

Original Article

Surgical Management of Facial Nonmelanoma Skin Cancer

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Abstract.

Background: Nonmelanoma skin cancer (NMSC) is the most common malignant facial tumor, and is comprised of basal cell carcinomas (approximately 80%), and squamous cell carcinomas (approximately 20%). The most frequently used method for treatment of facial nonmelanoma skin cancer is conventional surgical excision of the tumor. Our aim in this study was to review the cases of facial nonmelanoma skin malignancies and treatment outcomes of patients in our hospital.

Methods: We retrospectively reviewed the medical records of 31 recruited patients with facial nonmelanoma skin cancers who were treated between 2009 and 2011. The profile data of these patients, details of surgery including procedures for primary tumor excision and reconstruction, as well as long-term outcomes were collected for analysis.

Results: Facial nonmelanoma skin cancers constituted 1.6% (31/1893) of the new patients treated in our hospital's plastic surgery and dermatology departments. Basal cell carcinoma was the most common histological type (67.7%), followed by squamous cell carcinoma (32.3%). Reconstructive procedures were required in 77.4% of the patients, and local flaps were used for reconstruction in 17 cases (54.8%). For the most part, large post-resection defects were the predominant cause of these reconstructive procedures. During an average 16.7 months of follow-up, two patients had local recurrence (6.5%).

Conclusions: Conventional surgical excision of facial nonmelanoma skin cancers with immediate reconstruction using a local flap constituted a good therapeutic modality with a low recurrence rate.

Keywords : nonmelanoma skin cancer, basal cell carcinoma, squamous cell carcinoma

原著論文

手術治療顏面非黑色素瘤皮膚癌

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中文摘要

背景：非黑色素瘤皮膚癌在皮膚癌中最為常見，其中基底細胞皮膚癌約佔 80%，鱗狀細胞皮膚癌約佔 20%。皮膚癌的治療方式包含：放射治療、冷凍療法、局部化學治療、刮除術、電燒法、傳統手術切除和莫氏顯微手術。治療非黑色素瘤皮膚癌最常使用的方法是手術切除。

目的及目標：在我們的醫院裏，我們回顧顏面皮膚癌的病患以及它們的治療癒後。

材料及方法：從 2009 年至 2011 年之間，我們分析 31 名顏面皮膚癌病人，包含病人的皮膚癌種類、手術細節及重建方式，並且分析了它們的存活率。

結果：在整形外科及皮膚科所有治療顏面腫瘤病患中皮膚癌佔了 1.6% (31/1893)。最常見的是基底細胞皮膚癌(BCC, 67.7%)，其次是鱗狀細胞皮膚癌(SCC, 32.3%)。在手術治療後，有 77.4% 的病人因術後缺損過大需要施行重建手術。經過平均 16.7 個月的追蹤，有二名病患復發(6.5%)。所有病患的存活率是 100%。

結論：傳統手術切除腫瘤和立即施行皮瓣重建的治療模式，在可接受的復發率中是一種好的治療模式。

關鍵字：非黑色素瘤皮膚癌、鱗狀細胞皮膚癌、基底細胞皮膚癌

INTRODUCTION

Numerically, skin cancers do not rank among the ten most common cancers [1]. However, over the last several decades, there has been a progressive increase in the incidence of skin cancers, particularly cutaneous melanomas [2]. Besides melanomas, the other two most frequently occurring primary skin cancers are basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). Together, SCC and BCC are referred to as the nonmelanomatous skin cancers (NMSC). NMSC is the most common human malignant tumor in the United States, with over 1.3 million cases diagnosed each year [3-5]. Treatment options for NMSC include both surgical and nonsurgical modalities. However, surgical management of NMSC requires preoperative planning and an in-depth understanding of most common reconstructive techniques, including primary closure, skin grafting, local tissue and distant flaps. The practitioner's decision regarding the meth-

od of treatment of NMSC is highly individualized and depends on patient age, cancer size, histologic subtype, and lesion site. No single therapy or technique can be used for every situation. The goals of treatment include complete removal of the cancer lesion as well as preservation of normal function and cosmesis of the involved region.

In this study, we analyzed the clinical characteristics and treatment outcomes of 31 patients with primary facial skin cancer obtained during a 3-year period at Hsinchu Mackay Memorial Hospital, located in the center of northern Taiwan.

