LOWER EYELID RECONSTRUCTION IN FULL THICKNESS DEFECTS

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ABSTRACT

Background: Eyelid tumor excision, trauma and congenital coloboma are three common causes of eyelid defects requiring surgical reconstruction. A wide variety of surgical techniques are available and reconstruction of the eyelids can range from simple repair to the integration of multiple complex procedures. Knowledge of eyelid anatomy, adequate preoperative planning, and meticulous surgical technique will optimize the anatomical and functional result. The plastic or ophthalmic surgeon must be able to technically execute these techniques to close eyelid defects.

Purpose: is to evaluate the functional, cosmetic outcome and post operative complications following lower eyelid reconstruction using three different techniques for repair of full thickness defects after periorbital tumor excision, trauma or due to congenital coloboma.

Methods: This study was carried out on thirty eyelids (30) of thirty patients who had eyelid tumors (20 cases), trauma (8 cases) or congenital coloboma (2 cases). They were classified into three groups; Group (**A**) included 12 cases with 1/3 lower lid defect. Group (**B**) included 10 cases with 1/3 to 2/3 lower lid defect. Group (**C**) included 8 cases with subtotal lower lid defect.

Results: Eyelid defects were repaired using variable reconstructive techniques: **(1)** Primary reconstruction (± canthotomy or cantholysis) was performed in 12 cases for small to moderate eyelid defects (about 1/3 of lower lid), **(2)** Tenzel semicircular flap was used in 10 cases for moderate to large eyelid defects (about 1/3 to 2/3 of lower lid), **(3)** Hughes flap was performed in 8 cases for large size lower lid defects (more than 1/2 of lower lid).

Cosmetic results of eyelid reconstructive techniques were: Excellent results in 19 cases, satisfactory in 6 cases, accepted in 4 cases and poor in 1 case. Functional results were: Normal results in 24 cases; limited in 5 cases and lost in 1 case. We had 10 treatable post operative complications in 12 out of 30 cases, epiphora occurred in 8 cases of them.

Conclusion: proper management of lower eyelid full thickness defects necessitate good knowledge and well analysis to obtain optimum functional and aesthetic results. Direct closure of the defects should be the first priority, and flaps are more recommended than grafts. Tenzel flap is better than Hughes flap for 1/2 - 2/3 lower lid defects.

Keywords: Eyelid reconstruction, full thickness defect, Hughes flap, Tenzel flap, graft, FTSG, eyelid tumor.

INTRODUCTION

Eyelids are complex structures and pose a challenge for reconstruction. They play an important role in protecting the globe from trauma, excessive light, and in maintaining the integrity of tear films and moving the tears toward the lacrimal drainage system. The beauty and expression to the eye is given by the lids and muscles in it.

Eyelid Anatomy

Eyelid topography is influenced by age, race, ethnicity, and surrounding facial anatomy, particularly that of the eyebrow. The eyelid skin is the thinnest in the body, mainly owing to its attenuated dermis. Eyelid incisions therefore heal rapidly. The thinness of the skin also helps keep scarring to a minimum. As it crosses over the orbital rim, the eyelid skin abruptly thickens.[1]

The gray line serves as an important surgical landmark, separating the eyelid vertically into the anterior lamella (skin and orbicularis) and the posterior lamella (tarsus, retractors, and conjunctiva).[1]

The tarsal plates provide rigidity to the eyelids. They are composed of dense, fibrous connective tissue. The lower tarsus measures 3–5 mm vertically. The tarsal borders adjacent to the lid margin are straight, whereas the opposite edges have a convex curvature. The posterior edge of the tarsus is firmly attached to the palpebral conjunctiva, which extends onto the eyelid margin and terminates at the gray line.[2] Emanating from the medial and lateral borders of the tarsi and anchoring them to the orbital rim are the canthal ligaments.[3]

The indications of eyelid reconstruction are variable. The most common indications are:

1- **Eyelid Tumors:** Basal cell carcinoma (BCC) is considered the first cause.[4] Other tumors include squamous cell carcinoma (SCC), sebaceous cell carcinoma, malignant melanoma and metastatic lesions.
2- **Facial and Eyelid trauma:** either primary or secondary repair.
3- **Eyelid coloboma:** This may be congenital, traumatic or iatrogenic.

