What is optimum neck dissection for T3/4 buccal-gingival cancers?

Abstract Buccal-gingival (BG) cancers are an integral part of oral cancers but are biologically distinct, particularly with regard to the propensity and pattern of neck metastases. This study was undertaken to examine the adequacy of limited neck dissection in the management of these tumors. Between 1980 and 1989, 527 T3/4 BG cancers were treated surgically at Tata Memorial Hospital, Bombay. These cases were reviewed retrospectively. Among these, 178 underwent radical neck dissection (RND), 166 supradigastric dissection (SD) and 183 supraomohyoid dissection (SOHD) after confirming the negativity of levels II and III for nodal disease on frozen section. The overall incidence of histological node positivity was 42.5% (224/527). Level I was the most frequent site of metastases, with a skip rate of only 9%. The incidence of pure regional failure (primary controlled) was 3% with RND (67/178), 12% with SD (11/95) and 5% with SOHD (7/141) in patients with NO necks. In the N+ category the regional failure was 18% with RND (20/111), 34% with SD (24/71) and 19% with SOHD (8/42). These findings show that a limited (SD) dissection is grossly inadequate in the management of T3/4 BG cancers, whereas an SOHD when neck levels II and III are confirmed negative on frozen section yields results comparable to RND for both NO and N+ necks.

Key words Buccal-gingival cancer • Nodal metastases • Radical and modified neck dissections • Prognosis

Introduction

Much work on the management of the neck in squamous cell carcinoma of the oral cavity comes from nations in the West where tongue and floor of mouth lesions predominate. Squamous carcinomas of the buccal-gingival (BG) complex (buccal mucosa and/or lower gingiva) are an integral part of oral cancers but have certain distinct biological characteristics. The most important of these pertain to the propensity and pattern of cervical lymph node metastases. These tumors are locally aggressive but the overall incidence of nodal metastases is low compared to stage-matched tongue and floor of mouth lesions. Metastases usually involve the submandibular nodes and follow an orderly stepwise pattern of spread unlike tongue and floor of mouth lesions that have a high propensity to skip metastases. It would, therefore, be incorrect to generalize treatment policies for the management of the neck in all oral cavity cancers. In the absence of adequate published reports in the surgical literature, we undertook an extensive retrospective study at Tata Memorial Hospital, Bombay, to determine the true incidence of nodal disease in BG cancers and evaluate the role of limited nodal dissections in the management of these tumors.

Patients and methods

Between 1980 and 1989, 527 patients underwent composite resections as treatment for T3/4 squamous cell carcinomas of the BG complex. Among this group, 166 patients (31.5%) underwent supradigastric dissections (SD; level I node clearance), 183 patients (34.7%) underwent supraomohyoid dissections (SOHD; nodal clearance of levels I, II and III) and 178 patients (33.8%) underwent standard radical neck dissections (RND). Treatment decisions on the extent of neck dissection varied over the years and was subject to the prevailing philosophy in the literature at that time. The SD was in vogue up to 1982 and was performed in all patients if jugular nodes (levels II and III) were uninvolved clinically and at the time of surgery. Patients who had jugular node involvement underwent a RND. With an acceptably high incidence of regional failures following SD and the description of the SOHD in the literature, treatment policies changed in the mid-1980s (1983–1984 onwards). Patients from then on were subjected to either an SOHD or an RND based on the frozen section report of sampled nodes at levels II and III at surgery. Those who did not have metastases at levels II and III underwent SOHD, while those...
with nodal involvement underwent RND. The RND was also preferred occasionally when reconstruction entailed use of a pectoralis major myocutaneous flap.

Postoperative radiotherapy (4600–5400 cGy) was given to all patients when indicated, based on the final histopathology report. However, in those patients who underwent SOHD and required postoperative radiotherapy by virtue of a large locally aggressive tumor (T4 characteristics), radiotherapy fields were confined to the primary site and upper neck only (levels II and III).

A first recurrence (local/regional) was taken as the end-point of the study. However, all patients who completed a minimum of 18 months of follow-up. As the emphasis on this report is on the role of limited neck dissection in T3/4 BG cancers, only those patients with a “pure” regional recurrence in the ipsilateral neck with the primary controlled were studied.

