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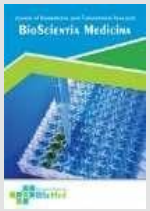

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Mixed Type Basal Cell Carcinoma Treated with Excision and Defect Closure Using Advancement Flap: A Case Report

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A B S T R A C T

Background: Basal cell carcinoma (BCC) is a localized malignant tumor in the basal layer of the epidermis thought to be the result of prolonged sun exposure and associated with gene mutations in most cases. Although rarely metastazises, BCC can cause high levels of morbidity due to its locally destructive nature. There are several modalities for managing BCC, and the defect caused by the lesion can reconstructed by local flap. **Case presentation:** We present a 55-year-old woman with a chief complaint of a blackish lump on the left maxillary region, growing bigger, and frequent episodes of bleeding. The lesion was excised and followed by histopathological examination, which revealed mixed subtype BCC. Closure of the defect with an advancement flap was performed with favorable results. **Conclusion:** Surgical excision is the best option for managing BCC, while a skin flap is preferred to close defects for lesions on the cheek.

1. Introduction

Basal cell carcinoma (BCC) is a localized malignant tumor in the basal layer of the epidermis thought to be the result of prolonged sun exposure and associated with gene mutations in most cases. This malignant tumor is characterized by slow tumor growth, rarely causes metastases, and can cause destruction of surrounding tissue. Approximately 0.5% of cases of BCC can develop into giant basal cell carcinoma (GBCC) with a diameter of more than 5 centimeters. GBCC has a more aggressive growth, capable of invading deeper underlying tissues or extradermal structures by infiltrating the dermis, such as fascia, muscle, and bone.

The incidence of BCC is approximately 75% of nonmelanoma skin cancers and nearly 25% of all cancers diagnosed in the United States. The incidence of BCC in Europe is around 200-400 per 100,000 people per year, while in Asia, it is around 16-20 per 100,000 people per year.[2] The most common types of skin cancer in Indonesia are BCC (65%), squamous cell carcinoma (23%), and melanoma malignant (7.9%).[3] Patient registration data at Dermatology and Venereology Polyclinic at Prof. Dr. I.G.N.G Ngoerah General Hospital Denpasar from January 2018 - December 2020 found 18 patients with a new diagnosis of BCC.[6] Predilections for BCC were the head or neck as an area exposed to the sun (52%), trunk

(27%), upper arm or leg (13%), and lower arm or leg (8%).[1,2] Although it rarely causes death or metastatic disease, BCC can cause significant morbidity due to local spread that destroys the surrounding tissue.[1,7]

BCC is caused by various factors involving genetic and environmental factors. Risk factors for BCC include exposure to ultraviolet (UV) rays, especially UVB, skin type, genetics, immunosuppression, and ionizing radiation exposure.[1] The main goal of the management of BCC is to eradicate the tumor while maintaining good organ and cosmetic function. Surgical excision is the best treatment modality for BCC and prevents recurrence.[1,9] There are several things that need to be considered before a surgical excision procedure, including location, size, depth, and adjacent tissue while reconstructing a defect due to the removal of the tumor. After the excision, the defect can be closed with flap reconstruction. Advancement flap is one of the frequently used skin reconstruction techniques. It is recommended for large lesions and has good cosmetic results with minimal scarring.

2. Case Presentation

A woman, a 55-years-old Indonesian citizen, came to dermatology and venereology polyclinic at Prof. Dr. I.G.N.G Ngoerah General Hospital Denpasar, on January 4th, 2022, with a chief complaint of a blackish lump on the left cheek. This lump appeared 2 years ago. It started as a small brownish lump, growing bigger and darkened in color. She did not feel itching or pain on the lump, but the lump sometimes bled when she scratched or pressed accidentally.

A history of similar complaints was denied by the patient. There was no history of prior trauma. She denied a history of tumor or malignancy. She has a history of diabetes mellitus since 10 years ago and takes diabetes mellitus medication regularly. She had been treated at the Primary Healthcare Center 3 months ago, received an ointment, and applied twice daily for several months. There was no improvement after application of the ointment. The history of using traditional medicine or oil was denied. None of the patient's family members had the same complaint. The patient is currently unemployed. Formerly, the patient was a farmer and was exposed to the sun every day while working. She never used sunscreen or a hat while working or doing outdoor activities. Dermatological examination in the left maxillary region showed a hyperpigmented nodule, solitary, well-defined, geographic shape, 2.5cm x 2 cm in size (Figure 1A, B).