BASAL CELL CARCINOMA (BCC)

Approximately 10-15% of skin malignancies involve the lid tissues.[5] BCC is the most common tumor of the lid, and most often the lower lid is involved. Several different clinicopathologic types of BCC exist, each with distinct biologic behavior: Nodular - Cystic, pigmented, keratotic, Superficial, Infiltrative, Micronodular and Morpheaform.[6]

Surgery, in almost all cases, is the recommended treatment, with treatments varying on the basis of cancer size, depth, and location.[7] Modalities used

include electrodesiccation and curettage, excisional surgery, Mohs micrographic surgery (MMS), and cryosurgery.[8]

MMS or standard surgery with frozen section control yield the highest cure rates with the lowest incidence of recurrence.[9] The prognosis for patients with BCC is excellent, with a 100% survival rate for cases that have not spread to other sites and it rarely metastasizes. The recurrence rate is less than 1% for primary (previously untreated) BCCs treated with MMS.[10]

Eyelid and periocular reconstructions

The objectives of eyelid reconstruction include: (1) Development of a stable eyelid margin, (2) Provision of adequate vertical eyelid height, (3) Adequate eyelid closure, opening and corneal protection, (4) Smooth epithialized internal surface of the eyelid and (5) Maximum cosmesis, symmetry and patient satisfaction. The surgeon must put in mind to reconstruct either the anterior or posterior lamella with a graft, but not both; one of the layers must provide the blood supply (pedicle flap).[11]

The exact technique to be used depends on several factors which include the size and orientation of the defect, patient's age, elasticity of the surrounding tissues, vascular supply to surrounding tissues, biologic behavior of the tumor, previous treatment and duration of the wound.[12]

First: Periocular flaps

Various types of flaps can be fashioned in the periocular tissues.

A. Flaps have some degree of their own blood supply and therefore heal faster than grafts.

B. The color and texture is best matched by the use of adjacent skin.[13]

C. Skin flaps do not contract as much as skin grafts.[14]

D. Flaps avoid additional surgery at a remote site.[15]

E. Flap thickness can be varied according to the defect depth.[16]

The various flaps used in the periocular area can be divided into 5 basic types: a. Sliding flap, b. Advancement flap**,** c. Rotation flap, d. Transposition flap **and** e. Island flap.[17]

Second: Grafts

There are numerous substitute graft materials that are available for posterior lamellar reconstruction. These include autogenous tissue (such as free tarsal grafts (FTG),[18] ear cartilage, nasal septal cartilage, or hard palate graft (HPG),[19] preserved human sclera, and synthetic implant material (such as (Goretex) and (Medpor).[20] All free graft materials require an adequate blood supply that can be provided by a myocutaneous flap.[21] The tarsus is replaced either by autologous or heterologous material (allograft) which is an acellular dermal matrix (Alloderm or Rederm) and is fabricated by processing cadaveric skin.[22]

Full thickness skin graft (FTSG) are now frequently used by plastic surgeons as anterior lamella substitutes in eyelid reconstruction surgery, providing tissue with similar colour, texture, and thickness.[23] Surgeons use skin from the postauricular, retroauricular area, the supraclavicular area and the medial surface of the upper arm.[17]

Eyelid defects are classified according to size and location:

- **For young patients (tight lids):**
  *Small - 25-35% *Medium - 35-45% *Large - Greater than 55%
- **For older patients (lax lids):**
  *Small - 35-45% *Medium - 45-55% *Large - Greater than 65%.[24]

Reconstructive Techniques for Lower Lid reconstruction

1-Direct closure: for defects up to one-third of the horizontal length of the eyelid. Direct closure can be augmented with a lateral canthotomy and superior cantholysis if necessary.[25]

2-Semicircular advancement combined with canthal release: is useful for moderately sized defects (25%–50%).[26] This myocutaneous advancement flap allows direct closure of the lid once canthotomy and cantholysis are done.[21]

3- Tarso-conjunctival Transpositional Flap (Hughes Procedure): for defects that comprise more than 50% of the lower eyelid. The best available technique to rebuild the lower eyelid posterior lamella is to borrow the tarsus and its conjunctival blood supply from the ipsilateral upper eyelid.[27-28] A myocutaneous flap can be advanced from the lower eyelid/cheek complex or a full-thickness skin graft may be used.[27] The Hughes procedure sutures the lid shut and requires a second stage of severing the flap, which is performed 4 to 6 weeks later.[29]

