Section A-Research paper
ISSN 2063-5346

Prognostic significance of neck dissection operations in lip cancer

Miskinli Rauf Zakir

National Oncology Center, Baku, Azerbaijan

Corresponding Author Email**: dr.miskinli@gmail.com**

DOI: 10.48047/ecb/2023.12.si4.1765

Abstract

The study looked at how neck dissection surgeries affected patients' prognoses of lip cancer. Indicators of 5-year overall and recurrence-free survival as well as anamnestic data from 108 patients at the National Oncology Centre in Azerbaijan who were diagnosed with lip cancer between 2010 and 2019 were investigated retrospectively for this purpose. In comparison to individuals with cN0 lip cancer, those with cN+ lip cancer have a poorer recurrence-free survival rate (28.1%) and a median 5-year survival rate (97.2%) of early-stage lip cancer. Patients at risk for T2, T3-T4 cNO neck metastases and those undergoing dynamic patient monitoring are advised to undergo selective neck dissection.

Keywords: Neck dissection, lip cancer, squamous cell carcinoma

Introduction.

5% of all malignancies, excluding mouth cancer and non-melanoma skin cancer of the head and neck, are lip cancers [1,2]. Each year, 4000 occurrences of oral cancer are caused by cancer of the lip [9]. Squamous cell carcinomas (SCC) with good differentiation account for more than 90% of mouth cancer cases. 90% of the time, SCC affects the lower lip, 8% to 9% of the time, the upper lip, and 1% to 2% of the time, the commissure of the mouth [12]. The primary technique of treatment for lip cancer is surgery since it produces quick results, reliable surgical margins, and good functional and aesthetic outcomes. Surgical treatment should be chosen initially, even though techniques including radiation therapy, cryotherapy, and electrocoagulation have been studied mostly in early-stage lip malignancies [18]. The T status of the tumour, the size and location of the primary tumour, its thickness, the degree of differentiation, perineural invasion, the status of regional metastases (cN0 and cN+), and extracapsular spread in regional metastases are all factors that affect the prognosis of lip cancer and the extent of surgical treatment that is chosen [4, 16]. The 5-year survival percentage with

SCC lip cancer is 90-92% when it is found early and effectively treated, and the recurrence rate is 8%, while it can occasionally be as high as 35%. The occurrence of metastases to the lymph nodes, which can increase mortality to 50%, is the most crucial prognostic marker for these individuals. The level of differentiation and tumour size are correlated with lymph node metastases [1, 9, 12]. 6 to 37% of SCC lip cancer patients have lymph node metastases, and after 5 years, 25 to 50% of these patients are still alive. The frequency of cervical lymph node metastases was reported to be 16.0% in T1 tumours, 18.0% in T2 tumours, 20.0% in T3 tumours, and 33.3% in T4 tumours in a retrospective clinical investigation involving 42 patients. Metastases are frequently found in the submandibular and submental regions of the neck [1, 9]. For 5-year overall survival (T1 - 87.3% and T2 - 65.6%) and relapse-free survival (T1 - 88.6% and T2 - 65.6%), the pathological tumour T locally stage is regarded as a prognostic factor [8]. In this approach, identifying patients at a high risk of occult lymph node metastases can stop the illness from progressing in an unsatisfactory manner clinically [9].

Radical and functional neck dissections are the gold standard for the treatment of regional metastases (cN+) discovered concurrently with the main tumour [6]. Prophylactic (selective) neck dissections are taken into consideration when there are clinically undetected (cN0) metastases in the neck lymph nodes [23]. A surgical approach called selective neck dissection preserves some of the lymph nodes that were taken during radical neck dissection while removing lymph nodes with a high risk of metastatic harm. Clinically unexplained (cN0), hidden (subclinical) metastases with a risk of 15-20%, and early clinical metastases (cN+) are the main indications for selective neck dissection [21]. Unilateral or bilateral supraomohyoid neck dissection, radical neck dissection, or functional neck dissection may be used, depending on the severity and location of the damage. The NO neck is where a supraomohyoid dissection is typically done. Unilateral supraomohyoid dissection should be used if one side of the lip is trapped.

A centrally situated tumour should be treated with a bilateral suprahomohyoid dissection. A radical neck dissection is performed on the side with a positive lymph node in the histological examination because the suprahyoid dissection is intended to perform a biopsy [3]. For patients with diffuse and intermediate tumour processes related to lip cancer, selective neck dissection is advised. Some researchers believe that removing level I neck lymph nodes during selective neck dissection is sufficient in the treatment of lower lip cancer. However, some studies do not think this volume of dissection is acceptable in cancer of the oral cavity, including the lower lip, and instead think supraomohyoid (I-III) neck dissection is appropriate [21] because of the high probability of regional metastases in II and III metastasizing zones. The prognosis and

regeneration percentages are better in N0 necks, and elective neck dissection is now advised because no tomography method can detect occult metastases with 100% accuracy. Postoperative radiation and chemotherapy (CRT) are crucial to preventing locozonal recurrence in cases of surgical nerve positive, lymph node metastases, extracapsular invasion, and perineural invasion in late-stage tumours.

