


Wide Excision and Flap Reconstruction for Basal Cell Carcinoma in the Right Frontal Region: A Case Report

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ABSTRACT

Introduction: Basal cell carcinoma is a type of non-melanoma skin cancer characterized by basaloid cells that form lobules, columns, bands, or strands. The primary goal of basal cell carcinoma treatment is to completely remove the tumor while preserving function and physical appearance as much as possible. **Case:** A 70-year-old man with basal cell carcinoma of the right frontal region-superior eyelid OD. Diagnosis was made based on physical examination and histopathological findings. The procedure included wide excision and frozen-section analysis of the surgical margins in the superior eyelid region and the medial canthus, with positive margins; reconstruction was performed with a rotational flap and a skin graft. Anatomical pathology results showed well-differentiated infiltrating basal cell carcinoma. The most effective therapy is surgery. **Discussion:** In this case, a diagnosis of mixed nodular and pigmented BCC was established based on clinical and histopathological findings, followed by surgical excision and reconstruction using an advancement flap appropriate for the defect in the frontal region. This approach yields a high cure rate; however, long-term follow-up remains necessary given the risk of recurrence and the emergence of new BCC lesions. **Conclusion:** Basal cell carcinoma generally grows slowly, often developing locally without spreading or metastasizing. Appropriate management can improve quality of life and life expectancy.

Keywords: Basal cell carcinoma, basaloid cell, case report, non-melanoma skin cancer.

ABSTRAK

Pendahuluan: Karsinoma sel basal atau basalioma adalah jenis kanker kulit non-melanoma dengan karakteristik sel-sel basaloid yang membentuk lobulus, kolum, pita, atau tali. Tujuan utama pengobatan karsinoma sel basal adalah mengangkat tumor sepenuhnya dengan tetap menjaga fungsi dan penampilan fisik semaksimal mungkin. **Kasus:** Pria berusia 70 tahun dengan karsinoma sel basal regio frontal dekstra-palpebra superior OD. Diagnosis dengan pemeriksaan fisik dan temuan histopatologis. Prosedur meliputi eksisi luas serta potong beku batas sayatan pada regio palpebra superior dan *canthus medial* dengan hasil positif margin, rekonstruksi dengan *rotational flap* dan *skin graft*. Hasil pemeriksaan patologi anatomi menunjukkan *well-differentiated infiltrating basal cell carcinoma.* Terapi paling efektif adalah pembedahan. **Pembahasan:** Pada kasus ini, diagnosis karsinoma sel basal tipe campuran nodular dan *pigmented* ditegakkan berdasarkan gambaran klinis dan histopatologi, kemudian diberi tata laksana eksisi bedah dan rekonstruksi menggunakan *advancement flap* yang sesuai dengan defek di regio frontal. Hal ini memberikan tingkat kesembuhan yang tinggi, namun tindak lanjut jangka panjang tetap diperlukan mengingat risiko kekambuhan dan munculnya lesi karsinoma sel basal baru. **Simpulan:** Karsinoma sel basal umumnya memiliki karakteristik pertumbuhan lambat, cenderung berkembang secara lokal tanpa menyebar atau bermetastasis jauh. Penanganan yang tepat dapat meningkatkan kualitas hidup dan angka harapan hidup. **Ari Oktavenra, Amwal Halil. Eksisi Luas dan Rekonstruksi *Flap* untuk Karsinoma Sel Basal di Regio Frontal Kanan: Laporan Kasus.**

Kata Kunci: Karsinoma sel basal, sel basaloid, laporan kasus, kanker kulit non-melanoma.

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INTRODUCTION

Basal cell carcinoma (BCC), also known as basalioma, is the most common type of non-melanoma skin cancer in humans.[1] This tumor originates from basal cells that do not undergo keratinization and are located in the epidermal layer of the skin. BCC generally develops in sun-exposed areas, such as the head, neck, and particularly the nose (about 30% of cases).[1] Basal cell carcinoma (BCC) is the most common skin cancer worldwide. In some countries, such as Australia and the

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United States, the incidence of BCC reaches approximately 652 and 479 cases per 100,000 populations per year, respectively.[2] In many countries, cancer registries do not include BCC data due to its low mortality rate. Based on insurance registry data and official statistics in the United States, the incidence of BCC is estimated to reach 4.3 million cases annually.[2]

