

Relative Frequency Of Biopsy Of Lesions In A Dental Hospital - A Retrospective Study

Research Article

Chaitanya Shree P¹, Herald J Sherlin^{2*}, Subhashree R³¹ Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.² Professor and HOD, Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.³ Senior Lecturer, Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.

Abstract

Introduction: Biopsy is a surgical procedure involving removal of whole tissue or lesion or removing a part of it for further investigation and diagnosis using histopathology features. The aim of this study is to assess the relative frequency of biopsy of lesions involving oral and maxillofacial regions in a dental hospital.

Materials and Methods: Data from 86000 patients visiting Saveetha dental college during the time period of June 2019 to March 2020 were collected and reviewed. All relevant information like Age, Gender, type of biopsy, the diagnosis were extracted from the patient's records. The collected data is entered in Excel and processed using SPSS.

Results: A total of 256 patients had undergone biopsy, 57.8% patients underwent Incisional biopsy 20.1% patients underwent resection and 21.5% patients underwent excisional biopsy. Majority of the patients affected are between the age of 41-50 years (22.7%) and most of them are males (68%). The most common diagnosis observed in our study is SCC. The results obtained are statistically significant ($p < 0.05$).

Conclusion: Majority of patients underwent incisional biopsy because most of the lesions are malignant. The most common diagnosis observed in our study is squamous cell carcinoma and this is probably due to habits like chewing tobacco, alcohol.

Keywords: Biopsy; Incisional; Excisional; Resection; diagnosis.

Introduction

The practice of modern dentistry demands evidence-based treatment decisions and therapeutic outcomes. Among the diagnostic procedures, biopsy is considered to be the gold standard one. Biopsy is one of the most common surgical procedures mainly done for the purpose of investigation and diagnosis of lesions. Types of biopsy includes excisional and incisional biopsy. In the former, we remove the whole lesion whereas in the latter, we remove a part of it [2, 17, 16].

Oral mucosa serves as a protective barrier against trauma, carcinogens and other pathogens. However, oral and maxillofacial region is most commonly exposed to a number of agents from simple irritants to carcinogens and it leads to a spectrum of lesions from traumatic or reactive lesions to malignancies like oral squamous

cell carcinoma. Identification and institution of proper treatment of these lesions are an important part of oral health care [18]. Several studies were done to check the frequency of biopsies and prevalence of oral lesions and each study shows a common prevalent lesion among their population [14, 19] but it did not include the type of biopsy performed [14]. Poor documentation of clinical pictures has led to inconclusive reports. Hence Photography is essential in biopsy to record the preoperative lesions and postoperative conditions [6]. The present study is aimed at assessing the relative frequency of biopsy of lesions retrospectively in a dental hospital setting in South India.

Materials And Methods

The present study was a retrospective cross-sectional study. Data

***Corresponding Author:**

Herald J Sherlin,

Professor and HOD, Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.

Tel: +91 98842 25017

Email Id: sherlin@saveetha.com

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from 86000 patients visiting Saveetha dental college during the time period of June 2019 to March 2020 were collected and reviewed. All case sheets were reviewed (CS*) and cross-verified by another investigator. (HJS*). All relevant information like Age, Gender, type of biopsy, the diagnosis were extracted from the patient's records. Biopsies of patients who were previously confirmed were not included for analysis. The collected data was entered in Microsoft Excel and transferred to IBM SPSS version 25 for analysis. Chi square test was used for analysis to know the difference in associated between the gender and age. ($p < 0.05$) was considered statistically significant.

Results And Discussion

There were a total of 256 patients who underwent biopsy during the time period and were included in the study. Among the 256 patients, 174 patients were males and 82 are females. The age group of the patients are summarised in Table 1. Totally 148 patients (57.8%) underwent incisional biopsy. 55 patients (21.5%) underwent excisional biopsy and 53 patients (20.7%) underwent cancer resection [Table 2]. Among the types of lesions, the most common diagnosis was squamous cell carcinoma (35.9%). Other common diagnoses observed are inflammatory fibroepithelial hyperplasia (8.2%), Lichen planus (4.3%), Radicular cyst (3.5%), Periapical granuloma (3.5%), OSMF (3.5%), Ameloblastoma (1.6%) . The biopsies also had some uncommon lesions like leiomyosarcoma, fibrolipoma, hemangioendothelioma (16%). The complete spectrum of the histopathological diagnosis of the biopsied cases are summarised in Table 3.

