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Editorial

Continuing Medical Education and Medical Research

Our students spent five years of education and one year of Internship in a medical college and becomes a medical graduate (MBBS) to catarrh the health need of the society and country. Then few of them make their way to get residency and training in respective subject of choice of and get a post graduate qualification to become a specialist. Most of the incumbents at the end of their achievements in these years either as a teacher or a specialist remain as it is through the rest of their life. Few exceptions are there who get further education and research facilities. But at large the scope for further training and research is limited or unfruitful. This state of affair is unacceptable for a good medical education and health delivery system of the country. The existing system will never meet a standard health care system of a country.

The medical science is developing at a much faster rate that we could imagine. we have to improve our knowledge and skill at much faster level then what now at a stage ---- Continued Medical education and research programs. New facts are added and revised guidelines are adopted continuously in different country's always according to the need.

Continued Medical Education is not a new concept. These are the Institutional and departmental responsibilities by starting with morning sessions, case presentations, organizing seminars and symposiums, publishing journals at regular intervals, arranging workshops on different subjects of medical education are few initial steps to start with. Clinical problem solving activities case discussion has been identified as the core activity of doctors in learning and keeping knowledge updated.

Inspiration of doctors to document, analyze their daily experiences is a fundamental tool for an updated professional development. Creating a friendly environment for CME is our national obligation.

Funding is an important issue. Specific provisions should be made by the govt. and private institutions in this respect and monitoring best utilization to be ensured. There are innumerable examples where money has been spent but the outcome has remained of no use.

CME is essential to maintain, develop and increase the knowledge, skill and professional performances. Recently American board of Surgery has disclosed that who are out of training for thirty years were less successful in the recertification results. Govts. of developed and many developing countries has recognized the need of CME and have established certifying bodies, Accreditation Councils locally and internationally. Systematic constant, accountable review of an CME is now the need of time.

Medical research is very much neglected in our country and has never been considered, but it cannot continue. Research must start to solve the health issues of our country, economically, technologically viable and sustainable.

Prof. Dr. Md. Nazmul Islam
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and
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From the desk of Executive Editor

Femtosecond Laser-Assisted Cataract Surgery - A New Horizon

Cataract Surgery Continues to Evolve, with new surgery techniques including clear corneal incision, small-incision Femtosecond laser-assisted cataract surgery (FLACS) is a fascinating advancement which has revolutionized the approach to modern day cataract surgery. As with other procedures, an initial learning curve is present. This is less steep for practitioners proficient with conventional phacoemulsification and prior experience with the femtosecond laser.

Initial challenges include difficulty in obtaining an ideal dock, extension of unnoticed capsular tags and cortical aspiration.[1] Transitioning surgeons need to recognize problems peculiar to FLACS and modify surgical steps to manage them appropriately.

I appreciate the efforts made by the Christy and associates to elucidate the difficulties encountered in the initial 100 eyes by surgeons unfamiliar with the femtosecond technology, which is published in this issue of Indian Journal of Ophthalmology.[2] In my opinion, patient selection is extremely critical in the early cases. I would recommend cooperative patients with well-dilated pupils and the ability to remain still through the laser application. Avoid patients with deep seated eyes, prominent brows and fixation difficulties.[3] Counseling the patient to keep both eyes open relaxes the orbicularis and facial muscles, allowing easy insertion of the patient interface.

I agree with the authors that avoiding tilt is crucial to reduce the risk of suction loss and incomplete capsulotomies. A well-centered patient interface allows accurate anterior segment imaging, identification of capsular planes and precise well-centered incisions.[4] The ideal placement of the eye should be perpendicular to the docking axis and parallel to the patient bed. The patient's nose should be moved sideways by tilting the head to the opposite side. One should look for signs of a creeping meniscus and conjunctival encroachment to avoid an impending suction loss.