Over the past three decades, the incidence of BCC is estimated to have increased by 20% to 80%. The incidence of BCC also increases with age, with a median age at diagnosis of 68 years.[3] Deaths from BCC are rare, generally occurring in patients with weakened immune systems. Metastatic BCC (1%) is usually caused by tumors with aggressive histopathological patterns (morpheaform, metatypical, basosquamous, or infiltrative); the most commonly involved areas are the regional lymph nodes, bone, lung, and skin.[3] The average age at death from BCC is higher than for SCC, with an age-adjusted mortality rate estimated at 0.12 per 100,000. This mortality risk is associated with advanced age, male gender (incidence more than double that of females), and the Caucasian racial phenotype.[4]

Clinically, BCC often appears as a pink or flesh-colored papule or nodule with telangiectasia on the surface. These lesions may ulcerate or bleed, with raised, pearl-like edges, which is a characteristic sign.[5] Based on their clinical characteristics, BCCs can be classified into five types: nodulo-ulcerative (ulcus rodens), pigmented, morphea-like or fibrosing, superficial, and fibroepithelial. BCC is a malignant skin tumor commonly found in the periorbital area, particularly the lower eyelid and medial canthus.[6]

More than 26 subtypes of basal cell carcinoma (BCC) have been identified; the most common and characteristic clinicopathological subtypes include nodular, micronodular, superficial, morpheaform, infiltrative, and fibroepithelial (also known as Pinkus's fibroepithelioma). These subtypes may appear in combination in certain cases.[3] Most BCCs are amelanotic, although small amounts of melanin are sometimes found in these tumors. The primary treatment for BCC includes various surgical methods, such as excision, electrodessication and curettage (EDC), cryotherapy, and Mohs micrographic surgery. These approaches are commonly applied to localized BCC; their success rate is high, with a 5-year cure rate exceeding 95%.[7]

CASE

A 70-year-old man presented to the Surgical Outpatient Clinic at Dr. M. Djamil General Hospital in Padang with a chief complaint of an ulcer accompanied by pain and itching on the right forehead near the corner of the nose, which had been present for 1 year. The lesion was perceived to be enlarging, particularly over the past 3 months, and was accompanied by pain, itching, and oozing. The patient was a farmer who does not use sunscreen or personal protective equipment when exposed to sunlight. There is no family history of similar diseases. Physical examination revealed a solitary ulcer with blackened edges and well-defined borders, with an erythematous base on the head. A lesion was visible on the eyelid: an ulcer measuring 40 x 40 x 5 mm, immobile (**Figure 1**). The patient reported pain with a VAS score of 7/10. No regional lymph node enlargement was found. The working diagnosis was basal cell carcinoma based on clinical presentation and physical examination. Laboratory tests were within normal limits. Chest radiography was within normal limits.

Surgery was performed for a right upper eyelid tumor, including a rotational flap and skin graft, in collaboration with the oncology and ophthalmology departments under general anesthesia. The surgical procedure involved wide excision of the tumor lesion according to preoperative mapping, with a 5-mm margin from the tumor induration, and frozen-section analysis of the incision margins in the right upper eyelid and the medial canthus, which showed positive margins. Upon re-excision of the medial margin and frozen section analysis, the margins were found to be tumor-free. Reconstruction was performed using a rotational flap and skin graft, with flap fixation using absorbable sutures. The skin graft was taken from the right inguinal region. The tumor tissue was sent for histopathological examination. Wound closure was performed using a simple suture technique with 2-0 and 5-0 polypropylene monofilament sutures, and topical antibiotics were applied to the wound.

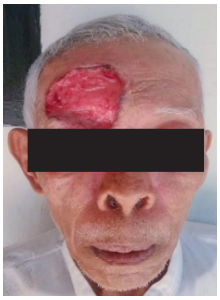

*Photo documentation by Ari Oktavenra.
Figure 1. Case of basal cell carcinoma.

