

## Yield of Lymph Nodes in Supra-Omohyoid Neck Dissections in Patients with Head and Neck Cancers

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### ABSTRACT:

**Objectives/Hypothesis:** There is no actual count of lymph nodes which proves that this neck dissection is adequate. The aim of this study is to know total yield of lymph nodes in neck dissection level I–III that is supraomohyoid type in patients having head and neck cancers especially oral cavity and parotid gland cancers.

**Study Design:** Retrospective single-institution analysis.

**Methods:** All the patients who were diagnosed with head and neck cancer and who go through supraomohyoid neck dissection level I–III from 2016 to 2022 at HMC Peshawar were included in this study. Patients with radiographic and clinical evidence of lymphadenopathy prior to surgery were eliminated, as was any patient whose pathology report indicated they had an unknown number of lymph nodes. Gender, age, tumor sub site, stage, surgeon, LNY were recorded.

**Results:** 85 individuals with level I–III neck dissections fulfilled the study's inclusion requirements. In our study maximum LNY was 18-24 in 47 patients (55.29 percent) in which 25 patients with age in between (61-85), and 19 patients with age (31-60) and <30 were only 3 patients with p value=0.43. Out of 47 patients 32 were female and 15 male with p value=0.7.

**Conclusions:** This study shows that atleast more than 18 lymph nodes should be dissected in supraomohyoid neck dissection in head and neck squamous cell CA patients to call it an effective neck dissection.

**Key Words:** Lymph node yield, supraomohyoid, level I–III neck dissection.

### Introduction

Globally head and neck CA ranks seventh in terms of frequency of cancer cases<sup>1,2</sup>. About 30% of all head and neck CAs are the oral cavity tumors<sup>3</sup> and 90% of these cancers are OSCCs<sup>4</sup>. The risk factors for HNSCCs are tobacco, heavy drinking, betel nuts and HPV.<sup>2,5</sup> The gold standard treatment of local disease is surgical excision in absence of distant metastasis, while adjuvant radiotherapy and chemoradiotherapy for advanced tumor<sup>6,7</sup>. The search for better outcomes and procedure in patients having head and neck tumors remains a challenge. In patients with Head and neck cancers, there is a focus on minimum than radical neck dissection, with special interest in neck dissection supraomohyoid type. The supraomohyoid neck dissection consists of only the removal level I-III level of lymph nodes. It is well known that lymph node involvement affects a patient's prognosis of head and neck CA<sup>8</sup> and its value is displayed in N classification of TNM staging which shows the number and spread of involved nodes. Having limited role of diagnostic radiology in finding occult mets in node, selective type of neck dissection is the gold standard for detecting occult disease in clinically No OCSs.<sup>9,10</sup>

The aim of our study is to know the total yielded lymph nodes in supraomohyoid neck dissection in patients having head and neck cancers, in our hospital as no recent study found on the subject in population catch by our hospital. Results of my study will guide us further the amount of lymph nodes that could be extracted during supraomohyoid neck dissection. Furthermore, the result will be shared with other local clinicians for record and knowledge.

**Objectives:**

To determine yield of lymph nodes in Supra-Omohyoid Neck Dissections in patients haivng Head and Neck Cancers

**Materials and Methods:**

This retrospective single institution study was carried out in ENT department of Hayatabad Medical Complex,Peshawar from 2016-2020. Patient selection was done by simple random sampling and 85 patients met the inclusion criteria in our study. We excluded all patients with clinically or radiologically positive neck nodes and other types of head and neck malignancies. We included metastatic disease. The data was recorded in SPSS version 20 and the categorical variables were expressed in percentages and frequencies. The association between age and gender with lymph node yield was assessed using Chi-Square test, and keeping p value <0.05 as statistically significant.

**RESULTS:**

Our retrospective study consists of 85 (30 males, 45 females) patients who undergone primary tumor resection alongwith supraomohyoid neck dissection as shown in table and figure 1. Patients belong to different age groups were divided into three categories <30 years, 31-50 years and last 61-85years in table 2.

TABLE:1

**Gender**

	Frequency
Male	30
Female	55
Total	85

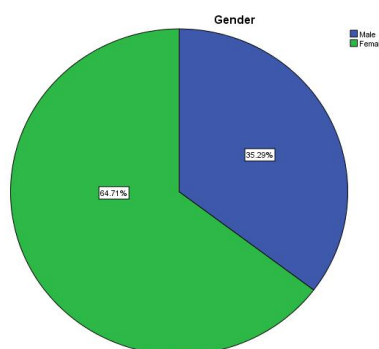


FIGURE:1

**Age**

	Frequency	Percent
<30years	8	9.4
31-60years	30	35.3
61-85years	47	55.3

TABLE: 2

Total	85	100.0
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TABLE: 3

**Age \* Gender Crosstabulation**

	Gender		Total
	Male	Female	
Age <30years	3	5	8
31-60years	12	18	30
61-85years	15	32	47
Total	30	55	85

Patients with tumor of different subsites of oral cavity were studied , in which among others 49.4% patients were of buccal cavity tumor and 23.5% were of tongue tumor shown in table 4 and figure 2.

