LEAD ARTICLE

Abstract

Cancer of the oral tongue is a common disease. Thirty five (35%) percent of patients seen at our hospital are in Stages I&II. The choice of surgical treatment is a wide excision of the lesion (WE) or a hemiglossectomy (HG). This study was carried out to compare the local recurrences and survival in patients undergoing either a WE or HG for early cancer of the tongue. One hundred and twenty six (126) patients were evaluated, 40 underwent a WE and 86 HG. The local recurrence was higher in the WE group, 25% compared with 9% in the HG group; which is statistically significant ($p=0.02$). This was also seen in the T1 subgroup ($p=0.003$). Survival were better in the HG group ($p=0.005$), which was also seen for the T1 subgroup ($p=0.004$). Our study demonstrates that there is a lower incidence of local recurrences following a hemiglossectomy for T1-2 tumours of the oral tongue with improved survivals. Our recommendation is that hemiglossectomy should be the optimal surgery performed for early cancer of the oral tongue.

Keywords

Tongue, Squamous carcinoma, Hemiglossectomy, Wide Excision.

Surgery in Early Cancer of the Oral Tongue (T1-2). Wide Excision Versus Hemiglossectomy

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The oral tongue is a common site for cancer in the head & neck region. At the Tata Memorial Hospital, Bombay, 400 patients of cancer of the oral tongue are seen annually. Of these, 35% are in early stages T1-2 (1) The oral tongue is an important organ for speech and deglutition. Hence, in treatment of cancer of the oral tongue, there has been considerable diversity-ranging from radiotherapy to conservative local surgery. Proponents of surgery as a primary modality of treatment, are divided in their opinions. Surgeons who practise a conservative local wide excision (WE) argue that the defect left behind by a hemiglossectomy (HG) is associated with considerable cosmetic, speech and feeding disabilities. On the other hand, the proponents of HG are concerned with the possibility of incontinuity spread of cancer and satellite/skip lesions in the remnant tissues and justify a more radical approach. They also contend that the cosmetic and functional results are within acceptable limits.

Local control rates and survivals of cancer of the oral tongue treated with surgery or radiotherapy are similar. Spiro and Strong (2) reported determinate 5 year survivals of 70% and 61% and local control at the primary site of 85% and 77% ; for T1 and T2 lesions, where surgery was the choice of treatment. At the Curie Institute, similar results have been obtained with radiotherapy in treatment of similar disease; 82% and 62% 5 year survivals with local control of 86% and 80%. (3) The goals of treatment are to achieve local and regional control, which are translated into long term disease free survival. When surgery is the only modality of treatment for carcinoma of the tongue, what should be the extent of excision of the primary tumour ? This study was undertaken to evaluate the efficacy of hemiglossectomy and wide excision in achieving local control of disease and disease free survival.

Patients and Methods

This is a retrospective study of 126 consecutive cases of early carcinoma of the oral tongue (anterior 2/3rds) staged T1-2/N0-2/M0(UICC - 1992); treated between 1987-1990. All patients had a biopsy proven squamous carcinoma. No patient had any surgery, radiotherapy or chemotherapy prior to definitive surgery for the primary disease. All patients had a minimal follow up of 12

months. None of the patients in this study received any adjuvant radiotherapy or chemotherapy.

Technique of Wide Excision (WE)

The tumour was excised intra-orally, in its entirety with wide mucosal margins - at least 1.5 cms from the visible and palpable edge of the tumour; and with a wide depth consisting its base. The residual defect was closed over with catgut sutures.

Table - 1
Patient and Tumour Demographics.

Age	
< 40 Yrs	27
40 - 60 Yrs.	77
> 60 Yrs.	22
Sex	
Males	90
Females	36
(Male : Female ratio = 3 : 1)	
Tumour Stage	
T1	48
T2	78
Node Stage	
N0	106
N1	12
N2 (a&b)	8

Technique of Hemiglossectomy (HG)

The tongue was divided in the midline along the fibrous median raphe, from the tip upto the foramen caecum. Laterally, along the floor of the mouth upto the anterior tonsillar pillar. The genioglossus was divided at its attachment with the mandible. The lingual artery was identified and ligated. Fig. 1 shows a T1 lesion of the lateral border of the tongue. The resultant defect was then reconstructed by rotating the remnant tongue, with the tip being sutured to the mucosa of the dorsum of the tongue adjacent to the anterior pillar of the tonsil. (Fig. 2) This procedure entails a complete hemiorgan resection. (Fig. 3) The long term cosmetic results of hemiglossectomy is shown in Fig. 4.

Nodal Dissection

All patients with a palpable node/nodes underwent a synchronous radical neck dissection. Some of the

Fig. 1 A T1 lesion of the left lateral border of tongue.

Fig. 2 Hemiglossectomy specimen.

Fig. 3 Reconstituted tongue, the tip of the opposite side is rotated to form a new bulkier tongue

patients with N0 necks also underwent a prophylactic comprehensive neck dissection removing nodes from level I to V. Patients who did not undergo a neck dissection were carefully observed, once in 2 months and a neck dissection performed if the nodes became

Fig. 4. Long term result, showing a normal looking tongue.

palpable. The decision to perform a node dissection in a N0 neck was done in a random manner as we were simultaneously conducting a prospective randomized trial in the management of the N0 neck. (4,5).

