



Manuscript ID ZUMJ-2406-3439

DOI 10.21608/zumj.2024.297033.3439

ORIGINAL ARTICLE

## Clinicopathological discrepancy of oral cavity cancer before and after surgery

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Submit Date 2024-06-18

Accept Date 2024-07-18



### Abstract

**Background:** oral cavity cancers are not uncommon types of malignancies, with surgery still a corner stone in its local control. Discrepancy between post-operative pathological findings and pre-operative ones are eminent feature in this malignancy group, which in turn needs to be considered in tailoring management plan

**Methods:** 39 patients with oral cavity cancers were included in the study after fulfilling the inclusion criteria. Pre-operative assessment was fulfilled, operative intervention was properly delivered, then post-operative pathological assessment was done with discrepancies reported.

**Results:** demographic and pathological data were tabulated for all patients, then on showing discrepancies different factors were assessed to determine which of them will help in predicting it. Alcoholism and patients age were proved to be these factors in this study (both showed  $p=0.02$ )

**Conclusions:** In this study discrepancy between pre- and post-operative findings in oral cavity malignancy could be proved especially in tumour grade and lymph node invasion.

**Key words:** oral cavity malignancy (cancers), clinic-pathological discrepancy, lymph node status, tumor grading.

### Introduction

**H**ead and neck cancer (HNC) is ranked globally as the seventh most common cancer with oral cavity cancers alone make up 2 to 5% of all cancers <sup>(1)</sup>. The incidence of this disease tends to increase, with its etiology is

potentially changing <sup>(2)</sup>. Approximately 90% of them are squamous cell carcinoma, which arise from the epithelial lining of the upper aerodigestive tract <sup>(1)</sup>. The variants of this disease are discretely categorized based on their anatomical location, having differences in the

presenting symptoms, treatment regimens and prognosis at each anatomical subsite <sup>(2)</sup>.

Methods for staging of oral cavity cancers rely primarily on clinical examination aided necessarily by CT, PET-CT or MRI with endoscopy and ultrasound are occasionally needed <sup>(3)</sup>. These cancer types are usually treated, depending on the stage of disease, as well as based on various risk factors, by combinations of surgery, radiotherapy (RT), chemotherapy <sup>(4)</sup>. While the location and the extent of the primary tumor is usually diagnosed precisely, most of the uncertainties are about the exact tumor grade and its spread to the regional lymph node. Discrepancies between post-operative pathological and pre-operative clinical grading and nodal staging data for oral cavity cancers have been described in the literature by few authors <sup>(5,6,7)</sup>.

This research article is targeting this issue of discrepancy with the possible factors predicting it.

## **Patients and methods**

This was an observational study (as the management plan was not targeted, it was just the discrepancies recorded), where 39 patients with established diagnosis of oral cavity cancers in different anatomical subsite were included.

All patients presented with histopathological proof of oral cavity cancers were included in the study provided that their tumor is not

metastatic nor recurrent with no previous exposure to radiotherapy for head and neck region

All of their carcinomas were staged according to the 7th Edition TNM Classification for Head and Neck Cancer. Pre-therapeutic staging examinations were routinely performed with contrast enhanced CT scans of the head and neck. Alternatively, MRI scans, alone or in combination with CT scans with some cases had PET scans according to MDT orders. These tools assessed local disease infiltration, as well as lymph node metastasis.

Histopathological evaluation of the retrieved biopsy (incisional or punch) for proving the malignant nature and assessing the grade of the malignancy.

Every participant completed an informed written consent form, and the ethics council Zagazig University's Faculty of Medicine accepted the study's design (IRB#11222 – 17/10-2023). The study was done according to The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

The patients were submitted to surgical resection involving both the primary tumor with proper safety margin with lymph node management according to the tumor location and the N stage.

Data regarding sex, age, risk factors (smoking and alcohol consumption), location, and size of

tumour, tumour grading and lymph node status were recorded.

