

A study comparing different approaches in managing neck nodes in early carcinoma of the tongue

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ABSTRACT

Objective: To evaluate elective neck treatment in patients with early stage (T1-2 negative neck node [N0]) squamous cell carcinoma of the oral tongue.

Methods: The medical records of all patients with early stage (T1-2 N0) of oral tongue cancer at the King Faisal Specialist Hospital and Research Center, Riyadh, Kingdom of Saudi Arabia, between January 1980 and December 1997, were identified and retrospectively reviewed.

Results: Our cohort consisted of 93 patients: 45 males and 48 females, with a median age of 60 years. All patients received treatment with curative intent. Partial glossectomy was carried out, except for 8 patients who underwent tongue brachytherapy. The neck was observed in 29 patients, 36 were treated by modified neck dissection, and 28 by elective neck irradiation. With a median follow-up of 62 months, 29 patients had documented neck node recurrence. Ninety six percent (28/

29) of recurrences occurred within 22 months from treatment completion. The 5 year actuarial event free survival with regard to nodal relapse in observed was 59%, dissected was 79% and irradiated neck was 63%. Our results showed a trend toward better neck node control in patients managed by elective neck dissection compared to those observed ($p=0.07$) or receiving elective neck irradiation ($p=0.18$). Tumor thickness of more than 10 mm was associated with increased risk of nodal relapse ($p=0.0004$). Neck node recurrence has a poor prognosis with a 5 year disease specific survival of 16%.

Conclusion: A trend for higher neck control was observed after neck dissection in patients with T1-2 N0 squamous cell carcinoma of the oral tongue. Elective neck dissection should be considered particularly for patients with tumor thickness of more than 10 mm.

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There are significant controversies regarding the optimal therapy for early stages of tongue cancer. Whereas, patients with clinically positive neck disease managed with surgery alone, radiotherapy alone or a combination of neck dissection and radiation, the treatment of the clinically negative neck remains controversial.

Several studies have shown a substantial risk for these patients to have occult nodal metastases, but this significant effect on survival is unclear. Although, some retrospective studies suggest a survival benefit for elective neck treatment, others advocate neck treatment only when nodes become involved. Also, there is no agreement on the optimal

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modality and extent of elective neck treatment. Since the salvage treatment is usually unsuccessful and associated with disappointing results,^{1,4} identifying factors predictive for recurrence, to select patients at high risk for neck failure who would benefit from elective neck treatment remains an important issue. We have previously published data in prognostic factors for early stage tongue cancer,⁵ and we evaluate the efficacy of elective neck treatment and the factors that would predict for nodal recurrence.

Methods. The medical records of all patients with early stage of (T1-2 negative neck node [N0]) squamous cell carcinoma of the oral tongue at the King Faisal Specialist Hospital and Research Center (KFSH&RC), Riyadh, Kingdom of Saudi Arabia, between January 1980 and December 1997 were identified and retrospectively reviewed. All patients were jointly evaluated at multidisciplinary combined clinic by Head and Neck Surgeons and Radiation Oncologists. All had a biopsy proven histological diagnosis. Pathological slides were reviewed by an expert Pathologist at KFSH&RC, to determine the histological grade and tumor thickness (TT) using an optical micrometer. They were re-staged according to 1997 American Joint Committee of Cancer (AJCC) criteria based on initial physical examination, routine laboratory tests, chest x-ray, and CT scan of the head and neck. Relapse was defined based on clinical examination and pathological confirmation.

Treatment. All patients underwent partial glossectomy except for 8 patients who had tongue brachytherapy. The neck was observed in 29 patients, managed by ipsilateral modified neck dissection in 36, followed by adjuvant neck irradiation in 20, and by elective neck irradiation in 28. This variation in neck management was a result of changing clinical practice over the years. Neck irradiation was given using megavoltage machines, and a dose of 45-50 Gy was given in 4.5-5 weeks.

Statistical methods. Event free survival (EFS) was measured from treatment completion date to the date of documentation of neck node recurrence and disease specific survival (DSS) was measured from the date of diagnosis to the date of death; from tongue cancer or from the date of last follow-up. Patients dying from other causes were censored on the date of death. Patients lost to follow up were included in all analysis, and were censored on the date of last follow up. Survival curves were plotted using the Kaplan and Meier methods, and compared using the log rank test. Univariate analysis was performed to evaluate the factors that would predict for neck failure. Differences were considered significant for p value ≤ 0.05 . All p values were two-tailed. Statistical Program for Social Sciences (SPSS) computer software was used for all analysis.

