

Retrospective Evaluation of Pediatric Oral Biopsies from A Dental and Maxillofacial Surgery Centre in Salem, Tamil Nadu, India

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ABSTRACT

Aim: The aim of the study was to evaluate the pediatric oral biopsies received between 2002-2011 from a dental and maxillofacial centre in Salem, Tamilnadu, India retrospectively based on age, sex, site and type of the pathologies.

Materials and Methods: The records of dental and maxillofacial surgery centre were taken and a retrospective evaluation of the pediatric lesions biopsied over a period of ten years (2002-2011) was done. Patients aged 15 years and below were considered as pediatric patients and pathologies were grouped into 8 categories, according to age, gender, anatomic location and pathologic diagnosis.

Results: A total of nine hundred twenty five biopsies were studied, of which 97 cases were from pediatric patients. The pathologies were predominant in mandible to maxilla (47:29). The distribution of the pathologies were 44 odontogenic pathologies, 18 connective tissue tumours, 3 salivary gland tumours, 5 fibro osseous lesions and 25 tumour like lesions. Out of this 44 odontogenic pathologies, 39 were odontogenic cysts, and 5 were odontogenic tumours.

Conclusion: Unlike other studies, the lesions were more common in the mandible with a female predilection. The majority of oral and maxillofacial lesions detected in pediatric population were benign similar to the previous reports.

Keywords: Pediatric oral pathology, Odontogenic cysts, Odontogenic tumours, Tumour like lesions, Salivary gland tumours

INTRODUCTION

Children are a distinct part of the general population, having small size and having different types of diseases. Some diseases like hemangioma, lymphoma, leukemia and Langerhans cell histiocytosis are more common in children. Literature reveals very few reported studies involving pediatric pathologies. Some of the recent reviews reported are by K Dhanuthai et al., [1] Mouchrek et al., [2] and Saxena et al., [3]. The review reported by Saxena et al., [3] from Meerut, India is only on pediatric tumours seen in jaws. Here we are reviewing pediatric pathologies as a whole from a single dental and maxillofacial centre from Salem, India. The information obtained from this review will help in further epidemiological studies and to know the predilection in a given population. They also give insight about the age, sex, incidence, prevalence and the site of occurrence of common pathologies.

AIMS AND OBJECTIVES OF THE STUDY

The aim of the study was to evaluate retrospectively, the pediatric oral biopsies received between 2002-2011 years from a single dental and maxillofacial centre in Salem, Tamilnadu, India.

1. To evaluate the total number of pediatric oral biopsies obtained below 15 years from a dental and maxillofacial centre.
2. To classify the pediatric oral pathologies based on age, sex and site predilection.
3. To identify the type of pediatric oral lesions based on histopathology.

MATERIALS AND METHODS

This retrospective study was undertaken from the records retrieved from the year 2002 -2011. Archival biopsy reports were taken from the dental and maxillofacial centre. Patients below the age of 15 years were included in the study. Out of the 925 biopsy reports available, 97 were identified as pediatric biopsies. The reports were categorized based on their age, gender, site, and pathological diagnosis. The 97 pediatric cases were further divided into two groups based on age and based on histopathologic diagnoses.

The age of the patients were further divided into three categories, According to the dentition period: primary dentition period (0–5 years), mixed dentition period (6–10 years), and permanent dentition period (11–15 years). The histopathologic diagnoses were classified under three categories: cystic lesions, neoplastic lesions, reactive / tumour-like lesions.

Inclusion criteria

1. Biopsy reports of all patients below 15 years.
2. All oral and maxillofacial biopsies obtained between the years 2002 and 2011.
3. Soft tissue and bony pathologies.

Exclusion criteria

1. Inflammatory conditions like pulpitis, pericoronitis etc.

RESULTS

1. Based on Age and Sex

Out of the 925 biopsy reports in the centre, 97 (10.5%) were pediatric cases. Of the 97 pediatric patients 32 (33%) were boys and 65 (67%) were girls. Five patients were in the 0-5 age group, 28 patients were between 6-10 years and 64 patients were between 11-15 years [Table/Fig-1].

2. Based on Site of the lesion

Based on the site of the lesions, it was found that 29 were in maxilla (M : F = 1 : 2.2) and 47 in mandible (M : F = 1 : 1.6), 5 were on the tongue (M : F = 1:1.5), 10 on the lip (M : F = 1 : 2.3), 4 on the palate (all females), 1 on buccal mucosa (female) and 1 on floor of the mouth (female) [Table/Fig-2].

3. Based on histopathologic diagnosis

Among the 97 pathologies analysed, only 4 (4.1%) were malignant while all the remaining 93 (95.9%) were benign.

The frequency distribution of the pathologies seen were as follows: 39 odontogenic cysts, 2 other cysts, 5 odontogenic tumours (M:F = 1:1.5), 14 benign connective tissue tumours (M:F = 1:1.8), 4

malignant connective tissue tumours (4 FM), 3 salivary gland tumours (3 FM), 5 fibro osseous lesions (M:F = 1.5:1) and 25 tumour like lesions.

