



## The retrospective survey of oral and maxillofacial malignant neoplasms

**Dr. Mustafa Mohammed**

### Abstract

**Background:** Awareness of the epidemiological characteristics of oral cancers allow for enhanced planning of timely and effective treatment in order to improve patients' life quality. Despite the fact that oral and perioral cancers are not included in common cancers, they are of special importance for their impact on human morbidity and life quality.

**Aim of the present study** was to investigate the distributional patterns of oral and perioral malignancies in terms of age, gender, type and location.

**Materials and Methods:** 4179 Oral and Maxillofacial cases taken over 5 years (2009 - 2013) at the Department of Oral and Maxillofacial Surgery, Specialist Surgeries Hospital, Medical city, Baghdad, were studied. Among these, 707 biopsy specimens were made for histopathological diagnosis, 182 cases included oral malignant lesions and the rest cases were benign lesions. The data involve age, gender, location, and type of malignancy for these cases were recorded.

**Results:** The results of this survey showed that the most common malignant oral lesions were of epithelial origin with 121 cases (66%), salivary lesions with 20 cases (11%), and hematogenic malignancies with 18 cases (10%). Squamous cell carcinoma, adenoid cystic carcinoma and lymphoma were the most common malignant lesions in this area of the body. The mean age of patients was (39.1) years of old and the male to female ratio was found to be 1.3:1.

**Conclusion:** In this study, epithelial malignant tumors constituted the majority of diagnosed malignant tumors followed by salivary malignant tumors and lymphomas.

**Key words:** Oral and Maxillofacial cancers, Epidemiological characteristics

### Introduction

Cancer accounts for a large group of diseases with high morbidity<sup>1</sup>. It has been identified as the most common cause of death in the age group below 65 and the second most common in the age group above 65<sup>1</sup>. From every three Americans, one contracts cancer of one type or more during his lifetime. Despite the various and new methods of treatment developed every year, only 54% of the patients survive the

disease<sup>2</sup>. It is also the cause of over 20% of the mortality rate in human societies. Compared to previous years, the cancer caused mortality has considerably risen in recent years<sup>2</sup>.

Although oral cancers account for 3% of all reported cancer cases, the survival rate of mouth and epiglottis cancers has remained awfully low, despite all advances made so far in diagnosis and treatment of

malignancies. Oral cancer is now one of the 10 major causes of deaths across the globe, which is a high rate because of its rather low cases<sup>3</sup>.

A second important observation is that cancer and its epidemiology are affected by many factors such as age, gender, race, geographical location, etc. Hence, distribution and epidemiology of cancer varies from place to place. This variation is even observed in the types of cancer commonly found in various geographical locations. For instance, oral cancer accounts for only 3% of all cancers encountered in the United States while in India, it is the most common type of cancer accounting for around 50% of the cases<sup>4</sup>.

In previous studies, the survey by the American National Cancer's data endorses the results reported in the literature<sup>5</sup>. Skinner et al (1985) studied oral malignancies in the United States. They found that 2 out of every 100 biopsy specimens had been reported as malignant lesions. The male to female ratio was found to be 1:1 and lesions were common in the 5th and 6<sup>th</sup> decades of life<sup>6</sup>. Idris et al (1995) surveyed oral cancers in Sudan and found that squamous cell carcinoma (66.5%) was the commonest malignant lesion. They also found that its prevalence was higher in men rather than in women (M/F>1)<sup>7</sup>.

Globally, oral cancers accounts for 1–4% of all cancers in the Western world and about 40% in Asian subcontinents with the vast majority of oral cancers occurring in the developing world<sup>8</sup>. Oral carcinomas are the most common orofacial malignant lesion, accounting for over 60% of all orofacial malignant neoplasms<sup>9</sup>. Sarcomas of the orofacial region are less common than carcinomas accounting for less than 1% of all adult orofacial malignancies<sup>10,11</sup>. It can occur in all

age group but is more prevalent in first and second decades of life<sup>12</sup>.

## Material and Methods

This is a retrospective, descriptive, case control study using the census methodology and existing data. To gather the required data, the records in the Department of Oral and Maxillofacial Surgery, Specialist Surgeries Hospital, Medical city, Baghdad were used. For this purpose, all of the 707 records related to biopsies of oral lesions available at the Department since its establishment in 2009 to the 2013 were reviewed to select any records indicating a malignancy. The data of these records including record No., patient's age and sex, lesion area, and type of malignancy were extracted from the archives for later reference. Considerable care was used in collecting the data and thus very profuse data were collected. In the next stage, the lesions were classified in terms of their malignancy into the six categories of epithelial, salivary, soft tissue, hematogenic, osteogenic, and odontogenic lesions<sup>2</sup>. According to the common classification for squamous cell carcinoma, the areas of lesions were grouped as under lip, tongue, mouth floor, buccal mucosa, gingiva, and palate. The remaining cases were classified as mandibular, maxillary, or perioral cases<sup>4</sup>. Redundant or inadequate data were discarded.

