

# Assessment of Various Histopathological Variants of Ameloblastoma among Kashmiri Population: A Retrospective Study.

Afreen Nadaf<sup>1</sup>, Sumiya Farooq<sup>2</sup>, Tajamul Hakim<sup>3</sup>

<sup>1</sup>MDS, Tutor, Department of Oral Pathology, Government Dental College & Hospital, Srinagar, Jammu & Kashmir, India.

<sup>2</sup>MD, Department of General Pathology, Government Medical College & Hospital, Srinagar, Jammu & Kashmir, India.

<sup>3</sup>MDS, Oral and Maxillofacial Surgery, Government Dental College & Hospital, Srinagar, Jammu & Kashmir, India.

Received: November 2017

Accepted: December 2017

**Copyright:** © the author(s), publisher. It is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Ameloblastoma is a locally invasive odontogenic tumour arising from the remnants of dental organ and dental lamina and is a highly destructive benign tumour of odontogenic origin. Nine percent of odontogenic tumours are ameloblastomas. **Methods:** The histological variants of Ameloblastomas are manifold, follicular, plexiform and acanthomatous are the most common ones among them. Ameloblastomas are classified radiologically into unilocular, multilocular and peripheral types. The present study is a descriptive retrospective study conducted to evaluate the histopathological variants of ameloblastoma. **Results:** The histopathological reports of the patients were reviewed for a period of 10 years. 40 patients were included in the study. Prevalence rate of 7.4% was seen. Age range of the patients of ameloblastoma was from 20-60 years. The most common age group was in the 3rd decade of life with more male predilection. **Conclusion:** The most common variant of ameloblastoma was of follicular variety. The most common site of occurrence of follicular ameloblastoma was posterior mandible.

**Keywords:** Ameloblastoma, Follicular, Odontogenic Tumour.

## INTRODUCTION

Ameloblastoma a locally invasive odontogenic tumour arising from the remnants of the dental lamina and dental organ or odontogenic epithelium. It is a highly destructive benign tumour of odontogenic origin and represents 9% of all odontogenic epithelium.<sup>[1]</sup> It has a strong tendency of recurrence in patients who undergo conservative surgical removal. Ameloblastoma has a rather contradictory histological and clinical behavior.<sup>[2]</sup> There has been a lot of work done using different immunohistochemical and biochemical methods to find out the proliferative activity and to find out the expression of metalloproteinase and growth factor receptors.<sup>[3]</sup> The histopathological grading of ameloblastoma can be done on the different variants of histological types of ameloblastomas among which the follicular and the plexiform type of ameloblastoma are more common frequently encountered types.<sup>[4]</sup> Ameloblastomas are classified

radiologically as unicystic, multicystic and peripheral types. While they are classified according to the histopathological variants as follicular, plexiform, acanthomatous and granular cell types, followed by basal cell ameloblastoma, desmo-plastic and clear cell variants, which are the uncommon forms of ameloblastoma according to its histological picture.<sup>[5]</sup> These categories of ameloblastoma are put into different categories on the basis of age when pre-sented site, clinical behaviour and radiographic features and prognosis.<sup>[6]</sup> Peripheral ameloblastoma are formed outside the bone and are slow growing pedunculated or sessile mass with no involvement of the underlying bone and appears on the gingiva and alveolar mucosa and intraosseous ameloblastoma arise in the jaw bone.<sup>[7]</sup> The present study is aimed at the various histo-pathological variants of ameloblastoma presenting to pathology unit of Govt. medical college & hospital Srinagar. The study will help the clinicians to determine the most common histopathological variant of this very aggressive locally invasive odontogenic tumour.