Another challenge specific to the femtosecond laser system is postdocking pupillary miosis.[4],[5],[6] The release of prostaglandins and inflammatory cytokines subsequent to laser delivery has been hypothesized as the cause. Preoperative nonsteroidal anti-inflammatory administration counters the action of inflammatory mediators and prevents pupillary constriction.[7] In pupils with suboptimal dilatation the capsulotomy and nucleotomy can be manually adjusted within the confines of the pupillary diameter.[8]

Limbal corneal incisions have limited laser penetration, hence the incision placement should be clear corneal. Moreover, the intended width should be slightly larger than a manual incision as the femtosecond-assisted wound architecture affords a tighter fit leading to subsequent wound hydration and reduced visibility. The use of trypan blue helps identification of incomplete capsulotomy areas and aids subsequent removal. In addition, with the advent of liquid optics and softer applanating interface, the corneal distortion is less enabling free floating capsulotomies. A dimple down technique entails a downward push at the center to separate the capsulotomy peripherally. Microadhesions can be released using a microforceps or cystitome and pulling in a circumferential fashion. A gentle hydrodissection following the escape of air bubbles is recommended to prevent excessive buildup of intracapsular pressure and capsular block.[8],[9]

A more closely arranged grid pattern reduces effective phacoemulsification time in dense nuclear cataracts. A combination of softening and segmentation pattern helps to achieve an adequate hold in the uncut areas and enables greater ease of chopping. Cortical aspiration poses a challenge as the clean cut of the laser ensures that there are no cortical tags beyond the edge of the anterior capsule. Therefore, aspiration in a circumferential pattern rather than a radial pull is recommended.

Femtosecond laser delivery in complex situations presents its own unique challenges. The laser works in a closed system delivering a precise capsulotomy in mature cataracts. However, the egress of fluid may interfere with subsequent laser delivery leading to uncut areas. The femtodelineation in posterior polar cataracts affords an epinuclear cushion for subsequent safe emulsification. The anterior segment optical coherence tomography allows differentiation from a posterior subcapsular plaque and helps assess the status of the posterior capsule. The posterior offset of nucleotomy should also be increased to prevent laser deliver close to the weak capsule in such cases and postvitrectomised eyes. The liquid optics interface enables safe laser delivery in small pupils following insertion of pupil expansion devices.

The authors of the current paper did not allude to the use of arcuate keratotomies for the management of preexisting astigmatism.[10] This is a very useful facet of the femtosecond laser where one can improve the visual outcomes. I routinely treat astigmatism between 0.50 and 1.25 diopters with the use of femtosecond-assisted arcuate keratotomies, while for those with astigmatism more than 1.5 D I prefer a toric intraocular lens. I open out the keratotomies at the onset of surgery, as the globe is well formed and epithelial disruptions are minimal.

In summary, FLACS is an exciting technology which can further our goal in achieving greater precision, reproducibility and safety in cataract surgery. With a greater understanding of the technology and subsequent ease with regular cataracts, FLACS can be extended to complex cases where it offers distinct advantages over conventional methods.

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Prevalence of Refractive Error among Primary School Children in Bangladesh: Demographic Pattern Analysis

Nahid Ferdausi[1], AHM Enayet Hussain[2], Golam Mostafa[3], Jalal Ahmed[4]

Abstract:

Purpose: *Undetected and uncorrected refractive errors which can easily be detected early and corrected with spectacles can, and do negatively impact learning process and educational potential are significant problems in school children. Treatment is cost-effective, has significant impact on quality of life and can prevent progression to severe impairment or blindness. The purpose of this study was to assess the prevalence of refractive error among urban, semi-urban and rural primary school children in selected areas in Bangladesh.*

Methods: *It was a cross-sectional study conducted on primary schools during the period of May 2015 to April, 2016 from National Eye Care (NEC), Bangladesh. Ten primary schools in urban, semi-urban and rural areas were purposively selected from Dhaka, Tongi and Rajoir upzila of Madaripur district. If uncorrected vision was ? 6/12 in either eye, the child was identified to have defective vision.*

Results: *Total number of students was 1309 with age ranging from 6 to 11 years with mean age being 8.4 ± 1.03 years. 51.9% were girls and 48.1% were boys. Prevalence of refractive-error was 3.2%. But it was found that prevalence of refractive-error was high (7.79%) in urban schools, moderate (4.42%) in semi-urban schools and low (1.4%) in rural schools. There was no significant differences in the prevalence of refractive error between boys and girls.*

