

Etiopathogenesis, management and outcome of Lid Trauma at Sarojini Devi Eye Hospital

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Abstract

Objective: The main objective is to study the causes of eye lid injuries of patients, management of injury and final outcome in terms of functional and cosmetic aspects among the patients attending the oculoplasty department, in Sarojini Devi Eye hospital Hyderabad. **Methods:** This prospective interventional study was undertaken in patients who attended in oculoplasty department, in Sarojini Devi Eye hospital Hyderabad, and diagnosed on the basis of history, clinical symptoms and signs, and try by radiological study. A total of 60 cases of eyelid injuries were studied. **Results:** Eye lid injuries were common in males (57%) and in females (22%), among children male (18%) 1 case were common in case of female children 2 (4%). Most of the eye lid injuries were present in the age group between 20-39 years i.e 25 cases (41%). Among the 60 patients RE 36 (60%) is more common than LE 24 cases (40%), in half of the patients 30 cases (50%) were injured, followed by upper lid 19 (30%), both eye lids were injured in 11 (18%) cases. **Conclusions:** Eye lid trauma was 3 times more common in males than females, in the present study road traffic accidents (48%) were most common cause for eye lid injuries, 48% of eye lid injuries are full thickness without canalicular involvement, most of these injuries are usually associated with other globe injuries, 66.33% of cases were managed with direct closure. Significant injuries with dog bite and with blouse hook while feeding were seen in children these were usually associated with medical canthal and lateral canthal injuries.

Keywords: Eye lids, Injuries, Etiopathogenesis, Lid Trauma

Introduction

Eyes are the very important and delicate structure of human body. Therefore nature gives the full protection by eyelids and bony orbit. Eyelids are the first wall work against the various external injuries to which the eyes are constantly exposed. Road traffic accidents, blasts, falls etc. are the major causes resulting in injuries to eye lids. If repair is performed immediately according to the principal of lid reconstruction, dysfunction and deformity can be avoided. Improper repair of traumatized eyelids results in facial disfigurement and greater insult to eyelids itself [1].

It is the nature of trauma to occur in a variety of ways and often in complex combinations. To approach the problems presented by trauma to the eyelid effectively, the ophthalmologist needs to have not only a thorough training in eyelid and orbital anatomy, but also a firm

knowledge of general approaches to trauma repair that can be intelligently adapted to the needs of each situation [2]. Before attempting the repair of eyelid trauma, thorough systemic and ocular evaluations must be performed and other significant trauma problems resolved. A complete dilated fundus examination is mandatory, since major and minor eyelid trauma may be associated with various ocular problems, including microscopic hyphaema, angle recession, and retinal detachment.

The primary reason for attending to the globe before the lids is to avoid inadvertent pressure applied to the potentially ruptured globe and special care is required when opening the oedematous eyelids[3]. Echinosis and edema are most common presenting signs of blunt trauma. Injuries of eye lids are very common after penetrating facial trauma. Such injuries can vary from simple skin abrasions to more complex cases that have extensive tissue loss and fracture of the underlying

Manuscript received: 8th July 2019
Reviewed: 18th July 2019
Author Corrected: 24th July 2019
Accepted for Publication: 27th July 2019

facial skeleton. A retrospective study was conducted by AlMahmoud et al, according to his study the epidemiology of eye injury requires hospitalization and surgery at a secondary referral center. Majority of injuries occurred at work (50.4%) followed by home (31.2%). Sharp objects (24.1%) and blunt trauma (16.3%) were the most common mechanism of injury.

Eye injury was less during the weekends (Friday and Saturday) and during the summer vacation. Cornea injuries (48.2%) were the most frequent cause for visual acuity deterioration followed by lens/cataract (23.4%). Among injured eyes, 30 eyes (21.3%) retained intraocular foreign bodies [4].

Ekta Syala et al conducted a prospective hospital-based study that included patients of ocular trauma presenting to the Department of Ophthalmology and Emergency, The workplace trauma was the most common mode accounting for 27.5% of the cases and was most commonly sustained by laborers (50.90%).

Metallic objects were responsible in 28.5% followed by vegetative matter (11%). Mechanical trauma was present in 94.5% while 5.5% suffered from chemical trauma. In 94.5% cases with mechanical trauma, 60.5% sustained closed globe injuries and 26% had open globe injuries [5].

