

## Original Article

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# Role of Selective Neck Dissection in Primary T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> Neck Oral Tongue Carcinoma

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### Abstract:

**Background:** Oral tongue is one of the common site for carcinoma. 22% to 39% of oral cancer develops at this site. The high incidence of cervical lymph node metastasis, occult cervical metastasis, Provide a logical basis for treatment of the neck. The aim of this study was to find out the importance of selective neck dissection in primary T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> Neck Oral Tongue Carcinoma.

**Methods:** This cross-sectional study was conducted in the Department of Otolaryngology-Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka Medical College Hospital and National Institute of ENT, Dhaka. Thirty cases of primary T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> Neck Oral Tongue Carcinoma with inclusion criteria was enrolled as a study sample. Patients were evaluated by a complete clinical head and neck examination as well as Imaging (MRI) of the primary tumor and neck. All the data were compiled and sorted properly and the numerical data were analyzed statistically. The results were expressed as percentage and mean  $\pm$  SD. Chi-square ( $\chi^2$ ) test or Fisher's Exact test was done for comparison of data presented in categorical value and p value <0.05 was considered as the level of significance. Among the patients 23(76.7%) were T<sub>1</sub> lesion and remaining 7(23.33%) were T<sub>2</sub> lesion. Extended Supraomohyoid Selective Neck Dissection (SOSD) (I-IV) was done in all patients. Following histopathological examination, 8(26.67%) patients of N<sub>0</sub> neck became positive for nodal metastasis.

**Results:** The study showed that most commonly (50%) involved group of occult metastasis was upper deep cervical lymph node in submandibular area (level-I). Occult nodal metastasis

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was significantly common 87.5% among male patients than females ( $p=0.039$ ) and also common 87.5% among <50 years age group ( $p=0.023$ ). Neck node positive was significantly more 62.5% in  $T_2$  lesion ( $p=0.002$ ) of oral tongue carcinoma.

**Conclusion:** In this study, we found that a number of patients had been histopathologically detected micro-metastases in regional neck nodes in clinically N0 patients. So, Extended Supraomohyoid Selective neck dissection (I-IV) was appropriate in  $T_1, T_2, N0$  Neck Oral Tongue Carcinoma.

**Key words:** Oral Tongue Carcinoma, Neck Node Metastasis, Selective Neck Dissection.

### Introduction:

Carcinoma tongue is a common head-neck cancer. Among all oral cancer, carcinoma tongue is the commonest. Tongue squamous cell carcinoma has tendency for occult metastasis in early stage. The incidence of occult metastasis ranges from 20-30%. Oral tongue squamous cell carcinoma is very aggressive & prognosis is poor<sup>1,2</sup>.

The incidence of oral cancer is high in Asian countries especially in south and south East Asia like India, Pakistan, Bangladesh, Taiwan and Srilanka. People of this subcontinent practice betel –quid chewing and tobacco smoking and alcohol consumption. These are important risk factors for cancer of oral cavity. Low socioeconomic status, diet low in nutritional value, lacking vegetables, fruits contribute risk factors. In addition, viral infections such as Human Papilloma Virus (HPV) & Poor oral hygiene are also important risk factors. The mean age of cancer of oral cavity is usually 51-55 years in most countries. Most common site is the tongue among oral cancers<sup>3</sup>.

The outcome of an early tongue carcinoma depends on various factors like age, tumor thickness or Depth Of Invasion (DOI) in underlying connective tissue, neck node metastasis, its extracapsular spread<sup>4,5</sup>. For measurement of tumor size & thickness, digital palpation, USG of tongue, MRI of tongue was done. Treatment of carcinoma tongue is done by Wide Excision with Neck

Dissection depending upto stage of tumor. Biopsy for histopathology was done routinely<sup>6</sup>.

Local invasion & distant metastasis is more common in early tongue carcinoma. Metastasis first to sentinel node & then to other cervical lymph nodes. It has a great impact on patient's survival. Prognosis is related to tumor thickness & cervical lymph node metastasis<sup>5</sup>. Most important prognostic factor is neck node metastasis. Survival rate lowers to 50% with neck node metastasis than without neck metastasis<sup>7,8</sup>. Clinical examination had a sensitivity of 75% & specificity of 80% to detect lymph nodes. Efficacy of USG, CT and MRI is compared to detect cervical lymph node metastasis. Clinical examination and CT scan detect 75-91% of neck metastasis<sup>9</sup>.

Byers et al<sup>10</sup>. did Supraomohyoid Neck Dissection (SOND) (level I-III) for primary tumors of oral cavity in N0 patients. In another study Byers showed skip metastasis in level III or IV in 15.8% patients with oral tongue carcinoma.