Figure 1. (A, B) In the left maxillary location, a solitary hyperpigmented nodule was seen.

Routine laboratory examinations, including complete blood tests and clotting factors, were within normal limits. Her fasting blood glucose level was 185mg/dl. It was subsequently planned that this patient undergo excision, histopathological examination, and skin flaps. An aseptic procedure was performed using povidone-iodine and normal saline on the operating site. Surgical markings and flap designs

are done on the lesion border (Figure 2). We use tumescent anesthetic for local anesthesia, consisting of 2 cc of a mixture of 40 mg lidocaine HCL 20% and epinephrine 0.025 mg (each cc tumescent anesthetic consists of lidocaine 20%, HCL 20 mg, epinephrine 0,0125 ml) then diluted with 0.9% NaCl to 10 cc. Lesion incised using no.15 blade. Periprocedural bleeding was controlled by applying pressure and electrocoagulation.

Figure 2. Surgical marking and flap design for wound closure.

The histopathology report revealed neoplastic basal cell proliferation that forms a nodular pattern, some jagged nests, trabecular, and infiltrative between fibro myxoid connective tissue stroma. Neoplastic cells are arranged in palisading at the periphery. Cell morphology with increased N/C ratio, narrow cytoplasm, round, oval nucleus, hyperchromatic, inconspicuous nucleoli, regular nuclear membrane, and some neoplastic cells develop brown pigment. The perineural invasion has a positive impression. Based on the histopathology examination, the definitive diagnosis of this patient was mixed subtype BCC (Figure 3).

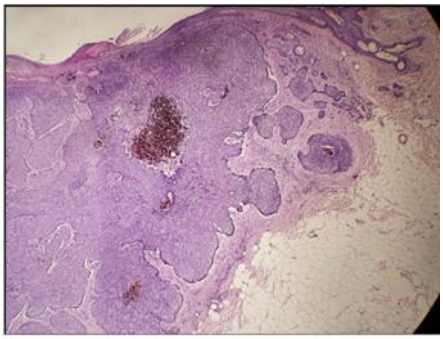

Figure 3. Histopathology examination revealed mixed subtype BCC.

The defect surgery was closed by an advancement flap. We took flap donors from the maxillary region and planned incisions from the nasolabial fold to the infraorbital region. We used tumescent for local anesthesia and no.15 blade to perform incision on the tissue. Following the incision, extensive undermining is conducted a few millimeters below the dermis, followed by extensive closure by an advancement flap (Figure 4A, B). A simple interrupted suture technique was performed using a 6/0 polypropylene thread (Figure 4C).

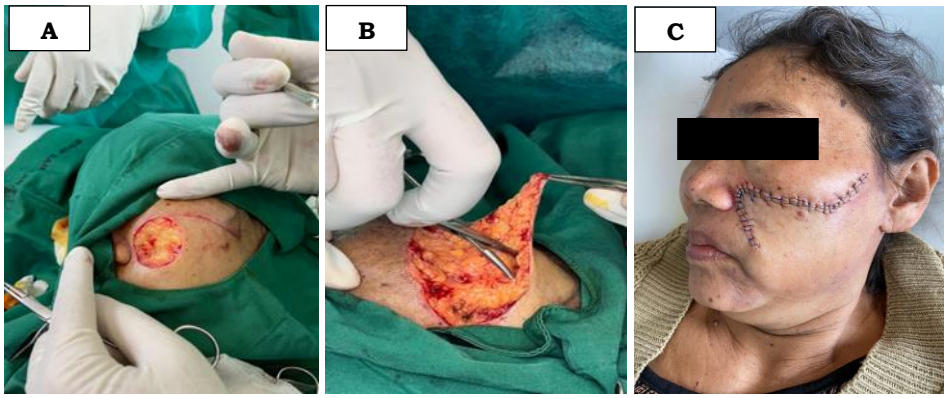

Figure 4. Advancement flap process.

After the procedure, the patient was prescribed medications such as cefadroxil 500 mg, mefenamic acid 500 mg, and gentamicin ointment. The patient was advised to keep the bandage dry and clean and regularly change the bandage once every three days. We also suggested that the patient protect herself from direct sunlight by wearing a hat or sunscreen. Seven days after the operation, the flap was in good condition (Figure 5). After evaluating the patient's condition, we concluded that the prognosis of this patient was favorable.

Figure 5. Patient's condition 7 days after the procedure.

