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# Journal of the Ophthalmological Society of Bangladesh

**Volume- 37, Number- 2, December 2010**

# Journal of the Ophthalmological Society of Bangladesh

## Executive Committee
## 2009 & 2010

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**FREE PAPERS**

From the desk of Editor in Chief

# Study on Cataract Surgery

Cataract is the most common cause of blindness in both male and female subject. Cataract is the leading cause of disability of people in their day to day activities also. Cataract thus has substantial efforts on the quality of life of people in their working years. Cataract makes people absent from work and loss of earnings ultimately affect eye heath care and economy of the country.

More over rural, illiterate and under-privileged people are not fully aware about various interventions that are available to restore vision of the curable blind and also eye care services are less existing at the community level. There are many researches and publications performed on this issue in different countries. Various study in our country on the proper management of cataract may help to gather much information and play an important role to find out possible practical intervention for the mass people.

**Dr. Md. Mahbubar Rahman**
Editor in Chief

Asso. Professor
Lions Eye Institute and Hospital
Dhaka

From the desk of Executive Editor

# Ocular Emergencies

Prompt recognition and appropriate treatment of ocular emergencies are essential in the primary care setting when the outcome may depend on timely management. All ocular emergencies, including a penetrating globe injury, retinal detachment, central retinal artery occlusion, acute angle-closure glaucoma, and chemical burns, should be referred immediately to the emergency department or an ophthalmologist. Careful eye examination and simple tests can help primary care physicians make decisions about appropriate treatment and referral. All patients with eye problems should be tested for visual acuity and ocular movements. Confrontation visual field examination, pupillary examination, and direct ophthalmoscopy of both eyes also should be performed. Ocular injury from high-velocity trauma or from chemicals may be easily misdiagnosed. After a chemical burn, thorough eye washing for at least 30 minutes or until the pH of the eye is within physiologic range is critical to prevent further damage. Use of an eye shield is required in patients with a ruptured globe to protect the injured eye and preserve the patient's vision

**Dr. Masum Habib**
Executive Editor

Asst. Professor
National Institute of Ophthatmology & Hospital
Dhaka

# Contrast sensitivity markedly diminished in amblyopic eye and remain diminished even after improvement of visual acuity with occlusion therapy

*Dr. Khair Ahmed Choudhury*

**Abstract**

***Purpose :*** *To investigate the contrast sensitivity on the amblyopic eye, fellow eye of amblyopic and successfully treated amblyopic subjects and to compare them with the age matched normal subjects.*

***Methods:*** *This study was carried out in Pediatric Ophthalmology and Strabismology unit, Al-Shifa Trust eye Hospital, Rawalpindi, Pakistan between the period June 2006 to Nov 2006. Contrast sensitivity was tested mono ocularly on both eyes of 17 amblyopic subjects, age ranges between 6-14 Years, and all were either unilateral or bilaterally amblyopic. Pelli-Robson chart was used to record the contrast sensitivity and 17 normal (34 eyes) subjects were used as age matched controls. Inclusion criteria were visual acuity in amblyopic eye 3/60 or better, no signs of congenital, latent or manifest nystagmus on clinical examination.*

***Results:*** *Contrast sensitivity functions from the fellow eye of the 17 amblyopic patients, who had never been treated with occlusion therapy before were significantly decreased compared with control subjects. This diminished in contrast sensitivity functions remains diminished even after success fully treated with occlusion therapy. This decreased in contrast sensitivity also depends upon the severity of visual status.*

***Conclusion:*** *Non amblyopic normal eye of amblyopic patients behaves abnormally when evaluated for contrast sensitivity functions. Neither the amblyopic eye nor the fellow eye of successfully treated subjects was comparable with controls. Fellow eye of amblyopic patients with poor contrast sensitivity rather could be a threat of developing occlusion amblyopia. The assessment of contrast sensitivity can provide important information on the visual function and the influence of occlusion therapy in amblyopia.*

## Introduction

Amblyopia is an impairment of vision arising from dysfunction of processing of visual information caused by degradation of the retinal image during a sensitive period of visual function.

Snellen distant visual acuity – a highly contrast chart is usually used to evaluate the visual function in amblyopia. The amblyopic eye is found to have decreased and the fellow eye normal visual acuity. Generally it is assumed on this basis that the non amblyopic eye is "normal" because visual acuity is normal. This assumption is so prevalent that the fellow eye of patients with amblyopia is by convention is referred to as the 'Good' or 'sound' or fixating eye. When other visual performance

Assistant Professor (C.C), Department of Ophthalmology, Sylhet MAG Osmani Medical College Hospital

was tested several studies have reported on the finding of impaired visual function of the 'Good' eye of the amblyopic subjects[1-4]. Contrast sensitivity is an additional parameter of visual function that measures the ability of the eye to discern sinusoidal gratings over a range of spatial frequencies that vary in order of decreasing contrast.

The ability to detect objects at low contrast (contrast sensitivity) is a fundamental aspect of visual performance and is closely related to the ability to perform tasks such as driving,[5-6] reading[7-10] and navigation.[10-13] Evidence also suggests that contrast sensitivity may help in detecting and monitoring ocular diseases such as glaucoma,[14] cataract[15] and optic neuritis.[16] Contrast sensitivity can also be used in evaluating outcomes of refractive surgery.[17] Measuring contrast sensitivity provides additional information on the quality of vision and as such is recommended for use in low vision clinics.[18]

Contrast sensitivity function (CSF) has been studied in amblyopia[19-21] and several researchers reported on subnormal performance of the "sound" eye in amblyopia when tested for contrast sensitivity [22-24], although other studies reflect the prevailing assumption that the fellow eye represents normality.[25].

The effect of occlusion therapy on CS of the fellow eye of amblyopic subjects, though remains controversial [22,26,27]. This study focuses on the assessment of CS in the non amblyopic eye of patients with amblyopia having under gone therapeutic occlusion and also comparing them with that of normal age matched control.

## Method

This study was carried out between June 2006 to Nov 2006, at Al-Shifa Trust Eye Hospital, Rawalpindi, Pakistan. Contrast sensitivity was tested monocularly on both eyes of 17 amblyopic patients. Pelli-Robson contrast sensitivity chart was used to record the CSF. The Pelli–Robson chart is wall mounted (measuring 60x85 cm) and viewed at 1 m, with the subject wearing an addition of +0.75 DS (appropriate addition for the screen distance) over the distance refractive correction. The chart uses the 10 Sloan letters, with constant size. The letters are arranged in 16 triplets over 8 lines, where each line consists of 2 sets of triplets all of constant size. Each triplet of letters has the same contrast in the Pelli–Robson chart.

Testing took place in a quiet clinical room. Illumination was provided for the room by overhead fluorescent tubes. No local lighting was used in order to ensure a minimum shadow in the room.

Patients were asked to read all letters starting with the highest contrast letters. Subjects were encouraged to guess and sufficient time was given to read each letter. Patients were reminded not to move closer to the chart; however, head movements sideways were allowed. A response of a letter "C" for an "O" or vice versa was marked correct.

The Pelli–Robson test (Haag–Streit, Harlow, UK) was wall-mounted and patients were tested at 1 m. Pelli–Robson scoring sheets were used to determine the contrast sensitivity. The "letter-by-letter" scoring system was used, whereby each letter correctly identified was scored as 0.05 log units (except for the first triplet, where contrast is 100%).[28] Testing ended when the patient missed two of three letters in a triplet

Subjects with at least visual acuity with 1/60 in each eye were included in the study and as the optotypes are English alphabets so below 6 years subjects were not included in the study. Other inclusion criteria were no signs of congenital latent or manifest nystagmus on clinical examination.

All subjects underwent a complete ophthalmic and orthoptic examination. Refractive error corrected with cycloplegic retinoscopy at a visit before testing the contrast sensitivity. Additional criteria

included were intereye acuity difference of at least 2 lines of snellen visual acuity.

Informed consent was taken from patient's guardian. Subjects were divided in 2 groups. The control group (Group – 1), consisted of 17 normal subjects with 34 eyes and was used to obtain an age-matched baseline curve for CSF values. The control group met the following criteria: (1) Best corrected visual acuity of 6/6 in each eye (2) No manifest deviation noted on cover test and heterophoria less than 10 , binocular vision better than 60 seconds/arc on Titmus steriopsis test.

17 amblyopic subjects, comprised group 2, those never went before for occlusion therapy trial of the better eye, contrast sensitivity was recorded before starting occlusion therapy and also at each follow up usually at 6th week, 12th week. Depending on

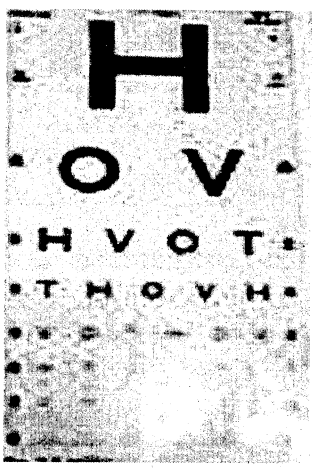



Fig : 1, Pelli - Robson chart

the age of the patient and type and depth of amblyopia full time/part time or full time subsequently tapered to part time occlusion was prescribed. Occlusion consisted with standard opaque patch. The duration and type of patching was determined by the degree of amblyopia and the age at onset of treatment.

## Results

In my study out of 17 amblyopic subjects (Gr-2) and 17 control (Gr-1), the total 12 (70%) were male and 05 (30%) female in Group – 1 whereas 10 (58%) and 07 (42%) respectively in Group – 2, that is also showed by pie chart - 1. Regarding the distribution of age between 6 to 10 years of age 11 (65%) and between 11 to 14 years it is 6 (35%) in Group – 1 and 12 (70%) and 05 (30%) respectively in group-2. The statistical comparison of age between the two groups is paired 't'test the't'= 0.41 and the 'p' value is >0.3. The best corrected visual acuity (BCVA) of the amblyopic eyes during starting the occlusion therapy was better than 6/18 = 4(23.5%), between 6/18 to 6/60 = 11 (65%) and less than 6/60 = 2 (11.5%) (Table – 3).

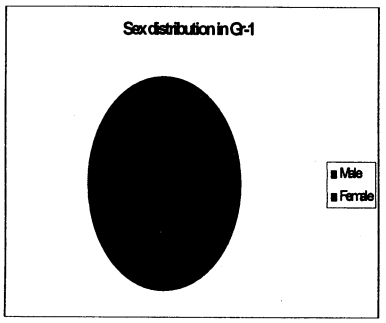
CSF from the amblyopic eye of the 17 amblyopic subjects (group-2), were found to be decreased compared with control subjects. Evaluation of the fellow eye of the 17 amblyopic subjects of group 2 also showed depressed CSFs compared with controls ($t = 6.861$, $p < 0.001$) (Table – 4).

Contrast sensitivity testing from the fellow eye of the 13 subjects (Table-5) that showed improvement in follow up period, showed better values in visual acuity but no significant improvement in CSFs, rather they were significantly decreased compared with the CSFs of normal subjects.

***Table -1, Sex distribution***

| Sex | Number in Group 1 | Number in Group 2 | % in Gr-1 | % in Gr-2 |
|---|---|---|---|---|
| Male | 12 | 10 | 70 | 58 |
| Female | 05 | 07 | 30 | 42 |
| Total | 17 | 17 | 100 | 100 |

**Pie chart – 1, Sex distribution:**



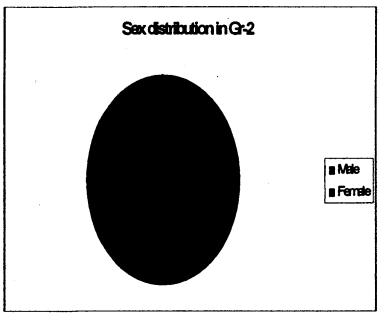




***Table -1, Sex distribution***

| Age in years | Number in Group 1 | Number in Group 2 | Statistical difference from control(t, p) |
|---|---|---|---|
| 6-10 | 11 (65%) | 12 (70%) | t = 0.41, |
| 11-14 | 06 (35%) | 05 (30%) | p>0.3 |
| Total | 17 (100%) | 17 (100%) | |
| Mean (SD) | 11.67 (2.88) | 11.22 (3.07) | |

It was observed in 4 cases no improvement in the visual acuity as well as CSFs, all were above 11 years that reflect the fact that latter the age of starting occlusion therapy less chance of improvement in visual acuity. In rest cases at least some improvement in visual acuity was found but no change of CSF, except in one case (Patient number – 7) where some improvement with CSF was observed along with improvement of visual acuity. It was also observed that those who were with poor CSF in presenting vision had less improvement with occlusion therapy.

Statistically it was found significant improvement of visual acuity after occlusion therapy. Student paired't' test showed the t = 6.816, p<0.001.Table - 6 showed the contrast sensitivity of the control group which is found much better than even the fellow nonamblyopic "good" eye of the amblyopic subjects. Statistical comparison of the right versus left eye of the control with paired't'-test (t =0.52, p = 0.6 ) showed no statistical differences between the two eyes that indicates any eye can be compared as control. Table – 7 and the bar diagram showed the types of amblyopia among the Group -2, where it is showed that strabismic amblyopia was found 6, anisometropic – 6, both strabismic and amblyopic = 2 and isoemetropic = 3.

**The column showing the age distribution**

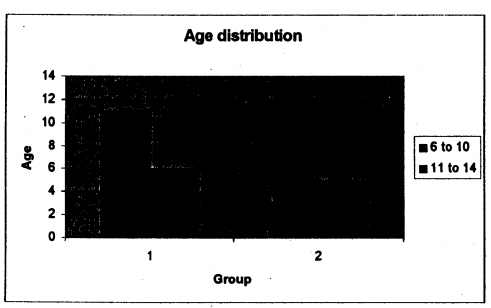



***Table – 3, BCVA in the amblyopic eye***

| Visual acuity | |
|---|---|
| > 6/18 | 4 (23.5%) |
| 6/24 to 6/60 | 11 (65%) |
| <6/60 | 2 (11.5%) |

**Pie chart – 2, BCVA in amblyopic eye**

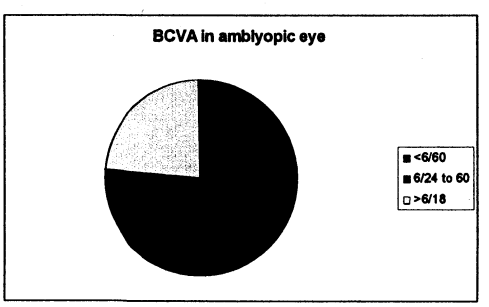


*Table – 4, Contrast sensitivity in Group 2 at Ist visit (Before starting Occlusion therapy)*

| Sl Number of the Pt | Better Eye | | Worst Eye | |
|---|---|---|---|---|
| | CSF | Visual Acuity | CSF | Visual Acuity |
| 1 | 1.65 | 6/7.5 | 1.5 | 6/18 |
| 2 | 1.65 | 6/6 | 00 | 1/60 |
| 3 | 1.50 | 6/6 | 1.50 | 6/60 |
| 4 | 1.65 | 6/6 | 0.45 | 3/60 |
| 5 | 1.35 | 6/15 | 1.35 | 6/15 |
| 6 | 1.65 | 6/6 | 1.50 | 6/60 |
| 7 | 1.20 | 6/9 | 1.05 | 6/36 |
| 8 | 1.50 | 6/6 | 1.35 | 6/24 |
| 9 | 1.65 | 6/12 | 1.50 | 6/24 |
| 10 | 1.05 | 6/48 | 1.05 | 6/48 |
| 11 | 1.65 | 6/6 | 1.50 | 6/12 |
| 12 | 1.65 | 6/18 | 1.50 | 6/36 |
| 13 | 1.50 | 6/7.5 | 1.20 | 6/18 |
| 14 | 1.50 | 6/6 | 1.35 | 6/18 |
| 15 | 0.90 | 6/18 | 0.75 | 6/18 |
| 16 | 1.65 | 6/6 | 1.50 | 6/12 |
| 17 | 1.50 | 6/6 | 1.35 | 6/12 |

*Table – 5, Contrast sensitivity in Group 2 at 3 months of follow up (After starting Occlusion therapy) :*

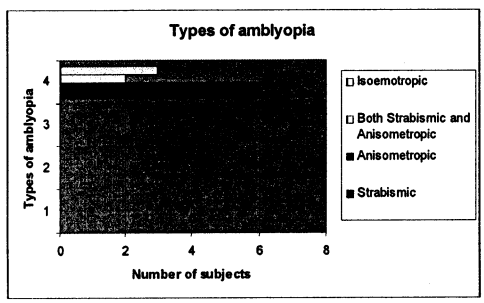
| Sl Number of the Pt | Better Eye | | Worst Eye | |
|---|---|---|---|---|
| | CSF | Visual Acuity | CSF | Visual Acuity |
| 1 | 1.65 | 6/7.5 | 1.5 | **6/12** |
| 2 | 1.65 | 6/6 | 00 | 1/60 |
| 3 | 1.50 | 6/6 | 1.50 | **6/36** |
| 4 | 1.65 | 6/6 | 0.45 | 3/60 |
| 5 | 1.35 | **6/6** | 1.35 | **6/6** |
| 6 | 1.65 | 6/6 | 1.50 | 6/60 |
| 7 | 1.20 | **6/6** | **1.35** | **6/18** |
| 8 | 1.50 | 6/6 | 1.35 | **6/12** |
| 9 | 1.65 | 6/12 | 1.50 | **6/12** |
| 10 | 1.05 | 6/48 | 1.05 | 6/48 |
| 11 | 1.65 | 6/6 | 1.50 | **6/6** |
| 12 | 1.65 | 6/18 | 1.50 | **6/18** |
| 13 | 1.50 | 6/7.5 | 1.20 | **6/12** |
| 14 | 1.50 | 6/6 | 1.35 | **6/9** |
| 15 | 0.90 | 6/12 | 0.75 | **6/12** |
| 16 | 1.65 | 6/6 | 1.50 | **6/6** |
| 17 | 1.50 | 6/6 | 1.35 | **6/6** |

***Table – 6, Contrast sensitivity in Group 1 (Control):***

| Sl. Number of the subject | Rt Eye | | Lt Eye | |
|---|---|---|---|---|
| 1 | 1.70 | 6/6 | 1.70 | 6/6 |
| 2 | 1.75 | 6/6 | 1.75 | 6/6 |
| 3 | 1.65 | 6/6 | 1.65 | 6/6 |
| 4 | 1.75 | 6/6 | 1.75 | 6/6 |
| 5 | 1.75 | 6/6 | 1.75 | 6/6 |
| 6 | 1.65 | 6/6 | 1.65 | 6/6 |
| 7 | 1.70 | 6/6 | 1.70 | 6/6 |
| 8 | 1.70 | 6/6 | 1.70 | 6/6 |
| 9 | 1.70 | 6/6 | 1.70 | 6/6 |
| 10 | 1.75 | 6/6 | 1.75 | 6/6 |
| 11 | 1.65 | 6/6 | 1.65 | 6/6 |
| 12 | 1.70 | 6/6 | 1.70 | 6/6 |
| 13 | 1.70 | 6/6 | 1.70 | 6/6 |
| 14 | 1.70 | 6/6 | 1.70 | 6/6 |
| 15 | 1.65 | 6/6 | 1.65 | 6/6 |
| 16 | 1.70 | 6/6 | 1.70 | 6/6 |
| 17 | 1.70 | 6/6 | 1.70 | 6/6 |

***Table – 7, Type of amblyopia:***

| Type | Number of subjects |
|---|---|
| Strabismic | 6 |
| Anisometropic | 6 |
| Both Strabismic and Anisometropic | 2 |
| Isoemotropic | 3 |




**Bar diagram showing Types of Amblyopia**

## Discussion

This study shows that the "good eye" of patients with amblyopia, whether they been treated with occlusion therapy or not, performs sub normally when tested for contrast sensitivity. Furthermore, neither the affected nor the fellow eyes of those subjects who have been improved or" cured" from amblyopia demonstrated normal contrast sensitivity.