TABLE: 4

**TumorSubsite**

TumorSubsite	Frequency	Percent
Lip	3	3.5
Buccal	45	52.9
Tongue	24	28.2
floor of mouth	4	4.7
retromolar trigone	5	5.9
Palate	4	4.7
Total	85	100.0

FIGURE: 2

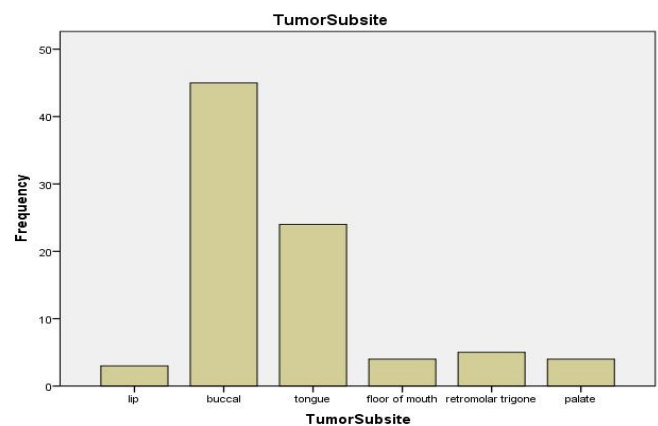


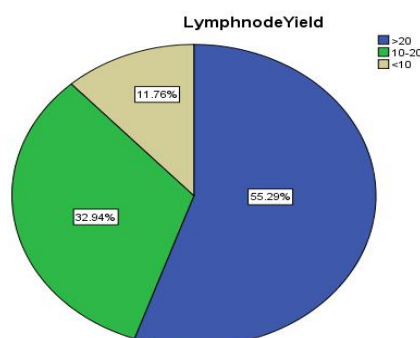
TABLE:5

**LymphnodeYield**

LymphnodeYield	Frequency	Percent
>20	47	55.3

10-20	28	32.9
<10	10	11.8
Total	85	100.0

FIGURE:3

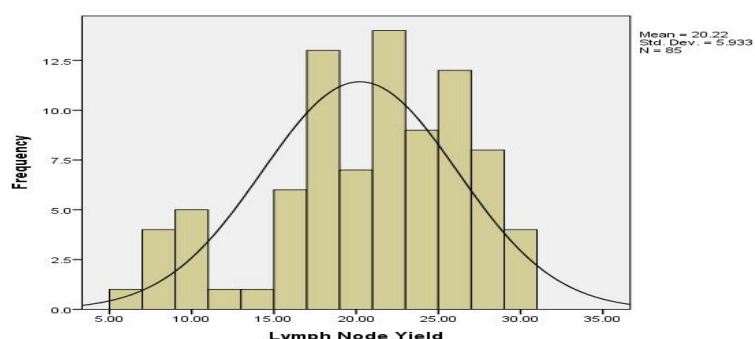


All these patients underwent SND for No disease and lymph node yield was noted. We categorized LNY in three categories, with maximum LNY of 18-24 were noted in 55.3% cases and 12-17 LNY were noted in 32.9% patients while the minimum 8-11LNY were dissected in 11.9% cases shown in table 5 and figure 3. In our study, mean LNY is 20.22, minimum LNY is 6 and maximum LNY 29 and with standard deviation of 5.93 shown in table 6 and figure 4.

**TABLE: 6**  
 Lymph Node Yield

Total Patients	85
Mean	20.2235
Std. Deviation	5.93291
Minimum	6.00
Maximum	29.00

FIGURE: 4



Our study shows no significant difference in LNY between two gender and also there is no association between age and LNY with p value of 0.7 and 0.43 shown in table 7 and 8 respectively.

**Table: 7**

**Gender \*LymphNode Yield Crosstabulation**

		Yield			Total
		>20	10-20	<10	
GNDR	Male	15	11	4	30
	Female	32	17	6	55
Total		47	28	10	85

P value:0.7

Table:8

**Age \*LymphNode yield Crosstabulation**

	Yield			Total
	>20	10-20	<10	
<30years	3	3	2	8
Age 31-60years	19	7	4	30
61-85years	25	18	4	47
Total	47	28	10	85