4-Tarsoconjunctival Grafts: can be transferred from the upper lid to the posterior lamella of the lower lid,[18] however, the graft must be covered with a vascularized local advancement flap. Other free grafts include HPG, ear cartilage and nasal septal cartilage.[19]

5-Composite Grafts: containing both anterior and posterior lamellae components have been used with some success in defects less than 8 mm in size.[30]

6-Mustarde´ Cheek Rotation Flap: is a large rotation flap with its leading edge at the lateral

canthus extending laterally and arching like a Tenzel flap.[31]

The posterior lamella must be reconstituted with free graft. It is indicated in lower lid defects involving over 75% of the lid margin.[32]

7- Bipedicle flap (Tripier flap): transfers tissue from the upper to the lower eyelid in two stages. The skin bridges medially and laterally remain intact after the first stage and are divided during the second stage 2–3 weeks later.[33]

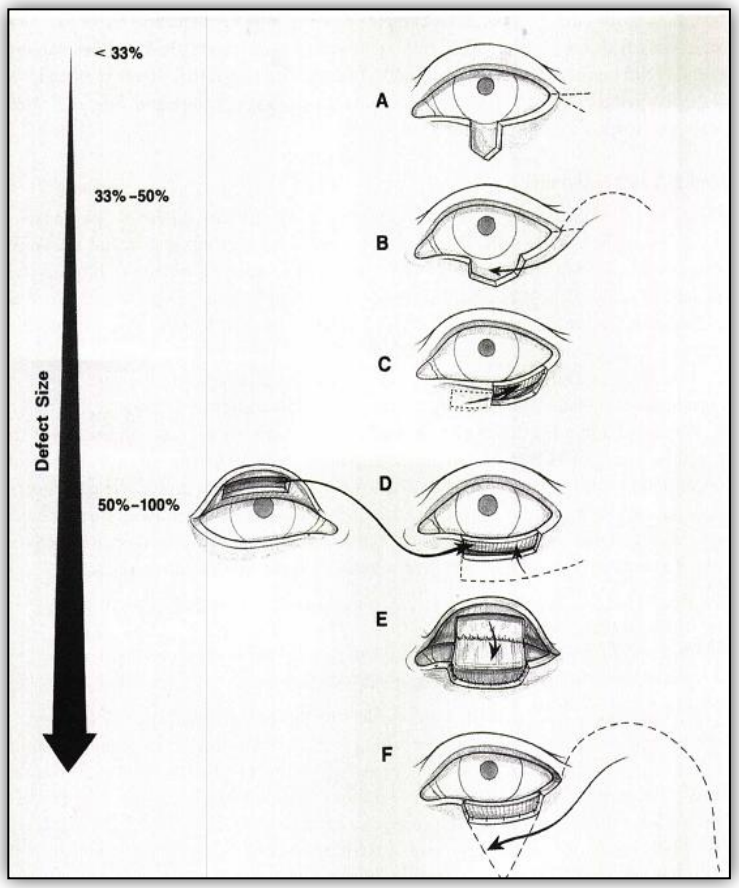
8-Laissez faire (Healing by secondary intention): The tarsus offers a good scaffold for epithelialization and prevents contraction of the wound, giving a good result. Laissez-faire can be especially useful in patients who are post-radiotherapy or have primary skin pre cancerous conditions with poor quality of skin, or in patients who would not tolerate further surgery.[34] Disadvantages of such technique are: 1• Delayed healing, 2• Increased contracture of the scar 3• Increased distortion of the surrounding tissue.[35]

*****complications of lower lid reconstruction:***

- Marginal ectropion
- Lateral tissue sag
- Corneal injury
- Orbital hemorrhage
- Conjunctival scarring
- Upper eyelid instability.[24]

PATIENTS AND METHODS

Figure (1):
Reconstructive options for lower eyelid defects: (A) direct primary closure ± canthotomy and cantholysis; (B) direct primary closure with semicircular flap; (C) Sliding tarsoconjunctival flap with FTSG; (D) free tarsoconjunctival graft and skin–muscle flap; (E) Hughes upper eyelid l flap and FTSG (FTSG not drawn); (F) Mustarde´ flap with free tarsoconjunctival graft.[11]



This study was carried out on thirty eyelids (30) of thirty patients - who had eyelid tumors, trauma or coloboma - attending the outpatient clinic of Ophthalmology Department, Zagazig University Hospitals from June 2010 till May 2012.

