

## Original Research Article

# Elective neck dissection versus watchful waiting in the management of early tongue cancers with node negative neck: our experience of 68 cases

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## ABSTRACT

**Background:** Prognosis for tongue squamous cell carcinoma depends upon lymph node metastasis and the treatment plan depends upon the management of cervical lymph node metastasis.

**Methods:** A prospective analysis of early squamous cell carcinoma oral tongue was done February 2017 to February 2020 in previously untreated and biopsy proven patients with T1-2N0 cancer of tongue and patients with clinically negative nodes on the basis of palpation, ultrasound and computerized tomography (CT) and previously untreated and biopsy proven patients with T1-2N0 cancer of oral cavity. After proper work up, patients were divided into two groups. Group 1 (n=35) patients that underwent a surgical excision of primary tumor with 15mm safe margin and selective neck dissection (level I, II, III), group 2 (n=33) patients that underwent surgical excision of primary tumor with 15 mm safe margin and neck observation. All patients with tumor thickness  $\geq 4$  mm were included in this group.

**Results:** The study included 51 (75%) males and 17(25%) female patients. In this study, recurrence was significantly related to tumor thickness ( $p < 0.05$ ) i.e.,  $> 4$  mm tumor thickness showed significantly higher local recurrence and nodal recurrences. Also, a significantly higher relationship was seen between nodal recurrence and postoperative close surgical margins ( $p < 0.05$ ).

**Conclusions:** Elective neck dissection becomes necessary in patients with T2N0 tumors and tumor thickness of  $> 4$  mm as frequency of occult metastasis and recurrence is more in these patients.

**Keywords:** Cancer, Occult, Tongue

## INTRODUCTION

Tongue cancer is the most common cancer in the oral cavity and second highest among the world.<sup>1</sup> Tongue squamous cell carcinoma is highly aggressive, has high recurrence rate and has tendency to invade locally.<sup>2</sup> Surgical resection of primary tumor, irradiation and treatment of clinical positive neck is the conventional therapy for early stage of oral cavity squamous cell carcinoma.<sup>3</sup> The most important prognostic factor in the tongue squamous cell carcinoma is cervical lymph node

status at the time of presentation that is if metastatic lymph nodes are present the rate of survival decrease and vice versa.<sup>4,5</sup> Various methods for the detection of neck node metastasis are computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), ultrasonography, USG- guided fine needle aspiration cytology.<sup>6,7</sup> Site, TNM staging, size of primary tumor, invasion of tumor, perineural invasion, biological tumor markers, patient compliance are the factors that affects the rate of metastasis as well as overall survival of the patient in oral cancers.<sup>7,8</sup>

Patients with neck node metastasis requires primary excision of tumor as well as neck dissection and reconstruction of the defect.<sup>9-11</sup> If nodal metastasis is >15-20% than elective neck dissection is justified.<sup>12</sup> About 20-40% patient with T1N0/T2N0 shows nodal metastasis.<sup>6</sup> When primary tumor with no neck node, is resected intraorally there is a matter of argument regarding the management of N0 neck.<sup>13-15</sup> In such cases, elective neck dissection is not necessary as there is no neck node metastasis and may leads to distress such as shoulder pain, sensible disorder, pain etc. and unnecessary surgery and cost.<sup>16-20</sup> Some studies shows that elective neck dissection may leads to increase in overall survival and reduction in lymph node metastasis.<sup>21</sup> On the contrary, some studies shows neither any benefit nor any increase in overall survival.<sup>22,23</sup>

The main aim of study is to review the results outcome in patient with tongue squamous cell carcinoma treated with surgery without neck dissection and watchful observation in T1/T2N0 and surgery with neck dissection in T1/T2N0. We also studied various factors associated with risk of occult metastasis and hence prognosis in the patients with T1/T2N0 lesions of tongue.

**METHODS**

A prospective analysis of early-stage squamous cell carcinoma of the oral tongue was done from February 2017 to February 2020 in department of ENT and head and neck surgery of SMGS hospital, Jammu after approval by institutional ethical committee.

**Inclusion criteria**

Patients with clinically node negative neck: pre-operative assessment was based on palpation, ultrasound and CT. Previously untreated, biopsy proven limited T1-2N0 cancer of oral tongue. No distant metastasis was included in the study.