The aim of the study is to determine how neck dissection surgery affects the prognosis of lip cancer.

Material and methods

In the study, which included 108 patients with an average age of 61.714.3 years (24 (22.2%) women and 84 (77.8%) men) who were diagnosed with lip cancer at the National Oncology Centre of Azerbaijan between 2010 and 2019 and received treatment there, the patients' complete medical histories were reviewed, and the data collected were retrospectively examined. Based on postoperative histological studies and preoperative lesion samples, pathological outcomes were examined. 85.1% (n=92) of the cases had the tumour located on the lower lip, 13.0% (n=14) on the upper lip, and 1.9% (n=2) in the oral cavity and lip corner. Lip injury was found in this group in 33.3% (n=36) of the right-side patients, 25.0% (n=27) of the left-side patients, 31.5% (n=34) of the midline patients, and 10.2% (n=11) of the patients on both sides, or the entire lip.

Following surgery, a locally distributed tumour with T1 - 41.7% (n=46), T2 - 45.4% (n=49), T3 - 9.3% (n=10), and T4 - 1.8% (n=2) is found. There were no records of distant metastases in the patients. Stage 1 was present in 38.9% (n=42) Stage 2 in 45.4% (n=49) Stage 3 in 11.1% of the study's participants. 0.9% at stage 3 (n=1) Definition of stage 4a. In 4 (3.6%) of the cases, the stage could not be identified. In the postoperative pathological evaluation, the patients had well-differentiated squamous cell carcinoma (n=38, 35.2%), moderately differentiated squamous cell carcinoma (n=41, 38.0%), basal cell carcinoma (n=6, 5, 6%), verrucous carcinoma (n=2, 1.9%), squamous carcinoma (n=8, 7.4%), poorly differentiated squamous cell carcinoma (n=9, 8.3%), undifferentiated squasquamous cell carcinoma (n=1, 0.9%), adenocarcinoma (n=1, 0.9%), keratosis (n=1, 1.7%), and malignant mesemchymal tumour (n=1, 0.9%) types are described.Some patients underwent USM of the neck and CT of the neck and lower jaw prior to surgery to determine local infiltration or distant metastases. The Ethical Committee granted permission to conduct the trial.

The trial was held in accordance with the Helsinki Final Act. The work's descriptive statistics are presented as mean and standard deviation for numeric data and frequency and percentages for categorical data. Non-parametric evaluation of independent data groups was

performed using the Mann-Whitney U test for numerical data and the Ki-squared test for categorical data. The Kaplan-Meier method was used to compute the survival rate of the patients in the study, which was represented by KM curves. For group comparisons, the log-rank test was utilised. The limit of significance in the statistical analyses done is specified as a Type-1 error rate of 5% and the strength of the analysis is at least 80% (20% Type-2 error). SPSS 21 (IBM Inc., USA) software was used for all statistical analyses.

Results and discussion

Wedge or W resection was performed in 49 (45.4%) patients, V fragment in 25 (23.2%) patients, Karapandzic flap in 11 (10.2%), Bernard in 14 (13.0%), Abbe-Estlander flap in 3 (2.8%) patients, Abbe flap in 2 (1.8%) patients, Local flap in 1 (0.9%) patient, Mucosal injection flap in 1 (0.9%) patient, and Nakajima flap in 2 (%1.8) patients. 58 patients had neck dissection over a 9-year period. 14 (13.0%) patients 4 patients (3.7%) had left supraomohyoid neck dissection. 12 patients (11.1%) had left selective neck dissection (right levels 1A, 1B, 2A, 2B, 3, 4). 4 patients (3.7%) had bilateral supraomohyoid neck dissection. 6 patients (5.5%) had bilateral selective neck dissection (Bilateral Level 1A, 1B, 2,3,4). 3 patients (2.8%) had right supraomohyoid neck dissection. 2 patients (1.9%) had right supraomohyoid right superficial paroidectomy. 2 patients (1.9%) had bilateral selective neck dissection (right level 1A, left level 1A, 1B, 2A, 2B, 3). 3 patients (2.8%) had bilateral selective neck dissection (left level 1,2,3, right level 1,2). Bilateral selective neck dissection (right level 1, 2, 3, 4, left level 1-2A), 2 patients (9%). Selective Neck dissection (Right Level 1A, 1B, 2A, 2B, 3, 4), 2 patients (1.9%) Right Supraomohyoid + Left Selective Neck dissection (Left Level 1A, 1B, 2, 3, 4) and 2 patients (1.9%) Right Supraomohyoid+Left Selective Neck dissection (level 1), 1 (0.9%) patient underwent radical extended neck dissection (table 1).

