

## Original Research

### A Clinico-pathological study to Analyze Odontogenic Cysts and Tumors: A Retrospective Study

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#### ABSTRACT:

**Background:** Ameloblastoma is one of the most recognized odontogenic tumour in many countries from all over the world. It is a relatively rare neoplasm derived from odontogenic epithelium and represents about 1% of all oral tumours. There are three clinical types of ameloblastoma: the solid or multicystic type, the unicystic type and the rare peripheral type. In relation to cellular pattern and organization, ameloblastoma can be classified into subtypes such as follicular, plexiform, acanthomatous, and granular. These subtypes can occur in isolation or combination. **Aim of the study:** To retrospectively study the clinicopathological characteristics of ameloblastomas in a given population. **Materials and methods:** For the study, we recovered 40 samples of ameloblastomas from the records of the department. For the analysis of the data, demographic variables such as age, gender, radiographic features, anatomic location, histopathological type and clinical features were considered. On the basis of location of the tumor, they were divided into anterior, premolar and molar for maxillary cases and into anterior, posterior, angle and ramus for mandibular cases. **Results:** During the study period, a total of 40 samples of ameloblastoma were reported in the Department of Oral Pathology of the dental institute. Of the 40 samples, 22 were of males and 18 were of females. We observed that highest number of cases belonged to age group 30-39 years (n=11) followed by 20-29 years (n=9). Lowest number of cases were observed in the age group 50-59 years (n=2). We observed that 30 cases were in mandible and 10 cases were of maxilla. The highest number of cases in mandible and maxilla were seen in the molar region. We observed that swelling was the most common chief clinical symptom for ameloblastoma followed by pain and paresthesia and pain and swelling. **Conclusion:** From the present study, baseline data for clinicopathological features of ameloblastoma for the study population is presented. The clinicopathological features of ameloblastoma the current study population are very similar to other populations.

**Keywords:** Ameloblastoma, tumor, clinical features.

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#### INTRODUCTION:

Ameloblastoma is one of the most recognized odontogenic tumour in many countries from all over the world. It is a relatively rare neoplasm derived from odontogenic epithelium and represents about 1% of all oral tumours.<sup>1</sup> Ameloblastoma may arise from developing enamel organ, epithelial cell rest of dental lamina, epithelial lining of odontogenic cysts and basal cells of oral epithelium.<sup>2</sup> It is a benign tumour but has aggressive characteristics such as persistent growth and locally invasive to surrounding structures.<sup>3</sup> Ameloblastomas usually present as a painless

swelling, slow growing mass, expansion of jaw bones, perforation of mandible or maxilla cortical plates and infiltration to surrounding soft tissue or sinonasal structure.<sup>4</sup> Radiographically, ameloblastomas present as multilocular and unilocular radiolucent lesions surrounded by a radiopaque border, located primarily in the posterior mandibular segment.<sup>5</sup> There are three clinical types of ameloblastoma: the solid or multicystic type, the unicystic type and the rare peripheral type.<sup>6</sup> In relation to cellular pattern and organization, ameloblastoma can be classified into subtypes such as follicular, plexiform, acanthomatous,

and granular. These subtypes can occur in isolation or combination.<sup>6</sup> Some regional variations are reported in respect to age of occurrence, site, and biological behavior of these tumors. Hence, the present study was planned to retrospectively study the clinicopathological characteristics of ameloblastomas in a given population.

**MATERIALS AND METHODS:**

The ethical clearance for study protocol was obtained from ethical committee of the institution. For the study, we recovered 40 samples of ameloblastomas from the records of the department. For the analysis of the data, demographic variables such as age, gender, radiographic features, anatomic location, histopathological type and clinical features were considered. On the basis of location of the tumor, they were divided into anterior, premolar and molar for maxillary cases and into anterior, posterior, angle and ramus for mandibular cases.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student’s t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