They were classified into three groups according to the size of the lesion:

Group (A): This group included 12 cases with 1/3 lower lid defect and reconstructed with direct closure technique ± canthotomy and cantholysis.

Group (B): This group included 10 cases with 1/3 to 2/3 lower lid defect ± canthal extension and reconstructed with Tenzel semicircular flap.

Group (C): This group included 8 cases with subtotal lower lid defect and reconstructions were done using Hughes technique.

The main surgical procedures included:

(1) Complete excision of the tumor lesions with safety margins and was sent for histopathology.

(2) The margins of traumatic and coloboma lid defects are refreshed to have raw surfaces.

(3) The defect size was measured with caliper or ruler.

(4) Reconstruction was started immediately according to the size of the defect.

The following data were recorded:

A-Cosmetic results: The cosmetic results were classified into:

1- **Excellent:** The reconstructed lid was more or less similar to normal contralateral eyelid.
2- **Satisfactory:** The lid had noticeable scar but cosmetic results was satisfactory.
3- **Accepted:** The lid had noticeable scar and change of color of graft or flap but final cosmetic result didn't annoy the patient.
4- **Poor:** The reconstructed lid had unmatched color of the graft or flap or rejection of the graft and the final cosmetic appearance was bad.[36]

B- Functional Results:

The functional results of eyelid reconstruction were classified according to the ability of the reconstructed lid to perform its function (opening, closure of palpebral fissure, tear drainage and protection of globe).[36] We classified them into: normal, limited and lost functional results.

C- Postoperative Complications and recurrence of eyelid tumors: were recorded.

D- Photos: Preoperative, intraoperative and postoperative photos were done routinely after taking consent from the patient for both, photographing and publication in a research.

RESULTS

The range of age for all cases extended from one month of age to 82 years old, while in lid mass patients age distributed from 40 to 80 years old with average of 58.4 years. The peak incidence of age distribution was between 52 and 65 years [17 cases (56.67 %)].

There was no marked sex difference.

In our study we defined the main three causes for lower lid defects, the highest incidence was in tumor resected patients [20 cases (66.67%)] while trauma cases were [8 cases (26.67%)] and congenital coloboma cases were [2 cases (6.67%)].

The lid margin was involved in all cases either by the lesion itself or as a part of safety margin resected.

1- **Size of the defect (table 1):**

The post excisional horizontal length of the defects were measured and recorded. The post excisional size ranged from 4 mm to 30 mm [Table (1)].

2- **Histopathological findings:**

Postoperative histopathological study of all mass lesion cases (20) showed that basal cell carcinoma was found in 16 cases (80%), squamous cell carcinoma in 3 cases (15%), adenocarcinoma in 1 case (5%) and no cases of malignant melanoma. It also showed that complete excision was performed in 18 cases (90%) while involved surgical margins were noticed in only 2 cases (10%).

3- **Type of surgery:**

All mass lesions were excised with 3-4 mm healthy safety margins. The size of the safety margin depended on the size of the lesions.

Eyelid defects were repaired using variable reconstructive techniques:

1- Primary closure was performed in 12 cases for repair of small to moderate lid defects (about 1/3 of lower lid) **(Figure 2).**
2- Tenzel flap was used in 10 cases for reconstruction of moderate to large eyelid defects (about 1/3 to 2/3 of lower lid) **(Figure 3).**
3- Hughes flap was performed in 8 cases for reconstruction of large size lower lid defects (more than 1/2 of lower lid) **(Figure 4).**

4- **Follow up period:**

Most cases had follow up period of 6 months with an average of 4 months. In every visit, the following data were collected and the final results were recorded.

A- **Cosmetic results (Table 2):**

Cosmetic results of lower eyelid reconstructive techniques of 30 patients were collected and recorded in Table (2). Excellent results were found in 19 cases, satisfactory results in 6 cases, accepted results in 4 cases and poor results in 1 case.

B- **Functional results (Table 3):**

Normal functions were noticed postoperatively in 24 cases; limited functions were found in 5 cases and lost in 1 case.

Direct closure technique (± canthotomy or cantholysis) and **Tenzel semicircular rotational flap** technique had the best postoperative functional results while **Hughes** technique had the least functional results.

