

ORIGINAL ARTICLE

Radiographic Appearance and Root Resorption Caused by Ameloblastoma in patients attending Teaching Institute of DentistryRUQQIA JEHAN¹, MUHAMMAD SHOAIB², MUHAMMAD ALI³, JAVERIA AFZAL⁴, ASIF NOOR⁵, MUHAMMAD JAMIL⁶, MUSTAFA SAJID⁶¹Senior Registrar, Department of Oral & Maxillofacial Surgery, CIMS Dental College CMH Multan²Assistant Professor, Department of Oral & Maxillofacial Surgery, Multan Medical and Dental College Multan³Assistant Professor, Department of Community Dentistry, CIMS Dental College CMH Multan⁴Assistant Professor, Department of Community Dentistry, Multan Medical and Dental College Multan⁵Associate Professor, Department of Community Dentistry, Multan Medical and Dental College Multan⁶Professor, Department of Operative Dentistry, CIMS Dental College CMH Multan⁷Associate Professor, Department of Operative Dentistry, Multan Medical and Dental College MultanCorrespondence to Dr. Muhammad Shoaib, Email: risingrock_star2006@hotmail.com**ABSTRACT****Background:** Odontogenic tumors represent the heterogeneous organization of lesions with numerous histopathological characteristics and medical manifestations. Ameloblastoma is real neoplasm of odontogenic epithelium, constitute one percentage of oral complete ectodermal tumors & 9percentage of an odontogenic tumors⁴. This tumor is benign, which suggests the insidious slowly increase, regionally aggressive having excessive recurrence rate⁵**Aim:** To evaluate radiographical features and root resorption among patients of Ameloblastoma reporting to Dept. of OMFS**Study Design:** Descriptive Cross-Sectional Study**Place and duration of study:** Department of Oral and Maxillofacial surgery, Multan Dental College Multan. Duration of this study was 2 years from 1st Jan 2021 to 31st Dec 2022.**Methodology:** A descriptive audit including all patient records with a histo-pathologically confirmed report of ameloblastoma based on the routine Hematoxylin and Eosin stain. Consecutive non-probability sampling technique was used.**Results:** One hundred and forty people with an ameloblastoma were contained within our study amongst whom 45(32.1%) were female and 95(67.9%) were men. 123(87.9%) lesions were found in the mandible. Swelling was mostly told symptoms in 137(97.8%) of all cases. 76(54.3%) showed root resorption. Radiographically, the multilocular appearance accounted for 97(69.3%) while uni-locularity was present in 43(30.7%) of the lesions.**Practical implication:** This study help in diagnosis of amelolastoma. This also guides the clinician to differentiate different forms of aelolastoma and differentially diagnose from other radiolucent lesions.**Conclusion:** This study pointed that ameloblastoma was seen more in men when compared with females Most cases showed root resorption. Mostly ameloblastomas were of multi-locular form/pattern with posterior are of lower jaw as most frequent site involved.**Keywords:** Ameloblastoma, features, radiolucency & Multi-locular**INTRODUCTION**

Odontogenic tumors initiated from tooth or enamel making apparatus, both one epithelial or ectomesenchymal or those each, represent the heterogeneous organization of lesions with numerous histopathological characteristics and medical manifestations¹. Ameloblastoma, odontomas and keratocyst odontogenic tumors are among 3 most common odontogenic tumors^{2,3}. Ameloblastoma is real neoplasm of odontogenic epithelium, constitute one percentage of oral complete ectodermal tumors & 9percentage of an odontogenic tumors⁴. This tumor is benign, which suggests the insidious slowly increase, regionally aggressive having excessive recurrence rate⁵.

Ameloblastoma may be visible in each gender equally. The most typical region is posterior area/sector of lower jaw having mandibular to maxilla ratio 5:1⁶. This lesion is asymptomatic in lots of instances and observed with the aid of using daily basis radiographic examination. Clinically there may be swelling and jaw bone's expansion⁷. Adeline concluded of their look at that the commonly renowned symptoms and signs of ameloblastoma have been swelling (98%), tooth's mobility (57%) and ache (36%). Posterior area of lower jaw became typically affected whereas maxillary ameloblastoma tended to seen at anterior sites⁸. Outcomes of that study done by Liu et al confirmed that ameloblastoma arise maximum normally in mandible (81%) while much less in maxilla (19%)⁹. Ameloblastoma might present radiographically as unilocular or multi-locular lesion and root resorption isn't always unusual^{10,11}. Christopher's team confirmed that of all known ameloblastoma instances 42% have been unilocular and 58% have been multilocular when seen on radiograph, with the root resorption in 42 % of instances¹².