My finding that the "good" eye of patients with amblyopia scores low in contrast sensitivity supports the statements given by others [1-4] which proves that the fellow eye should not be considered "normal" based solely on the fact that visual acuity is 6/6. The cause for the decreased in quality of the "good" eye in amblyopia are not clear. Difference in age of my subjects cannot account for the poor quality of visual function since all age groups had comparable age confirmed by statistical analysis (Table 2).

It can be explained that occlusion therapy might account for the decrease in performance of the "good" eye. Rogers et al[26] suggested that in some patients occlusion therapy resulted in loss of CSFs and Shawkat et al[29] suggested occlusion might account for impaired visual evoked potentials in the nonamblyopic eye.

A significant decrease of CSFs was noted in the nonamblyopic eye suggesting that patching may not account for the reduction of CSFs in the "good" eye of amblyopic subjects.

Although my results showed both eyes of subject's, considered as improved from amblyopia scoring significantly lower CSFs compared with

control patients, that differs from the results of Leguire et al [23] who found that the amblyopic eye improved in visual acuity and CSF and the nonamblyopic eye improved in CSFs. Whatever the cause for decrease in visual performance of the nonamblyopic eye, it essentially persisted even after "recovery" from amblyopia. This observation suggest that amblyopia is a deeply established anomaly, central in origin, which effects both eyes.[23, 24]

## Conclusion

Non amblyopic normal eye of amblyopic patients behaves abnormally when evaluated for contrast sensitivity functions. Neither the amblyopic eye nor the fellow eye of successfully treated subjects was comparable with controls. Fellow eye of amblyopic patients with poor contrast sensitivity rather could be a threat of developing occlusion amblyopia. The amblyopic deficit consists of three main parts: acuity loss, contrast sensitivity loss and spatial uncertainty. It can't be overemphasized that high contrast letter visual acuity is but one of the parameters describing visual function. The finding of impaired CSF of not only the amblyopic but also of the contra lateral , "good" eye of amblyopic subjects and its persistence despite conventionally defined "cure" of amblyopia, may confer to the understanding of the poor quality of vision and its particularities in amblyopia. The assessment of contrast sensitivity can provide important information on the visual function and the influence of occlusion therapy in amblyopia. Further studies could delineate the potential role of testing contrast sensitivity in monitoring success of amblyopia treatment.

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# Open Globe Injury in Children : Factors Predictive of Poor Visual Outcome

Dr. Masum Habib


## Abstract

***Objectives:*** *a) Identification of demographic features, causes and types of open globe injuries in children, b) observation of initial clinical features and correlation with visual outcome, and c) identify the predictors of poor visual outcome.*

***Patients and Methods:*** *This prospective observational study was conducted in National Institute of ophthalmology & Hospital (NIO & H), Dhaka during the period of January, 2005 to December, 2009. Children of 18 years age and below experienced open globe injury were included in the study purposively and consecutively. Demographic data including patients' age and sex, the mechanisms of ocular injury, place of injury were assessed. The initial clinical evaluation records included best-corrected Snellen visual acuity (BCVA) on presentation, the presence or absence of a relative afferent pupil defect (RAPD), the presence or absence of posterior segment involvement, the presence of anterior segment damage (corneal and/or sclera laceration, chemosis, hyphaema, cataract, traumatic mydriasis, an irregular pupil, and iris prolapse). Surgical procedures, (primary repair, other primary surgeries, secondary surgeries) and final BCVA were also recorded. Results were statistically analyzed using SPSS 12 version.*

***Results:*** *60 patients were included in the study. Among them 40 (66.67%) were male and 20 (33.33%) were female. Mean age was 10.60 ±4.12 (SD) years ranged from 3-18 years. Out of 60 cases, 40 (66.7) had sharp injuries and 20 (33.3%) had blunt injuries. Place of injuries show that in 35 (58.33%) cases injury occurred in home premises and in the rest 25 (41.67%) cases injury occurred in school premises. Initial presentations of 60 cases show that cataract developed in 20 (33.3%) cases, iris prolapsed in 21 (35%) cases and posterior segment was affected in 16 (26.7%) cases. Out of 60 cases, initially V/A, 6/12 or better was in 11 (18.3%) cases, 6/18- 6/60 in 31 (51.7%) cases and worse than 6/60 in 18 (30%) cases. Finally, V/A 6/12 or better was in 15 (25%) cases, 6/18- 6/60 in 24 (40%) cases and worse than 6/60 in 21 (35%) cases. Final visual outcome was found to be correlated with initial visual acuity, type of injury, presence of cataract, involvement of posterior segment, and type of surgery needed. Visual outcome is worse in more younger patients and poor outcome is associated with presence of RAPD, but these are not statistically significant.*

***Conclusion:*** *Open globe injuries in children remain a frequent and difficult problem. Difficulty in initial assessment of children may prevent adequate prognosis and influence management plans. It is evident that poor visual outcome is associated with younger age at presentation; poor initial VA, presence of cataract, RAPD and posterior segment involvement. Increased number of surgical interventions also influence final outcome. These factors should therefore be considered while formulating management plan for childhood open globe injuries.*


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## INTRODUCTION

Open globe injury is one of the major causes of visual morbidity worldwide, with significant socioeconomic impact·[1,2] Ocular trauma is an important, preventable, worldwide public health problem.[3] Every year, approximately 2 million eye injuries occur in the United States, of which, more than 40 thousand result in permanent visual impairment.[4,5] Prior studies in which the incidence of eye injury has been examined have produced varied results, in part because of study design differences.[6-11] When considering eye injuries requiring hospital admission, rates have ranged from 8 to 57 per 100,000. [6-11] Despite the heterogeneity of results, these studies provide important informations regarding the burden of eye injury. However, they have all been limited to a single year or narrow time frame making it difficult to determine trends in injury rates over time. A population-based study reported in U.S.A. a prevalence rate of 19.8% and an average annual incidence rate of 3.1 × 1000 population.[12]

Eye injuries among children are not uncommon and the damage is often serious.[13,14] The National Society to Prevent Blindness estimated that 55% of eye injuries occur in persons under the age of 25 years and one third of the vision loss in the first decade of life occur from eye injuries.[15,16] Eye injuries in children encounter some difficulties; these are – inadequate history, poor patient co-operation, difficulty in assessment of visual outcomes which may again be complicated by amblyopia.[17] The aim of this study was to evaluate the eye injuries affecting children presenting to emergency department of National Institute of Ophthalmology & Hospital (NIO & H), Dhaka to analyze – i) Causes and types of injuries, ii) initial characteristics of injuries, iii) relation of initial eye injury with ultimate visual outcome and iv) predictors for visual outcome. In this study, children meant children of 18 years age or below and open globe injury meant full thickness eye wall wound. [16,17]

## PATIENTS AND METHODS

This study was conducted in emergency department of NIO & H, Dhaka during the period of January 2005 to December, 2009. Children of 18 years age and below experienced open globe injury were included in the study purposively and consecutively. Parameters those were evaluated were demographic data, including patient age and sex, the mechanisms of ocular injury, and where the injury occurred. The injuries were classified as sharp or blunt. The initial clinical evaluation records included best-corrected Snellen visual acuity (BCVA) on presentation, the presence or absence of a relative afferent pupil defect (RAPD), the presence or absence of posterior segment involvement (vitreous haemorrhage, retinal haemorrhage, choroidal rupture or haemorrhage, retinal detachment, and presence of an intraocular foreign body), the presence of anterior segment damage (corneal and/or sclera laceration(s), chemosis, hyphaema, cataract, traumatic mydriasis, an irregular pupil, and iris prolapse). Surgical procedures (primary repair, other primary surgeries like cataract extraction, intraocular lens implantation, etc., secondary surgeries like pars plana vitrectomies, laser surgeries, cryosurgeries, etc. and final BCVA were also recorded. Results were statistically analyzed using SPSS 12 version.

## RESULTS

60 patients were included in the study. Among them 40 (66.67%) were male and 20 (33.33%) were female. Mean age was 10.60 ±4.12 (SD) years ranged from 3-18 years (Fig.1).

Out of 60 cases, 40 (66.7) had sharp injuries and 20 (33.3%) had blunt injuries. Place of injuries show that (Table-I) in 35 (58.33%) cases injury

***Table - I***

| Place of injury | | No. of case (%) |
|---|---|---|
| Home: | | |
| | Indoor | 20 (33.33) |
| | Outdoor | 15 (25) |
| School: | | |
| | Indoor | 10 (16. 67) |
| | Outdoor | 15 (25) |

*Table - II*

| Presentation | No. of cases (%) |
|---|---|
| Anterior segment: | |
| Chemosis | 12 (20) |
| Hyphaema | 09 15) |
| Iris prolapsed | 21 (35) |
| Cataract | 20 (33.3) |
| Scleral rupture | 06 (1 0) |
| Posterior segment: | 16 (26.7) |
| Vitreous | 06 (10) |
| haemorrhage | 04 (6.7) |
| Retinal | 03 (5) |
| detachment | 03 (5) |
| Choroidal | |
| detachment/ rupture | |
| IOFB | |

occurred in home premises and in the rest 25 (41.67%) cases injury occurred in school premises.

Initial presentations of 60 cases have been shown in Table – II. It shows that cataract developed in 20 (33.3%) cases, iris prolapsed in 21 (35%) cases and posterior segment was affected in 16 (26.7%) cases.

needed secondary surgeries (pars plana vitrectomies, laser procedures, cryosurgeries, etc.).

Predictive factors for final visual outcome were studied. Final visual outcome was found to be correlated with initial visual acuity, type of injury, presence of cataract, involvement of posterior segment, and type of surgery needed (Table-IV). Visual outcome is worse in more younger patients and poor outcome is associated with presence of RAPD, but these are not statistically significant.

## DISCUSSION

From the result of this study it is evident that visual outcome of open globe injury in children is critical. Open globe injuries in children are often difficult to assess at the time of presentation and may lead to a poor visual outcome despite best efforts to treat quickly and aggressively.

A higher incidence of trauma in boys than girls is well recognized, ranging from 2.5:1–5:1.[17,18,19] In our study male dominance is also evident. Mean age in our study was 10.60 years. In the study of Gupta *et al* (2009) average age was 9.8 years.[20] Mean age is also comparable to other similar case series[17,18,19]

*Table - III Visual acuity*

| Initial visual acuity | Final visual acuity | | | Total | $\times^2$ / p value |
|---|---|---|---|---|---|
| | 6/12 or better | 6/18-6/60 | Worse than 6/60 | | |
| 6/12 or better | 08 | 02 | 01 | 11 (18.3%) | |
| 6/18-6/60 | 07 | 19 | 05 | 31 (51.7%) | 39.14 / 000 |
| Worse than 6/60 | 00 | 03 | 15 | 18 (30%) | |
| Total | 15 (25%) | 24 (40%) | 21(35%) | | |

P value reached from Chi-squared test

Table-III shows the distribution of initial and final visual acuity of study subjects. Out of 60 cases, initially V/A, 6/12 or better was in 11 (18.3%) cases, 6/18- 6/60 in 31 (51.7%) cases and worse than 6/60 in 18 (30%) cases. Finally, V/A 6/12 or better was in 15 (25%) cases, 6/18- 6/60 in 24 (40%) cases and worse than 6/60 in 21 (35%) cases.

Management strategies of 60 cases were studied. Among 60 cases 23 (38.3%) cases needed only primary repair, 25 (41.7%) cases needed multiple primary surgeries (repair, cataract extraction, intraocular lens implantation) and 12 (20%) cases

Sharp objects accounted for the majority of injuries in our study (66.67%). It is similar to Gupta *et al* (2009)[20]. The sharp objects included objects, which are commonly found around the home or school, for example, knife, pen, glass, stick, slate, or dart. As children tend to spend the majority of their time in these locations, this factor may account for the predominance of sharp

***Table – IV***
*Predictive factors for visual acuity*

| Parameter | Final visual acuity | | | r value/ p value |
|---|---|---|---|---|
| | 6/12 or better | 6/18-6/60 | Worse than 6/60 | |
| **Initial visual acuity:** | | | | |
| 6/12 or better | 08 | 02 | 01 | |
| 6/18-6/60 | 07 | 19 | 05 | 0.67 / 000 |
| Worse than 6/60 | 00 | 03 | 15 | |
| **Type of injury:** | | | | |
| Blunt injury | 00 | 10 | 10 | 0.36/ 0.004 |
| Sharp injury | 15 | 14 | 11 | |
| **Age:** | | | | |
| Below 6 years | 01 | 03 | 05 | 0.18/ 0.14 |
| 6 years and above | 14 | 21 | 16 | |
| **Presence of post. Seg. Involvement:** | | | | |
| Yes | 00 | 05 | 11 | 0.46/ 000 |
| No | 15 | 19 | 10 | |
| **Cataract development:** | | | | |
| Yes | 01 | 05 | 14 | 0.50/ 000 |
| No | 14 | 19 | 07 | |
| **Presence of RAPD:** | | | | |
| Yes | 06 | 01 | 01 | |
| No | 00 | 02 | 06 | 0.19/ 0.13 |
| Unknown | 09 | 21 | 14 | |
| **Type of Surgery :** | | | | |
| Primary repair only | 13 | 08 | 02 | |
| Multiple pri. Su rgeries | 02 | 13 | 10 | 0.61 /000 |
| Secondary surgery | 00 | 03 | 09 | |

objects leading to open globe injuries in children. There was a trend towards those with sharp injuries achieving a better final VA compared to those with blunt injuries. Others studies have recognized sharp injuries occurring more commonly in children and hold the view that those injuries have a better visual outcome compared to blunt injuries.[17-20].

The influence of amblyogenic factors may play some role on final VA though it is difficult to ascertain as outcome depends on many factors. All children aged below 6 years had a final BCVA of less than 6/12 was 1.67% compared to 56% of those among 6 years or over. Amblyogenic factors as well as delay to institute surgery with general anaesthesia, difficult post-operative assessment and lack of justified interventions are possible causes. Rostomian *et al* [17] also noted children's age as being an additional risk factor in poor visual outcome. It is, therefore, extremely important that young children who undergo a repair of an open globe injury are followed up very closely. Aggressive treatment of presumed amblyopia and correction of amblyogenic factors, such as refractive error may improve visual outcome even in children with more severe injuries. It is vital that the child and their families are appropriately counseled and are involved in the often difficult and prolonged treatment of amblyopia.

Initial signs associated with an unfavorable visual outcome include the child's age, initial poor VA, presence of an RAPD, presence of cataract, presence of posterior segment involvement, the type and number of surgeries performed These findings correlate well with the literature,[17,20-23] whereby retinal detachment, vitreous haemorrhage, wounds greater than 10mm long, and hyphaema have also been associated with poor final VA. [20-23]

There is a strong relationship between the posterior segment involvement and the poor final VA. Delay to institute surgery with general anaesthesia, difficult post-operative assessment and lack of justified interventions are possible causes. This is also evident in other similar studies.[20-23]

## CONCLUSION

Open globe injuries in children remain a frequent and difficult problem. Difficulty in initial assessment of children may prevent adequate prognosis and influence management plans. It is evident that poor visual outcome is associated with younger age at presentation; poor initial VA, presence of cataract, RAPD and posterior segment involvement. Increased number of surgical interventions also influence final outcome. These factors should therefore be considered while formulating management plan for childhood open globe injuries.

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# Proportion of Primary Angle-Closure Glaucoma (PACG) & Primary Open-Angle Glaucoma (POAG) in patients attending Glaucoma Department of National Institute of Ophthalmology & Hospital (NIO&H) from December 2008 to November 2009

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**Abstract**

*A retrospective study was carried out at NIO&H, Dhaka to find out the proportion of PACG & POAG among the treated cases of primary glaucoma from December, 2008 to November, 2009.*
*Aims & Objectives: To find out the ratio of PACG to POAG and to compare the ratio with other published population-based studies.*
*Results: A total of 1791 patients with primary glaucoma were treated whose age ranged from 30 to >80 years. Among them PACG cases were 832(46.45%) and POAG cases were 959(53.55%). Ratio of PACG to POAG was 0.87:1. Among 832 PACG cases, 281(33.77%) were male and 551(66.23%) were female. Male to Female ratio was 0.51:1. Among 959 POAG cases, 489(50.99%) were male and 470(49.01%) were female. Male to Female ratio was 1.04:1.*
*Conclusion: Prevalence of PACG among the treated cases of primary glaucoma at NIO&H was much higher than prevalence in the community. As PACG is symptomatic, so more patients with PACG came to Hospital for treatment than the cases with POAG which is mostly asymptomatic.*

## Introduction

Glaucomatous optic neuropathy (GON) is most prevalent among people of African origin, and least prevalent in full-blooded Australian Aborigines[1]. Asian populations have rates intermediate between these two groups. European and African-derived people suffer predominantly from primary open angle glaucoma (POAG), whereas rates of primary angle closure glaucoma (PACG) are higher among East Asians than in other populations. The higher rate of GON in those of Chinese extraction is probably attributable to

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the excess of PACG[2]. Preliminary data suggest that prevalence of PACG is less in Southeast Asian populations than in Chinese, but more than in Europeans.

**Aims & objectives of study**

To find out ratio of PACG to POAG among treated primary glaucoma cases.

To compare the ratio with other published population-based studies.

**Materials & methods**

A retrospective study was carried out among the patients with primary glaucoma, those who were treated at NIO&H attending Glaucoma Department from December 2008 to November 2009.

**Inclusion criteria**

Age: 30 years

Sex: Both male & female

Primary glaucoma ? PACG & POAG

**Exclusion criteria**

Age: < 30 years

Congenital/developmental glaucoma

Normal tension glaucoma

Secondary glaucomas

Glaucomas associated with systemic diseases

**Data collection**

Patients treated at NIO&H for primary glaucomas were included in the study for the 1 year period mentioned above.

**Results**

A total of 1791 patients of PACG & POAG were treated at NIO&H from December 2008 to November 2009. Age of the patients was ? 30 years. Other glaucomas were not included in the study. Visual acuity of the treated patients varied from no light perception (NPL) to 6/6. Although patients' age ranged from 30 to > 80 years, most of the cases of PACG & POAG were in the range of 40 to 59 years of age.

