

Cutaneous squamous cell carcinoma on infraauricular region: A case report at Dr. Sardjito Hospital, Yogyakarta

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Abstract

Introduction: Cutaneous squamous cell carcinoma (cSCC) is a type of skin cancer commonly found in sun-exposed areas with a high risk of tissue invasion and metastasis. Managing cSCC in the head and neck requires both surgical and non-surgical approaches, especially in aggressive cases involving sensitive areas like the ears and neck.

Case Illustration: A 39-year-old woman had a wound below her left ear that progressed into a lump over the past two months. After undergoing a biopsy, she was referred to Dr. Sardjito General Hospital in Yogyakarta. The patient only complained of decreased appetite due to a discomfort in her left jaw. Physical examination revealed a hyperpigmented mass with an ulcer on its surface in the left infraauricular region, measuring 7 x 5 cm, along with left-sided level IIb cervical lymphadenopathy. Histopathological examination confirmed the presence of Keratinizing Squamous Cell Carcinoma (SCC), pT3N1M0. The patient underwent surgery with wide excision accompanied by radical neck dissection (RND), followed by wound reconstruction using a rotational skin flap.

Discussion: cSCC is a form of skin cancer with a relatively high prevalence. cSCC remains invasive and prone to recurrence, especially in high-risk cases. Diagnosis of cSCC is made through histopathological examination and imaging, while primary management involves surgery, such as wide excision or Mohs Micrographic Surgery (MMS). In high-risk cSCC cases, additional procedures like Radical Neck Dissection (RND) are often required to reduce the risk of regional recurrence, non-surgical therapies may be considered as adjuvant treatments to improve overall survival.

Conclusion: The presence of lymph node and other organ involvement is a special consideration in patients with cSCC of the head and neck region who will undergo surgical procedures in the form of wide excision and RND.

Keywords: cutaneous squamous cell carcinoma, head and neck cancer, metastasis, wide excision

Abstrak

Pendahuluan: Cutaneous Squamous Cell Carcinoma (cSCC) adalah kanker kulit agresif yang sering muncul pada area terpapar matahari seperti kepala-leher, dengan risiko tinggi invasi jaringan dan metastasis. Penanganannya memerlukan pendekatan multidisiplin bedah maupun non-bedah, terutama pada kasus risiko tinggi di area sensitif.

Laporan Kasus: Seorang wanita berusia 39 tahun dirujuk ke RSUP Dr. Sardjito dengan keluhan benjolan di bawah telinga kiri dalam dua bulan terakhir yang mengganggu nafsu makan akibat rasa mengganjal di rahang. Pemeriksaan fisik menunjukkan massa hiperpigmentasi berukuran 7 x 5 cm dengan ulkus di regio infraaurikula sinistra dan limfadenopati colli sinistra level IIb. Pemeriksaan pencitraan menunjukkan keterlibatan nodal regional tanpa metastasis jauh, sementara histopatologi mengonfirmasi Keratinizing Squamous Cell Carcinoma stadium pT3N1M0. Pasien menjalani eksisi luas disertai Radical Neck Dissection (RND), dilanjutkan rekonstruksi menggunakan kulit flap.

Diskusi: cSCC memiliki prevalensi tinggi pada area yang kronis terpapar sinar ultraviolet. Faktor risiko utama mencakup status immunocompromised dan lesi prekursor. Meski tidak seagresif melanoma, cSCC risiko tinggi bersifat invasif dan rentan rekurensi. Diagnosis ditegakkan melalui histopatologi dan pencitraan. Tatalaksana utamanya adalah pembedahan seperti eksisi luas atau Mohs Micrographic Surgery. Pada kasus dengan keterlibatan nodal, prosedur tambahan RND sangat krusial untuk mengontrol penyebaran lokoregional, sedangkan terapi ajuvan seperti radioterapi atau kemoterapi dapat dipertimbangkan guna meningkatkan kesintasan pasien.