Results. Ninety-three consecutive patients were available for analysis: 45 were males and 48 females, aged 26-90 years (median 60 years). With a median follow-up period of 62 months (6 - 205 months), data was available for all, although 5 patients were lost to follow-up. All lost follow-up cases were disease-free at last visit, and their median follow-up period was 37 months. Twenty-nine patients (31%) had neck node recurrence. Five years actuarial EFS rates at the neck after observation were 59%, dissection were 79% and elective neck irradiation were 63%. Our results showed a trend towards better neck nodal control in patients who underwent elective neck dissection ($p=0.07$) compared to those observed or received neck irradiation ($p=0.18$) (**Figure 1**).

Prognostic factors. T stage, tumor differentiation, TT (≤ 5 mm versus > 5 mm and ≤ 10 mm versus > 10 mm), and the presence of occult microscopic lymph node metastasis in the dissected neck were examined for their effect on neck relapse rate (**Table 1**). Patients with TT of more than 10mm had significantly lower 5-years neck node EFS ($p=0.0004$). T stage, tumor differentiation, and occult lymph nodes metastasis had no impact on neck failure rate.

Pattern of relapse. Ninety-six percent of neck node recurrences (28/29) occurred within 22 months from the treatment completion date. In the neck observation group, all nodal relapses (11/29) occurred at the ipsilateral side of level I and II. Eleven patients (11/28) developed nodal recurrence after irradiation, all at level I and II of the neck except 2 failed at lower part of level III outside radiation area. Patients group that underwent neck dissection had 7/36 neck relapses, 2 at contralateral side, one at level IV below dissected area and 4 in the surgical bed. The recurrence rates in the treatment area after neck dissection were 11% (4/36), radiotherapy were 32% (9/28), and observation were 38% (11/29) (**Table 2**). Neck node recurrence has a poor salvage rate, with 5-years DSS of 16%.

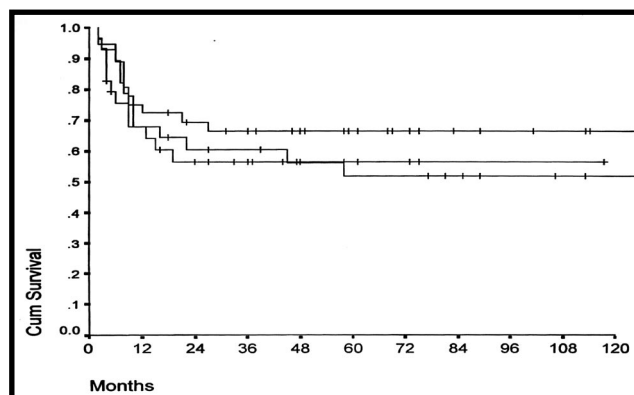


Figure 1 - Neck node event free survival. Cum - cumulative.

Table 1 - Prognostic factors for neck node relapse.

Factors	n patients	5 years EFS %	P value
Stage			
T1	30	71	NS
T2	63	66	
Grade			
G1	20	79	NS
G2	52	67	
G3	21	60	
TT			
≤5mm	26	80	NS
>5mm	50	63	
TT			
≤10mm	55	81	0.0004
>10mm	21	37	
Occult nodal (negative)	30	81	NS
Metastasis (positive)	6	50	
n - number, EFS - event free survival, TT - tumor thickness, NS - not significant			

Table 2 - Neck node relapse rate.