MATERIALS AND METHODS

The study population consisted of a subset of 31 patients with primary facial nonmelanoma skin cancer. From January 2009 through December 2011, these patients were diagnosed with primary facial nonmelanoma skin cancer by tissue biopsy at the hospital's Department of Dermatology. All 31 patients were treated with conventional surgical excision and immediate reconstruction by a plastic surgeon. Basal cell carcinomas (BCC) were excised and included 5 mm of grossly-normal skin around the lesion, while excision of squamous cell carcinomas (SCC) included at least 5 mm, and usually 10 mm of grossly-normal skin. All

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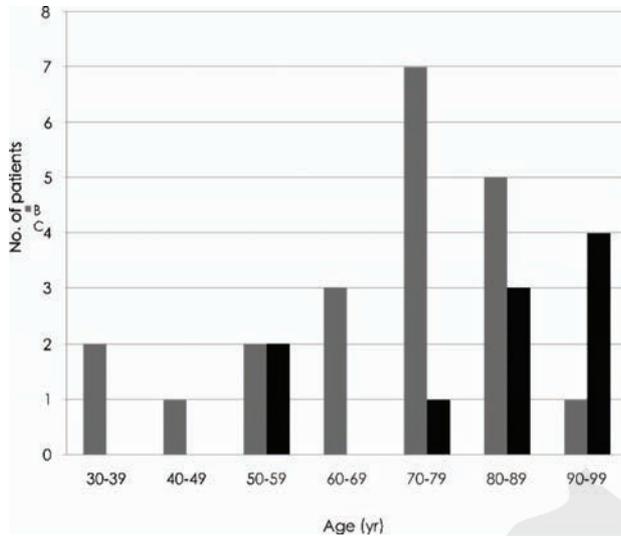


Figure 1. Age distribution of the patients with primary facial nonmelanoma skin cancer

Table 1. Distribution of primary sites of facial NMSC

	Total	BCC	SCC
Scalp	3	3	0
Forehead	5	2	3
Periorbit	3	3	0
Auricle	1	1	0
Nose	7	6	1
Cheek	8	3	5
Perioral	3	2	1
Chin	1	1	0
	31	21	10

suspicious lateral and deep margins were confirmed to be clear by frozen section intraoperatively. Resection margins were confirmed with permanent section of pathology after the operations.

The age and sex of the patients, diagnostic rate, types of primary facial skin cancer, lesion sites, surgical methods, and operative results were analyzed by reviewing patient medical charts. Thereafter, the results were compared with previously reported data in Taiwan.

RESULTS

Between January of 2009 and December of 2011, the total number of new patients who visited our hospital's dermatology and plastic surgery departments was 1,893. Of these, 31 patients were newly diagnosed as having primary facial nonmelanoma skin cancer with an average diagnostic rate of 1.6%. BCC was the most common type of NMSC, comprising 67.7% (21 of 31 cases), followed by 32.3% (10 cases) of SCC. Twelve patients were male and nineteen were female, and the male-to-female ratio was 1 to 1.58.

The mean age of the entire study population was 72.2 years (range, 35 to 93 yrs) (Figure 1). The mean age of the patients with SCC was 80.6 years (4 men and 6 women), while that of the patients with BCC was 68.2 years (8 men and 13 women).

Among the 31 patients in our study, the cheek was the most frequently involved site (8 out of 31 lesions, 25.8%) followed by the nose (7 lesions), forehead (5 lesions), periorbit (3 lesions), perioral (3 lesions), scalp (3 lesions), auricle (1 lesion), and chin (1 lesion). The nasal region was the site most frequently affected by BCC (6 lesions, 85.7%), and the cheek by SCC (5 lesions, 62.5%) (Table 1).

