

Facial Reconstruction after Surgical Excision of Basal Cell Carcinoma

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Abstract

Background and Aim of Study: The aim of this study was to evaluate the outcomes of different facial flaps used for reconstruction after surgical excision of basal cell carcinoma.

Patients and Methods: Patients with BCC of the facial area were 128 cases. The cases were treated, and followed up between January 2012 and April 2018. **Results:** There was a single case of tumor recurrence in the frontal area. Also scar formation in female patient over 60 years old was noted. The case of scar formation was notes after frontal flap which used for treatment of nasal defect.

Otherwise, there was no patient with any complications (like infective wound, keloid, scar formation, ischemia, or necrotic tissues), have been seen among the rest of the cases at the end of our study on 2020. In all male cases that treated with skin graft after excision of the tumor in frontal area which was 8 patients; at the end of follow up period, the color of skin and tissue harmony was coordinated.

Conclusion: No specific flap or graft can be done for all the types of BCC, we should choose the most appropriate flap or graft. Recurrent ratio was very low.

Key words: Basal cell carcinoma, facial reconstruction, skin graft, flap.

Introduction

Among all types of non-melanoma skin cancers, the BCC involve around 75%, in spite of BCC was excluded from registries in national cancer of the United States¹, while its mortality rate leveled off recently². Clinical evaluation and biopsy examination represent the majority of identification of skin epithelial tumors³.

One of the most interesting issue for the facial surgeons, after tumor excision in the facial region, is how to reconstruct the remaining defected area in the most accepted way that satisfied the patient and even his or her relatives.

There are variant types of flaps that can be used, for reconstruction of the face and the defect's nature after excision of the tumor, which give a pleased or convinced epilogue later on⁴.

The face is very different area from the rest of the body. Off coarse every part from our body is very important for us, but the face has that privacy make it top of others. It just like the sun for day or the moon for the night, or the compass in the see. So before starting any surgical step on the face we should have the perfect surgical plan for the facial lesions.

The subclinical invasion seems to be more in larger diameter basal cell carcinoma (more than 2 cm) than small lesion BCC⁵.

Sometimes basal cell carcinoma of the facial region is one of the tumors that left a worse defect in the face after removal surgically. Neck metastases is very rare in

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basal cell carcinoma⁶.

The ratio of margin to be excised which range from 4mm to 10mm according to the basal cell carcinoma subtype and tumor size should be evaluated carefully to minimize tumor recurrence. Just to be sure of removing the whole malignant lesion of BCC by surgical excision, enough margin from the normal tissue should be excised along with the lesion⁷.

Any defect that primarily cannot be closed, skin graft will show as one of the standard option. Epidermis and part or whole of the dermis is making the skin graft. Graft is part of the skin which removed totally from specific sites in the human body according to the requirement of surgical procedure, in which no vascularization to substitute⁸.

The Aim of This Study

Was to evaluate the outcomes of different facial flaps used for reconstruction of the defect after surgical excision of basal cell carcinoma.

Patients and Methods

Surgery was always the best way for the treatment of the cases of the basal cell carcinoma of the facial region. Clinical and radiographical examinations, with CT scan which give the amount of soft and hard tissues involved by the cancer.

In AL Ramadi Teaching Hospital and outpatient clinic 128 cases were admitted with facial skin basal cell carcinoma, and they treated and followed up. All the cases were diagnosed not only by the clinical examination, appearance of the lesions, X-Ray, and CT-scan, but all was approved by the biopsy. We have 92 male patients and 36 female patients. Age range from 10-70 years old, (mean age 40 years).

The cases were admitted to the hospital, treated, and followed up between January 2012 and April 2018. Surgical flap techniques that are used explained below.



Fig. 1 : Regional flap for nasal BCC



Fig. 2 : Advancement flap surgery for lower lip BCC



Fig. 3 : Skin graft technique for patient with bucco-mandibular pathology (BCC according to Mathez textbook of plastic surgery)

Tumor site was mostly on the right side 65%, the left side was 30%, and the center of the face was 5%. All the patients were fair skin.

In our study the male patients was more than female (92 case were male, and 36 case were female).

The tumor were distributed on the following areas of the face; frontal area, lower eyelid, nose, cheek, and lips (upper lip more than lower lip). The margin of **2-10mm** according to the tumor size was resected, and clinical history will help to determine the adequate borders to be removed with the tumor (safe margin).

Lip and cheek tumors were 26 and 12 patients respectively. In lip tumor 9 cases were females while 17 patients were males, while in cheek tumor only 4 patients were females and 8 patients were males. Among 26 patients with lip BCCs were allocation was in the upper lip more than lower; 19, 5 respectively. 12 patients were with BCC in the cheek; 4 of them were female patients and 8 male patients. There were only 2 male cases with ear zone over fifty years old.