Table 1. Applied neck dissection procedures

Neck Dissection Procedures	**n (%)**
Left Supraomohyoid Neck Dissection	14 (13,0)
Right Supraomohyoid Neck Dissection	6 (5,5)
Bilateral Supraomohyoid Neck Dissection	12 (11,1)
Left Selective Neck Dissection (Left Level 1A, 1B, 2A, 2B, 3, 4)	4 (3,7)
Right Selective Neck Dissection (Right Level 1A, 1B, 2A, 2B, 3, 4)	2 (1,9)

Bilateral Selective Neck Dissection:	**-**
Bilateral Level 1A, 1B, 2, 3, 4	4 (3,7)
Right Level 1 ,2, 3, 4 + Left Level 1-2A	3 (2,8)
Right Level 1A + Left Level 1A, 1B, 2A, 2B, 3	2 (1,9)
Left Level 1, 2, 3 + Right Level 1, 2	2 (1,9)
Right Supraomohyoid Right Superficial Paroidectomy	3 (2,8)
Right Supraomohyoid + Left Selective Neck dissection (Left Level 1A, 1B, 2, 3, 4)	2 (1,9)
Right supraomohyoid+ Left Selective (level 1)	2 (1,9)
Extended radical neck dissection	1(0,9)

As seen in the table, 30.0% of non-dissecting patients smoked, with an average of 22.610.2 packs of cigarettes consumed every year. 31.0% of patients in the dissection group smoked an average of 30.988.22 packs per year. Although there was no statistically significant difference between the groups in terms of the smoking percentage of patients in this group (p=0.218), it was discovered that patients in the neck dissection group smoked significantly more cigarettes (p=0.010). The majority of the patients who consumed alcohol (n=35, 60.3%) had their necks dissected. This is statistically considerably greater than the proportion of patients who did not have neck dissection (p=0.005). The results from both groups demonstrate that alcoholics had higher neck dissections (table 2). Table 2. Smoking and alcohol history in dissection groups

	Neck dissection (-)	**Neck dissection (+)**	**p**
	n (%)	**n (%)**	
Alcohol use	11 (22,0)	35 (60,3)	0,005
Smoking	15 (30,0)	18 (31,0)	0,218
	Ort±SS	**Ort±SS**	
Pack / year	22,6±9,1	30,9±8,22	0,010

Preoperative tumour diameters were found to be greater in the neck dissection group than in the non-dissection group, and T2 and T3 tumours were observed in a higher percentage in the

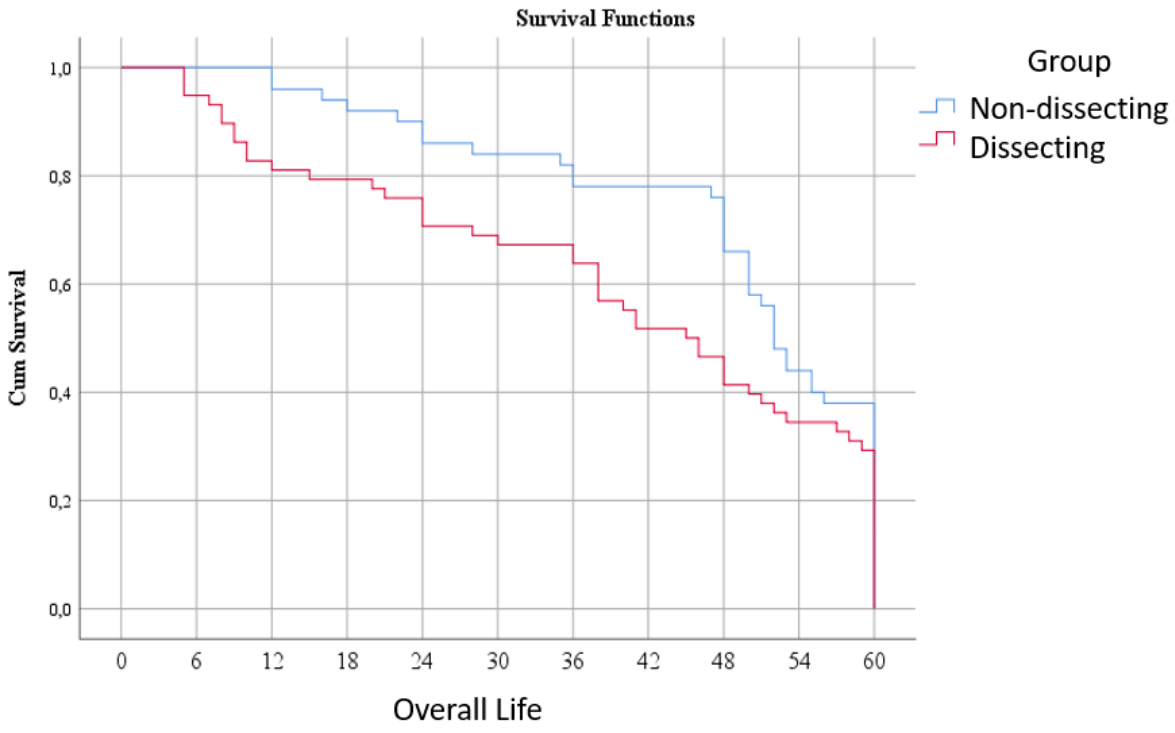
dissection group. T1 tumours were found in 60.0% of patients without dissection, 34.0% of patients with dissection, and 13.4% of patients with dissection. T1 tumours were found in 25.8% of patients without dissection, 55.1% of patients with dissection, and 13.4% of patients with dissection. The dissection group had a statistically significant difference in tumour size (p=0.045) (table 3). **Table 3. TNM staging in dissection groups**