After the surgical resection proceeded, the resected specimen was sent for complete post-operative histopathological examination, then the results were compared to the pre-operative pathological data to prove any discrepancy if present.

All patients' data were collected, checked and analysed by using (SPSS version 20). Data were expressed as mean ± SD or number according to type of variable. Chi-square test was used to assess the significance of variables. This study included 39 patients of different HNCs with their clinical data are shown in table (1)

### Results

<b>Age</b>		53.85 ± 9.51
<b>Sex</b>		
	Male	18 (46.2%)
	Female	21 (53.8%)
<b>Smokers</b>		18 (46.2%)
<b>Alcohol consumers</b>		3 (8%)
<b>Site</b>		
	Tongue	20 (51.2%)
	Cheek	8 (20.6%)
	Floor of mouth	8 (20.6%)
	Lower lip	3 (7.6%)
<b>Pathology</b>		
	SCC	29 (74.4%)
	Others	10 (25.6 %)
<b>Clinical T stage</b>		
	1	1 (2.6%)
	2	20 (51.2%)
	3	18 (46.2%)
<b>Clinical N stage</b>		
	0	27 (69.4%)
	1	10 (25.6 %)
	2	2 (5%)
<b>Clinical grade</b>		
	1	4 (10.3%)
	2	21 (53.8%)
	3	13 (33.3%)
	4	1 (2.6%)

For purpose of assessment of the changes in the post-operative pathological data compared to pre-operative clinical data, and studying the significant factors that may predict these changes; the patients were re-categorized according to the change seen in two sets of data:

The patients were divided into 2 groups based on the observed post-operative results; those who maintained their grade unchanged, the other group included those with up-grading as shown in table (2). ***It was observed that alcohol consumption has a significant predicting effect regarding the up grading of the tumour cells pathology***

**Change in tumour grading:**

		Same G (N=36)	Higher G (N=3)	p-value
<b>Age</b>		53.39 ± 9.77	59.33 ± 1.15	0.15
<b>Sex</b>				
	Male	15	3	0.17
	Female	21	0	
<b>Smokers</b>		15	3	0.17
<b>Alcohol consumers</b>		2	2	<b>0.02</b>
<b>Site</b>				
	Tongue	17	3	0.83
	Cheek	8	0	
	Floor of mouth	8	0	
	Lower lip	3	0	
<b>Pathology</b>				
	SCC	26	3	0.67
	Others	10	0	
<b>Clinical T stage</b>				
	1	1	0	0.54
	2	18	2	
	3	17	1	
<b>Clinical N stage</b>				
	0	25	2	0.67
	1	9	1	
	2	2	0	

**Change in LN status:**

Again, the patients were divided into 3 groups based on the observed post-operative results; those who maintained their LN invasion status unchanged, another group included those with up-grading in LN invasion status, the third

group included those with down-grading in LN invasion status as shown in table (3). *It was observed that the age has a significantly predicting effect regarding the change of the tumour LN status invasion with inverse relationship between the age and possibility of presence of actual (pathological LN invasion)*

		Same N (N=26)	Higher N (N=11)	Lower N (N=2)	p-value
<b>Age</b>		52.2 ± 10.8	51.9 ± 6.1	64.8 ± 2.7	<b>0.02</b>
<b>Sex</b>					
	Male	12	6	0	0.6
	Female	14	5	2	
<b>Smokers</b>		10	6	1	0.65
<b>Alcohol consumers</b>		2	1	0	0.71
<b>Site</b>					
	Tongue	12	7	1	0.65
	Cheek	5	2	1	
	Floor of mouth	8	0	0	
	Lower lip	1	2	0	
<b>Pathology</b>					
	SCC	17	10	2	0.4
	Others	9	1	0	
<b>Clinical T stage</b>					
	1	1	0	0	0.53
	2	11	8	1	
	3	14	3	1	
<b>Pre-op G</b>					
	1	3	1	0	0.43
	2	10	9	2	
	3	12	1	0	
	4	1	0	0	

## Discussion

Oral cavity cancers as foretold are not uncommon group of malignancies, with variable presenting picture according to the anatomical subsite. Few researchers investigated the issue of discrepancy between the pre and the post-operative findings regarding tumor grading and extent of lymph node spread. In this research the issue is addressed.