**Exclusion criteria**

Patients with other histological types of tumor or other involvement in oral cavity and CT nm >T2 or nodal involvement were excluded from the study.

All the patients had undergone an accurate clinical examination. All the patients had clinically N0 neck on palpation and Ultrasound. Ultrasonography of the tongue using 7.5 Mhz probe was performed in all the cases to know the tumor thickness preoperatively. CT scan of the cervicofacial area was also done before surgery. After proper workup, patients were divided into 2 groups.

**Sampling technique**

Group 1, (n=35) patients that underwent surgical excision of the primary tumor with 15 mm safe margin and Selective Neck Dissection (levels I-III). All the patients

with tumor thickness of >4 mm on preoperative ultrasound of the tumor were included in group 1.

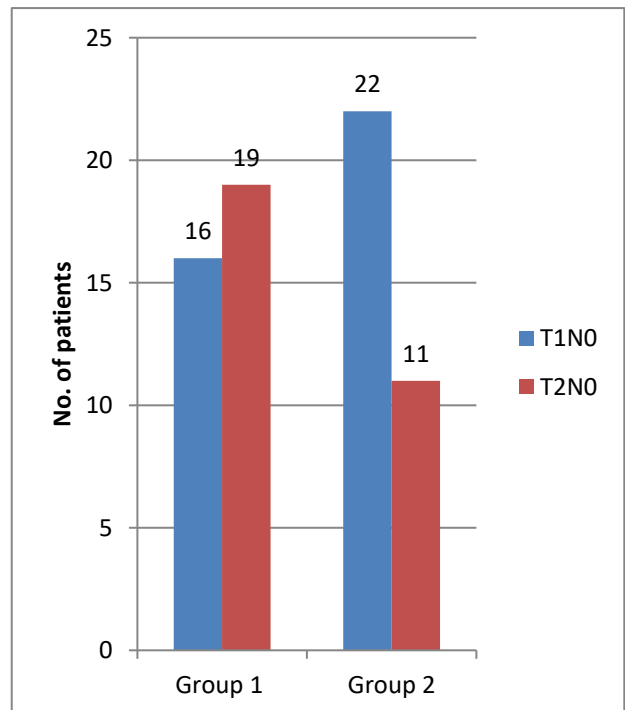
Group 2, (n=33) patients that underwent surgical excision of primary tumor with 15 mm safe margin and Neck Observation. All the patients with tumor thickness ≤4 mm was included in this group.

We analysed several histopathological features postoperatively such as tumor thickness (it was measured from the surface of normal mucosa to the deepest portion of the tumor invasion using an optical micrometer), surgical margins, node positivity. Local and nodal recurrence during the follow up period was also noted. We also analyzed the relationship of these factors with each other and their association with overall survival. We also studied the impact of neck dissection on overall survival of the patients.

Statistical calculations were performed using the SPSS ver 23. Frequency and percentages were used to evaluate the distribution pattern of cervical metastases. Chi-square tests were used to compare the differences between two groups: (group 1 and group 2). A p value less than or equal to 0.05 was considered significant.

**RESULTS**

The study included 51 (75%) males and 17 (25%) female patients. The male:female ratio was 3:1. The mean patient age was 56.8±12.3 years and range were 32 years to 84 years. Figure 1 shows distribution of patients of group 1 and group 2 according to clinical stage.



**Figure 1: Distribution of patients of group 1 and group 2 according to clinical stage.**

### Preoperative and postoperative histopathological tumor thickness

Tumor thickness was important prognostic factor in our study. In our study group 1 (n=35) patients had tumor thickness >4 mm preoperatively. On postoperative histopathological examination of the specimen the tumor thickness in group 1 (n=35) patients was >4 mm in 33/35 (94.3%) patients and ≤4 mm in 2/35 (5.7%) patients.

Group 2 (n=33) patients had preoperative tumor thickness of ≤4 mm by ultrasonography. On postoperative histopathological examination of the specimen the tumor thickness in group 2 was ≤4 mm in all the 33(100%) patients. This showed that ultrasonography of the tumor preoperatively had high sensitivity and specificity when histopathological findings were taken as standard results. Table 1 shows comparison between group 1 and group 2 patients preoperatively by ultrasonography and postoperatively by histopathological examination of specimen.