End points of study were : (a) recurrence at the primary site and (b) death-due to disease or unrelated causes. Data accrued was analyzed by the Chi Square test (univariate analysis), survival curves were drawn by the Kaplan-Meier method.

Results

Table I shows the age and sex distribution of the 126 patients, alongwith the stage of disease (T and N stage). Type of surgery performed in treatment of these patients is shown in Table II. Sixty eight percent (68%) of our patients had a hemiglossectomy and 58% a synchronous neck dissection. Pathological node positivity was 39%.

Local recurrence was studied in the groups undergoing WE and HG. It was seen that the incidence of local recurrence was higher in the WE group (10/40) as compared with HG (8/86), which is statistically significant, $p=0.02$. A subset analysis of T1 tumours showed a significant difference in local recurrence rates ($p=0.003$), but this was not seen for T2 tumours. This can be attributed to the skewed distribution of patients in both the groups. Table III summarizes these findings.

Determinate recurrence free survivals for the entire group was 72% at 24 months and 55% at 36 months and beyond. Figure 5 is a comparison of survivals amongst the WE and HG groups, which shows a significant survival advantage in the HG group ($p=0.005$). Similarly, in a subset analysis in the T1 tumours (Fig. 6), the HG group has done significantly better ($p=0.004$), whereas this is not the case in the T2 tumours (Fig. 7); which is attributed to unequal numbers that are not comparable.

Discussion

Surgical treatment of early cancer of the oral tongue has remained controversial and a large body of

Fig. 5. Type of surgery and disease free survival

Table - II
Surgical Details

Surgery for Primary Disease.	
Wide Excision	40
Hemiglossectomy	86
Surgery for nodes (Radical Neck Dissection)	
Synchronous	42*
Metachronous	30*
(* Pathologically node positive = 29/72 = 39%)	

surgeons prefer to perform a wide excision of the lesion with adequate gross tumour free margins. The rationale for such conservatism is to prevent cosmetic and functional disabilities which may be associated

Table III
Type of Surgery and Local Recurrence.

Type of surgery	No. recurrences
1. Wide Excision (n = 40)	10
2. Hemiglossectomy (n = 86)	8
	(p=0.02)
T1 tumours and type of surgery.	
1. Wide Excision (n = 23)	7
2. Hemiglossectomy (n = 25)	0
	(p=0.003)
T2 tumours and type of surgery.	
1. Wide Excision (n = 17)	3
2. Hemiglossectomy (n = 61)	8
	(p = 0.6)

Fig. 6 Type of surgery and disease free survival in T1 tumours

with a hemi-organ resection. However, compromise on local recurrence or survival is unacceptable in face of cosmetic/functional disabilities.

The tongue is a bilaterally symmetrical organ divided by a thick fibrous midline septum. Certain parts of the mammalian anatomy are independently unilateral in character, there being no direct vascular or neural communication across the midline. (6). It is well

Fig. 7. Type of surgery and disease free survival in T2 tumours.

established that cancer tends to spread along the interstices of normal tissue, and that fibrous tissue acts as a natural barrier to invading cancer-unlike muscles and other soft tissue. Skip/satellite lesions are also a known occurrence, which may result in local recurrence, despite tumour negative margins (7). Thus, cancer may spread in the hemiorgan by presence of skip/satellite lesions or by incontinuity spread. In the

technique of hemiglossectomy, the entire affected hemiorgan is excised along the fibrous septum that divides the two halves of the tongue, thus rendering a complete excision and reducing the possibility of local recurrence. Thus there is sound anatomical and embryological basis for the concept of hemiglossectomy. Hemiglossectomy permits a wide three dimensional excision. The depth of infiltration is an important prognostic factor. (4, 5).

Our study has focused attention on a surgical modality in treatment and its impact on survival and local recurrence. It has demonstrated clearly that a hemiorgan excision for early cancer of the tongue reduces local recurrences (9% vs 25%) and improves survival. This is further demonstrated again in the subset analysis of T1 lesions. It is precisely in the these small T1 lesions, that one is tempted to do a wide excision. Our results clearly show the superiority of hemiglossectomy over wide excision in the T1 lesions. Cancers detected in the earliest stage, should be offered a modality of treatment with the highest rate of success.

Improved radiotherapy techniques with caesium needle intersital implants have achieved high control rates (8), but with associated complications nearing 20%. Such control rates can be achieved successfully

by surgery alone and this has been clearly demonstrated in various studies (9,10)

The fear of poor cosmesis and function after hemiglossectomy is unfounded. All our patients were able to speak fluently without any disability. There was absolutely no difference in the quality of speech between the two types of surgery. In majority of cases, the residual half of the tongue hypertrophies and it is difficult to make out that an extensive part of the tongue has been removed. (Fig 4) Rotating the tip of the tongue backwards gives a superior cosmetic result without compromising the function of speech and deglutition. In our opinion there is no justification for not offering the choice of hemiglossectomy on basis of cosmetic or functional considerations.

Conclusion

Early cancer of the oral tongue merits radical treatment to achieve local control and improved disease free survivals. Anatomical and biological factors favour a hemiglossectomy in achieving this. This study has shown, conclusively, reduced local recurrences and better survival advantage in patients undergoing a hemiglossectomy,. In early cancer of the tongue (T1-2) - hemiglossectomy is the most appropriate surgical procedure as a single modality of treatment.

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