Case Report
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Double rhomboid skin flap in near basal cell carcinoma

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Abstract

The rhombic flap is a local geometric transposition flap and offers significant versatility in reconstructive surgery. This flap is most often used to fill skin cancer defects in the head and neck area. Basal cell carcinoma (BCC) is the most common cancer in humans. For many subtypes of BCC, the gold standard treatment is surgical excision. For low aggressive BCC, alternative treatments such as cryosurgery, curettage and cryosurgery, photodynamic therapy (PDT) and topical Imiquimod can be used. A case of BCC with adjacent lesions was reported and was treated by surgical excision using a modified double rhomboid flap technique.

Keyword: BCC; Excision Surgery; Rhombic Flap.

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Introduction

The rhombic flap is a localized and versatile geometric transposition flap in reconstructive surgery. These types of flaps are predominantly utilized to repair skin defects caused by cancer in the head and neck area.[1] The term “rhombus” originates from Euclidian geometry, defining a quadrilateral with opposite acute and obtuse angles, whereas “rhomboid” refers to parallelogram. Consequently, "rhombic" accurately describes a wing resembling a rhombus, while "rhomboid" encompasses both rhombus and a parallelogram shapes. The rhombic flap, introduced by Russian surgeon Alexander Limberg in 1945 and transleted into English in 1966, features a distinct rectangular rhombus shape facilitating its transposition into appropriately shaped skin defect.[1]

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Basal Cell Carcinoma (BCC) ranks as the most prevalent form of cancer in humans.[2-5] Annually, the United States records over 3 million new cases of Basal Cell Carcinoma (BCC). Well establish risk factors for BCC include exposure to Ultraviolet Radiation (UVR), light hair and eye color, Northern European ancestry, and a predisposition of sunburn. The development of BCC is linked to exposure to UVR, notably the Ultraviolet (UV) B spectrum (290–320 nm), which triggers mutations in tumor suppressor genes.[3] Surgical excision stands as the primary treatment, considered the gold standard, for numerous subtypes of BCC. However, for less aggressive forms, alternative therapies like cryosurgery, curettage, Photodynamic Therapy (PDT) and topical imiquimod offer viable options.

Case report

An 83-years-old woman presented to the dermatology

Figure 1 Hyperpigmented nodules and telangiectasias on the frontal region and buckle region.

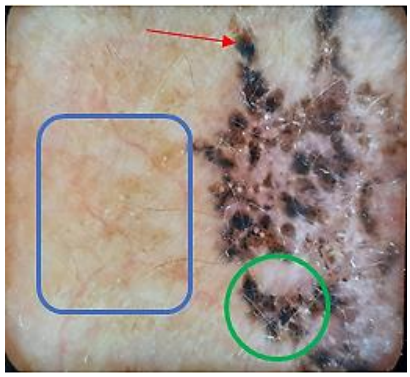

Figure 2 Arborizing telangiectasia (Blue Box), large blue-gray ovoid nest (Red Arrow), multiple blue-gray globules (Green Circle).

clinic with concerns regarding numerous black lumps on her forehead and cheeks, which she has noticed for over two decades. The lesion started as a small black spot, then it got bigger and bigger. The lump does not bleed easily but her Itch was not intense. She had a history of frequent sun exposure during her youth but reported no family history of similar condition.

During the physical examination, her vital signs were found to be within normal ranges. Dermatological assessment revealed the presence of hyperpigmented nodules and telangiectasias on the forehead and cheeks **(Figure 1)**.

In addition, dermoscopy examination was conducted, uncovering arborizing telangiectasia, large blue-grey ovoid nest, and multiple blue-grey globules **(Figure 2)**.

Figure 3 (A) Marking of Excision, (B and C) After tissue removal, (D) After suture.

She was treated with excisional biopsy with double rhomboid skin flap **(Figures 3A-3D)** with a cotrimoxazole 2x500mg was given post biopsy and the histopathological examination was performed **(Figure 4)**.

Follow-up after 37 days showed a hyperpigmentation in the suture marks and had a significant improvement with no new lesion occurred.

