

Evaluation Of Prevalence Of Odontogenic Tumours And Cysts At Maxillofacial Area

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Abstract

Aim: To evaluate the prevalence of odontogenic tumours and cysts of maxillofacial area.

Materials & methods: Eighty cases of odontogenic tumours and cysts of maxillofacial region is reported to the department of Oral and Maxillofacial Surgery were included for the study. The extent of the lesion, size, location and related with adjacent structures was noted. All cases were managed in department of oral surgery.

Results: Among tumors ameloblastoma found in 18 (22.5%), Keratocystic odontogenic tumor(KCOT) in 8 (10%), Calcified epithelial odontogenic tumour (CEOT) in 3 (3.75%), complex odontoma in 2 (2.5%), compound odontoma in 7(8.75%), odontogenic fibroma in 3 (3.75%), cementoblastoma in 1 (1.25%), primary intraosseous squamous cell carcinoma in 2 (2.5%) and ameloblastic carcinoma in 1 (1.25%), fibrosarcoma 2 (2.5%). Cysts were radicular cyst in 13 (16.25%), residual cyst in 6 (7.5%) and dentigerous cyst in 14 (17.5%). A significant difference was observed ($P < 0.05$). Conservative management was performed in 19 (23.75%), excision in 31 (38.75%), enucleation in 22 (27.5%), en bloc resection in 4(5%) and marsupialisation in 4 (5%). A significant difference was observed ($P < 0.05$).

Conclusion: Maximum cases were seen in age group 18-27 years, males had higher prevalence than females. Most common benign tumour was ameloblastoma and cyst was radicular cyst.

Key words: Benign tumours, odontogenic tumors, Mandible

Introduction

Odontogenic tumors (OT) are a group of heterogeneous lesions derived from epithelial or ectomesenchymal tissues or both. The formation of odontogenic tumor and cysts may or may not proceed tooth formation.¹ As defined by World health organisation (WHO) odontogenic tumors (OT) are a group of heterogeneous lesions derived from epithelial or ectomesenchymal tissues or both, which are part of the tooth-forming apparatus.^{2,3}

Most common cystic lesions of maxillofacial region are radicular cyst, residual cyst, odontogenic cyst, dentigerous cyst, or keratocystic odontogenic tumour (KCOT) etc.⁴ Most common benign tumour of jaw is odontoma followed by ameloblastoma.⁵ The origin of odontogenic tumours (OTs) is epithelial, ectomesenchymaland/or mesenchymal elements of the toothformingtissues.^{1,6} Timely modification in classification of odontogenic tumours have found to be effective. Addition of Adenoid odontogenic tumour (AOT) has been performed in odontogenic tumors by WHO in year 2005. These odontogenic tumours constitute 1% of all biopsied lesions of jaws.⁷

The main reason for cysts such as radicular cysts of maxilla or mandible is dental caries or dental trauma to tooth.⁸ The most common site is maxillary anterior region and it is mainly encountered in young adults. There is no gender predilection and both males and females have equal chances of its occurrence.⁹ Residual cysts may result from incomplete removal of cyst by surgeons. Dentigerous cysts are developmental cyst associated with unerupted or impacted teeth.¹⁰ The favourable site of its presence is mandibular third molar or ramus region. Considering this, the present study was conducted to assess frequency of odontogenic tumours and cysts of maxillofacial region.

Materials and Methodology

A total of 80 odontogenic tumours and cysts of maxillofacial region in reported to the department of Oral and Maxillofacial Surgery were recruited for the study. The time duration of the study was 1 year. These lesions were seen in age ranged 18-57 years of either gender. Specimens which were obtained in oral pathology department were also enrolled for the study.

The ethical approval was obtained from Institutional review and ethical committee. Written consent of patients was obtained.

All relevant clinical features, location, gender was recorded. They were also classified based in age groups. Cases were subjected to CBCT scan obtained with Newtom CBCT machine operating at 120 kVp, 12 mA, with exposure of 18 seconds. Multiplanar reformation (MPR) was done and all planes such as axial, sagittal and coronal sections were obtained. CBCT analysis was performed by an expert oral and maxillofacial radiologist with 5 years of experience. The size, extent of the lesion, location and association with adjacent structures was recorded. All cases were managed in oral surgery department. All patients were followed regularly for 4 months. Any recurrence of lesion was noted. Complications of surgery, if any were recorded. Results of the study were subjected for correct statistical inference using Mann Whitney U test. Level of significance was below 0.05.

Results

Table 1 show that age group 18-27 years had 48, 28-37 years had 31, 38-47 years had 12 and 48-57 years had 3 cases. A significant difference was observed ($P < 0.05$). Table 2 shows that out of 80 lesions, male had 50 (62.5%) and female had 30 (37.5%). A significant difference was observed ($P < 0.05$).

Table 3, shows that common tumors found were ameloblastoma in 18 (22.5%), Keratocystic odontogenic tumor(KCOT) in 8 (10%), Calcified epithelial odontogenic tumour (CEOT) in 3 (3.75%), complex odontoma in 2 (2.5%), compound odontoma in 7(8.75%), odontogenic fibroma in 3 (3.75%), cementoblastoma in 1 (1.25%), primary intraosseous squamous cell carcinoma in 2 (2.5%) and ameloblastic carcinoma in 1 (1.25%), fibrosarcoma 2 (2.5%). Cysts were radicular cyst in 13 (16.25%), residual cyst in 6 (7.5%) and dentigerous cyst in 14 (17.5%). A significant difference was observed ($P < 0.05$).