C- **Post-operative Complications:**

We had 10 treatable post operative complications in 12 out of 30 cases (Table 4). It is noticed from this table that most complications occurred after reconstruction of large sized defects by **Hughes** techniques. On the contrary, the least complications occurred after reconstruction of small sized defects by **direct closure technique.**

Whenever possible (for defects 1/2 – 2/3 of lower lid), it is advisable to use **Tenzel flap** rather than **Hughes flap.**

Table (1): Post excisional size in each subgroup.

size (mm)	Group A	Group B	Group C	Total	
				No.	%
0 - 5	2	-	-	2	**6.67**
6 -10	8	-	-	8	**26.67**
11 - 15	2	6	-	8	**26.67**
16 - 20	-	2	3	5	**16.67**
21 - 25	-	2	3	5	**16.67**
26 - 30	-	-	2	2	**6.67**
TOTAL	12	10	8	30	**100**

A- Lt. Lower lid BCC

B- Tenzel semicircular flap

C- one week post operative

D- 6 months post operative.

A- Traumatic LL defect with failed primary repair.

B- Direct closure with lateral canthal sling**.**

Figure (3): Lt. Lower lid Basal cell carcinoma

C- one week post operative. **D-** 6 months post operative.

Figure (2): Lt. Traumatic temporal lower lid defect.

A- Rt. Lower lid lesion with senile and mechanical ectropion.

B- One week after Hughes flap with skin graft.

C- 4 weeks post operative after division of the flap.

Figure (4): Rt. Recurrent lower lid lesion

Table (2): Cosmetic results in different surgical techniques.

Surgical techniques	Cosmetic results				Total
	Excellent	**Satisfactory**	**Accepted**	**Poor**	
Direct closure ± canthotomy or cantholysis	10	1	1	0	12
Tenzel semicircular flap	5	3	2	-	10
Hughes flap	4	2	1	1	8
TOTAL	19	6	4	1	30

Table (3): Functional results in different surgical techniques.

Surgical Techniques	Functional Results			Total	
	Normal	**Limited**	**Lost**	No.	**%**
Direct closure ± canthotomy or cantholysis	11	1	-	12	40
Tenzel semicircular flap	8	2	-	10	33.33
Hughes flap	5	2	1	8	26.67
TOTAL	24	5	1	30	100

Table (4): Post-operative complications in different subgroups.

Postoperative complications	Group A	Group B	Group C	**Total**
Wound dehiscence	-	1	1	**2**
Ectropion	-	-	1	**1**
Symblepharon	-	1	2	3
Displaced canthus	1	2	1	**4**
Hypertrophied flap	-	2	-	**2**
Epiphora	1	3	4	**8**
ptosis	-	-	1	**1**
Graft rejection & infection	-	-	1	**1**
Graft hypertrophy	-	1	1	**2**
lagophthalmos	-	-	1	**1**

DISSCUSSION

Eyelid reconstruction following tumor resection or trauma is a surgical challenge. The delicate structure of the eyelid with skin, lashes, cartilage and mucosa is unique. Good function of the eyelid is essential for protection of the eye, and enables undisturbed vision.

Without eyelids, the eye will be lost due to dryness and infection. Various methods may be used for lid reconstruction depending on the size and localization of the defect involving the use of

local skin flaps, flaps of superficial temporal fascia or grafts.[37]

In our study, there were 2 cases of congenital lower lid coloboma. They were reconstructed by direct closure (1 case) and Tenzel semicircular flap (1 case). The youngest infant was one month old with 40% lower lid defect.

Due to the unavailability of frozen section biopsies or Mohs' surgery, all our tumor cases were excised with 3-4 mm healthy safety margins. **Kakudo et al.**[38] stated that they resected routinely eyelid BCC with a 5mm safety margin. Margins of 3 mm for BCC and 5 mm for SCC were marked with the skin under tension in the work of **Nemet and associates.**[39]

This was in agreement with **Hamada et al.**[40], who reported that all tumors underwent primary (non-Mohs) excisional biopsy with 4 mm excision margins in 83%, 3 mm in 4%, and 2 mm in 13% of cases. Pathology confirmed 84% complete removal at primary excision.