In a study, subsequent to diagnosis, treatment was given on stage at diagnosis. Survival after surgical treatment depends on pre-operative characteristics of tumor including thickness, positive nodes, differentiation of tumor, the surgery itself, performance of neck dissection & post-operative positive resection margin<sup>11-13</sup>. Tumor thickness, presence of perineural invasion,

cervical metastasis all influence prognosis of tongue carcinoma. Patients with greater thickness has more chance to regional metastasis. The management of N0 patients consists followings: watchful waiting, neck dissection when metastasis detected or prophylactic Selective Neck Dissection (SND) with hispathological examination of specimen. Most to author is in favor of prophylactic Selective Neck Dissection which is important in diagnostically and therapeutically<sup>14</sup>.

Several studies were done in abroad about the role of selective neck dissection, very few study was done in our country. In our study, after selective neck dissection, we found micrometastasis in a number (eight) of patients who were clinically N0 neck patients. This helped in formulating treatment of the patients. So, the importance of selective neck dissection in primary T<sub>1</sub>, T<sub>2</sub>, N0 neck oral tongue carcinoma was observed in this study.

#### Materials and Methods:

This cross sectional study was carried out in the department of Otolaryngology-Head & Neck Surgery at BSMMU, Dhaka Medical College Hospital and National Institute of ENT, Dhaka with the duration of 24 months July 2017 to June 2019. A total number of 30 patients with primary T<sub>1</sub>, T<sub>2</sub>, N0 neck oral tongue carcinoma was selected by purposive sampling technique who fulfill the inclusion criteria admitted into the hospital for selective neck dissection.

#### Selection criteria:

##### Inclusion criteria:

- i. Early oral tongue carcinoma i.e. T<sub>1</sub> (greatest diameter d" 2cm, d"5mm DOI) and T<sub>2</sub> (>2 cm but d" 4cm &> 5mm-d" 10 mm DOI)
- ii. Clinically non-palpable neck node.

#### Exclusion Criteria:

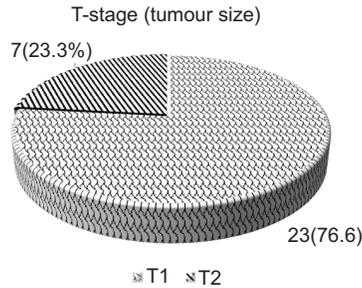
- i. Tumor more than 4 cm in greatest diameter & depth of Invasion > 10mm.
- ii. Tumor involving base of tongue or grossly invading floor of mouth
- iii. Recurrent oral tongue carcinoma
- iv. Carcinoma tongue as second primary carcinoma in oral cavity
- v. Palpable neck node metastasis
- vi. Radiologically detectable neck node.

**Study Procedure:** Patients with early oral tongue carcinoma, admitted in the department of Otolaryngology- Head & Neck Surgery, BSMMU; Dhaka Medical College Hospital and National Institute of ENT, Dhaka who had fulfilled the inclusion criteria were enrolled in this study. After taking informed written consent, detailed history was taken in a preformed questionnaire as a data sheet (instrument). Clinical examination was done to assess primary tumor and neck. Imaging (MRI) was done to measure tumour size, thickness, extension and neck assessment. After Surgery, tongue specimen & neck dissection specimens were sent for histopathological examination. Pathological size and thickness of tongue lesion was assessed. Histopathological examination of neck nodes at different levels were done to see whether metastasis was present or not. Pathological size>4cm & thickness> 10 mm (DOI) was excluded from the study.

**Data processing and analysis:** All the data were compiled and sorted properly. Data was processed and analyzed by using Microsoft office Excel 2010, software. The numerical data were analyzed statistically; results were expressed as percentage and mean ± SD. Chi-square (x<sup>2</sup>) test or Fisher's Exact test was done for comparison of data presented in categorical value. P- value <0.05 was considered as the level of significance.

**Results:**

Among 30 patients with early oral tongue carcinoma (T<sub>1</sub>, T<sub>2</sub>) with clinically N0 (absence of nodal metastasis), 17 males and 13 females (M:F=1.3:1), age ranged from 26 years to 78 years (mean ±SD= 52.6±9.26). Among those patients 23 (76.7%) were in T<sub>1</sub> stage and remaining 7 (23.3%) patients were in T<sub>2</sub> stage. All patients were clinically and radiologically negative for nodal metastasis (N0). All patients had undergone wide excision of primary tumour with Extended Supraomohyoid Selective Neck Dissection (I-IV) for nodal sampling. This sampling revealed histologically positive in 8 (26.67%) patients and negative in 22 (73.33%) patients.