Conclusion: *School children represent particularly a vulnerable group with uncorrected refractive-error. Vision screening is an appropriate strategy to reduce vision impairment caused by refractive-error. The treatment is non-invasive, simple, effective, and inexpensive. Students, parents, and teachers must be educated on early detection of refractive error and correction with spectacles to prevent progression to visual impairment. The existing school health services should be strengthened and implemented effectively for regular screening and to provide affordable corrective services.*

Keywords: *Refractive error, primary school children, Bangladesh.*

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4. Professor & Ex Director, National Institute of Ophthalmology & Hospital and Ex Line Director, National Eye Care, Bangladesh.

Introduction:

Refractive error is a major contributor to visual impairment which is a significant cause of morbidity in children worldwide.[1] School-age children constitute a particularly vulnerable group, because uncorrected refractive error may have a dramatic impact on learning capability and educational potential.[2] Visual impairment from uncorrected refractive errors can have immediate and long-term consequences in children, such as lost educational and employment opportunities, lost economic gain for individuals, families and societies, and impaired quality of life.[3,4] A series of World Health Organization-supported studies suggest that approximately 10 to 15 percent of school-aged children in the developing world have common vision problems.[5,6] In most settings, about ninety percent of these vision problems are caused by refractive error (largely myopia, but also hyperopia and astigmatism). The remaining 10 percent are caused by amblyopia, pediatric cataract and other less common vision disorders.[7]

According to the study conducted in India, most of the children with uncorrected refractive error are asymptomatic and hence screening helps in early detections and timely interventions.[8] Research done in Pakistan, indicated uncorrected refractive error is also responsible for a larger number of blind years lived by a person than most other causes if left uncorrected. It was estimated that blindness due to refractive error resulted on an average of 30 years of blindness for each person as compared to 5 years of blindness due to untreated cataract for each person.[9] School age especially at primary school level needs attention since it is the age at which refractive error starts significantly.[10]

Various factors are responsible for refractive errors those remain uncorrected: lack of awareness and recognition of the problem at personal and family level, as well as at community and public health level; non-availability of and/or inability to afford refractive services for testing; insufficient provision of affordable corrective lenses; and cultural disincentives to compliance.[11] In the age group 5-15 years, non-correction of refractive errors is due to several factors: the lack of screening, and the availability and affordability of refractive corrections are the most important. However, cultural disincentives also play a role, as shown in surveys from countries where routine screening and provision of corrections are free of charge or easily accessible, but compliance remains low.[12,13] A remarkable finding of one study showed that even in economically advantaged societies, refractive errors can go undetected or uncorrected in children.[14]

As children are not mature enough to point out the deficiency at an early stage or the parents have no idea on the gradually developing vision problem, uncorrected refractive error can have a dramatic impact on learning process and educational capacity.[15] Most of the children with such diseases are apparent and hence, screening helps in early detection and correction with spectacles.[8] In the global initiative, Vision 2020, for the elimination of avoidable blindness, refractive error has been emphasized.[16] As the treatment of refractive errors is perhaps the simplest and effective forms of eye care, blindness because of refractive error can be prevented. In most cases children's vision problems can be easily detected by simple vision tests (such as visual acuity screenings) and corrected by timely and proper fitting of quality eyeglasses.[17]

Early detection provides the best opportunity for effective treatment to reduce the incidence of avoidable childhood visual impairment. The purpose of this study was to assess the prevalence of refractive error among urban, semi-urban and rural primary school children in selected areas in Bangladesh.

Methods

It was a cross-sectional study conducted on primary schools during the period of May 2015 to April, 2016 from National Eye Care (NEC), Bangladesh. Ten schools from Dhaka (urban), Tongi (semi-urban) and Rajoir (rural) upzila from Madaripur district were the study areas. Two primary schools from urban, two from semi-urban and six from rural areas were purposively selected. Following operational definitions were used to define the study areas: Urban-Study area was in the city. Semi-Urban-Study area was not in city but near the city. Rural-Study area was in Upzila level.