P value:0.43

## Discussion

One crucial prognostic marker for individuals with head and neck SCCA is lymph node metastasis<sup>11</sup>. Even now a days there is advanced diagnostic imaging, despite of it there is no imaging modalities capable to detect accurately occult metastasis in cN0 neck.<sup>12,13</sup> Lymph node dissection in high risk squamous cell carcinoma of head and neck remains standard for staging of the cN0 neck.<sup>12,14,15</sup> The occult metastatic disease and precise surgical staging in the clinically N0 neck is determined by the number of excised lymph nodes and sensitivity of pathological tests.<sup>16</sup> Patients with cN0 and cN+ illness who undergo neck dissections with lymph node yields of 18 or more appear to have survival benefit of 5 years.<sup>17,18,19</sup>

Usually to analyze lymph nodes specimen histopathologically, dissected with the help of supraomohyoid neck dissection includes a single, longitudinal segment from centre of each distinct lymph node. The pathologist uses H&E stain, then uses light microscopy to examine the entire section for signs of metastatic disease.<sup>20</sup> With compromising of some comprehensiveness for practicality of examination this method is widely accepted and used.<sup>21</sup> A more sensitive histopathological approach afterwards used to identify indications of metastasis deposits that were missed by ordinary H&E microscopy is known as micrometastatic illness.<sup>22</sup> About 25% of patients having cN0 head & neck SCCA will have micro metastasis smaller than 3mm in elective neck dissection specimen.<sup>23</sup> Although it takes more time, serial section H&E staining at 3 to 4 micrometer of whole lymph node shows that metastatic disease can be detected in 2.2% of pN0 specimens when routine analysis is used. A single epithelial cancer cell in a lymph node can be detected by cytokeratin immunohistochemical analysis.<sup>12</sup> By using this technique micrometastatic detection rate demonstrated widely by several studies.<sup>12,21</sup> Recent studies suggest that increase in detection of micrometastatic disease in high lymph node yield improves overall survival however prognostic implications of micrometastatic disease are still poorly understood.<sup>16</sup>

In a metaanalysis of 10 oral cavity SCCs, De Kort et al reported better over all survival in OSCCs individuals having higher LNY<sup>24</sup>. Higher LNY is beneficial not only for diagnosis accurate pathological staging of HNSCCs<sup>25,26</sup> but also increases the chances of removing occult metastatic disease. 2003, Agrama and his colleagues studied nodal yield in T1 and T2 head and neck SCCs and found that a LNY of more than 20 is associated with increased incidence of cervical metastasis.<sup>27</sup>

A retrospective study conducted by ebrahimi et al.(2011) on 225 patients of oral squamous cell carcinoma who underwent supraomohyoid neck dissection, showed that lymph node yield of more than 18 is associated with good prognosis. Lemieux et al. analyzed LNY in pN0 patients with oral cavity SCCA and discovered that patients with higher lymph node yield had better overall survival.<sup>16</sup> Botcher et al. conducted a study and observed decreased rate of survival and increased recurrence rate with less than 18 LNY.<sup>28</sup> According to Guo et al, a less comprehensive neck dissection is just as surgically effective as an ipsilateral supraomohyoid type of neck dissection with excision of clinically negative lymph node levels I to III.<sup>29</sup>

This study is about to analyze LNY in supraomohyoid neck dissection in individuals of cN0 head and neck SCCA. As mentioned in ASCO guidelines recommendation 1.2a, an ipsilateral neck dissection for patients with cN0 neck should encompass nodal levels Ia, Ib, II, and III and at least 18 lymph nodes should be included in a proper dissection. In our study majority of patients were of female gender having 64.7 percentage shown in figure 1 and of age more than 61 years in contrast to study by Sean CS et al (2021)<sup>30</sup> and AITuwaijri AA et al (2021)<sup>31</sup>, having majority of pt <65 years and between 34 to 86 years of age with mean of 60 years and male 57% and >67.5% respectively. Like wise in our study most of the patients were of tumor subsite buccal region and then tongue subsite shown in table 3 while AITuwaijri AA et al (2021)<sup>31</sup> and Gupta A et al (2023)<sup>32</sup> shows tongue as major subsite in contrast to ours. Our results shows that maximum LNY was 18-24 in 47 patients (55.29 percent) in which 25 patients with age in between (61-85), 19 patients with age (31-60) and <30 were only 3 patients with p value=0.43 shown in table 8. Out of 47 patients 32 were female and 15 male with p value=0.7 shown in table 7. In our study LNY 12-17 were present in 28 cases and 8-11 LNY were present in 10 patients. In our study age and gender shows no associations with the lymph node yield. According to our study the maximum LNY of more than 18 met the criteria as mentioned in ASCO guidelines<sup>33</sup>.

### Conclusion

Despite the fact that LNY in elective levels I–III neck dissection has no set minimum. As per American Society of Clinical Oncology ASCO guidelines and our results 18 or more than 18 lymph nodes should be included in a neck dissection. If including a minimal LNY in the level I–III lymphadenectomy may improve clinical results, more research is required to determine this.

### Limitations:

This study is conducted in one center HMC Peshawar only and more generalized study should be conducted for better outcome. Second this study neck should be conducted to generalize its results.

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