Primitive mouth is covered with the aid of stratified squamous epithelium termed as an oral ectoderm¹³. An oral hollow space is functionally versatile, acting numerous obligations bearing on respiratory, phonation & digestion¹⁴. Due to the practical needs located at the oral hollow space, it histologically accommodates of predominantly non-keratinized stratified squamous epithelium¹⁵.

Ameloblastoma happens in sufferers between 20 & 50 years of age typically with the height occurrence in fourth and 5th decades. Its prevalence in babyunder12-months age have additionally been notified. In an evaluation by only just 1.8% of the sufferers have been more youthful than 10 years. It became pronounced that the median age became 35.9 years where-as the average age at the beginning analysis from evolved nations became 39.1 years in comparison to 27.7 years in sufferers from growing countries¹⁸.

Clinically, because of its intraosseous starting place with minimum or no symptoms & signs, ameloblastoma as are therefore, scarcely recognized early. The ameloblastoma looks like as a gradual developing and painless mass that can attain a good-sized length with swelling being the number one subject in maximum of the sufferers. Other symptoms and signs which seems later consist of ache due to super infection, toothache, nearby paraesthesia in few exceptional instances, tooth/enamel mobility and superficial ulceration of the oral mucosa. Bleeding in the mouth, that extraction site which fails to heal and speedy increase of a lump with inside the jaw have additionally been seen. In the extra unusual maxillary lesions, invasion of the maxilla, epistaxis or cheek's swelling were also told as presenting symptoms¹⁹.

An etiology of ameloblastoma stays ambiguous. A range of viable causal elements were implicated including: Infections or few traumas were taken into consideration to have a widespread role²⁰. Nutritional deficiencies consisting of rickets were taken into consideration even-though this has now no longer been proved in

Received on 03-01-2023

Accepted on 08-02-2023

experimental animals on rachitogenic diet²¹. Systematic management of cancer agents mainly N-methyl-N-nitrosurea answer has been proven to reason proliferation of ameloblastoma in animals indicating that cancer agent can be among causal factors²². Viral pathogenesis also indicated by Stanley's team (1964), in animal experiments in 1966 by Main and Dave. They observed neoplastic growths alleged to be counterparts of ameloblastoma with the aid of using injection of the polyoma virus²³. This study will help the clinician to diagnose ameloblastoma on the basis of radiographic features of the lesion and adjacent teeth.

The objective of the study was to evaluate radiographical features and root resorption among patients of Ameloblastoma reporting to department of OMFS, Multan Dental College Multan.

METHODOLOGY

This cross-sectional study was 2 years duration (1st Jan 2021 to 31th Dec 2022) was done at OMFS department, Multan Dental College Multan. Consecutive non-probability sampling technique used was. By using WHO calculator for 19% proportion, 95% confidence level and margin of error was 6.5%, the sample size came out was 140.

Inclusion Criteria: All the histopathologically identified people with ameloblastoma, including both genders, age group eighteen to fifty-five years were contained within study.

Exclusion Criteria: Recurrent ameloblastoma cases were left out. Ethical Review institutional Committee approved our study. All patients gave informed consent. Clinical & radiographical examinations were performed after detailed history. PNS, CT scan & OPG were included in radiographic investigations. Local/ general anesthesia was used to take biopsy and was directed to a single pathologist. Data was placid using Performa which bring together, patient's data (biographical) & those variables for instance, site of said lesion, radiological presentations.

SPSS Version-17 was utilized for analysis. Frequency plus percentages were premeditated for those categorical variables like gender, radiological features & resorption of root. Mean±SD was likewise calculated for those numerical variables like age. Common radiological features were then stratified amongst age plus gender to see if any effect modifiers. Post-stratification chi-square test was then applied keeping p value as <less than or = 0.05 as significant.

RESULTS

One hundred and forty people with an ameloblastoma were contained within our study amongst whom 45(32.1%) were female and 95(67.9%) were men. Figure 1. Overall range of age being 18-55 years. Age group 26-36 was mostly commonly affected with 65(46%) of cases. Cases showing age beneath thirty-six years were significant with 77(55%). Frequency of an ameloblastoma by this age-groups is revealed in Table 1.