3. Discussion

BCC is a malignant neoplasm originating from the basal layer of the epidermis, locally invasive, slow-growing, and rarely metastasizes. BCC is classified as non-melanoma skin cancer and the most common type of skin cancer. BCC is more frequent in men and people who are exposed to prolonged sunlight. The incidence of BCC is more common at older ages. Namely, 80% of cases occur in people aged 60 years and over, but the incidence increases in individuals under the age of 50.[1] Risk factors for BCC include exposure to sunlight (ultraviolet/UV), genetics (light skin type, blond hair, light iris color, patient or family history of skin cancer), drugs that cause photosensitivity, exposure to arsenic, and use of immunosuppressive drugs.[11] UV exposure is the main pathogenesis of BCC, especially UV-B, which induces mutations in tumor suppressor genes. UV-B radiation causes DNA damage and affects the immune system, which in turn causes progressive genetic changes and neoplasms. Mutations of the tumor suppressor gene p53 and patch gene mutations (PTCH) pathway are often found in BCC. These genes are the main targets of UV radiation that induce KSB.[1,8]

In this case, the patient was a 55-year-old female. The risk factor found in this patient is prolonged

exposure to sunlight while working daily without using protection or sunscreen. BCC predilection is most common in areas exposed to UV rays, such as the face, ears, and neck, but can appear on any part of the body.[1,12] Development of BCC is limited to skin containing pilosebaceous units and skin containing a higher number of target progenitor cells, like on the face. Based on its clinical picture, BCC can be divided into five subtypes, including nodular, superficial, pigmented, morpheaform (sclerosing/infiltrative) subtype, and fibroepithelioma of pinkus (FEP).[1,11] From the history taking and physical examination, the differential diagnosis was BCC and nodular type of malignant melanoma (MM).

BCC can be diagnosed definitively with a histopathological examination. Histopathological features of BCC are divided into Nodular, morpheaform (sclerosing, infiltrative), superficial, basosquamous, and fibroepithelioma of Pinkus.[13] The term mixed BCC refers to BCCs with the presence of two different subtypes of the tumor in one sample, e.g., superficial BCC in the dermis and sclerosing type in the deep dermis. The nodular subtype is the most common subtype of BCC, followed by the mixed subtype, with an incidence of 11-39%. In this case, histopathological examination revealed BCC mixed subtypes. Several modalities are available for BCC treatment, including surgical excision, tumor destruction through various modalities (curettage with electrodesiccation, cryosurgery), Mohs micrographic surgery (MMS), and topical chemotherapy. Complete excision surgery is considered the gold standard for BCC management with control of histopathological examination. In our institution, complete excision surgery is a standard procedure for this condition. In this case, we performed excision surgery on this patient, followed by an advancement flap for the close defect.

Several methods can be carried out to close the defect after excision. The decision for choosing the methods is regarding the patient's general condition, characteristics of the defect, and patient's preference. The flap is the most common surgical method for close defects after the decision, defined as the removal of adjacent skin and subcutaneous tissue with an intact vascular supply. Flaps can be divided according to tissue composition, vascularity, type of movement, and location of the defective lesion. Based on the type of movement, flaps can be divided into advancement, transposition, and rotation. The advancement flap technique used in this case for close the defect after excision. This technique has several advantages namely it can be used for large lesions in any anatomical region and has good cosmetic results. The other advantage is being able to easily reduce tissue tension so as to prevent tissue necrosis and scarring after the procedure.

Following the literature, the prognosis of BCC with appropriate treatment is very reassuring. Surgical excision is a very effective treatment for primary BCC with a recurrence rate of <2%, which is reported 5 years after complete excision. The prognosis of this patient was *quo ad vitam, quo ad functionam, quo ad sanationam* are *dubia ad bonam.* However, close monitoring is needed following the treatment to evaluate the possibility of recurrence or new tumors. The American Cancer Society recommends consistent follow-up every year in the five-year period after BCC treatment. The patient also suggested avoiding direct sunlight and using sunscreen or a hat.

4. Conclusion

Basal cell carcinoma (BCC) is the most common type of skin cancer. It occurs in areas that have prolonged exposure to sun and UV and is generally found in individuals older than 50 years old. The goal of surgical treatment of BCC is to destroy or remove the tumor so that no malignant tissue is allowed to proliferate further. Surgical excision is the most effective treatment for BCC and has been traditionally the main therapy for BCC. After the surgical procedure, we can choose several methods for closing the defect regarding the patient's general condition, characteristics of the defect, and patient's preference. After the surgical procedure, the patient was advised to monitor the lesion to evaluate the possibility of

recurrence or new tumors, avoid direct sunlight exposure, and use sunscreen or a hat when doing outdoor activities.

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