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Original Article

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Abstract

Objective: To study the efficacy of different locoregional treatment options for tongue cancer in determining the prognosis, with reference to recurrence of disease in neck.

Methods: This is a retrospective analysis of 80 patients with early (T1/T2) carcinoma tongue who had hemiglossectomy with or without neck surgery and radiotherapy for 14 years.

Results: Eighty patients were included in this study, 49 (61.3%) men and 31 (38.8%) women; 36 (45%) patients with T1 lesion and 44 (55%) with T2 lesion. Sixty two patients (77.5%) were staged cN0 and 18 patients had a clinically palpable neck nodes (cN+). Thirty seven patients were pathologically negative (pN0), whereas 22 were pathologically positive (pN+) and 21 were not operated so they were staged pathologically (pNx) (undissected necks). Thirty patients received postoperative adjuvant radiotherapy. The median follow-up was 16.5 months with a range of 10-120 months. The over-all rate of recurrence in neck was 32.5% (27 patients). The rate of recurrence was 23% in T1 and 45.8% in T2 lesion (P-value 0.09) without radiotherapy. The recurrence rates with T1 lesion patients who were given adjuvant radiotherapy did not change significantly whereas with T2 lesions the recurrence rate decreased from 45% to 25% in the group without radiotherapy.

Recurrence rate was higher in undissected neck as compared to patients who underwent elective neck dissection having radiotherapy and staged pN0 (P-value 0.009) or pN+ (P-value 0.005). Patients having therapeutic neck dissection, on comparison of final pathological node staging (i.e. pN0 or pN+) the rate of recurrence in patients pN+ was 56% and in group with pN0 it was 11%, with (P-value 0.046).

Conclusion: We did not find any effect of age, gender and surgically resected margins of primary early tongue tumor on recurrence of disease in neck. There was no significant difference between primary tumor stage T1 and T2 lesions on neck recurrence when treated with surgery alone, but adjuvant radiotherapy further reduced the neck recurrence in T2 groups. Adjuvant radiotherapy also showed a significant reduction in recurrence rates in both pN0 and pN+. Undissected necks have higher incidence of neck recurrence than dissected neck irrespective of pathological status of neck metastasis (JPMA 56:448;2006).

Introduction

Cancer of the oral tongue is traditionally treated by different options like surgery and/or radiotherapy[1-3], but before any treatment is planned other factors like age, health status, stage of the disease, functional and cosmetic outcome, compliance with regular follow-up and acceptance of the patient to the proposed treatment should be considered.

Tongue cancer carries a high risk for nodal metastasis even in small or early stage lesions regardless of the fact that the cervical lymph nodes are not palpable clinically, which is reported to be true in about 30% of the cases[4,5]; therefore the detection of occult neck disease in early stage cancer remains a challenging problem. The presence or absence of neck disease is an important factor not only for staging and deciding the treatment modality but also for predicting prognosis in these patients.

The policy of treatment for occult neck disease is still controversial and the option lies whether to observe such patients or to treat them with surgery, irradiation or both. The first treatment done for primary tongue cancer or neck metastasis influences the final prognosis or the survival of the patient. The decision to treat a clinically negative neck is recommended by recent evidence, which indicates that elective neck dissection offers a better prognosis with reported reduction of regional recurrence and better survival for patients with occult nodal disease.[6]

This study attempts to define the efficacy of different locoregional treatment options for tongue cancer in determining the prognosis, with reference to recurrence of disease in neck.

Material and Methods

Medical charts of 157 patients who underwent treatment for carcinoma of oral tongue during 14 years from January 1989 to December 2003 at The Aga Khan University Hospital were analyzed retrospectively.

Patients who had hemiglossectomy for histopathologically established early stage (T1 / T2) squamous cell carcinoma with primary surgical clear (>5mm) or close 5

(1-5 mm) margins were included in this analysis. Pre-operative staging was done by means of clinical examination or imaging studies; nodes less than 1 cm were staged N0. The initial management was surgical intervention followed by with or without radiotherapy. Patients who had a minimum follow up of 10 months were included in this study.

The results of treatment were analyzed for the development of recurrence in neck. The pattern of failure was determined by clinical and radiological examinations and recurrence was defined when carcinoma developed in a dissected neck or in an undissected neck.

The influence of surgery (primary and neck) and radiotherapy on recurrence of disease in neck was evaluated by comparing the following groups (1) pNx (2) cN0 and pN0 (3) cN0 and pN + (4) cN+ and pN0 (5) cN+ and pN+; where cN indicates clinical neck status and pN refers to pathological neck outcome and + and 0 stand for positive and negative respectively. Those patients who did not undergo neck dissection were termed as pNx.

