**ABSTRACT**

**Objective:** To determine whether the number of positive cervical lymph nodes and/or presence of extracapsular spread (ECS) were prognostic indicators for survival or treatment response.

**Study Design:** Cancer registry analysis

**Methods:** HNSCC surgical patients who had tumor resection and neck dissection at our institution from 1980 through 2007 were included in this retrospective study (n=1532). Cases were categorized according to the number of positive cervical nodes (no positive nodes (n=719), 1-2 positive nodes (n=459) or 3+ positive nodes (n=351)) and by ECS status as negative (n=1045) or positive (n=517). Differences in disease-free survival (DFS) and overall survival (OS) were assessed using Kaplan-Meier and log-rank tests.

**Results:** When stratified by ECS status, DFS and OS were significantly reduced with increasing number of positive nodes (both p<0.001). When stratified by node category, presence of ECS tended to be associated with shorter DFS and OS for 1-2 nodes (p=0.193 and p=0.050, respectively) and for 3+ nodes (p=0.035, p=0.058 respectively). In contrast to patients who were ECS negative, patients with ECS had statistically significant disease-free and overall survival benefit with surgery plus CRT compared to surgery alone (p=0.001, p<0.001 respectively for 1-2 nodes; p=0.002, p<0.001 respectively for 3+ nodes) and compared to surgery plus radiation (p=0.036, p=0.001 respectively for 1-2 nodes; p=0.041, p=0.001 respectively for 3+ nodes).

**Conclusion:** The number of cervical nodal metastases is a prognostic indicator independent of ECS status. ECS positive patients demonstrated improved survival when treated with surgery plus CRT compared to surgery alone or surgery plus radiotherapy. Consideration for positive cervical node number and ECS status can provide insight regarding prognosis and help guide treatment selection.

**CONTACT**

Jonas Johnson
University of Pittsburgh Medical Center
Email: jonasjohn@upmc.edu
Phone: 412-647-2100

---

**METHODS AND MATERIALS**

A database review from the UPifter Head and Neck Oncology Registry of all patients who were treated for HNSCC at this institution between 1980 through 2007 were conducted. Patients who underwent both surgical resection of the primary tumor and neck dissection with histological evaluation of the cervical lymph node status as part of primary treatment were included in the study. Those who had positive margins after the surgical resection, those with survival of 30 days or less, or those who had less than 2 years of follow-up were excluded from the study. 1532 patients were identified (see Table 1 for demographics description).

The major variables evaluated were the presence of ECS and number of lymph nodes involved with tumor. The endpoints evaluated included regional disease-free survival (RDFS), disease-free survival (DFS), and overall survival (OS). None of the patient had distant metastasis on presentation. RDFS was defined as time from the date of primary surgical treatment until the date of neck recurrence. Patients without a recurrence or who had a recurrence other than neck, were censored on their last known follow-up date. DFS was defined as time from the date of primary treatment until the earliest date of event (local recurrence, distant metastasis, or death from cancer). OS was defined as time from the date of primary treatment until the date of death from any cause. Patients without a date of death were censored on their last known follow-up date. Kaplan Meier method was used to produce these curves.

Univariate analysis was performed with log rank test to determine the differences between the comparison groups, using SPSS (version 17.0).

---

**REFERENCES**

