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Original Article

Neck involvement in early carcinoma of tongue. Is elective neck dissection warranted?

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Abstract

Objective: To evaluate need of elective neck dissection in patients with early oral tongue cancer, and to see the pattern of involvement of different lymph node levels.

Methods: Ninety four patients with T1-T2, N0 squamous cell carcinoma of the oral tongue were treated with a partial glossectomy and an elective modified radical neck dissection.

Results: Thirty two patients had T1 and 62 patients had T2 lesion. In patients with T1 carcinoma, 9 out of 32 had metastases (28%), whereas in patients with T2 carcinoma, 21 out of 62 showed metastases(34%). Thus, the overall rate of occult lymph node metastases was high(32%). In our study skip metastases to level III was seen in only in 2 patients (6%) but there was no skip metastases seen involving level IV or V.

Conclusion: The overall micrometastases rate in our patients (32%) warrants elective neck dissection in early cases also. The incidence of metastases to level IV and V from T1-T2 oral tongue cancer is low so these lymph nodes should be removed only when there is intraoperative suspicion of extensive metastases in levels I,II or III., otherwise supraomohyoid neck dissection is sufficient (JPMA 57:305;2007).

Introduction

Carcinoma of tongue is a common head and neck cancer. In two studies from Pakistan tongue was the second commonest site involved in oral cavity.^{1,2} The aim of curative surgery is to excise the carcinoma with an adequate margin of normal tissue. Metastases to cervical lymph nodes occurs more frequently from carcinoma of the tongue than from any other site in the oral cavity. Nodal status at presentation is the most important prognostic factor, if the nodes are affected then the chance of cure falls by half. Treatment failure in the neck is hence a significant problem.

Occult metastases (micrometastases) is defined as histological detection of lymph node involvement in the absence of clinical or radiological evidence. There is a high incidence of occult metastases even from early carcinoma (T1 and T2) of tongue .It can be seen in over 30% of patients with early carcinoma.

The treatment of neck in early stage, node negative oral tongue carcinoma is controversial; both "elective neck dissection" and "watchful waiting" have their proponents.

When performing elective neck dissection, "Supraomohyoid neck dissection" has been advocated as the procedure of choice. This dissection involves removal of lymph nodes from level I (submental and submandibular triangles), II (upper jugular) and III (midjugular). Investigators from M.D.Anderson Cancer Center have advocated an "extended" supraomohyoid neck dissection that also encompasses level IV (lower jugular) because of the possibility of "skip metastases" to that area.³ On the other hand in another study there was no significant difference in treatment results between radical neck dissection and selective I,II,III neck dissection.²

In other words, it's not clear that occult metastasis from early tongue carcinoma involves only levels I, II, III or there is frequent involvement of levels IV and V also. The present study was undertaken to determine the incidence of occult metastases in patients with T1 and T2 tongue cancer and to see the pattern of involvement of different lymph node levels.

Patients and Methods

The medical records of all patients with squamous cell carcinoma of the oral tongue surgically treated at Aga Khan University Hospital in Karachi between 1995 and 2006 were reviewed. Ninety four patients whose tumors were staged T1, T2 and N0 form the cohort studied. All patients were treated surgically with a partial glossectomy and elective modified radical neck dissection. Neck dissection specimen was divided by the surgeon or resident just after surgery. It was sent for histology into 5 containers

representing tissues from levels I-V. Post operative radiation was administrated when histopathological examination of the neck specimen revealed metastases in two or more lymph nodes, or extra capsular spread of the tumor ; it was also administrated when the primary tumor exhibited perineural or lymphovascular invasion. We excluded all patients with T3, T4, N+ve or base of tongue cancer. Mean follow up was for 4 years.

In addition to patient's demographics, the information recorded included the location of lymph nodes removed and the location of the lymph nodes that contained metastatic tumour.

Results

There were 94 patients including 58 men and 36 women. The age of the patients ranged from 25 to 78 years (average 55 years).The mean duration of symptom before diagnosis was made, ranged from 1 month to 6 months with a mean of 6.5 months. The primary tumor was staged T1 in 32 patients and T2 in 62 patients. All patients had clinical as well as radiological negative necks (N0). All patients had partial glossectomy and modified radical neck dissection (sparing accessory nerve).