	Neck dissection (-), n (%)	**Neck dissection (+), n (%)**	**p**
Pathological T			
1	30 (60,0)	15 (25,8)	
2	17 (34,0)	32 (55,1)	0,045
3	2 (4,0)	8 (13,4)	
4	-	2 (3,5)	
Pathological N			
X	-	1 (1,7)	
0	48 (96,0)	49 (84,5)	
1	-	7 (12,1)	
2b	-	3 (5,3)	
Pathological Mx	2	1	
Stage			
1	19 (38,0)	23 (39,7)	
2	26 (52,0)	23 (39,7)	
3	3 (6,0)	9 (15,5)	0,035
4	1 (2,0)	-	
x	1 (2,0	3 (5,2)	

A statistically significant difference was found between the dissection stages and the non-dissection groups (p=0.035). As a result, 52.0% of the non-dissection group had stage 2, 6.0% had stage 3, and 39.7%, 39.7%, 15.5%, and 5.2% of the dissection group had stage 1, 2, 3, and x stage, respectively. Neck dissection appears to have been prioritised in both the G3 and Gx stages. Recurrence was observed in 27% (n=3) of patients with T3-T4 tumours (n=11) who underwent neck dissection, CRT was given in 3 patients due to lymph node metastasis, and the

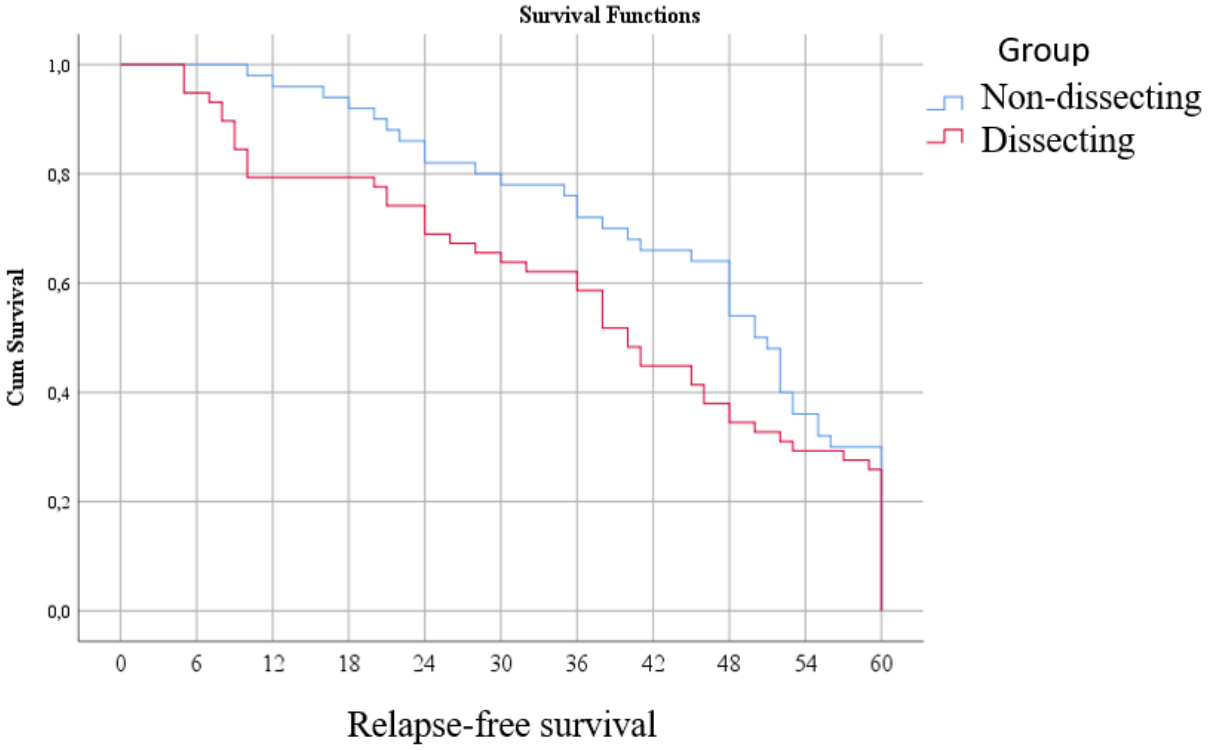
possibility of metastasis was avoided in the other 8 patients due to neck dissection. The tumour size in these patients was 46.9±2.6 mm. Recurrence was 14.9% in 47 patients with T1-T2 tumours who underwent neck dissection.