**Table 1: Comparison between group 1 and group 2 patients preoperatively by ultrasonography and postoperatively by histopathological examination of specimen.**

Groups	Preoperative tumor thickness by ultrasonography	Postoperative histopathological tumor thickness (%)
<b>Group 1 (&gt;4 mm), (n=35)</b>	35	33 (94.3)
<b>Group 2 (≤4 mm), (n=33)</b>	33	33 (100)

### Specimen characteristics of neck dissection

In our study 7 out of 35 (20%) (group 1) patients who were previously staged as clinically N0 and had undergone neck dissection presented with node involvement on postoperative histopathological examination. The tumor thickness on histopathological examination in these patients was >4 mm. A statistically significant relation between occult nodal metastasis and tumor thickness >4 mm was seen (p<0.05). These occult metastases were found more frequently in T2 (28.5%) as compared to T1 (7.1%) tumors though no statistical difference was seen (6/21 versus 1/14).

A total of 9 cervical nodes had been infiltrated by cancer cells. The most affected level was IIA with 5 (55.5%) metastases found at this level, while 3 positive nodes at level IB (33.3%) and 1 positive node at IV (9%). In our study the most common site of occult metastases was level II A followed by IB and level IV.

### Surgical margins at postoperative histopathological examination

The 61 of 68 (89.7%) patients showed free surgical margins on histopathological examination whereas 7 of 68 (4.76%) had close surgical margins. Out of these 7 patients, 3 (42.8%) belonged to group 1 (n=35) whereas 4 (57.14%) patients belonged to group 2 (n=33). Four of 7 patients with close margins underwent surgery to expand the margins whereas other 3 were treated with radiotherapy. No significant correlation was found between group 1 and group 2 with respect to close surgical margins (p>0.05)

### Recurrence

The mean follows up period in group 1 was 40.3±15 months whereas the mean follows up period in group 2 was 39.0±11 months.

Recurrence is an important prognostic factor in early-stage cancer. Table 2 shows relation between local and nodal recurrence in group 1 and group 2 patients.

In particular only 4 (11.4%) patients of group 1 (n=35) and 3 (9.1%) patients of group 2 (n=33) showed local recurrence. Two (5.7%) patients of group 1 (n=35) and 6 (8.2%) patients of group 2 (n=33) showed nodal recurrences during the follow up period. However, statistical analysis found no significant relation between local recurrence and type of neck treatment (p>0.05) (p=0.758). Also, no significant relation was seen between nodal recurrence and the two groups (p>0.05) (p=0.112).

Recurrence was significantly related to tumor thickness (p<0.05) i.e., >4 mm tumor thickness showed significantly higher local recurrence and nodal recurrences.

Also, a significantly higher relationship was seen between nodal recurrence and postoperative close surgical margins (p<0.05).

**Table 2: Relation between local and nodal recurrence in group 1 and group 2 patients.**

Recurrence	Group 1, (n=35) (%)	Group 2, (n=33) (%)	P value
<b>Local</b>	4 (11.4)	3 (9.1)	0.758
<b>Nodal</b>	2 (5.7)	6 (8.2)	0.112

The 2 (28.5%) patients out of 7 of local/regional recurrences died whereas 3 (37.5%) patients out of 8 of nodal recurrence died during the follow up period.

### DISCUSSION

Tongue squamous cell carcinoma has higher risk of cervical nodal metastasis due to majority of lymphatics.<sup>23</sup> The most common site for early stage I and stage II

tongue squamous cell carcinoma is neck and occult neck node metastasis incidence ranges from 13-33% in stage I and 27-53% in stage II.<sup>24</sup> Neck palpation is considered as the most important for staging the neck nodes and shows false positive result in about 40%. The false negative results have been reduced to 22.7% by (CT) computed tomography. Other method of detecting neck nodes are MRI and PET scan. De Bondt et al concluded in his study that neck staging by imaging method (USG, CT, MRI, PET scan) is more accurate than by palpation.<sup>25</sup>

Some studies shows that results of elective neck dissection in patients with N0 is more beneficial and has improved overall survival rate as compared to patients with primary tumor excision with no neck dissection. Elective neck dissection is important for treatment of occult nodal metastasis in some patients and decrease local and regional spread while in other this may lead to unnecessary surgery and costs. Yuen et al in his study showed that most patients in observational group require neck dissection for regional neck node recurrence and had shoulder disability.<sup>26</sup>