**Ratio of PACG to POAG=0.87:1**

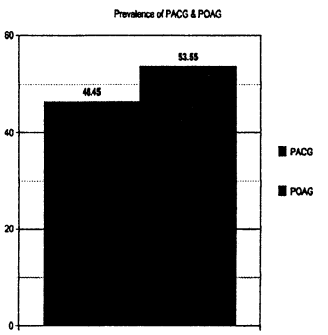


Figure - 1: Bar diagram

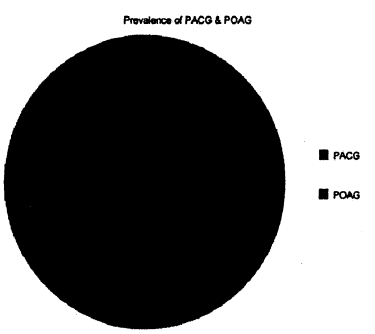


Figure - 2: Pie diagram

**Discussion**

A total of 1791 patients aged ? 30 years with primary glaucomas were treated at NIO&H from December 2008 to November 2009. Among these patients, 832 (46.45%) were primary angle-closure glaucoma (PACG), and 959 (53.55%) were primary open angle glaucoma (POAG) (Table – I). The ratio of PACG to POAG was 0.87:1. He M et al[3] found this ratio as 0.71:1 in Liwan,

***Table I Number of PACG & POAG cases (age ? 30 years)***

| Total number of patients (PACG & POAG) | Number of PACG | Percentage of PACG | Number of POAG | Number of POAG |
|---|---|---|---|---|
| 1791 | 832 | 46.45% | 959 | 53.55% |

*Table II Age & sex distribution of PACG cases (N = 832)*

| Age | Number of cases | Male | Female |
|---|---|---|---|
| 30 - 39 | 108 | 38 | 70 |
| 40 - 49 | 287 | 96 | 191 |
| 50 - 59 | 287 | 101 | 186 |
| 60 - 69 | 123 | 36 | 87 |
| 70 - 79 | 19 | 7 | 12 |
| 80 - above | 8 | 3 | 5 |
| Total | 832 | 281 | 551 |
| Percentage | | 33.77% | 66.23% |

**Male : Female = 0.51 : 1**

*Table III Age & sex distribution of POAG cases (N = 959)*

| Age | Number of cases | Male | Female |
|---|---|---|---|
| 30 - 39 | 140 | 73 | 67 |
| 40 - 49 | 247 | 124 | 123 |
| 50 - 59 | 317 | 160 | 157 |
| 60 - 69 | 194 | 99 | 95 |
| 70 - 79 | 46 | 25 | 21 |
| 80 - above | 15 | 8 | 7 |
| Total | 959 | 489 | 470 |
| Percentage | | 50.99% | 49.01% |

**Male : Female = 1.04 : 1**

*Table IV Prevalence of glaucoma in various Asian populations*

| Author (year) | Location | Number | Age group (years) | Prevalence of PACG | Prevalence of POAG | Ratio PACG:POAG |
|---|---|---|---|---|---|---|
| He et al, 2006 | Liwan, Guangzhou | 1405 | ? 50 | 1.5% | 2.1% | 0.71:1 |
| Vijaya et al, 2005, 2006 | Chennai, India | 3924 | ? 40 | 0.87% | 1.62% | 0.54:1 |
| Raychaudhuri et al, 2005 | Calcutta, India | 1269 | ? 50 | 0.72% | 3.6% | 0.2:1 |
| Rahman et at, 2004 | Dhaka, Bangladesh | 2346 | ? 35 | 0.4% | 2.5% | 0.16:1 |
| Foster et al, 2000 | Tanjong Pagar, Singapore | 1232 | 40 - 79 | 1.13% | 1.78% | 0.63:1 |
| Dandona et al, 2000 | Hyderabad, India | 1399 | ? 40 | 1.08% | 2.56% | 0.41:1 |
| Casson R J et al, 2007 | Meiktila, Myanmar | 1997 | ? 40 | 2.5% | 2.0% | 1.25:1 |

Guangzhou, China; Vijaya et al[4] found this ratio as 0.54:1 in Chennai, India; Raychaudhury et al[5] found this ratio as 0.2:1 at Calcutta, India; Rahman et al[6] found this ratio as 0.16:1. in Dhaka, Bangladesh; Foster et al[7] found this ratio as 0.63:1 in Tanjong Pagar, Singapore; Dandona et al[8] found this ratio as 0.4:1 in Hyderabad, India; Casson R J et al[9] found this ratio as 1.25:1 in Meiktila, Myanmar. So in our study, the ratio of PACG to POAG was higher than all studies except the study carried out by Casson R J et al[9] in Meiktila, Myanmar in which the ratio of PACG to POAG was higher than that of ours. The study by Rahman et al[6] in Dhaka city showed ratio of PACG to POAG was 0.16:1 which was much lower than that of ours. We think, this difference of ratios was due to the difference of study pattern. His study was population-based, but our one was hospital-based study which was opportunistic screening. As PACG cases are symptomatic, so more patients with primary angle-closure with complaints sought treatment and rushed to hospital. Age of the patients with PACG (Table – II) ranged from 30 – > 80 years but most of the patients' age ranged from 40 – 59 years.

The ratio of male to female was 0.5:1. As we know, female gender is recognized as a major predisposing factor toward the development of PACG[7,10,11].

Age range of POAG patients was similar to that of PACG (Table – III). Here also most of the patients were 40 – 50 years of age. POAG showed male to female ratio as 1.04:1 which is similar to the above-mentioned studies.

**Conclusion**

Prevalence of PACG among the treated cases of primary glaucomas at NIO&H is much higher than the prevalence in the community.

As PACG is symptomatic, so more patients with PACG come to hospital for treatment than patients with POAG as it is asymptomatic.

Meticulous gonioscopic examination must be done routinely to detect any sort of angle-closure.

A nationwide comprehensive survey should be done to find out the actual prevalence of PACG and POAG in the community.

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# Secondary glaucoma in variant conditions: A retrospective study in NIO&H

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**Abstract**

***Aim of study:*** *To evaluate the common causes of secondary glaucoma and thereby reducing the incidence of secondary glaucoma.* ***Placce and time of study:*** *This is a retrospective study conducted at glaucoma department of NIO&H during the period of January/2009 to october/2009.* ***Materials and methods:*** *Data of patients were collected from patiet registers of glaucoma department of NIO&H during the period of January/2009 to october/2009. From the register book patients of secondary glaucoma were selected from the total patient for this study. Total 372 patients of secondary glaucoma were studied. Data of patient includes name, age, sex, visual acuity, intraocular pressure and cup: disc ratio, gonioscopic findings, visual field, and diagnosis with cause and treatment given. Result From this study it is noted that secondary glaucoma is more common in the age group between 40 to 60years (41.67%) and rare below 10 years of age (1.61%). Among total 372 patients male are 214 (57.53%) and female are 158 (42.47%). Common causes of secondary glaucoma are found postoperative (25.81%), neovascular (17.20%), inflammatory (16.67%), phacolytic (10.21%), trauma (09.68%), keratoplasty (04.84%), steroid induced (04.30%).* ***Discussion:*** *From the patient register it is seen that a large number of patients with secondary glaucoma attended in glaucoma clinic of NIO&H daily. Most of patient attended to the glaucoma clinic with marked reduction of vision in one eye or both eyes. In that stage management is very difficult to cure the disease. Sometime only supportive therapy was given to relieve the symptoms. Management of secondary glaucoma depends on the detection and treatment of causes and glaucoma itself. So prevention of secondary glaucoma is more important than treatment.* ***Conclusion:*** *If patients are concious and we treat the causes of secondary glaucoma at proper time and meticulouly a large number of secondary glaucoma can be prevented.*

***Key word:*** *Secondary glaucoma, causes, prevention.*

## Introduction

Secondary glaucoma may be due to some systemic systemic desease or ocular and orbital deseases. Basic mechanism may be due to: (a) Hypersecretion of aqueous humour without any pathology in the outflow pathway. Classical example being epidemic dropsy syndrome. (b) Blockage in the aqueous drainage pathway: (i) Internal flow block-pupillary block causes angle closure glaucoma. (ii) Outflow block is due to patholgy in the trabecular meshwork, schlemm's canal, collector channels and venous system. Secondary glaucoma may be open angle or close angle type. Secondary glaucoma may occur in any age and sex. Management of secondary glaucoma depends upon the systemic or local causes and open or close angle.

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## Materials and methods

Data of patients were collected from patiet registers of glaucoma department of National institute of ophthalmology and Hospital, Dhaka during the period of January/2009 to october/2009. From the register book patients of secondary glaucoma were selected from the total patient for this study.Total 372 patients of secondary glaucoma were studied. Data of patient includes name, age, sex, visual acuity, intraocular pressure, cup: disc ratio, gonioscopic findings, visual field, and diagnosis with cause and treatment given.

## Result

From this study it is noted that secondary glaucoma is more common in the age group between 40 to 60years (41.67%) (Table-I). This may be due to postoperative (25.81%), neovascular (17.20%), inflammatory (16.67%), causes which mostly occur in this age group. Secondary glaucoma is rare below 10 years of age (1.61%). Among total 372 patients male are 214 (57.53%) and female are 158 (42.47%) (Table-II). Among the causes of secondary glaucoma most common is the postoperative causes (25.81%) and least common is the Marfan syndrome (0.54%). Other causes are shown in Table-III.

## Discussion

From the patient register it is seen that a large number of patients with secondary glaucoma attended in glaucoma clinic of NIO&H daily.Most of patient attended to the glaucoma clinic with marked reduction of vision in one eye or both eyes.In that stage management is very difficult to cure the disease.Sometime only supportive therapy is given to relieve the symptoms. Management of secondary glaucoma depends on the detection and treatment of causes and also glaucoma.So prevention of secondary glaucoma is more important than treatment. In this study it is found that large number of secondary glaucomas are due to aquired causes such as post operative (25.81%), neovascular glaucoma (17.20%), inflammatory (16.67%), trauma (09.68%), keratoplasty (04.84%), steroid induced glaucoma (04.30%). Among the post operative causes cataract operation is the highest number.Pupil capture, AC IOL without peripheral iridectomy, posterior synechia, pupillary block, inflammation, and vitreous loss are major causes. If we do the cataract surgery with proper care and uneventfully, and if we manage the peroperative and postoperative complication meticulously we can prevent the large number of secondary glaucomas due to post operative causes.

***Table-I Age distribution***

| Sl. no. | Age in years | Number of patients | Percentage (%) |
|---|---|---|---|
| 1. | <10 | 6 | 1.61 |
| 2. | 11-20 | 26 | 6.99 |
| 3. | 21-40 | 107 | 28.76 |
| 4. | 41-60 | 155 | 41.67 |
| 5. | >60 | 78 | 20.97 |
| Total | | 372 | 100 |

***Table-II Sex distribution***

| . Sl. no. | Sex of patients | Number of patients | Percentage (%) |
|---|---|---|---|
| 1. | Male | 214 | 57.53 |
| 2. | Female | 158 | 42.47 |
| Total | | 372 | 100 |

***Table-III***

***Causes of secondary glaucoma***

| Sl. no. | Causes of secondary glaucoma | Number of patients | Percentage (%) |
|---|---|---|---|
| 1. | Post operative | 96 | 25.81 |
| 2 | Neovascular glaucoma | 64 | 17.20 |
| 3. | Inflamatory | 62 | 16.67 |
| 4. | Phacolytic glaucoma | 38 | 10.21 |
| 5. | Trauma | 36 | 09.68 |
| 6. | Keratoplasty | 18 | 04.84 |
| 7. | Steroid induced glaucoma | 16 | 04.30 |
| 8. | Pseudoexfoliation glaucoma | 07 | 01.88 |
| 9. | Aphakia | 06 | 01.61 |
| 10. | Neurofibromatosis | 06 | 01.61 |
| 11. | Aniridia | 06 | 01.61 |
| 12. | Pigmentary glaucoma | 05 | 01.34 |
| 13. | Phacomorphic glaucoma | 04 | 01.07 |
| 14. | Sturge weber syndrome | 04 | 01.07 |
| 15. | Reiger syndrome | 02 | 0.54 |
| 16. | Marfan syndrome | 02 | 0.54 |
| Total | | 372 | 100 |

Regarding the neovascular glaucoma common causes is diabetic retinopathy, CRVO, BRVO, vasculitis retinae, long standing retinal detachment and chronic anterior uveitis. Early diagnosis and treatment with laser photocoagulation and anti VEGF can prevent the neovascular glaucoma. Inflammatory glaucoma results from chronic anterior uveitis followed by ring synechia and pupillary block. Lsns induced glaucoma is the important cause of secondary glaucoma. Phacolytic glaucoma can be prevented by doing the cataract operation at proper time. Early management of ocular trauma by expert surgeon can prevent vast majority of secondary glaucoma.

Glaucoma after keratoplasty results from long continued shallow anterior chamber and prolong use of topical steroid. So proper management of shallow anterior chamber and cautious use of topical steroid prevent glaucoma after keratoplasty. Injudicious use of topical steroid may cause steroid induced glaucoma. So ophthalmologist should be careful about long term use of topical steroid. Early diagnosis and proper mangement of some congenital causes of secondary glaucoma such as aniridia (01.61%), Sturge Weber syndrome (01.07%), Reiger syndrome (0.54%) and Marfan syndrome (0.54%) can prevent the glaucomatous damage.

## Conclusion

Treatment of causes is the mainstay to prevent the development of secondary glaucoma. So, early diagnosis and treatment of causes (desease proper) can save the many eyes with secondary glaucoma. Result of treatment of active secondary glaucoma is not satisfactory. So we should be cautious about the management of causes of secondary glaucoma. By proper treatment of acquired causes we can reduce the number of secondary glaucoma.

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# Re-detachment after successful repair of pseudophakic retinal detachment

Tariq Reza Ali

**Abstract**

*The aim of this study was to compare time and rate of redetachment after surgery for pseudophakic retinal detachments. This retrospective study was carried out at L V Prasad Eye Institute, Hyderabad, India. The patients' case notes, who had retinal detachment after cataract surgery and was referred to this institute and who had undergone retinal detachment surgery from 2002 to 2006 was reviewed. We collected the data of 100 patients (eyes). The retrieved data included age at presentation, gender, affected eye, nature and duration of presenting symptoms, the date of cataract surgery done with procedure (ECCE/SICS or Phacoemulsification ) and nature of IOL used. The date of detachment surgery done with detail surgical procedure was also analyzed. Postoperative follow up including visual acuity and intraocular pressure was noted. Date of redetachment was sorted from the follow up sheets. Date of re-surgery and final visual outcome after this re-intervention was also collected from the patient's record. There was total 100 eyes of 100 patients. Mean age of the patients were 55 years (SD±14). Mean duration of diagnosis of retinal detachment after cataract surgery was 39 months (SD±37.26). Mean duration of symptomwas 57 days (SD±59.20). Preoperative best corrected mean visual acuity was 1.67 logMAR and postoperative best corrected visual acuity was 1.31 log MAR. Difference between pre and postoperative best corrected visual acuity was significant by student's paired t test ( $p<0.001$). Scleral buckling was done in 25 cases and parsplana vitrectomy with endolaser and silicon oil injection or fluid gase exchange was done in 75 cases. There was redetachment in 32 cases. In scleral buckle group 10 of 25 cases (40%) and in parsplana vitrectomy group 22 of 75 cases (29.2%). Resurgery was done in 19 eyes of 32 cases; finally attached retina was in 15 eyes, detached 4 eyes. Total attached retina was 83 eyes, detached 17 eyes. Success rate is 83%, SD± 46.67; 95% CI: 75.63 to 90.36.*

## Purpose

To compare time and rate of redetachment after surgery for pseudophakic retinal detachments.

## Introduction

Cataract extraction with intraocular lens (IOL) implantation is the most common ophthalmic surgical procedure[1]. The popularity of IOL implantation and concurrent longevity in life expectancy is raising the incidence of pseudophakic retinal detachments (RDs)[2].It has been estimated that up to 40% patients that come for retinal reattachment surgery are pseudophakic[3]. The incidence of pseudophakic RD has been estimated to between 0.6% to 1.7% in 1st postoperative year[4].

Retinal detachment after cataract extraction is a vision threatening event, with approximately half of the patients not recovering better than 20/40 acuity[5]. One of the challenges in the management of pseudophakic RD is difficulty in visualization of the peripheral retina. This may be due to sub optimal dilatation, anterior and posterior capsular opacities, cortical remnants and optical aberrations of the implant and smaller sized breaks in the retina[6]. Both pars plana vitrectomy (PPV) and pars plana vitrectomy-scleral buckle (PPV-SB) procedures are time- tested surgical techniques for

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reattachment of pseudophakic retinal detachment. Several authors have tried to find the best among these three procedures for reattachment. It was reported in one study that PPV and combined PPV-SB resulted in higher reattachment compared to scleral buckle alone[7].

Redetachment of retina is also not uncommon. In one study it was found that redetachment rate was 7.3% in PPV and 6% in combined PPV-SB group. The time from initial repair to redetachment occurred from 2 weeks to 5 months[8]. In another study it was found that 84% of redetachment occurred within 3 months of surgery[9].

Redetachments after successful surgeries are demoralizing for the patients as well as for the surgeons and also affect the reputation of the institution.

**Study design: Retrospective study**

**Study period: January 2002 to December 2006.**

**Methods**

All the data was collected from the medical records department of L V Prasad Eye Institute. The patients' case notes, who had retinal detachment after cataract surgery and was referred to this institute and who had undergone retinal detachment surgery from 2002 to 2006 was reviewed and data was entered into a database for analysis. We collected the data of 100 patients (eyes) The retrieved data included age at presentation, gender, affected eye, nature and duration of presenting symptoms, the date of cataract surgery done with procedure (ECCE/SICS or Phacoemulsification ) and nature of IOL used. Detail of the initial examination included the presenting visual acuity and refractive status of the affected eye, type of RD, type, site, size, location and the number of the retinal breaks, the extent of the sub-retinal fluid, the macular attachment status and the presence and grading of Proliferative Vitreoretinopathy (PVR). The date of detachment surgery done with detail surgical procedure was also analyzed. Postoperative follow up including visual acuity and intraocular pressure was noted. Date of redetachment was sorted from the follow up sheets. Date of re-surgery and final visual outcome after this re-intervention was also collected from the patient's record.

**Main outcome measures**

Single surgery rate and time of redetachment.

**Secondary outcome measures**

Final visual outcome

**Inclusion criteria**

All the pseudophakic patients had undergone RD surgeries from January 2002 to December 2006.

Pseudophakic at presentation with a primary retinal detachment

**Exclusion criteria**

Patients who had a combined cataract extraction with an intraocular lens placement and PPV at the time of retinal detachment repair Patients who did not have documented follow-up of 3 months Patients with a previous history of a PPV or SB in the study eye. Patients with preexisting macular disease other than RDs and PVR changes

Patients with combined vitreous hemorrhage and retinal detachment. Patients with a giant retinal tear (>3 clock hours) and retinal detachment . Patients with exudative and tractional RD.

Patients with preoperative proliferative vitreoretinopathy (PVR) grade B or C without prior surgery were not excluded. The reasons for this were that preoperative PVR can be detected in a significant number of cases (preoperative PVR is one of the major known risk factors for postoperative failure in RRD surgery) and that the exclusion of patients with one major risk factor for a bad postoperative outcome may obscure the identification of coexisting factors in a multivariate analysis.

**Surgical technique**

Scleral buckling and pars plana vitrectomy with belt buckle insertion, endolaser plus silicon oil or gas ($C_3F_8$)/ air both were used as surgical procedure. The procedure depended on the surgeon's choice and according to the presentation of patient.

In scleral buckle cases, cryo was applied to the break(s) after proper localization. Then appropriate buckle was sutured by 5/0 Dacron suture. 360 degree belt buckle was also used in all cases. SRF was drained in all cases during surgery

In parsplana vitrectomy cases, belt buckle was used in all cases. Then 3 port standard sclerotomy was made, parsplana vitrectomy was done with 20 G vitrectomy cutter. After doing anterior and mid vitrectomy, posterior vitrectomy was carried out and it was tried to remove all the vitreous from the edge of the breaks. PFCL was used in some cases, and surgical procedure was according to the surgeon's choice. Peripheral vitreous base was shaved as much as possible. Retinotomy was made nasal to the optic disc. Fluid –air exchange was done and retina was lasered around the break and in some cases 360 degree. Then use of silicon oil or injection of gas ($C_3F_8$) was done according to the surgeon's choice.

Assessment of visual acuity was done by Snellen's chart. We have converted it to log MAR. Counting finger visual acuity was taken as 2 and hand movement with presence of light perception was taken as 3 in log MAR

**Results**

100 eyes of 100 patients were evaluated for a mean of 11.38 months (range 3 days to 44 months; SD 11.03). There were 72 male and 28 female patients. Mean age of the patients were 55 years (range 7-80 years; SD 14). The mean duration of detachment after cataract surgery was 39 months (range 10 days to 6 months; SD 37.26). The patients had symptoms of defective vision after cataract surgery. The mean duration of symptoms was 57 days (range 2 days to 6 months; SD 59.20).