The recurrence rate in this group was 18.2% among 11 individuals with tumours bigger than 30 mm (35.1±3.9 mm), and 13.9% in tumours smaller than 30 mm (20.6±7.5 mm). The tumour size in patients without neck dissection is 16.5±4.2 mm, the recurrence rate is 18.0%, and the majority (88.0%) was observed in tumours with a size of 22-34 mm (n=8). Only one (12.0%) patient with a size of 8 mm experienced recurrence after 30 days, and this patient was histologically identified as squamous cell carcinoma. The patients were followed up on for 60 months (5 years) after surgery, and 21 of them experienced tumour recurrence, with 3 requiring bilateral supraomohyoid neck dissection. 12 of the operated patients died for a variety of reasons, the most common of which was heart failure, and three died from lip cancer. Three patients died of lip cancer in the group where neck dissection was performed, and their T4aN0M0, T2N2bM0, and T4aN1M0 classifications were determined. The 5-year overall survival rate was 48.7±1.7 months (95% CI: 40.3 - 47.1 months; p=0.085), i.e. 97.2%, according to the Kaplan-Meier graph. The average survival rate in the group without neck dissection was 48.4±2.0 months (95% CI: 44.4-52.4 months), while in the group with neck dissection was 39.7±2.6 months (95% CI: 34.6-44.8%) (graph 1).



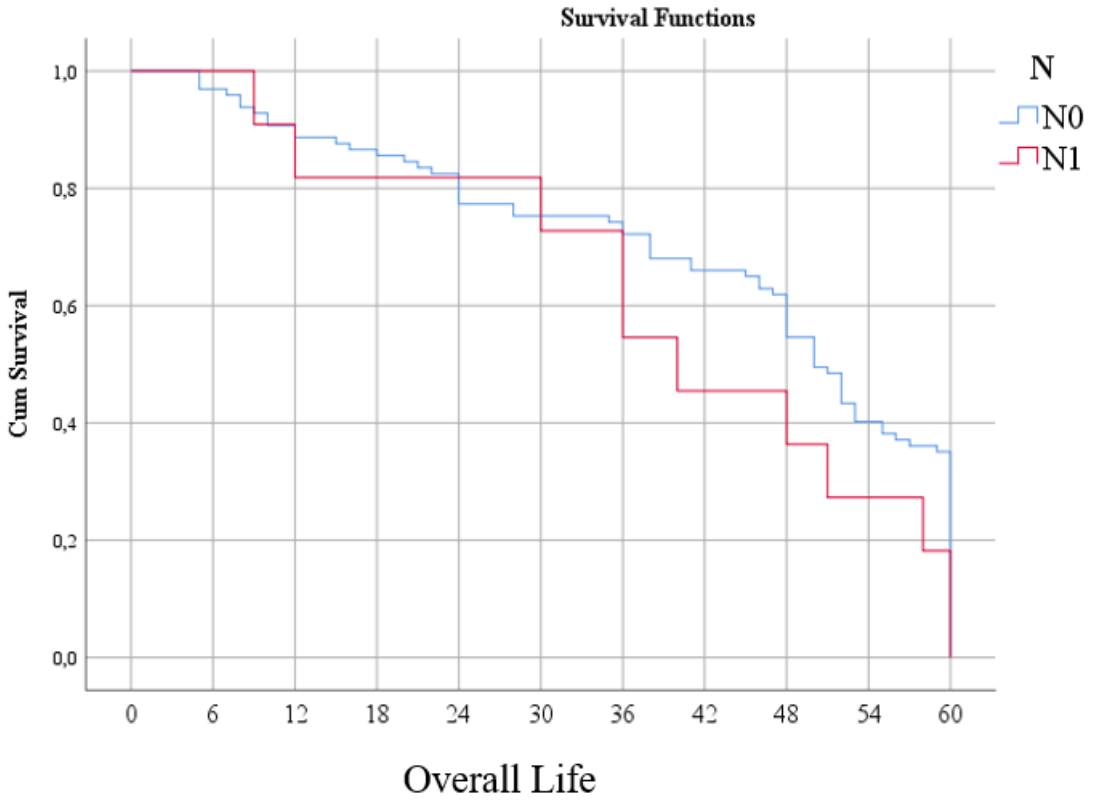
Graph 1. 5-year overall survival rate of lip cancer patients

Relapse-free survival in the non-dissection group was 46.32.3 months (95% CI: 41.1-49.6 months) and 37.6±2.6 months (95% CI: 32.6 -42.3 months). The dissection group appears to have a poorer recurrence-free survival rate. The use of neck dissection reduced the recurrence rate, so the total recurrence rate was 19.4%, 17.2% in the neck dissection group, and 22.0% in the non-neck dissection group (p=0.169) (graph 2).

