Case Report

Reconstruction Options Following Wide Excision of Basal Cell Carcinoma of the Face

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Abstract

Basal cell carcinoma is the commonest skin malignancy diagnosed in Malaysia. Surgery is the recommended treatment of choice with the lowest failure rate provided a clear margin is obtained. However, the defect may be too large to be repaired primarily. Formal reconstruction using grafts and flaps should be done to achieve the optimal aim of maintaining the integrity, function and cosmetic patient outcome. Three reconstructive methods are described in this series to restore the facial defect following the wide local excision. The procedures described were peri-alar crescentic advancement flap, nasolabial rotational flap and full thickness skin graft using supraclavicular skin. This series highlights the usage of the procedures based on solid foundation and principles, without compromising the desired outcomes for the patient.

Keywords: Carcinoma, basal cell, face, reconstructive surgical procedures, surgical flaps, grafting, skin

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Date of submission: 10 Oct, 2015 Date of acceptance: 1 Dec 2015

Introduction

The most common cancer in the United States is skin cancer and non-melanoma skin cancer including basal cell carcinoma is estimated to have higher incidence than prostate, breast, colorectal and lung cancer combined (1). Skin cancer accounts to approximately 2-4% of all cancers reported among Asians and basal cell carcinoma is the commonest among Asian Chinese and Japanese (2). In Malaysia, basal cell carcinoma is also the most commonly diagnosed skin cancer among the different subtypes (3). Although it is common, the disease is highly curable and thus, special attention is required to manage it appropriately before it is too late.

Surgery remains the mainstay treatment for basal cell carcinoma with the lowest reported failure rates (4). For optimum results, a clear margin is required to reduce the risks of recurrence (5). However, overzealous excision is a problem resulting in difficulty in closing the wound and poor cosmetic outcome. Hence, it is extremely important for proper reconstruction following excision especially when the lesions are commonly found in the face and head. We report a series of cases of patients with basal cell carcinoma who underwent wide local excision with various reconstructions following the excision.

Case Report

Case 1

A 55-year-old male with hypertension presented with painless ulcer at right upper lip for one year which gradually increased in size and non-healing. The ulcer bled and intermittently it was non-pruritic (Fig. 1). On examination, there was a 2x2 cm ulcer at right upper lip with raised pearly edges. Incisional biopsy was done and histopathological examination showed basal cell carcinoma. Patient was then planned for wide excision and immediate reconstruction. Intraoperatively, the tumour was identified and the safe margin for incision was marked. Decision was made for a peri-alar crescentic flap and the design was marked. Two stay sutures were used to mark the wound edges. Full thickness excision of the lesion was done with a 3mm margin. Reconstruction was made with full thickness incision at previously marked peri-alar region to create a crescentic flap. The flap was then advanced medially and closed in layers of mucosa, muscle and skin.

Case 2

A 78-year-old male with hypertension and history of stroke and ischaemic heart disease presented with right upper lip lesion for 1 year. The lesion progressively increased in size with occasional blood and serous discharge. It was also associated with occasional pruritus. On examination, there was a 2x2 cm hyper-pigmented raised lesion with a central ulceration at the right upper lip (Fig. 2). Incisional biopsy was done and histopathological examination confirmed the diagnosis of basal cell carcinoma. He was then planned for wide excision and immediate reconstruction as well. Decision was made for an inferiorly based nasolabial rotational flap with an excision margin of 3mm. The flap was created with tension-free approximation to the wound edges.

Figure 1: a) Pre-operative marking with 2 stay sutures marking the lip edges, b) Wound defect and crescentic flap, c) Post-operation

