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### Histopathological grading and assessment of risk factors of squamous cell carcinoma tongue

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#### ABSTRACT

The main aim to study the histopathological grading of squamous cell carcinoma tongue and to assess the risk factors of squamous cell carcinoma tongue. Histopathological grading of squamous cell carcinoma tongue is a prognostic indicator because squamous cell carcinoma tongue has potential for metastasis to lymph nodes mainly submandibular lymph node. The major risk factors are history of smoking and tobacco chewing. Surgical resection along with radiotherapy and chemotherapy is the treatment of choice. After approval from the ethical Committee both retrospective and prospective studies for 3 years duration from March 2012 to April 2015 was done and All the samples were taken from department of dentistry and department of ENT to the department of pathology for histopathological examination. All samples were processed and slides were stained with H & E and total cases in this study are 133. Squamous cell carcinoma tongue was more common in males accounting about 80.4% (107/133) with a history of smoking present 93.4 % (100/107) males and 23% (6/26) females, History of tobacco chewing seen in 91.5% (98/107) males and 34.6 % (9/26) females. History of alcohol consumption was seen in 30% (40/133) cases. On histopathological examination 71.4% (95/133) of the tumors were well differentiated, 26.3% (35/133) were moderately differentiated and 2.2% (3/133) were poorly differentiated. Most of tongue lesions were well differentiated squamous cell carcinoma, so main risk factors are smoking and tobacco chewing for commonest metastasis was to submandibular lymph node.

**Keywords:** Carcinoma of the tongue, Squamous cell carcinoma, Submandibular lymph node.

#### INTRODUCTION

Oral cancer is the sixth most common cancer worldwide <sup>1</sup>. Maximum 90% of all oral cancers are squamous cell carcinoma (SCC) <sup>2</sup>. The most important risk factors for oral squamous cell carcinoma are the use of tobacco or betel quid and the regular drinking of alcoholic beverages <sup>3</sup>.

However, infection with high-risk human papillomavirus (HPV) genotypes, and a diet low in fresh fruits and vegetables have also recently been implicated in the aetiopathogenesis of oral squamous cell carcinoma <sup>4</sup>. The highest incidence and prevalence of oral SCC is found in the Indian subcontinent where the risk of developing oral SCC

is increased by the very prevalent habits of chewing tobacco, betel quid and Areca-nut<sup>5</sup>. The mutagenic effects of tobacco, alcohol, betel quid or Areca-nut are dependent upon dose, upon frequency and upon duration of use and are accelerated and exaggerated by the concurrent use of two or more of these agents<sup>6</sup>.

The carcinoma of the tongue represents 25% to 50% of all cases of oral squamous cell carcinoma (OSCC) with the lateral borders and the anterior two thirds the most commonly affected locations<sup>7</sup>. Squamous cell carcinoma of the tongue usually arise from the ventrolateral aspect of the mid and posterior tongue, probably due to adjacent pooling of carcinogens<sup>8</sup>. There is a strong association between the frequent consumption of alcohol and tobacco and the incidence of head and neck cancer, and the reduction of their consumption has been associated with the prevention of cancer development<sup>9,10</sup>. Due to the extensive lymphatic drainage of the tongue, nodal metastases are common (37-58%)<sup>5,6</sup> at the time of diagnosis (more common than any other site in the oral cavity)<sup>11</sup>. The present investigations to study the histopathological grading of squamous cell carcinoma tongue and assess the risk factors of squamous cell carcinoma tongue.

## MATERIALS AND METHODS

Clinicopathological data of 133 patients diagnosed with Oral Tongue Squamous Cell Carcinoma (OTSCC) at the Department of Pathology ASCR Govt. Medical College Hospital between March 2012 to April 2015 were reviewed. The local Ethics Committee approved the study protocol. Only patients with tumors clinically defined as OTSCC, original histopathological material available for review and a clinical follow-up data with a minimum of 36 months or until death were included in the

study. 115 patients were eligible for the inclusion. All patients were surgically treated with curative intent. Hospital records were reviewed and data on patient characteristics, treatment, histopathology, and follow-up were collected. The dates and causes of death were provided. Exclusion criteria being a history of carcinoma of the upper GIT. All the samples were sent from department of dentistry and department of ENT to the department of pathology for histopathological examination. All cases with lesions in the tongue undergone semi or total glossectomy and neck dissection.

