



EXPERIENCE OF SURGICAL MANAGEMENT OF TONGUE CANCERS- A RETROSPECTIVE ANALYSIS AT A TERTIARY CANCER CENTER

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ABSTRACT

INTRODUCTION: Tongue cancer is one of the most common cancer of the oral cavity seen most commonly in the western world. Tongue cancers are a different entity with separate differences in work-up and management. Here in this paper, we share the surgical experience in treating the tongue cancers.

Aims and methods: This retrospective study was carried out in department of Oral oncology, Kidwai memorial institute of oncology, Bengaluru, India from 2014-16. Patients with biopsy proven tongue cancers are included.

Results: A total of 74 patients underwent Supraomohyoid neck dissection and 18 underwent modified radical neck dissection. 62.4% were males and 36.6% were females. The median age of diagnosis is 51 years. 51.6% are smokers and 54.8% are alcoholics. 62.4% are habituated to tobacco chewing. Occult lymph nodes were identified in 37 lymph nodes. The median lymph nodal yield identified in our study is 22. A single occult lymph node was identified in 19% was identified and occult N2 disease was identified in 5%. The rates of occult metastasis to cervical lymph nodes were 16%, 31.8%, 33.3% respectively in T1, 2, 3 tumours. The rate of occult cervical lymph node metastasis in tumours with depth of invasion <5, 5-10 and > 10 mm were 54.7%, 0%, 10% respectively.

Conclusion: Tongue cancers management requires appropriate staging and pre-operative identification of depth of invasion. Depth of invasion is more important than T-status and is an important factor that can guide the management of clinically node negative neck and aid in addressing the neck. Early stage cancers can be treated by surgery with very minimal morbidity. Close follow-up is needed in early stage cancers.

KEYWORD

Tongue Cancers, Surgical Management, Lymph Node

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INTRODUCTION:

Tongue cancer is one of the most common cancer of the oral cavity seen most commonly in the western world. Carcinomas of the buccal mucosa are most commonly seen in the Indian subcontinent. However, there has been an upsurge in the trend of the carcinomas of the oral tongue in Indian subcontinent. While the wide-ranging principles of treatment of oral cancers are similar, the majority of publications have focused on buccal mucosa cancers in Indian subcontinent. Tongue cancers are a different entity with separate differences in work-up and management. In the hospital-based cancer registries, cancer of the tongue is an important site contributing a quarter of all head and neck cancers. Most common site of involvement is lateral border of tongue accounting for 85% of cases. Dorsum, ventral surface and tip of the tongue (5% each) form rest of the cases. (1) Lymph nodal metastasis more frequently seen with oral SCC are level I and II cervical lymph nodes. These most common lymph nodal subsite involvement occurs in up to 60-70% of tongue cancers. (2) The survival benefit and the actuarial survival in

patients without lymph node metastases is 95% and 71% in patients without metastases. (3) These highpoints the fact that prognosis of oral tongue SCC is primarily determined by status of Cervical Lymph node metastases. The diagnosis of Cervical Lymph node can be done by clinical examination, imaging techniques. CECT and MRI are the most commonly utilised imaging modalities which are accurate in the identification of the Cervical Lymph node metastasis. The options for the management of the CLN in oral tongue carcinomas include watchful waiting and address the neck when there is a nodal recurrence, selective neck dissection, and sentinel lymph node biopsy to identify the nodal disease. Treatment decisions are based on the clinical and radiological staging of the tumour. It is imperative at the commencement to decide the goal of the treatment which should be curative (stage I-IVA) or palliative (stage IVB-locoregionally advanced and stage IVC - metastatic disease). Infrequently a stage IVB tumour may respond to treatment and later be amenable for surgical salvage. However, the percentage of such cases is uncommon and should be

Carefully selected. Early stage disease is treated with single modality therapy either surgery or radiotherapy. Surgery is preferred because of its simplicity, low cost, no significant functional or cosmetic deficit and that it can be repeated. Locally advanced operable cancers are treated with combined modality therapy, surgery followed by postoperative radiotherapy or chemo-radiation. Here in this paper, we share the surgical experience in treating the tongue cancers.