Kesimpulan: Keterlibatan limfonodi regional menjadi pertimbangan khusus yang krusial pada pasien cSCC kepala-leher yang menjalani eksisi luas dan RND demi mengoptimalkan kontrol lokoregional.

Kata kunci: eksisi luas, kanker kepala dan leher, karsinoma sel skuamosa kutan, metastasis

Background

Masses in the head and neck region are commonly encountered in both pediatric and adult populations. In children, infection is the most frequent underlying etiology. Conversely, in the adult population, head and neck masses are primarily driven by malignancy. Consequently, the presence of a head and neck mass in an adult patient must be presumed malignant until proven otherwise.¹

Although most head and neck cancers (HNC) originate from primary head and neck organs—such as the oropharynx, nasopharynx, thyroid, or presenting as lymphoma—some cases arise from other tissues, with the skin being a notable example.² Cutaneous Squamous Cell Carcinoma (cSCC) is the second most common non-melanoma skin cancer after Basal Cell Carcinoma (BCC). It accounts for approximately 20% of all skin malignancies and is responsible for 75% of all skin cancer-related mortalities. The incidence of cSCC has been steadily rising each year, driven by an aging population and increased exposure to risk factors such as ultraviolet radiation, smoking, human papillomavirus (HPV) infection, and immunosuppressive states.³

The predilection sites for cSCC typically involve chronically sun-exposed areas, including the scalp, ears, cheeks, forehead, temples, nose, and mouth. However, cases occurring in other parts of the body are also frequently documented.⁴ Generally, cSCC presents as a slow-growing, wart-like skin lesion that may or may not be painful. In Bowen's disease or bowenoid papulosis, the lesions usually manifest as hyperpigmented papules, whereas epidermodysplasia verruciformis typically presents as flat skin lesions. A highly aggressive variant of cSCC is the Marjolin's ulcer, which develops from chronic wounds or scars. Aggressive cSCC is characterized by a diameter > 2 cm, depth > 5 mm, high recurrence rates, perineural invasion, and locoregional metastasis.⁵

Given the high mortality rate associated with cSCC, prompt diagnosis and appropriate treatment are mandatory to prevent progression and recurrence. The primary management for head and neck cSCC typically involves wide local excision (extirpation), with adjuvant radiotherapy indicated for cases exhibiting high-risk histopathological features or nodal involvement.⁴⁻⁶

Surgical management and subsequent reconstruction of head and neck cSCC, particularly in the infra-

auricular and external ear regions, pose unique challenges. This is due to the aggressive nature of the lesion, which can invade underlying tissues up to the cranium, infiltrate the facial nerve (CN VII) leading to facial palsy, and metastasize to the cervical lymph nodes and parotid gland. Considering these challenges, we present a case report highlighting the successful excision of an infra-auricular cSCC combined with a Radical Neck Dissection (RND) in an adult patient.

Case Illustration

A 39-year-old woman presented with a chief complaint of a lump below her left ear that had developed over the past two months. Initially, the lesion appeared as a small erosion measuring 0.5 × 0.5 cm, which then widened by approximately one fingerbreadth within a week. Over the last month, the lesion became increasingly prominent. The complaint was not accompanied by pain or fever. For the past 1.5 months, the patient had been receiving treatment at Pura Raharja Hospital, where she underwent a biopsy procedure and was prescribed analgesics. She was subsequently referred to Dr. Sardjito General Hospital, Yogyakarta, for further management.



Figure 1. Clinical appearance of the mass

Currently, the patient complained of a decreased appetite due to a foreign body sensation in her left jaw. Upon admission, she was conscious (*compos mentis*) with vital signs within normal limits. Localized examination of the head and neck region revealed a hyperpigmented mass in the left infraauricular region, measuring 7 × 5 cm. The mass featured an ulcerated surface, a firm consistency, distinct borders, and was fixed to the underlying tissue. No palpable cervical

lymphadenopathy was detected during the initial physical examination. Other physical findings were within normal limits. Laboratory evaluations only demonstrated leukocytosis.