Conventional surgical excisions, not Mohs surgery, were performed for the treatment of primary facial nonmelanoma skin cancer in our 31 patients. There were no intraoperative or postoperative deaths. Only one lesion showed involvement of the deep resection margin in the permanent pathology after surgical excision and reconstruction, that was re-excised 2 weeks after the initial surgery. Skin defects after the surgical excisions were reconstructed with local flaps in 17 lesions (54.8%) (Figure 2), skin grafts in 6 lesions (19.3%), and primary closures in 8 lesions (25.8%). All 31 patients were followed up successfully and regularly. The mean follow-up period was 16.7 months (range 3 to 36 months). Two patients (one SCC and one BCC) (6.5%) showed local recurrences: one patient was treated with re-excision, and the other went on close follow-up without no further treatment

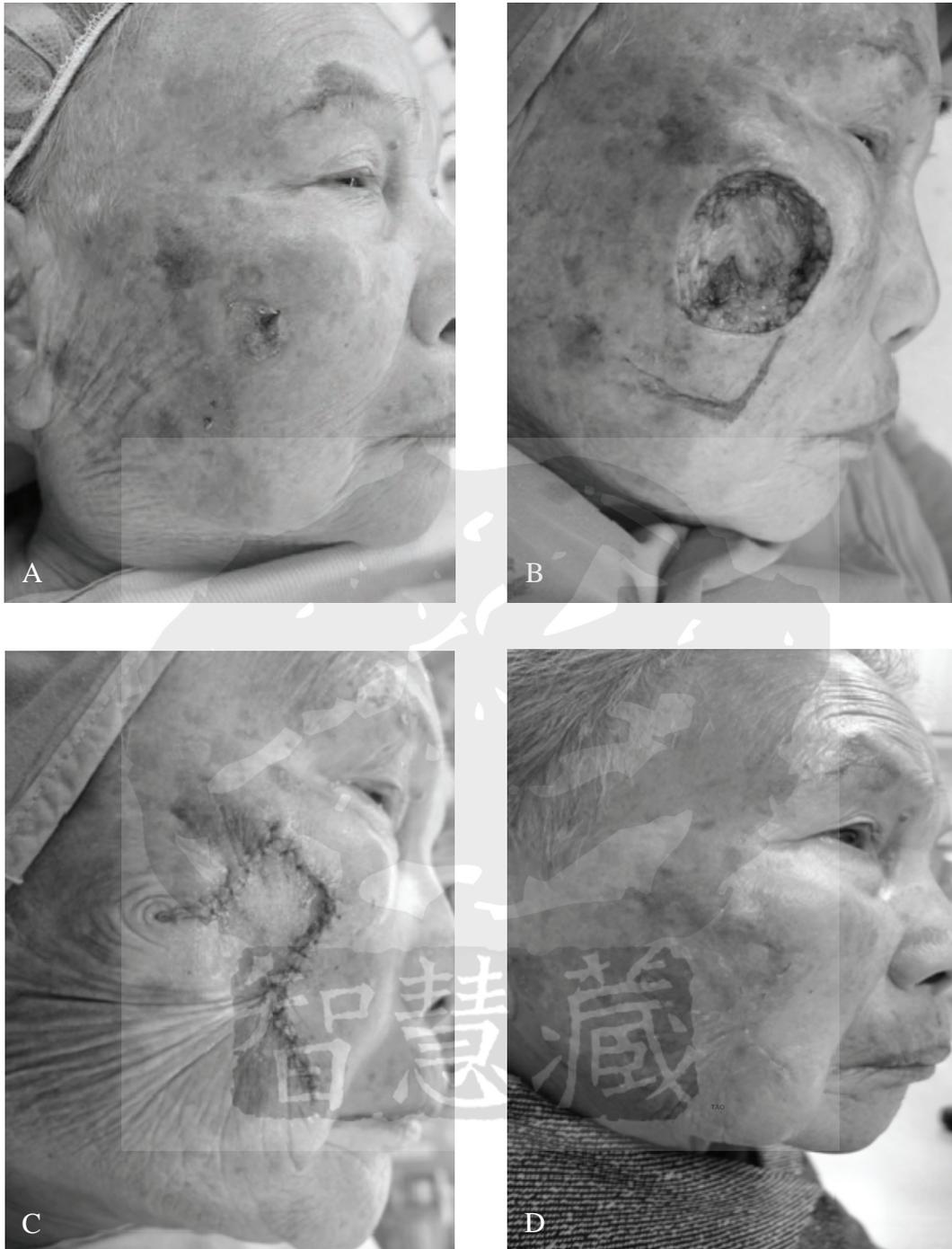


Figure 2. (A) SCC on the right side of the face. (B) Postresection defect. (C) Resection defect covered with local flap. (D) Postoperative picture following resection and local flap reconstruction

to the end of the study. Reconstructions after surgical excisions were generally successful without any significant functional or aesthetic deformity. Except for

remaining facial scars, two cases showed definite complications: one case with partial necrosis of the tip of the flap healed by secondary intention, and the oth-

er case with partial loss of skin graft also healed by secondary intention.