MATERIALS AND METHODS:

This retrospective study was carried out in department of Oral oncology, Kidwai memorial institute of oncology, Bengaluru, India from 2014-16.

Patients were included in the study who were diagnosed as oral squamous cell carcinoma of tongue. Benign diagnosis, recurrent and residual lesions were excluded from the study. Stage IV are excluded from our study. The enrolled patients included the biopsy proven SCC of tongue.

Patients were classified as per AJCC 8th edition and T1 and above lesions with clinical node negative status underwent surgery as primary modality and adjuvant radiation therapy depending upon the histopathological report. All patients underwent clinical examination and contrast-enhanced MRI scanning before the initial treatment. The tumour, node, metastasis classification and clinical stage were determined according to the criteria established by the American Joint Committee on Cancer and the International Union Against Cancer, 8th edition. All patients with clinical T1, T2 and N0 status underwent wide local excision of the primary tumour along with unilateral supraomohyoid neck dissection (Level I, II, III). All patients with clinical T3, T4 and N0 and N1/2 status underwent wide local excision of the primary tumour along with IJV preserving neck dissection was performed.

In this study, demographic factors (age, gender, substance abuse), clinical factors (tumour site, stage), and pathological factors (tumour stage, nodal status, lymphovascular invasion, perineural invasion) were analysed.

The microscopic slides were reviewed by a single pathologist. Histological grade determined based on classification proposed by the World Health Organization.

The maximum depth of invasion was measured using an ocular micrometre. The maximum depth of invasion was measured vertically from the virtual normal mucosal line to the deepest infiltrating tumour cell.

The specimen of the neck dissections was fixed in 10% neutral-buffered formalin. All lymph nodes visible or palpable were carefully dissected from fat. All nodes that were 5 mm or larger were subjected to haematoxylin and eosin (H and E) stained pathological examination.

The result of clinical examination, radiological imaging was compared with histopathological results of neck dissection specimen; the presence and absence of metastatic lymph nodes, their number, size, and level in the neck were noted. Close margins are defined when the distance between the surgical margin and tumour is less than 5mm.

Correlation analyses were made between occult metastasis and the variables studied by the Chi-square test. Values of P < 0.05 were considered statistically significant.

RESULTS:

During this study, a total of 74 patients underwent supraomohyoid neck dissection and 18 underwent modified radical neck dissection. 62.4% were males and 36.6% were females. The median age of diagnosis is 51 years.

Demographic factors are depicted in table 1.

AGE	51 Years (Median)	
SEX		
MALE	58	62.4%
FEMALE	34	36.6%
SMOKING		
YES	47	51.6%
NO	45	48.4%
ALCOHOL		
YES	50	54.8%
NO	42	45.2%
TOBACCO CHEWING		
YES	57	62.4%
NO	35	37.6%

Occult lymph nodes were identified in 37 lymph nodes. The median lymph nodal yield identified in our study is 22 (SD=7.12). A single occult lymph node was identified in 19% (n=19) was identified and occult N2 disease was identified in 5% (n=6).

T STATUS		
T1	30	32.6%
T2	44	47.8%
T3	18	19.6%
N STATUS		
N0	67	72.8%
N+	25	27.2%

The rates of occult metastasis to cervical lymph nodes were 16%, 31.8%, 33.3% respectively in T1,2,3 tumours. The rate of occult cervical lymph node metastasis in tumours with depth of invasion <5,5-10 and > 10 mm were 54.7%,0%,10% respectively. The rate of occult lymph node metastasis in tumours which have positive lymphovascular invasion are 73.9% and 13.11% in negative lymphovascular invasive tumours. The rate of occult lymph node metastasis in tumours which have positive perineural invasion are 64.2% and 20.5% in negative perineural invasive tumours.

DISCUSSION:

Tongue cancers constitute a different scenario in the oral cavity. They are unique that they have high incidence of cervical lymph node metastasis. Recurrence rate is high. Depth of invasion, status of cervical lymphadenopathy and choosing an appropriate management regimen for early stage cancers is essential.