Radiological evaluations, including plain cervical and chest X-rays, were within normal limits. However, contrast-enhanced Multi-slice Computed Tomography (MSCT) of the head revealed a left auricular mass suggestive of malignancy, along with left-sided level IIb cervical lymphadenopathy. Histopathological and immunohistochemical profiles from the biopsy specimen confirmed a well-differentiated Keratinizing

Squamous Cell Carcinoma, with a tumor diameter of 5.8 cm and an invasion depth of 11 mm. Based on the American Joint Committee on Cancer Staging Manual (AJCC 8th edition), the cSCC was classified as stage pT3N1M0.

The patient underwent aggressive surgical management consisting of a wide local excision combined with a Radical Neck Dissection (RND). Following the extirpation of the tumor and the evacuation of the regional cervical lymph nodes, defect reconstruction was performed using a local skin flap, and a surgical drain was placed for postoperative wound drainage.

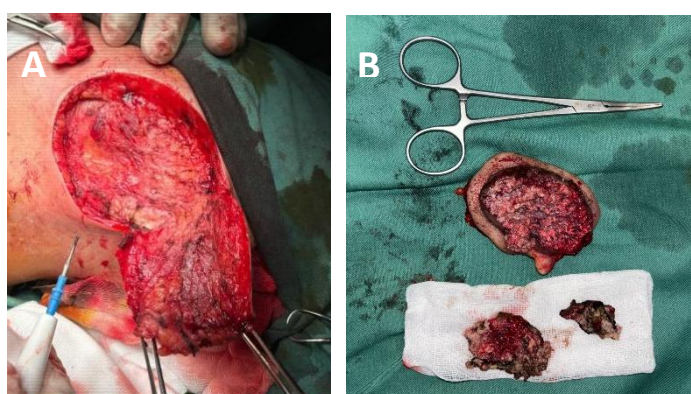


Figure 2. During the operation (A) The tumour of the infraauricular region (B)

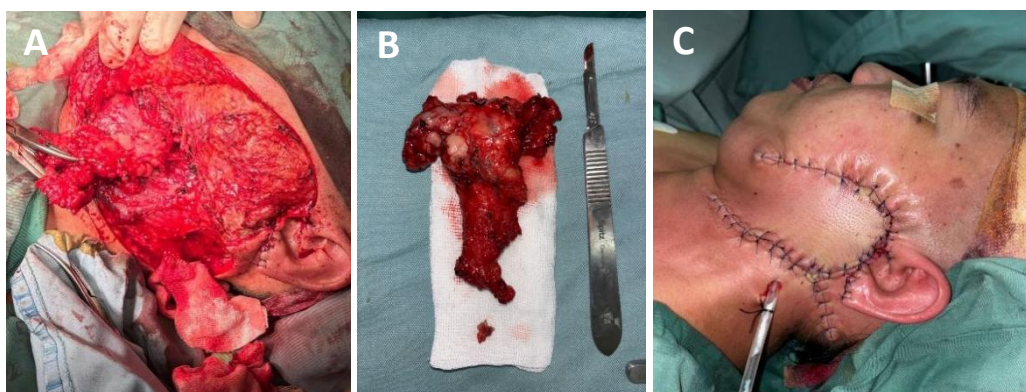


Figure 3. During the operation (A) The sample of RND (B) After defect closure (C)

Discussion

Cutaneous Squamous Cell Carcinoma (cSCC) is a highly prevalent non-melanoma skin cancer originating from keratinocytes in the epidermal layer, specifically the stratum spinosum. In the Caucasian population, cSCC, alongside basal cell carcinoma (BCC), constitutes the most frequently diagnosed

skin malignancy compared to melanoma.⁷ cSCC accounts for approximately 20% of all skin cancer cases and is responsible for 75% of mortalities associated with skin malignancies. Comprehensive national incidence data for cSCC in Indonesia remain unavailable. However, according to the 2020 Global Cancer Observatory (GLOBOCAN) report,

skin cancer cases in Indonesia reached approximately 18,000, with an estimated 3,000 deaths.⁸