The obtained results were compared using Chi square test and made into a graph. Comparison between age and type of biopsy was done and the p value obtained is not statistically significant ($p > 0.05$) [Fig 1]. Comparison between gender and type of biopsy also showed that p value obtained is not statistically significant ($p > 0.05$) [Fig 2]. Age and diagnosis are compared and the p value

obtained was statistically significant ($p < 0.05$) [Fig 3]. Gender and diagnosis are compared and the p value obtained was statistically significant ($p < 0.05$) [Fig 4].

Histopathology is the gold standard of diagnosis and hence prevalence studies on the distribution of lesions from oral and maxillofacial biopsies are an indicator of the prevalence of lesions among a population in a given region. From this retrospective study in a time period of 10 months a total of 256 cases were included for analysis. In the present study, though biopsies were taken in all age groups, the highest was seen in the age group of 41-50 years, followed by 51-60 years. This presentation was more common in patients with oral Potentially Malignant Disorders like Oral submucous fibrosis and oral squamous cell carcinoma. This may be attributed to the period of accumulation of mutations before the development of malignancy. In the Study conducted by Kamala A Kamble et al during the year 2017, they observed that patients above 44 years were most commonly affected and the common diagnosis observed by them is tobacco pouch keratosis [12]. On the other hand, non-neoplastic and reactive lesions were common among the younger individuals.

In the present study most of the patients are males. This is in contrary to the study conducted by [20], they observed that there is no significant difference in gender [20]. This may be attributed to two reasons: i) majority of the biopsied lesions (35.9%) was OSCC.ii) In India, OSCC is most commonly seen in males due to the prevalence of deleterious habits like tobacco chewing which is most common among males [18]. However, some authors reported no significant difference in age and gender among biopsied lesions [27].

Lesions affecting the oral cavity can be non-neoplastic or neoplastic. If neoplastic, benign or malignant. Biopsy is conducted based on the lesion. There is no specific size criteria for biopsy [2]. Excisional biopsy is the removal of whole tissue or lesion

Table 1. Frequency distribution of different age groups of patients undergoing biopsy.

Age Group	Frequency	Percent
1-10 years	8	3.1
11-20 years	9	3.5
21-30 years	40	15.6
31-40 years	34	13.3
41-50 years	58	22.7
51-60 years	53	20.7
61-70 years	38	14.8
71-80 years	11	4.3
81-90 years	5	2
Total	256	100

Table 2. Frequency distribution of types of biopsy.

	Frequency	Percent
Excisional biopsy	55	21.5
Incisional biopsy	148	57.8
Resection	53	20.7
Total	256	100

Table 3. The frequency distribution of diagnosis of the biopsied cases.

	Diagnosis	Frequency	Percentage
Epithelial Malignancy	Squamous cell carcinoma	92	35.9
	Verrucous carcinoma	3	1.2
Benign Papillary Lesions	Squamous papilloma	1	0.4
PMDs	OSMF	9	3.5
Dermatological / Immunological lesions	Lichen planus	11	4.3
	Pemphigus vulgaris	2	0.8
	Plasma cell gingivitis	2	0.8
	Subepithelial blistering disorder	1	0.4
Reactive Lesions/ Inflammatory pathology	Inflammatory fibroepithelial hyperplasia	22	8.6
	Angiomatous granuloma	10	3.9
	Periapical granuloma	9	3.5
	Fibroma	2	0.8
	Peripheral ossifying fibroma	3	1.2
	Granuloma	1	0.4
Cysts	Radicular cyst	10	3.9
	Odontogenic keratocyst	6	2.3
	Dentigerous cyst	4	1.6
	Ciliated cyst	1	0.4
Salivary Gland pathology	Mucous extravasation	6	2.3
	Basal cell Adenoma	1	0.4
Odontogenic Tumours	Ameloblastoma	4	1.6
	Odontogenic myxoma	2	0.8
	Odontoma	1	0.4
Bone Pathology	Central giant cell granuloma	2	0.8
	Juvenile ossifying fibroma	1	0.4
	Psammomatoid ossifying fibroma	1	0.4
	Cemento ossifying fibroma	1	0.4
Soft tissue tumours	Fibrolipoma	1	0.4
	Hemangioendothelioma	1	0.4
	Leiomyosarcoma	1	0.4
Lymph Node	Lymph node	1	0.4
	Reactive lymph node	1	0.4
Infections	Mucormycosis	1	0.4
Others	Scar tissue	1	0.4
	Non specific	41	16.0
	Total	256	100.0

