Objective: To evaluate the regional recurrence (RR) rate in a consecutive series of patients with node-positive head and neck squamous cell carcinoma (N+ HNSCC) who underwent selective neck dissection (SND) as part of their treatment in a single institution.

Design: Retrospective case series with 2 years of follow-up.

Setting: Tertiary care university hospital.

Patients: One hundred ninety-one patients with N+ HNSCC underwent 256 neck dissections (NDs) between 1999 and 2002. Of these, 17 had unilateral SNDs and 11 had bilateral NDs (6 patients, bilateral SND; 5 patients, radical ND and SND). There were 22 men and 6 women, ranging in age from 37 to 79 years (median age, 53 years), with 17 laryngeal, 5 hypopharyngeal, 4 oral cavity, 1 oropharyngeal, and 1 nasopharyngeal primary tumors, which were classified as follows: T1 (n=2 [7.1%]), T2 (n=2 [7.1%]), T3 (n=7 [25.0%]), and T4 (n=17 [60.8%]). The neck stages were N1 (n=8 [28.6%]), N2a (n=2 [7.1%]), N2b (n=7 [25.0%]), and N2c (n=11 [39.3%]). Most patients had tumors that were stage III (14.3%) or stage IV (85.7%) and had undergone postoperative radiotherapy. The minimum follow-up period was 2 years (median follow-up period, 36 months). Two patients (7.1%) died of postoperative complications, and 2 became unavailable for follow-up before 12 months.

Main Outcome Measure: The RR rate.

Results: There were 4 RRs (11.8%) among 34 patients who underwent SND, and 2 RRs (40%) among 5 patients who underwent radical ND. None of the patients with T1 or T2 tumors had recurrences; 1 (14.3%) of 7 patients with T3 tumors and 3 (17.6%) of 17 patients with T4 disease had RRs. One (12.5%) of 8 patients with N1 stage cancer, none of 2 patients with N2a stage cancer, 2 (28.6%) of 7 patients with N2b stage cancer, and 1 (9.1%) of 11 patients with N2c stage cancer had RRs.

Conclusions: The RR rate was acceptable in patients with T1/T2 tumors and N1 nodal stage disease. However, it was higher in those with advanced T tumors and/or N2b stage cancer.

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Quamous Cell Carcinoma (SCC) is the most frequent malignancy of the head and neck region. It is estimated that 40,000 new SCC cases occur in the United States each year, causing 11,000 deaths. At the time of diagnosis, 50% of the patients with SCC of the head and neck (SCCHN) have regional lymph node metastases, either clinical or subclinical. Cancer in the lymph nodes is the most important prognostic factor in these patients. Multiple studies have shown that survival rates decrease by 50% when there are positive nodes in the neck. The standard treatment for patients with node-positive (N+) necks is radical neck dissection (RND). It was described by Crile in 1906 and popularized by Martin in the 1950s. In the last 3 decades, this procedure has been modified to reduce operative morbidity without compromising the oncological result. Therefore, modified RNDs have become widely accepted for the treatment of the N+ neck. Selective neck dissections (SNDs), preserving 1 or more lymph node echelons, were primarily indicated only for elective treatment of N0 necks. Recently, however, some authors have suggested that SND be used in selected cases of N+ necks, eg, in clinical situations in which there was N1 or even N2c cancer on the less involved side of the neck. Most published series, though, include only a small number of cases, with limited follow-up. Therefore, considerable controversy still persists.

The aim of our study was to describe the experience in a single institution with a consecutive series of selected patients with N+ HN SCC treated with SND and a minimum follow-up of 2 years, focusing on the neck control rate.
In this retrospective study, we analyzed the charts of 191 consecutive patients with N1+ HNSCC who underwent 256 neck dissections at a single institution from 1999 to 2002. The vast majority of the patients underwent RND. Twenty-eight patients underwent at least 1 therapeutic SND. Twenty-two patients (78.6%) were male and 6 (21.4%) were female (age range, 39–77 years; median age, 53 years).

The distribution of the primary tumors was as follows:

<table>
<thead>
<tr>
<th>Primary Tumor Site</th>
<th>Patients, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larynx</td>
<td>17 (60.8)</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>5 (17.9)</td>
</tr>
<tr>
<td>Oral cavity</td>
<td>4 (14.3)</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>1 (3.5)</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>1 (3.5)</td>
</tr>
</tbody>
</table>

The TNM staging is shown in Table 1. Of the 11 patients with N2c disease, 5 were treated with an RND on 1 side and a contralateral SND. Six patients underwent bilateral SND. Therefore, a total of 34 SNDs were performed in 28 patients with N1+ HNSCC.

Seventeen patients (60.8%) with laryngeal tumors underwent 21 SNDs; the disease in 6 cases was classified as N2c and 4 patients underwent bilateral SND. Level I was preserved in all cases; level V was also spared in 7 cases. Of the 5 patients with hypopharyngeal tumors, 2 had N2c disease, 1 underwent an RND on 1 side and a contralateral SND, and 1 underwent bilateral SND. Therefore, 6 SNDs were performed for hypopharyngeal primary tumors: only level I was preserved in 5 cases; levels I and V were spared in 1 case. There were 4 oral cavity primary tumors: 2 were N2c, 1 of which was treated with bilateral SND. Three of the 5 SNDs were supraomohyoid neck dissections, and in 2 only level V was not dissected. The only patient with an oropharyngeal primary tumor had N2c disease and underwent an RND on one side and an SND on the other. Finally, the patient with a primary nasopharyngeal tumor underwent a unilateral SND. All pathology reports included a complete analysis of the presence of extracapsular spread.