## RESULTS AND OBSERVATIONS

### Age Distribution

Total number of cases in the present study was 133 out of them Family history of cancer was present in 15% (20/133) patients, Family history of oral cancer was present only in 7.5% (10/133) patients, History of smoking was present 93.4 % (100/107) males and 23% (6/26) females, History of tobacco chewing seen in 91.5% (98/107) males and 34.6 % (9/26) females, History of alcohol consumption was seen in 30% (40/133) cases. The most common site of tongue lesion was on Posterior lateral border accounting for about 60.1% (80/133), next common site was Anterior border tongue about 24 % (32/133), remaining were dorsum & ventral areas occupying about 8.2% (11/133) and 7.5% (10/133), Leukoplakia was present in 11.2% (15/133) cases, Clinically patients presented with painless swelling in the tongue with metastasis to submandibular lymph node in 82.7% (110/133) remaining cases presented with only ulcer in the tongue i.e. 17.2% (23/133), The median size of tongue lesion were 5x3cm and results and observations were shown in both table and figure number 1-2 and 1-2

**Table 1 Age Distribution**

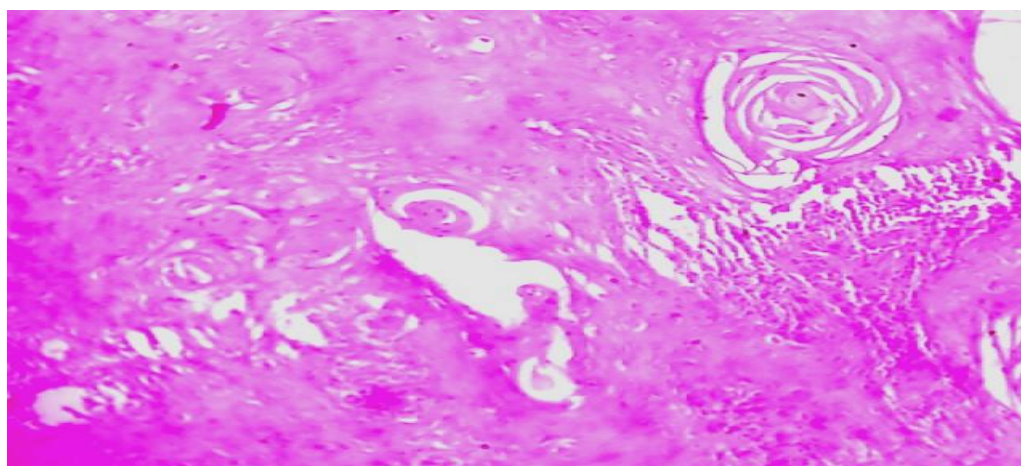
Age in years	Males	Females	No. of cases/%
20-30	4	1	5(3.7%)
31-40	6	4	10(7.5%)
41-50	11	4	15(11.2%)
51-60	45	8	53(39.8%)
61-70	34	6	40(30%)
71-80	3	2	5(3.7%)
81-90	4	1	5(3.7%)
Total	107	26	133(99.6%)

**Table 2 Showing histopathological grading of squamous cell carcinoma tongue**

Broders Classification	Metastatic group	Non metastatic group	Total
Well differentiated	88	7	95(71.4%)
Moderately differentiated	20	15	35(26.3%)
Poorly differentiated	2	1	3(2.2%)
Total	110	23	133



**Figure 1 Received Total Glossectomy specimen showing tongue with grey white lesion measuring about 3x3cm.**



**Figure 2 40X H/E stained sections show well differentiated squamous cell carcinoma ,keratin pearls**

### **TNM Staging**

Staging is the way your disease is measured. Three aspects are important are 1. The size of the cancer in mouth (T stage), 2. Whether there has been any spread of the cancer to the lymph glands in your neck (N stage) and 3. Whether there has been any spread of the cancer to other parts of your body (M

stage). This form of spread is unusual in oral tongue cancer. This forms the basis of a classification known as a 'TNM' staging. Most of the patients reported very late in advanced stage i.e. Stage III 65 (48.8%) and Stage IV 41 (30.8%) respectively, Stage I 8 (6%) and II. 19 (14.2%) AND Results and Observations are shown in table numbers 3and 4.