(a) Odontogenic cysts

Of the 39 odontogenic cysts (M : F = 1: 1.2), 9 were dentigerous cysts (M:F = 1:1.25), 6 were odontogenic kerato cysts (M:F = 1:2), 8 were radicular cysts (M:F = 1:1), 1 glandular odontogenic cyst (1FM), 3 calcifying epithelial odontogenic cysts (3M), 1 lateral periodontal cyst (1 FM), 11 inflammatory odontogenic cysts (M:F = 1:1.2). 1 incisive canal cyst (1M) and 1 traumatic bone cyst (1M).

(b) Odontogenic tumours

Among the 5 Odontogenic tumours (M:F=1:1.5), 3 were ameloblastomas and 2 were ameloblastic fibromas.

(c) Tumour like lesions

Of the tumour like lesions, 9 were pyogenic granulomas (M:F = 1: 3.5), 14 mucocoeles (M:F = 1:2. 5) and 2 inflammatory fibrous hyperplasias (2 FM).

Age wise distribution	No. of cases
0-5 years	5
5-10 years	28
10-15 years	64
Total	97

[Table/Fig-1]: Age wise distribution of oral biopsies

Site	Number	Male	Female
Maxilla	29	9	20
Mandible	47	18	29
Tongue	5	2	3
Lip	10	3	7
Buccal mucosa	1	0	1
Palate	4	0	4
Floor of mouth	1	0	1
Total	97	32	65

[Table/Fig-2]: Site wise distribution of oral biopsies

Type of Pathology	Total No	Male	Female
Odontogenic Cyst			
Dentigerous Cyst	9	4	5
Odontogenic Kerato Cyst	6	2	4
Radicular Cyst	8	4	4
Glandular Odontogenic Cyst	1	0	1
Inflammatory Odontogenic Cyst	11	5	6
Calcifying Epithelial Odontogenic Cyst	3	3	0
Lateral Periodontal Cyst	1	0	1
Total Odontogenic Cysts	39	18	21
Other Cysts			
Incisive Canal Cyst	1	1	0
Traumatic Bone Cyst	1	1	0
Odontogenic Tumour	5	2	3
Neoplastic Lesions			
Benign Connective tissue tumour	14	5	9
Malignant Connective tissue tumour	4	0	4
Salivary Gland Tumours	3	0	3
Fibro Osseous Lesions	5	3	2
Tumour Like Lesions			
Pyogenic Granuloma	9	2	7
Mucocoele	14	4	10
Inflammatory Fibrous Hyperplasia	2	0	2
Total	136	54	82

[Table/Fig-3]: Distribution of pediatric oral lesions

4. Based on Descending Order of occurrence

The pathologies arranged in descending order of occurrence are as follows: Most common pathology was odontogenic cysts (39,40.2%) followed by benign connective tissue tumours (14, 14.4%) and mucocoeles (14,14.4%), pyogenic granulomas (9, 9.3%), fibro osseous lesions (5, 5.2%) and Odontogenic tumours (5, 5.2%), malignant connective tissue tumours (4,4.1%), salivary gland tumours (3,3.1%), inflammatory fibrous hyperplasias (2,2.1%) and other cysts (2, 2.1%) [Table/Fig-3].

DISCUSSION

[Table/Fig-4] Review of Pediatric oral pathologies.

Author and year	Duration of study	Total number of Pediatric oral pathologies
Bhaskaret al., [4]	14 years study	293 oral tumours
Dehner et al., [5]	15 years study below 15 years	46 lesions in jaws
Khanna and Khanna [6]		24 tumours in the jaws
Skinner et al., [7]	14 year study from a dental school, 0-20 years	1525 pediatric head and neck cases /11902 biopsies
Kezler et al., [8]	25 year study 0-15 years from dental college	1289 pediatric biopsies/ 18966 biopsies
Sumitra Das et al., [9]	11 year study Below 20 years from a dental school, Chicago	2370 pediatric biopsies / 19379 oral biopsies
Chen et al., [10]	11 year study Below 15 years	534 pediatric cases/ 9672 biopsies
K. Dhanuthai et al., [1]	15-year period below 16 years from a dental college	1251 pediatric cases / 8314 oral biopsies
Mouchrek et al., [2]	16 year study Federal University of Maranhão	88 head and neck pediatric cases / 3550
Saxena et al., [3]	6 year study in a dental college Meerut, India	61 pediatric tumours – Odontogenic and non odontogenic
Present study	9 year single dental and maxillofacial centre study	97 pediatric tumours / 925 biopsies

[Table/Fig-4]: Review of Pediatric oral pathologies

Reviews of oral pathologic lesions in children are rare. Some of the reviews reported in the literature are presented in [Table/Fig-1]. Skinner et al., [7] reported 1525 oral biopsies from 0- to 20-year-old blacks and whites from Louisiana. Keszler et al., [8] reported 1289 biopsies in 0- to 15-year-old children from Argentina, but the race was not mentioned. Bhaskar [4] reported 293 oral tumors in children up to 14 years of age. He found that 91% of the tumors were benign and 9% were malignant. Dehner [5] described 46 tumors of mandible and maxilla in children from ages 3 months to 15 years. Khanna and Khanna [6] reported 24 tumors of the jaws in children.

