

Treatment Results with 5-mm Surgical Excision in Nonmelanoma Skin Cancers: Analysis of 234 Cases

Mehmet Sonmez, Omer F. Yikilmaz¹, Ramazan E. Unlu¹

Department of Plastic, Reconstructive and Aesthetic Surgery, Yildirim Beyazit University, Ankara Sehir Hastanesi, Ankara, Turkey, ¹Department of Plastic, Reconstructive and Aesthetic Surgery, Saglik Bilimleri University, Ankara Sehir Hastanesi, Ankara, Turkey

Abstract

Background: Basal cell carcinoma and squamous cell carcinoma constitute the majority of nonmelanoma skin cancers. In our study, we analyzed our results of nonmelanoma skin cancer treatment with 5-mm surgical excision and compared them with the literature. **Material and Methods:** Patients treated at Ankara City Hospital Plastic, Reconstructive, and Aesthetic Surgery Clinic between February 2019 and March 2022 were included in this study. Demographic data, anatomical region, tumor subtype/differentiation, surgical margins, reconstruction method, and recurrence parameters were recorded. IBM SPSS Statistics (version 26.0) was used for the data analysis. **Results:** Of the 234 cases, 163 were reported as basal cell and 71 as squamous cell cancer. Margin positivity with 5-mm surgical excision was 14.1% and 16.9% in basal and squamous cell cancer, respectively. Ninth-month recurrence rates were 4.2% and 19.7% in basal and squamous cell cancer, respectively. **Conclusions:** All surgical margin positivity and recurrences were located in the head and neck regions, revealing the importance of developing treatment references according to the anatomical region.

Keywords: Basal cell cancer, local neoplasm recurrence, margins of excision, recurrence, skin neoplasms, squamous cell carcinoma

INTRODUCTION

Nonmelanoma skin cancers (NMSCs) include mainly basal cell cancer (BCC) and squamous cell cancer (SCC). Other NMSCs are rare, and adnexal tumors, Merkel cell tumors, and skin lymphomas can be considered examples. The incidence of NMSCs has increased by an average of 3%–8% per year since the 1960s.^[1] This increase in incidence can be attributed to aging of the population, increased sun exposure, and increased diagnostic possibilities.^[2]

Chronic sun exposure is the main factor affecting NMSC formation. Other causes include white skin, ionizing radiation, immunosuppression, previous malignancy, and conditions that predispose the patients to malignancy. The diagnosis of NMSC is usually clinically and histopathologically confirmed by excision. Histopathological diagnosis using punch biopsy is useful for large lesions that require graft or flap surgery.^[3] The American National Association for Cancer Research

(NCCN) defines NMSC as low or high risk according to its location, histological features, size, primary or recurrent occurrence, and presence of immunosuppression. According to this classification, a surgical margin of 4 mm for BCC and 4–6 mm for SCC, and postoperative margin evaluation are recommended for low-risk lesions. The gold standard for high-risk lesions is micrographically oriented histographic surgery (MOHS) surgery. Excision with wider surgical margins is recommended for cases in which MOHS surgery is not possible. However, the main disadvantage of MOHS surgery is that it is time-consuming and expensive.^[2] Therefore, standard surgical excision remains important and is used for both low- and high-risk lesions. However, the wider surgical margin recommended for high-risk lesions increases morbidity because most lesions are located in the head and neck regions.

Address for correspondence: Dr. Mehmet Sonmez,

Department of Plastic, Reconstructive and Aesthetic Surgery, Yildirim Beyazit University, Ankara Sehir Hastanesi, Universiteler Mah. 1604. Cad. No.9 Ankara 06800, Turkey.
E-mail: mehmet_snmz@hotmail.com

Submission: 14-10-2022 Revision: 21-03-2023
Acceptance: 05-04-2023 Web Publication: 17-06-2023

Access this article online

Quick Response Code:



Website:
www.tjdonline.org

DOI:
10.4103/tjd.tjd_120_22

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Sonmez M, Yikilmaz OF, Unlu RE. Treatment results with 5-mm surgical excision in nonmelanoma skin cancers: Analysis of 234 cases. *Turk J Dermatol* 2023;17:69-72.

The success of treatment and the accumulation of literature in this field are important, because NMSCs are common in the community and are important in terms of morbidity and treatment costs. The main purpose of our study was to evaluate the demographic factors and treatment success in patients who applied to our clinic and underwent 5-mm standard surgical excision and compare them with the existing literature.