In addition the effect of age, gender, surgical margins, T stage and adjuvant radiotherapy was also studied in these patients.

Results

Out of 157 patients, 80 met the inclusion criteria and were included in this study. There were 49 (61.3%) men and 31 (38.8%) women, with a mean age of 52.5 (range 15-87) years.

According to TNM Classification, there were 36 (45%) patients with T1 lesion and 44 (55%) with T2 lesion. Sixty two patients (77.5%) were staged cN0 and of them 41 (66.1%) had elective neck surgery. Eighteen patients had clinically palpable neck nodes (cN+) and all had neck surgery.

Out of the 41 patients (cN0) who underwent elective neck dissection, 28 (68.29%) were staged pN0 and 13 (31.7%) were pN+.

Out of 18 patients (cN+) who had clinically palpable neck nodes, all had neck dissection; only 9 were patholologically positive for metastasis (pN+).

Therefore, histopathologically 37 patients were negative (pN0), whereas 22 were pathologically positive (pN+) and 21 were not operated so they were staged pathologically (pNx) (undissected necks).

All 80 patients had primary tongue tumor resection , 61 out of 80 (76.3%) had a clear surgical margin i.e. the margin was more than 5 mm from the tumor and 19 (23.8%) had tumor excision close to the margin i.e. less than 5 mm from the tumor shown in Table 1. Thirty patients received postoperative adjuvant radiotherapy. The median follow-up was 16.5 months with a range of 10-120 months.

The overall rate of recurrence in neck was 32.5% (27 patients). Out of these 27 patients 7 were pN0 group, 9 were pN+ and 11 were pNx. The average time for recurrence was16 (range 3-48) months in the undissected necks and 21(range 4-77) months in the dissected necks and

Table 1. Clinical characteristics of 80 patients with early stage Carcinoma of oral tongue.

Variable	No. of patients	%
Sex		
Male	49	61.3
Female	31	38.8
Age (years)		
< 40	18	22.5
≥ 40	62	77.5
Clinical Neck Stage		
cN0	62	77.5
cN+	18	22.5
Final Neck Stage		
pN0	37	46.2
pN+	22	27.5
pNx	21	26.2
Final T Stage		
T1	53	66.2
T2	27	33.7
Final T and N Stage		
T_1N0	15	18.7
T_1N+	22	27.5
T_1Nx	16	20.0
T_2N0	05	06.2
T_2N+	17	21.2
T_2Nx	5	6.2
Surgical Margins		
Clear	61	76.3
Close to Excision	19	23.8
Adjuvant Radiotherapy		
Received	30	37.5
Not Received	50	62.5

Table 2. Factors and rate of recurrence (Univariate Analysis).

Variable	% of patients with recurrence	P-value
Age		
< 40	33.3%	0.93
> 40	32.3%	
Sex		
Male	30.6%	0.65
Female	35.5%	
Surgical Margins		
Clear Margins	32.8%	0.92
Close to excision	31.6%	
T-Stage		
T1	27.8%	0.41
T2	36.4%	
Radiotherapy		
Without radiotherapy	34.0%	0.71
With radiotherapy	30.0%	

Table 3. Factors for recurrence (Multivariate Analysis).

Variable	P-value
T Stage without radiotherapy	
T1 Stage	0.09
T2 Stage	
Clinically Negative Neck (cN0) without radiotherapy	
pN+	0.56
pNx	
pN0	0.48
pNx	
Clinically Negative Neck (cN0) with radiotherapy	
pN0	0.009
pNx	
pN+	0.005
pNx	
Clinically postive Neck (cN+)	
pN0	0.046
pN+	

21(range 4-77) months in the dissected necks.

Table 2 shows factors associated with recurrence. The overall rate of recurrence was similar when patients less than 40 years of age were compared with those who were more than 40 ($p < 0.932$). No significant association was found on comparing gender for rate of recurrence ($p < 0.65$).

The patients with close and clear surgical margins were compared, but no statistical difference was found (P-value 0.92) in these two groups. The rate of neck recurrence in the group with T1 lesion was 27.8%, whereas it was higher in patients with T2 lesion (36.4%) however, there was no statistically significant difference ($p < 0.41$) between them. Overall the rate of recurrence was higher in patients with undissected neck (38%) when compared to dissected necks having positive (36%) and negative (27%) node status. Overall 30% patients with radiotherapy developed recurrence as against 34% those without radiotherapy ($p< 0.71$).

Table 3 shows the multivariate analysis of the factors associated with recurrence.

On comparing patients with primary T1 and T2 lesions who did not receive radiotherapy, it was found that the rate of recurrence was 23.1% in T-1 lesion and 45.8% in T-2 lesions ($p < 0.09$). With the addition of adjuvant radiotherapy there was no significant change in neck recurrence in patients with T1 lesions but these rates fell from 45% to 25% in patients with T2 lesions.