The pathogenesis of cSCC involves an interplay of multiple environmental and intrinsic host risk factors. Ultraviolet (UV) radiation is the most significant environmental factor driving cSCC oncogenesis. Consequently, cSCC predominantly affects chronically sun-exposed areas with approximately 80% of cases localized to the head and neck region, including the scalp, ears, cheeks, forehead, temples, nose, and mouth. Nevertheless, cSCC lesions in other anatomical sites are also widely documented. Other environmental carcinogens include exposure to arsenic, nitrosamines, and polycyclic aromatic hydrocarbons. Intrinsic risk factors include advanced age, male sex, and Caucasian race. Furthermore, an immunocompromised status secondary to HIV infection, immunosuppressive medications, or leukemia significantly upgrades the risk. Precursor skin lesions, such as Marjolin's ulcers (chronic wounds), human papillomavirus (HPV)-induced lesions, and actinic keratosis, also serve as high-risk predisposing factors.⁹

Based on keratinocyte differentiation observed via histopathological examination, cSCC is classified into well-differentiated, moderately differentiated, and poorly differentiated types, which correlate directly with tumor biological activity, recurrence rates, and mortality prognosis.¹⁰ Accurate tumor staging is equally paramount to guide therapeutic modalities. Staging criteria defined by the American Joint Committee on Cancer Staging Manual (AJCC 8th edition) and the Brigham and Women's Hospital (BWH) system are widely adopted in clinical practice.¹¹ Although cSCC is generally less aggressive than melanoma, it remains locally invasive and prone to recurrence. High-risk cSCC is characterized by a tumor diameter ≥ 2 cm, invasion depth ≥ 2 mm, high recurrence rates, perineural invasion, locoregional metastasis, or a classification of stage T2b/T3 under the BWH system or T3 under the AJCC-8 guidelines.^{5,11}

To date, the gold standard for diagnosing cSCC is histopathological evaluation via skin biopsy, which accurately identifies tumor staging and differentiation. Complementary imaging modalities, including plain head/cervical radiographs, contrast-enhanced Computed Tomography (CT), and Magnetic Resonance Imaging (MRI), are essential to detect distant metastasis, regional lymph node involvement, and perineural invasion. Therefore,

radiologic staging is critical for comprehensive patient evaluation.

Surgical intervention represents the cornerstone of management for nearly all cSCC cases. Electrodesiccation and curettage (ED&C) can be utilized in selected low-risk lesions, yielding success rates up to 97%.¹¹ Conventional wide local excision (WLE) with a 4–6 mm margin for low-risk cSCC extending up to the mid-subcutaneous adipose layer achieves an oncologic clearance rate of approximately 95%.^{12,13} However, because cSCC cells frequently infiltrate subclinically beyond the clinically apparent margins, Mohs Micrographic Surgery (MMS) is strongly recommended for high-risk cSCC, tumors in immunocompromised individuals, and lesions in anatomically critical areas where tissue conservation is paramount, such as the head and neck.^{11,14} The clinical algorithm presented in Figure 4 represents an adaptation of the cSCC management guidelines from the European Association of Dermato-Oncology (EADO) and the National Comprehensive Cancer Network (NCCN).¹⁵