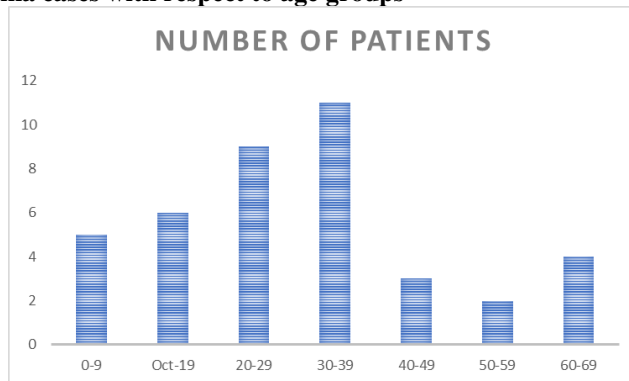
**RESULTS:**

During the study period, a total of 40 samples of ameloblastoma were reported in the Department of Oral Pathology of the dental institute. Of the 40 samples, 22 were of males and 18 were of females. Table 1 shows the distribution of ameloblastoma cases on the basis of age. We observed that highest number of cases belonged to age group 30-39 years (n=11) followed by 20-29 years (n=9). Lowest number of cases were observed in the age group 50-59 years (n=2) [Fig 1]. Table 2 shows the distribution of ameloblastoma cases on the basis of site and type. We observed that 30 cases were in mandible and 10 cases were of maxilla. The highest number of cases in mandible and maxilla were seen in the molar region. The most common type of ameloblastoma was follicular ameloblastoma in both maxilla and mandible. Table 3 shows the distribution of chief clinical symptom in ameloblastoma cases. We observed that swelling was the most common chief clinical symptom for ameloblastoma followed by pain and paresthesia and pain and swelling. Only pain was the rarest chief clinical symptom. The results were compared and found to be statistically non-significant [Fig 2]. (p>0.05)

**Table 1: Distribution of ameloblastoma cases on the basis of age**

Age (years)	Number of patients
0-9	5
10-19	6
20-29	9
30-39	11
40-49	3
50-59	2
60-69	4

**Fig 1: Number of ameloblastoma cases with respect to age groups**



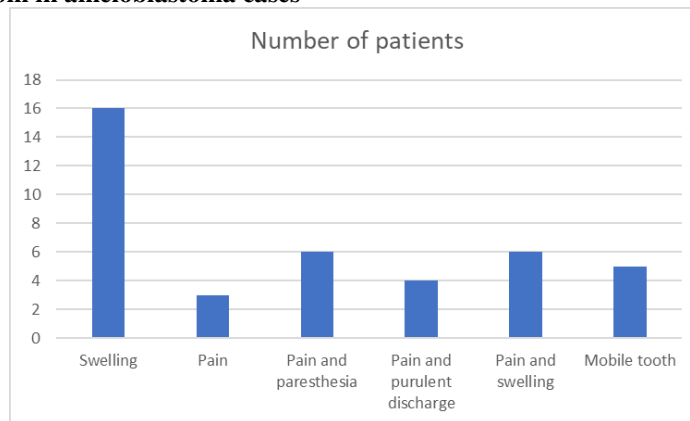
**Table 2: Distribution of ameloblastoma cases on the basis of site and type**

Histologic type	Maxilla				Mandible					
	Ant.	Premolar	Molar	Total	Ant.	Premolar	Molar	Angle	Ramus	Total
Follicular	1	2	4	7	1	1	7	2	1	12
Plexiform	-	-	1	1	-	-	4	3	1	8
Acanthomatous	-	1	-	1	-	2	3	-	-	5
Unicystic	1	-	-	1	1	2	2	-	-	5

**Table 3: Distribution of chief clinical symptom in ameloblastoma cases**

Chief Clinical symptoms	Number of patients	p-value
Swelling	16	0.21
Pain	3	
Pain and paresthesia	6	
Pain and purulent discharge	4	
Pain and swelling	6	
Mobile tooth	5	

**Fig 2: Chief clinical symptom in ameloblastoma cases**



**DISCUSSION:**

In the present study, we observed a total of 40 samples of ameloblastoma reported in the Department of Oral Pathology of the dental institute. Of the 40 samples, 22 were of males and 18 were of females. Swelling was the most frequent chief clinical symptom for ameloblastoma. Furthermore, it was observed that ameloblastoma is more commonly seen in mandible as compared to maxilla. The results were statistically non-significant and were consistent with previous studies. Gupta S et al compared the clinical, radiologic, and histopathological features of 28 intraosseous ameloblastomas. In addition, we compared the data obtained in this study with that of previous studies. Data with regard to age, gender, clinical manifestation, radiographic aspect, anatomical distribution, and histopathological subtypes were analyzed in 28 subjects. The patients' age ranged from 7 years to 65 years (mean, 30.4 years). Sixteen (57.14%) of the 28 subjects were males, and 12 (42.85%) were females. A total of 22 cases (78.5%) were located in the mandible, posterior region was more often affected with 17 cases (77.27%) than only 5 cases (22.72%) in the anterior segment. Swelling was the most common symptom and was experienced by 12 (42.85%) patients. Radiographically, 14 cases (50%) were multilocular with a well-demarcated border. Of the remaining 14 cases, 10 were unilocular and 4 were unknown in appearance. The most common histopathological pattern was follicular followed by plexiform or acanthomatous. They concluded that the clinical epidemiological profile to patients in the present