## MATERIALS AND METHODS

This retrospective study was conducted in the Department of General Pathology, Govt Medical

### Name & Address of Corresponding Author

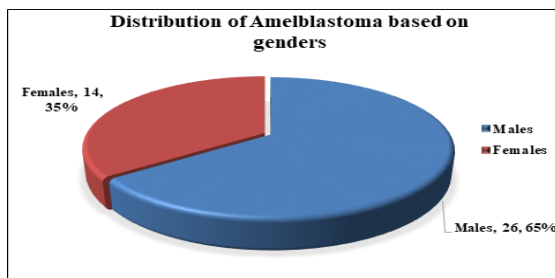
Dr. Afreen Nadaf  
MDS, Tutor, Department of Oral Pathology,  
Government Dental College & Hospital,  
Srinagar, Jammu & Kashmir, India.

College & Hospital Srinagar. The study duration was of 10 years i.e., from 2007 to 2016. A total of 540 cases with odontogenic tumors were reviewed from the department of general pathology for the period mentioned. The histopathological reports of ameloblastoma were categorized as follicular, plexiform, acanthomatous, basal cell, desmoplastic and granular cell types. The different genders, age groups of the patient, along with the histopathological variants and anatomic site were recorded from the department records. The data was entered in SPSS version 20 and analysed using descriptive statistics and later presented in the form of tables and figures.

**RESULTS**

**Table 1: Histopathological distribution of ameloblastoma according to age.**

Histopathological variant	Age group of patient in years				Total
	21-30	31-40	41-50	51-60	
Follicular	5	6	3	3	17
Plexiform	3	3	4	0	8
Acanthomatous	4	4	2	1	13
Granular	0	1	0	1	2
Basal	0	0	0	0	0
Desmoplastic	0	0	0	0	0
Total	12	14	9	5	40



**Figure 1: Histopathological distribution of Ameloblastoma according to genders.**

**Table 2: Histopathological variants of Ameloblastoma according to the location and gender.**

Histopathological variant	Mandible		Maxilla	
	Male	Female	Male	Female
Follicular	9	6	2	1
Plexiform	4	3	1	0
Acanthomatous	7	4	1	0
Granular	2	0	0	0
Basal	0	0	0	0
Desmoplastic	0	0	0	0
Total	22	13	4	1

In this study, of the total 540 odontogenic tumors, 40 patients with ameloblastomas were included with an overall prevalence rate of 7.4%. Males were predominantly affected with male:female ratio of 1.8:1 (26 males, 14 females). The age range of ameloblastoma was between 21-60 years but most of the ameloblastomas were seen in age group of 31-40 years, The most common histological variant was follicular ameloblastoma 42.5% followed by acanthomatous type (32.5%). Two of the patients reported with the most aggressive form of

ameloblastoma i.e., granular cell type. The predominant anatomical distribution of ameloblastoma was in the Mandible (posterior region) (87.5%) while maxilla (posterior region) was affected in 12.5% of the cases.

**DISCUSSION**

Ameloblastomas are of ectodermal origin. They arise from epithelium enriched with the potentiality of oncogenesis. There are many variants of ameloblastomas, but the cell type tends to mimic the ameloblast. There is variation in size and shape of cell from a tall columnar to a low cuboidal form, occasionally a squamous metaplasia and is pigmented. The tumour always arise as a solid tumour, which becomes cystic with age and development, except the melanoameloblastomas. The current concept of ameloblastoma is to define ameloblastoma into solid or multicystic types, unicystic subtypes, peripheral, and classical intraosseous types. The unicystic ameloblastoma has a less aggressive behaviour as compared to solid multicystic types which are locally aggressive and recur if the excision is not complete.<sup>[9]</sup> The recurrence rate affects the histopathological grading of ameloblastoma.<sup>[10]</sup> The recurrence rate of desmoplastic, plexiform, unicystic ameloblastomas are relatively high.<sup>[11]</sup> Socioeconomic conditions have an influence on the clinical and demographic outcomes, there are genetic factors which affect the pathogenesis of the different types of ameloblastomas and their outcome.<sup>[12]</sup> The follicular and plexiform patterns of ameloblastoma have similar growth patterns and locally invasive behavior but their recurrent rates are different.

