



E-ISSN: 2616-3470

P-ISSN: 2616-3462

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2025; 9(2): 18-19

Received: 12-02-2025

Accepted: 15-03-2025

**Wiko Wicaksono**

Department of Surgery, Faculty of  
Medicine, Andalas University,  
RSUP Dr. M. Djamil, Padang,  
Indonesia

**Daan Khambri**

Division of Oncology Surgery,  
Department of Surgery, Faculty of  
Medicine, Andalas University,  
RSUP Dr. M. Djamil, Padang,  
Indonesia

**Rahmat Taufik**

Division of Oncology Surgery,  
Department of Surgery, Faculty of  
Medicine, Andalas University,  
RSUP Dr. M. Djamil, Padang,  
Indonesia

**Corresponding Author:**

**Wiko Wicaksono**

Department of Surgery, Faculty of  
Medicine, Andalas University,  
RSUP Dr. M. Djamil, Padang,  
Indonesia

## Dominant recurrence factors in patients with squamous cell carcinoma of the skin following wide excision Surgery: A retrospective cohort study at RSUP Dr. M. Djamil Padang (2018-2024)

**Wiko Wicaksono, Daan Khambri and Rahmat Taufik**

DOI: <https://www.doi.org/10.33545/surgery.2025.v9.i2.A.1186>

### Abstract

**Background:** Skin cancer is a major global health issue, with an increasing incidence particularly in non-melanoma skin cancer (NMSC) cases. Squamous cell carcinoma (SCC) represents the second most frequent subtype of NMSC, often associated with chronic sun exposure, immunosuppression, or prior radiation therapy. Despite adequate surgical treatment, SCC recurrence remains a substantial challenge.

**Objective:** To determine the dominant recurrence factors in patients with SCC of the skin after wide excision surgery at RSUP Dr. M. Djamil Padang.

**Methods:** A retrospective cohort study was conducted by reviewing medical records from January 2018 to September 2024.

**Results:** Out of 69 patients, recurrence was detected in 27.5%. Neurological symptoms, predilection site, and tumor stage were significant risk factors.

**Conclusion:** Tumor stage was identified as the most dominant factor contributing to recurrence.

**Keywords:** Non-melanoma skin cancer, recurrence, squamous cell carcinoma, wide excision surgery

### Introduction

Skin cancer is a major global health issue, with an increasing incidence particularly in non-melanoma skin cancer (NMSC) cases (Leiter *et al.*, 2020) <sup>[1]</sup>. Squamous cell carcinoma (SCC) represents the second most frequent subtype of NMSC, often associated with chronic sun exposure, immunosuppression, or prior radiation therapy (Que *et al.*, 2022) <sup>[2]</sup>. Wide excision remains the gold standard treatment for SCC, aiming to remove the tumor completely with an adequate margin (NCCN, 2024) <sup>[5]</sup>.

Despite adequate surgical treatment, SCC recurrence remains a substantial challenge. Multiple factors such as tumor size, depth of invasion, location, and perineural involvement have been identified as significant predictors of recurrence (Ferrandiz *et al.*, 2021; Stratigos *et al.*, 2020) <sup>[3, 4]</sup>. This study aims to identify the dominant factors associated with recurrence in SCC patients following wide excision surgery at RSUP Dr. M. Djamil Padang between 2018 and 2024.

### Methods

#### Study Design and Setting

This retrospective cohort study was conducted at the Oncology Surgery Division of RSUP Dr. M. Djamil Padang from March to April 2025. Medical records of patients diagnosed with cutaneous SCC and who underwent wide excision between January 2018 and September 2024 were reviewed.

#### Participants

Inclusion criteria were patients with confirmed histopathological SCC diagnosis, complete surgical and follow-up data, and no prior systemic therapy before wide excision. Patients with incomplete records or loss to follow-up were excluded.

