

## Characteristics of plexiform ameloblastoma patients at dr. Hasan Sadikin Hospital OMFS Department, 2020-2024

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Received 17 October 2025; 1<sup>st</sup> revision 20 January 2026; 2<sup>nd</sup> revision 8 April 2026; Accepted 13 April 2026;

Published online 27 April 2026

### Keywords:

Ameloblastoma,  
Odontogenic, Plexiform,  
Treatment

### ABSTRACT

**Background:** Ameloblastoma, the most prevalent odontogenic tumor (40–50% of occurrences worldwide), displays locally aggressive characteristics and a significant recurrence rate after incomplete excision, predominantly in the posterior mandible. Population studies show differences in histopathology and demographics. The follicular subtype is the most common, and 60–80% of people who have conservative treatment will have a recurrence. While the characteristics of the plexiform variant require elucidation, aggressive resection mitigates risk. This study examines the location, management, histopathology, and demographics of plexiform ameloblastoma cases at the oral surgery department of Hasan Sadikin Hospital between 2020 and 2024.

**Method:** A retrospective analysis utilized the medical records of patients diagnosed with plexiform-type ameloblastoma. We looked at 41 cases and looked at things like age, gender, where the tumor was, what treatment was given, and how often it came back.

**Result:** The majority of the patients were between the ages of 21 and 30 (29.3%), with an average age of 37. More than half of them were women (53.7% vs. 46.3%). The mandible was involved in 92.7% of cases, mostly in the back. Segmental resection (39.0%) and hemimandibulectomy (39.0%) were the most common radical surgeries. Patients who received radical treatment did not exhibit any recurrences during follow-up; cases managed conservatively (enucleation/curettage) are currently under observation.

**Conclusion:** This study emphasizes the necessity for appropriate management of plexiform-type ameloblastoma to reduce the likelihood of recurrence and enhance patients' quality of life. Consequently, additional research involving larger sample sizes and extended follow-up durations is essential to assess the recurrence risk and the efficacy of each treatment modality.

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doi: <http://dx.doi.org/10.30659/odj.13.1.11-16>

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Odonto : Dental Journal accredited as **Sinta 3 Journal** (<https://sinta.kemdikbud.go.id/journals/profile/3200>)

How to Cite: Pasaribu, et al. Characteristics of plexiform ameloblastoma patients at dr. Hasan Sadikin Hospital OMFS Department, 2020-2024. Odonto: Dental Journal, v.13, n.1, p.11-16, April 2026.

## INTRODUCTION

Ameloblastoma accounts for about 49% of all cases of odontogenic tumors, making it the most common type. In 1885, Louis-Charles Malassez referred to the lesion as Adamantinoma. In 1933, Ivey and Churchill altered the nomenclature to "ameloblastoma". The mandible is more frequently affected by ameloblastomas than the maxilla. They are mostly unilateral (95%) and are found in the back of the jaw (85%). They also show that different racial groups tend to prefer different sites. Pinborg and Clausen categorized odontogenic tumors into three classifications: benign, malignant, and intermediate (borderline), based on clinical and histopathological characteristics.<sup>1-9</sup>

Ameloblastoma is considered an intermediate tumor because it is not cancerous but can spread to nearby tissues and come back often if not treated. The precise initiators of neoplastic transformation remain unidentified; however, it is thought to start from basal oral mucosa cells, odontogenic cyst epithelium, or remains of enamel organs. Radiographically, ameloblastomas can have a variety of histological characteristics and appear as one or many lesions. The follicular type is the most common. The frequency ratios of mandibular to maxillary ameloblastoma range from 8% to 99%.<sup>1,4,10-15</sup>

The epidemiology of research indicates the characteristics that are distinct within the population. As per Lu et al. report that 90.8% of Chinese patients have mandibular tumors, with an average age of 31.4 years and a sex ratio of 1.5:1. According to Hatada et al., 92.6% of Japanese patients have mandibular tumors, with an average age of 34.7 years and a sex ratio of 1.6:1. Ruslin et al. reported that a study conducted in Eastern Indonesia found that 25% of the cases were unicystic ameloblastomas, 57% were follicular, and 8% were multicystic. The most common type of tumor to recur is follicular (29.5%), followed by plexiform (16.7%) and acanthomatous (4.5%).<sup>3,5-7,9,13,16-21</sup>

