion

Odontomas are benign tumors that arise from the tissues involved in tooth development. Odontoma are the most common type of odontogenic tumor, accounting for approximately 22% of all odontogenic tumors in the jaw.<sup>9,10</sup> Tumors often develop around the second decade of life, with no significant difference between genders. During the period from January 2017 to December 2022, the Oral and Maxillofacial Surgery Department at Hasan Sadikin Hospital identified the highest number of odontoma cases individuals aged 11-20 years, with 9 patients (50%) evenly divided between males and females. A study by Paolo., et al (2022) indicated that out of 127 odontoma patients, 70 cases were in males and 57 cases were in females, with an average age of 22 years. Odontomas often develop during the second decade of life, with no significant differences between males and females.<sup>11</sup>

Daniela et al. (2021) reported that 61% of odontomas in the anterior jaw are compound odontoma, whereas complex odontoma is more common in the posterior jaw. Odontomas are often found during regular radiographs when permanent teeth are unable to erupt or are malpositioned, especially during the transition from primary teeth to permanent teeth, due to the obstruction caused by the tumor.<sup>12</sup> Odontoma was most commonly found in the anterior maxilla at the Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital between January 2017 and

December 2022, with 6 patients (33%) having the compound odontoma type.

During the period from January 2017 to December 2022, the most common kind of odontoma found in patients treated at Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital was complex odontoma, with 10 patients (56%). The WHO categorizes odontoma into two types: compound odontoma and complex odontoma, based on the organization and degree of differentiation of odontogenic cells. Complex odontoma is characterized by calcified dental tissue that is not fully differentiated, forming an amorphous mass separated from from the surrounding bone by connective tissue. Compound odontoma is mostly composed of dental structures resembling normal dental tissue but smaller in size and more numerous, separated from the surrounding bone by connective tissue. In a study by M. Soluk., et al in 2020, complex odontoma was more common than compound odontoma. Out of 335 cases of odontoma, 191 (56.7%) were complex odontoma and 144 (43.3%) were compound odontoma.<sup>7</sup>

The treatment of choice is generally surgical removal to prevent associated complications, such as enucleation or resection, depending on the size and location of the tumor. Enucleation surgery is the preferred therapy for both forms of odontoma. In this procedure all of the connective tissue surrounding the tumor and the surrounding bone is removed to prevent the tumor from developing into a cyst that could lead to pathologic fractures. The intraoral enucleation procedure ensures that the surgical scar remains hidden, so it doesn't disturb the aesthetics of the patient's face after odontoma treatment. The prognosis after odontoma surgery is very satisfactory, with a low recurrence rate.<sup>13,15,17</sup> According to the statistics of

the Oral and Maxillofacial Surgery Department Hasan Sadikin General Hospital from January 2017 to December 2022, the most common therapy for odontoma is intraoral enucleation, accounting for 18 (100%) cases. Pratima., et al (2022) reported three series of compound odontoma cases in their study, which were treated conservatively by surgery with enucleation, resulting in good outcomes.<sup>16,17</sup>

### Conclusion

Odontomas are equally common in males and females during the second decade of life, especially between the ages of 11 and 20 years. Among the 18 patients with odontoma, complex odontoma is more common than compound odontoma. Odontoma occur primarily in the anterior maxilla, especially the compound type. Conservative surgery, such as intraoral enucleation, is a common treatment.

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