The histopathological examination revealed a well-differentiated infiltrating basal cell carcinoma. Malignant tumor cell infiltration was observed in the temporal bone, consisting of proliferating basaloid tumor cells with foci of hemorrhage; the margin of the resection was not tumor-free. An intraoperative frozen section examination was performed to evaluate the margins in real time during surgery; if tumor cells were still present, additional excision was performed. It was decided to perform flap reconstruction in a single procedure. Postoperatively, the patient was prescribed cefixime 200 mg twice daily and paracetamol 500 mg three times daily.

DISCUSSION

Basal cell carcinoma (BCC) has various clinical variants; the most well-known are superficial, nodular, and morpheaform.[3] Nodular basal cell carcinoma is the most common, appearing as a pink or skin-colored papule or nodule with telangiectasia on the surface.[8] This tumor can enlarge and undergo ulceration, resulting in edges that appear rolled or resemble a Roden-like ulcer. The most common locations are the face, particularly the nose, cheeks, forehead, nasolabial folds, and eyelids. Patients often report crusting and recurrent bleeding. Pigmented nodular basal cell carcinoma is more common in individuals with darker skin.[9]

Superficial basal cell carcinoma presents as a pink-to-red macule or plaque with varying degrees of scaling, which may contain telangiectasia. It is usually found on the shoulders, chest, or back, and may involve multiple lesions. A pigmented variant of superficial basal cell carcinoma also exists.[3] Clinically, superficial basal cell carcinoma may resemble inflammatory dermatoses such as eczema or psoriasis; therefore, the


diagnosis of superficial basal cell carcinoma should be considered in cases of persistent erythematous, scaly plaques.[8] Some cases of superficial basal cell carcinoma may progress to nodular basal cell carcinoma.[9]

A diagnosis of basal cell carcinoma can generally be made directly through a skin biopsy. However, diagnostic challenges often arise when there is overlap between basal cell carcinoma and other types of basaloid epithelial tumors, or when skin sampling techniques are inadequate. Some differential diagnoses for basal cell carcinoma include trichoepithelioma (trichoblastoma), squamous cell carcinoma (SCC), adenoid cystic carcinoma, and Merkel cell carcinoma. Sometimes basal cell carcinoma and SCC can be difficult to distinguish, especially when keratinous mass formation is present. A key distinguishing feature between basal cell carcinoma and SCC is that basal cell carcinoma tumor cells are generally more basophilic, whereas SCC tumor cells exhibit eosinophilic keratinization with Hematoxylin-Eosin staining. On immunohistochemical staining, basal cell carcinoma shows reactivity to cytokeratin (CK) polypeptides and the BerEp4 antibody, and does not react to EMA. Conversely, SCC reacts positively to EMA and does not react to BerEp4. This is very helpful in distinguishing metatypical basal cell carcinoma from basaloid-type SCC.[6,9,10]

The diagnosis of basal cell carcinoma in this patient was established through medical history, physical examination, and histopathological examination. Based on the patient's profile, basal cell carcinoma is most common in patients over 60 years of age—likely due to 20–50 years of cellular damage from UV exposure—and in men. The increase in BCC cases is primarily due to prolonged, continuous sun exposure.[9] Histopathological examination following surgery revealed a mixed-type basal cell carcinoma (nodular and pigmented). Nodulo-ulcerative basal cell carcinoma lesions typically begin as a papule or nodule that enlarges, often accompanied by bleeding due to minor trauma. These lesions may subsequently undergo ulceration (rodent ulcer); the overhanging edges of the lesion are often a characteristic diagnostic sign.[11] Pigmented basal cell carcinoma (BCC) is a subtype of the nodular form characterized by increased melanization, presenting as translucent hyperpigmented papules. About 75% of BCCs contain melanocytes, and 25% of these contain large amounts of melanin.[12]

Basal cell carcinoma is generally treated with local therapy, whether surgical or non-surgical, given its low rate of metastasis. Surgical therapies include curettage and electrodessication, cryosurgery, surgical excision, and Mohs excision.[7] With curettage and electrodessication, the five-year survival rate reaches 95%, while with surgical excision and Mohs excision, it reaches 99%.[4] Mohs excision has the advantage of being able to remove the entire tumor at once, using frozen section examination to ensure that the excision margins and tumor bed are clear of tumor cells.[11]