To prevent recurrence, more radical methods of treatment are suggested; recurrence rates using radical methods are about 15%, compared to over 50% for conservative treatment methods. It is important to monitor patients after treatment due to the high likelihood of recurrence.<sup>8,22-24</sup>

## RESEARCH METHOD

The exemption of this research has been granted by the Universitas Padjadjaran research ethics committee with the number of 852/UN6.KEP/EC/2024. The patients with plexiform ameloblastoma treated at the Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital during the years of 2020 to 2024 have been used in this study which was done retrospectively using the descriptive approach. Full medical records which comprised information about patient demographics, clinical and histopathological diagnosis of the disease, tumor site, treatment performed, and recurrence during the follow-up period have been required in order to participate in the study. The study design utilized total sampling.

The age group used in this research is age when the patients are diagnosed for ameloblastoma. Patients are categorized as follows: 0-10 years, 11-20 years, 21-30 years, 41-50 years, 51-60 years and above 60 years. Gender is divided into male and female genders. Location where ameloblastoma occurs is categorized into two places: maxilla or mandible.

Management of ameloblastoma can be broadly classified into two groups: conservative management and radical management. The former consists of two methods: enucleation and dredging, while the latter involves marginal resection, segmental resection, hemimandibulectomy, and hemimaxillectomy.

The method used for data gathering involved the application of the total sampling approach through the use of the patient's medical records of plexiform ameloblastomas managed by the Oral Surgery Department of Hasan Sadikin General Hospital between the years 2020 and 2024. Proportions and percentages were utilized in the descriptive statistic analysis of the acquired data. The data gathered was computerized to transform it into information.

Data processing begins with the editing phase which involves verification of accuracy for the required data. The coding process involves conversion of the required information which is in sentence form or alphabetical form into numerical form. Lastly there is data entry where the data collected from the subjects after being coded, is entered into the computer system.

After entering all the data regarding the patient, re-examination will be conducted to check the possibility of any errors in the codes and also incompleteness, among others. The data is collected from medical records from the year 2020 to 2024. Quantitative data will be represented in terms of means and standard deviations. Qualitative data will be shown using proportions and percentages. Analysis may require the use of SPSS.

## RESULTS

Of the total 41 cases of plexiform ameloblastomas, the proportion of females was 53.66%, which consisted of 22 cases, while males comprised 46.34% of the total (19). The mean age of the affected patients was 37 years, with 29.27% of them being between 21 to 30 years old. Of the total 41 cases, 38 occurred in the mandible (92.68%), while only 3 occurred in the maxilla (7.32%).

Table 1. Patients demographic distribution

| Characteristic              | Frequency (n=41) | Percentage (%) |
|-----------------------------|------------------|----------------|
| <b>Gender</b>               |                  |                |
| Male                        | 19               | 46,34%         |
| Female                      | 22               | 53,66%         |
| <b>Age interval (years)</b> |                  |                |
| 0-10                        | 1                | 2,44%          |
| 11-20                       | 5                | 12,19%         |
| 21-30                       | 12               | 29,27%         |
| 31-40                       | 3                | 7,32%          |
| 41-50                       | 10               | 24,39%         |
| 51-60                       | 7                | 17,07%         |
| >60                         | 3                | 7,32%          |

Radical and conservative methods were used, as described in Table 2. Although radical surgeries such as segmental resection and hemimandibulectomy were performed on 16 patients (39.02%), conservative therapy such as dredging was also performed in 7 patients (17.08%). Hemimaxillectomy and marginal resection were done in one patient (2.44%).