All data was compiled using a D-base III Plus program (Ashton-Tate, Torrance, Calif., USA) and statistical analysis was done using the Fisher exact test.

Results

Prevalence and patterns of cervical metastases

Of the 527 patients, 224 (42.5%) were found to have pathological nodal involvement by tumor. In the SOHD group (183 patients) and the RND group (178 patients), the total incidence of pathological node positivity was 42.3% (153/361). The pattern of lymph node metastases studied from the node-positive cases revealed that the level I node (submandibular) was the first echelon for nodal metastases in most cases. Only 9% of patients had jugular nodal metastasis in the absence of level I involvement.

Clinicopathological correlation showed that the incidence of false-negative neck nodes was high (55%) while the incidence of false-negative neck nodes was only 3%.

Patterns of failure

As in most T3/4 cancers, the incidence of local failure was high in all three groups studied (36.5%). As this paper deals with the extent of neck dissection in T3/4 BG cancers, only those cases are presented with “pure” neck failures where the primary was controlled (Table 1). The SD group had a higher rate of regional recurrences (12% for N0 necks and 34% for N+ necks). However, the SOHD and RND groups were comparable (and not significantly different) in terms of regional recurrences; i.e., 5% versus 3%, respectively, for the N0 group (P = 0.4) and 19% versus 18%, respectively, for the N+ group (P = 0.8).

Table 1 Incidence of pure regional recurrences in patients with buccal gingival squamous cell carcinoma (RND radical neck dissection, SD supradigastric dissection, SOHD supraomohyoid dissection)

<table>
<thead>
<tr>
<th>Extent of neck dissection</th>
<th>SD (level I)</th>
<th>SOHD (level I-III)</th>
<th>RND (level I-V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0</td>
<td>N+</td>
<td>N0</td>
<td>N+</td>
</tr>
<tr>
<td>Nodes</td>
<td>95 (12%)</td>
<td>71</td>
<td>141</td>
</tr>
<tr>
<td>Regional recurrences</td>
<td>11 (12%)</td>
<td>24 (34%)</td>
<td>7 (5%)</td>
</tr>
</tbody>
</table>

Discussion

Since its original description by Crile [4] in 1906, radical neck dissection has been the traditional approach to the treatment of cervical metastases and the standard against which other types of neck dissections are compared. However, during the past decade, a major clinical shift has occurred from radicality, with researchers advocating more conservative neck dissections in carefully selected cases [1, 2]. Since then, there have been a number of published articles in the literature describing patterns of nodal metastases and the role of limited neck dissections in the management of oral cancers [6, 8–10]. All of these reports, however, have a major limitation in that oral cancers are treated as a single entity when actually they are a heterogeneous group, with tongue and floor of mouth cancers distinct from BG cancers in their biological behavior, just as supraglottic laryngeal cancers are distinct from glottic laryngeal cancers.

In actual practice, BG cancers form a very small percentage of the entire group of oral cancers in the various studies reported, thus making it difficult to draw valid conclusions regarding optimum management of the neck. Our present study therefore analyzed patients with T3/4 operable BG cancers, focusing on the propensity and patterns of neck metastases and failures in the neck, following standard RND and limited neck dissections (SD and SOHD) in order to evaluate the adequacy of the latter as definitive procedures.

The overall incidence of neck metastases from operable T3/4 BG cancers in our cases was only 42.5% (224/527). This is relatively low as compared to cancer of the oral tongue where the incidence of ipsilateral neck metastases for T3/4 lesions is in the range of 50–75%, with an added 3–25% risk of contralateral/bilateral metastases occurring [3, 7]. Level I nodes were the first station of metastases, with only 9% of cases skipping this level. In contrast, the majority of tongue cancers have metastases at levels II and III, with a higher incidence of “skip” metastases [5]. This being the pattern of lymph node metastases, diagnosis of the pure regional failures was undertaken to study and optimize the extent of neck dissection in these cancers.

Our study clearly shows that an SD is grossly inadequate with an unacceptable high incidence of regional failures (12% for N0 and 34% for level-I-positive cases). A SOHD confirming the negativity on frozen section of nodes at levels II and III results in pure regional failures of 5% and 19% in N0 and N+ necks, respectively. This is