The main objective is to study the causes of eye lid injuries of patients, management of injury and final outcome in terms of functional and cosmetic aspects among the patients attending the oculoplasty department, in Sarojini Devi Eye hospital Hyderabad.

Material and Methods

This prospective interventional study was undertaken in patients who attended in oculoplasty department, in Sarojini Devi Eye hospital Hyderabad, and diagnosed on the basis of history, clinical symptoms and signs, and try by radiological study.

A total of 60 cases of eyelid injuries were studied.

Inclusion criteria: The inclusion criteria were the lid conditions requiring surgical reconstruction either by trauma, dog bite, fights, and blouse hook injuries while feeding involving the lid marginal injuries, canalicular injuries and canthal injuries

Exclusion criteria: Exclusion Criteria are the congenital lid defects like coloboma of the lid, tumours of the lid and who are not willing to take photographs.

This study was carried out for two years of period beginning from October 2010 to October 2012. The parameters studied were causes of eye lid injuries, age and gender of the patients, extent of injury and the reconstructive surgical procedures.

Data collection procedure: The relevant data was recorded in already performed case sheets. In that the entire data of injury including mode of injury, time interval between injury and first-aid management taken at hospital was noted.

Most of the details were recorded from the patients as narrated by him or her if they are co-operative. In case of children the information was taken from attendant who was one parent or others.

Method of clinical examination- General information was done to look for injuries other than ocular injuries. All systems were examined. Ocular examination was done, starting from the ocular adnexa with a touch and slit lamp. All patients were underwent comprehensive ophthalmic examination and preoperative evaluation which include

Detailed clinical history

BCVA by Snellen's chart- In slit lamp examination all injuries were examined and documented, including of orbital walls or any other globe injuries if present. Papillary reactions, RAPD, IOP and globe integrity, In all injuries depth, extent of injury was documented and all foreign material was removed to some extent. Wound depth was estimated by gently separating the wound edges with cotton tipped applicator. The eye lid were examined carefully to determine the integrity of the margin, skin and tarsus.

Lacrimal drainage system was examined by syringing, eye lid movements were examined to know the function of levator and orbicularis oculi and other muscles. A saline moistened dressing was placed over the injury until surgical intervention and protective shield to prevent the further injury. Posterior segment examination with direct and indirect ophthalmoscope, 90 D lens in case of clear media.

Investigations- For all patients only a few laboratory tests are needed to complete the evaluation of the patients with lid injury. A complete blood count, serum chemistries are often required for anesthesia purpose.

Coagulation studies are helpful if patients are using anticoagulant medication or vit. K. Ultrasonographic

examination of the contents of the globe, extraocular muscles, orbit and optic nerve is often helpful. For all cases where the cause of injury is external object X-ray orbit was taken to rule out presence of any orbital fracture. CT scan was recommended for exact localization of site of fracture and also to know the extent of fracture. For all cases in addition to careful evaluation and surgical planning we counseled patient about intra-operative and post operative complications and advised to stop anticoagulants if they were on treatment.

Anti tetanus prophylaxis 1.5 ml IM to all patients was given who have not received for past 10 years, others is for rabies if the cause is dog bite 20-40 IU/kg bwt, and again 3,7,14 and 28 days later. Antibiotic prophylaxis was given to all patients.

General surgical considerations- All surgical procedures were done under local anesthesia directly in to the lids or peribulbar anaesthesia, if the patient is a child under GA.

Simple lacerations were repaired with simple direct closure with 6-0 vicryl, without tension complicated lacerations were repaired with interrupted sutures and was maintained correct re-approximation of the wound edges in correct anatomical position and was maintained approximate tension.

Eye lid marginal lacerations repaired by 3-suture technique with 6-0 absorbable suture material. Eye lid

injury with minimum tissue loss was repaired and sutured in a layer by layer with 6-0 absorbable suture material meticulously after freshen up the lid margins. Eyelid injury with moderate tissue loss in upper and lower lids were repaired by advancement of lateral tissue or by canthotomy or by cantholysis.

Eye lid injury with large defects- in upper and lower lids were repaired by lid sharing procedures culter-bearing procedure. In lower lid defects were repaired by sharing procedure like mustarde operation in two stages.

All patients were treated post operatively with topical and systemic antibiotics and anti inflammatory agents to control the inflammation.