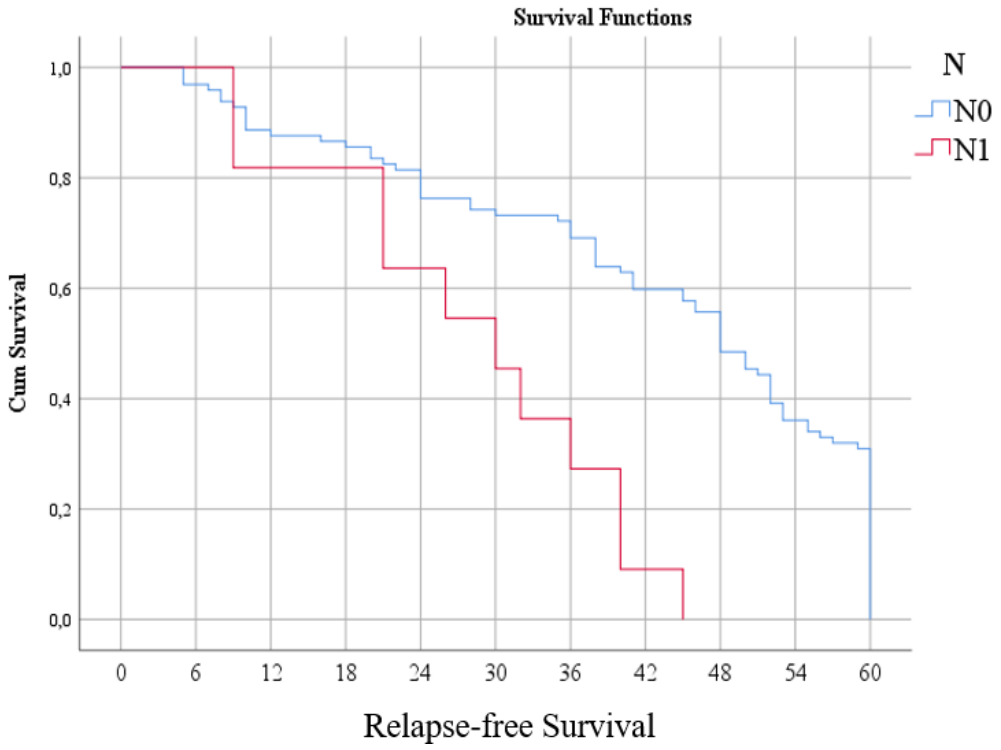


Graph 2. 5-year recurrence-free survival rate of lip cancer patients

Overall survival rate in patients with metastases to regional lymph nodes (cN+) was 40.6±5.4 months (95% CI: 29.5-50.5 months), recurrence-free survival rate was 28.1±3.7 months (95% CI: 20.9-35.3 months), and in patients without metastases (cN0) was 44.1±1.8 months (95% CI: 40.6-47.7 months) and 42.7±1,8 months (95% CI: 39.1-46.3 months). Although the overall survival index revealed no statistically significant difference between groups (p=0.219), the relapse-free survival index revealed a statistically significant difference (p<0.001). As can be shown, cN+ lip cancer patients had much poorer survival rates than cN0 patients (graph 3-4).



Graph 3. 5-year overall survival rate of lip cancer patients according to cN0 and cN+



Graph 4. 5-year recurrence-free survival of lip cancer patients according to cN0 and cN+

Discussion. In the instance of lip cancer, surgery includes excision, lymph node dissection, and single moment repair. The surgical approach chosen is mostly determined by the location and size of the tumour. When tumours cover more than one-third of the lip, a V or W-shaped excision is employed. If the resection region is substantial, the Abbe, Abbe-Estlander, or Karapandzic flaps are employed to alleviate functional issues and microstoma. Thus, regional flaps or freely revascularized flaps are used in the case of medium-sized defects with a volume of 30-50% or in tumours covering 1/3 to 2/3 of the area, from flaps taken from the lateral tissue of the cheek - regionar pieces such as Abbe, Estlander, and Stein, in tumours covering 2/3 from the Camille Bernard flap, if the defect is too large and the cheek flaps are inadequate. Estlander's modification, which employs a cross-lip flap, is used during the rebuilding of the lips' corners. When more than two-thirds of the lower lip (75%) and 30% of the entire width of the lip are injured, a Karapandzic flap is used. The fundamental advantage of the Karapandzic piece is that it maintains innervation and blood circulation in the lips, allows the subcircular muscles to rotate smoothly, preserves the functional integrity of the lips, and does not impair sensory or motor capabilities [10, 22].

The Gillius or Bernard-Webster technique is utilised in bigger lesions. The Camille Bernard flap is the most often used cheek lift procedure for subtotal full-layer lower lip restoration. At this point, the mucous membrane of the lips remains near to the lip-alveolar furrow in the centre, forming Burov's triangle, which eventually becomes crescent-shaped. This surgical approach allows for the total restoration of the lower lip in a single step. The missing feature is a reduction in the size of the oral cavity, as well as lip deformation in the form of a "permanent smile" [11, 19]. The Camille-Bernard approach may allow for spike and commissure healing while avoiding microstomia [7]. In cases of entire lower lip injury, the Nakajima flap is used. Nakajima gives appropriate red vermilion margin, good aesthetic appeal, and functional outcome [18]. Perialar crescent-shaped pieces, reverse Karapandzic flap, Abbe-Estlander flap are used in upper lip injuries (1/2 - 2/3), while Burova-Diffenbach and free valve approach are utilised in larger injuries (2/3).