**Figure 1** T (Tumour size) stage of the early Carcinoma of Oral Tongue (n=30)

**Table I :**

*Baseline characteristics of the patients with early Oral Tongue Carcinoma (n=30)*

Variables	Frequency	Percentage
<b>Age (in years)</b>		
<30	1	3.33
31-40	2	6.67
41-50	15	50
51-60	6	20
61-70	4	13.33
>70	2	6.67
Mean±SD (Range)	52.6±9.26 (26-78) years	
<b>Sex</b>		
Male	17	56.7
Female	13	43.3
<b>Personal habit</b>		
Smoking	19	63.3
Betelnut + tobacco	27	90.0
Alcohol	2	6.7

**Table II :**

*Positive node sampling in relation to the age and gender of the patients in early Oral Tongue Carcinoma (n=30)*

Variables	True N0	Occult N+ve	Total	p-value
Age	< 50 years	9(40.91%)	7(87.5%)	0.023 <sup>s</sup>
	> 50 years	13(59.09%)	1(12.5%)	
Sex	Male	10 (45.45%)	7 (87.5%)	0.039 <sup>s</sup>
	Female	12 (54.54%)	1 (12.5%)	

**Table III :**

*Duration of betel nut plus raw tobacco chewing and smoking habits (n=30)*

Duration	Betel nut plus raw tobacco chewing	Smoking	Both (Betel nut plus raw tobacco chewing and smoking)	None
< 10 years	4 (14.8%)	2 (10.5%)	3 (15.0%)	0
10-20 years	6 (22.2%)	4 (21.1%)	5 (25.0%)	0
> 20 years	17 (62.9%)	13 (68.4%)	12 (60.0%)	0
Total	27 (100.0%)	19 (100.0%)	20 (100.0%)	3

**Table IV :**

*Distribution of the patients by presenting symptoms, anatomical sites and macroscopic features (n=30)*

Variables	Frequency	Percentage (%)
<b>Presenting complaints</b>		
Ulcerated tongue	28	93.3
Dysphagia	22	73.3
Pain in tongue	18	60.0
Excess salivation	9	30.0
Earache	2	6.7
<b>Anatomical sites</b>		
Lateral border of the tongue	22	73.3
Dorsum	4	13.3
Ventral surface	2	6.7
Tip of tongue	2	6.7
<b>Macroscopic features</b>		
Ulcerative	20	66.7
Exophytic	6	20.0
Fungating	3	10.0
Infiltrative	1	3.3

**Table V :**

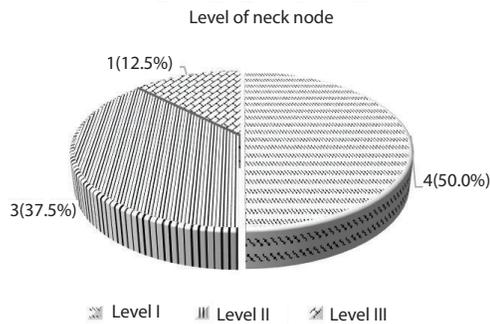
*Categorization of early oral tongue carcinoma (T<sub>1</sub> and T<sub>2</sub>) according to node positive status (n=30)*

T-Tumour size (greatest diameter in cm) and depth of invasion	N0(%)	N+ve (%)	Total (%)	p value
T <sub>1</sub> (≤2 cm)	20 (90.9%)	3 (37.5%)	23 (76.7%)	0.002 <sup>s</sup>
T <sub>2</sub> (>2 - 4 cm)	2 (9.1%)	5 (62.5%)	7 (23.3%)	
Total	22 (100.0%)	8 (100.0)	30 (100.0)	

**Table VI :**

*Relation between tumor thickness and Neck Node metastasis among study subjects (N=30).*

Tumor thickness(mm)	Neck Node Metastasis		t-test	p value
	Positive (n=8)	Negative(n=22)		
Mean ± SD	5.55±1.07	2.88±0.75	8.32	<0.001**
Range	4.3 - 7.8	1.10 - 4.0		



**Figure-2:** Frequency of node positive in different neck node levels in early Oral Tongue Carcinoma (n=8)

Most common 4 (50%) involved group was upper deep cervical lymph node in submandibular area (level- I) followed by level- II 3 (37.5%) and level –III 1 (12.5%).

#### Discussion:

The present study was conducted to determine the incidence of occult metastases in patients with T<sub>1</sub> and T<sub>2</sub> oral tongue carcinoma and to assess the pattern of involvement of cervical nodal metastasis in different lymph node levels. This cross-sectional study was conducted among 30 clinically N<sub>0</sub> patients with early T<sub>1</sub>, T<sub>2</sub> Oral Tongue Carcinoma in three different tertiary hospitals in Dhaka.