A total of 34 SNDs were performed in 28 patients with N1+ HNSCC. Microscopic extracapsular spread was noted on the final pathology reports in 7 (14.2%) of the 34 cases. There was 1 regional recurrence (RR) (14.2%) among the 7 cases with extracapsular spread, compared with 2 RRs (11.1%) among the remaining 27 cases with no extracapsular spread. There were 6 RRs among the 28 patients, 4 (11.8%) of which occurred after SND. Also, 2 (40%) of the 5 patients who underwent RND had RR. The features of the 4 cases with RR after SND are shown in Table 2.

Results did not occur in any of the patients with T1 or T2 tumors; however, RR occurred in 1 (14.3%) of 7 patients with T3 tumors and 3 (17.6%) of 17 patients with T4 tumors. Regional recurrence was detected in 1 (12.5%) of 8 patients with N1 disease, none of 2 patients with N2a disease, 2 (28.6%) of 7 patients with N2b disease, and 1 (9.1%) of 11 patients with N2c disease. The patient with the primary tumor in the oral cavity that recurred after bilateral SND (including levels I through III on the right side and I through IV on the left side) presented with the level V recurrence on the right side. Of the 2 patients with recurrences after SND, one had a hypopharyngeal tumor and the other had an oral cavity tumor (both T4 N2c).

Since Crile’s4 landmark publication, the standard treatment of the N1+ neck in HNSCC has been RND, with reasonable RR rates.14 However, some recent articles have suggested a shift in this paradigm. After the safety of SND was demonstrated for N0 necks,6,6 the use of SND has been proposed for selected patients with N1+ necks. Traynor et al11 published a study involving 29 patients who underwent 36 SNDs, with a 4% RR rate. Andersen

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age, y</th>
<th>TNM Stage</th>
<th>Primary Site</th>
<th>Levels Included in SND</th>
<th>Extracapsular Spread</th>
<th>Disease-Free Interval, mo</th>
<th>Level of Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>61</td>
<td>T4 N2b</td>
<td>Larynx</td>
<td>II–IV</td>
<td>Yes</td>
<td>24</td>
<td>V</td>
</tr>
<tr>
<td>Male</td>
<td>46</td>
<td>T4 N1</td>
<td>Larynx</td>
<td>II–IV</td>
<td>No</td>
<td>4</td>
<td>I</td>
</tr>
<tr>
<td>Male</td>
<td>53</td>
<td>T3 N2b</td>
<td>Larynx</td>
<td>II–V</td>
<td>No</td>
<td>6</td>
<td>I</td>
</tr>
<tr>
<td>Male</td>
<td>56</td>
<td>T4 N2c</td>
<td>Oral cavity</td>
<td>I–III</td>
<td>No</td>
<td>17</td>
<td>V</td>
</tr>
</tbody>
</table>

Abbreviation: SND, selective neck dissection.
et al analyzed 106 cases in which SND was performed for N+ HNSCC, with a 9% recurrence rate. Chepeha et al noted an RR rate of 6% among 26 cases of N+ HNSCC. It is noteworthy that all of the articles were retrospective, and included few cases.

Therefore, we tried to look at our own experience with SND for the treatment of N+ HNSCC. It is important to emphasize that a retrospective chart analysis of a 5-year period, including 191 patients with N+ necks who underwent 256 NDs, retrieved only 28 cases in which 34 therapeutic SNDS were performed. Therefore, even in our institution, the indications for SND in cases of N+ HNSCC were the exception rather than the rule.

The RR rate after therapeutic SND in the present series was 11.8% (4/34), slightly higher than the rates reported in the articles mentioned above. Moreover, despite the small number of cases, we tried to identify some factors associated with this recurrence. The vast majority of patients in our study had advanced T stage disease, and all neck recurrences occurred in cases involving T3 or T4 tumors, even in the N1 neck. To our knowledge, there was no mention of the influence of T stage on neck recurrence in this setting. Regarding the N stage, RR was more frequent among the N2b cases (28.5%), even when compared with the N2c cases (9.0%). This finding confirms previous reports on pN+ disease, suggesting that patients with multiple clinical neck nodes may not be suitable for less than an RND or modified RND; evidently, this statement must be confirmed by other studies, including a larger number of cases. Historically, in our institution, the RR rates in N+ necks treated with modified RNDs or with RNDs, always along with postoperative radiation therapy, have been 8.7% in N1 necks, 13.2% in N2 necks, and 38.6% in N3 necks (C.R.C., oral communication, November 1997). Therefore, despite the smaller numbers in the present series, our recent data suggest that there was an increase in the RR rate specifically among N2b cases in which SND was performed. In 2 patients in whom N+ laryngeal primary tumors were treated with SND, sparing level I, RR appeared only on this level, confirming other findings. Therefore, even in N1 necks, it may be advisable to include level I, especially if the T stage is advanced.

All patients in the present series underwent postoperative radiotherapy. Byers et al evaluated neck failure in a large retrospective study of 517 patients with HNSCC and N0 and N1 nodes who underwent SND, and the RR rate was significantly higher in the patients with N+ tumors who did not receive postoperative radiotherapy. The influence of extracapsular spread on the RR rate was not clear in this retrospective series. Microscopic extracapsular spread was noted in 20.6% of the 34 necks that underwent SND. However, among these, 14.2% presented with RR, compared with the 11.1% RR rate observed in the neck specimens without extracapsular spread.

In conclusion, SND may be indicated in very carefully selected cases of N+ HNSCC, but our study suggests that caution should be exercised in patients with an advanced T stage and/or with multiple clinically positive neck nodes, even when postoperative radiotherapy is used. Moreover, prospective studies including larger series are needed to properly validate our findings.

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REFERENCES