MATERIALS AND METHODS

Ethics committee approval (E1-22-2462, dated March 9, 2022) for the study was obtained from the local ethics committee of Ankara City Hospital. Patients who were treated with surgical excision in our clinic by scanning the hospital data record system with the diagnosis of “C44” international classification of diseases code between February 2019 and March 2022 in Ankara City Hospital were included in the study. First, this was a retrospective study. Patients treated for recurrence were excluded, and only those who underwent primary standard surgical excision were included in the study. The orientation of the pathologist was ensured by placing two marker sutures on the superior, medial, lateral, or inferior borders of the removed material as a standard and by documenting this situation. All surgical excisions were performed with a surgical margin of 5 mm from the lesion or 5mm from induration around the lesion if existed. Patients diagnosed with cancers other than nonmelanocytic cancers

in the final pathology report were excluded from the study. A total of 234 patients who met these criteria were identified. Tumors with the largest diameter and depth, more complex reconstruction, or positive surgical margins were considered in patient with more than one NMSC. Age, sex, anatomical region, tumor subtype and differentiation, reconstruction method, surgical margins, re-excision rate, and recurrence were recorded. Surgical margins were evaluated as either lateral and/or deep positive. During patient follow-up, the recurrence of the primary tumor, which was documented clinically and histopathologically, was considered recurrence. Patients were followed up clinically at the first, third, sixth, and ninth months for recurrence. IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. (Armonk, NY: IBM Corp) was used for the data analysis. Descriptive statistics were used for parameters such as age, sex, tumor subtype, differentiation, reconstruction method, margin positivity, and recurrences.

RESULTS

Of the 234 patients, 163 (69.6%) were diagnosed with BCC and 71 (30.3%) were diagnosed with SCC. Concomitant NMSC was found in 24 (14.7%) cases diagnosed with BCC and 15 (21.1%) were diagnosed with SCC. Demographic data, tumor histopathological features, and tumor locations are summarized in Table 1.

Table 1: Demographic data and treatment results				
Specifications	Nonmelanocytic cancer cases			
	n = 234			
Subtypes/Differentiation	BCC	SCC		
	n = 163	n = 71		
	Age = 68.5 (29–97, median = 70)	Age= 69 (40–94, median = 69)		
	Male/female ratio = 1.29	Male/female ratio = 1.44		
	Nodular	39 (23.9%)	Well differentiated	34 (47.8%)
	Infiltrating/morpheaform	14 (8.5%)	Intermediate differentiated	11 (15.4%)
	Nodulocystic	10 (6.1%)	Undefined	7 (7.8%)
	Superficial	8 (4.9%)	Insitu SCC (Bowen disease)	6 (8.4%)
	Micronodular	4 (2.4%)	Basosquamous	5 (7%)
	Mixt	37 (22.6%)	Undifferentiated	3 (4.2%)
	Undefined	40 (24.5%)	Other subtypes (sarcomatoid, clear cell, acantholytic, verrucous)	3 (4.2%)
Regions	Other subtypes (Adenoid, nodulocystic, follicular) 11 (%6,3)			
	Head and neck (n = 150)	Nose	Head and neck (n = 57)	
			Nose	16 (%22,5)
			Malar-temporal	17 (%23,9)
			Frontal/scalp	9 (%12,6)
			Buccal	7 (%9,8)
			Ear/preauricular	4 (%5,6)
			Lower lip	2 (%2,8)
			Upper lip/neck	2 (%2,8)
	Trunk and extremities (n = 13)	Trunk: 10 Lower extremity: 3	Trunk and extremities (n = 14)	
			Trunk: 3	2 (%3,9)
			Lower extremity:4	2 (%3,9)
			Upper extremity:7	

Downloaded from http://journals.lww.com/iod by BHMfsePHkav1zEumt1QINMa+kJLhEZgbsHh04XMOhCwWCX1AW nYQp/IOHID3I3D00dRy7ITV5FIC3VCA/OAVpDa8K2+YaeH515KE= on 01/11/2024

Table 2: Detailed analysis of recurrences

Specifications	Recurrences		
	n = 21		
Subtypes/differentiation	BCC	SCC	
	n = 7	n = 14	
	Male/female = 4/3	Male/female = 9/5	
	Nodular	Well differentiated	2
		Intermediate differentiated	5
	Infiltrating/morpheaform	Undifferentiated	2
	Mixt	Undefined	2
	Undefined	Other subtypes	3
	Tumor depth (mm)	3.6 (min-max: 2-4)	5.9 (min-max: 2-8)
Tumor length (mm)	10.6 (min-max: 7-15)	37.6 (min-max: 6-115)	
Margin positivity	Positive	Positive	9
	Negative	Negative	5
Regions	Nose	Nose	4
		Ear/preauricular	4
	Malar-temporal	Skalp	3
	Ear/preauricular	Malar-temporal	2
	Upper lip	Servikal	1

