

Surgical Management of Primary Carcinoma of Eye Lids and Periorbital Skin

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ABSTRACT

Aim of Work: To review the clinical and pathologic features, treatment and outcomes of primary carcinoma of eyelids and periorbital skin. In this prospective study seventy six patients with primary carcinomas of the eye lids and the periorbital skin were treated between January 2009 and December 2014. The analyzed epidemiologic data and clinical pathologic criteria of all lesions. General anesthesia was used for all patients and frozen section examinations were done only in eye lids and inner canthus lesions, the cutaneous margin including the resected parts of the lid margins and the deep soft tissue margin were confirmed negative intraoperatively. The follow-up period ranged from 8 month to 5 years. We recorded and analyzed the surgical complications and their management, the functional and cosmetic results in addition to the recurrence rate. Exclusions criteria includes recurrent cases and those with familial cancer syndromes. **Results:** Male to female ratio was (1.7:1). Age of the patients ranged from 36 to 81 years with an average incidence of 66 years. BCC represented 93.5% of the lesions (71 patients), SCC represented 5% of the lesions (4 patients) and meibomian gland carcinoma of upper eye lid occurred in one patient (1.5%). The most common clinical variant of BCC was the nodular type and maximum diameter of the lesions ranged from 4mm to 24 mm. Inner canthus was the most common location for BCC, followed by the outer canthus. SCC occurred only in the lids and in 4 patients only. Two of them were treated by orbital exenteration, one by wide local excision and median glabellar flap and the fourth by excision and primary closure. The patient with meibomian gland carcinoma was treated by subtotal upper lid excision and lid switch flap for lid reconstruction in addition to cervico-facial lymphadenectomy. All safety margins were confirmed negative in the paraffin sections. The most common method of repair was primary closure done in 35 patient (47%) followed by paramedian glabellar flap in 33 patients (43%). The rate of postoperative complications was 23.5% (18 patients) and the recurrence rate was 1.3% (1 patient only). **Conclusion:** Primary cutaneous carcinoma of the periorbital region is a curable disease and most of the patients present early in the disease course. Negative margins are easily obtained with conventional frozen section techniques but local recurrences still can occur. Functional complications are inevitable. Their correction is an integral part of surgical treatment.

Keywords: Basal cell carcinoma (BCC), squamous cell carcinoma (SCC), periorbital skin, surgical treatment

INTRODUCTION

Basal cell carcinoma (BCC) is the most common cancer in individuals with fair skin type. It accounts for 80% of non melanoma skin cancer and steadily in creasing in incidence specially in younger patients less than 40 years although the average age at first diagnosis is 60 years. In the post 30 years the incidence has increased 2-3 folds⁽¹⁾.

The site of predilection is the chronically sun-exposed facial skin especially that of the eye lids and periorbital skin⁽²⁾. Using clinical criteria and occasionally histological data obtained from

incisional biopsies one can distinguish between the most common subtype, the nodular BCC which account for 50% of lesions and the infiltrative subtypes (sclerodermiform and micronodular BCC) and the multicentric superficial subtype each of which maybes up around 25% of tumors. Rare variants include pigmented BCC (around 1%)⁽¹⁾.

The treatment of choice is complete excision of the BCC⁽³⁾. Ideally, microscopically-controlled surgery (micrographic or Mohs surgery) is used in the periorbital zone of the face. Alternatively the excision can be performed using tumor-adjusted safety margins and conventional histological

evaluation. Since the infiltrative subtypes are more likely to recur, a wide excision margin (0.3-1cm) is recommended⁽⁴⁾.

Disadvantages of surgical treatment includes the usual operative risks, aesthetically or functionally disturbing scars with hypo- or hyperpigmentation⁽⁴⁾. SCC is the second most common malignancy (5-10%) of the eye lids and periorbital skin⁽⁵⁾. It is more rapidly growing and invasive than BCC but has no pathogenomic feature that allows its differentiation from other cutaneous SCC. Early diagnostic and curative treatment are very important because of its ability to invade the orbital and intracranial regions and metastasis to the lymph nodes and distant organs⁽⁶⁾.