Table 1: Distribution of an ameloblastoma according to the age group

Age	Frequency	Percent
15-25	12	8.6
26-36	65	46.4
37-47	48	34.3
48-58	15	10.7
Total	140	100.0

Swelling was mostly told symptoms in 137(97.8%) of all cases. Pain was in only 17(12.14%) partakers, among whom 12(8.5%) were mild, 5(3.6%) were complaining moderate pain and none was with severe/extreme pain. While antiquity of mobile tooth was verified in 73(52.1%) of all cases (Figure 2).

A Multi-locular presence was mostly common radio-graphic aspect recorded accounting for 97(69.2%) cases despite the fact uni-locular lesions accounted for 43(30.7) of those lesions. There

was, nevertheless no statistical-significance of those radiological features with gender (P>0.05) (Figure 3).

There was, nevertheless no statistical-significance of root resorption with gender & age where p values were 0.604& 0.292 respectively. Root resorption between various age groups is presented in Table 2. Root resorption for gender is presented in Table 3

Figure 1: Gender-wise distribution of participants

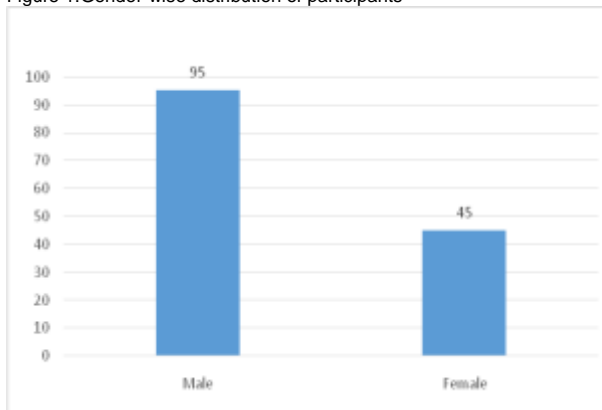


Figure 2: Percentages of commonly reported symptoms of ameloblastoma

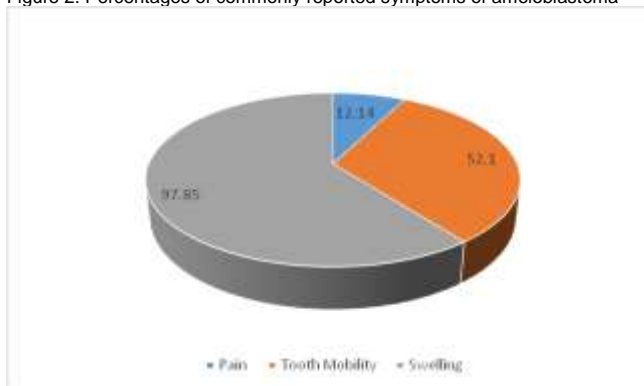


Figure 3: Gender-based distribution of pattern of ameloblastoma

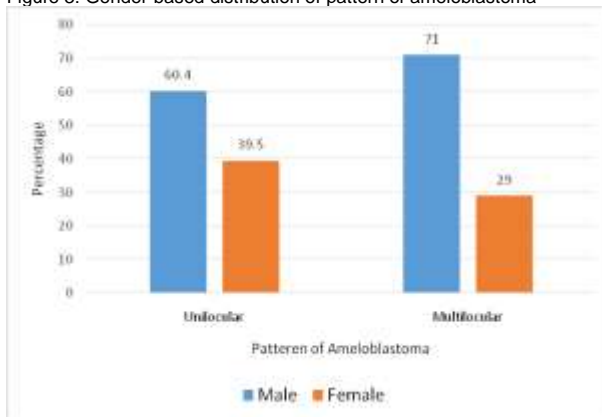


Table 2: Root resorption between various age groups (years)

Age group	Root resorption		Total
	No	yes	
15-25	7(10.9%)	5(6.6%)	12(8.6%)
26-36	25(39%)	40(52.6%)	65(46.4%)
37-47	26(40.6)	22(29%)	48(34.2%)
48-58	6(9.3%)	9(11.8%)	15(10.7%)
Total	64(45.7%)	76(54.3%)	140(100%)

Chi square test P value .292

Table 3: Root resorption for gender

Gender	Root resorption		Total
	No	Yes	
Female	22(34.3)	23(30.2%)	45(67.8%)
Male	42(66%)	53(70%)	95((32.1%)
Total	64(45.7%)	76(54.3%)	140(100%)

P value .604

DISCUSSION

Ameloblastoma, an odontogenic benign tumor of epithelial beginning that reveals an aggressive local behaviour with an excessive degree of recurrence²⁴. Of all notified swellings of mouth, odontogenic tumors are 9% and inside this group, ameloblastoma bills for 1 per cent of lesions²⁵. Ameloblastoma happens with identical frequency in each gender and less common in upper jaw than lower²⁶. It can arise in 3specific clinico-radiographic patterns, the traditional intra-osseous/multicystic (86%), unicystic (13%) and peripheral (1%). A histological category subdivides into plexiform, an acanthomatous, granular& follicular ameloblastoma²⁷.