Additional surgical interventions beyond primary tumor extirpation are frequently required. In high-risk cSCC, metastasis to regional lymph nodes is a common occurrence due to the complex lymphatic drainage patterns of the head and neck region. Concomitant involvement of surrounding structures, such as the parotid gland and other salivary glands, is also frequently documented. A cohort study conducted in a United States hospital revealed that metastatic head and neck cSCC predominantly infiltrates the parotid gland as well as level II and III cervical lymph nodes⁶. Not infrequently, patients may also require temporal bone resection and the sacrifice of the facial nerve (CN VII) to achieve complete oncological clearance. Because nodal metastasis significantly worsens the patient's prognosis, patients with clinically positive cervical lymph nodes typically undergo Radical Neck Dissection (RND). In cases involving invasion into the parotid gland or other salivary tissues, RND is often combined with a parotidectomy or excision of the affected gland. However, contemporary guidelines increasingly advocate for selective neck dissection (SND) in specific scenarios. This shift is supported by recent studies demonstrating that patients undergoing selective neck dissection achieve regional control and overall survival rates of 85–100%, which are comparable to those undergoing conventional RND.¹⁵

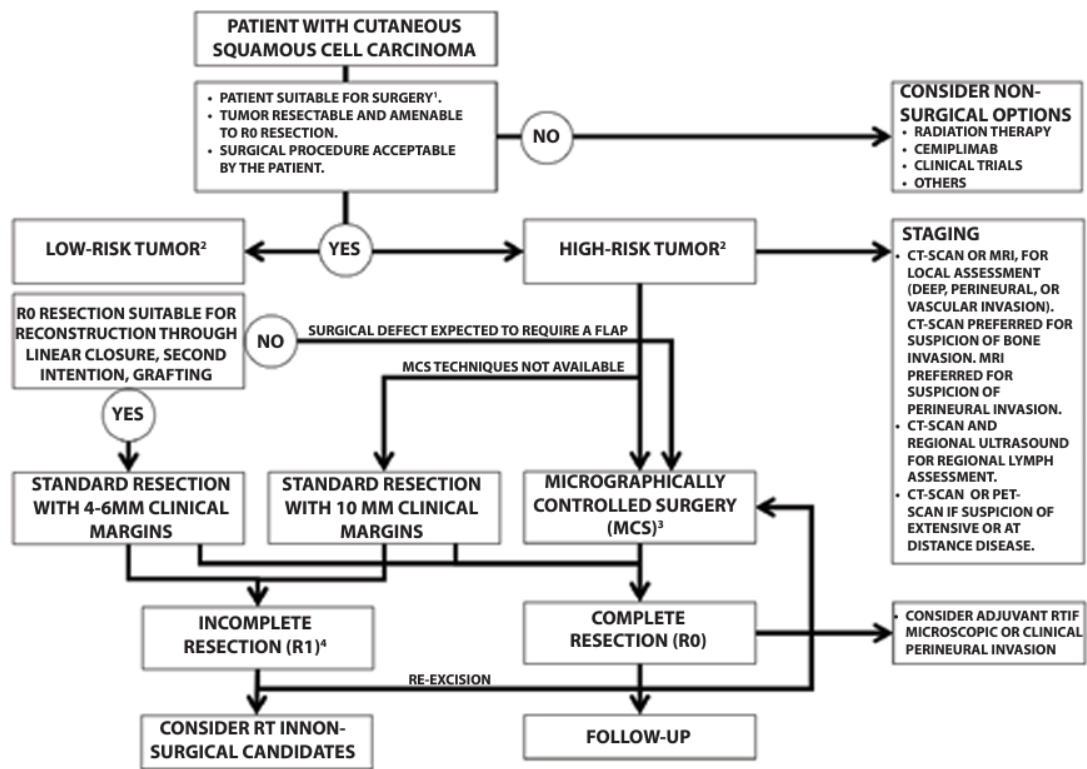


Figure 4. Algorithm of cSCC management based on EADO dan NCCN¹⁵

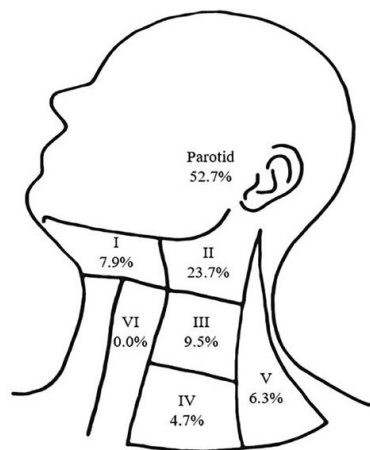


Figure 5. Locoregional metastatic predilection of SCC in head-neck.⁶

In addition to surgical interventions, non-surgical modalities represent important therapeutic options in the management of cSCC. For low-risk cSCC and cSCC *in situ*, photodynamic therapy (PDT) serves as an alternative tissue-conserving approach to optimize