Follow up of every case was done on first post operative day, first week, and 6 weeks. During each visit uncorrected and best corrected visual acuity, slit lamp examination, lid movements, lid marginal alignment and complications were noted.

Based on extent and depth of eyelid involvement the patients were classified in to

- Partial thickness eyelid injuries
- Full thickness eyelid injuries with canalicular lacerations
- Full thickness eye lid injuries without canalicular lacerations.

Results

We have observed road traffic accidents as most common cause.

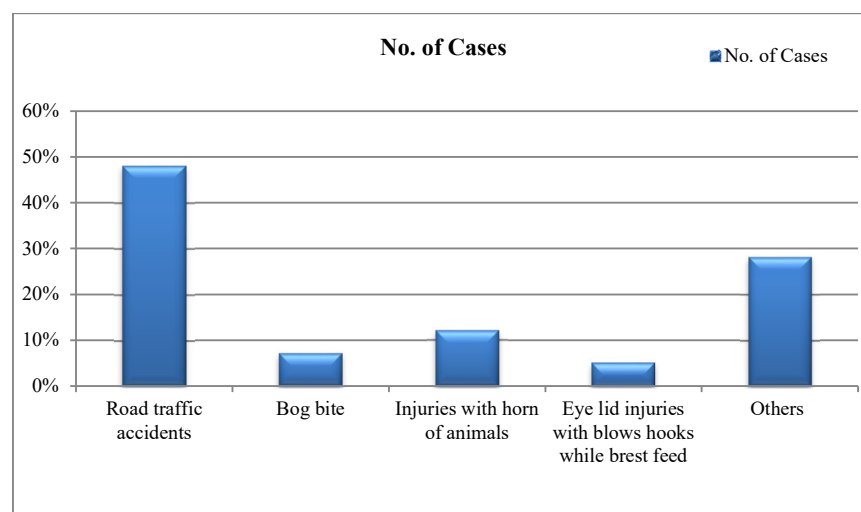


Figure-1: Distribution of patients according to the etiology

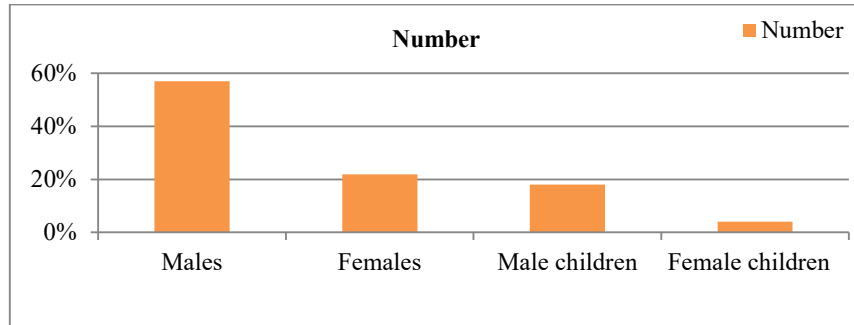


Figure-2: Sex wise distribution

Eye lid injuries were common in males (57%) 34 cases than females (22%) 13 cases among children male children (18%) 11 cases were common than female children 2 (4%).