Histopathological examination of the neck dissection specimen (n=94) revealed lymph node metastases in 30 patients. In patients with T1 carcinoma, 9 out of 32 had metastases (28%). Whereas in patients with T2 carcinoma, 21 out of 62 showed metastases (34%).Thus, the overall rate of occult lymph node metastases was 32%.

Twenty two patients (73%) had involvement of levels I, II and III.Two patients had a "skip metastases" in level III nodes (6%). Four patients had metastases in levels I, II, III and IV (13%) and interestingly two patient (6%) had involvement of level V along with involvement of level I and II also. No patient in our series had a "skip metastases" in level IV or V.The distribution of histopathologically positive lymph nodes in our series is shown in Table.

Table. Distribution of Pathologically Positive Nodes.

Distribution of Lymph Nodes	No. of Patients
I	4
II	8
I + II	6
I +II +III	4
III	2
I + II+III+IV	4
IV	0
I +II + V	2
V	0
Total	30

Sixteen patients received postoperative radiation for positive nodal metastases and four patients for histological features of the primary tumour.

At an average follow up of 4 years (range 6 months to 10 years), 6 (6%) patients had recurrence of tumor in the neck. Four patients (4%) developed recurrence at primary site.

At the last follow up, 84 (89%) patients were alive with no evidence of disease. Six (6%) patients were alive with disease and four (4%) patients died of disease. Complications from surgery were minimal, the most common being wound infection that occurred in 4 (4%) patients and two (2%) patients developed chylous fistula.

Discussion

Occult metastasis or micro metastasis to neck is defined as histological involvement of lymph node with no clinical or radiological evidence of metastasis. In early lesions of tongue (T1 and T2) radiotherapy or surgery is offered to the primary site. But interestingly, if elective neck dissection is also done a high incidence of occult metastasis is usually seen. Samuel et al.⁵ found 40 % incidence of micrometastasis. The incidence of occult node positive neck was 27 % in another study by Yuen et al.⁴

In our study the incidence was 32%. In view of the high incidence of occult metastasis, elective neck dissection should be considered even when treating early carcinoma of tongue. Elective neck dissection has the advantage of more accurate pathological staging of the neck compared with all available radiological investigations, and the pathological information can guide the subsequent use of postoperative radiotherapy for a pathologically node-positive neck.⁴

The traditional approach for surgical treatment of neck node metastases from primary squamous cell carcinoma of tongue has been a classical radical neck dissection. Since its description by Crile in 1906,⁶ and after its routine practice by Hayes Martin⁷ and others, it has become the mainstay of surgical treatment for decades. Although the operation provides comprehensive clearance of lymph nodes at all neck levels, it results in significant functional and aesthetic morbidity. Therefore, modifications of the classical radical neck dissection are proposed to avoid its attendant morbidity. Bocca et al. believe that adequate "cancerologic radicality" can be achieved by a functional neck dissection.⁸

In another study, Byers et al.⁹ advocated supraomohyoid neck dissection (including levels I, II and III) for primary tumors of oral cavity in N0 or N1 patients, if the surgeon is careful enough to fully dissect level III. But Byers et al.¹⁰ in another study showed "skip metastases" to

lymph nodes in level III or IV in 15.8% with cancer of oral tongue. This means that supraomohyoid neck dissection cannot take care of such patients. As a result, the authors recommend including the lymph nodes of level IV when ever an elective neck dissection is performed in any patient with cancer of oral tongue. On the other hand several studies indicate that the risk of occult metastases to level IV is low. Khafif et al.¹¹ reported that metastases to level IV lymph nodes was seen in 4% of patients with T1-T3, N0 oral tongue cancer. Shah et al.¹, studying radical neck dissection specimens performed electively for oral cavity tumors, found metastases in level IV lymph nodes in 3%. In our study skip metastases to level III was seen in 2 patients (6%) but there was no skip metastases seen involving level IV. Level IV involvement was only seen in 4 patients (13%) but in these patients level I, II and III were also involved.

In conclusion, the results of this study indicate that the overall micro metastases rate in our patients was 32%, which is high and thus warrants elective neck dissection in early cases also. The incidence of metastases to level IV and/or level V, from T1-T2 oral tongue cancer is low so these lymph nodes should not be removed routinely. Supraomohyoid neck dissection is sufficient most of the times. When there is intraoperative suspicion of extensive metastases in levels I, II or III only then one should consider addressing levels IV and V.

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