

Full-thickness skin graft in women with recurrent basal cell carcinoma in the right infraorbital region: A case report

Zilpa Widyastuti, Moerbono Mochtar, Prasetyadi Mawardi

Departement of Dermatovenereology, Faculty of Medicine, Sebelas Maret University, Dr. Moewardi General Regional Hospital, Surakarta, Indonesia.

Abstract Basal cell carcinoma (BCC) is a malignancy of the skin that mainly occurs in skin that is frequently exposed to sunlight. The first choice of treatment for BCC is excision. Excision is usually followed by reconstruction, as in this case report using a full-thickness skin graft reconstruction technique. A 32-year-old woman came with a complaint of a lump appeared on the bottom of her right eye since a few weeks ago. The patient had previously been diagnosed with BCC in the same location about 1 year ago. The conclusion from histopathological examination of the lesion is BCC. The chosen management is excision of the tumor and reconstruction using the full-thickness skin graft technique. Basal cell carcinoma generally occurs on the face and affects elderly population, but recently it is often found in groups of young adults. The main environmental risk factor that plays a role in the development of BCC is ultraviolet exposure. Management of BCC is usually done with surgery such as excisional biopsy followed by reconstruction such as skin graft. Basal cell carcinoma is the most common skin cancer. Excisional biopsy is helpful in differentiating skin tumors, inflammatory processes, and other dermal lesions. Skin grafts are an option when primary closure or flap repair are deemed unsuitable.

Key words

Basal cell carcinoma; Fullthickness skin graft; Infraorbita.

Introduction

Basal cell carcinoma (BCC) is a malignancy of the skin, especially occurring on skin that is often exposed to sunlight.¹ Incidence in Europe in 2017 was between 24 and 170 per 100,000 people while in Asia 16 to 20 per 100,000 people.² In general, men are more affected than women with a ratio of 1.5-2:1.³ The incidence of BCC also increases threefold with age between 65 and 79 years, although it can also occur at a younger age.⁴ Individuals with a history of BCC are at least 10 times more likely to develop

recurrent BCC.³ The diagnosis of BCC can be established by physical examination and supporting examinations. Physical examination of BCC can reveal slow-growing transparent nodules with telangiectasias that appear on the surface of the skin and are ulcerated with resounding edges, but can vary clinically based on the BCC subtype.^{3,5} Supportin examination of BCC can be done by dermoscopy and histopathological examination.^{6,7} Treatment for BCC is usually done surgically, but some forms of BCC can be treated with medical treatment or radiation therapy.⁸ Various types of therapy include Mohs micrographic surgery, standard surgical excision, radiation, photodynamic therapy, cryosurgery, topical therapy and systemic drugs.⁹ This case report aims to increase knowledge about the diagnosis and management of BCC in patients with a history

Address for correspondence

Dr. Zilpa Widyastuti

Departement of Dermatovenereology, Faculty of Medicine, Sebelas Maret University, Dr. Moewardi General Regional Hospital, Surakarta, Indonesia.

Ph: 081291876371

Email: zilpawidyastuti84@gmail.com

of recurrency so as to reduce disease morbidity and mortality.

Case report

A 32-years-old female patient came to the Dermatovenereology Department of Dr. Moewardi General Regional Hospital (RSDM) Surakarta with the main complaint of the reappearance of lump under her right eye since a few weeks ago. The patient had previously undergone excision and a single advancement flap in the same location as the current new lump one year earlier and was diagnosed with BCC. The new lump is currently small at first, but over time it gets bigger and wider. The lump is also accompanied by itching so it is often scratched and injured. The wound on the lump then widens and bleeds easily when scratched. The patient works as a swimming pool guard who is often exposed to the sun for approximately 5-6 hours each day. The patient has no history of other diseases such as diabetes mellitus and hypertension. The patient had experienced a similar complaint 1 year ago and had performed an operation in the form of excision and a single advancement flap. The patient has no history of smoking and allergies. The patient's family has no history of similar complaints and history of malignancy.