## Results

A total number of (1479) records of Oral and Maxillofacial cases were studied in the present study which included (182) biopsies specimens of oral malignancies (approximately 4 out of every 100 cases). Among the malignant cases, epithelial lesions with 121 cases (66%) were recognized as

the commonest malignancies. Salivary lesions with 20 cases (11%) and hematogenic lesions with 18 cases (10%) followed epithelial ones in rank. Bone lesions (8 cases, 4%), soft tissue lesions (2 cases, 1%) and odontogenic lesions (1 case, 0.5%) were among the less common malignancies. There were also 12 cases identified as malignant which did not fit into any of these classifications (Diagram 1).

Out of the 183 patients, 111 (61%) were men while 71 (39%) were women; in other words, the male-to-female ratio (M/F) was 1.3 (Table 1). However, the male-to-female ratio showed differences in the different categories of lesions. The highest male-to-female ratio belonged to the unknown source lesion category (M/F=3). In other lesion categories, this ratio varied from 1 to 2 ( $1 < M/F < 2$ ). Only in the case of salivary lesions, females outnumbered males (M/F=0.5) (Table 1). The mean age of the patients was 39.1 years of old, where males and females mean ages were 31.9 and, 44.7 respectively. The mean age also varied in lesion categories. The lowest mean age belonged to the osteogenic category (22) while the highest one belonged to the epithelial category (58). The mean age in the epithelial lesions category was higher than the overall mean age while it was lower than the overall mean age for other categories. The mean age for the salivary category was near the overall mean (47.5 years). With regard to lesion area, Perioral, Buccal mucosa and tongue accounted for 39.5%, 18.6% and 11.5% of more involved areas, respectively. Overall, more than half of the malignancies had occurred in one of these areas, while the rest of the cases were scattered across the other 8 anatomical areas (Table 2). Different lesion categories varied in terms of their most commonly lesion occurring areas. In

some cases, it was not possible to assign any specific area to a type of lesion, mainly because of the few reported cases (Table 3).

## Discussion

Cancers of the orofacial region are a diverse group of neoplasm<sup>1</sup>. Some predisposing factors have been implicated including: tobacco, alcohol, viruses, diet and familial history<sup>13</sup>. They can be fatal in cases of late presentation as is often the case in Africa where treatment is often palliative<sup>14</sup>.

In this study, from the 707 oral biopsy specimens, 182 cases, or 26 out of every 100, had been reported as malignant. In a similar study by Skinner et al on 10414 specimens, 2 out of every 100 had been reported as malignant<sup>6</sup>.

The commoner malignancies found in the present study were epithelial (66%), salivary (11%), hematogenic (10%), osteogenic (4%), soft tissue (1%), and odontogenic (0.5%) malignancies. In a study on oral cancer in Sudan, Idris et al found commoner lesions to be SCC (66.5%), salivary (14.7%), non-epithelial non odontogenic (9.6%), and odontogenic (8.6%) malignancies<sup>7</sup>.

The relative frequencies of the malignancies found in Idris et al study are similar to those in the present study. Non epithelial-non odontogenic lesions in the present study include the three groups of hematogenic, osteogenic, and soft tissue lesions, all accounting for 15.5% of the malignancies which show a higher frequency than the one in Idris et al study. However, the odontogenic malignancies in the present study account for only 0.5 % of the total malignancies. Since the number of odontogenic lesions found in the present study agrees well with global

statistical observations, it may be necessary to study the reason for the rather high cases in Sudan.

The epithelial malignant tumor patients were all older than the lymphoma and sarcoma patients and the sarcoma patients significantly older than the lymphoma patients, a view similarly shared<sup>15,16</sup>.

The orofacial cancer patients had a higher male to female occurrence with a ratio of 1.3:1. But in Idris et al study, this ratio was reported to be 1, as in Skinner et al study<sup>6</sup>. In Funk et al investigation this ratio was found to be 1.5 and finally, in this study the ratio was reported to be 1.3. The reason adduced in the literature was more men being dependent on tobacco and alcohol than women<sup>17</sup>.

Bayat found an M/F ratio of 4 to 1 and Tabesh<sup>19</sup> also found an M/F ratio of 2.4, which is evidently higher than our finding. Reason may be claimed to explain these differences in previous studies, the presence of rather high numbers of SCC and Basal cell carcinoma (mostly occurring in men) may have led to higher M/F ratios<sup>18,19</sup>.