In the present study, histopathological examinations showed that complete excision of the tumor was performed in 18 cases (90%) while involved surgical margins were noticed in only 2 cases (10%). Although our results are inferior to **Kakudo and his colleagues**[38] who had complete excision in 96% of 49 patients with BCC, ours are better than those of **Nemet et al.**[39] where excision was initially incomplete in 25.4% (123 cases) of all tumors**.**

In our present study, Lower eyelid defects were repaired using variable reconstructive techniques:

Primary reconstruction (± canthotomy or cantholysis) was performed in 12 cases (40%) for reconstruction of small to moderate eyelid resections and the cosmetic results were excellent in 10 cases, satisfactory in 1 case and accepted in 1 case, while all cases showed normal functional results except one with limited function. **(2) Tenzel semicircular flap** was used in 10 cases (33.33%) for reconstruction of moderate to large eyelid defects and the cosmetic results for this technique were excellent in 5 cases, satisfactory in 3 cases and accepted in 2 cases, while their functional results were normal in 8 cases and limited in two cases. **(3) Hughes (tarsoconjunctival) flap** was performed in 8 cases (26.67%) for reconstruction of large size lower lid defects and the cosmetic results were excellent in 4 cases, satisfactory in 2 cases, accepted in one case and poor in another case. Regarding the functional results, they were normal in 5 cases, limited in 2 cases and lost in one case.

In their retrospective series, **Hamada et al.**[40] have been able to close lid defects directly in 72% of cases out of 162 patients without cantholysis and end up with excellent functional and cosmetic results. Similar findings were noticed in the Swedish Mohs study.[41] **Nemet et al.**[39] reported direct closure (± cantholysis) in nearly 54% of primary reconstructed cases and 49% of cases in secondly reconstructed cases.

Saleh et al.[42] used Tenzel flap to reconstruct defects in upper or lower lid ranged from 16-18mm. They reconstructed 14 out of 60 cases, 6 in the upper lid and 8 in the lower lid. They reported that the cosmetic results were excellent in 10 cases, satisfactory in 4 cases, while all cases had normal functional results.

Although FTSG was not used as a separate technique in our study, it worth discussion as it is incorporated as a part of some techniques in the study. The main advantages of FTSG are availability, low metabolic requirement and resistance to trauma.[43]

In our study, we used FTSG in 9 cases (30%) (8 cases with Hughes flap and one case with large defect of anterior lamella of lower lid after reconstruction with Tenzel flap). All grafts were taken from post-auricular skin area. We had some complications following FTSG, graft rejection occurred in one case. Graft hypertrophy (more than 2 mm elevation) developed in two cases. The first case improved without interference while the other needed intralesional steroid injection. **Holmstrom et al.**[44] in a study of 203 cases of eyelid cancers reported application of FTSG in 48.2%. This was in agreement with **Brewitt et al.**[45]

Twelve out of thirty cases in our present case series study had relatively treatable post operative complications. These included wound dehiscence (2 cases), ectropion (1 case), symblepharon (3 cases), displaced canthus (4 cases), hypertrophied flap (2 cases), graft rejection and infection (one case), graft hypertrophy (2 cases), ptosis (one case), lagophthalmos (one case) and epiphora (8 cases).

Wasfy et al.[46] in their study on 34 BCC cases stated that 7 cases (20.6%) showed post operative complications, 4 of them were epiphora. **Hamada et al.**[40] in their 162 cases, reported that there were only minimal complications, granuloma formation 4.1% and trichiasis 2.7%. The most common complication after reconstruction of the eyelids reported by **Nemet and associates** [39] was ectropion, which was seen in 20 cases (4.1%), followed by trichiasis (8 cases), lagophthalmus (6 cases), ptosis (4 cases), and failed graft (3 cases).

Recurrence of the eyelid tumors is one of the most dangerous complications of surgical excision and not reconstructive techniques. In our study, only one case (2.5%) showed recurrence during the follow up period of the study (occurred after 2 months) and needed further management. Moderately or poorly differentiated SCCs are also known to carry a significant risk of invasive spread, recurrence, or metastasis.[48] **Hamada et al.**[40] in their (non-Mohs) 162 cases**,** reported that two-millimeter margins have been shown to be adequate in preventing recurrences for nodular BCCs, and 4 mm for other types of BCC**.** There were three recurrences (4.35%), all in infiltrative tumors.

Using MMS technique, **Malhotra et al.** [48] found five-year recurrence rates of 0% and 7.8% for primary and recurrent periocular BCC, respectively.

CONCLUSION

Proper planning for upper and lower eyelid reconstruction begins with fundamental knowledge of eyelid anatomy and defect size analysis.

While choosing a reconstructive method, the specific function of the area of the eyelid has to be kept in mind. The lower eyelid is for stability. Hence, it must be stabilized well.