On physical examination, the general condition of the patient appeared to be good, with adequate nutritional status. Vital signs within normal limits, namely BP 110/70 mmHg, HR 84x/minute, RR 24x/minute, temperature 36.8°C and pain scale 0. Dermatological status in the right infraorbital region showed a hyperpigmented erythematous solitary tumor, well-defined with raised edges, a shiny-looking lump ± 0.5 cm in diameter (**Figure 1**). There was no enlarged lymph nodes and organ enlargement. From the anamnesis and physical examination, the patient was differentially



Figure 1 The right infraorbital region shows a solitary reddish tumor with well-defined borders with raised edges, smooth and shiny surface with a diameter of ± 0.5 cm (red arrow).

diagnosed with BCC, squamous cell carcinoma (SCC) and microcytic adnexal carcinoma (MAC).

The patient then underwent supporting examinations, namely laboratory examination and histopathological examination with frozen section and with hematoxylin-eosin (HE) staining. Routine blood laboratory tests showed results within normal limits. Histopathological examination with frozen section and with HE staining showed clustered cells, large sized cells, arranged in rows (palisading), basaloid cells, hyperchromatic, coarse chromatin, erythrocyte background with the conclusion of basal cell carcinoma (**Figure 2,3**). Based on history, physical examination and histopathological examination, this patient was diagnosed with recurrent BCC. Based on this diagnosis, a surgical plan was carried out by excision of the tumor and continued with reconstruction using the full-thickness skin graft technique. The operation procedure is shown in **Figure 4**.

Discussion

Basal cell carcinoma (BCC) is a malignant neoplasm of nonkeratinizing cells in the basal layer of the epidermis, locally invasive, aggressive, destructive but rarely metastasizes.¹⁰

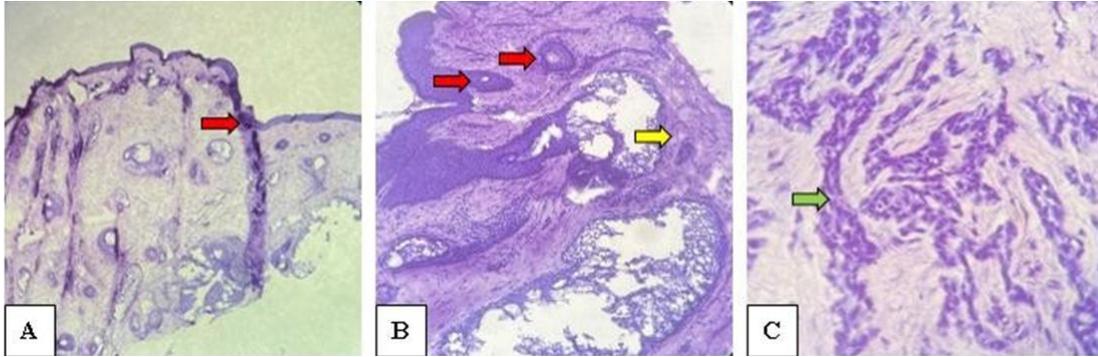


Figure 2 Histopathological features of frozen section. A. In the epidermal and dermis layers, nodular aggregates of basaloid tumor cells are seen (red arrows). B. In the dermal stroma layer there is minimal retraction with solar elastosis (yellow arrows). C. In the dermis layer, hyperchromatic nuclei arranged in palisades are seen (green arrows).