In general, surgical closure of the ensuing defect is determined by the stage of the tumour, the patient's demand, and the availability of the necessary resources. Lymph node metastases, distant metastases, and uncontrolled recurrence are all risk factors for lip cancer. Malignant tumours of the lower lip are known to have a high metastasizing propensity and to be locally invasive. In 75-80% of instances, lip cancer is identified at the T1 stage. Cervical metastases is detected at an 8% rate during diagnosis. The risk of metastasis is 0-15% in T1

tumours, but the percentage of metastasis to neck lymph nodes increases in late stages, ranging from 11-35% in T2 tumours to 63% in T3 tumours [7, 20].

Because SCC of the lower lip usually spreads to the submandibular and submental lymph nodes, deliberate dissection of the neck lymph nodes is being debated in both the risk group and cN0 patients [20]. Lower lip cancer metastasis to regional lymph nodes is highly debatable. Although some authors believe that doing a planned dissection in cN0 classification is vital, others believe that it is superfluous and redundant. Although the therapeutic strategy for neck metastases is obvious, the therapy consensus in the early stages of the disease is not. Clinicians now take three approaches to this stage. Although some writers advocate selective neck dissection in cN0 tumours, others advocate a "wait-and-see" strategy in which neck dissection is performed only if the illness recurs in that location. Another group suggests a biopsy of the signal lymph node to identify the disease's concealed course. The National Complex of Oncologists Network currently recommends that the patient be observed at the early stage (T1-2, cN0), in the absence of perineural, vascular, and lymphatic invasion, and in the absence of surgical margins [25]. Because lymph node expansion is likely to be related with hyperplastic, reactive events in clinical cN+ patients, doing neck dissection in early-stage tumours may be viewed as an unneeded and supplementary treatment. However, there is no conclusive evidence that preoperative nodular growth is caused by metastasis. According to the literature, neck dissection in lip cancer patients is controversial, depending on the size of the lymph nodes and the stage of the illness.

While Luce advises initial suprahyoid neck dissection for patients with low differentiation, locally recurrent, and clinically cN+ tumours larger than 3 cm, G. Margolin and co-authors (2018) advise prophylactic supraomohyoid neck dissection in clinical cN0 or cN+ patients [15, 17]. In their study, Bon-Mardion N. (2015) et al. discovered that 7 (11.9%) of 59 patients with T1 lip cancer had cervical lymph node metastases after 13.3 ± 7.9 months of follow-up. The cN+ group has a larger number of weak and poorly differentiated tumours, as well as worse overall and relapse-free survival rates than the cN0 group. This demonstrates the importance of detecting and treating occult metastases to neck lymph nodes in T1N0 tumours in SCC lip cancer [5].

During a 28-month follow-up, Kuscu O. (2016) et al. discovered that patients with clinical cN0 who underwent neck dissection had an overall survival rate of 94.7%, compared to 29.1% for patients who did not receive neck dissection. The author demonstrates that neck recurrence during lower lip SCC carcinoma has a negative impact on patients' overall survival metrics. The authors concluded that in patients with lip cancer, doing a Level 1-2 (L1-2ND) neck

dissection is a critical step in managing neck metastases and identifying individuals who require adjuvant CRT [14].

Neck dissection is not necessarily required for patients in stage T1N0, according to Olgun Y. (2015) and Vanderlei J.P. (2013). individuals with SCC lip cancer whose tumour size is greater than 3 cm have a higher chance of spreading to the neck lymph nodes, hence neck dissection is necessary in these individuals. In late-stage tumours with surgical nerve positive, lymph node metastases, extracapsular and perineural invasion, radiation therapy and CRT following surgery may be necessary to avoid locozonal recurrence [20, 24].As a result of our findings, neck dissection surgeries were conducted primarily in T2, T3, and T4 tumours, preventing early metastasis and relapse. Failure to execute neck dissection in T1 and T2 cN0 tumours increased recurrence risk but did not decrease overall survival substantially.

Conclusion

The key issue that field doctors and specialists will focus on is early detection of lip cancer patients in terms of low metastasis percentages, good prognosis, high survival rates, and low morbidity and mortality. If early-stage lip cancer is properly treated, the average 5-year survival rate is 97.2%. Cervical lymph node metastasis worsens the prognosis, lowering the 5-year survival rate to 28.1%. According to the study's findings, patients who do not undergo neck dissection have a higher probability of recurrence. Metastasis and mortality are more common in T3-T4 locally disseminated tumours greater than 3 cm in size; the 5-year survival percentage in patients who underwent preventive neck dissection (level I-III) was 82.8%. Thus, in patients with a risk of metastases in T2, T3-T4 cNO necks, selective neck dissection (particularly sublingual dissection at I-III levels) is indicated, as is dynamic surveillance of other individuals. Prophylactic dissection can be extremely beneficial in preventing hidden metastases and enhancing overall and recurrence-free survival rates.

References

1. Agostini T. Spinelli, G., Arcuri F. [et al.] Metastatic Squamous Cell Carcinoma of the Lower Lip: Analysis of the 5-Year Survival // Arch Craniofac Surg., - 2017. 18(2), - p. 105-111
2. Alhabbab R., Johar R. Lip cancer prevalence, epidemiology, diagnosis, and management: A review of the literature, Advances in Oral and Maxillofacial Surgery, Volume 6, 2022, 100276, ISSN 2667-1476.

