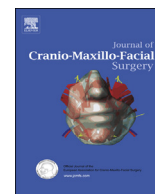




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# The role of suprahyoid neck dissection in the treatment of squamous cell carcinoma of the lower lip: 20 years' experience at a Tertiary Center

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## ABSTRACT

**Purpose:** To evaluate the efficacy of L1–2ND in the management of the lower lip squamous cell carcinoma and to achieve the highest cure rates with adequate neck dissection.

**Methods:** A retrospective review was completed on patients treated between 1994 and 2014. The case histories of 184 patients who were treated with surgical excision of the primary tumor along with neck dissection, and 24 patients who were treated only with surgical excision without neck dissection at another center, were studied. All patients were followed up for evidence of recurrent disease.

**Results:** In 208 patients (193 men, 15 women) with a mean age of 51 years, 12 were N1, 3 were N2, and 169 were N0; 24 patients had undergone operation at another center without neck dissection. Lymph node metastases were present in 34 patients (18.4%) with dissected necks and occult metastases were detected in 19 patients with clinically N0 necks (11.2%). The median follow-up of each patient was 28 months. Only 1 patient developed neck recurrence, and there was no local recurrence. The overall survival rate (OAS) of patients with clinical N0 disease who underwent neck dissection was 94.7%; the OAS of the patients who were not treated with neck dissection was 29.1%.

**Conclusion:** Level 1–2 neck dissection (L1–2ND) is the treatment of choice for controlling neck disease in patients with lower lip carcinoma, and serves as a staging procedure to detect patients who require adjuvant therapy.

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## 1. Introduction

Cancer of the lower lip is the most frequent cancer of the oral cavity, and it should not be assessed as a skin cancer but as an organ cancer. Over 90% of the malignant lower lip neoplasm is squamous cell carcinoma (SCC). Cervical metastases occur in less than 10% of patients with SCC of the lower lip at the time of initial presentation (Bucur and Stefanescu, 2004). Although cancer of the lower lip has a low predilection for regional spread, most of the mortality is the result of uncontrolled disease in the neck. Thus even if occult regional lymph node metastasis is rare, it can be lethal (Ozkul et al.,

2016). This study was conducted to provide insight into the course of lower lip cancer and yield some clues as to the best therapeutic approach.

## 2. Materials and methods

The records of 251 patients with SCC of lower lip in the Department of Otolaryngology Head and Neck Surgery at Hacettepe University School of Medicine between 1994 and 2014 were retrospectively studied. This study was approved by the Hacettepe University Hospital institutional review board, and all participants signed an informed consent agreement. Only those patients with complete follow-up (n = 208) were evaluated in the study. The patients were staged according to the American Joint Committee on Cancer (AJCC; 2010). The minimum follow-up was 12 months for all patients. The median follow-up was 28 months (range, 12–96

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months). The patients ranged in age from 24 to 93 years; their mean age was 51 years. There were 193 men and 15 women.

In our department, surgical treatment of the lower lip cancer has consisted of resection of the lower lip with a 1-cm safe margin, including the skin (supraperiosteal plan of the mandible); unilateral or bilateral L1–2ND is used for N0 patients; and supra-omohyoid or modified radical neck dissection is used for N+ cases. Depending on the number of metastatic lymph node or existing extra capsular extension, adjuvant radiotherapy (RT) or chemoradiotherapy (CRT) was carried out. If only the lateral quarter of the lower lip was involved, unilateral L1–2ND, which included the submental region and the submandibular region on the affected side, was performed. If medial part was involved, bilateral L1–2ND was performed. Reconstruction was usually performed just after the frozen section examinations confirmed clear margins. Primary closure and Bernardoplasty were the procedures most frequently used. Abbe-Estlander and distant free flaps were used if necessary. The Kaplan–Meier test was used with SPSS 22.0 for statistical analysis. The research was conducted in compliance with the ethics principles of the Declaration of Helsinki.

### 3. Results

The tumor characteristics of our patients are shown in Table 1. Of the patients, 158 had lesions that were less than 4 cm (T1 or T2) (85.8%), and 26 of the patients had lesions that were advanced (T3 or T4) (14.2%). In all, 169 patients had clinical N0, 12 of them had clinical N1, and 3 of them had clinical N2 disease. It is not known whether their lymph node status was clinical N0 or N+ in the group of OAH (24 patients). Occult lymph node metastases were detected in 19 of the 169 patients (11.2%), which was clinical N0 necks; the overall lymph node metastasis rate in our center was 18.4 % (34 cases) of the dissected necks on pathological examination.