Reviewing the patients' clinical data in our study proved that their age range was more quite similar to the patients' age range studied by other researchers as those published by *Eder et al.* <sup>(8)</sup>, *Rahadiani et al.* <sup>(9)</sup>, and *Dasgupta et al.* <sup>(10)</sup>. This is consistent with the globally published consensus regarding age distribution for this group of malignancy.

On reviewing the sex distribution, we had more female predominance, and this quite different than most of the published studies. Actually we had no definite explanation for that apart from the idea of having predominant number of tongue cancer complicating chronic traumatic ulcer by sharp broken tooth in old females, this may make some sense. Consequently, reviewing the two most common risk factor smoking and alcoholism showed that less percentage of smokers being not a common female habit in the region of study, as well as

less and less alcohol consumption being very uncommon in the study region.

Regarding tumour site and histopathological type, we had similar findings as those recorded by *Rahadiani et al.* <sup>(9)</sup> in the both aspects. On the other side both *Eder et al.* <sup>(8)</sup>, and *Dasgupta et al.* <sup>(10)</sup> showed quite different findings not having the tongue as the mostly encountered as ours, and the pathology was exclusively determined by both of squamous cell carcinoma.

Reviewing T stage of the tumour, our results are very similar to both *Eder et al.* <sup>(8)</sup>, and *Dasgupta et al.* <sup>(10)</sup> having T2 as the most predominantly encountered cases followed by T3 then T1. The condition is different than *Rahadiani et al.* <sup>(9)</sup> who reported T4 as the most predominant then T3, T2 and finally T1. On the other hand, both *Rahadiani et al.* <sup>(9)</sup>, and *Dasgupta et al.* <sup>(10)</sup> showed similar percentage of lymph node infiltration, having N0 as the mostly encountered, while *Eder et al.* <sup>(8)</sup> had N2 as the most predominant. But on assessing the grade, the results are variable between studies with no dominant trend manifested.

On reaching the core of our study regarding the discrepancy between the pre- and post-operative findings with statistical assessment of different factors trying to find the effective factors predicting this gap, we found that

alcoholism is a strong predictor of having post-operative higher tumour grade compared to the pre-operative finding. But it is worth noting that our biopsy was always incisional (punch, or partial tumour mass biopsy) raising the question regarding the malignancy provoking reaction of alcohol consumption, is it a more deeper effect than superficial contact with the surface epithelium.

But regarding the other aspect of the gap of lymph node invasion, It was observed that the age has a significantly predicting effect with inverse relationship having higher lymph node invasion percentage with younger age groups. This principle agrees with the dynamic process of lymphatic drainage in different organs with changes affected by advancing individual age.

This discrepancy is well stated by other researchers, *Henriques et al.*<sup>(11)</sup>, *Kilic et al.*<sup>(12)</sup> who reported that clinical staging usually underestimates the presence of nodal disease, with nodal upstaging is much more common than downstaging producing survival implications. Therefore they recommended neck dissection to be performed in cNo oral cavity squamous cell carcinoma.

## Conclusion

In this study discrepancy between pre- and post-operative findings in oral cavity malignancy could be proved especially in tumour grade in relation to alcohol

consumption and lymph node invasion in relation to patient age. Based on these findings extended lymph node dissection levels can be considered in patients with oral cavity cancers deemed for neck dissection especially when the patient age is less than fifty years of age.

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### To Cite:

Abozaid, E., Sweed, A., Asar, M., Qasem, E., Awad, J. Clinicopathological discrepancy of oral cavity cancer before and after surgery. *Zagazig University Medical Journal*, 2024; (1938-1945): -. doi: 10.21608/zumj.2024.297033.3439