Of the BCC tumors, 88 (53.9%) were treated with full-thickness skin graft (FTSG), 51 (31.2%) were primary, 19 (11.6%) were local flaps, and 5 were treated with other methods (Antia-Buch, split-thickness skin graft [STSG], wedge excision). Of the SCC tumors, 33 (46.4%) were FTSG, 16 (22.5%) were primary, 12 (16.9%) were STSG, 7 (9.8%) were reconstructed using local and regional flaps, and the remaining three cases were reconstructed using other methods.

The re-excision rate was 10.4% in BCC tumors due to close or positive surgical margins, and 15.4% in SCC tumors. The histopathological positivity rates for BCC and SCC re-excision were 29.4% and 54.5%, respectively. The dominant BCC subtypes with margin positivity were mixt and infiltrative, and nearly 50% of these cases (12/23) were located on the nose. Thirteen cases with margin positivity with BCC were followed up for clinic recurrence due to patient preference without re-excision and none of them had clinic recurrence. There was not any dominance on differentiation of SCC cases with margin positivity. However, most of these cases (5/12) were located on the nose. Nine of 12 margin-positive cases with SCC had undergone re-excision. The remaining three cases were followed up without re-excision. One case was followed with palliative treatment due to patient comorbidities, two cases received adjuvant radiotherapy, and one of them received chemotherapy too.

Margin positivity after 5-mm surgical excision was 14.1% and 16.9% in BCC and SCC, respectively. All surgical margin positivities for BCC and SCC were located in the head and neck regions, and 82% and 83.3% of these cases were located in high-risk areas, respectively. The recurrence rates during follow-up were 4.2% and 19.7% for BCC and

SCC, respectively. All recurrences for both tumor types were located in the head and neck regions, and 71.4% and 57.1% of these cases were located in high-risk areas, respectively. Most of the recurrences are located in nasal region for BCC and scalp, preauricular, and nasal regions for SCC. The mean age was 65.3 (min-max: 43-84; SD: 12.3) for recurrent cases. Of the 21 recurrent cases, 15 were treated with FTSG and STSG, three with local flaps, and three with primary closure. Five of the 21 cases had a concomitant NMSC as a predisposant factor. Detailed data of recurrences are given in Table 2.

DISCUSSION

BCC and SCC, which constitute the majority of NMSCs, are quite different in terms of clinical course, etiopathogenesis, and treatment approach.^[1] Therefore, separate analyses were performed for BCC and SCC, which were categorized on the same group. Although their localization in high-risk areas was similar, SCC tumors were more frequently located in the extremities. Although the mean age was similar for both cancer types, the male predominance was more prominent in SCC tumors in terms of sex. The most common reconstruction method was FTSG for both tumor types. We used FTSG for color matching and convenience during the tumor follow-up. Nodular and mixed subtypes were dominant in BCC tumors, and well-differentiated subtypes were dominant in SCC tumors. Our recurrence rate for BCC in 9 months was nearly the same compared with the literature. However, our recurrence rate for SCC was more than twice high compared with the literature.

Considering the clinical studies on the Turkish Index in the literature, it has been observed that BCC cases are twice

as common as SCC cases.^[4-6] Our results indicated similar results on the distribution of NMSCs. In the general literature, it is reported that BCC is observed four to five times more frequently than SCC.^[2,7] In terms of subtypes, mixed and infiltrative subtypes were observed more frequently in this study. However, the nodular subtype was the dominant subtype in another study conducted in a similar population.^[8] This finding supports the fact that mixed and infiltrative lesions are primarily treated with surgical excision.

Studies on optimal surgical margins have focused on lateral surgical margins. In a meta-analysis of BCC excisions, a surgical margin of 3 mm was recommended for the low-risk group and for lesions measuring less than or equal to 2 cm. A margin of 4–6 mm is recommended for high-risk groups and for lesions measuring greater than or equal to 2 cm. Considering the studies included in the meta-analysis, quite different results were reported between the number of incomplete excisions in excisions with a 5-mm surgical margin.^[9] In one study included in the meta-analysis, incomplete excision with 5-mm excision was observed in 8 of 50 nasal BCC cases,^[10] whereas in another study, all 46 cases located in the whole body were completely excised.^[11] According to our results and literature, we believe that the anatomical location of BCC tumors is an important factor in incomplete excision.