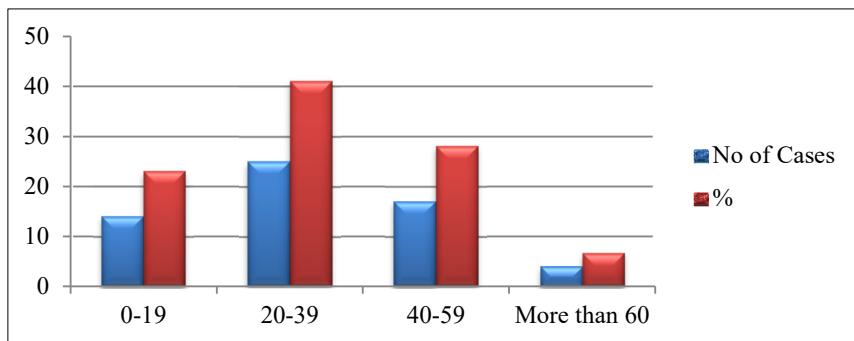


Figure-3: Age wise distribution

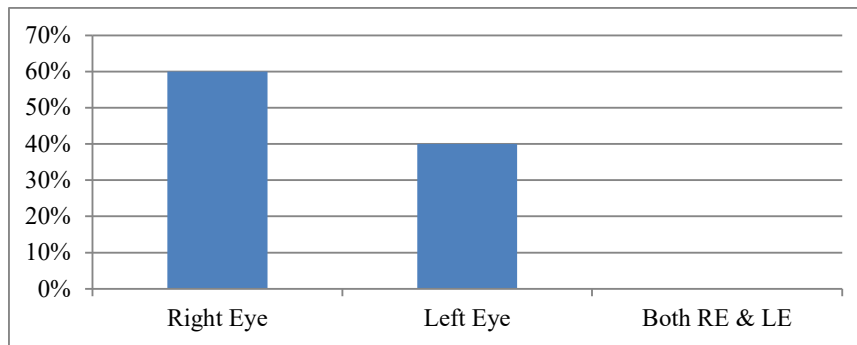


Figure-4: Laterality of Injury

Among the 60 patients RE 36 (60%) is common than LE 24 cases (40%)

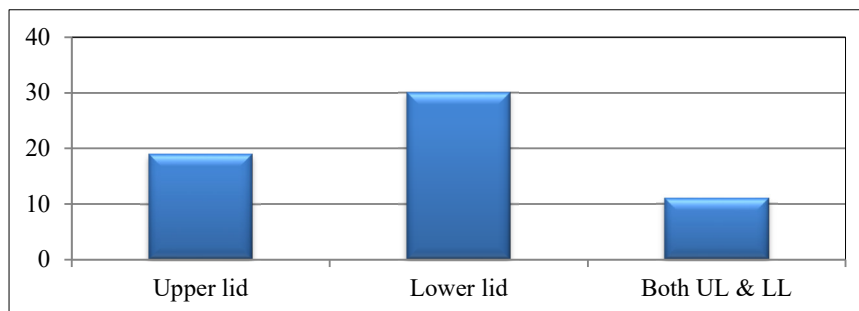


Figure-5: Lid wise distribution

Among the 60 patients in half of the patients 30 cases (50%) were injured, followed by upper lid 19 (31%), both eye lids were injured in 11 (18%) cases.

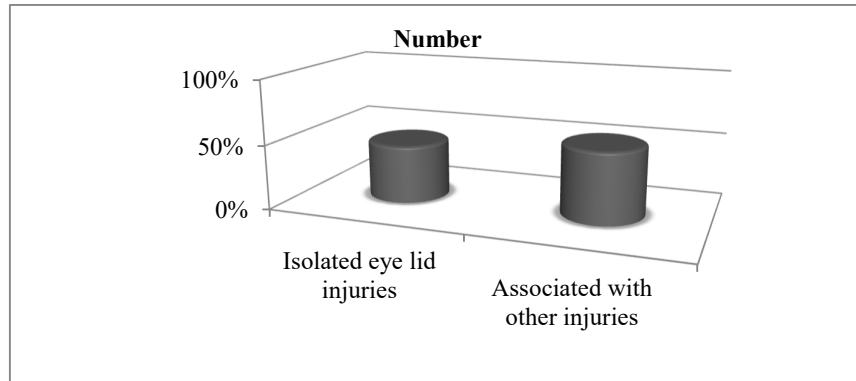


Figure-6:Associations of eye lid injuries

In the present study eye lid injuries are presented as isolated eye lid injury and associated other eye injuries

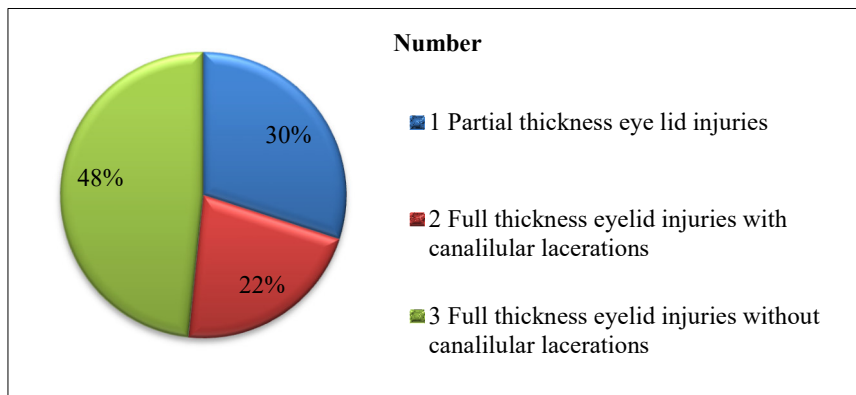


Figure-7: Shows distribution according to the extent of injury

In this series 48% (29 cases) of eye lid injuries were full thickness without canalicular lacerations, 30% (18) cases were partial thickness eye lid injuries and 22% (13) FT with canalicular lacerations

