

## Ameloblastoma: A Clinicopathological Retrospective study .

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### Abstract

**Objectives:** The aim of the present study was to analyze the clinicopathological features from a series of ameloblastomas diagnosed and treated in our department.

**Study Design:** The records of all ameloblastoma patients were revisited and their clinical and radiological and histological information were obtained. Data were descriptively analyzed and compared with respect to different ameloblastoma subtypes.

**Results:** Thirty ameloblastomas composed the final sample, including 24 (72.5%) solid/multicystic, 4(12%) unicystic, 1 (3%) desmoplastic and 1 (3%) peripheral ameloblastomas. Mean age of the affected patients was 38 years of life an. Most tumors presented as multilocular radiolucencies and were located in the posterior mandible and showed the follicular and plexiform histological patterns..

**Conclusions:** The clinicopathological features of the ameloblastoma patients in our study group were almost similar to the studies done on other worldwide populations.

**Key words:** Ameloblastoma, solid, unicystic,

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### I. Introduction

Ameloblastoma is a benign, locally aggressive odontogenic tumor that has a close histopathologic resemblance to the enamel organ. It belongs to the group of tumors arising from odontogenic epithelium with mature fibrous stroma without odontogenic connective tissue according to the World Health Organization (WHO) Classification of Odontogenic Tumors in 2005. Ameloblastoma is divided into 4 types: unicystic, solid/multicystic, desmoplastic, and peripheral.<sup>1</sup> It is believed to originate from remnants of tooth-forming apparatus, such as developing enamel organ, odontogenic rests, reduced enamel epithelium and the epithelial lining of odontogenic cysts, especially dentigerous cysts, or from the basal epithelial cells of the oral mucosa.<sup>2,3</sup> Ameloblastoma ranks as the most common odontogenic tumor in Asia and Africa, whereas odontoma is listed as the most common odontogenic tumor in Europe and America.<sup>4-6</sup> The average age of patients afflicted with ameloblastoma in industrialized countries was 39.1 years, whereas in developing it was 27.7 years.<sup>7,8,9</sup>

The aim of the present study was to analyze the clinicopathological features of ameloblastoma patients diagnosed and treated in Oral and Maxillofacial department Government Dental College Srinagar.

### II. Materials And Methods

We carried out a retrospective study in a series of ameloblastoma cases using their clinical charts, radiological records and histology slides and reports. We used 30 cases of ameloblastomas whose clinical, radiological and histological record along with paraffin blocks was available..

For the clinical study, we collected data regarding the patients' gender and age, as well as anatomical location, symptoms and time of lesion development and radiological feature. For the histomorphological study, slides were revisited in pathology laboratory for confirmation and inference.

### III. Results

From the 30 selected ameloblastomas 24 (72.5%) were diagnosed as solid/multicystic, 4 (12%) unicystic, 1 (3%) desmoplastic and 1(3%) peripheral. 16 patients (56%) were males and 14 (44%) females. Average age of all patients was 36 years (ranging from 16 to 70 years) and there was no statistically significant difference on the mean age of males (38 years) and females (35 years). Age of the patients affected by both peripheral (65 years) and desmoplastic (48 years) ameloblastomas was higher than mean age of the patients affected by the other two subtypes.

One third of the patients reported symptoms associated with the tumors, including especially swelling, pain and discharge. Mandible was affected in 88% of the cases, maxilla in 9% and the posterior region of the

mandible was affected in 26 cases (78.5%), in contrast with the anterior region 1 case 3%, 3 cases in maxilla 9%). 70% have multilocular radiological appearance while 20% were unilocular, 6% were mixed and 3% have no radiological presentation. Radiological limits were considered well defined and ill-defined in, respectively, 80% and 20% of the cases. Root resorption was encountered in 48% of the tumors located in close proximity with the adjacent teeth. The greatest radiological diameter of the tumors ranged from 4 to 90 mm (mean of 46.2 mm).

Most common histological pattern found in solid ameloblastoma follicular followed by plexiform {16 (64%) and 8 (32%)}, respectively. The 4 unicystic ameloblastomas were characterized by mural (3, 9%) and luminal (1, 3%) growing pattern and the 1 peripheral ameloblastomas were characterized by the presence of both follicular and plexiform histological subtypes.