They were treated with advancement and rotational flaps, due to pliable tissue nature in these areas. Also skin graft was used in bucco-mandibular area down the right side of lower lip was treated with skin graft.

Advancement flap was also used in ear tumor; only 2 patients were with ear tumor, both of them were male patients.

In the nasal area was 63 patient; 47 male and 16 female patients; right side, left side and central of the nose distributions was as follow; among the total 63; right side was 31 case, left side of the nose was 23 case, and the center of the nose was 9 patients. They were treated with rotational flap, skin graft, and forehead interpolated flap.

Infraorbital tumors were 16 patients, 6 females and 10 males; advancement and rotational flap was used.

Frontal area only nine cases with one female case and recurrence occur in this case, and 8 male patients with no recurrence. They were treated with advancement flap and skin graft. The table I and table II below show the tumor distribution.

Table I : Distribution of basal cell carcinoma according to age in female patients.

Age group	Lips	Nasal	Cheek	Ear	Infra-Orbital	Frontal Area`	Total
10-20	0	0	0	0	0	0	0
21-30	0	1	0	0	2	0	3
31-40	0	0	0	0	0	1	1
41-50	3	2	2	0	1	0	8
51-60	3	5	1	0	1	0	10
61-70	3	8	1	0	2	0	14
Total	9	16	4	0	6	1	36

Table II : Distribution of basal cell carcinoma according to age in male patients.

Age group	Lips	Nasal	Cheek	Ear	Infra-Orbital	Frontal Area`	Total
10-20	1	1	0	0	0	0	2
21-30	1	1	0	0	1	0	3
31-40	3	8	0	0	0	0	11
41-50	4	11	1	0	3	0	19
51-60	4	15	3	1	2	2	27
61-70	4	11	4	1	4	6	30
Total	17	47	8	2	10	8	92

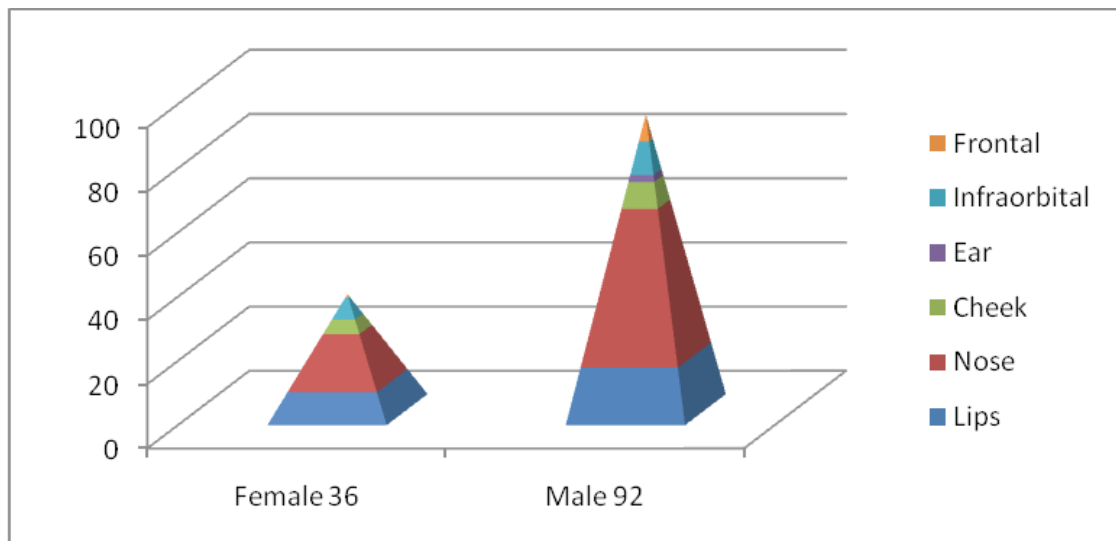
Our surgical management for all hundred twenty eight patients with mean age of forty years old was by using the conventional surgical excision with safe margin (**2-10mm**) and with no hesitation in critical area like suborbital, perioral, and nasal areas. Full thickness resection and using adequate flap or using skin graft according to the case requirement's for best result was done. Some cases were done in theatre under general anaesthesia, while other cases were done under local anaesthesia in outpatient clinic.

Follow up period was more than enough in our study because it is extended from 2012 until 2018, so

that was a privilege of our research. We have enough time to check the degree of pigmentation whether hypo or hyper, hypertrophic, keloid, ischemia, wound infection, and tissue necrosis.