Mean age for all oral and perioral malignancies were 39.1 in the present study. This result disagreed with Skinner et al reported their patients to be in their fifth and sixth decades of life. Funk et al in their study on oral cancer reported a mean age of 64<sup>5,6</sup>. Funk et al reported that non-SCC lesions were most common in young patients. This is also confirmed by the present study where the mean age of all malignancy categories were less than the overall mean except for epithelial malignancies (Table 1).

The most common anatomical regions for all types of malignancies in the present study included Perioral region (39.5%), Buccal mucosa (18.6%), Tongue (11.5%) and Maxillary bone (6%). Babazadeh et al studied different types of cancer at

Oncology Center in Iran. They found tongue to be the commonest region for head and neck cancers, accounting for 13.3% of the cases<sup>20</sup>. Skinner et al found the floor of the mouth to be the commonest region for cancer in US. Frequency distribution of the cancer regions, as reported by Bayat and Tabesh, are in sharp contrast to the findings of the present study.

The commoner lesions found by the present study are squamous cell carcinoma (49%), basal cell carcinoma (17%), lymphoma (8.2%), adenoid cystic carcinoma (4.4%), osteosarcoma (3.8%), mucoepidermoid carcinoma (3.2%) and adenocarcinoma (2.7%). In all previous studies, SCC had been found to be the most common malignant lesion with different relative frequencies. Bayat and Tabesh found SCC to account for 85% and 73.3% of malignancies, respectively. This is while SCC was found as 85.3% of malignancies in Funk et al<sup>5</sup> and 66.5% in Idris et al studies<sup>7</sup>. Some discrepancies are observed among the findings of present study and previous studies carried out in Iran. Bayat reported the next common types of cancers as follows: adenoid cystic carcinoma (4%), mucoepidermoid carcinoma (2%), and adenocarcinoma (1%)<sup>18</sup>. In Tabesh study basal cell carcinoma (16.2%), adenoid cystic carcinoma (1.9%), and lymphoma (1.5%) ranked as second to fourth as the next common oral cancers, where mucoepidermoid carcinoma (1.1%) follows them.

The geographical location does not seem to cause the found differences; However, the time interval between the previous studies (both 1980-1992) and the present one (2009-2013) may account for the differences as the frequency distributions of different oral cancers may have changed over the recent decade. One reason may be the

role of stress is well established in development and contraction of SCC.

Generally speaking, the present study of common lesions shows differences from the previous studies. Epithelial lesions take place in life one decade earlier than they used to. Although squamous cell carcinoma was found to be the most frequent malignant lesion in present study, as was in previous studies, its relative frequency is lower than them.

Anatomic distribution of oral cancers was also shown to be different in the present study, comparing to previous studies. The higher incidence of perioral cancers reported in the present study is probably due to the fact that the present study was carried out in the Oral and maxillofacial department, where surgical care and medicine are the main activities. The differences between the incidences of cancers of buccal mucosa and floor of the mouth in Iraq and other countries may be attributed to different life styles including smoking and drinking, which are commoner outside Iraq.

In conclusion, it may be suggested that Cancer Registries should be established around the country, based on country divisions. It is further suggested that all health and medical personnel at whatever rank should be legal bound to report and refer all cases of oral cancer to the cancer registries so that comprehensive national surveys become possible in order to determine the epidemiological characteristics of cancer in Iraq.

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Table (1): Frequency distribution of malignant lesions based on sex and age.

Malignancy	Frequency and Percentage(%)	Male	Female	M/F ratio	mean age(years)	Column1 Male	Mean age	Column2 Female
Epithelial	121 (66%)	78	43	1.8		58		56.6
Salivary	20 (11%)	7	13	0.5		47.5		50.6
Soft tissue	2 (1%)	1	1	1		23		25
Hematogenic	18 (10%)	12	6	2		34.6		27.8
Osteogenic	8 (4%)	4	4	1		22		24.2
Odontogenic	1 (0.5%)	-	1	-		50		-
Unknown Source	12 (6%)	9	3	3		38.5		39
Total	182(100%)	111	71	1.3		39.1		31.9

Table( 2): Frequency distribution of malignant lesions based on anatomic areas.