Written consents of school headmasters of all selected schools were obtained. The distant vision was tested utilizing Snellen's Illiterate 'E' chart. The visual acuity was tested at with the chart at 6 meters. If uncorrected vision was ? 6/12 in either eye, the child was identified to have defective vision.18 When visual acuity was 6/12 pinhole was used. Refractive error was considered when subnormal visual acuity improved with a pinhole test. Objective refraction was done by using auto-refractometer. Then subjective refraction was carried-out. Children needed cycloplegic refraction referred to National Institute of Ophthalmology and Hospital, Dhaka. External eye examination was performed using a pen torch. The Hirschberg's test was used to determine the presence or absence of strabismus. A cover-uncover test was then performed to confirm the diagnosis if strabismus was present. The eye movements were tested in 6 cardinal directions to rule out paralytic or restrictive strabismus. Anterior segment was examined with hand-held slitlamp. A direct ophthalmoscope was used to examine the posterior segment of the eye where necessary. Children with minor eye problems were treated, while those with major eye conditions were referred to the National Institute of Ophthalmology and Hospital, Dhaka. Students who were identified with refractive error provided spectacles free of costs from National Eye Care (NEC). Team members from NEC including residence and Ophthalmologists conducted this study.

Results:

A total of 1309 students from 10 primary schools (mixed gender) were study subjects for this study. Students who were absent on the day of the examination excluded from the study. Mean age of the students was 8.4 ±1.03 years with a range of 6 to 11 years. 51.9% were girls and 48.1% were boys. There was no difference in the prevalence of refractive error between boys and girls.

Table 1: Urban, Semi-Urban and Rural distribution of the students according to grade, age and gender

Variables	Urban	Semi-Urban	Rural	Total
Grade(Age in yeas)				
Class I (6)	43(18.62%)	80(27.21%)	140(17.86%)	263 (20.09%)
Class II (7)	24(10.39%)	48(16.33%)	126(16.07%)	198(15.13%)
Class III (8)	45(19.48%)	53(18.02%)	143(18.24%)	241(18.41%)
Class IV (9)	56(24.24%)	55(18.71%)	125(15.94%)	236(18.03%)
Class V (10/11)	63(27.27%)	58 (19.73%)	250(31.89%)	371(28.34%)
Total	**231 (100%)**	**294 (100%)**	**784 (100%)**	**1309(100%)**
Gender				
Boys	111 (48.1%)	140 (47.6%)	383 (48.9%)	634 (48.2%)
Girls	120 (51.9%)	154 (52.4%)	401 (51.1%)	675 (51.8%)
Total	**231 (100%)**	**294 (100%)**	**784 (100%)**	**1309 (100%)**

This school sight testing programs offered the opportunity to detect eye diseases other than refractive error. Vernal conjunctivitis was the most prevalent ocular disorder occurring in 5.73% of students (5.19% in urban, 7.14% in semi-urban and 5.36% in rural students). 0.31% of the children had strabismus and 0.15% had ptosis.

Prevalence of refractive-error was 3.2%. But it was found that prevalence of refractive-error was high (7.79%) in urban schools, moderate (4.42%) in semi-urban schools and low (1.4%) in rural schools. There was no significance difference in the prevalence of refractive error between boys and girls.

Table 2: Prevalence of Refractive Error among Study Populations in Demographic Variations

Variables	Urban	Semi-Urban	Rural	Total
Boys	8(3.46%)	7(2.38%)	5(0.64%)	20(1.53%)
Girls	10(4.33%)	6(2.04%)	6(0.76%)	22(1.67%)
Total	**18/231(7.79%)**	**13/294(4.42%)**	**11/784(1.4%)**	**42/1309(3.2%)**

Figure 1: Prevalence of Refractive Error among Study Populations in Demographic Variations