Several reviews on ameloblastoma had posted with research is playing that ameloblastoma happens with identical frequency in woman and males^{28, 29}. The present research disclosed a slight men preponderance which is synchronized with that study done by Tatapudi et al³⁰ while preponderance for woman is reported in researches done in Mexico plus Chile^{31,32}. Age group of 26-36 become maximum normally affected with sixty-five sufferers (46.4% of those cases). This agrees with outcomes of that research done by shoor & colleagues³³, in which a mean age was 37.57 year, whilst a study of Arotiba and his team, age group of sufferers were among 18 and 19 years (44%)³⁴.

Regarding place of these lesion, 87.85% have been determined inside lower jaw whilst 12.14% have been placed inside upper jaw. There is harmony within literature that this ameloblastoma extra often have an effect on lower jaw bone, mainly in its posterior vicinity³⁵. The posterior lower jaw become maximum reported area in our research. Ladeinde along with colleagues observed that mostly common site of ameloblastoma's occurrence is that posterior zone/sector of lower jaw bone (pre-molar region/zone)³⁶. Lesion within anteriorly placed segment, crossing that midline in upper jaw bone was publicized in some of cases. Regarding that anatomic site of this occurrence, prevalence of lesion of upper jaw bone is much less drastically amongst posted research^{37,38}.

Earlier reports by Kaneda and Ueda in 1991, decided that previously documented cases of radio resistance ameloblastoma early on was because of less sufficient and effective radiation-therapy. Radio sensitivity of tumor has been verified by utilization of mega-voltage radiotherapy &henceforth postulations regarding radiotherapy in the conjunction with a surgery may well have place in managing of those selected patients. Chemo-therapy has been in use for patients with the recurrent tumors as well. Difference in reply to several treatment modalities could be because of variation of proliferative activity inside &b/w different tumors. Undoubtedly identifying indicators in an ameloblastoma to forecast biology of tumor could indicate utilization of the combination therapy in order to treat an ameloblastoma.

Swelling become the maximum normally pronounced signs, in 99.9% partakers of the prevailing look at with related signs like purulent discharge, any paresthesia, tooth/enamel mobility& pain. Among less often pronounced signs, ulceration (superficial), bleeding as a result of trauma while/during eating, trismus and socket that fails to heal have been publicized. This was same as that observation of Kim et al³⁹. Few sufferers presented with simplest gradual developing swelling that is steady with research finished by Adeline⁸and Simon⁴⁰.

Radiological capabilities on this look at confirmed that Multilocular look become the maximum noted radiographic features/ changes comprising 69.2 cases whilst unilocular lesion for 30.7% of cases. There becomes no statistical importance of the

radiological capabilities with gender. Most research reinforce the concept that ameloblastoma are mainly and especially characterised through Multi-locular radiolucencies, that is synchronized with our outcomes⁴¹⁻⁴³. A study of Kim contradicts our outcomes where he detected 59.2% of all lesions were uni-locular with a fine demarcated boundary. Of remaining cases, 14 have been classified as Multi-locular and thirteen have been unknown in look³⁹. In one study of Montes, comparable outcomes with chiefly uni-locular lesions have been noted/observed⁴⁴.

This study will help the clinician to differentiate the ameloblastoma from the other lesions on the basis of radiographic features of the lesion. This study also demonstrates the invasiveness of the lesion regarding resorption of adjacent teeth. There are very few studies done in Pakistan regarding ameloblastoma.

CONCLUSIONS

This study pointed that ameloblastoma was seen more in men when compared with females and showed peak in 2ndas well as 3rd decades of one's life, partakers who were beneath 30 years age formed more than half of those cases. Pain-less inflammation was typically reported symptom attributing to that late diagnosis of these lesions. Mostly ameloblastomas were of multi-locular form/pattern with posterior are of lower jaw as most frequent site involved.

Conflict of interest: Nil

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