Malignancy	sinu- maxillary	maxillary Mandib	maxillary Mandib	maxillary bone	Maxilla	Palate	Tongue	Buccal mucosa	mouth the	Floor of	Perioral	Upper lip	Lower lip
1- Epithelial	6	9	2	3	2	21	19	3	46	3	7		
2- Salivary	-	-	1	5	1	-	3	2	8	-	-		
3- Soft tissue	-	-	-	1	-	-	1	-	-	-	-		
4-Hematogenic	-	-	1	1	-	-	6	-	10	-	-		
5-Osteogenic	-	-	6	-	-	-	2	-	-	-	-		
6-Odontogenic	-	-	-	1	-	-	-	-	-	-	-		
Unkown source	-	-	-	-	-	-	3	-	8	1	-		
Frequency	6	9	10	11	3	21	34	5	72	4	7		
Total percentage	3.2	4.9	5.4	6	1.6	11.5	18.6	2.7	39.5	2.1	3.8		

Table( 3): Frequency distribution of malignant lesions based on incidence.

Lesion	Frequency	Percentage
Squamous cell carcinoma (SCC)	89	49 %
Mucoepidermoid carcinoma	6	3.2 %
Lymphoma	15	8.2 %
Osteosarcoma	7	3.8 %
Verrucous carcinoma	1	0.5 %
Adenoid cystic carcinoma	8	4.4 %
(Salivary) Adenocarcinoma	5	2.7 %
Basal cell carcinoma (BCC)	31	17 %
Chondrosarcoma	1	0.5 %
Fibrosarcoma	1	0.5 %
Leukemia	1	0.5 %
Polymorphous low grade adenocarcinoma	1	0.5 %
Rhabdomyosarcoma	1	0.5 %
Malignant melanoma	2	1.1 %
Malignancy in calcifying odontogenic cysts (COC)	1	0.5 %
Unknown source malignancy	12	6.6 %
Total	182	100%

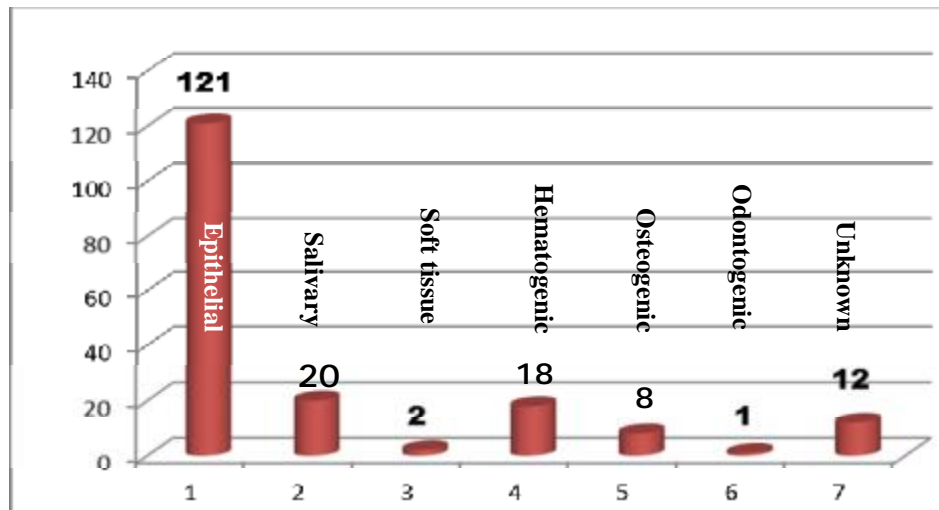


Figure (1): Frequency distribution of malignant lesions based on lesion type

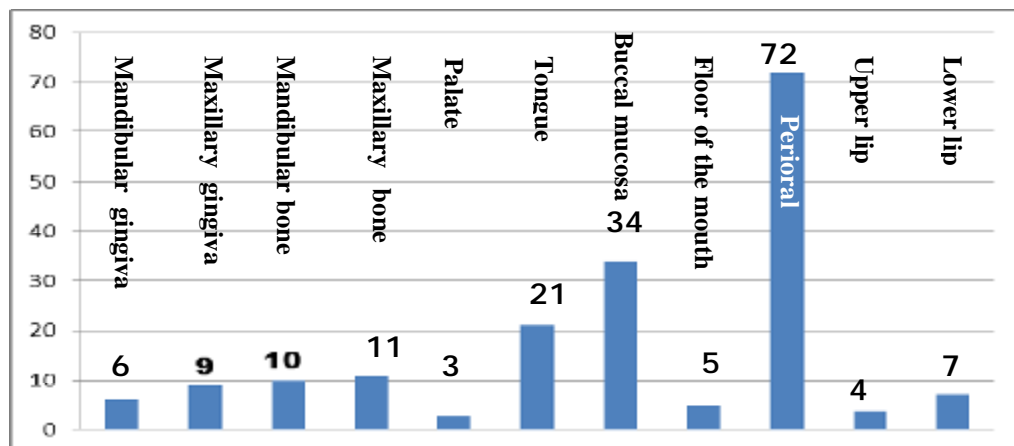


Figure ( 2 ): Frequency distribution of malignant lesions based on affected area.