

ORIGINAL RESEARCH

Correlation between Clinical T-Staging and positive lymph nodes in histopathological reports in cases of oral cavity malignancies

¹Dr. Jubin Sonane, ²Dr. Rajgovind Sharma, ³Dr. Suresh Singh, ⁴Dr. Pinakin Patel

¹Assistant Professor, Department of Plastic Surgery, MGM Superspeciality Hospital, Indore, Madhya Pradesh, India

²Senior Professor & Head, Department of Surgical Oncology, Shri Ram Cancer Centre, Mahatma Gandhi Medical College Hospital, Jaipur, Rajasthan, India

³Professor and Head, ⁴Associate Professor, Department of Surgical Oncology, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India

Corresponding author

Dr. Jubin Sonane

Assistant Professor, Department of Plastic Surgery, MGM Superspeciality Hospital, Indore, Madhya Pradesh, India

Email: jubin.sonane@gmail.com

Received: 11 June, 2023

Accepted: 14 July, 2023

ABSTRACT

Introduction: Oral cancer is the world's sixth leading cause of cancer-related death. Nodal metastases, whether present or absent, has a significant impact on the prognosis and survival of patients with head and neck cancer. We did a study to see if there was a link between T staging and positive lymph nodes in histopathological reports in cases of oral cavity malignancies that had been operated on. **Materials And Methods:** The research was conducted as a Hospital Based Descriptive Observational Study. The study comprised 111 patients with histopathological verified Squamous Cell Carcinoma of the Oral Cavity and those who needed surgery with neck dissection due to metastatic disease. Patients were operated with excision of tumour and modified radical neck dissection. Initial T stage of the lesion was compared to final number of positive lymph nodes in the histopathological report. **Results:** With advanced (T3 and T4) stage of presentation, metastasis to lymph nodes was more common (77.5%) than early (T1 & T2) stage of presentation (54.92%). With T4 stage metastasis to multiple nodes (63.63%) was more than T2 stage (61.53%). Early stage i.e., T1 has more cases with single lymph node metastasis (58.33%) while T4 has low single lymph node metastasis (36.36%). (table -4). In Early stage of presentation i.e., T1 & T2, patient had more metastasis to single lymph node (44.73%) while in late presentations i.e., T3 & T4, patients had more metastasis to multiple lymph nodes (58.06%). **Conclusion:** It was found that T4 had more patients (63.63%) with multiple lymph node involvement, followed by T2 which had 61.53% patients having multiple nodal metastasis. Patients with T1 had more patients (58.33%) with metastasis to single lymph node. In patients classified as late stage, i.e., T3 & T4 patients had 58.06% multiple nodes involvement compared to early-stage patients (41.93%). There was no significant association between stage of presentation and number of nodes involved.

Keywords: oral cancers, oral cavity malignancy, lymph nodes, neck dissection, TNM staging

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

INTRODUCTION

Oral cancer is the world's sixth leading cause of cancer-related death. Oral cavity and pharyngeal cancers account for 363,000 new cases and about 200,000 fatalities per year around the world. This accounts for around 6% of all cancers' incidence and 5% of all cancer deaths. Oral cavity and pharyngeal cancers account for about three-quarters of all cases, with laryngeal cancers accounting for the remainder^{1,2,3}.

Oral cancer is a big problem in the Indian subcontinent, where it is one of the country's top three cancers⁴.

In addition to the main lesion's size, the location, thickness, histological staging, and the presence or absence of metastatic dissemination all play a role in determining a therapeutic strategy. The five-year survival rate drops to 50% when an ipsilateral metastatic node is present.⁵ When compared to a patient who does not have a metastatic node, the presence of bilateral metastatic neck nodes lowers the survival rate to 25%.^{6,7}

Nodal metastases, whether present or absent, has a significant impact on the prognosis and survival of patients with head and neck cancer. This raises the chances of localised recurrence as well as distant metastasis. Even in early-stage cancer, there is a substantial rate of concealed metastases (T1 and T2). It is found in more than 30% of patients with early carcinoma. Although late-stage carcinomas (T3 and T4) have clear metastases to their respective cervical lymph nodes, cervical lymph node positivity varies depending on the initial and final T staging.⁸

We did a study to see if there was a link between T staging and positive lymph nodes in histopathological reports in cases of oral cavity malignancies that had been operated on.

MATERIALS AND METHODS

The research was conducted as a Hospital Based Descriptive Observational Study. Patients with malignancies of the oral cavity are admitted to S.M.S. Medical College and Hospital in Jaipur. The sample size was calculated 111 participants at alpha error 0.05 and power 80 percent, assuming cervical lymph node metastases in 35.6 percent of T1 and T2 tumours and 62.35 percent of T3 and T4 tumours. The study comprised patients with histopathological verified Squamous Cell Carcinoma of the Oral Cavity and those who needed surgery with neck dissection due to metastatic disease. Patients who had received radiation and chemotherapy, as well as those who had inoperable illness with distant metastases, were excluded from the study. Each patient had a thorough medical history obtained, followed by a clinical examination to capture specified physiological characteristics. Clinically cervical lymph nodes were assessed for location, number, size, and fixation of

lymph nodes. Nodes will be malignant if size > 1 cm: fixed and hard.