Best corrected visual acuity was 1.67 log MAR preoperatively (range 0.1 to 2; SD 0.59). Postoperative best corrected visual acuity was 1.31 log MAR (range 0.1 to 2; SD 0.63). The difference between pre and postoperative best corrected visual acuity was statistically significant. ($p<0.001$, Student's paired t test).

Scleral buckling (SB) was done in 25 cases. In rest 75 cases pars plana vitrectomy with silicon oil injection/ or expansible gas was injected. Redetachment was in 32 eyes; 10 eyes of SB cases (40% of total 25 cases) and 22 eyes of PPV cases (29.2% of total 75 cases). Re-surgery was done in 19 eyes of these 32 cases. 13 patients did not go for second surgery.

15 eyes of these 19 cases had attached retina on final follow up after this second surgery. Retina was detached in 4 cases. So the final detached retina was in (4+13) 17 eyes. Success rate was 83% (SD 46.67; 95% CI 75.63 to 90.36). The duration of diagnosis of recurrent RD was 2.66 months (mean). The range was 3 days to 21 months; SD 0.7.

Preoperative PVR was found in 21 cases. Of these, 11 eyes had successful reattachment after first RD surgery. So retina was detached in 10 cases with PVR. Re-intervention was done in 4 eyes. 2 eyes had again detachment and in these 2 cases 3rd intervention was not done. 3rd intervention was done in 4 eyes of total 100 cases, 2 with PVR and 2 without PVR. Retina of these 4 eyes was attached till last follow up.

Mean preoperative IOP was 12 mmHg (SD 6.34) and mean post operative IOP was 18 mmHg (SD 6.93). Though IOP was within normal range, the difference was statistically significant ($p<0.001$, Student's paired t test).

**Discussion**

Cataract surgery is an established risk factor for rhegmatogenous retinal detachment. The rate of rhegmatogenous retinal detachment is approximately half after extra capsular cataract extraction (range, 0.3% to 1.6%) compared with

**Table: 1. Preoperative characteristics**

| | |
|---|---|
| Gender | Male :72, Female:28 |
| Mean age (years) (SD) | 55 ±14 |
| Mean Duration of RD (months) (SD) | 39 ±37.26 |
| Mean Duration of symptoms (days) (SD) | 57 ±59.20 |
| Mean BCVA log MAR ( SD) | 1.67 ±0.59 |
| Mean IOP (mmHg) (SD) | 12 ±6.34 |
| Surgical procedure | SB-25; PPV+SOI/ FGI 75 |
| Presence of PVR (no of eyes) | 21 |

**Table: 2. Postoperative Characteristics:**

| | |
|---|---|
| Mean follow up duration (months) (SD) | 11.38 ± 11.02 |
| Mean Postoperative BCVA log MAR (SD) | 1.31± 0.63 |
| Mean IOP-mmHg (SD) | 18 ±6.93 |
| Status of retina (no of eyes) | Attached- 83<br>Detached-17 |

**Table: 3. Surgical Procedure and detachment:**

| Surgical procedure | Number of eyes (%) | 95% CI |
|---|---|---|
| SB | 10/25 (40%) | 20.79-59.2 |
| PPV+SOI/FGE | 22/75(29.2%) | 19.02-39.63 |

**Table: 4. Role of PVR with surgical outcome:(total preoperative cases with PVR-21)**

| | | |
|---|---|---|
| PVR with attached retina in 1st surgical attempt (no / %) | 11/21 (52.38) | 95% CI-(31-73.74) |
| PVR with attached retina in 2nd surgical attempt (no / %) | 2/4 (50%) | 95% CI (1-99) |

**Table: 5. The cumulative retinal reattachment rate:**

| | No | percentage | 95% CI |
|---|---|---|---|
| 1st operation | 68/100 | 68 | 58.86-77.14 |
| 2nd operation | 15/19 | 78.94 | 60.61-97.28 |
| Total | 83/100 | 83 | 75.63-90.36 |

intracapsular extraction( 1.0% to 3.6%).[10] However, cataract extraction remains a major risk factor for retinal detachment, with a cumulative probability of detachment of 0.9% at 4 years after surgery and 1.3% at 10 years after surgery.[11]An

**Table: 6. Statistical Analysis of pre and post operative VA and IOP:**

| | Preoperative | Postoperative | P value (paired t test) |
|---|---|---|---|
| Mean Best Corrected Visual Acuity (log MAR) | 1.67 | 1.31 | <0.001 |
| Mean IOP (mmHg) | 12 | 18 | <0.001 |

**Table: 7. Difference between paying and nonpaying patients:**

| | Total | Detached after 1st surgery | Resurgery done | Finally attached | %; (95%CI) | Finally detached |
|---|---|---|---|---|---|---|
| NP | 53 | 14 | 7 | 5 | 35.7(10.61-60.81) | 9 |
| P | 47 | 18 | 12 | 10 | 55.5(38.6-78.5) | 8 |
| Total | 100 | 32 | 19 | 15 | | 17 |

estimated 50% to 75% retinal detachment occur within 1 year of cataract surgery.[12]Approximately 25% of detachments occur 3 years or later after surgery. The effect of cataract surgery is probably never lost as the risk of RD is still estimated to be 7.5 times greater than in phakic eyes after 6 years.

Defining the surgical method of choice to successfully treat pseudophakic RDs remains controversial. SB surgery seems to be less effective in the treatment of pseudophakic RD than in the treatment of phakic RD. In large reported series of pseudophakic RDs, SB surgery yielded a high rate of initial failure to reattach the retina, varying from 20% to 38.5%.[13] With repeated surgeries, in the same noncomparative case series of pseudophakic RDs, the overall rate of anatomical success of SB surgery ranged from 82% to 93.5%.[14] Alternative techniques to SB surgery, including pneumatic retinopexy and balloon buckling, have also been investigated for the repair of pseudophakic RD,[15] but the incidence of failure was high (20%).[16]

Recent developments in instrumentation, including wide-angle viewing systems, per fluorocarbon liquids, vitrectomy machines, and intraocular tamponades,

have led to increasing sophistication in primary PPV techniques for the treatment of rhegmatogenous uncomplicated RD. Primary PPV is gaining popularity and has had an expanding role over the past years in the surgical treatment of many categories of primary rhegmatogenous RD including pseudophakic RD.[17] The rationale for primary PPV in the treatment of pseudophakic RD can be clearly justified owing to the absence of risk of vitrectomy-induced cataract in these eyes, and this technique is becoming very popular as the initial treatment of choice for these detachments.[18]

Indeed, in noncomparative case series, reported results of primary PPV as treatment of pseudophakic RD are encouraging because the retinal reattachment rate after the first surgery reached or exceeded 90%.[19] The largest series described 294 eyes that were treated only by vitrectomy, fluid/air exchange, and endolaser without SB surgery; with one surgery, the retinal reattachment rate was 88%, and with subsequent surgeries, the retina was reattached in 96% of eyes.[20] The frequency, characteristics, causes, and risk factors of late recurrent retinal detachments (LRRD) was evaluated recently. The authors retrospectively analyzed 445 eyes operated consecutively for rhegmatogenous retinal detachment, both phakic and pseudophakic. Only eyes with complete reattachment after a minimum follow-up of 6 months were included. The authors defined LRRD as detachment occurring at least 6 months after a complete retinal reattachment. They found nine eyes had a LRRD (2.02%). Six eyes had scleral buckle procedure and three eyes had vitrectomy silicone oil injection then silicone oil removal. LRRD occurred after an average period of 54 months. New or reopened breaks were associated with LRRD in all eyes. The retinal reattachment was achieved in the seven eyes. Final visual acuity ranged from 20/400 to 20/60 after an average follow-up of 37.8 months. The authors did not find any significant correlation between pseudophakia and late recurrent retinal detachment, rather according to them new or reopened break was the prime cause of late detachment.[21]

Another study evaluated the incidence of pseudophakic retinal detachment (RD) recurrence after primary vitrectomy. This was a prospective nonrandomized consecutive case series; evaluating two series with pseudophakic RD. Total 103 eyes of 97 patients were included in the study. 24 consecutive pseudophakic eyes treated with gas vitrectomy surgery with placement of an encircling band was in group A and 79 consecutive pseudophakic eyes treated with gas vitrectomy surgery with no encircling band were in group B. In the cases of postoperative RD recurrence, the pre- and postoperative risk factors as well as the anatomic and functional outcome were analyzed. Recurrence of RD after primary vitrectomy occurred in eight of 103 (7.8%) eyes in both groups. More specifically, two of 24 (8.3%) eyes in group A and six of 79 (7.6%) eyes in group B. Among these eight eyes, four eyes (50%) presented proliferative vitreoretinopathy (PVR) at the time of initial vitrectomy, while all eyes presented PVR at the time of recurrence (one grade B, seven grades C). These results show that recurrence after primary vitrectomy for pseudophakic RD is most often related to the presence of PVR before or after the first intervention.[22]

In our study the recurrence of RD after primary intervention is 32%. It came to 17% after second surgery. This incidence is quite higher than the reports available in the literature. We did not search the probable cause of recurrent RD in our institution. But it seems that preoperative PVR was the major cause of this high recurrence.11 of 21 cases with preoperative PVR was successful after primary surgery, i.e. retina was attached postoperatively. Among the rest 10 cases, 4 persons underwent second surgical procedure and in 2 cases the retina was settled after this second attempt.If we define recurrent RD as the occurrence after 6 months of surgery and before that time as surgical failure, then the incidence is 3% in our study.

We should also keep in mind that LVPEI is a training institute and the trainees here usually do

the surgery in nonpaying patients. It is also another cause of high recurrent RD.

## Conclusion

The rate of recurrent RD after successful retinal detachment surgery in pseudophakic cases is alarming in our study. It is a reflection of the cases done in 2002-2006. After that the surgical procedure has improved and newer technique like 23 G pars plana vitrectomy has been followed up in a number of cases. It was a retrospective study, and we could not take all the cases done during this period. If we could analyse all the cases done in those period, might reflect better success and failure result. We recommend a prospective study to carry out to get the proper information regarding recurrent RD and other complications related with pseudophakic retinal detachment.

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# Chronic Dacryocystitis an Emerging Challenge

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**Abstract**

*Chronic Dacryocystitis is the commonest but neglected adnexal eye disease. Its definitive treatment is Dacryocystorhinostomy (DCR). It is neglected by the patients & their relatives due to lake of social awareness and by the ophthalmic community because DCR surgery troublesome, laborious, time consuming and unpredictable. As a result number of patients suffering from chronic Dacryocystitis is increasing progressively in the society. The aim of is study is to see the magnitude of increasing backlog of patients who are interested to undergo DCR surgery. This study was done in National Institute of Ophthalmology during the period of October 2009 to December 2009. Total 298 patients suffering from chronic Dacryocystitis were included in this study Among them 114 were male & 184 were female with a male female ratio of 1:1.62.Irrespective of sex maximum patients (48.32%)wanted surgery was young (21-40 years age group).Among 298 patients desiring surgery 170 (57.05%) were operated & remaining 128(42.95%) were not operated due to our limitations. If we fail to overcome these limitations, chronic Dacryocystitis will soon become a challenge.*

## Introduction

The commonest adnexal eye disease is Chronic Dacryocystitis involving both male & female of all ages. Though people of dusty slum areas and of low income group are more commonly affected, people of high society with standard living style are not exempted from this chronic & troublesome disease. Though there is no specific data our practical observation says prevalence & incidence of this disease is very high in Bangladesh. Though it is not directly a blinding disease, its complications like acute exacerbation, orbital cellulites & even endophthalmitis may lead to blindness. On the other hand repeated rubbing of watery eye may cause ectropion, entropion, Trichiasis, corneal ulceration & corneal opacity. Even uncomplicated Chronic Dacryocystitis is a socially embracing & cause of constant ocular discomfort.

As Cataract is the commonest cause of curable blindness, more emphasis has been given on CSR to reduce Cataract backlog to 0% by 2020. But unfortunately due to lake of social awareness and less interest of government & non government Medical manpower, proper management of Chronic Dacryocystitis is neglected till today. As the definitive treatment of Chronic Dacryocystitis is surgery by this time a huge backlog of Chronic Dacryocystitis has developed. With increasing medical awareness demand for Chronic Dacryocystitis surgery is also increasing. The aim of this study is to see the gap between patients demand and our service delivery towards the proper management patients suffering from Chronic Dacryocystitis., so that we can Evaluate ourselves & formulate a program to help these neglected patients.

## Materials & Methods

This is a cross sectional study carried out in NIO during the period of September 2009 to December 2009.

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Patients coming with epiphora, discharge and/or regurgitation of pus on pressure over the sac were primary detected as a case of Chronic Dacryocystitis. Diagnosis was confirmed by SPT. Patients with common canalicular or nasolacrimal duct obstruction were selected and enlisted for surgery. Patients below 10 years or less was excluded from this study. Those who refused surgery were also excluded. Patients having unilateral or bilateral Chronic Dacryocystitis were selected as single case. After confirmation of diagnosis, their surgical fitness was determined by evaluating RBS,ECG, Hb%, B.T & C.T. If the patients were surgically fit & consented for operation, they were enlisted for surgery. According to age, patients were divided in four age group. These were 11 – 20, 21 – 40, 41 – 60 & above 60 years.

**Result**

Total 298 patients were selected for DCR surgery during this study period. Table-I shows age & sex distribution of patients.

The above table shows male female ratio among the study population was 1:1.62. Maximum patients were of 21 -40 age group. That is total 144 (48.32%) were young. 108 (36.24%) patients were of 41 – 60 age group, 35 (11.74%) patients were of above 60 age group & only 11 (3.69%) patients were of 11 – 20 years age group.

***Table-I***

| Age | Male | Female |
|---|---|---|
| 11 - 20 | 04 | 07 |
| 21 – 40 | 53 | 91 |
| 41 – 60 | 41 | 67 |
| Above 60 | 16 | 19 |
| | 114 | 184 |

Table – II shows month wise enlisted patients for DCR surgery month wise surgery done:

The above table shows in the month of October 103 patients were enlisted for operation. But only 64 patients were operated & 39 (37.86%) patients remained unoperated. In the month of November 96 patients were enlisted for operation. 51 patients were operated & 45 (46.87%) were unoperated. In December 99 patients were enlisted for operation and operation was done in 55 patients. Remaining 44 (44.44%) patients were unoperated. That is during the study period out of 298 enlisted patients, operation was done on 170 patients. Operation could not be done on 128 (42.95%) patients due to shortage of logistics & facilities.

***Table-II***

| Month | Enlisted for operation | Operated | Unoperated | % of unoperated patient |
|---|---|---|---|---|
| Oct'9 | 103 | 64 | 39 | 37.86% |
| Nov'9 | 96 | 51 | 45 | 46.87% |
| Dec'9 | 99 | 55 | 44 | 44.44% |
| Total | 298 | 170 | 128 | 42.95% |

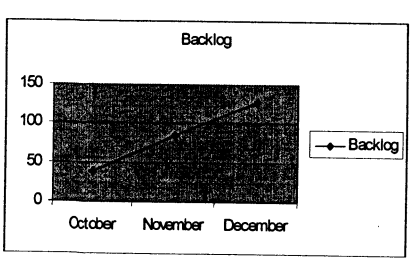
Table-III Shows Backlog of DCR surgery during the study period.

Table-III shows there is an increasing backlog of DCR surgery during the study period. In October DCR backlog was 39 (37.86%) patients. In November it raised to 84 (62.22%) & in December backlog of DCR operation became 128 (69.95%) patients.

***Table-III***

| Month | Previous Backlog | New entry | Total waiting | Operated | Total Backlog |
|---|---|---|---|---|---|
| Oct'9 | | 103 | 103 | 64 | 39 |
| Nov'9 | 39 | 96 | 135 | 51 | 84 |
| Dec'9 | 84 | 99 | 183 | 55 | 128 |

Figure-I shows there is a progressive increase in DCR surgery backlog.



## Discussion

This study shows Patients coming for DCR surgery is 1.6 times more than male patients because incidence & prevalence of Chronic Dacryocystitis is more in female. This finding co-relate other others[4,5] & literatures[2,3] Though the females are 3[1] times more affected by Chronic Dacryocystitis than male, in our study it is 1.6 times more. These disparity is probably female patients are less medically cared than the male.

In this study maximum patients (48.32%) were within 21-40 years age. This findings co-relate with other studies carried out in Bangladesh[1,2]. According to E.W. Dorell Chronic Dacryocystitis is commonest in 40-60 years age group. This is because the study of E.W. Dorell was community based whereas this study was hospital based. Young people are more annoyed with their watery discharging eyes. So they are come to hospital more commonly than the older people. That may be the cause of disharmony between E.W.Dorell and this study.

In this study 298 patients were enlisted on patients demand basis, not on the basis of capacity of the hospital to deal with such number of cases. Because the main objective of this study was to see how much we can deliver service according to patients need. During the study period among 298 enlisted patients 170 (57.05%) patients were operated. The gap between patients demand is because DCR surgery is laborious, time consuming, & unpredictable from surgeon's point of view. Besides setup for DCR surgery is not as good as that for cataract surgery. So disposal rate of DCR surgery is slow & is not up to the level of patients demand.

For the same reason this study reveals backlog of DCR surgery increased from 37.86% to 69.95% during this study period. That is backlog of DCR surgery is doubling in every 3 months, which is alarming. So time has come to look at this problem & formulate action plan to increase rate of DCR surgery & to fix a goal to reduce Backlog of Chronic Dacryocystitis to 0%.

## Conclusion

This was carried out in a single hospital within a short span of time & limitations. So the result of this study may vary from large scale studies. The major bulk of DCR surgery is done in government hospitals. NGO (With few exceptions) hospitals are mainly concerned with cataract surgery. This study was done in a big well equipped government hospital with sufficient trained manpower, so the information obtained from this study may highlight to some extent about the actual national picture of Chronic Dacryocystitis & its management. This study revealed that the maximum patients (48.32%) cames to hospital for proper management of their watery discharging eyes are most active working group of people (21 -40 years) irrespective of sex. But definitive treatment of Chronic Dacryocystitis (DCR) was done in 57.05% patients; remaining 42.95% were added with backlog. If this situation continues Chronic Dacryocystitis may emerge as a new national eye problem before achieving the goal of Vision 2020.

We have sufficient trained manpower, good nationwide infrastructure and instruments & logistics for DCR surgery are not very costly. That is; with present setup of eye care delivery system we are able to face this emerging challenge. What we need is to develop national strategy, social motivation & commitment of ophthalmic community to face the challenge.