DISCUSSION

Several studies have reported that the incidence of primary skin cancer is increasing worldwide [3,6]. In Western countries, a vast majority of skin cancers are NMSC, mainly BCC [7-11]. In this study, 67.7% of all facial NMSCs were BCC, a similar result to other reports in which BCC represents 80-94% of all facial skin cancers [3,9].

The biological behavior of skin malignancies varies widely. Basal cell carcinomas rarely metastasize and have an excellent prognosis and survival rate. Squamous cell carcinomas have a 2-6% incidence of distant metastasis [10,12]. Basal cell carcinomas usually occur on sun-exposed areas, while SCCs most commonly appear on sun-damaged skin. Primary skin cancers, including those of the face, mainly affect people in the older age groups. Since elderly people have been exposed to UV radiation for a longer period of time, their skin is more susceptible to cancer [13]. The mean age of the patients in this study, 72.2 years, is almost 10 years older than those from other reports in the literature [14].

Mohs surgery, conventional surgical excision, radiotherapy, cryosurgery, curettage and electrodesiccation, topical chemotherapy, or laser therapy can be used for the treatment of skin cancers. Surgery is the mainstay treatment for all types of NMSC. Simple surgical excision is effective for all types of BCCs, with a cure rate approaching 99% when the histological margins are clear. The recommended margin is 5 mm; the chances of recurrence are greater when the margin of resection is less than 4 mm [5,15-17].

Mohs surgery has been reported to present higher cure rates than other techniques [5,18,19]. Although it has been suggested for use on recurrent lesions or those cancers located in such vital areas as the eyelid, digits, penis, nose, etc., Mohs surgery requires a dedicated surgical pathologist and an onsite facility for

pathology examination which are lacking in most medical centers. Only a few hospitals in Taiwan offer this surgery because there are only a few Mohs surgeons, and National Health Insurance does not fully cover the fee. The conventional surgical excision method does not provide as complete tumor control as the Mohs surgery, but it also has some advantages: the duration of surgery is shorter, and can be performed under local anesthesia without hospitalization, with immediate defect reconstruction. The recurrence rate observed in our study was slightly higher than that of Mohs surgery [19,20], but similar to the results of other conventional surgical methods [21]. Confirmation of the surgical margin with frozen section and excision of the lesion with adequate safety margins can contribute to the lower recurrence rate.

According to the concept of "reconstruction ladder", skin defects after surgical excision can be reconstructed by primary closure, skin graft, local flap or distant flap. The final choice of reconstruction method depends on tumor variables such as the location, size, histological type of the tumor, and patient variables including age and medical status. As shown in our study, reconstruction by local flap (54.8%, 17 in 31 cases) is the most frequently used method because it provides better functional and aesthetic outcomes. With proper defect analysis and flap design, the defect can be reconstructed with satisfying aesthetic results.

The role of adjuvant therapy is limited in skin cancers. Radiotherapy can be used as a primary mode of treatment for BCC and SCC located in certain sites such as the nose, lip, eyelid, and canthus, where surgery is either technically difficult or likely to yield poor cosmesis. Postoperative radiotherapy is indicated in patients with advanced lesions, positive margins, lymph node metastasis, and palliation [22]. None of the patients in this study received any radiotherapy, chemotherapy or immunotherapy.

In this study, the rate of local recurrence was 6.5%. These results suggest that it is possible to achieve reasonably good local regional control of the disease

with optimal surgery taking adequate excision margins, as well as using a reconstructive procedure when needed.

CONCLUSIONS

In summary, facial nonmelanoma skin cancers constitute a small but significant proportion of the patients with cancer at Hsinchu Mackay Memorial Hospital, where the detection of primary facial skin cancer is increasing annually, with the majority of the cases being BCCs[4-6]. Conventional surgical excision is an acceptable method for treatment of primary facial skin cancers considering the paucity of Mohs surgeons. Facial defects caused by conventional surgical excisions can be adequately reconstructed using appropriate methods such as the local flap. Teamwork between the dermatologist and the facial plastic surgeon from the initial step of the diagnosis to the final treatment and follow-up plays a crucial role in the successful management of facial nonmelanoma skin cancer.

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