Within the group cN0, on comparison of pN0, pN+ and pNx, it was seen that the group, with pNx had a higher rate of recurrence compared to those subjected to dissection and had a pathologically uninvolved neck (pN0). There was a statistically significant difference ($p < 0.009$) when both of these groups were compared with respect to radiotherapy.

The patients with pNx were also compared to those who had cN0 and had elective neck dissection and were pathologically positive (pN+), it was seen that the recurrence rates were significantly higher in undissected necks. ($p < 0.005$).

Within the group having therapeutic neck dissection (cN+), when the patients with histopathologically positive nodes (pN+), were compared to those having negative nodes (pN0) , it was seen that pN+ group had a higher rate of recurrence (56%) versus pN0 (11%) ($p < 0.046$). When patients with pN0 were compared with those with undissected necks, it was observed that the rate of recurrence in undissected neck (88.9%) was again higher than those with pN0 (11.1%).

In those patients who had neck surgery and adjuvant radiotherapy, in group pN0 the rate of recurrence decreased from 41.2% to 18.2% ($p < 0.203$), whereas in the group pN+, the rate of recurrence decreased from 50.0% to 11.1% ($p < 0.125$).

Discussion

In early carcinoma of tongue with clinically palpable neck nodes, surgery is usually the first choice of treatment. But for clinically non palpable neck nodes there are two options. One is elective neck dissection and the other is observation. Elective neck dissection itself entails low morbidity and allows accurate node staging, but it may be an unnecessary operation in some patients, and adjuvant radiation may be required when dissected nodes turn out to be metastatic lymphadenopathy. To manage the patients with carcinoma of tongue, locoregional control is crucial for survival, as majority die of locoregional recurrence other than distant disease. The optimal treatment of these patients is locoregional control, without jeopardizing the functions and cosmesis of head and neck. To decide which treatment method is to be adopted there is a need to identify the reliable prognostic factors for locoregional disease control and survival.

In our study mean age of our patients at diagnosis was 52.5 years (range 15-87 years), which was similar to that reported in literature.[7] The proportion of women (38.8%) was less then men (61.3%), which is different than that reported in western studies[8], because Ca tongue is on the rise in female population due to popularity of smoking, while smoking is not very commonly encountered in women in our society.

On univariate analysis, neck recurrence of disease in our study population was 33.3% in patients less then 40 years of age and 32.3% in age group more then 40 years. In literature some authors reported higher recurrence rate in the younger patients.[11-13] Other studies concluded that there is no significant difference between the age groups[9,10,14,15]

which is similar to our study.

The primary surgical margins are important prognostic factors in relation to recurrence at primary site, El-Husseiny et al[16], Amdur et al[17] and Kirita et al[18] reported higher recurrence rate with involved margins and decreased recurrence at local site with clear margins.

The rate of recurrence of disease in neck in the group of patients with T1 lesion was 27.8% and slightly higher in patients with T2 lesion 36.4%. Similar results were reported by El-Hussain et al[16], and Mitchell and Ghighton.[19]

On univariate analysis of patients who had neck dissection only, the rate of recurrence for patients with pathologically negative (pN0) neck was 41.2% and in group of patients with pathological positive neck (pN+) was 50%. But when these patients were compared with group of patients who were given adjuvant radiotherapy, the rate of recurrence in neck for pN0 dropped from 41.2% to 18.2% and in group pN+ from 50% to 11.1%. These results are similar to those reported by Shingoki et al[20] and El-Hussaini.[16]

On multivariate analysis of factors of recurrence it was seen that patients who were not treated surgically i.e. pNx had a higher rate of recurrence than the patients who had neck dissection with final p stage of pN0. Statistically it was more significant when undissected neck was compared to patients with pN0 and adjuvant radiotherapy. Anthony et al[21] reported similar results, with low recurrence in patients who had elective neck dissection and were given adjuvant radiotherapy.

When patients with undissected neck (pNx) were compared to patients who had elective neck dissection cN0 and were pN+, the rate of recurrence was significantly higher in undissected necks. In literature other studies also support our results.[22,23]

In conclusion, we did not find any effect of age, gender and surgical resection margins of primary early tongue tumour on recurrence in the neck. There was no significant difference between primary tumour stage T1 and T2 lesions on neck recurrence when treated with surgery alone, but adjuvant radiotherapy further reduced the neck recurrence in T2 groups while there was no significant difference in T1. Adjuvant radiotherapy also showed a significant reduction in recurrence rates in both pN0 and pN+. Undissected necks have higher frequency of neck recurrence than dissected neck irrespective of pathological status of neck metastasis.

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