In a margin study of SCC, a positive margin was reported in 14 (17.3%) of 81 cases of excisions made according to the NCCN criteria, 13 of these cases were reported to be located in the head and neck regions. However, its localization has not been fully elucidated.^[12] Based on the results of our study and the literature, delayed reconstruction may be the preferred method in conditions where MOHS surgery cannot be performed, particularly for SCC tumors located especially in the head and neck regions. Similarly, delayed reconstruction or MOHS surgery is recommended for the treatment of high-risk lesions of both types.^[3]

The 5-year recurrence rate in high-risk lesions with standard surgical excision has been reported to be 4.1%–10.1% in BCC and 8.1% in SCC.^[2] In this respect, our early recurrence rates are more than twice as high for SCC compared with the literature. This may be due to the fact that tumor behavior is quite different in SCC compared with BCC. Additionally, since our all recurrences located in the head and neck regions, we believe that two important factors may play a role in our high recurrence rate. First, our patients tend to present at a later stage for treatment. Second, excisions tend to be made more thinner in the face and neck regions than in the other body parts, because preserving the neurovascular and aesthetic structures is an important objective in face and neck surgeries to reduce morbidities.

The limitations of our study include the relatively small number of cases compared with the incidence in the

community, the relatively short follow-up period for recurrence, and the single-center nature of the study. We believe that conducting multicenter studies with longer follow-up periods will contribute to the accumulation of knowledge on this subject.

As a result, in the treatment of BCC and SCC, which constitute the majority of cases in the treatment of NMSCs, excision with a 5-mm surgical margin provides 95.8% and 80.3% treatment success in BCC and SCC, respectively. The positive surgical margin and recurrences were located in the head and neck regions, especially in high-risk areas in both tumor types. In conclusion, location-based treatment algorithm can increase treatment success and delayed reconstruction may be a preferred method for the treatment of tumors located in the head and neck regions.

Ethical approval

Ethical approval (E1-22-2462, date March 9, 2022) was obtained from the local ethics committee of Ankara City Hospital.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Madan V, Lear JT, Szeimies RM. Non-melanoma skin cancer. *Lancet* 2010;375:673-85.
- Mendez BM, Thornton JF. Current basal and squamous cell skin cancer management. *Plast Reconstr Surg* 2018;142:373e-87e.
- Newlands C, Currie R, Memon A, Whitaker S, Woolford T. Non-melanoma skin cancer: United Kingdom national multidisciplinary guidelines. *J Laryngol Otol* 2016;130:S125-32.
- Eskizmir G, Özgür E, Temiz P, Gençoğlu G, Ermertcan AT. Baş ve boyun melanom dışı deri kanserlerinde tümör histopatolojisi, konumu, karakteristiği, boyut ve kalınlığının incelenmesi. *Kulak Burun Boğaz İhtisas Dergisi Tr-ENT* 2012;22:91-8.
- Ağırçöl Ş, Bozkurt K. Non-melanoma skin cancers reported at a secondary care institution in milas. *Haseki Tıp Bül* 2017;55:269-73.
- Uslu A. Retrospective analysis of the treatment and follow-up of 251 patients with non-melanoma skin cancer in the Mediterranean region. *Acta Oncol Tur* 2019;52:221-31.
- Gordon R. Skin cancer: An overview of epidemiology and risk factors. *Semin Oncol Nurs* 2013;29:160-9.
- Demirseren DD, Ceran C, Aksam B, Demirseren ME, Metin A. Basal cell carcinoma of the head and neck region: A retrospective analysis of completely excised 331 cases. *J Skin Cancer* 2014;2014:858636.
- Quazi SJ, Aslam N, Saleem H, Rahman J, Khan S. Surgical margin of excision in basal cell carcinoma: A systematic review of literature. *Cureus* 2020;12:e9211.
- Lin SH, Cheng YW, Yang YC, Ho J-C, Lee C-H. Treatment of pigmented basal cell carcinoma with 3 mm surgical margin in Asians. *Biomed Res Int* 2016;2016:7682917.
- Konopnicki S, Hermeziu O, Bosc R, Abd Alsamad I, Meningaud JP. Nasal basal cell carcinomas. Can we reduce surgical margins to 3mm with complete excision? *Ann Chir Plast Esthet* 2016;61:241-7.
- Ribero S, Osella Abate S, Di Capua C, Dika E, Balagna E, Senetta R, *et al.* Squamocellular carcinoma of the skin: Clinicopathological features predicting the involvement of the surgical margins and review of the literature. *Dermatology* 2016;232:279-84.