Surgical excision is the treatment of choice with cure rates over 95% for selected primary cutaneous SCC. High risk primary SCC are those arising in the mask area of the face with thickness greater than 2mm, poorly differentiated histology or invasion of the subcutaneous tissues or structures. SCC with a diameter more than 2cm are considered also high risk. The ideal surgical safety margin can be tailored according to these risk for factors⁽⁷⁾. Typically the least recommended skin safety margin ranges from 4-6mm in low risk lesions to 6-10mm in high risk lesions. A surrounding safety margin of at least 15mm is recommended for lesion with multiple risk factors⁽⁷⁾.

The over all rate of regional lymph node metastasis in patients with SCC of the eyelids and periorbital skin may be as high as 24%, indicating that careful management of regional lymph nodes at the primary treatment is crucial for cure⁽⁸⁾.

Orbital exenterations in developing countries are done mostly for neglected patients with periorbital and ocular cutaneous malignancy. The procedure is rarely indicated as initial therapy for patients presenting with early disease⁽⁹⁾.

Medial canthus carcinomas with high risk factors often invade the orbit silently without clinical manifestations, but this is an uncommon event. Margin controlled excision of these lesions follow-up after excision strongly indicated⁽¹⁰⁾.

PATIENTS AND METHODS

Seventy six patients with primary carcinomas of the cutaneous part of the eye lids and the periorbital region were treated by excision and

surgical repair in National Cancer Institute, Nile Badrawi Private Hospital (NBH) and Fayoum Insurance Hospital. This prospective study was conducted between January 2005 & December 2014. We analyzed prevalence, sex and age distribution localization and clinical criteria of all lesions. All resected specimens were examined histologically to confirm the clinical, diagnosis and completeness of excision. General anesthesia was used for all patients. Intraoperative frozen section examination of the excised safety margins was done only in eye lids and inner canthus lesions, the cutaneous margin including the resected parts of the lid margins and the deep soft tissue margin were confirmed negative intraoperatively. Except for 6 patients who are lost to follow up and 4 who have died of unrelated conditions all patients continued to have regular follow up. The maximum follow-up period has been 5 years and the minimum was 8 month. We recoded and analyzed the surgical complications and their management, the functional and cosmetic results in addition to the recurrence rate.

Exclusion criteria includes all recurrent cases and these with familial cancer syndromes.

Statistical analysis was done & descriptive analysis will be presented. The study was approved by the ethical committee of NCI.

RESULTS

In this prospective study we found a slight male predominance (1.7:1). The age of the patients ranged from 35 years to 81 years with an average age incidence of 66 years. Seventy one lesions were BCC (93.5%). **Figure (1)**, 4 lesions were SCC (5%) **Figure (2)**. One female patient had meibomian gland carcinoma of the upper eye lid (1.5%) **Figure (3)**.

Regarding BCC, the most common clinical variant was the nodular type and the maximum diameters of the lesions ranged from 4mm to 24mm. Location of these lesions is shown in **Table (1)**. The inner canthus was the most common location for BCC. The lid margins were involved in all cases but the lacrimal punctum was involved only in 9 cases (in 3 cases it was directly invaded by the tumor in 6 cases it was located in the safety margin) **Figure (4)**.

Outer canthus was the second most common site and lid margin involvement did not occur in any of these lesions (**Figure 5**).

SCC was rare in our study (5%) and occurred only in the lids. In one female patient the lesion involved both lids with invasion of the eye globe and the outer canthus (**Figure 6**). In a male patient the lesion involved the lower eye lid with invasion of the eye globe (see **Figure 2**). Orbital exenteration was done for both patients. SCC of the upper eye lid skin occurred in 2 male patients. In one patient the size of the lesion was 8x9mm and located in the medial 1/3 (**Figure 7**), in the other patient the size was 1.5 x1mm and located in the middle 1/3 of the after eye lid. None of these SCC patients had palpable parotid are cervical lymph nodes at presentation.

The female patient with meibomian gland carcinoma presented with a biopsied upper lid mass and palpable lymph node metastasis in the right parotid gland. Subtotal upper lid excision (preservation of upper conjunctival fornix and its over lying skin) was done. Lid switch flap (rotational lower lid flap) was done for lid reconstruction, in addition to cervicofacial lymphadenectomy in the form of total parotidectomy with facial nerve preservation and modified radical neck dissection type III (**Figure 8 a,b**).