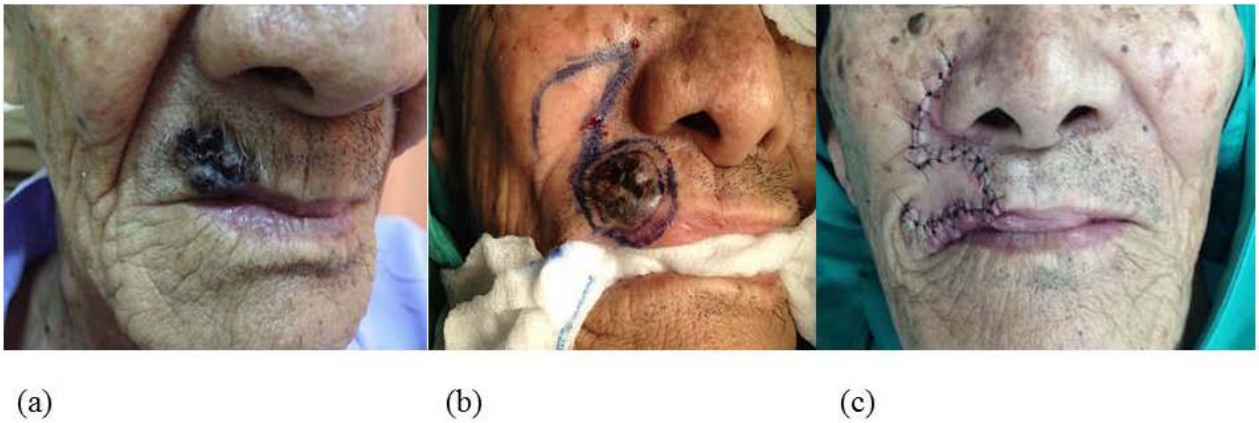

Figure 2: a) Pre-operative lesion, b) Pre-operative marking for excision margin and flap reconstruction, c) Post-operation

Figure 3: a) Pre-operative lesion, b) Full thickness skin graft, c) Post-operation

Case 3

A 91-year-old female with unknown medical illness presented with a left cheek lesion for 10 years which progressively increased in size for 1 year. The lesion was painless, non-pruritic but associated with contact bleeding. There was no other similar lesion elsewhere. On examination, there was a 3x2 cm an irregular skin thickening at the left cheek just lateral to the left nasal alar with areas of hyperpigmentation (Fig. 3). There was no palpable cervical lymph node. Incisional biopsy was performed and confirmed the diagnosis of basal cell carcinoma. Wide excision with a margin of 3mm was performed. Decision was made to cover with full thickness skin graft which was harvested from the left supraclavicular region and fenestrated. The donor site was closed primarily and the recipient site was secured with a tie-over dressing.

Discussion

Skin cancer is the commonest cancer in the United States of America and among the different subtypes; basal cell carcinoma and squamous cell carcinoma are more common than the rest (1). The incidence of skin cancer however is less common among Asians making up only 2-4% of all neoplasms reported (2). Similar incidence is seen here in Malaysia with skin cancers other than melanoma made up of 2.6% of all cancers diagnosed in 2003 to 2005 (3).

Basal cell carcinoma is the commonest skin cancer diagnosed in Malaysia; making up 51.5% of all skin cancer reported (3). Although it is very common, it is a slow growing locally invasive tumour which rarely metastasizes to other part of the body (6). The prognosis of the disease is excellent and associated with low mortality; though the prognosis for metastatic disease is poor with mean survival of 8 months to 3.6 years (6). Keeping this in mind, it is essential to intervene accordingly upon diagnosis before the development of metastatic disease.

There are certain factors associated with poorer prognosis in patients diagnosed with basal cell carcinoma. These include morphoeic clinical subtype, tumour >5cm, located at centrofacial and ear, infiltrative and micronodular histological subtype, perineural or perivascular involvement as well as presence of host immunosuppression, recurrent lesions or presence of lymph node involvement or distant metastasis (7). One common poor prognostic factor was seen in all 3 patients which was the presence of the lesion in the centrofacial region. Despite that, the aim of treatment in basal cell carcinoma is similar to the aim of other malignant tumour excision, which is the complete removal or destruction of the lesion with maximal preservation of functional and cosmetic outcomes (6-8).

In basal cell carcinoma, various treatment options are available and can be divided into surgical and non-surgical intervention. Surgical excision with a predetermined margin had been the mainstay treatment for basal cell carcinoma (8). However, due to potential poor functional and cosmetic outcome from surgical excision, other methods had been introduced to help overcome the problem such as curettage and electrodessication, liquid nitrogen cryosurgery, carbon dioxide laser ablation, radiotherapy, topical fluorouracil, topical imiquimod and topical photodynamic therapy (7). Despite all these alternatives being available, surgery and radiotherapy are the most effective treatments with surgery having the lowest failure rate (4).