The surgeon must perform any appropriate direct closure of the defect whenever possible and tissue characteristics should be matched (color, texture and thickness) as best as possible for flaps and grafts, and flaps should be the first choice.

For defects 1/2 – 2/3 of lower lid, it is advisable to use Tenzel flap rather than Hughes flap.

Development of an aligned and stable eyelid margin is mandatory with maintenance or creation of a "conjunctiva-like" posterior eyelid surface.

Mohs micrographic surgery or at least frozen section techniques are recommended as they maximizes cure with tissue-sparing benefits.

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الملخص العربى

تمثل جفون العين تركيباً معقداً يستدعى تحديات جمة من أجل عمليات إعادة البناء، حيث تلعب الجفون دوراً حيوياً فى حماية مقلة العين من الإصابة والإضاءة الشديدة بالإضافة للمحافظة على سلامة طبقة الدموع التى تغطى سطح العين.

وينقسم جفن العين تشريحياً إلى شريحة أمامية (الجلد والعضلات)، وشريحة خلفية (الملتحمة وغضروف الجفن). وأثناء عملية إعادة بناء الجفون لابد أن يتم إصلاح كليهما للحصول على الوظيفة المثالية للجفون من الحماية والجمال.

إن هذا العمل يهدف إلى تقييم النتيجة الوظيفية والجمالية والرضا النفسي للمريض بعد عمليات إعادة بناء الجفن السفلى باستخدام الطرق المختلفة لإصلاح الجروح الإصابية وبعد استئصال أورام الجفون.

لقد أجريت هذه الدراسة على (30) عيناً لـ (30) مريضاً ممن يحتاجون لعمليات إعادة بناء الجفن السفلى بعد استئصال الأورام بمختلف أنواعها أو الحالات التى تحتاج ذلك بعد الإصابات أو من لديهم ثُلامة خِلقية بالجفون. وقد تم تقسيم الحالات إلى ثلاث مجموعات حسب موضع العيب:

مجموعة (أ) : وتشمل (12) حالة للعيوب الصغيرة بالجفن السفلي (أقل من 3/1 الجفن).

مجموعة (ب) : وتشمل (10) حالات للعيوب المتوسطة بالجفن السفلى (من 3/1 – 3/2 الجفن).

مجموعة (ج) : وتشمل (8) حالات للعيوب الكبيرة بالجفن السفلى (أكثر من 2/1 الجفن).

وفى هذه الدراسة تبين أن حالات أورام الجفون كانت هى الأعلى بنسبة 66,67% (20 حالة)، بينما مثلت حالات إصابات الجفن السفلى نسبة 26,67% (8 حالات)، وحالات الثُلامة الخِلقية للجفون نسبة 6,67% (2 حالات).

لقد تمت عمليات إعادة بناء العيوب كاملة الثخانة للجفن السفلى فى هذه الدراسة كالتالى:

(1) عملية إعادة البناء الأولية (مع أو بدون بَضع اللحاظ أو تفريق اللحاظ) وقد أجريت لـ 12 حالة (للعيوب الصغيرة والمتوسطة).

(2) سديلة تِنزل الهلالية وتمت لـ 10 حالات (للعيوب المتوسطة والكبيرة).

(3) سديلة هيوز وتمت لـ 8 حالات (للعيوب الكبيرة بالجفن السفلى).

لقد لوحظ أن النتائج التجميلية لعمليات إعادة بناء الجفون كانت ممتازة فى 19 حالة، ومُرضية فى 6 حالات، ومقبولة فى 4 حالات، بينما كانت النتائج ضعيفة فى حالة واحدة فقط. أما النتائج الوظيفية فكانت طبيعية فى 24 حالة، ومحدودة فى 5 حالات، ومفقودة فى حالة واحدة فقط.

وبملاحظة المضاعفات بعد العمليات ، وُجد أن هناك 10 أنواع من المضاعفات حدثت فى 12 حالة من أصل 30 حالة قيد الدراسة، ووجد أن الإدماع وحده قد حدث فى 8 حالات منها.

لقد تبين أن معظم المضاعفات حدثت بعد عمليات إعادة بناء العيوب الكبيرة خاصةً باستخدام سديلة هيوز، وعلى العكس من ذلك فإن أقل مضاعفات قد حدثت بعد عمليات إعادة البناء الأولية للعيوب الصغيرة.