In our study the prevalence rate of ameloblastoma was 7.4%. In a study conducted by Al Sheddi MA et al, ameloblastoma accounted for 25% of odontogenic tumors.<sup>[13]</sup> This is more than 11% to 18% suggested by Siar et al,<sup>[14]</sup> but still quite less than the percentage reported for populations in China and Egypt.<sup>[15-17]</sup>

In assessing the age distribution of all ameloblastomas in this study, age of incidence was in the 3rd decade of life which was similar to the studies of Ladeinde et al.<sup>[18,19]</sup> Other studies also showed age distribution during the second and third decades.<sup>[1,20]</sup>

Generally no gender preference for ameloblastoma is reported in the literature,<sup>[21]</sup> however in Thai population it showed slightly male predilection.<sup>[17]</sup> which was in accordance to our study, showing male predilection with a male:female ratio of 1.8:1. In agreement with virtually all previous studies, the mandible was by far the most common location for ameloblastoma.<sup>[22,23]</sup> Our study too showed 87.5% occurrence in posterior mandible while maxilla (posterior region) was affected in 12.5% of the cases. Our observation showed that follicular ameloblastoma was the most prevalent histological

variant with 42.5% in the present study and agrees with reports in the literature.<sup>[24-26]</sup> A study conducted by Muslim et al also showed similar results.<sup>[19]</sup> This was followed by acanthomatous type (32.5%). Two of the patients reported with the most aggressive form of ameloblastoma i.e., granular cell type (64.9%). It should be noted however that in some cases the assessment of predominant histological pattern is undoubtedly subject to some degree of sampling error since it is well known that large ameloblastomas often show a mixture of several histological patterns. Consequently, an accuracy of assessment with respect to the predominant histological subtype based on small biopsy specimen may be questioned.

## CONCLUSION

The present study concludes that follicular type was the most common histopathological variant of ameloblastoma followed by acanthomatous and plexiform types. The most common age range was in the 3rd decade of life with more male predilection. The most common site of occurrence of follicular ameloblastoma was in the mandible. The findings resulted in better understanding of the pattern of ameloblastoma in Kashmiri population. The research on the patterns of this tumor is essential to provide information for the effective management of the tumor.