In our study, the mean age is 56.8±12.3 years and age ranges between 32 years to 84 years. This is consistent with the study of conducted by Faisal et al in which mean age is 57.92±11.93 years.<sup>27</sup> Davidson et al in his study showed that with increase in age of patient with oral cancer, there is an increase in mortality.<sup>28</sup> Our study also shows that male predominance in tongue squamous cell carcinoma with male: female ratio of 3:1 similar to study conducted by Hakeem et al.<sup>29</sup>

In our study, level IIA lymph node is the most common site for occult nodal metastasis followed by level IB and level IV which is similar to study conducted by Pet al who also concluded that level II is most common neck node in tongue squamous cell carcinoma.<sup>30</sup>

Jones et al in their study concluded that there is a strong correlation between thickness of tumor and risk of nodal metastasis.<sup>8</sup> O'Brient et al proposed that depth of tumor invasion is the most important measurable prognostic factor in early stage oral cancer.<sup>31</sup> Ganly et al in their study concluded that patients with tumor thickness >4 mm had occult neck metastasis were 62.2% which is consistent with our study in which occult neck nodal metastasis were found in patient with tumor thickness >4 mm.<sup>4</sup>

We used ultrasonography preoperatively to know the depth of the tumor and hence divided the patients into two groups because it was quickly available and low cost effective. Ultrasonography could differentiate tumor easily from the surrounding tissues as a hypoechoic irregular malformation. Tumor thickness was important prognostic factor in our study. In our study group 1 (n=35) patients had tumor thickness >4 mm preoperatively as measured on ultrasonography. On

postoperative histopathological examination of the specimen the tumor thickness in group 1 (n=35) patients was >4 mm in 33/35 (94.3%) patients and <4 mm in 2/35 (5.7%) patients. Group 2 (n=33) patients had preoperative tumor thickness of <4 mm by ultrasonography. On postoperative histopathological examination of the specimen the tumor thickness in group 2 was <4 mm in all the 33 (100%) patients. This showed that ultrasonography of the tumor preoperatively had high sensitivity and specificity when histopathological findings were taken as standard results. Some studies shows that ultrasonography is easily available and low-cost effective means of detection of neck nodal metastasis and also for decision making Shintani et al.<sup>32</sup>

Dias et al conducted a study in which in which he took two groups. In group 1 patients with primary resection of tumor and observation and group 2 patient with primary tumor resection and elective neck dissection, in this study he analyzed that 24% patients in group 1 had regional recurrence compared with 4% in group 2 and difference between two groups were statistically significant and also the difference between disease free survival in two groups were also statistically significant.<sup>9</sup> In this study, we found that 4 patients with group 1 and 3 patients of group 2 showed local recurrence whereas 2 patients of group 1 and 6 patients of group 2 showed nodal recurrence but difference between two groups are not statistically significant. But we found that recurrence and tumor thickness are statistically significant.

Some studies have shown that there is no advantage of elective neck dissection when strict USG guided FNAC follow up was implemented. However, it is highly operator dependent investigation and requires additional manpower and time, thus making its routine use difficult in centres where cancer load is high. So, in patients where strict follow up is not possible elective neck dissection is the safest strategy.

In conclusion, although this study was done with small and limited number of patients, the frequency of occult nodal metastasis was found more frequently in T2 (28.5%) as compared to T1 (7.1%) tumors, so elective neck dissection becomes necessary in these patients with T2N0 tumors. In our study, recurrence was significantly related to tumor thickness ( $p<0.05$ ) i.e., >4 mm tumor thickness showed significantly higher local recurrence and nodal recurrences. Thus, tumor thickness should be assessed preoperatively so that elective neck dissection can be indicated in patients with preoperative tumor thickness of >4 mm.

### **Limitation**

Limitation of current study was the small sample size; a bigger sample size could give more consistent results.

## CONCLUSION

The frequency of occult nodal metastasis was found more frequently in T2 (28.5%) as compared to T1 (7.1%) tumors, so elective neck dissection becomes necessary in patients with T2N0 tumors. In our study, recurrence was significantly related to tumor thickness ( $p < 0.05$ ) i.e.,  $> 4$  mm tumor thickness showed significantly higher local recurrence and nodal recurrences. Thus, tumor thickness should be assessed preoperatively so that elective neck dissection can be indicated in patients with preoperative tumor thickness of  $> 4$  mm.

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