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# Corneal rehabilitation is earlier in clear corneal incision than sclerocorneal incision in phacoemulsification cataract surgery with posterior chamber intraocular lens implantation : A comparative study

Bhowmik Roy SwapanKumar[1], Golam Haider[2], Masum Habib[3], Syed Maruf Ali[4]

**Abstract**

***Purpose:*** *To evaluate the effect of incision on postoperative corneal decompansation and corneal rehabilitation in phacoemulsification cataract surgery using either clear corneal incision or sclerocorneal incision.* ***Method :*** *This randomised prospective study was done in the National Institute of Ophthalmology and Hospital, Dhaka from January, 2001 to December, 2002. Out of 60 patients of age-related cataract (ARC) who underwent phacoemulsification cataract surgery, 30 patients were done by clear corneal incision (Group-I) and another 30 patients were done by sclerocorneal incision (Group-II). All the surgical procedures were done with standard method and same, except for wound construction. The corneal condition were observed and recorded with slit-lamp examination preoperatively and postoperatively at 1 day, 1 week and 6 week.* ***Result :*** *The corneal condition were normal for all the patients (100%) at preoperative examination. At 1 day postoperative examination 4 out of 30 patients (13%) developed corneal haze for clear corneal incision (group-I) and 7 out of 30 patients (23%) for sclerocorneal incision (group-II). No statistical significant deference was found between the two groups of patient ($p>0.05$). Although, the proportion of normal cornea was higher in group-I patients than group-II patients. But, at 1 week and 6 week postoperative follow-up, the corneal condition of all of the patients (100%) in each group became normal i.e. clear and transparent cornea were achieved.* ***Conclusion:*** *In phacoemulsification cataract surgery, the corneal decompansation and corneal haze were more pronounced in sclerocorneal incision and affecting the corneal rehabilitation and visual outcome. Thus, corneal rehabilitation is earlier in clear corneal incision with proper medical treatment and follow-up. This observation suggest to choice the clear corneal incision, the better surgical procedure than the sclerocorneal incision, is more beneficial for the patients and can be safely performed.*

## Introduction

Blindness from cataract is one of the major health problems[1]. Treatment of cataract is surgical. Surgical technique used for cataract extraction may play an important role in development of unwanted postoperative complication e.g. pain, corneal oedema and corneal decompansation,

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corneal haze, wound leakage, delayed wound healing, postoperative inflammation, raised IOP, retained viscoelastic materials in anterior chamber or behind the IOL, retinal vascular occlusion, anterior ischemic optic neuropathy and optic nerve damage.[2-4]

In the present world, the ophthalmologist are trying hard to develop the best procedure of cataract surgery to overcome these postoperative complications. The phacoemulsification is the choice of technique, which is the most modern and popular method and a sophisticated surgical modality. Phacoemulsification may be done either using clear corneal incision or sclerocorneal incision to achieve early corneal and visual rehabilitation and functional recovery. This study observe and evaluated the effect and potential influences of a number of demographics and surgical procedures on postoperative corneal and visual rehabilitation. Informed consent were taken.

## Patients and Method

In this prospective randomised study, out of 60 patients of age-related cataract who underwent phacoemulsification cataract surgery, 30 patients were using clear corneal incision (Group-I) and of equal number of patients were using sclerocorneal incision (Group-II).

All the surgical procedure were with standard method and same, except for wound construction. A 3 mm three plane sclerocorneal tunnel was made with keratome for group-II patients. After a superior conjunctival opening along the limbus, a 3.2 mm straight scleral incision at 10-11 o'clock position was made 1.5 mm behind the limbus and enter into the anterior chamber 1.5 mm infront of limbus, through the cornea. On the other hand, a 2-2.5mm long three plane corneal tunnel was prepared by 3.2 mm straight anterior limbal incision at 10-11 o'clock position, also by keratome, for group-I patients. Paracentesis at 1 o'clock position, a concentric curvillinear capsulorrhexis, hydrodissection and hydrodelineation, phacoemulsification, in bag PCIOL implantation were done by standard method. In sclerocorneal incision, the conjunctival edges were cauterised with wet-field cautery for their re-apposition, at the end of surgery. The immediate (at 1 day) and mid-term (at 1 week and 6 week) postoperative corneal condition were observed and recorded. The postoperative corneal condition and corneal rehabilitation and changes in visual acuity were evaluated. The statistical analysis were done by "$X^2$" test and "t" test.

## Result

In this study, the mean age of the patients was 62.8±10.8 years (range : 45-90Yrs). 36 (60%) patients were male and 24 (40%) patients were

***Table I: Age distribution of the study patients***

| Age in years | Study patients | | | | | | p value |
|---|---|---|---|---|---|---|---|
| | *Group I* | | *Group II* | | *Total* | | |
| | *No.* | *%* | *No.* | *%* | *No.* | *%* | |
| <50 | 6 | 20.0 | 2 | 6.7 | 8 | 13.3 | |
| 50-59 | 4 | 13.3 | 7 | 23.3 | 11 | 18.3 | |
| 60-69 | 10 | 33.3 | 10 | 33.3 | 20 | 33.3 | |
| ≥70 | 10 | 33.3 | 11 | 36.7 | 21 | 35.0 | |
| **Total** | **30** | **100.0** | **30** | **100.0** | **60** | **100.0** | |
| ***Mean±SD (Range)*** | ***62.0±10.8 (45-90)*** | | ***63.5±10.9 (45-90)*** | | ***62.8±10.8 (45-90)*** | | ***0.579*** |

Group I= Patients of clear corneal incision
Group II= Patients of sclerocorneal incision
p value reached from unpaired student's t test

female. There was no statistically significant difference in age and sex distribution (Table:I).

The preoperative corneal condition were normal (100%) for all the 60 patients of both group. At 1 day postoperative examination, it was observed and recorded that 26 (86.7%) patients become normal corneal condition for group-I; and in group-II, 23 (76.7%) were showed normal corneal condition. In clear corneal incision (group-I) 2 (6.7%) patients developed mild corneal haziness and same number of patients developed moderate corneal haziness. On the other hand, 5 (16.7%) patients developed mild corneal haziness and 2(6.7%) patients developed moderate corneal haziness in sclerocorneal incision (group-II) (Table-II & Fig:1). None can detected as severe corneal complication, among both the groups of patients. The statistical significant difference was not found between the groups of patients ($p>0.05$). Although, the proportion of normal corneal condition were higher in group-I patients than group-II patients. At 1 week and 6 week postoperative periods, the condition of the cornea become normal in both the groups of patients.

***Table II: Preoperative and postoperative follow up of the study subjects (condition of cornea)***

| *Follow up* | *Condition of cornea* | Study patients | | | | | | *p value* |
|---|---|---|---|---|---|---|---|---|
| | | *Group I (n=30)* | | *Group II (n=30)* | | *Total (N=60)* | | |
| | | *No.* | *%* | *No.* | *%* | *No.* | *%* | |
| **Preoperative** | Normal | 30 | 100.0 | 30 | 100.0 | 60 | 100.0 | - |
| ***1st POD*** | | | | | | | | |
| | Normal | 26 | 86.7 | 23 | 76.7 | 49 | 81.7 | *0.316* |
| | Mild haziness | 2 | 6.7 | 5 | 16.7 | 7 | 11.7 | |
| | Moderate haziness | 2 | 6.7 | 2 | 6.7 | 4 | 6.7 | |
| | Severe haziness | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | |
| ***7th POD*** | Normal | 30 | 100.0 | 30 | 100.0 | 60 | 100.0 | |
| ***6th wk POD*** | Normal | 30 | 100.0 | 30 | 100.0 | 60 | 100.0 | |

Group I= Patients of clear corneal incision
Group II= Patients of sclerocorneal incision
p value reached from chi square analysis (*p>0.05*)

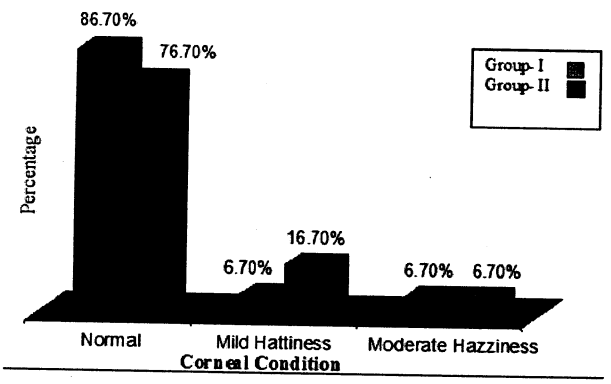
***Table-III: Mean percent of changes of visual acuity in relation to normal visual acuity***

| *Visual acuity* | Study patients | | *p value* |
|---|---|---|---|
| | *Group I (n=30) Mean Percent* | *Group II (n=30) Mean Percent* | |
| At 1st POD | 52.4 | 41.6 | *0.047* |
| At 7th POD | 69.0 | 71.3 | *0.641* |
| At 6th weeks | 85.7 | 91.7 | *0.226* |

Group I= Patients of clear corneal incision
Group II= Patients of sclerocorneal incision
p value reached from unpaired student's t test (*p>0.05*)

The pre-and post-operative visual acuity were recorded and percent change of visual acuity were observed in each follow-up. At 1 day postoperative period, the visual acuity were improved 52.4% and 41.6% respectively for group-I and group-II patients. The mean percent difference was found statistically significant between the groups ($p<0.05$). But, at subsequent follow-up at 1 week and 6 week, the percent of improvement were higher in group-II patients than group-I patients. Although, the mean difference was not statistically significant ($P>0.05$). (Table:III)

Fig: 1. Postoperative corneal condition of study patients (at 1 day postoperative follow-up).




## Discussion

Clarity of the cornea is one of the most important factor for early visual and corneal rehabilitation of the patients after phacoemulsification cataract surgery. In immediate postoperative period, there may be development of hazy cornea resulting from corneal oedma, which is related with incision, and development of corneal decompansation following cataract surgery.[5] During the immediate postoperative periods, the central corneal thickness increases, and this is followed by slit-lamp evidence diffuse haze throughout the entire cornea. Surgical trauma and increased intraocular pressure could be the factor, which produced the thickening and haze[6].

In this study, the postoperative corneal condition were evaluated and at immediate postoperative period it was found that the 86.7% and 76.7% of patients became as normal, respectively for group-I and group-II patients. There was no statistically significant difference in corneal condition between the groups ($P>0.05$). But at mid-term postoperative periods, the corneal condition became normal status in all the study population. So, the corneal rehabilitation and visual recovery were earlier and more among the clear corneal incision than the sclerocorneal incision.

The endothelial cell loss has been clearly demonstrated after ICCE, and ECCE, as well as after phacoemulsification. The intraocular trauma to endothelium from the manipulation of the instruments, lens materials, intraocular lens (IOL), irrigating fluid turbulence and air bubble exposure are the probable major factors in endothelial cell loss and corneal decompansation. Hence, in cataract surgery, viscoetastic substance are used to protect the endothelial cells.

All the viscoelastic substances aims to prevent mechanical damage to corneal endothelium, provide a surgical device for manipulating delicate tissue and maintain anterior chamber depth during surgery. The clearance of viscoelastic substances through the trabecular meshwork are believed to be dependant upon the viscosity and molecular weight of the used materials. The lower viscosity viscoelastic substances compared with higher viscosity viscoelastic substances, may have disadvantage of poorer endothelial protection.[7]

The viscoelastic substances should removed with great care from the anterior chamber and, as well as, from behind the IOL, at the end of surgery. However, it is nearly impossible to complete removal of the viscoelastic substances without injuring the endothelium and other vulnerable structures of the eye. Assuming that, the amount of remaining viscoelastic substances is a major reason for the early transient postoperative IOP rise.[8]

So, aims of this study is to prevent endothelial damage and transient rise of IOP, during surgery

and postoperative follow-up, for the benefit of the patients.

## Conclusion

In phacoemulsification cataract surgery, to achieve the early and more corneal rehabilitation, early visual rehabilitation and functional recovery, the clear corneal incision is superior and better surgical procedures. Because the corneal haze and corneal decompansation is more pronounced in sclerocorneal incision. The clear corneal incision procedure can be performed safely and some unwanted complications could be avoided.

So this study suggest that the clear corneal incision is the choice of technique and more beneficial for the patient.

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# Incidence of posterior capsule rupture and its effect- in a peripherally situated Medical College Hospital

Dr. Md. Enamul Hoque[1], Dr.Golam Baquiul Alam[2]
Dr. Md. Moyez Uddin[3], Asma Haque[4]

## Abstract

***Purpose**: To assess incidence of posterior capsule rupture and how patients from a general hospital population is affected on a short-term basis after posterior capsule rupture (PCR) during cataract surgery.*

***Setting**: Department of Ophthalmology, Rajshahi Medical College Hospital, Bangladesh.*

***Materials and Methods**: This was a prospective study of one-year period evaluated the incidence of posterior capsule rupture and its outcome. Details of the patients' age, diagnosis, postoperative best corrected visual acuity (BCVA), ocular co-morbidity, surgeon grade, number and duration of follow-up reviews, and postoperative complications were collected.*

***Results**: Over the one year period, the PCR rate was 14% (14 PCR in consecutive 100 cataract cases). Two eyes among the PCR was achieved a final BCVA (best corrected visual acuity) of 6/12. In 6 eyes, final BCVA was attained to less than 6/60. Mean duration of follow-up was 11.7 weeks. The most common extra procedure was anterior vitrectomy (12 cases) with Scleral fixation IOL implantation (12 cases). The most common post operative complication was corneal oedema (10 cases) on the first post operative day. None developed infective Endophthalmitis. Only two cases were developed macular oedema after two months. Patients were required additional long term medication at the final visit.*

***Conclusion:** Posterior capsule rupture is one of the common complications in cataract surgery, especially in peripheral medical college. This complication affects the patient in the short-term in terms of additional surgical procedures, additional topical and oral medications in the duration of follow-up period. Most patients usually not recovered an acuity of 6/12 or better. Proper training, instrumentation and guide are necessary to reduce this complication.*

## Introduction

**Purpose:** To assess incidence of posterior capsule rupture and how patients from a general hospital population is affected on a short-term basis after posterior capsule rupture (PCR) during cataract surgery.

**Setting**: Department of Ophthalmology, Rajshahi Medical College Hospital, Bangladesh.

**Materials and Methods**: This was a prospective study of one-year period evaluated the incidence of posterior capsule rupture and its outcome. Details of the patients' age, diagnosis, postoperative best corrected visual acuity (BCVA), ocular co-morbidity, surgeon grade, number and duration of follow-up reviews, and postoperative complications were collected.

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100 consecutive cases of cataract were selected. The distribution and diagnosis of cases shown in table (fig.1) as well as bar (fig.2) and pie chart (fig.3). Among these cases, Senile hypermature cataract was 46% and Senile mature cataract was 34%.

| Diagnosis | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | SIC | 9 | 9.0 | 9.0 | 9.0 |
| | SMC | 34 | 34.0 | 34.0 | 43.0 |
| | SHC | 46 | 46.0 | 46.0 | 89.0 |
| | Traumatic Cat | 5 | 5.0 | 5.0 | 94.0 |
| | Diabetic Cat | 3 | 3.0 | 3.0 | 97.0 |
| | PPC | 2 | 2.0 | 2.0 | 99.0 |
| | Other | 1 | 1.0 | 1.0 | 100.0 |
| Total | | 100 | 100.0 | 100.0 | |

Fig.1: Diagnosis of cataract cases taken in the study

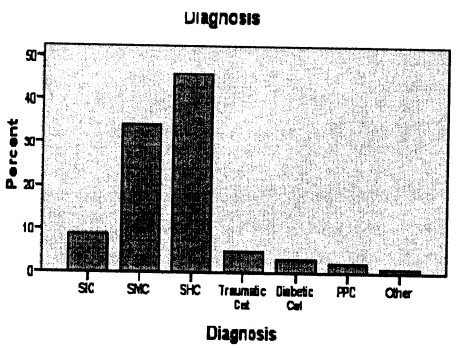


Fig.2: Bar chart of cataract cases taken in the study

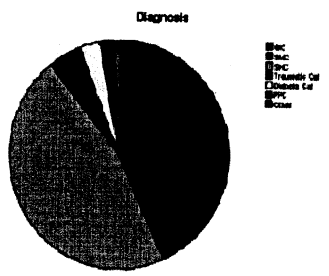


Fig.3: Diagnosis of cataract cases showing in pie chart

The age range was 15 – 85 years where mean age was 58.13(SD ±15.23) (fig.4). The male was 52% and female was 48% (fig.5, 6).

ECCE with posterior capsule IOL implantation was done in 74 cases (74%) and SICS was done in 12 cases (12%) (Fig.7). The most common extra procedure was anterior vitrectomy (12 cases) with

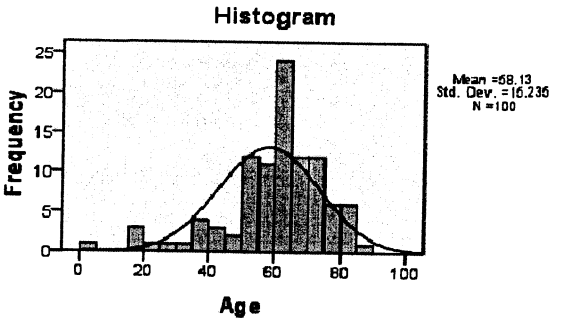


Fig.4: Histogram of age

Sex

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 52 | 52.0 | 52.0 | 52.0 |
| | Female | 48 | 48.0 | 48.0 | 100.0 |
| Total | | 100 | 100.0 | 100.0 | |

Fig.5: Distribution of sex

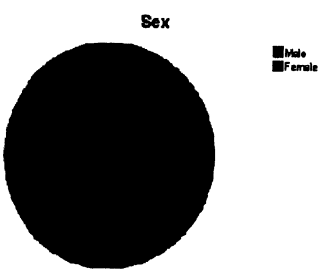


Fig.6: Pie chart of sex

Scleral fixation IOL implantation (12 cases) (Fig.8). Mean duration of follow-up was 11.7 weeks

| Preplanned operation executed | | |
|---|---|---|
| Name of operation | No. | % |
| ECCE+IOL | 74 | 74% |
| SICS+IOL | 12 | 12% |

Fig.7: Preplanned operation executed

| Post planned operation done due to PCR | | |
|---|---|---|
| Name of operation | No. | % |
| Anterior vitrectomy + Scleral fixation IOL | 12 | 12% |
| Sulcus fixated IOL | 2 | 02% |

Fig.8: Post planned operation done due to PCR

## Results

Over the 100cases, the PCR rate was 14%. It was most common in Senile mature cataract (5 cases) (fig.9, 10). PCR most commonly occurred (3 cases) during irrigation and aspiration of cataract surgery (fig.11, 12). Two eyes among the PCR was achieved a final BCVA (best corrected visual acuity) of 6/12. In 6 eyes, final BCVA was attained to less than 6/60 (fig.13). Mean duration of follow-up was 11.7 weeks.

| Per operative Complication | | | |
|---|---|---|---|
| | PCR | No PCR | |
| Diagnosis | SIC | 3 | 6 |
| SMC | 5 | 29 | |
| SHC | 4 | 42 | |
| Traumatic Cat | 1 | 4 | |
| Diabetic Cat | 0 | 3 | |
| PPC | 1 | 1 | |
| Other | 0 | 1 | |
| Total | 14 | 86 | |

Fig.9: Per operative Complication

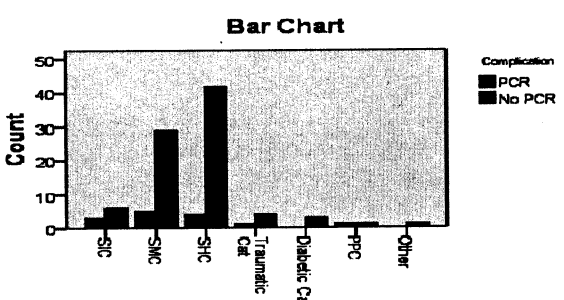


Fig.10: Per operative Complication

The most common post operative complication (Fig.14) was corneal oedema (10 cases) on the first post operative day. None developed infective Endophthalmitis. Only two cases were developed macular oedema after two months. Patients were required additional long term medication especially topical steroid (14 cases) at the final visit. How patients were affected that were shown in table (fig.15.)

| | Cause of PCR | | |
|---|---|---|---|
| | During Irrigation & Aspiration | During Implantation IOL | During delivery of Lens nucleus |
| Diagnosis SIC | 2 | 1 | 0 |
| SMC | 3 | 1 | 1 |
| SHC | 3 | 1 | 0 |
| Traumatic Cat | 1 | 0 | 0 |
| Diabetic Cat | 0 | 0 | 0 |
| PPC | 0 | 1 | 0 |
| Other | 0 | 0 | 0 |
| Total | 9 | 4 | 1 |

