Abstract

To show our work of eyelid and periorbital reconstruction over the period Jan. 2000 – Dec. 2005 in Babylon city.

In this outcome study we survey the results of surgeries done on 50 cases of eyelid and periorbital skin loss. We investigated the results and complications.

Most of our work was direct closure with or without canthotomy or reconstructing the defect with the use of local flaps (advancement, Z plasty, Limberg flap and forehead flap). In two of the cases, we used free oral mucous membrane graft to line the skin flap. The results ranged between excellent and acceptable with adequate patient satisfaction with all the results in varied degrees.

This work is a step forward in this task in Babylon city.

Introduction

Reconstruction of eyelid and periorbital skin defects should aim at obtaining full globe protection without visual disruption and restoring the area to an appearance as close to normal as possible[1]. Before Babylon city could have a plastic surgeon, ophthalmologists tackled this job in the simplest of forms. Probably one or two of them did free skin graft to a periorbital area once or twice in his career. It is true that this job was once taken as the work of a faciomaxillary surgeon[2], no such surgeon dare to handle it in Babylon city. In the period Jan. 2000 to Jan. 2003, I could improve the task a bit by increasing the direct lid closures with or without canthotomy. From Jan. 2003 to Dec. 2005 a jump came in where finally specialized plastic surgery had launched in Babylon city and again I had the opportunity to do some joint
work with them. The aim of this study is to display the methods we adopt to close eyelid and periorbital skin defects over the aforementioned period which, we hope, are only first steps in the long march toward acceptable standards.

**Methods**

The study population consisted of 50 patients, 32 males and 18 females (males: females 5:3) all of them had skin loss at the lids and/or the periorbital region due to various causes. In the cases where the defect was due to tumour excision (the great majority) after the initial examination a decision was made regarding the type of excision and plan for reconstruction needed. Regarding the safety margin we followed the famous rule, "surgical excision should remove the entire tumour but at the same time preserve as much normal tissue as possible." ([3]) keeping in mind the classical safety margins for suspected malignant tumors which ranged between 2 and 5 mm for basal cell carcinoma and 10 mm for sequemous cell carcinoma. The rest of the cases where the patient comes with the skin defect already present, here again we put a plan for reconstruction mostly by direct closure with or without local flaps. Surgeries were mostly done under GA in Al-Hilla General Teaching Hospital or in a private hospital in Hilla except few simple cases that were done in our private clinics under LA. The instrument used was the usual ones and fine nonabsorbable suture material was used. Cases were followed up at day 1, removal of stitches, 3 weeks and as needed till a stable result is reached (up to 6 months). Any complication noted is treated in time. We divided the cases into: A. lower lid (anterior lamella and full thickness), B. upper lid (anterior lamella and full thickness). The size of the skin defect in A and B was divided into groups: group 1 (G1) is of 3 – 5 mm horizontal width, group 2 (G2) 5 – 7 mm, group 3 (G3) 7 – 9 mm and group 4 (G4) 9 – 11 mm. C. skin defects at or encroaching on the medial canthus and D. skin defects at or encroaching on the lateral canthus. The size of the defect in C and D was divided into group 1 (G1) equal or less than 5 mm and group 2 (G2) more than 5 mm. The reconstruction was mostly direct closure for small defects and anterior lamellar ones. One fourth of the lid margin can be safely excised pentagonally and directly closed without any harm(fig:3). Simple advancement was needed for larger partial thickness defects that are not involving the conjunctiva. Canthotomy was needed for even larger defects(fig:4). A still larger 2 medial canthal defects were treated by local forehead flaps. One of them was closed with pedicled forehead flap, causing minor distortion of eyebrow(fig:10), and the other one closed with island forehead flap without any distortion of eyebrows(fig:11). A large defect at the lateral canthus and lateral halves of both lids(fig.7) was treated by local cheek advancement flap made Y shaped to create lateral canthus and lateral palpebral fissure. The posterior lamella was reconstructed by a free oral mucous membrane graft. A whole upper lid reconstruction was done using a pedicled local forehead flap with free mucous membrane oral graft (fig.9).
Results

Figure 1: Causes of skin defects
B: due to burn
C: due to congenital causes

Figure 1 the causes of skin defects. 39 cases (78%) were skin tumors, 9 (18%) were due to trauma and one case due to coloboma(c) and one due to burn (b), (2% each).

Table 1 Cases where the skin defects involve only the lid (upper or lower) anterior lamellar (P) or full thickness (F) as groups from G1-G4. It gives immediately the number of defects dealt with of any type.

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<thead>
<tr>
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<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
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<tbody>
<tr>
<td></td>
<td>3–5</td>
<td>5–7</td>
<td>7–9</td>
<td>9–11</td>
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<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
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<tr>
<td>F</td>
<td>3</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>B</td>
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<tr>
<td>P</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>2</td>
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<tr>
<td>F</td>
<td>0</td>
<td>1</td>
<td>2</td>
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Table 2 Cases of the skin defect involve or encroaching on the medial canthus (C) and those on the lateral canthus (D). equal or less than 5 mm (group 1- G1) or more than 5 mm (group 2- G2).