**Table 3 Comparative studies of TNM Staging of squamous cell carcinoma tongue**

TNM Staging	Muslim khan et al (13)	Hamidreza azimi et al (15)	Present study
Stage I	2(8.69% )	64(67.2%)	8(6%)
Stage II	4(17.39% )	4(3.9%)	19(14.2%)
Stage III	10(43.47% )	10(9.8%)	65(48.8%)
Stage IV	7(30.43% )	24(23.5%)	41(30.8%)
Total	23	102	133

**Table 4 Comparative studies of histopathological grading**

Histopathological grading	Muslim khan et al (13) no. of patients	Elizabeth Mathew iype et al (12)	Hamidreza azimi et al (15)	Present study Number of patients
G1	17(73.91% )	55 (47.8%)	57(55.8%)	95(71.4%)
G2	4(17.39% )	41 (35.7%)	43(42.1%)	35(26.3%)
G3	2(8.69% )	1 (0.9%)	2(1.9%)	3(2.2%)

G1=Well differentiated, G2= Moderately differentiated and G3= Poorly differentiated.

## DISCUSSION

The present study was done for the duration of 3 years from March 2012 to April 2015 and total number of cases with Squamous cell carcinoma tongue was 133, the majority of the cases involved in 51-60 years age group. When compared to Elizabeth Mathew iype et al <sup>12</sup> study, a total number of 115 patients under the age of 35 years with Squamous cell carcinoma tongue in the 15-year period from 1982 to 1996 were analyzed and compared with Muslim khan et al study <sup>15</sup> a total number of 23 patients were studied with the majority being in 41-50 years age group. In the present study about 89.4% (119/133) males presented with squamous cell carcinoma tongue and correlating with Muslim khan et al <sup>13</sup> study, which, showed squamous cell carcinoma of the tongue more common in males (65%) than females (35%), when compared to Elizabeth Mathew iype et al <sup>14</sup> study and they were 64.3% (74/115) men and 35.7% (41/115) women with a male to female ratio of 1.7:1 and compared with Hamidreza Azimi et al <sup>15</sup> study showed 67 males and 35 females with the median age of 57 years (age ranged from 40 to 70 years). In the present study family history of cancer was present in 15% (20/133) patients, and family history of oral cancer was present only in 7.5% (10/133) patients and it was correlated to Elizabeth Mathew iype et al <sup>12</sup> study,

which showed family history of cancer in 12.2% (14/115) patients, whereas family history of oral cancer was present only in 2.6% (3/115) patients. The most common site of tongue lesion was on Postero-lateral border accounting for about 60.1% (80/133) this was correlated with Muslim khan et al study <sup>13</sup> which showed 52.1% (12/23) at Postero-lateral border. In Azam Fazlipur et al <sup>14</sup> study all of the smokers (28.5%) were male and no consumption of alcohol was seen. Ian Ganly et al study <sup>16</sup> histories of tobacco smoking were seen in 50% cases (109/216) and History of alcohol consumption in 36% cases (77/216). In the present study history of smoking was present in 83.4% (111/133) and history of alcohol consumption was seen in 30% (40/133) cases. Azam Fazlipur et al <sup>14</sup> study the most common site of node involvement was the submandibular area (41.1%) followed by upper and mid jugular (23.5%) and sub mental area (11.7%). In Hamidreza Azimi et al study <sup>15</sup> the most common complaint among 77% of the patients was a painless swelling or ulcer. The remaining 23% complained of a dull ache radiating deeply into the ear. In the present study painless swelling in the tongue with metastasis to submandibular lymph node seen in 82.7% (110/133), remaining cases presented with only ulcer in the tongue i.e. 17.2 % (23/133).

It was observed that 6% of the cases clinically classified as TNM stage I were disease-free, as were 19% of the patients with TNM stage II after 3 year's follow-up and found that 65% of patients with TNM stage III had the disease or had died. Stage IV was present in 41% of the patients who had the disease or who had succumbed to it. TNM, clinical stage I and II were mostly observed in disease-free patients, whereas individuals with ongoing or recurring disease or who had died were the most prevalent in TNM clinical staging III and IV. Woolgar et al.<sup>17</sup>, Numata et al.<sup>18</sup>, and Dib et al.<sup>19</sup> report a strong correlation between TNM, clinical classification and survival in patients with oral squamous cell carcinoma of the tongue.

Many researchers consider TNM, clinical staging to be one of the best prognostic indicators of oral

squamous cell carcinoma<sup>20</sup>. The study has shown a strong correlation between TNM, clinical classification and the survival of patients with oral epidermoid carcinoma<sup>17-20</sup>.

## CONCLUSION

From the all investigations and basis of results and observations, it was concluded that the most of tongue lesions were well differentiated squamous cell carcinoma. Main risk factors were smoking and tobacco chewing. Most of the patients were presented in stage IV with commonest metastasis to submandibular lymph node. Surgical resection along with radiotherapy and chemotherapy is recommended for survival the patients, those who are with this significance.

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