In our study among the 97 pathologies, only 4 (4.1%) were malignant while the rest of 93 lesions were benign. It is difficult to determine the age interval in which pediatric oral and maxillofacial lesions occur most frequently, because of the different age ranges used in different studies [2]. For instance, some studies only recruited children up to 15 years of age, whereas others accepted older children into their studies. The present study showed that most pediatric lesions occurred in the older age group, which is similar to the time interval reported in the studies of Das et al., [9] and Chen et al., [10] and Maia et al., [11].

Whereas, other authors demonstrated that most pediatric oral and maxillofacial lesions were found in the mixed dentition period [3,11]. Many studies showed an almost equal distribution between both genders (M:F = 1.05:1) as reported by Gultelkin [12], Das

and Das [9] and Jones and Franklin [13]. But in our study, the pathologies were more common in females. Studies of Maia et al., [11] and Lima et al., [14] reported maxilla as the most common site, but in our study mandible was found to be more affected than maxilla.

Reactionary/tumour like lesions

In our survey, mucocoele was the most prevalent head and neck lesion similar to the studies reported by Skinner et al., [7] and Sumithra Das et al., [9]. According to Monique Maria Melo Mouchrek et al., [2] inflammatory fibrous hyperplasia was the commonest lesion. According to Gultekin et al., [12] peripheral giant cell granuloma was the most common lesion. Harrison [15] compiled a 7-year study on mucocoeles and showed that out of 55 cases, 32.7% were in the birth to 20 year age group. He also reported that the majority of lesions were in females and the lower lip was the most common site [14]. In our study also lower lip was the most common site with female predilection.

Cysts

In our study, inflammatory odontogenic cysts were the most common followed by dentigerous cysts. Dentigerous cysts were the most common in the studies reported by Monique Maria Melo Mouchrek et al., [2] Kittipong Dhanuthai et al., [1] and Sumithra Das et al., [9]. There were 8 radicular cysts, 6 odontogenic keratocyst, 3 calcifying epithelial odontogenic cyst, 1 lateral periodontal cyst and one glandular odontogenic cyst also. Radicular cysts and odontogenic keratocysts were the second and third commonest odontogenic cysts in many studies [1,2,7]. Other cysts like one incisive canal cyst and one traumatic bone cyst were also seen in our study.

Neoplastic lesions

Among the odontogenic tumours in our study, ameloblastoma was the most common tumour. One ameloblastic fibroma and one adenomatoid odontogenic tumour were also present. Most studies showed that odontoma was the most common odontogenic tumour [2,7,9] whereas Dhanuthai et al., [1], Saxena et al., [3] and Arotiba GT [16] reported ameloblastoma as the most common odontogenic tumour. In this dental and maxillofacial centre odontomas were diagnosed radiographically but were not sent for decalcified histopathologic study after surgical removal. The soft tissues associated with odontomas only were sent for histopathology. So we don't have a clear picture about the number of odontomas surgically removed in the centre. This shows the importance of routine oral and radiographic examination as an essential part of diagnosis for every child.

Among the connective tissue tumours, 14 were benign and 4 were malignant, 3 salivary gland tumours and 5 fibro osseous tumours were seen. Monique Maria Melo Mouchrek [2], reported hemangioma as the most common connective tissue tumour. In our study also hemangioma was the most common connective tissue tumour with ossifying fibroma also present equally followed by Giant cell granuloma and neurofibroma. One case of osteoma, eosinophilic granuloma, round cell tumour, plasmacytoma, rhabdomyosarcoma, osteosarcoma and Ewing's sarcoma were

also present.

In our study, malignancy was very low, only 4 out of 97 biopsies (4.1%) similar to the studies reported by Jones and Franklin [13] (1%) and Monique Maria Melo Mouchrek [2] (8.9%). Among the fibro osseous lesions, fibrous dysplasia was the commonest with 3 cases followed by one case of cemento osseous dysplasia. Saxena et al., [3] studied pediatric jaw tumours and have reported 9 cases of fibrous dysplasia. Many of the studies have reported only mucocoele as salivary gland pathology, while Saxena et al., [3] has reported one case of mucoepidermoid carcinoma. In our study, three salivary gland tumours were seen and all the three were pleomorphic adenomas.

CONCLUSION

This article is an attempt to study the commonest pediatric oral and maxillo-facial pathologies reported to a single centre in Salem, Tamil Nadu, India. The majority of the oral pathologies detected were benign compared to a few malignant lesions. This study will throw some light regarding the prevalence and characteristics of the lesions prevailing in the pediatric population in a geographic area, which in turn will be useful for the general dentist and pediatric dentist in diagnosing and managing these lesions appropriately.

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