and is commonly conducted in benign tumors whereas incisional biopsy is the removal of a part of lesion commonly conducted in malignant tumors [2]. In the study conducted by Raquel Sixto - Requeijo et al in the year 2011, they found that most of their cases underwent excisional biopsy [22, 20]. In the present study however the cases of excisional biopsy was lesser compared to incisional biopsy. This may be attributed to the high prevalence of OSCC which requires confirmation by incisional biopsies.

In any biopsy setting, malignancies represent a major part of the samples received. Though, malignancies like Hepatocellular carcinoma

represent the second most common cause of cancer death in the world [4], In the present study as OSCC was the most common diagnosis, reflecting the high prevalence of OSCC in the Indian Subcontinent. This high prevalence of OSCC due to tobacco chewing has led us to perform many studies in the field of OSCC and potentially malignant disorders. [9, 26, 9]. Even in Countries like Spain and China, some studies showed that the most common oral cancer is squamous cell carcinoma [3, 31, 28].

Followed by OSCC and OSMF, the reactive pathology group was the second most common biopsied lesion. Inflammatory fibroep-

Figure 1. Bar chart representing the association between age and types of biopsy (X axis - age of the patient, y axis - number of cases). Blue denotes patients underwent excisional biopsy, red denotes patients underwent incisional biopsy and green denotes patients underwent resection. Chi square test: p value is 0.142 (not significant).

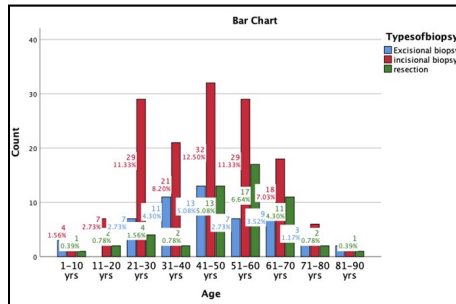


Figure 2. Bar chart representing the association between gender and types of biopsy (X axis - gender of the patient, y axis - number of cases). Blue denotes patients underwent excisional biopsy, red denotes patients underwent incisional biopsy and green denotes patients underwent resection. Chi square test: p value is 0.152 (not significant).

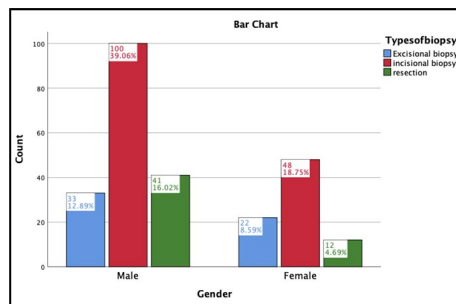


Figure 3. Bar graph chart representing the association between age and diagnosis. (X axis - age, y axis - number of patients). Dark green denotes squamous cell carcinoma which is more prevalent. Pink denotes OSMF, green denotes lichen planus, orange denotes inflammatory fibroepithelial hyperplasia, purple denotes radicular cyst, dark blue denotes mucous extravasation, aqua colour denotes verrucous carcinoma, beige colour denotes non specific and so on. The middle age group is more prone for the development of pathologies especially oral squamous cell carcinoma in the study population. This was found to be statistically significant. Chi square test: p value = 0.00.

