

*Case report*

## Advanced cutaneous squamous cell carcinoma of the left auricle: a radical but effective surgical approach

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### Abstract

Cutaneous squamous cell carcinoma (cSCC) is the second most common form of skin cancer. Although it has a good prognosis, cSCC of the ear is associated with a poorer outcome. Reconstruction following total ear amputation because of a cSCC of the ear can be challenging, especially in elderly patients. Currently, to the best of our knowledge, the number of published articles discussing reconstruction modalities following total ear amputation is relatively limited. A 95-year-old patient presented with an advanced form of cSCC of the left ear. Total ear amputation and defect reconstruction using a large preauricular transposition flap was performed. Because the patient was blind, there was no need to save the helix fold or tragus as an eyewear holder. Postoperative flap viability was good and, after complete site healing, the patient and his family were satisfied with its aesthetic appearance. Histopathological analysis showed poorly differentiated cSCC penetrating the surface of the auricular cartilage, with wide clear surgical margins. Total ear amputation in cases of advanced cutaneous carcinomas is very rare and lacks reconstructive modalities. In this patient, it provided him with tumor-free status as well as a satisfactory aesthetic appearance with good quality of life.

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### Introduction

Cutaneous squamous cell carcinoma (cSCC) is the second most common form of skin cancer, immediately after basal cell carcinoma and before melanoma, accounting for about 20% of keratinocytic carcinomas (1). The most significant risk factors resulting in cSCC include UV exposure, older age, fair skin (Fitzpatrick skin types I–III), and immunosuppression (2). The incidence of cSCC is three times higher in males and increases with age, with an average onset in the mid-60s (2, 3). One of the stronger predictors of cSCC development in previously unaffected individuals is the presence of actinic keratosis, although the rate of transformation of individual solar keratosis is relatively low (4, 5).

Currently, the gold standard for cSCC treatment is complete wide surgical excision with histologically clear margins. A biopsy and histological confirmation should be performed in all clinically suspected cSCC (6, 7). Mohs micrographic surgery (MMS) is still being discussed, and it is performed only when necessary and when wide surgical excision is not possible (8). The 2019 National Comprehensive Cancer Network guidelines recommend Mohs micrographic surgery, resection with complete circumferential peripheral and deep margin assessment (“slow Mohs”), or standard excision with “wider surgical margins (over 4 to 6 mm)” followed by postoperative margin assessment and linear or delayed repair.

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When treated early and correctly, primary cSCCs are typically indolent tumors, with good prognosis and 5-year cure rates greater than 90% (9). If the initial removal is incomplete, cSCC is more likely to recur, mostly locally and less frequently in regional lymph nodes (10). According to a systematic review and meta-analysis conducted in 2016 by Thompson et al., statistically significant risk factors for local recurrence were Breslow > 2 mm and > 6 mm, invasion beyond subcutaneous fat, perineural invasion, tumor diameter > 20 mm, localization on the temple, and poor histological differentiation. Significant risk factors for nodal metastasis, among the factors mentioned above, were localization on the ear or lip, as well as immunosuppression (11).

Demographically speaking, the risk of cSCC metastasis increases in the older population, especially in males (12). cSCC is characterized by high rates of local recurrence and lymph node metastases compared to other head and neck sites, and it is considered the leading cause of death from nonmelanoma skin cancer (13–15). According to Rowe et al., cSCC of the ear has shown an elevated absolute risk of 9% toward lymph-node metastasis when compared to a baseline absolute risk of 5% for other sun-exposed areas (16). These results can be explained by the anatomical features of the ear. The skin of the ear attached to the underlying cartilage is thin, with minimal interposed subcutaneous tissue. Therefore, tumors are in contact with dermal or subcutaneous lymphatics and cartilage early on in the course of the disease (17).

The American Joint Committee on Cancer's *Cancer Staging Manual* (eighth edition) and the Union for International Cancer Control system is used for staging cSCC (18, 19). Lower tumor stages (T1 and T2) are exclusively defined by tumor diameter. T1 cSCCs are smaller than 2 cm, and T2 tumors measure 2 to 4 cm. T3 criteria were expanded to include tumors larger than 4 cm or presenting with one or more risk factors (i.e., depth of invasion beyond subcutaneous fat or deeper than 6 mm, minor bone erosion, or perineural invasion greater than or equal to 0.1 mm or presenting with clinical or radiographic involvement of named nerves). The T4a stage includes tumors demonstrating gross cortical bone erosion with marrow invasion; T4b includes tumors with skull base invasion and/or skull base foramen involvement (20–22). The recurrence rate in primary tumors of the lip and the ear may be twice as high as other skin sites.