Non-surgical therapies include radiation therapy, topical therapy, immunomodulator injections, and photodynamic therapy. Non-surgical therapies are often used in patients who cannot undergo surgery or when the tumor is located in a hard-to-reach area.[5] Currently, many clinical trials of targeted therapies for basal cell carcinoma using Hedgehog pathway inhibitors (HPIs) are being developed, as the Hh signaling pathway plays a key role in the pathogenesis of basal cell carcinoma.[6]

The patient presented with a lesion in the right frontal region. The forehead unit is divided into upper and lower sections, which are further subdivided into a central subunit and two lateral subunits. The eyebrow serves as a specific landmark in this area. An elliptical excision in the central subunit is performed vertically along the glabellar wrinkle line; small to moderate defects in the glabellar subunit can be addressed with a nasal root flap or bilateral advancement flaps, which receive vascular supply from branches of the angular, supratrochlear, and supraorbital arteries. In the lateral subunit, excision can be made vertically or horizontally, depending on skin elasticity and wrinkle lines; scars can be concealed along the hairline, skin wrinkles, or the eyebrow border. Blood supply from the dermal vascular plexus around the forehead allows for the use of a double hatchet flap or double advancement flap for small to large defects in the lateral forehead area.[13]

This patient was treated using surgical excision followed by advancement flap. The excision margin was set at 1 cm; Huang and Boyce demonstrated that to achieve a 95% cure rate, BCCs with a diameter < 1 cm require a 0.5 cm margin; those with a diameter of 1–2 cm require a 0.8 cm margin, and those with a diameter > 2 cm require a 1.2 cm margin.[14] Making a wider incision will result in a larger defect, so wound closure requires special attention. Advancement flap is chosen for wound closure when primary closure is not possible, for example, in large wounds, those with excessive tension, or where there is a risk of linear scarring.[10]

Advancement flap involves moving tissue from the area surrounding the wound directly over the defect without passing through other tissues; it is frequently used on the eyelids, lips, alar rim, nasolabial folds, or the orbitomolar groove. Other common sites for advancement flap include the upper and lower lip skin, the lateral nasal wall, the infraorbital cheek, the lower eyelid, the forehead and temples, the preauricular cheek, and the helix margin. This flap can conceal scars by placing the incision along natural creases or cosmetic subunit junctions. Undermining is performed down to the subcutaneous layer to prevent disruption of blood flow to the flap **(Figure 2)**.

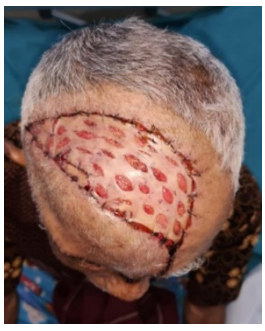


*Photo documentation by Ari Oktavenra.

Figure 2. The patient's graft after surgery.


Appropriate management is crucial and is influenced by factors such as the patient's age and comorbidities, as well as the lesion subtype and location. The management of BCC on the face may differ from that of BCC in other locations. Excision is one effective treatment option for BCC on the face. Mohs surgery is performed when possible, as it yields better histopathological accuracy.[15]

The 5-year survival rate for primary BCC treated with surgical excision is 96.7%, but ongoing monitoring is necessary because approximately 20% of patients experience recurrence between 6 and 10 years post-surgery, and it is estimated that 40%–50% of patients with primary BCC will develop one or more BCCs within five years.[16] Independent risk factors for skin cancer include older age, male gender, Caucasian race, a history of malignancy prior to transplantation, polycystic kidney disease leading to end-stage renal disease (ESRD), re-transplantation, T-cell depletion induction, and the use of tacrolimus/mycophenolic acid. With appropriate treatment, the prognosis for most BCC patients is excellent.[17]

CONCLUSION

Basal cell carcinoma is generally characterized by slow growth and tends to develop locally without spreading or metastasizing to distant sites. The patient underwent wide excision of the tumor lesion, performed according to mapping with a 5-mm margin from the tumor induration. Anatomical pathology results showed a well-differentiated infiltrating basal cell carcinoma; it was decided to perform flap reconstruction using surgical excision followed by advancement flap. Following flap reconstruction, appropriate follow-up is necessary to ensure optimal healing and prevent recurrence, including routine monitoring, wound care, protection from UV rays, regular self-examination, and a healthy lifestyle.

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