The primary tumor was clinically T<sub>1</sub> in 23 (76.67%) patients and T<sub>2</sub> in 7 (23.33%) patients. Neck of all patients was clinically negative (N<sub>0</sub>). Wide excision of primary tumour and Extended Supraomohyoid Selective Neck Dissection (I-IV) was done in all patients.

Among those patients, male were dominant. Total 17 (56.67%) male and 13(43.33%) females (M:F=1.3.1). In a different study in Pakistan it was 1.6:1<sup>15</sup> and in India was 1.5:1.<sup>16</sup> Incidence of tongue cancer in India is second highest in the world. Among males

the age adjusted incidence rate is as high as 14/100,000 per year in Ahmedabad while among females it is 74/100,000 in Mumbai.

Age of the patients ranged from 26 years to 78 years (mean  $\pm$ SD: 52.6 $\pm$ 9.26). Highest frequency of age among the patients with early oral tongue carcinoma was in 4th decade 50%, next to this was in 5<sup>th</sup>decade 20%. Study in Pakistan<sup>15</sup> the age of the patients ranged from 34 to 72 years, in India<sup>17,18</sup> ranged from 22 to 75 years, These patients were exposed to risk factors for long time.

Most of the patients 90% with early oral tongue carcinoma had the habit of taking raw tobacco and betel nut chewing (Table-I). 63.3% patients had the habit of smoking and most of them were male. Our study is similar with other study<sup>20</sup> who reported most of the patients were practicing betel nut with raw tobacco chewing 60.0% and smoking 64.7% more than 20 years.

Tongue ulceration was most common presenting feature 28 (93.3%) followed by dysphagia 22 (73.33%) and pain in tongue 18 (60%) (Table-IV). This study is similar with another study.<sup>21</sup>

The commonest involved site (Table-IV) of carcinoma was in lateral border of the tongue 73.3%. Ulcerative lesion was more common 66.7%, exophytic, fungating and infiltrative was 20%, 10% and 3.3% respectively (Table-IV). Ulcerative lesion was found common in early oral tongue carcinoma<sup>22,23</sup>. Probably the reason is that tongue is a mobile organ. So any malignant growth which has less blood supply tends to become ulcerative with contact of sharp teeth.

Following selective neck dissection, neck node sampling revealed histologically positive for metastasis only in 8 (26.67%) patients; 22 (73.33%) patients revealed no metastases. Occult lymph node metastasis was more in

T<sub>2</sub> stage 62.65% of the carcinoma of oral tongue. The proportion of sampling node positive in the two different tumour stage (T<sub>1</sub>, T<sub>2</sub>) was significantly different (p= 0.002) (Table-5). Node positive found more in male patients (Table-II). This is similar to another study<sup>18</sup>. This is because male are exposed to more risk factors like betel nut & tobacco chewing, smoking and alcoholism. Occult lymph node metastasis was common in patients less than fifty years (Table-III), similar to previous study.<sup>18</sup> This group of patients were exposed to risk factors for long duration. The tumor size and depth of the tumor had important role in lymph node metastasis; larger tumor with more depth of invasion had more nodal metastasis (Table-VI).

Most commonly 50.0% involved group was upper cervical node in submandibular area (level-1), level- II and level-III were 37.5% and 12.5% respectively. There was no involvement of level- IV node (Figure-2). In a study<sup>16</sup> they found that level- II lymph node was commonly involved 63.6% followed by level-I 51.5%, level-III 18.2% and level- IV 15.2%.

Elective neck treatment is traditionally recommended when risk of occult metastasis exceeds 20%. Present study demonstrated a 26.67% incidence of occult metastasis in primary T<sub>1</sub>, T<sub>2</sub> oral tongue carcinoma. So, Extended Supraomohyoid Selective Neck Dissection (I-IV) was justified in patients presenting with T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> Neck Oral Tongue Carcinoma.

#### Conclusion:

This study revealed that a number 8 (26.67%) of patients had histopathologically detected micrometastases in the regional neck nodes in clinically N<sub>0</sub> patients. This was significantly common among male patients with T<sub>2</sub> stage of carcinoma and patients aged below fifty years. So, Extended Supraomohyoid Selective Neck Dissection was beneficial for

treating primary T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> Neck Oral Tongue Carcinoma. So, early Oral Tongue Carcinoma (T<sub>1</sub>, T<sub>2</sub>, N<sub>0</sub> neck) should be treated by surgery, wide excision maintaining safe margin accompanied by Extended Supraomohyoid Selective Neck Dissection (SOSD)+ followed by Radiotherapy.

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