## **Case report**

We present the case of a 95-year-old male patient with a clinically ulcerated tumor measuring 45 × 40 × 2 to 7 mm on the left auricle. According to the patient, he noticed the tumor about 2 months prior, with typical symptomatology (bleeding, itching, and scabbing). Other than total blindness and prior cSCC involving a nose operation, he reported no other diseases of interest. Clinically, the patient had fair skin with visible actinic keratosis on multiple sites. As a part of the preoperative diagnostics, chest X-ray and an ultrasound of regional lymph nodes of the head and neck were performed, which showed no abnormalities, as well as full preoperative blood work, and full cardiology consultation and evaluation (ECG, neck vessels, color Doppler sonography, etc.). After careful evaluation and discussion with the patient and his family, it was decided that the best treatment method would be a radical ear amputation because it would increase the chances of clear histological margins. Due to the patient's blindness and therefore lack of need for eyewear, it was agreed that this option would not greatly interfere with aesthetic and functional aspects of the patient's quality of life.

Total ear amputation and reconstruction using a large preauricular transposition flap was performed under analgesedation with local tumescent anesthesia (Figs. 1a–c). The procedure and initial postoperative period took place without any complications. Flap viability was good, with no signs of infection, wound dehiscence, or hematoma. The patient was placed on a 14-day course of oral antibiotics. The sutures were completely removed on the 12th day. After complete site healing, the patient and his family were quite satisfied and reported no complaints regarding the final aesthetic result.

Pathohistology reported poorly differentiated cSCC, with a maximum tumor thickness of 12.2 mm, depth of invasion at the level of the cartilage surface with focal peri- and intraneural invasion (Figs. 2a, b), without lymphovascular invasion and with a clear histological margin width of 20 mm. The case was reviewed by the soft tissue tumor board, and a decision was made for no adjuvant treatment with a follow-up every 3 months, then every 6 months, and after that every year.

For follow-up, complete clinical examination with chest X-ray, and abdomen and pelvis ultrasound was performed, as well as regional lymph node basin ultrasound, and testing for lactate dehydrogenase levels. The patient had no evidence of recurrence or any local or visceral metastasis during a 3-year follow-up.

## **Discussion**

Total ear amputation defect in cases of advanced skin carcinomas is very rare and lacks reconstructive modalities. Reconstruction following total ear amputation because of a SCC of the ear can be challenging, especially in elderly patients. Currently, to the best of our knowledge, the number of published articles discussing reconstruction modalities following this method of treatment is limited (20). A definite diagnosis of SCC is made based on a biopsy, and for poorly differentiated cSCC wide surgical margins—in this case total ear amputation—provides clear histological margins. Several features are associated with increased risk of local recurrence, nodal disease, and disease-specific death. These include immunosuppression, tumor size, histologic findings (grade/differentiation), perineural invasion, tumor depth, recurrent status, and anatomical site (e.g., lip or ear) as risk factors for poor outcomes in cSCC (21). High-risk cSCC remains a management challenge, and tracking outcomes nationally through cancer registries is difficult. Mohs micrographic surgery is an alternate excision method for high-risk cSCC (HRcSCC) with comprehensive margin assessment using frozen sections with complete peripheral and deep margin assessment (23). HRcSCC is associated with a high risk of metastasis and death, and when possible radical surgical excision is the gold standard (24).

The soft tissue tumor board made a decision based on the elderly age of the patient and on the fact that diagnosis and surgical treatment had taken place at the initial stage (wide excision and clear margins), without intracranial invasion and without locoregional or distant metastasis. Adjuvant chemotherapy and radiotherapy had been discussed in light of the potential risk and cost-benefit principle considering the patient's age and no significant locoregional and distant tumors spreading. Sentinel lymph node biopsy in nonmelanoma skin tumors has demonstrated that early treatment of nodal metastases leads to substantial improvements in patient outcomes, including prolonged distant disease-free survival but not overall survival.

## **Conclusions**

We have described a case of an advanced form of SCC of the ear in an elderly patient, diagnosed with histopathological examination, and with clinical and imaging investigation for exclusion of a metastatic tumor. Wide surgical excision and reconstruction with a large local transposition flap were the therapy of choice. This surgical treatment provided the patient with tumor-free resection margin status, as well as a satisfactory aesthetic appearance and quality of life.