#### Data Collection

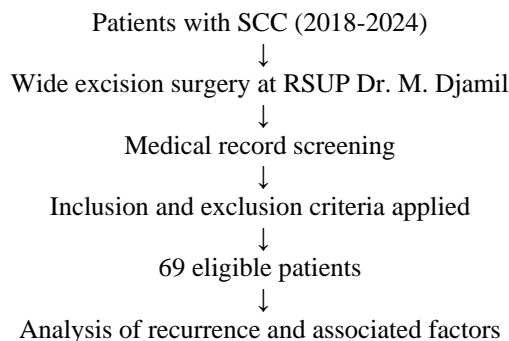
Collected variables included demographics (age, sex, occupation), clinical features (neurological

symptoms, tumor predilection site, tumor stage, radiotherapy history, previous skin cancer history), and recurrence status during follow-up.

**Statistical Analysis**

Cox proportional hazards regression was used to determine factors associated with recurrence. Results were expressed as odds ratios (OR) with 95% confidence intervals (CI), and significance was considered at  $p < 0.05$ .

**Research Flowchart**



**Results**

A total of 69 patients met the inclusion criteria. 27.5% experienced recurrence.

**Table 1:** Patient Demographics and Clinical Characteristics

Characteristics	Total (n=69)	Recurrence (n=19)	p-value
Age ≥45 years	58 (84.1%)	17 (89.5%)	0.411
Male	49 (71.0%)	14 (73.7%)	0.831
Outdoor occupation	42 (60.9%)	13 (68.4%)	0.525
Previous skin cancer history	9 (13.0%)	5 (26.3%)	0.092
Neurological symptoms	7 (10.1%)	6 (31.6%)	0.008*
Tumor at predilection site	10 (14.5%)	8 (42.1%)	0.001*
Advanced tumor stage (III-IV)	12 (17.4%)	9 (47.4%)	0.001*

(\*) Statistically significant

**Table 2:** Multivariate Cox Regression Analysis

Variable	OR	95% CI	p-value
Neurological symptoms	11.720	1.981-69.350	0.007*
Tumor predilection site	24.881	3.883-159.438	0.001*
Tumor stage	29.649	3.832-229.383	0.001*

**Discussion**

The recurrence rate of 27.5% observed in this study aligns with global reports ranging from 20% to 30% for SCC patients post-surgical intervention (Que *et al.*, 2022) [2]. Male predominance and the older age group (>45 years) reflect typical epidemiological patterns for SCC as sun exposure accumulates with age (Leiter *et al.*, 2020) [1]. Neurological symptoms were significantly associated with recurrence, supporting previous findings that perineural invasion is a key marker of aggressive tumor behavior (Ferrandiz *et al.*, 2021) [3]. Tumors involving major nerve structures carry higher risks for incomplete resection and subsequent spread.

Predilection sites, such as the scalp, ear, and lips, were also significant predictors of recurrence. These areas are more prone to aggressive disease and may require wider surgical margins or adjuvant therapy (Stratigos *et al.*, 2020) [4]. Tumor staging emerged as the most dominant factor. Higher stage tumors (T<sub>3</sub>-T<sub>4</sub>) are known to invade deeper structures and carry a greater

risk for metastasis and recurrence (NCCN, 2024) [5]. This emphasizes the importance of early detection and comprehensive management strategies for high-risk SCC.

**Conclusion**

This study identified several factors associated with the recurrence of squamous cell carcinoma (SCC) of the skin following wide excision at RSUP Dr. M. Djamil Padang. Patients aged ≥45 years, the presence of neurological symptoms, high-risk predilection sites, and advanced staging were found to be significantly associated with recurrence. Among these, tumor staging emerged as the most dominant factor influencing recurrence rates. Conversely, a history of previous cancer and radiotherapy were not significantly related to recurrence. Future studies are encouraged to utilize a longer observation period and to explore various types of skin cancers treated with wide excision procedures. The present research is expected to serve as a reference for the prevalence and associated factors of skin squamous cell carcinoma recurrence post wide excision at RSUP Dr. M. Djamil Padang.

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**How to Cite This Article**

Wicaksono W, Khambri D, Taufik R. Dominant recurrence factors in patients with squamous cell carcinoma of the skin following wide excision Surgery: A retrospective cohort study at RSUP Dr. M. Djamil Padang (2018-2024). *International Journal of Surgery Science* 2025;9(2):18-19.

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