During surgical excision, an oncological safe margin is usually required to ensure complete removal of the lesion and reduces the risk of recurrence. In the excision of basal cell carcinoma, a 3mm surgical margin can be safely used in lesion smaller than 2cm and 5mm margin for bigger lesions (9). There are exceptions to this; for example in our third patient, the margin of 3mm was clinically acceptable due to the proximity of the lesion to anatomical nasolabial landmarks despite the lesion being more than 2cm. Even though by removing a bigger margin provides a better oncological safety, this will result in too much healthy tissue being removed compromising the functional and cosmetic outcomes. In certain areas such as the face and ear, however, even removing the minimal margin required may still affect the final outcome both functionally and cosmetically. Hence, various methods of reconstruction had been proposed following wide local excision of basal cell carcinoma of the face.

Reconstruction following any excision or wound defect traditionally falls back on the reconstructive ladder. The initial concept of choosing the simplest method of reconstruction, which is primary closure and then slowly moving up the ladder to skin graft, local flap and distant flap based on the complexity of wound had been challenged and modified with time. Choosing the simplest reconstruction may not end up with the best outcome. Hence, reconstructive elevator had been introduced with emphasis on choosing the appropriate level of reconstruction rather than the simplest method of repair (10). With further understanding of tissue and wound as well as advancement in wound healing, additional options are added to the traditional ladder or elevator. These include the use of negative pressure wound therapy and dermal matrices which provide surgeons more options in reconstructing the defect (10).

Reconstruction of the head and neck is unique in comparison to reconstruction elsewhere in the body. In additional to restoring the integrity of the face, neck or digestive tract, it is essential in restoring the function as well. Aesthetic outcome is also important in the reconstruction of the face but all these should not compromise on the safety outcome of the surgery. The decision to restore integrity, function, aesthetic outcome or all 3 depends on the underlying pathology, patient's health status and comorbidities, as well as the outcome desired by both patients and surgeons.

Following excision of the lesion on the face, primary closure along the skin tension line whenever possible should be the preferred choice of closure (11). This is, however, not possible in all circumstances and other techniques in the reconstructive ladder would be required. Instead of moving up the rung to skin graft, local flaps or free flaps would be preferred to achieve better cosmetic and functional outcome (12). This is due to better matching of skin quality and thickness in local flaps while distal flaps bring new tissue with its own blood supply which allow better healing and less scarring in comparison to skin grafts (11,12).

Various techniques have been described in the reconstruction of the face. It can be as simple as rotational or rhomboid flap to more complex lip switch flap, finger forehead flap or submental artery flap (11,12). The choice on the type of flap or grafts being used is depending on various factors including the location of the lesion, the defect created after excision, the blood supply for the flap or graft, patients' fitness for general anaesthesia and surgery, patients' cooperation on the postoperative care as well as surgeons' expertise. The essential objective after excision of the lesion is to achieve an optimal reconstruction within the same setting as this will help achieve a better long term outcome (12). Second stage procedure can be carried out later on if required though the outcome may not be as good.

The techniques described in this series were advancement flap, rotational flap and full thickness skin graft. In the first patient, a nasolabial advancement flap was chosen to achieve the best cosmetic outcome with the scar well hidden within the nasolabial fold. The defect for the second patient was not amenable to a nasolabial advancement flap, thus we fashioned a rotational flap from healthy surrounding tissue to achieve tension-free closure of the defect. For the third patient, she was not keen for local flap closure over the wide wound defect. There was also a high risk of recurrence and thus, reconstruction with a full-thickness skin graft facilitates close monitoring and early detection of recurrence. In each case, the decision making on the method of closure is based on principles of management of basal cell carcinoma and soft tissue closure.

The 3 cases reported in this series illustrate various methods to close a defect following wide local excision of basal cell carcinoma of the face and lip. In each case, satisfactory reconstruction was achieved by restoring the integrity, function and acceptable aesthetic outcome for the patients.

Conclusion

Basal cell carcinoma is one of the commonest malignancies encountered and the most effective

treatment is surgical excision with a predetermined margin of safety. Reconstruction in the same setting would provide the best long term outcome for the patients especially for lesions at the head and neck region. Despite the availability of various complex procedures for reconstruction, simple methods as described in the series were also able to achieve the desired outcome and thus, should be considered during reconstruction following wide local excision of basal cell carcinoma.

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