Fig.11: Cause of PCR

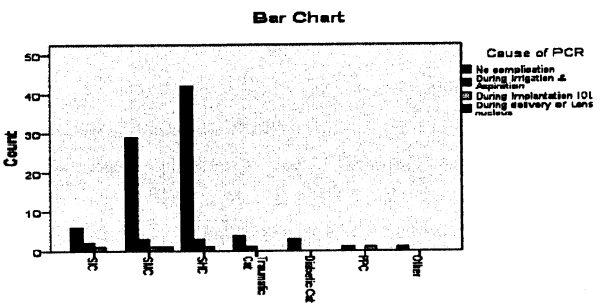


Fig.12: Cause of PCR

BCVA after operation of PCR cases

| Visual acuity | No. | % |
|---|---|---|
| | 6/12 | 2 |
| | 6/24 | 2 |
| | 6/60 | 4 |
| | <6/60 | 6 |

Fig.13: BCVA after operation of PCR cases

| Post-operative complication among 14 cases | | |
|---|---|---|
| Complication | No | % |
| Corneal oedema | 10 | 71.4% |
| Severe uveities | 5 | 35.7% |
| IOP>30mmHg | 4 | 28.6% |
| Updrawn pupil | 7 | 50% |

Fig.14: Post-operative complication among 14 cases

| How patients were affected | Additional surgical | |
|---|---|---|
| procedure | Anterior vitrectomy | 12 |
| | Scleral fixation IOL | 11 |
| Additional Medication | | |
| during follow-up | Anti-glaucoma drugs | 2 |
| | Topical steroids | 14 |
| | Topical mydriatics | 4 |
| | Oral steroids | 14 |
| Long time complications | | |
| | Stitch reaction | 14 |
| | Corneal oedema | 5 |
| | Chronic uveities | 3 |
| | Pschyhcological upset | 14 |

Fig.15: How patients were affected

## Discussion

PCR is one of the disastrous complication during surgery[3]. In many cases complete surgery can not able to be performed, if this complication occurs. Vitreous being prolapsed, tear of posterior capsule gradually being increased. Finally, the total operation may be failed. Surgeons become psychologically more tense at the time of operation and later on. In this study, PCR occurred in 14% cases. In one study done by Ionides, where PCR was 4.1% cases[2] and in other study done by Astbury where PCR occurred in 1.7% cases (45 rupture). Among these 45 cases, 15 ruptured by trainee doctor[1] . In this study, PCR occurred more than the above study and this was happened mainly in mature cataract during aspiration and irrigation. The mature cataract specially if it is black cataract, where it is very difficult to complete uneventful operation. Here nucleus is very hard and large and zonules are very weak. So if the surgeon is not very alert at the time of operation, any complication may occur par operatively. This high rate of PCR occurred as maximum surgery done by the trainee doctor or ophthalmologist who has less experience. This usually happened in peripheral medical college, where load of cataract cases is high and experienced surgeon is minimum. Old instrument or non parallel surgical instrument are also responsible for such type of complication. Post operative complication of corneal oedema and severe uveities occurred 71.4% and 35.7% cases respectively among the complicated cases which is due to injury of endothelium during operation, vitreous touch of cornea as well as increase IOP. Unplanned Vitrectomy and scleral fixation IOL was done[4] in 11 cases where vision was achieved[2] not more than 6/12. Visual acuity was not achieved due to decantation of IOL, corneal oedema, media to some extent hazy. Visual acuity may reach to normal if vitreous is handled properly like proper anterior vitrectomy, with centered scleral fixation IOL. Long time taken for rehabilitation after surgery, vision not achieved up to the mark which make the patient psychologic upset in all of complicated 14 cases. This event of PCR during operation can be maximally minimized by proper training of ophthalmologist; the trainee surgeons will do the surgery under the guidance of experienced ophthalmologist and also with the availability of modern and parallel instrument which should be available in every institution.

## CONCLUSION

Posterior capsule rupture is one of the common complication in cataract surgery specially in peripheral medical college. This complication affects the patient in the short-term in terms of additional surgical procedures, additional topical and oral medications in the duration of follow-up period. Most patients usually not recovered an acuity of 6/12 or better. Proper training, instrumentation and guide is necessary to reduce this complication.

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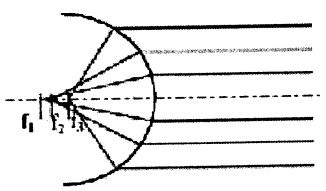
# Q-Value adjustment—A New Horizon in Refractive Surgery

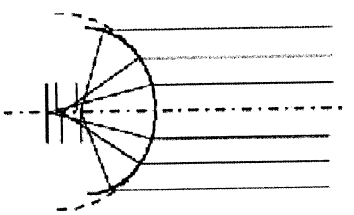
*Dr.Rashid Hyder*[1]

## Introduction

Corneal Q-value is a measurement of corneal asphericity. Q-Value (Fig-1) adjustment means corneal asphericity adjustment. In this article we will try to clarify the problems with corneal asphericity change after laser ablation and the means to overcome it with a present day new technology. In this regard few new terminologies have also come along in the literature of refractive surgery. Even few years ago we were not accustomed with these terms but gradually we are coming across these newly found problems and fortunately with their solutions as well. Terminologies like Q-Value, Lower Order Aberrations (LOA), Higher Order Aberrations (HOA), Prolate, Oblate, Corneal Eccentricity etc. have been introduced along with the advent of modern refractive surgery. We will also see how the new 4th. generation machines with a latest technology can efficiently correct these iatrogenic problems without going into full Wave Front Guided Treatment. **Q-Value adjustment by Allegretto Wave laser machine is done by its F-CAT Module.** It adjusts corneal asphericity and it is also called Custom-Q. That means it is a customization procedure which corrects the exact amount of altered asphericity of cornea detected after the ablation. Though so far it is not possible to correct by every excimer laser machine yet but it is predicted that it will be soon. Using this new technology, surgeons can adjust for the Q-value, significantly improving not only the acuity but the quality of vision as well. This **F-CAT module** of Allegretto Wave can also fine tune correction values, optical zones and transition zones.



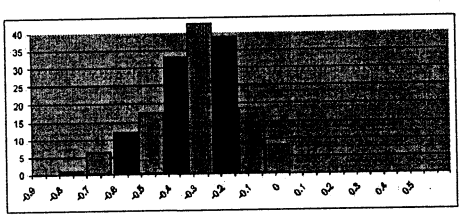
A spherical lens (same curvatur all over the surface) focuses light in more than one focus point (f1,f2,...). Light that hits the the lens on the periphery will be stronger refracted than the light that hits the centre. This causes spherical aberrations.



Keeping the central curvature and increasing the curvature of the periphery creates an oblate shape. An oblate shape creates more spherical aberrations than a pure sphere.

## Relationship between corneal shape and Q-value.

A normal cornea before any operation usually has a Q-value within -0.26 to -0.46 (Fig.2). Average Q-Value -0.3 and Ideal Q-Value is-0.55.



Q-Value on the positive side is oblate and on the negetive side is prolate. If Q-value is >-0.3 F-CAT treatment is suggested, Q-made minus and better, towards ideal-0,55 in all patients.

After standard Lasik the shape of the cornea becomes **oblate** (Fig 3) but after Q-Value correction by F-CAT it becomes **prolate** (Fig.4 )

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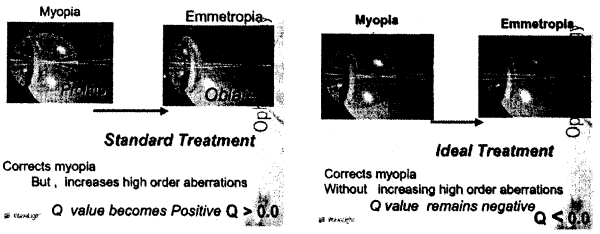
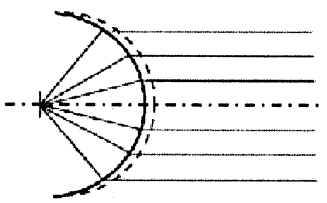
**Prolate and Oblate Cornea**

Normally myopic cornea is **prolate** center convex like a **bullet.** Quality of vision in a prolate cornea

**Corneal Shape and Q-Value**



To have a sharp view, i.e. to focus all the light in one point, the curvature in the periphery has to be changed to get a so called aspheric lens. To change a spherical object to an aspherical prolate shape the curveture in the pheriphery has to be decreased. The central curveture remains the same and the aberrations can be eliminated.

$$Q = - e2$$

The so called excentricity e or the asphericity Q describes the change of the curvature from the centre to the pheriphery.

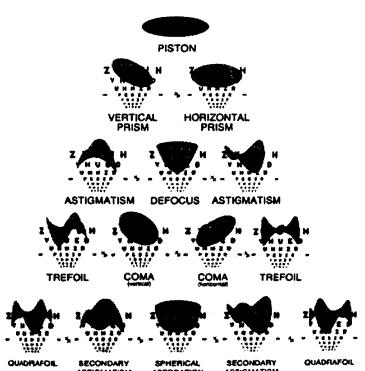
is good. But after standard ablation the cornea becomes oblate (Q value becomes positive (Q>0.0), increasing higher order aberrations, where peripheral laser is needed to make the cornea prolate again for better quality of vision and that is done by Allegretto's ordinary optimized module for low myopes and by Custom-Q module (F-CAT) for high myopes, without going into expensive and time consuming Wavefront Technology. After Optimized and F-CAT ablation Q-value becomes negative (Q<O.O ). In optimized and Custom-Q module aberrometer is not needed and not even very detailed topography. This is a great advantage of these two programs of Allegretto which are not available in any other machine. Q is negative in **prolate shape** (Bullet shape) and results good visual quality.

Normally hyperopic cornea and myopic cornea after standard ablation, when it becomes emmetropic, is **Oblate**, that is center flat and periphery steep like a **beef burger.** Quality of vision in an oblate cornea is poor. Here Q is positive. The relationship of the so called Excentricity ? or the asphericity **Q** which describes the change of the curvature from the center to the periphery is **Q= -?²** (Fig-5)

**Higher & Lower Order Aberrations:**

| R cornea | å | Q |
|---|---|---|
| 7.78mm | -0.71 | +0.5 |
| 7.80mm | 0 | 0 |
| 7.82mm | 0.71 | -0.5 |

Our cornea is aspheric. In standard Lasik only central cornea is treated and nothing is done to the periphery. As soon as the central cornea is treated the whole corneal integrity is changed. Here we will discuss some of the important iatrogenic corneal changes which occurs along with standard corneal ablation and its effect on the quality of vision which are not correctable by glasses. These are called **Higher Order Aberrations (HOA)** and normal corneal aberrations myopia, hypermetropia and astigmatism are called **Lower Order Aberrations (LOA).**




ere is a well recognised set of pictures to show Higher order aberrations ( Fig.6).

Standard Lasik specially in high power corrections result poor quality of vision due to induced Higher Order Aberrations even after gaining emmetropia. This iatrogenic change may be compared with the *coupling effect* of Radial Keratotomy. If one dimention of cornea is changed the other dimension is also affected.

HOA is measured by RMSH ( Root Mean Square of Higher Order Aberrations) e.g. RMSH of Coma is -0.04504

**Advantages of F-CAT are:**
Custom-Q or F-CAT module= customized aspheric ablation.

Apart from producing **prolate** cornea other **advantages** are:

- It can correct power, both spherical and cylindrical, in 0.01 **increments** which normally is 0.25 increments, eg. instead of -4.50 it can correct -2.51.
- In the same manner **Optical Zones** can also be adjusted minutely. Instead of 5.50, 6.00 or 6.50mm we can use 5.60, 6.10 or 6.60mm. By doing this it can **minimise the tissue consumption** in high corrections, less regression and less chance of corneal ectasia. Results of larger optical zones are more stable and results are more accurate.
- By this method there are **no microwricles** in the cornea postoperatively due to better contour of cornea which are seen in standard ablation of high myopes.
- Better night vision.
- No glare.
- It doesn't need even detailed topography like T-CAT (Topography guided Lasik) or Aberrometry, still the methods can design the treatment individually. It only needs routine preoperative topography.

**Indications for F-CAT are** Moderate to high refractive errors, spherical aberration.

**What should be the target Q-Value?**
**To calculate** : Flattest central K-Reading is needed
**Aim** : Rotationally Symmetric Negative Asphericity
**Value** : Flat Meridian Q -0.25/ -0.46 Increase Up to only -0.6

Every one of us has some corneal asphericity. Q-Value is the measurement of corneal asphericity. Adjustment of Q-value significantly improves visual acuity outcomes. With Allegretto's Custom-Q software (Allegretto Optimized program) corneal ablation can be customized. Moreover with it's F-CAT module correction values, optical zones and transition zones can be fine tuned. Post operative Q-Value is adjusted to maintain the preoperative flattest meridian and that is the negative range. Ideal Q-Value -0.50 to -0.55, Average Q-Value -0.26 to -0.46. Allegretto Topolyzer automatically calculates the eye's Q-Value in the steepest and flattest meridian, on the basis of which target asphericity is determined for the treatment. The calculation of the target Q-Value is based on the flattest central K-reading and addresses existing spherical aberration in the patients eye. The average Custom-Q treatment takes longer than a standard treatment, but using the 400Hz machine treatment time so far only been 34 seconds. The laser's stable energy and accurate eye tracker are especially useful in such cases.

Q-value if more than 0.00 (>0.00 ) that is on the positive side then the post-op. complaints like glare, night vision problem, ghost image are more. Negative Q-value is always better.

**Summary**
So Allegretto Optimized corrects Q-Value for low myopes and used for the majority of patients .Custom-Q should be used for moderate and high myopes . Custom-Q uses larger optical zones and creates better corneal contour reducing epithelial remodeling and regression. I t also provides improved night vision quality. Custom-Q treated corneas do not show micro wrinkles which is usually encountered in higher corrections by normal methods of ablation. Custom-Q technology is an excellent tool to correct high refractive errors.

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# Double Flap and single flap Dacryocystorhinostomy (DCR) operation – A comparative study

*Dr. Md. Enamul Hoque[1], Dr.Golam Baquiul Alam[2]*
*Dr. S.M. Mahfuz Hossain[3], Dr. Mst. Nurjahan Khatun[4]*

**Abstract**

*The study of various modification of classical daeryocystorhinostomy (DCR) for the treatment of Epiphora due to Nasolacrimal Duct (NLD) obstruction is still continuing due to failure of various percentages. In this paper, one modification of anterior flap of sac & nasal mucosa with suspended ceiling stitch is compared with author's modification of lacrimal sac mucosa flap attached to periosteum of nasal bone or overlying muscle anterior to osteum after total removal of nasal mucosa. Statistically no difference in the outcome of these two methods. So the author's method can be taken as a surgical method of Nasolacrimal Duct Obstruction or Chronic Dacryocystitis. The author's technique is presented in details.*

## Introduction

The positive value of dacryocystorhinostomy (DCR) for the treatment of Fpiphora due to Nasolacrimal Duct (NLD) obstruction is well established. DCR can be done either by External DCR or by Endonasal DCR[1]. In 1921 the classical technique of External DCR described by Dupuy Dutemps & Baurguet[2], where edge to edge anstomosis of sac & nasal mucosa over the bony margin of osteum by external approach.

Due to failure of various percentages, study are continuing with various modification. In one modification of external DCR, where the anterior flap of sac & nasal mucosa with suspended ceiling stitch is described by Khan AM et at in 1996[3] & Baldeschi L et al[2] in 1998 which is practiced not only in our country but all over the World.

Another modification applied by the author where only the lacrimal sac mucosa flap attached to periosteum of nasal bone or overlying muscle anterior to osteum after total removal of nasal mucosa.

A comparative study was designed to see the success of DCR operation in between the method of anchored anterior suspended flaps of lacrimal sac and nasal mucosa with author's method of single anterior lacrimal sac flap attached to periosteum or orbicularis muscle anterior to osteum. The author's technique is presented in details.

## Materials & Methods

This study was an experimental study done in Rajshahi Medical College Hospital & private clinic in the period of Jan'08 to July'09 .

1 Associate Professor (Ophthalmology) Rajshahi Medical College, Rajshahi Bangladesh
2 Junior consultant Rajshahi Medical College Hospital
3 Honorary Medical Officer, Rajshahi Medical College Hospital
4 Honorary Medical Officer, Rajshahi Medical College Hospital

102 cases of chromic dacryocystitis were selected where obstructive lesion of lacrimal drainage apparatus situated distal to the internal common cannalicular opening.

1. For this reason following test were done in every case.
2. Sac patency tests by syringing where regurgitation only over the upper &/or lower punctum.
3. Probing –all cases were the hard touch.
4. Pressure over sac – regurgitation through upper or/& lower punctum but not through nose. Jones dye test - done in some cases where both primary & secondary were the negative result.
5. Condition of nostrils – any sever deviated nasal septum, growth or polyp were not included in this study.

**Patients were divided into two groups**

1st group – where external DCR operation done with anterior flap of sac & nasal muscosa which was anchored by giving ceiling stitch with orbicularis muscle & sub-cutaneous tissue (Double flap method).

2nd group – where external DCR done by author's technique in which nasal flap was totally removed and anterior flap of lacrimal sac mucosa attached with periosteum or orbicularis muscle anterior to osteum (Single flap method).

Cases were randomly selected for any group of operation where 54 (52.9%) were in 1st group and 48 (47.1%) were in 2nd group (table-1).

The age of the patient in 1st group was 15 to 80 years with mean age ±SD was 40.49 ± 11.13 years and in 2nd group was 15 to 80 years with mean age ±SD was 41.46 ± 15.42 years (table-2). The male was 7 and the female was 47 in 1st group and the male was 10 and the female was 38 in 2nd group (table-1).

All cases were followed up 4 months to 1 year with average duration of follow up was 6 months.

**Methods ( Surgical procedure)**

*Pre-operative preparation:*

Selected all patients were advised to take oral antibiotic of amoxicillin & nasal decongestion from 3 days before operation. Patient was also advised to frequent pressure over sac region within this time.

*Anesthesia:*

Nasal pack soaked with 1:1000 adrenaline & 3-4 cc of 2% Lignocain mixed with chloramphenical eye ointment was introduced in every case.

5-8 cc of local anesthesia agent of 2% ligncain mixed with Bupivacain (1%) (3:2) was infiltrated locally along the medial canthal region.

*Surgical procedure:*

3 cm length skin incision was given about 0.5cm medial to the medial canthus. Orbicularis Oculi was split. Angular jugular vein was identified & retracted either medially or laterally. Medial canthal ligament & periosteum was incised along margin of insertion. Lacrimal sac was separated. Only anterior flap of lacrimal sac was formed by two horizontal & one vertical incision.

Nasal & lacrimal bone was trephined. Osteum was enlarged to 15x15 mm. Only anterior flap of nasal muscosa was formed by two horizontal & one vertical incision.

The first group was made anastomosis by using suture material of 6/0 silk or chromic catgut or vicryl and the flap was made ceiling by giving ceiling stitch with 6/0 chromic catgut with orbicularis & sub-cutaneous tissue. In 2nd group nasal mucosal flap was totally removed and only lacrimal sac was stitched to periosteum or orbicularis muscle anterior to osteum with 6/0 silk or chromic catgut or vicryl

Orbicularis muscle was stitched by 6/0 chromic catgut. Skin was made apposed by mattress suture or continuous suture.

Every patient was discharged on 2nd day. On 7th day, skin stitch was removed.