Discussion

This paper reports a case of Double Rhomboid Skin Flap in Near Basal Cell Carcinoma (BCC) on a 83 years-old woman. BCC holds the distinction of being the most prevalent cancer among individuals of white

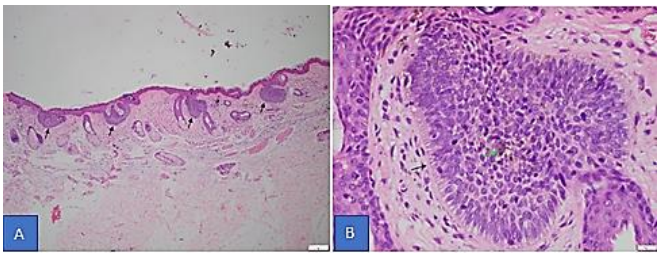

Figure 4 (A) Basaloid cells (Black arrow) (B) Palisading edges (Black Arrow) and Melanin cells (Green Arrow).

ethnicity, with its incidence steadily rising on a global scale. In the United States, the rates have been escalating by approximately 2% annually, resulting in over 2.5 million BCC patients receiving treatment each year. While non-Western regions like Asia and South America report substantially lower incidence rate, ranging from ten to one hundredfold less, they too are witnessing an upward trend in BCC occurrence.[5] Patients with BCC are more frequently male, with a male:female ratio of 1.2:1.7 Mean age the median time of tumor occurrence is about 71 years. The age-specific rate increases with age and is much higher and steeper among men than women.[7] It is usually a slow-growing skin cancer that starts as small papules that are barely visible, usually grows over years without aggressiveness into nodules or plaques, sometimes ulcerating, leaving time to be properly diagnosed and treated.[4] The majority of BCCs manifest in the head and neck area, typically exposed to sunlight with the trunk and extremities accounting for a smaller proportion, as these areas are comparatively less exposed to sunlight.[5] Nodular basal cell carcinomas most frequently appear on the face, particularly on areas such as the nose, cheeks, forehead, nasolabial folds, and eyelids.

The main carcinogenic factor is ultraviolet (UV) light, which explains why most tumors are in sun-exposed sites.[4,9] UV light exposure, particularly UVB radiation, triggers mutations in tumor suppressor genes, thereby playing a crucial role in the development of BCC.[10] A recent meta-analysis of the epidemiological studies, comprising 23 investigations, unveiled a 43% elevation in the risk of BCC among individuals exposed to UV radiation in their workplace, in contrast to those employed indoors.[9] Higher incidence rates of BCC have been corelated with increasing age, male gender, and Caucasian ethnicity.[10] Other significant risk factors include a family history of skin cancer, fair skin tone, light eye and hair color, as well as reduced ability to tolerate sun exposure.[10]

The primary treatment for many subtypes of BCC is surgical excision. Achieving complete removal of the tumor during this procedure is crucial to reduce the risk of recurrence. Previous studies have shown a wide range for incomplete primary excision, with reported rates ranging from 6% to 18% in association with BCC.[6] Research of surgical margins aimed at achieving complete tumor removal across different anatomical sites has demonstrated cure rates exceeding 95% within five-year period when employing a surgical margin of 4 to 5 millimeters.[11] A rhombic flap consists of a segment of skin and subcutaneous tissue that rotates around a pivot point to cover a neighboring defect. This versatile technique can be applied to various areas of the body and finds widespread use in facial and breast reconstruction, neurosurgery, ophthalmology, and proctology. When utilized for facial defect correction, rhombic flaps typically yield satisfactory functional and aesthetic outcomes, particularly when the resulting scar aligns with the natural contours of the face. Although complications such as partial necrosis, hematoma, bacterial infection and the formation of “dog ears” are possible, they occur infrequently.

Conclusion

BCC is the most common malignant tumor. Surgical therapy is still the gold standard and reduces the chance of recurrence. In the case of BCC with adjacent lesions, the use of the rhomboid flap technique may be considered.

Declaration of patient consent The authors certify that they have obtained all appropriate patient consent.

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Conflict of interest Authors declared no conflict of interest.

Author’s contribution

NA: Have made substantial contribution to conceptuation and design, acquisition of date, analysis and interpretation of data. Have been involved in drafting the manuscript**.**

KD,SW,AIA,ARN: Have made substantial contribution to acquisition, analysis and interpretation of data. Have been involved in revising it critically for intellectual content.

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