cosmetic outcomes, although literature indicates it is associated with higher recurrence rates.¹⁶ Other ablative techniques, including laser therapy (carbon dioxide or erbium), electrocoagulation, and cryosurgery, may also be considered, particularly in patients who are ineligible for surgery or present with strict surgical contraindications. However, these ablative modalities carry a significantly higher risk of cSCC recurrence compared to standard surgical interventions.¹⁴

For high-risk cSCC, non-surgical approaches are primarily utilized as adjuvant therapies to eradicate residual microscopic tumor cells following surgical resection. Adjuvant modalities include radiotherapy, chemotherapy regimens utilizing capecitabine, epidermal growth factor receptor (EGFR) inhibitors (such as cetuximab and panitumumab), or immune checkpoint inhibitors targeting programmed death-1 (PD-1), such as cemiplimab. Current literature demonstrates that incorporating adjuvant non-surgical therapies yields a significantly higher overall survival rate compared to surgical management alone.^{11,14}

In the present case, the patient was classified as having stage T3 cSCC according to the AJCC-8 system, which categorizes it as a high-risk cSCC. While both wide local excision (WLE) and Mohs Micrographic Surgery (MMS) are viable options for high-risk lesions, clinical evidence indicates that MMS offers superior cure rates and significantly lower recurrence rates compared to standard excision.^{17,18} During cSCC surgery, achieving clear clinical and microscopic tumor margins is paramount. When relying solely on clinical margins for high-risk tumors, the excision margin must be at least 6 mm; if additional high-risk features are identified, the margin should be extended up to 9 mm. Nevertheless, tailoring the excision margin based on an individualized clinical assessment of each tumor remains the highly recommended approach.^{11,15}

In the present case, a Radical Neck Dissection (RND) was performed due to the confirmed involvement of level IIb cervical lymph nodes. In a standard RND procedure, in addition to the resection of cervical lymph node levels I–V, the operation involves the removal of a portion of the parotid gland, the sterno-cleidomastoid muscle, the internal jugular vein, and the spinal accessory nerve. While this aggressive approach is widely utilized to achieve complete oncological clearance in affected areas and significantly reduce regional recurrence rates, it is associated with substantial postoperative morbidity, most notably shoulder movement dysfunction^{19,20}. Consequently, to minimize these complications, contemporary guidelines increasingly advocate for selective neck dissection, which has been shown to offer regional recurrence and overall survival rates comparable to those of conventional RND¹⁵.



Figure 6. Wide excision procedure of cSCC in left infraauricular region



Figure 7. RND procedure

A non-surgical approach may also be considered for this patient, given the high-risk nature of the cSCC. Evidence from several studies indicates that patients with high-risk cSCC who receive systemic therapy following surgical resection experience lower 5-year locoregional recurrence rates compared to those managed with surgery alone.¹¹ Consequently, a multidisciplinary team approach is highly recommended for the long-term postoperative management of this patient.

Conclusion

Surgical intervention, via either wide local excision (WLE) or Mohs Micrographic Surgery (MMS), remains the cornerstone of management for both low-risk and high-risk cSCC. In cSCC localized to the head and neck region, critical factors such as cervical lymph node metastasis, salivary gland invasion, facial nerve (CN VII) involvement, and cosmetic tissue conservation must be carefully evaluated during tumor

extirpation. Furthermore, the administration of adjuvant non-surgical therapies can significantly improve overall survival rates and minimize recurrence in high-risk cSCC cases.

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