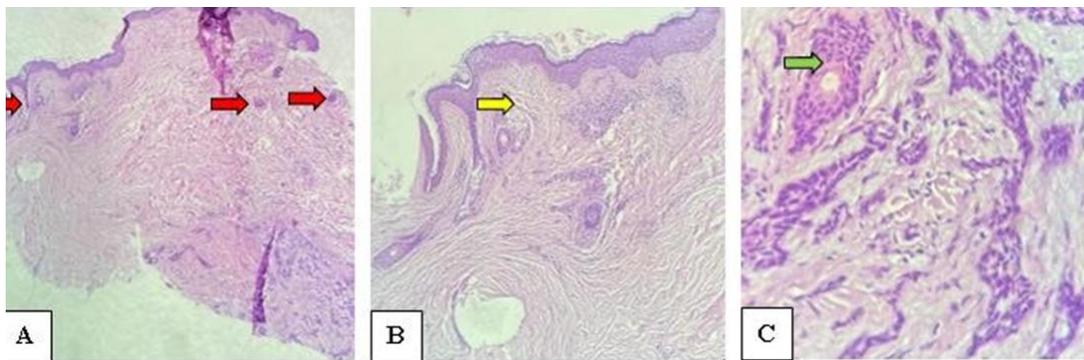


Figure 3 Histopathological appearance with HE staining. A. In the epidermal layer, an irregular basaloid cell epithelial tumor arises from the epidermal layer (red arrow). B. The dermal stroma shows solar elastosis (yellow arrow). C. In the dermis layer, a hyperchromatic cell nucleus and scant cytoplasm arranged in a palisade manner are visible (green arrows).

Basal cell carcinoma is the most common malignancy in the United States and its incidence increases by 4% to 8% annually, which is strongly influenced by cumulative sun exposure and increasing age.¹¹ The incidence of BCC has been reported to be increasing in many countries around the world as a result of increasing general population longevity and behaviors that support sun exposure.¹² The incidence of BCC in the Asian continent is 16-20/100,000 people per year.¹³ Basal cell carcinoma is a skin carcinoma originating from epidermal cells, but several different hypotheses have been formulated regarding the pathophysiology of BCC.^{14,15} The main carcinogenic factor is UV light which explains why most tumors are located in places that exposed to sunlight as in this case the lesion was

found in the infraorbital region. Basal cell carcinoma is one of the most mutated tumors (65 mutations/megabase) and most of the mutations are UV-induced (C:T or CC:TT transition at dipyrimidine sites).^{16,17} Genetic factor that acts as the main driver is activation of Hedgehog (Hh) pathway with PTCH1-inactivating mutations identified in 90% of sporadic BCCs, Hh pathway changes are also found in other Hh-dependent tumors such as medulloblastoma and neuroblastoma.¹⁸

Clinical manifestations of BCC is an appearance of pearl-like papules, appear fleshy, pink in color and can be accompanied by ulceration or telangiectasia.¹⁹ Other characteristics that can be found in BCC include papules that look like waxy droplets, erosion, central ulceration and