Table 4, shows that out of 18 cases of ameloblastoma, maxilla had 7 and mandible had 11, KCOT was seen in 3 in maxilla and 5 in mandible, CEOT 1 in maxilla and 2 in mandible, complex odontoma 1 in maxilla and 1 in mandible, compound odontoma 4 in maxilla and 3 in mandible, odontogenic fibroma 3 in mandible, cementoblastoma 1 in mandible, primary intraosseous SCC 2 in mandible, ameloblastic carcinoma 1 in mandible, fibrosarcoma 1 each in maxilla and mandible, radicular cyst 7 in maxilla and 6 in mandible, residual cyst 4 in maxilla and 2 in mandible and dentigerous cyst 8 in maxilla and 6 in mandible. Maxilla exhibited 40% and mandible 60% of total lesions. A significant difference was observed ($P < 0.05$).

Table 5 shows that management performed was conservative in 19 (23.75%), excision in 31 (38.75%), enucleation in 22 (27.5%), en bloc resection in 4(5%) and marsupialisation in 4 (5%). A significant difference was observed ($P < 0.05$).

Discussion

There was geographic and demographic variation in occurrence in cysts and odontogenic tumors.^{11,12} We recruited 80 cases which were reported to department of oral surgery.

A study by Araujo JP et al¹³ reported 450 patients of which females had 71 (54.62%) and 87 (66.92%) were Caucasian. 71.43% cases were seen in mandible than the maxilla (28.57%). 60 (42.85%) showed swelling and 38 (27.14%) cases had pain. 89 cases (63.57%) were radiolucent lesions and in 114 cases (81.43%), lesions were unilocular. A total of 93 cases had histopathological analyses and the periapical cyst was the most frequent lesion.

Tawfik et al¹⁴ determined the occurrence of 82 different forms of odontogenic tumors and compared them with various reports. Benign were 96.3% and malignant were 3.7%. Ameloblastoma was seen in 41.5% and keratocystic odontogenic tumor in 19.5%, 13.4% had odontoma and 8.5% had odontogenic myxoma.

Gupta et al¹⁵ revealed that maximum cases were seen in mandible viz. ameloblastoma, ameloblastic fibroma and complex odontoma and maxilla showed occurrence of compound odontoma and adenomatoid odontogenic tumors.

Nunez-Urrutia et al¹⁶ found that mandible exhibited 61.5% of bone lesions. Authors found 97.7% of Paradental cysts and 69.2% of dentigerous cysts predominantly in the mandible, maxilla showed radicular cysts in (56.2%).

The limitation of present study is small sample size. Age wise distribution of cases was not done. Further studies are needed to verify the tumor prevalence.

Conclusion

Maximum cases were seen in age group 18-27 years, males had higher prevalence than females. Most common benign tumour was ameloblastoma and cyst was radicular cyst.

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Legends for illustrations

Tables

Table 1: Distribution of patients according to age

Age group (years)	Number	P value
18-27	48	0.01
28-37	31	
38-47	12	

48-57	3	
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Mann Whitney U test, Significance P< 0.05

Table 2: Distribution of patients according to gender

Gender	Male	Female	P value
Number	50	30	0.05
Percentage	62.5%	37.5%	

Mann Whitney U test, Significance P< 0.05

Table 3: Distribution of cysts and tumors

Parameters	Lesions	Number	P value
Tumors	Ameloblastoma	18 (22.5%)	0.01
	KCOT	8 (10 %)	
	CEOT	3(3.75%)	
	Complex odontoma	2 (2.5%)	
	Compound odontoma	7(8.75%)	
	Odontogenic fibroma	3 (3.75%)	
	Cementoblastoma	1(1.25%)	
	Primary intraosseous SCC	2 (2.5%)	
	Ameloblastic carcinoma	1 (1.25%)	
	Fibrosarcoma	2 (2.5%)	
Cyts	Radicular cyst	13 (16.25%)	
	Residual cyst	6 (7.5%)	
	Dentigerous cyst	14(17.5%)	

Mann Whitney U test, Significance P< 0.05

Table 4: Distribution of lesions based on jaw

Lesions	Total	Maxilla	Mandible	P value
Ameloblastoma	18	7	11	0.01*
KCOT	8	3	5	0.03*
CEOT	3	1	2	0.04
Complex odontoma	2	1	1	0.06
Compound odontoma	7	4	3	0.07
Odontogenic fibroma	3	0	3	0.05*
Cementoblastoma	1	0	1	0.08
Primary intraosseous SCC	2	0	2	0.07
Ameloblastic carcinoma	1	0	1	0.07
Fibrosarcoma	2	1	1	0.07
Radicular cyst	13	7	6	0.07
Residual cyst	6	4	2	0.05
Dentigerous cyst	14	8	6	0.06

Total	80	36 (45%)	44 (55%)	
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Mann Whitney U test, Significance $P < 0.05$

Table 5: Case Management aspect

Management	Number	P value
Conservative	19 (23.75%)	0.05
Excision	31 (38.75%)	
Enucleation	22 (27.5%)	
En bloc resection	4 (5%)	
Marsupialisation	4 (5%)	

Mann Whitney U test, Significance $P < 0.05$