The magnitude of resected safety margin of all cases and their stages are shown in **Tables (2 a,b)**. All safety margins were confirmed negative in the paraffin sections. According to TNM staging system for non melanomatous eye lid and skin cancers we had forty two T1 lesion (55%), twenty three T2 lesion (30.5), eight T3 lesion (10.5) and Three T4 lesion (4%). In the lymphadenectomy specimen of the meibomian carcinoma there was 3 positive lymph nodes without extracapsular spread. None of our patients received adjuvant therapy. Methods of repair done for the 76 cases are show in the **Table (3)**. The most common method of repair was primary closure done in 35 patients (47%) followed by paramedian glabellar flap in 33 patient (43%) **Fig. (9)**.

Other flaps used in our series include nasolabial flap for lower eye lid reconstruction (**Figure 10**), forehead flap for skin reconstruction after orbital exenteration and median glabellar flap for upper eye lid reconstruction (**Figure 11**).

The rate of postoperative complication was 23.5% (18 patients). Poor cosmetic results occurred in 10 patients in the form of rounding of

outer canthus, narrowing of the palpebral fissure, thick flap and donor site scarring. Lower lid ectropion occurred in 2 patients and epiphora in 9 patients. Ectropion was spontaneously corrected in one patient with nasolabial flap for lower eye lid reconstruction. In the female patient with lower lid switch flap tarsorrhaphy was done to correct the ectropion and to minimize corneal exposure. Epiphora was tolerable in 6 patients and annoying in 3 patients which were treated by dacryocystostomy in Ophthalmology Department.

The recurrence rate was 1.3% (1 patient only). He had superficial spreading BCC of the inner canthus and safety margin was negative. The recurrence occurred 10 month post excision in the form of 1mm superficial ulcer adjacent to the edge of the paramedian glabellar flap, and was excised.

Table (1): Topographic distribution of BCC

Location of tumor	Number of cases
Lower eye lid	2 (2.8%)
Upper eye lid	1 (1.4%)
Outer canthus	30 (42.2%)
Inner canthus	33 (46.5%)
Nasocanthal angle (root of nose)	4 (5.7%)
Infra orbital skin and lower eye lid	1 (1.4%)
Total	71 (100%)

Table (2a): Clinical staging and magnitude of resected safety margin in BCC of periorbital skin

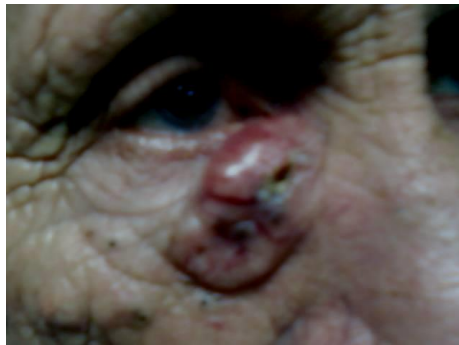
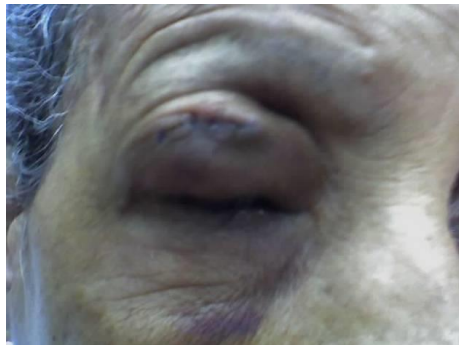
Clinical stage	No. of cases	Excision in mm
T1	37 (55.2%)	4-5
T2	22 (32.8%)	6-10
T3	7 (10.5%)	11-15
T4	1 (1.5%)	Over 15
Total	67 (100%)	

Table (2b): Clinical staging and magnitude for resected safety margin in eye lid skin carcinoma

Clinical stage	N: of cases	Excision in mm
T1 (SCC)	2 (22.2%)	3-5
T1 (BCC)	3 (33.4%)	2-4
T2 (BCC)	1 (11.1%)	5
T3 (meibomian)	1 (11.1%)	8
T4 (SCC)	2 (22.2%)	12-16 (orbital exenteration)
Total	9 (100%)	