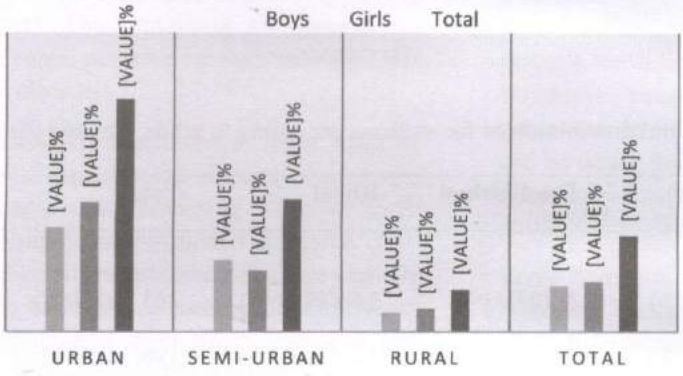


Figure 2: Refractive error in urban area

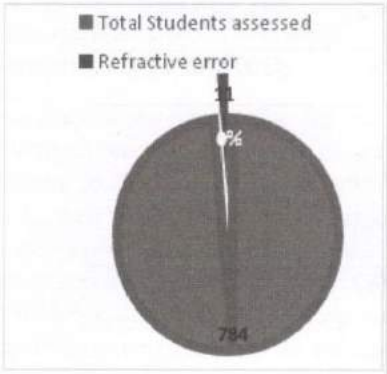


Figure 3: Refractive error in urban area

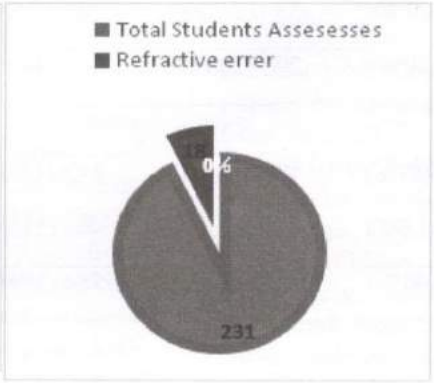
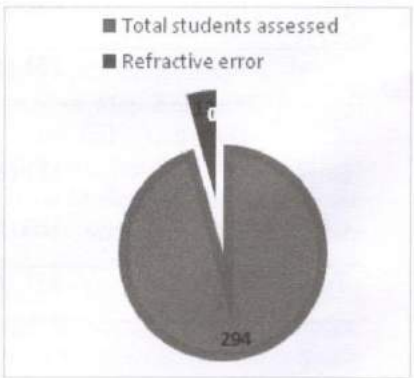


Figure 4: Refractive error in rural area



Discussion:

Refractive error is one of the avoidable causes of blindness and visual impairment. It can hinder education, personality development and career opportunities, in addition to causing an economic burden on society. So, it is essential to understand the pattern of refractive errors in school children to plan effective programs to deal with the problem. Provision of appropriate spectacles is one of the simplest, most cost-effective strategies to improve vision, yet uncorrected refractive error is the primary cause of moderate visual impairment throughout the world.[19]

Refractive errors are responsible for more than half of the impaired vision in the majority of surveyed population. They affect a large proportion of the population worldwide, irrespective of age, gender, or ethnic group. They can be easily diagnosed, measured, and corrected with spectacles and other refractive corrections to obtain normal vision. Unless corrected they cause low vision and even blindness. The prevalence of refractive errors varies according to geographic location, gender, age and parental education.[20,21,22]

As a result of the large variation in study design, purpose and outcomes measured, different measurement methods, different definitions of refractive errors and using different grouping of ages, studies were often not directly comparable. In current study, prevalence of uncorrected refractive error is 7.79% in urban areas and 1.4% in rural children which slightly differs from the results shown by a study by Dept. of community ophthalmology, H.V. Desai Eye Hospital, Pune, India (2009), the prevalence of uncorrected refractive error in urban and rural children was 5.46% and 2.63% respectively.[8] Future research can be done to explore the cause of higher rate of refractive error in urban children. The overall prevalence of refractive error among primary school children in this study was 3.2% similar the study conducted on elementary students in Addis Ababa, the capital city of Ethiopia23 which was 3.7%. This study results are also similar in results of other studies conducted in Iran24 (3.8%) and in Nepal.[25] (2.9%).