There were 21 patients with temporary marginal mandibular nerve paresis; there was no lingual and/or 11th cranial nerve paresis or palsy. No cranial nerve persistent palsy was observed. Ten patients complained of xerostomia because of submandibular

gland excision. There were no hematoma and/or seroma in the neck, and there was no need for blood transfusion due to the L1–2ND (Table 2). There was one regional recurrence in a patient who was treated with adjuvant radiotherapy. This patient had a recurrence in the neck about 8 months after the initial operation. Patient staging was T4N0M0 at the presentation; this patient died as a result of carotid blow-out because of neck recurrence.

Twenty-four patients who had undergone operation at another hospital (OAH) initially were included in the evaluation of our treatment results (Table 3). Twenty-four patients had their initial treatment as primary lip resection without neck dissection at another center. In all, 21 of 24 patients had T1–2 tumor with clinical N0, but they were not evaluated radiologically for lymph node involvement of the neck. The other 3 patients had T3 tumor and clinical and radiological N0, yet neck dissection was not performed. According to their pathological evaluation, 23 patients had clear surgical margins. One patient had a positive surgical margin and underwent radiotherapy without neck dissection. Unfortunately, we have no information about these patients' follow-up. All 24 patients were admitted to our hospital with neck recurrence a few years after their initial treatment (2–15 years). We evaluated these patients with computed tomography/magnetic resonance imaging (CT/MRI) and/or positron emission tomography (PET), if necessary, to detect the extent of disease. None of the patients showed distant metastasis, and 7 (29.1%), who were classified as N1, underwent neck dissection (radical or modified radical neck dissection). Fourteen of them, who were clinically at least N2B, underwent combined mandibulectomy with neck dissection (Commando) because of mandibular invasion. Three patients who had neck masses were regarded as inoperable/unresectable because of prevertebral fascia involvement and 360-degree enrollment of the common carotid artery. These two patients received palliative chemoradiotherapy. Seventeen patients (70.9%) developed advanced neck recurrence and died as result of great vessel bleeding, including the carotid or innominate artery, notwithstanding the neck dissection with adjuvant radiation therapy (RT) or chemo-radiation therapy (CRT) performed in these patients in our clinic.

The overall survival rate (OAS) of 19 of 169 patients, who were clinically N0 but who had occult metastases and underwent neck dissection, was 94.7%. The OAS of the patients who were not treated by neck dissection was 29.1 %. Statistical analysis revealed a significant difference for OAS between the two groups, with a p value of <0.001 (Table 4). Fig. 1 shows the Kaplan–Meier curves for OAS of the patients who were or were not treated by neck dissection for occult metastases.

**Table 1**  
Tumor characteristics of the patients operated on at the authors' hospital.

Characteristic	Number of patients	Percentage (%)
Clinical tumor stage		
T1	96	52.17
T2	62	33.69
T3	12	6.52
T4	14	7.60
Clinical nodal stage		
N0	169	91.84
N1	12	6.52
N2	3	1.63
N3	–	–
Pathological nodal stage		
pN0	150	81.52
pN+	34	18.47
Treatment		
Lip resection	–	–
Lip resection + level 1–2 neck dissection	169	91.84
Lip resection + level 1–3 neck dissection	15	8.16
Surgical margins		
Tumor involved	–	–
Clear	184	100
Number of metastatic nodes		
Single	13	7.06
Multiple	2	1.12
Extracapsular spread		
Absent	15	8.18
Present	–	–

**Table 2**  
Tumor characteristics of the patients operated on at another hospital.

Characteristic	Number of patients	Percentage (%)
Clinical tumor stage		
T1–T2	21	87.5
T3	3	12.5
T4	–	–
Clinical nodal stage		
<sup>a</sup> N0	24	100
Pathological nodal stage		
pN0	–	–
pN+	–	–
Treatment		
Lip resection	24	100
Surgical margins		
Tumor involved	1	4.1
Clear	23	95.9

<sup>a</sup> Clinically N0, but patients were not evaluated radiologically for lymph node involvement.

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