The management of early stage tongue cancers is essential. A prospective study to assess the role of elective versus therapeutic neck dissection in early tongue cancers showed no significant difference in survival between hemi glossectomy alone and hemi glossectomy with radical neck dissection group. (4) Role of prophylactic neck dissection in early tongue cancers in randomized setting showed Disease free survival was better for the patients who received prophylactic neck dissection but not statistically significant. (5) D'cruz AK et al., (6) randomised 359 patients of early tongue cancers, divided into 2 groups: elective neck dissection and wait and watch. No difference in the 3 and 5-year disease-free survival between the two groups. They suggested the need for randomized controlled trial still exists. (6) In our study, early tongue cancers underwent supra omohyoid neck dissection as a staging procedure and the rate of occult metastasis in T1 are 16% and T2 are 31.8%. This shows that occult metastasis still exists despite aggressive scrutiny and management. Sentinel lymph node biopsy may play a major role in this regard. The role of sentinel lymph node biopsy had been well clarified in breast cancer. The advantage of sentinel lymph node biopsy is it can identify the subset of patients who can have actual benefit with lymph

node dissection. However, the rate of false negativity is high in head and neck cancers owing to complex anatomy, need for additional expertise. (7) Hence, it would be appropriate to identify the factors that can increase the risk of occult cervical lymph nodes to choose appropriate therapeutic option.

The other important factor that has an impact on prognosis is Depth of invasion. Depth of invasion is the dimension taken as perpendicular distance from basement membrane region to the deepest point of the infiltrative front of the tumour in millimetres. This is different from tumour thickness which is perpendicular distance between the highest point of the tumour surface to the deepest point of the infiltrative front of the tumour in millimetres. (8) Depth of invasion was suggested to be an independent prognostic factor for overall survival and disease specific survival with the cut-off points to be 7.25mm and 8mm respectively. (9) It was reported that the presence of occult metastases was the main predictor of survival outcome. (10) Metanalysis by Huang et al., suggested that the risk of cervical nodal metastasis increases beyond 4mm and this should be the optimal cut off point. (11) Kane et al., (12) studied the role of depth of invasion as histological parameter in cervical lymph node metastasis in 48 early tongue cancer patients. Patients with tumour depth more than 5 mm were at increased risk of developing lymph node metastasis. This signifies the importance of depth of invasion in the occurrence of occult cervical lymphadenopathy, that is once tumours of oral tongue reaches certain depth, the rich network of lymphatic pathways in the tongue favour nodal spread of disease. Our study has showed the rate of occult cervical lymph node metastasis in tumours with depth of invasion <5,5-10 and > 10 mm were 54.7%,0%,10% respectively.

The histopathological factors that could prognosticate the disease are lymphovascular invasion and perineural invasion. LVI implicate that many tumour cells have entered the lympho-vascular compartment and consequently leads to a higher chance of regional and distant metastasis. It was reported that lymphatic invasion exhibited significant associations with poorer overall survival, disease-specific survival, and disease-free survival. (13) In a study assessing the pathological outcomes in low stage tongue cancers, it was reported that depth of invasion was a significant predictor of lymphovascular invasion. (14) our study has shown the rate of occult lymph node metastasis in tumours which have positive lymphovascular invasion are 73.9% and 13.11% in negative lymphovascular invasive tumours. The rate of occult lymph node metastasis in tumours which have positive perineural invasion are 64.2% and 20.5% in negative perineural invasive tumours.

Thus, among many clinic-pathological factors that increase the risk of cervical lymph node metastasis, depth of invasion, lymphovascular and perineural invasion and close margins greatly influence the risk of occult metastasis and clearly guide in choosing the appropriate patient in whom neck dissection clearly improves the benefit. Our study has its limitations, as it is a retrospective series based on case records. A major drawback of this investigation is the limited detail available for each case. This is an inherent limitation in our study method. In addition, our sample size is relatively smaller than a few other studies and this is a hindrance to draw definite conclusions.

CONCLUSION:

Tongue cancers management requires appropriate staging and pre-operative identification of depth of invasion. Depth of invasion is more important than T-status and is an important factor that can guide the management of clinically node negative neck and aid in addressing the neck. Early stage cancers can be treated by surgery with very minimal

morbidity. Close followup is needed in early stage cancers.

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