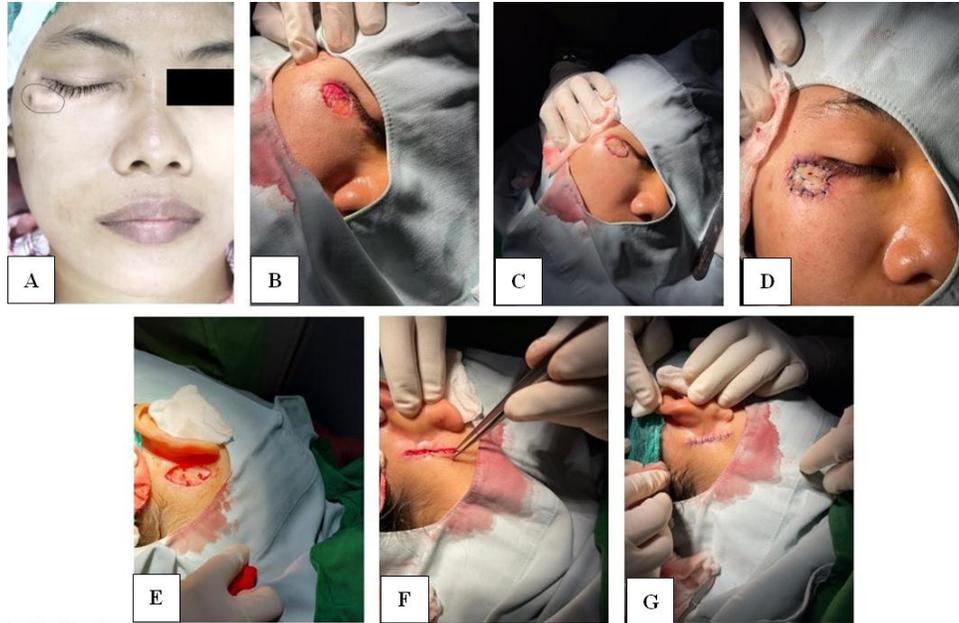


Figure 4 Patient's surgical procedure. (A) Side marking was done after aseptic and antiseptic measures were previously performed in the operating area. (B) Excision of the tumor mass. (E) Extraction of skin tissue from the back of the ear. (F) Suturing the scar behind the ear. (G) Results of suturing the wound behind the ear. (C) Closure of the excised wound with skin grafting. (D) Results of skin grafting in the right infraorbital region.

pigmentation, accompanied by bleeding especially when experiencing trauma, and commonly the lesions are oozing or crusting, the edges of the lesions are elevated, translucent, telangiectatic, grow slowly 0.5 cm in 1-2 years and are black-blue or brownish in color.¹¹ Lesion of BCC in this patients were located in face precisely in the infraorbital region. Another clinical manifestation found was telangiectasia, growing ± 0.5 cm in 1 year and appearing transparent with raised edges. The main environmental risk factor that plays a role in the development of BCC is exposure to UV light which is appropriate in this case considering the patient's daily profession as a pool guard with a 5-6 hours/day exposure of the sun. Basal cell carcinoma generally occurs in the elderly population, but recently it has been frequently found in young adults aged <50 years,¹⁵ this corresponds to a patient who is only 32 years old.

Basal cell carcinoma can be diagnosed by direct examination with the naked eye or by further

examination with dermoscopy and histopathological examination.²⁰ Diagnostic criteria for dermoscopy examination for BCC are the finding of a blue-white sheath, short fine telangiectasis and an appearance resembling a maple tree leaf.²¹ The histopathology that is commonly found in BCC is a uniform proliferation of basaloid cells with hyperchromatic nuclei, relatively scanty cytoplasm and not well-defined borders.²² The patient in this case report underwent direct naked eye examination and excisional biopsy while dermoscopy was not performed. The histopathological picture in this case is the finding of grouped and large sized basaloid cells, arranged in a row (palisading), basaloid cells with these are hyperchromatic and have an erythrocyte background.

The differential diagnoses for BCC include squamous cell carcinoma (SCC) and microcystic adnexal carcinoma (MAC). The clinical features of SCC are lesions that can be flat, nodular or plaque-like which can be accompanied by

telangiectasia and bleeding. Other clinical features that can be found in KSS are crusting, ulceration and hyperkeratosis. Histopathological examination of SCC generally reveals proliferation of squamous epithelial cells, atypia cells accompanied by changes in the shape of the rete peg processus, abnormal keratin formation, increased proliferation of basaloid cells, irregular cell arrangement and tumor nests that infiltrate into the surrounding tissue.²³ The main SCC founding was not found in this case so that the differential diagnosis of SCC could be ruled out. Microcytic adnexal carcinoma is a rare malignant tumor of the sweat glands that often occurs on the head and neck.²⁴ Clinical features of MAC are white to pink plaques located on the face with slow growth. The histopathological appearance of MAC can mimic the histopathological appearance of BCC and SCC. Histopathological examination of MAC usually presented small basaloid cells, these lesions were later known as microcytic which is also the main histopathological appearance in MAC. Another feature that can be found at higher magnification is strands of basaloid epithelioid cells displaying ductal lumina that infiltrates the dermis and subdermis. The main feature that distinguishes MAC from other tumors is the presence of a dividing zone between the epidermis and tumor cells.²⁵ The histopathological appearance in this case did not find the main features of MAC, so that the differential diagnosis of MAC can be ruled out.