## REFERENCES

- Reichert PA, Philipsen HP, Sonner S. Ameloblastoma: biological profile of 3677 cases. *Eur J Cancer B Oral Oncol.* 1995; 31B: 86-99.
- NG KH Siar Ch. Peripheral ameloblastoma with clear cell differentiation. *Oral Surg, Oral medicine, and Oral Pathology.* 1990;70:210-13.
- Payers MR Santanafilhom, Lauxenis, Barbachanj. Quantitative analysis of Argyrophilic nucleolar organizer regions and epidermal growth factors receptors in ameloblastoma. *J oral Pathol med.* 2007;36:99-104.
- Ueno S, Mushimoto K, Shirasu R, Prognostic evaluation of ameloblastoma based on histologic and radiographic typing. *Journal of oral & maxillofacial surg.* 1989;47:11-15.
- Nakamura N, Mitsuyasu T, Higuchi Y, Sandra F, Ohishi M. Growth characteristics of ameloblastoma involving the inferior alveolar nerve: A clinical and histopathological study. *Oral surg oral med oral Patol oral radiol endod* 2001;91:557-62.
- Reichert PA, Philipsen HP, Sciubba JJ. The new classification of head and neck tumours (WHO): any change? *Oral oncology* 2006; 42(8):757-20.
- Ccankurtaran Ceylan Z, Chiosea Simion, Barnes E, Leon JR, Branstetter, Barton F. Ameloblastoma and Dentigerous cyst associated with impacted mandibular third molar tooth. *Radiographic* 2010; 3:1415-20.
- Myron S. Aisenberg. Histopathology of Ameloblastomas. *Oral Surg Oral Med Oral Path* 1953(6):1111-1128.
- Robinson L, Martinez MG. Unicystic ameloblastoma: A Prognostically distinct entity. *Cancer* 1977; 40:2278-85.
- Hong J, Yun PY, Chung IH, Myoung H, Suh JD, Seo BM, Lee JH, Cheung PH. Longterm follow up on recurrence of 305 am-eloblastoma cases. *Int J Oral Maxillofac Surg* 2007; 36:283-88.
- Ghandhi D, Ayoub AF, Anthony M, MacDonald G, Brocklebank LM, Moos KF. Ameloblastoma: a surgeon's dilemma. *J Oral Maxillofac Surg* 2006; 64(7):1010-14.
- Butt FM, Guthua SW, Awange DA, Dimba EA, Macigo FG. The pattern and occurrence of ameloblastoma in adolescents treated at a university teaching hospital in Kenya; A 13 year study. *J craniomaxillofac surg*; 2012;40:39-45.
- AlSheddi MA, AlSenani MA, AlDosari AW. Odontogenic tumors: analysis of 188 cases from Saudi Arabia. *Ann Saudi Med.* 2015; 35: 146-50.
- Siar CH, Lau SH, Ng KH. Ameloblastoma of the jaws: a retrospective analysis of 340 cases in a Malaysian population. *J Oral Maxillofac Surg.* 2012; 70: 608-15.
- Jing W, Xuan M, Lin Y, et al. Odontogenic tumours: a retrospective study of 1642 cases in a Chinese population. *Int J Oral Maxillofac Surg.* 2007; 36: 20-25.
- Tawfik MA, Zyada MM. Odontogenic tumors in Dakahlia, Egypt: analysis of 82 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2010; 109: 67-73.
- Intapa C. Analysis of Prevalence and Clinical Features of Ameloblastoma and its Histopathological Subtypes in Southeast Myanmar and Lower Northern Thailand Populations: A 13-Year Retrospective Study. *Journal of Clinical and Diagnostic Research.* 2017 Jan, Vol-11(1): ZC102-ZC106.
- Ladeinde AL, Ajayi OF, Ogunlewe MO, Adeyemo WL, Arotida GT, Bamgbosn BO, Akin JA: Odontogenic tumours: A review of 319 cases in a Nigerian teaching hospital. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005;99:191-95.
- Muslim khan et al; Histopathological variants of ameloblastoma — A study. *Pakistan oral & dental journal* vol 37, no. 2 (april-june 2017);235-37.
- Darshani Gunawardhana KS, Jayasooriya PR, Rambukewela IK, Tilakaratne WM. A clinico-pathological comparison between mandibular and maxillary ameloblastomas in Sri Lanka. *J Oral Pathol Med.* 2010; 39: 236-41.
- Dhanuthai K, Chantarangsu S, Rojanawatsirivej S, Phattaratatip E, Darling M, Jackson Boeters L, et al. Ameloblastoma: A multicentric study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2012;113:782-88.
- Darshani Gunawardhana KS, Jayasooriya PR, Rambukewela IK, Tilakaratne WM. A clinico-pathological comparison between mandibular and maxillary ameloblastomas in Sri Lanka. *J Oral Pathol Med.* 2010; 39: 236-41.
- Qannam A. Ameloblastoma: Analysis of 76 cases from a university-based biopsy service in Saudi Arabia. *Pakistan Oral & Dental Journal* 2016.36, No. 2: 210-13.
- Adebiyi KE, Odukoya o, Taiwo EO: Ectodermal Odontogenic Tumours: analysis of 197 Nigerian cases. *Int J Oral Maxillofac Surg* 2004, 33:766-770.
- Regezi JA, Sciubba J: Odontogenic Tumors. In *Oral pathology. Clinical-pathologic correlations* Philadelphia: Saunders; 1999:323-356.
- Adebiyi KE, Ugboko VI, Omoniyi-Esan GO, Ndukwe KC, Oginni FO. Clinicopathological analysis of histological variants of ameloblastoma in a suburban Nigerian population. *Head Face Med.* 2006;2:42.

**How to cite this article:** Nadaf A, Farooq S, Hakim T. Assessment of Various Histopathological Variants of Ameloblastoma among Kashmiri Population: A Retrospective Study. *Ann. Int. Med. Den. Res.* 2018; 4(2): DE06-DE08.

**Source of Support:** Nil, **Conflict of Interest:** None declared