

Reconstruction of Contracted Eyelids: Outcome of Different Procedures of Surgery

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ABSTRACT

Objective To evaluate the different procedures of the reconstruction of post traumatic eyelids contractures with regards to the functional and cosmetic results.

Study design Descriptive case series.

Place & Duration of study Department of Plastic & Reconstructive Surgery at Jinnah Post Graduate Medical Centre (JPMC) Karachi, from 2003 to 2008.

Methodology All patients admitted with eyelids contractures were included. A detailed history was taken. Examination of eyes were done, which included visual acuity and near vision test. Test for tear formation, staining of the cornea for any ulcer or rupture of cornea due to injury, were also performed. Priority was given to vision restoration. Culture and sensitivity of discharge from eye, if any, was also done. Patients were subjected to different surgical procedures.

Results There were total of 30 patients with 16 males and 14 females. The age of the patients ranged from 7 years to 58 years. Excision of lesion and primary closure was done in two patients (6.6%), rotation advancement flap in two (6.6%), release and medium thickness grafting in thirteen (43.3%), release and Wolfe grafting in eight patients (26.7%) and Z plasty in five (16.7%) cases.

Conclusion Medium thickness skin graft is preferred in up to $\frac{3}{4}$ th loss of eyelid thickness and primary closure is appropriate where up to 25% loss is found.

Key words Eyelid contractures, Excision and release of contractures, Reconstruction of lids.

INTRODUCTION:

The eyelids are commonly involved in many types of facial injury. It results in cosmetic as well as functional impairments. Their prompt reconstruction is necessary. A lesion confined to eyelids is seen in only few patients. Scar contractures of the upper and lower or both eyelids, expose the cornea, which is frequently found in burns of the face. This can lead to severe exposure keratitis with permanent impairment or even loss of vision.¹ In Pakistan the increasing ratio of automobile accident, lack of safety measures for house wives and cooks, unchecked

fits in epileptic patients and criminal assault are major causes of this disaster.

The existence of records of eyelid surgery dates as far back as the beginning of the 10th century when surgeons Avicenna and Ibn Roshd in Arabia, expressed the difficulty in vision due to the excess skin folds in the upper eyelid and wanted to excise them. The evolution of eyelid surgery since that time and especially over the last century, has brought about considerable sophistication which is based on improved surgical and anatomical knowledge.²

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The first century Aulus Cornelius Celsus, was probably the first to comment on the excision of the skin of the upper eyelids.³ In 1809 Van Graefe constructed lower eyelid with a cheek rotation flap. His method was modified by Fricke who introduced a procedure for both upper and lower lids

reconstruction, using zygomatic and temporal skin flaps. Many surgeons of the 19th century, tried to use the technique of applying skin grafts which was introduced by Reverdin.⁴ Reconstruction of eyelids can be done by many techniques including local flaps including rotation flaps, transposition flaps, and islands flaps, free grafts, split thickness skin grafts (Thiersch), full thickness grafts (Wolfe) and mucous membrane from nasal or buccal mucosa.⁵

In reconstructive surgery of eyelids all the requirements should be fulfilled to achieve good functional and cosmetic results. This is only possible when skin, mucous and membrane are in right proportion. Composite tissues should be soft and pliable. Contractures as a result of scar should be avoided. Pliability is possible when the skin of the eyelid is used. This study was conducted to document experience of repair of eyelids contractures with various techniques.

METHODOLOGY:

A descriptive case series was performed in the Department of Plastic & Reconstructive Surgery at Jinnah Post Graduate Medical Centre, Karachi from 2003 to 2008. All patients with eyelids contractures due to any cause were included. A detailed history was taken. Examination of eyes was done in all cases. Visual acuity and near vision were assessed. Test for tear formation was also done. Staining of the cornea for any ulcer or rupture of cornea due to injury was also sought. Culture and sensitivity of discharge from eye, if any, was also done. Patients were subjected to different surgical procedures depending upon the extent and type of contractures.

The results of reconstruction were divided into cosmetic results, functional results, lacrimal drainage and blinking. Results were marked as good, satisfactory and unsatisfactory. Complications were categorized into early and late groups. Follow up was done on regular basis in all cases. Descriptive statistics were performed. Frequency and percentages were computed for different variables.

RESULTS:

There were thirty patients with post traumatic contractures of eyelids in this series. There were 16 females and 14 males. The age ranged from 7 years to 58 years with the mean age of 24.7 years. Majority of the cases were due to thermal burns (n=15). Chemical and mechanical injuries were the cause in other cases.

In 13 patients the contractures were released and split thickness graft was applied. Wolfe grafting was done in 8 patients (table I). Cosmetically good results

were found in 10 cases and satisfactory in 19 patients. In one case result remained unsatisfactory. Functionally 15 patients had good outcome (Fig-I & II). In 13 cases satisfactory function was achieved while two were unsatisfactory. The lacrimal drainage in 15 cases was good and satisfactory in others. The blinking was good in 15, satisfactory in 14 cases and unsatisfactory in one case.