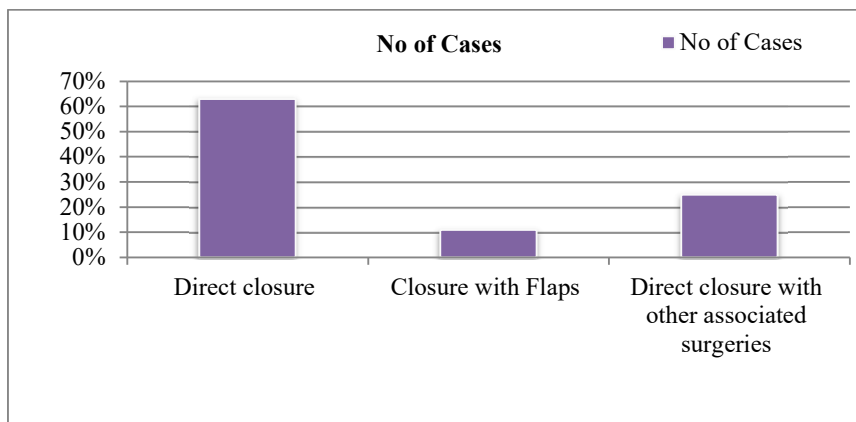


Figure-8:Distribution according to the management

38(66.3%) cases were managed with direct closure. 71 (11.66%) cases were managed with flaps, 15(25%) cases are managed with direct closure and associated with other surgeries.

Table 1: Distribution according to the visual outcome distribution

	Isolated eye lid injuries		Associated with other injuries	
>6/12	21	77%	20	60%
<6/12-1/60	6	23%	9	28%
<1/60	0	0	4	12%

BCVA > 6/12 in isolated injuries was 77% (21) associated with other injuries was 60% (20). BCVA 6/12 – 1/60 in isolated eye lid injuries 6 cases (23%) in associated with other injuries

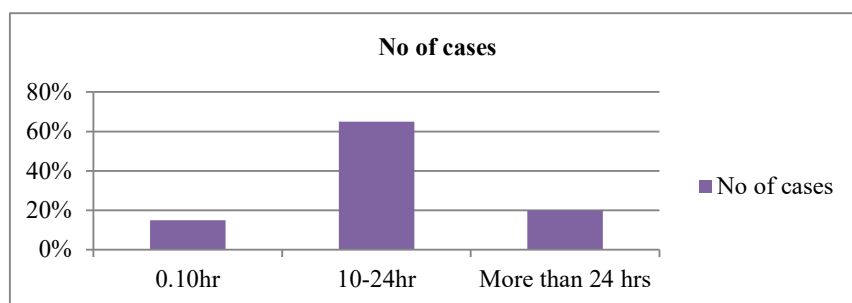


Figure-9: Distribution according to the arrival of the patients in to the hospital

9 cases (15%) were attended to the hospital for primary repair, within 10-24 hours 39 cases (65%) were attended and more than 24 hours, 12 patients (20%) were attended.

Discussion

In the present study, out of 60 cases, 25 (41%) cases were in 3rd decade. In Nigerian study 30% of people were in 3rd decade of life. The difference in incidence was due to referral bias [6].

In the present study, incidence in male was in 34 cases (57%) and female was in 13 cases (22%) this infers male predominance in the present study. These results were similar to study conducted by Milind Naik [7]. The incidence of lid injuries was more in male children (18%) than female children (4%). In the present study association of lid injuries with globe injury was seen in 17 cases (28.33%). The results were similar to study conducted by Milind Naik (25%) In the present study, RE injuries were common 36 cases (60%) than LE injuries 24 cases (40%), half of the patients (50%) presented with lower lid injuries. Upper lid injuries were seen in 19 cases (31.66%). Both UL and LL were injured in 11 cases (18.335).