Neck treatment	n patients	In field RR n (%)	Outside treatment field RR n (%)
Observation	29	11 (38)	-
XRT	28	9 (32)	2 (7)
Neck dissection	36	4 (11)	3 (8)
n - number, RR - relapse rate, XRT - irradiation			

Discussion. Predicting the clinical course of T1 and T2 squamous cell carcinoma of the oral tongue for individual patients is difficult, and although survival rates are good with local control rates around 80-85%, still 15-25% die of the disease.^{1,6} Inadequate control of neck disease is the major cause of treatment failure, and usually accounts for the fatal outcome. In patients followed closely for N0 disease, 20-30% will subsequently develop cervical node metastases.⁷ In view of the high incidence of occult metastases and the poor salvage rate, elective neck treatment appears to be justified in this group of patients. However, this issue continues to generate debates and remains unresolved. Different patient and treatment variables were analyzed in an attempt to identify and select a high risk group that may benefit from elective neck treatment. These included tumor size, stage, and differentiation. More recently,

perineural extension, TT and cytometric flow analysis of DNA content have shown some correlation with the incidence of nodal metastases.⁸⁻¹³ Using a computer model to compare different management strategies in the treatment of patients with N0 neck, Weiss et al¹⁴ concluded that treatment of the neck is warranted if the probability of occult cervical metastases is greater than 20%. Whereas, some advocate a "watchful waiting" or observation policy,¹⁵ the increased awareness of the relatively high incidence of occult neck metastases had led most of the authors to recommend elective irradiation or modified neck dissection for poorly differentiated T1 and all T2 or greater lesions.^{2,7,9,16-19} Elective neck dissection was found to reduce the initial regional recurrence rate significantly from 47-49% with an increase in 5-year disease survival rate from 55-86%.² In the same study, there was 23% mortality rate attributed to regional recurrence in the "watchful waiting" policy group. However, 2 randomized studies have addressed this issue in T1-T3 lesions of the oral tongue and floor of mouth, and found no statistically significant difference between an elective neck dissection and observation.^{9,15} Spiro and Strong¹³ suggested that most patients with T2 or T3 lesions probably should undergo elective lymphadenectomy. They found a trend suggestive of improved 5-year survival in patients undergoing an elective as opposed to a therapeutic neck dissection. Mendelson et al²⁰ recommended prophylactic neck dissection for T2 or T3 and high grade T1 tumors. Others recommended elective neck treatment for lesions greater than 2 cm, for deeply invasive and poorly differentiated tumors and in patients with perineural invasion. Spaulding et al and Nathanson et al^{17,21} recommended elective treatment for T1 lesions if TT exceeds 10 mm. This recommendation correlates well with the findings in our current study, where TT was found to be the only predictive factor for neck node recurrence (**Table 1**). Supraomohyoid neck dissection has been advocated as the procedure of choice.^{8,12,16,22} This procedure involves dissecting nodes in levels I-III. Investigators from MD Anderson Cancer Center advocated extending the procedure to include level IV.^{18,23} Failure rates are generally lower than 10%, and most of the recurrences occurring in the dissected field.² Elective neck dissection also has the advantage of providing an accurate staging procedure, and thus defines which patients need to be treated with adjuvant therapy. There is a general agreement for indications of postoperative radiation therapy to the neck: metastatic involvement of more than 2 nodes, or extracapsular extension of disease.^{2,7,24} Although the ipsilateral neck is the most common site of recurrence,²⁵ contralateral regional metastasis is also a problem facing ipsilateral elective neck dissection (END). Elective neck irradiation provides the advantage of whole neck coverage, and infield recurrences after whole neck irradiation to a dose of 50 Gy are uncommon.^{17,26} Spaulding et al¹⁷ and Fu et

al²⁷ reported that partial neck irradiation did not confer protection against subsequent neck relapse. The incidence of occult node metastases in our cohort of patients was 17% (6/36) to which relatively lower than that reported in other series. There is a wide variation in the literature for the incidence of occult nodal metastases in early tongue tumors, which could be related to different treatment protocols, inclusion or exclusion criteria, and possibly differences in the diligence with which pathologists search for microscopic disease. Although elective neck irradiation is associated with a higher neck control rate,^{17,26,28,29} it is difficult to prove a significant survival benefit. Only a few studies have demonstrated a trend towards survival improvement with elective neck treatment.^{2,13,30} In the current study, this presumed advantage for elective neck radiation was not observed. There was a trend towards better control in patients treated with END as compared to those observed or had elective neck irradiation. Failure to identify such differences is most likely attributed to the small number of patients in each subgroup.

In conclusion, the current study shows a trend towards improved regional control with the use of elective neck, treatment, and should be considered in early oral tongue lesions, particularly in high risk patients for regional recurrence. In our study TT emerged as the only prognostic factor for regional failure.

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