Table (3): Methods of repair

<i>Site of the defect</i>	<i>Method of repair</i>	<i>No. of cases</i>
Inner canthus	Para median glabellar flap	33 (43.5%)
Outer canthus	Primary closure	27 (35.6%)
	Advancement cheek flap	2 (2.6%)
	Rotational flap	1 (1.3%)
Nasocanthal angle	Primary closure	4 (5.3%)
Upper eye lid	Primary closure	2 (2.6%)
	Lid switch flap	1 (1.3%)
	Median glabellar flap	1 (1.3%)
Lower eye lid	Primary closure	2 (2.6%)
	Nasolabial flap	1 (1.3%)
Orbital exentration	Forehead flap	2 (2.6%)
Total		76 (100%)

**Fig. 1:** BCC inner canthus**Fig. 2:** Lower eyelid**Fig. 3:** Meibomian cancer upper eye lid**Fig 4.** Lacrimal punctum involvement**Fig. 5:** BCC outer cathus**Fig. 6:** T4 SCC eyelids

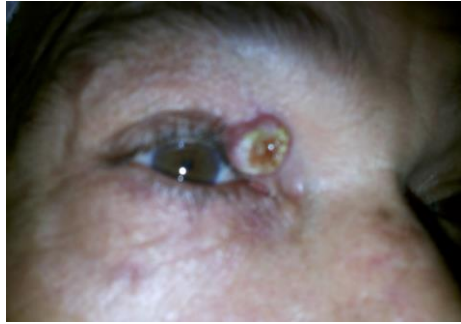


Fig. 7: SCC upper lid



Fig. 8a: Lid switch flap



Fig. 8b: Cervicofacial dissection



Fig. 9: Paramedian glabellar flap



Fig. 10: Superiorly based nasolabial flap



Fig. 11: Median glabellar flap

DISCUSSION

Many of the retrospective studies on carcinomas of the periorbital region and eye lids show slight male predominance^(11,12), while some show female predominance in both BCC and SCC⁽¹³⁾.

The over all average patients age was 58.5 years⁽¹²⁾, 63 and 64 years respectively^(11,13).

In our study we had a male predominance and the over all average patients age was 66 years. BCC remains the most prevalent carcinoma of the eye lids and periorbital region^(1,12). It represents 93.5% of our patients, the nodular subtype being the commonest which matches the findings in the literature⁽¹⁴⁾.

The eye lids seem to be the most prevalent site for carcinomas in the periorbital region^(11,13), but in our study 43.5% of the lesions were in the inner canthus. All our safety margins were negative, because 55% of our carcinoma were T1 lesions and 83% of the lesions were localized in the canthal region where safety margin can be extended easily except in the area of the medial lid margins, where we depended on frozen section guidance.

Additional causes are exclusion of recurrent cases, those with familial cancer syndromes and the very small incidence of SCC in our study (it occurred in 4 cases and only in the eye lids). Lid switch flap is mainly used for lower eye lid reconstruction but rarely it can be harvested from the lower eye lid for partial upper lid reconstruction^(11,12).

In our case with meibomian gland carcinoma we used the lid switch flap from the lower eye lid to reconstruct the lower half of the conjunctiva and the whole skin of the upper eye lid, then after a week we did a tarsorrhaphy (see **Figure 8b**). There was no contact of the skin flap with the cornea nor lower lid ectropion.

Postoperative complication rates after surgery in the periorbital region ranges from 11% to 21%^(12,11). We had a slightly higher incidence (23.5%) because of our cosmetic outcome (poor in 13% of the patients) and epiphora which occurred in 12% of the patients. In addition most of our defects were in the inner canthal region and the lacrimal punctum was removed in 9 patients. Primary closure of some outer canthal defects resulted in rounding of the outer canthus

which contributed to the poor cosmetic results in the study. The recurrence rates after surgical treatment of primary periorbital skin cancer ranges from 0.7% to 7%^(15,16,17). Although all our safety margins were negative we had a recurrence rate of 1.3%.

CONCLUSION

Primary cutaneous carcinoma of the periorbital region is a curable disease and most of the patients present early in the course of the disease.

Negative safety margins can be easily achieved with conventional frozen section techniques, but local recurrences still can occur.

Functional complications are inevitable and life style impeding. Their correction is an integral part of surgical treatment.

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