study is similar to that in other populations, with follicular ameloblastoma being the most common histological subtypes seen. Filizzola AI et al analyzed the clinicopathological features from a series of ameloblastomas diagnosed in a single Oral Pathology service in Brazil in an 8-year period. The files were revised and all cases diagnosed as ameloblastomas in the period were retrieved. All hematoxylin and eosin stained histological slides were reviewed and all clinical and radiological information were obtained through a review of the laboratory forms. Data were descriptively analyzed and a comparison was performed with the different ameloblastomas subtypes. Seventy ameloblastomas composed the final sample, including 57 (81%) solid/multicystic, 9 (13%) unicystic, 2 (3%) desmoplastic and 2 (3%) peripheral ameloblastomas. Mean age of the affected patients was in the fourth decade of life and there was a slight male predominance. Most tumors presented as multilocular radiolucencies, were located in the posterior mandible and showed the follicular and plexiform histological patterns. There was no difference on the mean age of the patients affected by solid and unicystic ameloblastomas. The study showed that the clinicopathological features of the ameloblastomas included in this Brazilian sample were similar to the features described in most other worldwide populations.<sup>7,8</sup> Siar CH et al analyzed the clinicopathologic characteristics of ameloblastoma in a Malaysian population. The study was a retrospective study (1993 through 2008) of consecutive ameloblastoma cases accessioned in 2 main

oral pathology diagnostic centers: the Unit of Stomatology, Institute for Medical Research and the Department of Oral Pathology, Oral Medicine, and Periodontology, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia. Data on patient demographics, tumor location, symptomatology, duration, radiographic appearance, preoperative diagnosis, clinicopathologic subtypes, treatment, and recurrence were analyzed. Three hundred forty cases of ameloblastoma were reviewed. These were from 197 male patients (57.9%) and 143 female patients (42.1%), with a male-to-female ratio of 1.4:1. A wide age range (7 to 85 years), mean onset age of  $30.3 \pm 16.3$  years, and peak incidence in the second decade of life were recorded. Most were mandibular tumors ( $n = 311/340$ , 91.5%). These consisted of 95 (28%) unicystic ameloblastomas, 221 (65%) solid/multicystic ameloblastomas, 22 (6.4%) desmoplastic ameloblastoma, and 2 (0.6%) peripheral ameloblastomas. Unicystic ameloblastoma (41.1%) and solid/multicystic ameloblastoma (52.0%) mostly affected Malays patients, whereas desmoplastic ameloblastoma (59.1%) was prevalent in Chinese patients. Unicystic ameloblastoma (56.8%) and solid/multicystic ameloblastoma (47.1%) occurred predominantly in the body and posterior mandible, whereas desmoplastic ameloblastoma (36.4%) preferentially involved the anterior jaw segment. Most tumors presented as multilocular radiolucencies (36.8%). Enucleation ( $n = 42/92$ , 45.7%) was the treatment of choice. About 18 cases (13.3%) presented with recurrence. They concluded that because ameloblastoma subsets differ in their biologic behavior, the data was significant as baseline references for clinicians and pathologists. Selvamani M et al analyzed the frequency and clinical features of multicystic ameloblastoma and its histological variants in South Indian sample population, as there is minute information available in the English literature. The study source was the biopsy specimens retrieved from the archives of the Department of Oral and Maxillofacial Pathology, College of Dental Sciences, Davangere, Karnataka, India, during the past 13 years, from 2001 to 2013. Clinical data for the study were obtained from the case records of patients and the analyzed clinical variables were age, gender and anatomical location. Histologically, hematoxylin and eosin stained sections fitting the World Health Organization (2005) criteria for diagnosis of multicystic ameloblastoma were selectively included. Of the 3026 biopsy reports analyzed, 103 cases were odontogenic tumors (3.4%) and 58 cases were ameloblastoma. 31 cases of multicystic ameloblastoma, including follicular ameloblastoma (54.8%), acanthomatous ameloblastoma (29%), plexiform ameloblastoma (6.5%), granular cell ameloblastoma (6.5%) and desmoplastic ameloblastoma (3.2%) were recorded. The age of the patients during the presentation of the lesion was ranging from 21 to 73 years, with a mean of 39.5 years. The most frequent clinical manifestation was swelling, followed by a

combination of pain and swelling. In our study, ameloblastoma showed distinct anatomic predilections for occurrence in mandible (96.8%) rather than maxilla (3.2%). This study results also indicated that there is geographical variation in the frequency and distribution of ameloblastoma.<sup>9,10</sup>

## CONCLUSION:

From the present study, baseline data for clinicopathological features of ameloblastoma for the study population is presented. The clinicopathological features of ameloblastoma the current study population are very similar to other populations.

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