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<tr>
<th></th>
<th>G1</th>
<th>G2</th>
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<tbody>
<tr>
<td></td>
<td>≤5</td>
<td>&gt;5</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>1</td>
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Table 3 Methods of reconstruction.
Table 5 Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>Number of cases</th>
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<tbody>
<tr>
<td>Infection</td>
<td>6</td>
</tr>
<tr>
<td>Ectropion</td>
<td>2</td>
</tr>
<tr>
<td>Lagophthalmos</td>
<td>1</td>
</tr>
<tr>
<td>Epiphora</td>
<td>4</td>
</tr>
<tr>
<td>Dog ears</td>
<td>2</td>
</tr>
<tr>
<td>Bulky lid</td>
<td>1</td>
</tr>
<tr>
<td>Local recurrence of tumor</td>
<td>1</td>
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</tbody>
</table>

The outcome of our work ranged between excellent and satisfactory. Most of our patients were happy or at least satisfied with the results.

Discussion

It is obvious from our results that we preferred the direct (1 step) method which makes use of the surrounding tissues paying attention to the goals of eyelid reconstruction: corneal protection, restoration of the integrity of lid lamellae and improvement of facial symmetry [4], we tried to reach the best with what we can do. Regarding the tumour cases we couldn't follow the "small margin excision [5]" method due to the impractical delay it entails. When the skin defect involves the lid margin, our plan was direct closure with or without canthotomy and if that was not enough we did local flap. When it is away from the lid margin, we usually revert to Z plasty or local flap. We generally did not need to use cartilage graft to substitute for the small posterior lamellar defects which we faced. In the preoperative planning we were very careful to choose local advancement, Z plasty, and Limberg flap wherever possible instead of the (standard) free skin graft [6] to save time and not jeopardize cosmesis. The difficulty of reconstruction of the eyelids arises from the need to reconstruct different supporting and covering structures in a single operation [7]. Regarding the medial canthus, it is an anatomic and surgical entity due to the complexity of its structure and proximal lacrimal drainage apparatus [8]. So its
reconstruction should forestall complications like epiphora [9], drawing of eyebrows together (due to glabellar flap) [10] and careful choice of the skin of the used graft 11 to match colour and texture of skin surrounding the defect area. Regarding Limberg flap, the cause we chose it is the ease of application. It is an effective, quick and simple technique for medial canthal reconstruction. It provides excellent cosmoses and is associated with minimal complications. It can be modified according to the nature of the periorbital skin and the location, size and depth of the defect[12]. These facts are highlighted by the widely written research work on it[13-19]. Forehead flap was found excellent to cover big medial canthal defects and total upper lid loss. Regarding the complications a nearly quarter of cases is not a very high figure relative to other studies[20, 21] especially if we consider that all were cleared by traditional treatment or were simply self limiting.

A: 

Figure 2  A: Young female with a warty lesion at the left medial canthal area, excised and the defect closed directly with Z plasty. B: postoperative result 3 months later.

B: 

(preoperative) (3 weeks postoperative)

Figure 3 Elderly lady with BCC encroaching on the right lower lid margin. The lesion is pentagonally excised with 5mm safe margin and closed directly with out need for canthotomy.
Figure 4: Middle aged male patient with BCC at the central part of right lower lid, managed by pentagonal excision with lateral canthotomy.

Figure 5: A: Old patient with BCC near the right medial canthal region. B: Planning of local limberg flap from the nose. C: 2 weeks postoperatively.

Figure 6: A: Old patient with BCC at the left lateral canthal region. B: Immediate postoperative closure with local limberg flap from the check. C: The result 6 months later.
Figure 7 A: An old man with BCC at the left lateral canthal region involving the nearby lids. B: The resultant defect after excision. C: Free oral mucous membrane graft substituting the conjunctiva. Cheek Mustarde rotational advancement flap substitute the cover. D: Postoperative results 6 months later.

Figure 8 A A young man with post traumatic sever ectropeon of right both eyelids. B: Release and coverage with split skin grafts. C: The result 6 months later.
**Figure 9**

A: A young man with post traumatic loss of whole right upper lid.
B: Elevation of forehead flap, split skin graft coverage of flap donor site, and free oral mucous membrane graft as a lining to the flap.
C: The result 3 months later.

**Figure 10**

A: Old patient with SCC involving most of the nose.
B: 3 months after excision with coverage by split skin graft. Unfortunately, the patient developed a recurrence at the root of the nose.
C: Re-excision of the tumor and elevation of forehead flap.
D: One day postoperatively.
**Conclusion**

We cannot claim that we are offering a high standard of lid and periorbital reconstruction but at least we founded and walked a few steps in the way and are hoping for development in the future. It is found that using simple methods of direct closure with or without canthotomy, making the best use of surrounding tissues, including z-plasty, limberg flap or rotational flap are the most useful ways of reconstruction.

**References**

5. Hsuan JD, Harrad RA, Potts MJ, Collins, Small margin excision of periocular basal cell carcinoma: 5 year