Mean greatest diameter of solid (44.8 mm) and unicystic (35 mm) ameloblastomas were not statistically significant different. Females and males presented tumors with mean greatest diameter of 47.6 mm and 45.2 mm, respectively. There were also no statistically significant differences on the mean greatest diameter of the tumors when comparing patients with or without symptoms, with unilocular or multilocular radiolucencies, and tumors presenting follicular or plexiform histological patterns.

#### **IV. Discussion**

Apart from being classified as benign entities, these tumors can present local infiltrative growth and are able to produce extensive bone destruction and infiltration to the surrounding soft tissues. There are also some histologically benign ameloblastomas producing regional and distant metastasis (malignant ameloblastomas) and some malignant ameloblast-derived neoplasms (ameloblastic carcinomas) showing some histological characteristics superimposed to the ones found in ameloblastomas, bringing additional difficulties on their differential diagnosis. Thus it is very important to have early and accurate diagnosis for better management of ameloblastoma and its malignant counterparts.

Reichert et al.<sup>10</sup> reviewed the biological profile of 3677 ameloblastomas; the largest series so far. The age of patients in their series ranged from 4 to 92 years. Our data were in accordance with this range. In our study average age of all patients was 36 years (ranging from 16 to 70 years) and there was no statistically significant difference on the mean age of males (38 years) and females (35 years). The peak incidence in Asia fell in the third decade of life as compared with the fifth decade of life in North America. The explanation for the lower average age of patients with ameloblastoma may reflect poor nutrition and reduced access to the health care system in developing countries, as proposed by Dodge's concept<sup>11</sup>, however it may not be entirely applicable. The present study revealed an almost equal gender distribution, which is also in accordance with previous studies<sup>10</sup>.

The mandible is the site of predilection for odontogenic tumors, including ameloblastoma. In the present study, 27 cases (81.66%) of intraosseous ameloblastomas were encountered in the mandible. This figure is comparable with the 87.3% reported in a Korean study<sup>14</sup>, 87.8% in a Sri Lankan series,<sup>16</sup> 93.0% in a US data<sup>8</sup>, 93.5% in a Kenyan study<sup>19</sup> and 93.9% in a Thai study.<sup>13</sup> In our study, the ratio of mandible: maxilla ranged from 9:1, compared with 3:1.00 to 6:1.00 in North America. Sriram and Shetty<sup>9</sup> reported the mandible: maxilla ratio as high as 18:1.0

Most cases (78.5%) were located in the premolar/molar region of the mandible and about 70% were multilocular in radiological appearance. This finding is consistent with studies by Sirichitra and Dhiravarangkura,<sup>13</sup> Kim and Jang,<sup>14</sup> and Buchner et al.<sup>8</sup> The reason why mandible, particularly the premolar/molar region, is the favored site for ameloblastoma is still unknown. However, Adeline and coworkers<sup>15</sup> found that the angle-ramus region was the most common site of ameloblastoma. Studies revealed that multilocular radiolucencies outnumbered unilocular radiolucencies,<sup>13,15</sup> whereas the contrary was true for others.<sup>12,14</sup> In Asia, except Korea, multilocular radiolucency outnumbered unilocular radiolucency, whereas the contrary was true for North America.<sup>17</sup>

A previous study by Kim and Jang<sup>14</sup> also supports this finding. Desmoplastic ameloblastoma has been reported to account for 0.9% to 13.0% of all ameloblastomas.<sup>14</sup> In the present study, desmoplastic ameloblastoma accounted for 3.1% of all ameloblastomas.

Regarding the histopathologic features, the follicular and plexiform patterns were the most common patterns, similar to previous reports.<sup>10,13,14,17</sup> The follicular pattern by far is the most common histopathologic pattern encountered. Peripheral ameloblastoma has been reported to account for 0.5% to 9.3% of all ameloblastomas.<sup>3-17</sup> In the present study, peripheral ameloblastoma accounted for 3.1% of all ameloblastomas.

#### **V. Conclusion**

Ameloblastoma is a benign, locally aggressive odontogenic tumor. It mostly affects patients in the third to the fifth decades of life, with no gender predilection. The mandible, especially the posterior part, is the site of predilection. Radiographically, ameloblastomas mostly appear as multilocular or unilocular radiolucencies. The

most common histopathologic pattern found in ameloblastoma is the follicular followed by plexiform pattern. In comparison to previous studies, there were no significant differences in age, gender and radiographic features.

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