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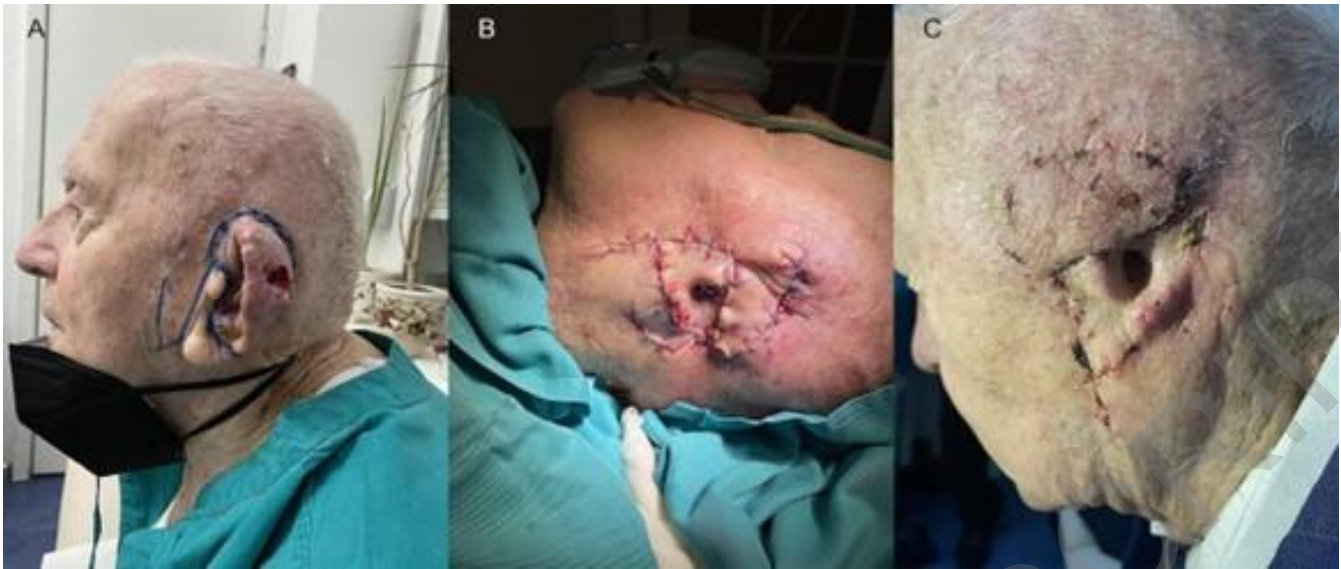


Figure 1. a) Large ulcerated tumor of the earlobe, preoperative view, b) partial amputation and reconstruction with large local transposition preauricular flap, postoperative view, and c) 2 weeks after the operation.

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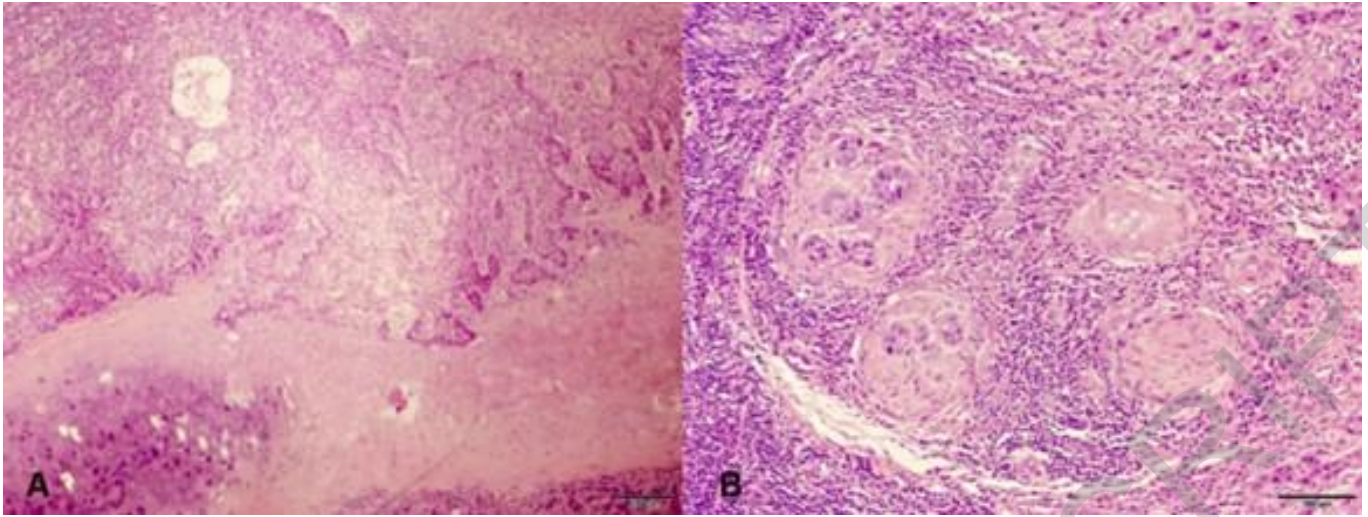


Figure 2. Histopathology a) showing poorly differentiated squamous cell carcinoma infiltrating the auricular cartilage, and b) with focal peri- and intraneural invasion (H&E 40× and 100×).

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