Table 2. Case distribution based on fracture classification, etiology, and their management

| Cases                         | Frequency (n=41) | Percentage (%) |
|-------------------------------|------------------|----------------|
| <b>Ameloblastoma location</b> |                  |                |
| Maxilla                       | 3                | 7,32%          |
| Mandible                      | 38               | 92,68%         |

| Management          |    |        |
|---------------------|----|--------|
| Dredging            | 7  | 17,08% |
| Marginal resection  | 1  | 2,44%  |
| Segmental resection | 16 | 39,02% |
| Hemimaxillectomy    | 1  | 2,44%  |
| Hemimandibulectomy  | 16 | 39,02% |

There was no recurrence in the patients undergoing treatment at all in the study period. But since dredging involves repeating curettage procedures till there is confirmation that the cells are negative, patients going for this type of procedure are kept under observation anyway.

## DISCUSSION

Ameloblastoma features vary greatly in terms of radiographic examination and anatomic pathology, and an analysis is needed to determine which aspects are most common in patients at the Oral Surgery Department at General Hospital Hasan Sadikin. From the results of data analysis, it can be concluded that the number of patients who suffer from plexiform ameloblastoma and receive treatment at General Hospital Hasan Sadikin in the year 2020 to 2024 was 41 people, with an average age of 37 years. According to research made by Ruslin, regarding the average age of patients suffering from ameloblastoma in Makassar, Indonesia which is 39.7 years, it supports the assumption that the peak of ameloblastoma cases is in the third and fourth decade.<sup>7,9,20</sup>

Based on numerous international investigations, the peak occurrence of plexiform variant ameloblastoma is found in the third and fourth decades, which supports the age profile of the patient population that is mostly young to middle-aged. This reinforces the importance of early diagnosis and proper treatment to mitigate the adverse impacts of this disease in society and economy. Having a higher number of females compared to males among the studied population, this gender discrepancy indicates geographical variations due to genetic and environmental influences.<sup>1,4,5,18,19,21</sup>

The most predominant type was the mandibular presentation, with 92.68% (38/41) of plexiform ameloblastoma patients presenting mandibular swellings and only 7.32% (3/41) of cases with maxillary presentations, which corresponds well with findings of the study. This disparity could be attributed to the greater volume of mandibular bones, presence of greater number of epithelial cells as rest of Serres and Malassez of developing teeth, and higher biomechanical stresses resulting in transformation into neoplasm. Therefore, mandibular lesions are seen in 80-95% of cases mostly involving posterior body and angle areas due to these factors. The differences observed reflect general statistics observed in numerous studies around the world. On the contrary, maxillary ameloblastomas are less common and aggressive, growing by way of infiltration, posing great danger to orbital floor and maxillary sinus. These characteristics make maxillary ameloblastomas harder to treat. This prevalence rate of the site-specificity of the tumors demonstrates the need for increased attention to radiographic diagnosis of mandibular swellings among our younger patients to avoid bone resorption and functional defects.<sup>21,24-28</sup>

Treatment methods for ameloblastoma treatment include conservative and radical treatment. As stated by Muller, what everyone can choose is radical treatment because if applying radical treatment, the chance of recurrence will be only 15% compared to conservative treatment which exceeds 50%. In light of research

proving that there is a decrease in the chances of recurrence after applying radical rather than conservative treatment, radical treatments such as segmental resection and hemimandibulectomy were considered more often to decrease chances of recurrence. Although conservative treatment was still beneficial in some cases, particularly those involving young patients with unicystic ameloblastoma.<sup>5,6,8,20,22,25</sup>

## CONCLUSION

Mandible was the most frequent site of tumors. Productive age was found to be the most prevalent age among the plexiform type of ameloblastomas at Hasan Sadikin General Hospital from 2020 to 2024, and a slight predominance was observed among females. Radical therapy was the key approach used to reduce chances of recurrence, which had not been reported during this period.

## ACKNOWLEDGEMENT

We would like to thank our mentors for their invaluable advice during the research process and Hasan Sadikin General Hospital for providing vital facility support and access to patient data. Additionally, we sincerely appreciate the valuable feedback and constructive comments provided by the anonymous reviewers, which greatly enhanced the quality of this manuscript.

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