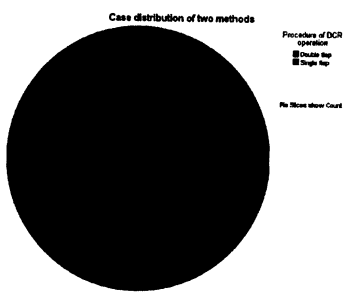
***Table -1: Sex distribution in between two methods***

| Procedure of DCR operation | | Sex | | Total |
|---|---|---|---|---|
| | | Male | Female | |
| Double flap Age: 15-75 yrs. | Count | 7 | 47 | 54 |
| | % of total | 13% | 87.7% | 100% |
| Single Flap Age: 18-80yrs. | Count | 10 | 38 | 48 |
| | % of total | 20% | 79.2% | 100% |

***Tablr – 2: Age distribution in between two methods***

| Procedure of DCR operation | Mean age | N | Std. Deviation | % of Total N |
|---|---|---|---|---|
| Double flap | 40.09 | 54 | 11.131 | 52.9% |
| Single flap | 41.46 | 48 | 15.422 | 47.1% |
| Total | 40.74 | 102 | 13.272 | 100.0% |

Graph -1: Case distribution in two methods




Every patient was followed up on 15th day, one month & every 3 monthly.

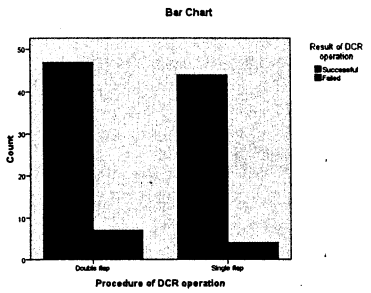
## RESULT

## DISCUSSION

In this study, the success of double flap (1st method) is 87% (table-3, graph -2). This success is well correlated with the study of Khan AM et al[3] and Baldeschi L[2] et al where success is

***Table-3: Procedure of DCR operation * Result of DCR operation Crosstabulation***

| | | | Result of DCR operation | | |
|---|---|---|---|---|---|
| | | | Successful | Failed | Total |
| Procedure of DCR operation | Double flap | Count | 47 | 7 | 54 |
| | | % within Procedure of DCR operation | 87.0% | 13.0% | 100.0% |
| | Single flap | Count | 44 | 4 | 48 |
| | | % within Procedure of DCR operation | 91.7% | 8.3% | 100.0% |
| Total | | Count | 91 | 11 | 102 |
| | | % within Procedure of DCR operation | 89.2% | 10.8% | 100.0% |




Graph -2: Result of DCR operation in two methods

87.85%,and 84.4% respectively. In this study, success of single flap (2nd method) is 89.2% (table-3, graph - 2). Statistically in these two method, there is no significant difference ($p > 0.50$) in the outcome of DCR operation.

In double flap method, while making osteotomy nasal mucosa may damage. There may be redundant of flaps. Sometimes there is chance to retract of flap to osteum, thereby closing the osteum.

In single flap (2nd method ) method, nasal mucosa is totally removed. Hazards in making nasal flap is totally eliminated. Lacrimal sac mucosa flap is anastomosed to periosteum or orbicularis muscle anterior to osteum. This suturing the anterior flap with sufficient tension prevent it to collapse. Chance of flap retraction and closing of osteum is less.

Surgeons only work with lacrimal sac flap, not facing any embaracing situation to make nasal flap, tension of flap can be sufficiently produced to prevent collapse. Statistically no significant difference in the outcome of results in between two methods. With above consideration, the single flap of lacrimal sac can be taken as a method of surgery to manage nasolacrimal duct obstruction or chronic dacryocystitis.

## CONCLUSION

The single flap of lacrimal sac can easily anastomose with periosteum or orbicuraris muscle anterior to bony osteum, sufficient tension of flap can be easily produced, so the chance of flap retraction and closure of osteum is less in single flap than double flap method. Beside these, outcome of these two methods of surgery is highly insignificant statistically. Surgical procedure of single flap of lacrimal sac of DCR operation can be taken as a surgical procedure of Nasolacrimal Duct Obstruction or chronic dacryocystitis.

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# Role of Excimar Laser in High Myopic Astigmatism

Dr. Md. Sharfuddin Ahmad[1], Dr.Iftekhar Md. Munir[2], Dr.Inamur Rahman Choudhury[3]
Dr.Chandra Shekhar Majumder[4], Dr.Rokhshana Reaj[5]

## Abstract

*Modern Excimer Laser practice can treat pure cylinder upto -10 D. Here it was decided to see the efficacy in our situation (OSB Laser Vision Center).*

***Aim:*** *Assess the results of LASIK in Simple Myopic Astigmatism of high D value.*

***Material and Methods:***

***Study Design:*** *Retrospective Study.*

***Sample Size:*** *8 Eyes of 5 patients.*

***Sampling:*** *Random*

***Inclusion Criteria:*** *-2.0 to -4.0 D.C. Simple Myopic Astigmatic patients were included in this study.*

***Exclusion criteria:*** *D Value <-2.0 and > -4.0 were excluded from this study.*

***Place of Study:*** *OSB Laser Vision Center, Mirpur. Dhaka.*

***Period of Study:*** ***1st*** *June/09 to 31st August/09.*

***Result :*** *From result 4 eyes had no residual refraction (50%) while 4 eyes had residual refraction (50%) of -0.5 D to -0.75 D , With a mean value of – 0.62 D. which is quite less and can well be tolerated by patients and another striking feature there was vision improvement Best Corrected Visual Acuity (BCVA )>-1 Snellen line in 6 case (75%) and none had any loss of line. No major per or post operative complication was observed and stabilization of refraction was also observed. So result is encouraging.*

***Conclusion:*** *Patients with pure Myopic Cylinder (-2.0 to -4.0 D) were treated by Excimar Laser with very good results.*

***Key word:*** *LASIK. Simple Myopic Astigmatism.*

## Introduction

LASIK is frequently performed for Myopia and Hypermetropia, because of its excellent predictability and final outcome. However it yet not strongly recommended for pure Astigmatism. Here we have tried to assess the results in cases of simple myopic Astigmatism of high D value in our situation (OSB Laser Vision Center).

**Aim:** Assess the results of LASIK in Simple Myopic Astigmatism of high D value.

## Material and Methods

**Study Design:** Retrospective Study.

**Sample Size:** 8 Eyes of 5 patients by Random Sampling.

1. Professor cum Chairman Dept. of Ophthalmology,BSMMU
2. Asstt. Professor (c.c),Glaucoma. NIO
3. Asstt. Professor (c.c), NIO
4. Asstt. Professor (c.c),Cornea NIO
5. Consultant, OSB LVC

**Inclusion Criteria:** -2.0 to -4.0 D.C. Simple Myopic Astigmatic patients were included in this study.

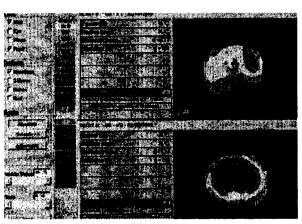
**Place of Study:** OSB Laser Vision Center (LVC ) Mirpur, Dhaka.

**Period of Study:!st** June/09 to 31 st August/09.

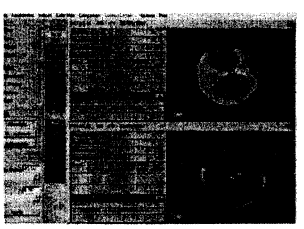
**Exclusion criteria:** D Value <-2.0 and > -4.0 were excluded from this study.

**Following examinations were done for all selected patients :**

- V.A
- S/L Examination.
- Tonometry



Pre Lasik Topography



Post Lasik Topography

- Refraction under mydriasis Pre and Post Oparative.
- Keratometric reading.
- Pachymetry
- Corneal Topography: Pre and Post operative.
- Follow up Examination in 1st week 1st month and 2nd month Post operatively.

**Procedure**

- Suction ring is applied to the globe which raises the IOP over 65 mmHg. This may temporarily occlude the Central Retinal Artery and extinguish vision.
- The ring is centred on the cornea and provides a guide track into which an automated microkeratome is inserted.
- The keratome is mechanically advanced across the cornea to create a very thin flap, which is reflected.
- Suction is released and the bed is treated with the excimer laser.
- The flap is repositioned and allowed to settle undisturbed for 30 seconds.
- All surgery were done by Dr. Rokhshana Reaj, Consultant OSB LVC

**Result**

*Table- 1 : Demography*

| Sex | | Eye | | Age(yr) |
|---|---|---|---|---|
| M | F | R/E | L/E | |
| 4 | 1 | 4 | 4 | 20-25(mean 21.5) |

**Discussion**

Modern Excimer Laser practice can treat pure cylinder upto -10 D. Here it was decided to see the efficacy in our situation (OSB LVC).

*Table – 2: Refractive States and visual recovery*

| Case | Eye | Pre Operative Ref.Error | Pre Operative vision | Post Operative Ref.Error | Post Operative vision | Remarks |
|---|---|---|---|---|---|---|
| 1 | 1 | -3.0/180 | 6/9 | Plano | 6/6 | Improve |
| 2 | 2 | -2.75/160 | 6/6 | Plano | 6/6 | Same |
| | 3 | -2.5/170 | 6/6 | -0.5/80 | 6/6 | same |
| 3 | 4 | -4.0/165 | 6/12 | -0.75/90 | 6/9 | Improve |
| | 5 | -3.0/175 | 6/9 | -0.5/85 | 6/6 | Improve |
| 4 | 6 | -3.0/20 | 6/9 | -0.5/110 | 6/6 | Improve |
| 5 | 7 | -2.0/25 | 6/9 | Plano | 6/6 | Improve |
| | 8 | -2.5/165 | 6/9 | Plano | 6/6 | Improve |

From result 4 eyes had no residual refraction (50%) while 4 eyes had residual refraction (50%) of -0.5 D to -0.75 D , With a mean value of – 0.62 D. which is quite less and can well be tolerated by patients and another striking feature there was vision improvement Best Corrected Visual Acuity

(BCVA)$^{>}$-1 Snellen line in 6 case (75%) and none had any loss of line. No major per or post operative complication was observed and stabilization of refraction was also observed. So result is encouraging.

**Limitation:** Series is small.

**Conclusion**

Patients with pure Myopic Cylinder (-2.0 to -4.0 D) were treated by Excimar Laser with very good results.

**Recommendation**

Further study with large sample size is needed for final comment.

**Acknowledgement**

Thankful to staff of OSB Laser Vision Center for their co-operation.

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# Diagnostic value of pupillary Ruff loss as a marker for angle closure Glaucoma

Dr. Iftekhar Md Munir[1]


## Abstract

*Of the nearly 67 million patients with glaucoma worldwide, it has been estimated that one half are affected by angle closure glaucoma.. In the south Asia Primary angle closure glaucoma (PACG) is predominant form of glaucoma and the leading cause of blindness in rural than urban area due to lack of modern diagnostic facility. To prevent this we should introduce new diagnostic technique for early diagnosis of PACG and thereby decrease the incidence of blindness in our population.*

*Pupillary Ruff is series of small ridges of the Pupillary margin formed by continuation of the pigment epithelium from the posterior surface. Developed from internal layer of the Optic Cup. It marks the anterior limit of the Embryonic Cup. Its nutrition is supply by directly or indirectly from Major and Minor Arterial Circle.*

***Aim**: To assess pupillary Ruff changes as a clinical marker for the diagnosis of primary angle closure glaucoma (PACG)*

***Methods:** A Cross sectional Observational study was conducted in Glaucoma clinic of National Institute of Ophthalmology (NIO) Sher-e-Bangla Nogar, Dhaka, between the period of 1st May 2009- 31st October 2009. Out of 115 cases 65 PACG patients and 50 POAG patients Were selected by Random sampling.All patients underwent thorough Clinical History and ophthalmic examination, including Best Corrected Visual Acuity, Slit Lamp Examination for pupillary Ruff changes and Limbal A/C Depth measurement, Gonioscopy for Angle status, Disc assessment by 78/90 D condensing lens and IOP measurement with Goldman applanation tonometer. Pupillary Ruff changes were graded as O to 2.0: Normal. 1: Uneven width of pupillary Ruff for at least 2 clock hours 2: pupillary Ruff completely absent for 2 clock hours (No Ruff Loss=0 Ruff Loss=1 and 2)*

***Result:** Age ranges from 38-65years mean 49.54 year and 39-67 years mean 50.16 year respectively for PACG and POAG patients. Among Sex in PACG ( M-26.15% F-73.85%) in POAG (M-48% F-52%) with female predominant and more marked in PACG.*

*pupillary Ruff loss in PACG was 86.15% and in POAG was only 6% with high sensitivity and specificity. Uneven width of papillary Ruff changes were found frequently (60%) than complit pupillary Ruff loss (40%). Among catchment area rural people was (58.20%) and urban people was (41.74%) in both type of glaucoma collectively.*

***Conclusion:** Peripheral Anterior Synechia (PAS) causes kinking of radial iris vasculature during angle closure probably causes temporary ischemia especially of end arteries supplying area of the papillary Ruff. Pupillary Ruff loss in PACG as an easily observed objective marker of the pupil for PACG diagnosis.*


***Key Words**: PACG POAG Pupillary Ruff*

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## Introduction

Of the nearly 67 million patients with glaucoma worldwide, it has been estimated that one half are affected by angle closure glaucoma.. In the south Asia Primary angle closure glaucoma (PACG) is predominant form of glaucoma and the leading cause of blindness in rural than urban area due to lack of modern diagnostic facility.[1,2] To prevent this we should introduce new diagnostic technique for early diagnosis of PACG and thereby decrease the incidence of blindness in our population. Assessment of pupillary Ruff changes as a clinical marker for the diagnosis of PACG is a new technique in this regard.

## Methods

**Study design**: Cross sectional Observational study.

**Sample size:** Out of 115 cases 65 PACG patients and 50 POAG patients.

**Sampling:** Random

**Place of study:** Glaucoma clinic, National Institute of Ophthalmology ( NIO ). Sher-e-Bangla Nogar , Dhaka.

**Study period:** 1st May 2009 to 31st October 2009.

**Exclusion criteria:** $2^0$ Glaucoma, congenital Glaucoma are excluded from the study.

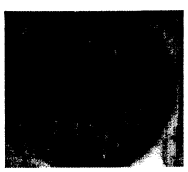
**Proper clinical History with catchment area (Rural/Urban) was noted.**

**Initially following examinations were done for all patients:**

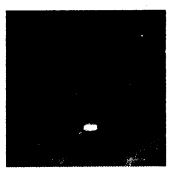
- Best Corrected Visual Acuity (BCVA)
- Pupillary Ruff changes was examined under Slit lamp magnification and graded as 0 to 2.
- 0: Normal
- 1: Uneven width of pupillary Ruff for at least 2 clock hours
- 2: pupillary Ruff completely absent for 2 clock hours

**(No Ruff Loss=0 Ruff Loss=1 and 2)**

- Limbal A/C depth Meatured by Van Herick theory.
- Tonomerty by GAT.
- Gonioscopy for angle stetus by Goldmann 3-mirror.
- Disc assessment by 78/90 D.
- Automated Visual Field Analysis by Humphrey.



Normal Pupillary ruff



pupillary ruff change

Slit Lamp

## Results

***Table -1 Pupillary Ruff changes in PACG ( n=65)***

| Pupillary Ruff changes | Number | % |
|---|---|---|
| Ruff loss | 56 | 86.15% |
| No Ruff loss | 9 | 13.85% |

PACG= Primary Angle Closure Glaucoma N=number of patient

***Table -2 Pupillary Ruff changes in POAG (n=50)***

| Pupillary Ruff Changes | Number | % |
|---|---|---|
| Ruff loss | 3 | 6 |
| No ruff loss | 47 | 94 |

PAOG=Primary open Angle Glaucoma N= number of patient

***Table -3 Grade of pupillary Ruff loss in PACG ( n=65 )***

| Grade | Number | % |
|---|---|---|
| Grade 1 | 39 | 60% |
| Grade 2 | 26 | 40% |

PACG=Primary Angle Closure Glucoma N=number of patient

***Table-4 Age Distribution of patients PACG (n-65)***

| Age group | Number of patient | % | Mean Age |
|---|---|---|---|
| <40 year | 9 | 13.85% | 49.54 years |
| 40-50 year | 43 | 66.15% | |
| >50 year | 13 | 20% | |

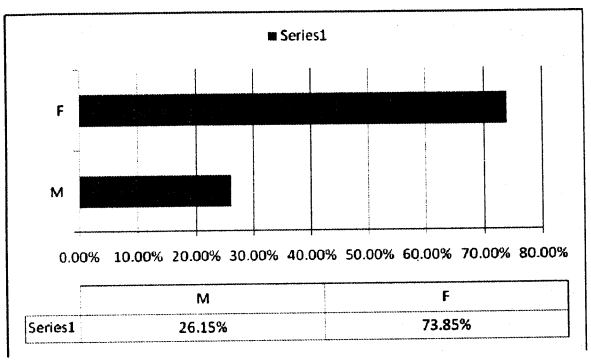
PACG=Primary Angle Closure Glucoma N=number of patient

*Table-5 Age Distribution of patients POAG (n-50)*

| Age group | Number of patient | % | Mean Age |
|---|---|---|---|
| <40 year | 7 | 14% | 50.16 years |
| 40-50 year | 31 | 62% | |
| >50 year | 12 | 24% | |

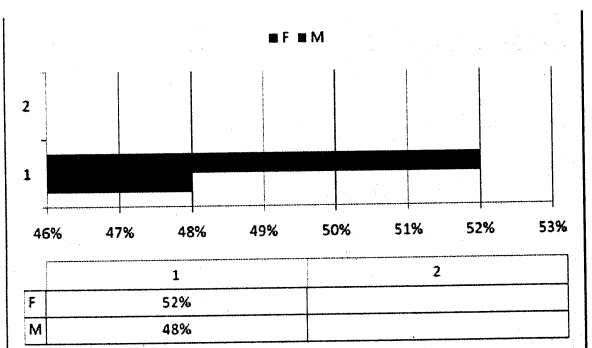
PAOG=Primary open Angle Glaucoma N=Number of patient

**Fig. 1 Sex Distribution of patients PACG (n=65)**



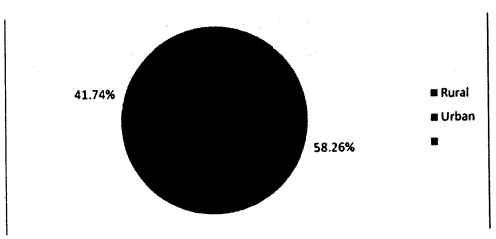

PACG=Primary Angle Closure Glucoma N=number of patient
M=Male F=Female

**Fig. 2 Sex Distribution of patients POAG (n=50)**




PACG=Primary Angle Closure Glucoma N=number of patient
M=Male F=Female

**Fig. 3 Catchment Area of both POAG and PACG (n=115)**




Primary open Angle Glaucoma. PACG= Primary Angle closure Glaucoma N=Number of patient

## Discussion

The angle closure glaucoma includes a large and diversified group of diseases, which are unified by the presence of peripheral anterior synechiae and or irido-trabecular apposition. Their presentation can be acute, with profound symptom, or chronic, with asymptomatic visual loss. The physician must identify the anatomic changes that have occurred and the underlying pathophysiology that has precipitated these changes in order to initiate the appropriate therapy for each type of angle closure glaucoma.

Pupillary Ruff is series of small ridges of the Pupillary margin formed by continuation of the pigment epithelium from the posterior surface. Developed from internal layer of the Optic Cup. It marks the anterior limit of the Embryonic Cup. Its nutrition is suppled by directly or indirectly from Major and Minor Arterial Circle. [3,4,5]

Peripheral Anterior Synechia (PAS) is clinically seen by gonioscopy. In gonioscopy it is typically broader than iris processes and irregular tent shaped. It bridge the angle recess instead of following recess and do not follow the concavity of the angle recess. PAS drag normal radial iris vessels with them and causes kinking of radial iris vasculature resulting temporary ischemia especially of end arteries supplying area of the pupil. [6,7]

Table 1 and table 2 showed significant pupillary Ruff loss in PACG (86.15%) than PAOG (6%). Agarwal study (EJO-2004) correlate with the study.( 8). But Lee T J Study (chin Med J- 2002) showed more sensitive of pupillary ruff loss (94%) in Chines population [9] than this study (86.15%). This may be Chines population are more prone to Angle Closure Glaucoma in Asia.