The management of BCC mainly focuses on local control due to its low metastatic potential.⁷ The main goals of BCC management include removing the tumor to prevent recurrence at a later date, correcting functional disorders caused by the tumor and to provide the best cosmetic results for patients considering that most BCCs are located on the face.⁹ The management of BCC is most often done with surgery, but in some forms of BCC it can be treated with

radiation therapy.⁸ Various types of therapy commonly used in the management of BCC include standard surgical excision, Mohs micrographic surgery, radiation, cryosurgery, photodynamic therapy, topical therapy and systemic drugs.⁹ The patient in this case was treated with standard surgical excision with the aim of preventing recurrence and improving the cosmetic condition of the patient's face and then proceeding with reconstruction of the post-excision scar using the full-thickness skin graft (FTSG) technique.

Skin graft is the transfer of skin-free tissue that is separated from the donor site and transplanted to the recipient site.^{26,27} Skin grafts are a therapeutic option when primary closure or repair with a flap is considered unsuitable. The FTSG technique covers the epidermis and dermis as a whole, while the split-thickness skin graft (SSG) covers the entire epidermis and part of the dermis. Full-thickness skin grafts are relatively simple to retrieve from the donor site and secure at the receiving site and are particularly suitable for defects of the nasal tip, dorsum of the nose, nostrils, eyelids and ears.²⁷ Optimal donor skin must match the color, thickness, degree of actinic damage and skin texture around the defect from the recipient site.²⁸ The patient in this case report underwent reconstruction in the infraorbital area using the FTSG technique considering that there was a recurrence after one year before the patient underwent surgical excision followed by reconstruction using a single advancement flap technique. The FTSG technique is considered the best option considering the esthetic factors and possible recurrence in the future.

Areas that can be used to collect skin grafts are in the pre and post auricular regions, clavicle skin and the inner arm. The locations where grafts are most often useful include the tip of the nose, dorsum of the nose, nostrils and sidewalls

as well as the eyelids and ears.²⁶ The site chosen in this case was the post-auricular region with considerations related to the suitability of color, thickness and skin texture which tends to be similar with the location of the graft recipient in the infraorbital region. Graft survival depends on capillary growth from the recipient site for survival, so a viable tissue base with some vascularization is required.²⁷ Skin grafts should be separated immediately from all underlying adipose structure and hair after harvest. The graft was then fixed with simple interrupted sutures and the donor site was repaired with a layered closure. Grafts are generally left for 1 week. The graft must maintain direct contact with the wound bed and must remain fixed for a period of 1 week.²⁸ Patients should avoid trauma to the graft site and strenuous activity for at least 2 weeks after surgery. The prognosis for FTSG is quite good with a success rate of 76% and a relatively low recurrence rate of 7%.²⁹ The prognosis for BCC itself is very good, with a survival rate of 100% for cases that have not spread to other places but if they develop furthermore, BCC can result in significant morbidity and cosmetic damage. The 2.5 year recurrence rate after surgical excision is 3% and the 10 year recurrence rate is 12%.⁵

Conclusion

A case of recurrent BCC in the right infraorbital area in a 32 year old woman has been reported. The diagnosis is based on anamnesis, physical examination and histopathological examination. Therapeutic option for this patient is excisional biopsy followed by reconstruction using a full-thickness skin graft technique. This reconstructive technique is one of the main options in cases of BCC that experience recurrence. The results of the operation in this case still show minimal scars both in the infraorbital area and in the area where the donor skin was taken in the post auricular area. The

presence of scars does not result in functional and aesthetic disturbances, so that other reconstruction techniques can be considered for BCC lesions in the infraorbita in order to get the best results.

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