3. Bailey B. Selective neck dissection: the challenge of occult me tastases. //Arch. Otolaryngol. Head Neck Surg., 1998, v.124, p.353.
4. Bhandari K, Wang DC, Li SC, Jiang BH, Guo YX, Koirala U, Du XY. Primary cN0 lip squamous cell carcinoma and elective neck dissection: Systematic review and meta-analysis. Head Neck. 2015 Sep;37(9):1392-400.
5. Bon-Mardion N. De Raucourt D, Babin E, [et al.] Cervical lymph node metastases and T1 squamous cell carcinoma of the lips // B-ENT., - 2015. 11(2), - p. 89-93.
6. Byers R., Wolf P., Ballantyne A. Rationale for elective modified neck dissection // Head NeckSurg 2016 134-136.
7. Calcaianu, N. Popescu SA, Diveica D. [et al.] Surgical attitude in premalignant lesions and malignant tumors of the lower lip // J Med Life., - 2015. 8(1), - p. 109-11.
8. Eskiizmir G., Ozgur E, Karaca G, [et al.] Stage is a prognostic factor for surgically treated patients with early-stage lip cancer for whom a 'wait and see' policy in terms of neck status has been implemented // J Laryngol Otol., - 2017. 131(10), - p. 889-894.
9. Essam E., Salch T., Alghazaly A., İbrahim M. İmpact of depht of invasion on number of cervical lymph nodes infiltration in cancer lip. Austic Surgical Oncology 2020; 5(1); 1-5.
10. Faveret P.L.S. Lip reconstruction after tumor resection // Rev. Bras. Cir.Plást., - 2015. 30(2), - p. 206-218.
11. Frunza A. Dragos, S., Beedasy A. The Camille Bernard Flap for lower lip reconstruction // Eplasty, - 2015. vol. 15.
12. Howard A., Agrawal, N. Gooi Z. Lip and Oral Cavity Squamous Cell Carcinoma // Hematol Oncol Clin N Am, - 2021. vol. 35, - p. 895–911.
13. Kerawala C. Roques, T. JJeannon J.P. [et al.] Oral cavity and lip cancer: United Kingdom National Multidisciplinary Guidelines // J Laryngol Otol., - 2016. 130(2), - p.83-89.
14. Kuscu O., Bajin M.D. Süslü N. The role of suprahyoid neck dissection in the treatment of squamous cell carcinoma of the lower lip: 20 years' experience at a Tertiary Center // J. Craniomaxillofac. Surg., - 2016. 44(9), - p. 1404–1407.
15. Luce EA. Discussion: Functional Neck Dissection: The Operative Technique Series. Plast Reconstr Surg. 2016 Nov;138(5):1087-1088.
16. Lydiatt D., Robbins K., Byers R. [et.al.] Treatment of stage I and II oral tongue cancer // Head Neck. 1993; 15(4); 308-312.

17. Margoli G. A.M. Mudunov, I.M. Gelfand [et al.] The need and benefits of personalized cervical lymphadenectomy for oral mucosal cancer 2N0M0. The path to radical surgery // Tumors of the head and neck, - 2018. v.8. No. 4, - p. 26-31.
18. Moretti A., Vitullo, F., Augurio A. [et al.] Surgical management of lip cancer // Acta Otorhinolaryngol Ital., - 2011. 31(1), - p. 5-10.
19. Nguyen, H.X., Nguyen H.V. H.X. Nguyen [et al.] Lower lip squamous cell carcinoma: A Vietnamese case report of surgical treatment with reconstruction by local flap // Int J Surg Case Rep., - 2018. v. 53, - p.471-474.
20. Olgun, Y. Durmuşoğlu, E. Doğan E. [et al.] Role of Elective Neck Dissection in Early Stage Lip Cancers // Turk Arch Otorhinolaryngol., -2015. 53(1), - p. 23-25.
21. Pellitteri P., Robbins K., Neuman T. Expanded application of selective neck dissection with regard to nodal status. Head Neck 1997; 14(4); 260- 265.
22. Tomizawa, H. Omi E., Yamada T. Lower lip cancer treated with extended bilateral Karapandzic flaps reconstruction and simultaneous cervical lymph node dissection // Oral and Maxillofacial Surgery Cases, - 2023. vol. 9 (1), - 100294.;
23. Traynor S., Cohen J., Gray J. et.al Selective neck dissection and the management of the node-positive neck. Am J. Surg. 1996; 172(6); 654-657
24. Vanderlei, J.P. F.J. Pereira-Filho, F.A. da Cruz [et al.] Management of neck metastases in T2N0 lip squamous cell carcinoma // Am J Otolaryngol., - 2013. 34(2), - p. 103-6.
25. Yücel, A., Ömeroğlu E. Güllüev M. [et al.] Predictive factors of late neck metastasis in early stage lip cancer followed by “wait and see” policy // American Journal of Otolaryngology, - 2020. vol. 41, no 5, - 102556.