Result

We found the male patients more affected than female patients, the ratio of male to female patient in basal cell carcinoma occurrence around 2.5 (male) : 1 (female). The (**fig. 4**) below explains this ratio.

**Fig. 4: BCC distribution according to Female and male patients**

The outcome of lip and cheek surgeries reconstruction was accepted for the patients, by using the preferred technique; V-Y advancement flap, rotational flap, and skin graft.

The postoperative result of nasal surgery was

accepted, whether the defect treated with forehead flap, rotational flap, or with skin graft. The color of the skin and coordination was good; no hyperpigmentation was noted in the skin graft for nasal surgery. Figure 5 and figure 6 explain the preoperative and postoperative results.



Fig. 5: Skin graft for nasal basal cell carcinoma, preoperative and postoperative.



Fig. 6: Frontal flap for nasal basal cell carcinoma, preoperative and postoperative.

One case with recurrence was there among all the cases that treated surgically, female patient with this complication, over thirty years old, had BCC in frontal area. Also scar formation in three patients (one male and two females) over 60 years old was noted in nasal reconstruction with forehead regional flap, scar revision was done later. Otherwise, the rest of the cases, there was no patient with any complications (like infective wound, keloid, scar formation, ischemia, or necrotic tissues), have been seen among the rest of the cases at the end of our study on 2020.

In all male cases that treated with bilateral advancement flap and skin graft after excision of the tumor in frontal area which was 8 patients; at the end of follow up period, the color of skin and tissue harmony or fitting was very coordinated. The satisfaction or gratification of the patients which is one of the goals of our study was greatly assured.

Discussion

Basal cell carcinoma covers around three quarter of non-melanoma skin cancer⁹. The location of the BCC plays an important role during surgical planning. Some of these lesions affect the face esthetically while the others effect on both way; functionally and esthetically like those lesion in the perioral, perinasal, and periocular areas. Male patients in this study was higher percentage than females; 2.5(M): 1(F).

BCC is usually directly related to patient persistent susceptible to sun light¹⁰. The cases of basal cell carcinoma in this study was caused by the ultraviolet light over exposure; which was based on the intense and the accumulation effect of this harmful light presence in the sun light.

BCC is rarely cause death¹¹. Tumor Excision with safe margin and the diagnosis was approved by biopsy (excisional biopsy)¹²,. Neck metastases are very rare in basal cell carcinoma¹³.

Graft is part of the skin which removed totally from specific sites (donor site) in the human body according to the requirement of surgical procedure, in which no vascularization to substitute in the recipient site^{8,14}.

Advancement flap can be used without undermining or with undermining to release the tethered skin for better

result and to avoid the stretching the flap by decreasing traction forces for easy skin sliding¹⁵.

The site of the tumor and the size of the defected area left after excision, the laxity of the tissue, and its blood supply; all these together affect the length of the arc in rotational flap. All that should be calculated before choose the rotational flap ((in which a triangular defect can be closed with curvilinear way)) for facial reconstruction^{16,17,18}.

The ratio of recurrence after excision of basal cell carcinoma usually is low, which is limited to some subtypes of basal cell carcinoma, tumor's size and site¹⁹.

In our surgical approach with enough safe margins (2-10mm) in en bloc resection even in critical facial areas for invasion of under structure should be determined during treatment planning and reconstruction technique, all these to give clean margin postoperatively²⁰.

Conclusion

The facial surgeon need more than surgical mind, or engineering mind, actually he need the mind of genuine art that domesticate or qualify him to choose the best surgical procedure, according to his imagination on, what will come in the future after scalpel start work on the face.

The reconstruction outcome of the surgical excision with appropriate surgical reconstruction, for the facial BCC that be done on one hundred twenty eight patients suffering from different subtypes of facial basal cell lesion were functionally and esthetically very good and giving the patient the most acceptable appearance and normal lifestyle later on. Understanding the anatomy and physiology of the facial tissues consider as a crucial and very important point in rebuilding, remodeling, and reconstruction of the face.

At early age 10-20 years old the incidence of BCC in male more than female in our study. Also in general the male more affected than female patients in BCC.

The type of the surgical technique and using adequate flap or skin graft according to the site of the tumor and requirement of the case is the key for success of our surgical strategy and patient's satisfaction in the future. Good treatment planning and safe margin is

mandatory in the management of basal cell tumor, to decrease or avoid the recurrent of this distorted type of facial tumor.

Conflict of Interest: It as nil

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Ethical approval: This study was conducted according to the committee of medical ethics in Iraqi Ministry of Health

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