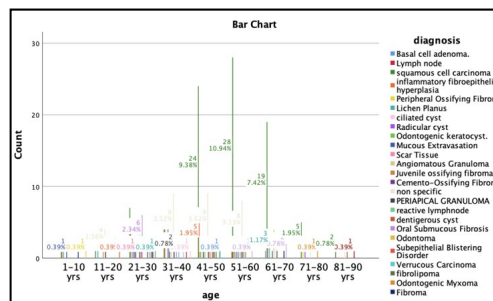
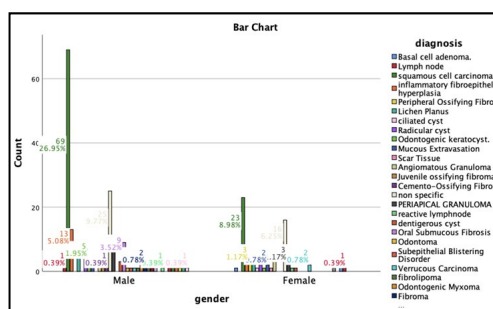


Figure 4. Bar graph chart representing the association between gender and diagnosis (X axis - gender, y axis - number of patients). Dark green denotes squamous cell carcinoma which is more prevalent. Pink denotes OSMF, green denotes lichen planus, orange denotes inflammatory fibroepithelial hyperplasia, purple denotes radicular cyst, dark blue denotes mucous extravasation, aqua colour denotes verrucous carcinoma, beige colour denotes non specific and so on. Males had a higher percentage of squamous cell carcinoma (26.95%) compared to females (8.98%) and this was found to be statistically significant. (Chi square test: p value is 0.042).



ithelial hyperplasia (8.6%) was the most common lesion followed by Angiomatous granuloma (3.9%). This is not an uncommon finding as the oral mucosa is a highly dynamic environment subjected to a wide variety of trauma from dentition, prosthesis, malocclusion, plaque, calculus and other factors [8, 25].

Among the cysts of the maxillofacial region Inflammatory odontogenic cyst was most common followed by Odontogenic keratocyst and Dentigerous cyst. Third molar impaction can cause dentigerous cyst has a potential complications and represent 4% of the biopsied cases [21, 26]. As far as odontogenic tumours were concerned, Ameloblastoma was the most common case followed by odontogenic myxoma and odontome. The odontogenic myxoma and odontome cases were reported in children.

Among the salivary gland lesions mucocele was the most commonly reported in the younger age group. Though Mucoepidermoid carcinoma is one of the common salivary gland tumors [9] the present study did not have any case of MEC but had a case of Benign Salivary Gland Neoplasm- Basal Cell Adenoma.

Central bone lesions like Central giant Cell granuloma (2%) were also included in the biopsy samples [13]. Recent studies showed that ameloblastoma is one of the common odontogenic tumors [29] and the present study also had cases of ameloblastoma. Some of the soft tissue tumours like leiomyosarcoma, hemangioendothelioma, fibrolipoma are rare in the head and neck. The present study had even such cases biopsied. Few studies have shown their incidence previously [15, 30, 1].

16% cases were non specific due to presence of inadequate clinical pictures or biopsy from a non-representative site. In order to avert these adequate photographic documentation of the clinical presentation [6] might help the reporting pathologist.

The limitations are that only a small sample size from a short time period are included in this study and it is conducted as a single centered study. In future, this study can be conducted by including a large population and as a multicentered study with advanced histopathology procedures. Future studies might use the role of biopsies along with other molecular techniques. For instance, testing molecular grading system like cyclin D1, p27 p63 might be employed in the grading of epithelial dysplasia [9]. Saliva may be explored as an efficient non-invasive tool for patients. Salivary biomarkers also helps in detection of oral cancers like SCC [7]. Metabolites in saliva like lysine, L-carnitine, 8-hydroxyadenine, 17-estradiol, 5,6-dihydrouridine, MTA in cases of oral leukoplakia might also be explored [24, 23]. Also in the future, mirror image biopsies [28] might be employed to identify the role of field cancerisation in patients with habits and undergoing biopsies as most of the patients in the present study had undergone biopsy with a diagnosis of OSCC.

Conclusion

In the present study, we observed that patients between the age group of 41-50 years are most commonly affected and majority of them are males. Most common biopsy observed in this study is incisional biopsy and the most common diagnosis is squamous cell carcinoma. This study helps us in understanding the prevalence of lesions, its correlation with histopathologic features, and

to understand the growth pattern. This study also helps in fulfilling the lack of knowledge on oral lesions, its prevalence, lack of knowledge on lesions that require biopsy.

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