SURGICAL PROCEDURE

With the original tumour removed, a neck dissection was performed. A Supraomohyoid neck dissection was performed if there was no sign of lymph node involvement during the pre-treatment evaluation. A radical neck dissection was performed if there was evidence of lymph node involvement.

OBSERVATIONS AND CALCULATIONS

Out of 111 patients, 88 were male (79.27%); with male to female ratio of 3.82. Cheek/buccal mucosa was the most common site involved followed by tongue. (Table 1). Males had presentation at early age (43.14 yrs.) compared to females (47.82 yrs.). Average age of presentation was 44.13 yrs. Tobacco chewing (59.46) followed by smoking (53.13) were most common predisposing factors. (Table -2). Clinical nodes were present in 59 patients (53.23%) with N1 (37.83%) being the commonest. (table -3). Nodal metastasis was seen more common in T3 and T4 cases. With advanced (T3 and T4) stage of presentation, metastasis to lymph nodes was more common (77.5%) than early (T1 & T2) stage of presentation (54.92%). With T4 stage metastasis to multiple nodes (63.63%) was more than T2 stage (61.53%). Early stage i.e. T1 has more cases with single lymph node metastasis (58.33%) while T4 has low single lymph node metastasis (36.36%). (table -4). In Early stage of presentation i.e. T1 & T2, patient had more metastasis to single lymph node (44.73%) while in late presentations i.e. T3 & T4, patients had more metastasis to multiple lymph nodes (58.06%).

Table – 1: Malignancy Site

Site	Male patients		Female patients		Total	
	No of patients	% of patients	No of patients	% of patients	No of patients	% of patients
Lip	4	3.6%	1	.9%	5	4.5%
Tongue	19	17.11%	7	6.3%	26	23.42%
Buccalmucosa/cheek	33	29.72%	9	8.1%	42	37.83%
Floor of mouth	2	1.8%	2	1.8%	4	3.6%
GBS	7	6.3%	2	1.8%	9	8.1%
RMT	12	10.8%	2	1.8%	14	12.60%
Alveolus	5	4.5%	0	0%	0	4.5%
Multiple sites	6	5.4%	0	0	6	5.4%
Total	88	79.27%	23	20.72	111	100%

Table – 2: Predisposing factors

Predisposing factors	Total patients	Percentage
Alcohol intake	21	18.91
Pan	12	10.8
Smoking	59	53.13
Betel nut	12	10.8
Tobacco chewing	66	59.46
Occupational exposure	0	0

Dental prosthesis	0	0
Trauma d/t dentures	2	1.8
Any other	2	1.8
None	6	9.23

Table – 2: Tobacco chewing (59.46) followed by smoking (53.13) were most common predisposing factors.

Table – 3: Nodal staging

Nodal stage	Number of patients	Percentage
N0	52	46.83
N1	42	37.83
N2a	8	7.2
N2b	8	7.2
N2c	1	0.9
N3	0	0
Total	111	100

Table –3: Clinical nodes were present in 59 patients (53.23%) with N1 (37.83%) being the commonest.

Table – 4: Number of nodes involved in relation to t stage

T Stage	Cases with positive Lymph node metastasis	Cases with Single Lymph Node metastasis	Cases with Multiple Lymph node metastasis
T1	13	8 (58.33%)	5 (41.66%)
T2	26	10 (38.46%)	16 (61.53%)
T3	8	5 (55.55%)	5 (44.45%)
T4	22	8 (36.36%)	14 (63.63%)

Table-4: With T4 stage metastasis to multiple nodes (63.63%) was more than T2 stage (61.53%). Early stage i.e. T1 has more cases with single lymph node metastasis (58.33%) while T4 has low single lymph node metastasis (36.36%).

COMPARISON OF CLINICAL LYMPH NODE PALPATION WITH HP EXAMINATION

On clinical examination 74 patients had palpable neck nodes on (66.67%) examined. On comparing with the pathology reports 47 of 74 patients showed metastasis but the remaining 27 neck sides revealed no metastasis. Out of 111 neck sides, 47 were true positive (42.24%), 24 were true negative (21.62%), 27 false positive (27.32%) and 13 were false negative (11.7%). There is statistically significant difference in presence of metastasis in patients with early and late stage of presentation in oral cavity cancer with p value=0.03 (<0.05) calculated using Chi Square test. Presence of metastasis to lymph nodes is much higher (71.5%) in late stage of oral carcinoma than early (54.5%). Late stage of presentation has more (58.06%) lymph node metastasis than early stage of presentation (55.26%) but there is no statistically significant association (p value=0.912) between stage of presentation of oral cancer with lymph node metastasis.