In epidemiological study on eye lid injuries the incidence of upper lid injuries was 47.22% lower lid was 30.55% and both lid injuries was in 22.22%. In the present study, main etiological factor causing eyelid injuries was Road traffic accidents, which was seen in 29 cases (48%) followed by dog bite in 4 cases (7%) injuries with horn of animals in 7 cases (12%), and injury with blouse hook in 3 cases (5%) injuries with

blouse hook were seen while breast feeding. But in Nigeria study RTA causing lid injuries were only 27.3% the high incidence of road traffic accidents causing eye lid injuries in the present study infers that in our area, the road traffic accidents are more common than other areas because of ignorance, illiteracy and in obedience of road traffic rules and regulations[6].

In the present study according to the extent of injury, we found that full thickness eye lid injuries without canalicular lacerations were 29 cases (48%), followed by partial thickness eye lid injuries in 18 cases (30%) and full thickness eye lid injuries with canalicular lacerations were 13 cases (22%). Milind N. Naik and et al. conducted a study and reported that 36% canalicular involvement in all eye lid injuries [7].

In the present study, 3 cases (75% of dog bite cases) were associated with canalicular injury. Kennedy and associates also reported dog bites and scratches as common cause for canalicular injuries [8].

In the present study, 38 cases (63%) were managed with direct closure. Similarly in Nigerian study, 60.6% of cases were managed with direct closure. Herzum and et al [9] have conducted a study on eye lid injuries and epidemiological aspects, in their study they stated that 55.55% of cases were managed with direct closure

In the present study 7 cases (11.66%) were repaired with flaps. Kennedy et al in their study revealed the 31 closure with flaps was done in 21% of cases [8].

In the present study, direct closure of lid injury along with the repair of other injuries was done in 10. Cases (16.66%), Canalicular repair was done in 5 cases (8.33%). According to Fang Bai [10] canalicular repair was done in 5% of cases.

In the present study out of 60 patients on follow up we observed ectopion in 3 cases which were managed by secondary surgical procedure. Keloid was found in 2 cases. Epiphora was noted in 1 case after canalicular repair with stent. Evisceration was done for 5 cases to prevent sympathetic ophthalmitis, in those presented with open globe injury with visual acuity PL-VE.

In the present study visual outcome was not much effected except in eye lid injuries associated with globe injuries. Several studies on primary canalicular injuries found a similar trend and showed that the single lower canalicular involvement was the most common, followed by single upper canalicular involvement and bicanalicular involvement[11-14].

BCVA equal to or better than 6/12 was observed in 21 cases (77%) of isolated eye lid injuries and BCVA < 6/12-1/60 was noted in 6 cases (23%) of isolated eye lid injuries. BCVA < 6/12-1/60 was seen in 9 cases (28%) of associated globe injury.

BCVA < 1/60 was seen in 4 cases (12%) of associated globe injuries. BCVA equal to or better than 6/12 was seen in 20 cases (60%) of associated globe injuries.

Conclusion

All age group are involved but incidence of eye lid trauma is more in age group of 20-39 yrs (41.6%). Eye lid trauma was 3 times more common in males than females, in the present study road traffic accidents (48%) were most common cause for eye lid injuries, 48% of eye lid injuries are full thickness without canalicular involvement, most of these injuries are usually associated with other globe injuries, 66.33% of cases were managed with direct closure. Significant injuries with dog bite and with blouse hook while feeding were seen in children these were usually associated with medical canthal and lateral canthal injuries. Adequate primary repair of the lid injury gives the most satisfactory result and meticulous lid repair is mandatory for lid injuries for cosmetic and function of the eye lid.

Author Contribution:

Dr. M. Santha: Manuscript writing and provided data accumulation.

Dr. Modini Pandharpurkar: Monitoring and guidance of the work. Both authors reviewed the final manuscript.

Funding: Nil, **Conflict of interest:** Nil

Permission from IRB: Yes

Ethical approval: The study was approved by the Institutional Ethics Committee

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How to cite this article?

Pandharpurkar M, M. Santha. Etiopathogenesis, management and outcome of Lid Trauma at Sarojini Devi Eye Hospital. *Trop J Ophthalmol Otolaryngol.* 2019;4(3):250-257.doi:10.17511/jooo.2019.i03.12

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