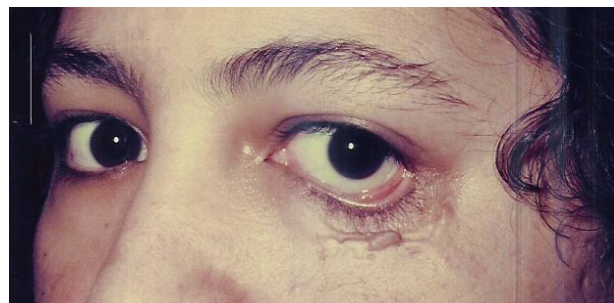


Fig I A Contracture of Left Lower Eyelid.



Fig I B Postoperative view



Fig II A Contracture of Right Lower Eyelid.

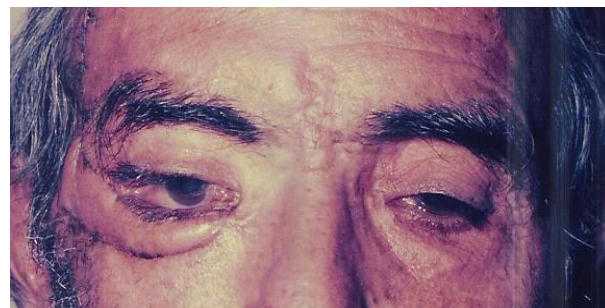


Fig II B Postoperative view

Complications were divided into early and late. In early complications 12 patients had infection, 3

Table II: Late Complications

Complications	At 3 Months	At 6 Months
Conjunctivitis	10	09
	20	21
Epiphora	08	04
	22	26
Keratitis	07	07
	23	23
Contracture of Graft	03	13
	27	17

Table I: Surgical Procedures

Management	Frequency	Percentage
Excision and Primary Closure	02	6.6%
Rotation Advancement Flap	02	6.6%
Release and Medium Thickness Graft	13	43.3%
Release and Wolfe Graft	08	26.7%
Z-Plasty	05	16.7%
Total	30	100.0%

patients had epiphora along with infection. Two cases had infection, epiphora and partial ptosis. Nine patients had no complications. Late complications were noticed at the 3 months and 6 months intervals, which included conjunctivitis, epiphora, keratitis and contraction of the grafts (table II).

DISCUSSION:

In severely burnt male patients, when suitable donor site is not available, the prepuce can provide excellent material for this purpose. It has got a suitable texture and gradation of color.⁶ In older patients with a natural surplus of skin in the upper and lower eyelids and in the area to the outer canthus, it is rarely necessary to look for donor skin elsewhere. In those patients the use of transposition flaps from the forehead or cheek. Although one must know that these flaps may not settle in to the eyelids well, reducing its pliability.⁷ Result of surgery is good when perfect symmetry is obtained. In two cases of this study rotation advancement flap technique was used. The results were cosmetically unacceptable because of bulky tissue. Later debulking was done for better appearance.

Reconstruction of upper and lower lids are considered separately as they are some what

different in structure, but Mustarde opines that this division is useless.⁷ The techniques of reconstruction are virtually inter-changeable. Complete reconstruction of upper lid with the lower lid may be satisfactory in the hands of an experienced surgeon. The reverse however is unacceptable.⁸ The best results are achieved by local flaps. In such situations skin used resembles quality and color of the defect more closely than any other tissue. In 13 patients of present series following release of contracture medium thickness skin grafting was done. In upper eyelid surgery the outcome was good but in some cases re-grafting was done for lower eyelid. In 8 cases where full thickness grafting of lower eyelid was done results were acceptable.

Main sources of rotation flaps are cheek, the glabella and forehead.⁹ With zygomatic cheek flap when adequate undermining and mobilization done, a defect of a length of the palpebral fissure will easily be covered.¹⁰ Transposition flap may be used to remove the position of eye lashes, eye brows or canthi. Two transposition flaps, designed as Z-plasty are extremely useful in releasing contractures or lengthening and changing the direction of unsatisfactory scars.¹¹ Furnas described island flap of skin and soft tissues of naso-jugal fold, based on superior end of angular artery. Disadvantage of this

Disadvantage of this procedure is the need to trim the bulkiness of flap in subsequent stages.⁴ Split thickness grafts contract and are not durable as compared to full thickness graft.¹²

Although medium thick graft (0.014-0.016 inch) is ideal for upper eyelid,¹³ for conjunctival graft some authorities recommend buccal mucosa in comparison to nasal mucosa, because of easy approach.¹⁴ In some cases mucosal graft from hard palate can be used.¹⁵ When source of injury is burn, diagnosis of degree of burn is important. First degree requires cleaning and application of sterile saline with good antibiotic packs every 3 hours during day for two days. In 2nd degree, the treatment is same except vesicle should be opened and dead epithelium removed. 3rd degree need grafting and other procedures of reconstruction. In most cases of present series conjunctiva was not involved thus buccal or nasal mucosa was not used.

In reconstruction of post traumatic eyelids special attention should be given to achieve good functional and aesthetic goals. The functional aspect is considered successful when all the factors are eliminated which cause lagophthalmos, ectropion and entropion or aesthetic aspect. There should be no difference in length and width of palpebral fissure. Color matching and thickness of the lid should be appropriate.

CONCLUSIONS:

Medium thickness skin grafting is ideal for an eyelid reconstruction when there is loss of more than 75%. Rotation advancement flap with undercover of nasal or buccal mucosa is preferred in such cases. In less than 25% loss of lid primary repair is advised.

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