DISCUSSION

In comparison to any other Asian country, India has the highest rate of oral cavity cancer. Oral cancers are the third most prevalent type of cancer in India, according to the IARC's GLOBOCAN 2008 report. In males, it is the second most prevalent type of cancer, while in females, it is the fourth most common. In India, smokeless tobacco products like betel nut,

tobacco, 'gutkha,' and 'pan,' (a mixture of tobacco, betel nut, lime, and other substances wrapped in a vegetable leaf), are very popular.⁹

A tumour's cervical metastasis is a clear indication of its aggressiveness. The treatment of cervical metastatic illness is one of the most contentious issues in medicine. The presence of cervical metastasis is widely acknowledged as the most important prognostic factor in oral cavity/head and neck SCC, accounting for a 50% reduction in 5-year survival rate for ipsilateral cervical lymph node metastasis and a 75% reduction in 5-year survival rate for bilateral metastasis. As a result, individuals with oral cavity SCC should have their cervical lymphadenopathy evaluated. Fortunately, much progress has been made in understanding the complex dynamics of metastatic illness. Most cancers exhibit a consistent pattern of neck metastasis. From December 2012 to November 2014, 111 patients with oral cancer were studied at our Institute's Surgical Oncology, Plastic Surgery, Otolaryngology, Radiography, And Pathology Departments. Observational research was carried out in a hospital. This study's overall profile compares our findings to those of previous research. Lymph node metastasis was present maximum in T3 stage (81.81%)>T4 (78.57%)>T2 (59.09%)>T1 (48.14%). Patients were divided as early and late based on T stage, with early being T1 & T2 while late being T3 & T4. In Early-stage patients had nodal metastasis in 54.92% of cases while in late-stage patient had metastasis in 77.5% of cases.

By using Chi Square test P value was calculated 0.031, which showed significant association between T stage and nodal metastasis.

In our study, sensitivity and specificity of clinical examination was poor suggesting that clinical examination is of limited use in predicting cervical nodal metastasis. McNemar test was used to calculate P value for difference between Clinical examination and Histopathological examination for nodal staging. A $p=0.0398$ value was obtained which signified the difference between two entities.

In our study, nodal metastasis was also studied as number of positive lymph nodes, i.e. whether single or multiple nodes are involved in each T stage and also in early or late stage of presentation.

It was found that T4 had more patients (63.63%) with multiple lymph node involvement, followed by T2 which had 61.53% patients having multiple nodal metastasis. Patients with T1 had more patients (58.33%) with metastasis to single lymph node.

In patients classified as late stage, i.e. T3 & T4 patients had 58.06% multiple nodes involvement compare to early stage patients (41.93%). There was no significant association ($p=0.912$) between stage of presentation and number of nodes involved.

CONCLUSION

Lymph node metastasis was present maximum in T3 stage (81.81%)>T4 (78.57%)>T2 (59.09%)>T1 (48.14%). In Early stage, patients had nodal metastasis in 54.92% of cases while in late-stage patient had metastasis in 77.5% of cases. It was found that T4 had more patients (63.63%) with multiple lymph node involvement, followed by T2 which had 61.53% patients having multiple nodal metastasis. Patients with T1 had more patients (58.33%) with metastasis to single lymph node. In patients classified as late stage, i.e., T3 & T4 patients had 58.06%

multiple nodes involvement compared to early-stage patients (41.93%). There was no significant association between stage of presentation and number of nodes involved.

REFERENCES

1. Broumand V, Lozano T, Gomez J. Evaluation and Staging of Oral Cancer. *Oral and Maxillofacial Surgery Clinics of North America*. 2006;18(4):435-444.
2. Parkin D, Pisani P, Ferlay J. Global cancer statistics. *CA: A Cancer Journal for Clinicians*. 1999;49(1):33-64.
3. Jatin P. Shah, Snehal G. Patel. *American Cancer Society Atlas of Clinical Oncology, Cancer of the Head and Neck*. BC Decker Inc, Hamilton, London; 2001: pp 1.
4. Mishra A, Meherotra R. Head and Neck Cancer: Global Burden and Regional Trends in India. *Asian Pacific Journal of Cancer Prevention*. 2014;15(2):537-550.
5. To E, Tsang W, Cheng J, Lai E, Pang P, Ahuja A et al. Is neck ultrasound necessary for early stage oral tongue carcinoma with clinically N0 neck?. *Dentomaxillofacial Radiology*. 2003;32(3):156-159.
6. Knappe M, Louw M, Gregor R. Ultrasonography-Guided Fine-Needle Aspiration for the Assessment of Cervical Metastases. *Archives of Otolaryngology-Head & Neck Surgery*. 2000;126(9):1091.
7. Anand N, Chaudhary N, Mittal M, Prasad R. Comparison of the efficacy of clinical examination, ultrasound neck and computed tomography in detection and staging of cervical lymph node metastasis in head and neck cancers. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2007;59(1):19-23.
8. Fischer's Mastery Of Surgery 6th edition Nodal factors and Prognosis p 334-336.s
9. Ferlay J, Shin H, Bray F, Forman D, Mathers C, Parkin D. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International Journal of Cancer*. 2010;127(12):2893-2917.