Tabte 3 Showed uneven width change of papillary Ruff frequently found (60%) than complit pupillary Ruff loss (40%) due early change in response to ischemia.

Table 4 and 5 showed Age distribution of PACG and POAG from 38-65years mean 49.54 year and 39-67 years mean 50.16 year respectively. It is because both type of glaucoma are middle age diseases and increase risk with age.

Fig-1 & Fig-2 showed sex distribution in both PACG and POAG are Female predominant with 73.85% and 52% respectively which is more marked in PACG. It correlates with Sk.Foster PJ. Study (Arch Ophthalmol. 1997 (10).

Fig-3 showed among catchment area rural people was (58.20%) and urban people was (41.74%) in both type of glaucoma collectively.

**Conclusion** Pupillary Ruff loss in PACG as an easily observed objective marker of the pupil forPACG diagnosis.

**Recommendation** Further multi centre study with large sample size is needed for final comment.

**Acknowledgement** Thankful to Dr. Yamli Ali, Dr. Masum Habib and Dr. Saifullah for their cooperation.

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# Narrow- Strip Conjunctival autograft to prevent recurrence of pterygium

*Dr. Nurul Alam[1], Dr. Md. Fakhrul Islam[2], Dr. Ferdous[3], Dr. A.S.M Moin Uddin[4], Dr. Khurshid Zaman[5]*

## Abstract

***Purpose:*** *To determine the efficacy of narrow- strip conj autograft in the treatment of pterygium.*
***Methods:*** *Prospective study in 26 patients at Easy- West Medical College Hospital, Turag, Uttara, Dhaka From January to December 2008. Male 11 and female 15. Age group about 20 to 60 years. After excision of pteryguim a narrow strip about 3 to 4 mm wide conjunctival auto graft done leaving 2 to 3 mm bare area from limbus. Regular follow up was given at 1st, 7th and 30th POD and at irregular interval for about 13 months. All patients were advised to attend the hospital for recurrence.*
***Results:*** *No recurrence of pterygium was found within one year.*
***Conclusion:*** *Narrow –strip conjunctival autograft with 2 to 3 mm bare sclera appears to be an effective surgical technique.*

## Introduction

A pterygium (Greek: Wing) is a triangular fibrovascular subepithelial in growth of degenerative bulbar conjunctival tissue over the limbus on to the cornea. It is most prevalent in populations with high exposure to ultraviolet light. Histopathological features are non-specific hyaline degeneration, low grade lymphocytic infiltration with destruction of Bowman's members.

Some pterygia remain stationary for decades, so that excision should not be performed unless growth is confirmed. Excision is indicated for cosmetic reasons, Marked discomfort or progression towards the visual axis.

## Methods

Total 36 patients admitted in the East West Medical College Hospital for pterygium operation from January to November 2008. Male 16 and female 20. Age group about 20 to 60 years. Out of them male 11 and female 15 patients were treated by narrow strip conjunctival autograft. Extreme ages. Patients having DM or other systemic diseases were excluded.

With all aseptic precaution excision of pterygium done under peribulbar 1% lignocaine. Shaving was done by tooks knife and in some cases by crescent knife. About 3 to 4 mm narrow strip of conjunctival epithelium was grafted leaving about 2 to 3 mm bare sclera between limbus and the proximal margin of the graft. 4 to 5 stitches were given with 10-0 monofilament nylon.

1. Associate Professor (Ophthalmology) EWMCH
2. Assistant Professor (Ophthalmology) EWMCH
3. Registrar (Ophthalmology) BIRDEM
4. Assistant Professor (Ophthalmology) EWMCH
5. Assistant Registrar (Ophthalmology) EWMCH

Inj. of combined dexamethasone and neomycin flash was given and patching was done and kept for about 3 to 4 hours. Then patients were treated by combined ciproflaxacin-dexamethasone drop, artificial tear and sreroid ointment at night for about 1 year. Proper counselling was done and all patients advised to attend the hospital for recurrence.

**Results**

No graft was lost or displaced. No infection was found. In one case one secondary stitch was given. In most of the case stitches felled out spontaneously. Only in few cases one/two stitches were removed after one month. Watering. redness, discomfort almost disappeared within one week. Recurrence was not found in any case within the study period.

**Discussion**

Recurrence is about 40 to 50% in pterygium excision with bare sclera within one year, most of these occur within 2 months of surgery. Recurrence in amniotic memberane graft is about 40% and about 5% in conjunctival autograft found in department of ophthalmology Chiang Mai University Thailand. Free flap conjunctival autograft combined with mitiomycin-c application done in department of opthalmology, Merir Hospital, Sapir Medical center, Kfar- Saba, Israel and found 2% recurrence. Pterygium excision with free conj autograft was done in Lions eye hospital, Perth, australia, Found 6.5% recurrence. Narrow strip conj. Autograft, leaveing 2 to 3 mm zone of bare sclera between the graft and ant. Margin of the conj wound outcome was 5.3% recurrence within 12 months, study was done in cole Eye institute, Cleveland, USA.

Our study was done in East west medical College Hospital, turag, Dhaka, recurrence was not found in any case within the study period of about one year.

**Conclusion**

Narrow- strip conjunctival auto-graft appears to be an effective surgical technique in preventing pterygium recurrence, creating an intervening 2 to 3 mm bare sclera between limbus and graft margin, may be important factor in preventing recurrence.

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# Non-glaucomatous Atypical Discs - A case series of 30 cases

*Dr. Shams Mohammed Noman*

**Abstract**

***Purpose :*** *To document and describe different patterns of non-glaucomatous atypical discs and to identify their other ocular and systemic associations.* ***Design :*** *A hospital-based prospective observational case series done during the period from 1st November 2007 to 31st October 2009.* ***Method :*** *Patient particulars, history and complaints were recorded. Ophthalmic examination included visual acuity, refraction, slit-lamp examination, pupillary reaction, tonometry, gonioscopy and funduscopy. The relevant investigations were done and documented. Similar relevant details were recorded on each follow-up.* ***Results :*** *30 patients were included in this case series. 13 patients were female, 12 were male. 5 patients were diagnosed as myelinated optic nerve head in both eyes, 5 patients had bilateral titled discs without refractive error; 4 patients had unilateral optic disc pit; 4 patients had bilateral optic disc drusens, 3 patients had bilateral disc coloboma, 2 patients had morning glory disc, 1 patient had optic nerve hypoplasia, 5 patients had macrodisc and 1 patient was diagnosed with post-traumatic optic nerve head avulsion.*
***Conclusion :*** *Proper ophthalmic examination and investigations are essential for the diagnosis of atypical discs and congenital anomalies of the optic disc. Documentation not only helps clinicians in their clinical practice but also helps in teaching, patient counseling and planning for rehabilitation.*

**Introduction:** The optic nerve begins anatomically at the optic disc but physiologically and functionally from the ganglion cells that cover the entire retina. It is a collection of 1.1–1.2 million ganglion cell axons that traverse the sclera through lamina cribrosa. The optic nerve develops from the neural tube (neuroectoderm). Due to developmental anomalies, infection and trauma there is damage to the ganglionic cells, as well as nerve fibres, which in turn affects the patient's visual acuity and visual field. A normal disc is 1.5 mm in diameter, has a 0.3:1 – 0.5:1 cup disc ratio and a healthy neuroretinal rim.

Traumatic, inflammatory and vascular toxic optic disc abnormalities are not uncommon in this subcontinent but atypical optic disc changes like congenital optic disc anomalies are very rare and usually these patients remain undiagnosed and without rehabilitation. With accurate diagnoses at early age, this can aid us in identifying associated ophthalmic and systemic anomalies so that treatment and rehabilitation can be started.

**Methods:** This is a hospital-based combined non-concurrent and concurrent prospective case series. Cases ere identified throughout a two-years period. All patients were referred from the outpatient department of the Chittagong Eye Infirmary and Training Complex (CEITC). Details of history included maternal and birth history, biographical details and family history. History of trauma was ascertained. Ophthalmic examination was done on all patients and examination details included visual acuity, tonometry, gonioscopy, indirect ophthalmoscopy and optic disc photography. B-scan ultrasonogram was done if necessary.

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**Results:** A total number of 30 patients with atypical optic discs were included in this case series. Amongst them, 29 cases were either congenital or developmental in nature. 1 case was traumatic.

**Myelinated Optic Nerve:** Of the 5 myelinated optic nerve cases, 3 were female and 2 were male. Symmetrical involvement was observed in these cases. No other ocular and systemic associations were present in these cases. In all cases, visual acuity was normal. 2 cases had peripapillary myelination and 3 cases had myelination along the superior arcuate area. On Humphrey's Visual Field (HVF) analysis 4 cases showed corresponding visual field loss such as enlargement of blind spot and arcuate scotomas.

**Bilateral Tilted Discs:** There were 5 bilateral titled disc cases. 3 were female and 2 were male. They all had normal visual acuity with no refractive errors. They all has small, oval and D-shaped discs that were tilted inferior-nasally.

**Optic Disc Pit:** 4 optic disc pit cases were found; 3 were female and 1 was male with an average age of 40 ± 10 years. Their visual acuity was normal with no refractive errors. HVF analysis revealed caecocentral scotomas in 2 cases. Neither macular oedema nor serous macular detachment was observed in any of these cases. The pit was present in the temporal aspect of the disc.

**Optic Disc Drusen:** 4 patients were diagnosed with optic disc drusen. Of these, there were 3 female and 1 male. All cases were bilateral with minimal disturbance in visual acuity (6/9 – 6/12). 2 cases revealed an enlargement of the blind spot on HVF analysis. All cases had some common features such tortuous blood vessels, increased blood vessels, scalloped disc margin and refractile bodies over the disc. B-scan ultrasonography revealed hyperacoustic shadows in optic nerve head suggestive of calcification.

**Optic Disc Coloboma :** In the optic disc coloboma cases all were male with an average age of 50 ± 10 years. 2 of them had isolated disc colobomas and 1 was associated with retino-choroidal coloboma. Visual acuity was diminished in all of the affected eyes (6/60–CF).

**Morning Glory :** Of the 2 morning glory cases 1 was male and 1 was female. Visual acuity was impaired in both cases. Typical signs of morning glory seen were seen in both cases (such as large optic discs, funnel-shaped excavation, central glial tissue and spoke-like blood vessel configuration).

**Optic Nerve Hypoplasia:** There was one patient of optic nerve hypoplasia who was a boy of 6 years. It was a bilateral case in both optic disc and macular hypoplasia. Visual acuity was diminished in both eyes.

**Macrodisc :** 5 macrodisc cases were found (1 female and 4 male) with an average age of 30 ± 10 years. All of them had normal visual acuities without refractive errors. Normal IOP and normal visual fields were observed in all cases. Average cup:disc ratio was 0.6 ± 0.2.

**Optic Nerve Avulsion :** There was a single case of optic nerve avulsion which had a history of trauma and loss of vision for 2 days.

**Discussion** :The first portion of the optic nerve contains the nerve fibres of 1 to 1.2 million ganglionic cells that traverse the sclera through the lamina cribrosa. Developmentally, the optic nerve is neural tube derivative. The ganglionic cells of the retina develop axons, to a point where the optic nerve leaves the posterior surface of optic cup. Developmentally this will become the optic disc. In the inferior aspect of the optic stalk, normally there is a groove or fissure which contains mesenchymal tissues and the hyaloid atrery. This fissure becomes the optic canal by fusion at the seventh week of gestation. Failure of the fissure to close completely results in coloboma formation in the retina, choroid and also in the optic nerve. The cells of the optic stalk form neuroglial supporting cells for the axons, and the cavity of the stalk disappears. The stalk together with the ganlionic cell axons, form the optic nerve. The axon of the optic nerve begin to develop their myelin sheaths just before birth, but the process of myelinetion continues for sometime after birth. In myelinated optic disc, the optic disc is surrounded by bright white streaky and irregular patches. The

myelination may extend to the periphery or cover part of the disc. It may be unilateral or bilateral with asymmetrical involvement. Myelinated nerve patches are often seen in the arcuate bundles occasionally abutting the disc. When they are contiguous, these nerve patches

Figure 1: Myelinated optic disc involving superior arcuate area

may be confused with disc oedema or cotton wool spots[1] (Figure 1). Of the 5 myelinated optic nerve cases, 3 were female and 2 were male. Symmetrical involvement was observed in these cases. No other ocular and systemic associations were present in any of the cases. In all cases visual acuity was normal. In 2 cases peripapillary meylination was present and in 3 cases meylination was along the superior arcuate area. On HVF analysis, 4 cases showed corresponding visual field loss such enlargement of blind spot and arcuate scotomas. Usually with extensive nerve fibre myelination, myopia, anisometropia and amblyopia are associated. Neurofibromatosis-1 and multiple basal cell naevus are some systemic associations. Neither systemic nor ocular associations were found in our series.

Tilted discs are usually bilateral. They are caused by a developmentally oblique entry of the optic nerve into the globe. For this, one portion of the neuroretinal rim is elevated and the other is depressed. Usually it looks D-shaped and is directed inferonasally. The disc margin may be indistinct and temporal vessels deviate nasally before turning temporally. The visual field may show a superior temporal field defect[2]. Visual acuity and visual field were normal in all of our cases. Titled discs positioned inferonasally was present in all cases. Temporal elevation of the neuroretinal rim with nasal shifting of temporal vessels were observed in all cases (Figure 2).

Optic disc pit is a depressed area within the optic nerve head and usually lies temporally. Visual acuity is normal in the absence of complications. Visual filed defects are common and mimic glaucoma. Serous macular detachment develops in about 45% of eyes with non-central disc pits. The subretinal fluid is thought to be derived from the vitreous. Less likely sources are the subarachnoid space and fromabnormal vessels within the base of the pit.[2] Visual acuity was normal in all of our cases. In 2 cases caecocentral scotomas were detected on HVF examination. Discs were normal in shape, no subretinal fluid nor serous macular detachment was observed in our cases (Figure 3).

Optic disc drusen are composed of hyaline-like calcific material within the optic nerve head. They are often bilateral. The buried drusen cannot be seen over the surface. Elevated disc, hyperaemia and early branching of the blood vessels are characteristics of buried drusens. Exposed drusens are usually seen over the surface of the disc. The drusen may be associated with angioid streak. They may also be associated with retinal bleeding.[3] All of our cases were bilateral with minimal disturbance in visual acuity (6/9-6/12) and with no improvement with pinhole. 2 cases revealed enlargement of blind spot on HVF analysis. In all cases, there were some common features like tortuous blood vessels, increased blood vessels, scalloped disc margin and retractile bodies all over the disc. B-scan ultrasonography revealed hyperacoustic shadows in the optic nerve head suggestive of calcifications (Figures 4a and 4b).

Optic disc coloboma is a developmental defect due to non-closure of optic fissure at the 7th week of gestation. It may be associated with retinochoroidal coloboma. Sometimes it looks like duplication of the optic disc and is called pseudo duplication[4]. Visual acuity is often decreased. A bowl-shaped excavation (decentered inferiorly) and the remaining superior portion of neuroretinal rim are the clinical features of optic disc coloboma. Perimetry usually shows superior visual field defect. It may be associated with microphthalmos and retinochoroidal coloboma. Complications such as serous retinal detachment and peripapillary choroidal neurovascularization may occur. Some chromosomal anomalies and CHARG association (heart defects, choanal atresia, retarded growth and development, genital

Fig:Ankylblepharon filiforme Adnatum (before surgery)

Fig:Ankylblepharon filiforme Adnarum (after surgery)

## Discussion

Congenital total ankylblepharon is a rare condition. Acquired partial ankylblepharon is seen in adult patient in chemical burn, Steven Johnson syndrome and cicatrical pemphigoid. Congenital or acquired ankylblepharon is usually associated with symblepharon but in this patient symblepharon is not found. Patient with congenital total ankylblepharon needs immediate treatment to avoid amblyopia in children.

## Conclusion

Early diagnosis and release of total ankylblepharon is mandatory to avoid sensory deprivation amblyopia in children. During operation sufficient precaution should be taken to avoid any injury of cornea or adjacent structures.

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# A case of secondary pterygium postoperative to limbal dermoid excision

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Miss JOSNA BANU, age 19 years, female, a garments worker, hailing from Dhonupara, Naoga, admitted into the department of ophthalmology, East West Medical College & Hospital on 8/2/2011, with the complaints of swelling & irritation in the nasal limbus of the left eye since childhood. On examination her visual acuity was found 6/6 in right eye & 6/18 in left eye. Conjunctiva, cornea, sclera & media of the right eye were found normal. But an elevated & somewhat rounded lesion was found in the nasal limbus of her left eye which was pressing the adjacent cornea. Cornea adjacent to the lesion was found opaque. According to the history of the patient the lesion was increased in size very slowly. The lesion was firm in consistency & adherent to the limbus. On slit lamp examination there was no extension of the lesion into the anterior chamber. On fundoscopy, no abnormality was detected.

Excision of the lesion for cosmetic & visual improvement was done with the consent of the patient. Biopsy of the lesion was advised but patient was reluctant to do so due to her poor economic condition. The lesion was clinically & morphologically diagnosed as limbal dermoid. Postoperative management of the patient was done by ciprofloxacin with dexamethason eye drop, artificial tear drop, oral ascorbic acid, & weekly follow up for one & half months.

Final outcome of the operation were-visual acuity of the left eye was improved to 6/9 without any aid, irritation reduced & cosmetic improvement occured. Patient was followed up for 6 weeks & refraction was done at last visit. Spectacle was advised and her corrected visual acuity was 6/6 in both eyes.

After 3 months on 9/5/2011, patient came with the complaints of redness & irritation. On examination, a fleshy mass of fibrovascular tissue from the medial canthus to the cornea encrossing the limbus was found. The mass was congested & found adherent to the underlying sclera, limbus & cornea. Visual acuity was found 6/9 in left eye. The lesion was diagnosed as secondary pterygium. Reason for this was the pterygium developed after the excision of limbal dermoid, where nasal limbal stem cells & adjacent corneal stroma were affected by dermoid itself & dermoid surgery.

Management of secondary pterygium was done by surgical excision & limbal stem cell autograft under local anesthesia. Postoperative follow up of the patient was done first at 1 week, then at 2 weeks & finally 4 weeks interval for last 6 months. Graft was found in situ with quite eye. Visual and cosmetic outcome of the patient was found satisfactory.

**Discussion**

Pterygium is a triangular fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus onto the cornea[1].

Recurrent or secondary pterygium occurs after primary surgical excision and often has a more exuberant fibrovascular growth response than the original pterygium[2]. In this case primary surgery

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was done for limbal dermoid, not for pterygium, which damaged limbal stem cells & secondary pterygium developed due to damage in limbal stem cells. Dermoids of the limbus and cornea are clinically presented as whitish or yellowish solid formations, circular or oval in shape with smooth surface protruding like a dome on the eyeball surface[3].

When stem cells are destroyed by disease or injury then the corneal surface become covered with conjunctival epithelium[4]. An autograft of limbal epithelium can repopulate the diseased cornea with normal corneal epithelium[4].

## Conclusion

Excision of deep limbal lesion can cause damage to stem cells, leading to secondary pterygium. Management of secondary pterygium is by excision of pterygium & limbal stem cell autograft.

Key words- secondary pterygium, limbal dermoid, limbal stem cell autograft.

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