In this study there was no significant difference in the prevalence of refractive error between boys and girls which is similar to the study conducted among school-going children of Imphal, Manipur, India[26]. But in some studies girls showed higher prevalence.[27,28] Other researchers reported higher prevalence among boys.[29,30]

Conclusion:

This study was conducted to provide baseline data on the prevalence of refractive errors among primary school children in Bangladesh. School children represent particularly a vulnerable group with uncorrected refractive-error. The treatment is non-invasive, simple, effective, and inexpensive. Students, parents, and teachers must be educated on early detection of refractive error and correction with spectacles to prevent progression to visual impairment. The school sight testing program should be incorporated with education ministry and implemented effectively for regular screening and to provide affordable corrective services.

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Anti-VEGF Mono Therapy in the Treatment of Aggressive Posterior Retinopathy of Prematurity (APROP) in Selected Cases

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Abstract:

Purpose: *To report the outcomes of APROP treated with anti-VEGF monotherapy followed by PRN rescue laser.*

Design*: Retrospective case series*

Methods: *Retrospective review of data of 43 consecutive APROP babies from May 2012 to May 2015 was performed. The diagnosis of APROP was made by dilated and tortuous vessels in zone I and zone II Posterior, looping of vessels, vitreous haze and poor dilation of pupils. Intravitreal injection of Anti-VEGF (Avastin) was performed in both eyes with all aseptic precaution on the day of diagnosis. Injections were performed in the operation theatre with the presence of neonatologist and anesthetist. The babies were followed up on the next day, after 3 and 7 days. Rescue laser was performed to the avascular retina after 7 days if there was no change in the status of APROP. Laser was done 360 degrees and all the peripheral ischemic retina was ablated with DIODE indirect laser in single or multiple sessions. Examination Under Anaesthesia (EUA) was performed in every baby at 6month intervals.*

Results: *Nine cases did not need additional laser in whom blood vessels grew up to periphery, and vascular tortuosity decreased. The APROP regressed in the remaining 34 cases in whom laser was required. All babies were followed up for at least 2 years. Cycloplegic refraction done in all 43 babies. Among the nine babies who underwent only injection, 2 developed low myopia and 7 were emmetropic. Out of 34 babies who underwent laser, 23 babies needed spectacle correction and the mean spherical correction was - 4.5 Dioptre. The mean duration of follow-up was 24 months (9 months to 36 months). All the babies showed regression of ROP.*

Conclusion: *Intravitreal injecction of Avastin is a good treatment choice in APROP. Not all cases need laser and favorable cases can be followed up. However, in our series, a substantial number of babies needed rescue laser.*

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Introduction:

Retinopathy of prematurity (ROP) is caused by abnormal development of retinal vessels in the immature retinas of preterm infants with very low birth weight. ROP remains a leading cause of childhood blindness as advances in neonatal intensive care improve the survival of very immature infants at high risk for the disease[1]. Risk factors for ROP include low gestational age and birth weight[2], early high and late low oxygen saturation[3], early post-natal low serum insulin-growth factor-1 concentration[4], hyperglycemia[5] and neonatal infections[6], and it often occurs in conjunction with co-morbidities such as bronchopulmonary dysplasia, cerebral white matter damage and necrotizing enterocolitis[7]. ROP is a biphasic condition characterized by an initial phase of hyperoxia and loss of maternal-foetal interaction resulting in an arrest of retinal vascularization, followed by a second phase of hypoxia-induced aberrant vasoproliferation in an increasingly metabolically active yet poorly vascularized retina[8]. In most infants ROP regresses spontaneously. However, in a small proportion of infants, abnormal retinal neovascularization progresses aggressively to fibrous scarring, distortion, tractional retinal detachment, and ultimately blindness if left untreated. The current standard of care for ROP involves peripheral retinal laser photocoagulation for Type 1 ROP, based on the results of the Early Treatment of Retinopathy of Prematurity (ETROP) trial[9]. Laser therapy has largely replaced treatment with cryotherapy and aims at destruction of the peripheral avascular retina to induce regression of neovascularization. More recently, however, intravitreal injection of anti-vascular endothelial

growth factor (anti-VEGF) has also been used as an alternative treatment for ROP. Vascular endothelial growth factor plays an important role in stimulating retinal neovascularization and elevated levels have been detected in eyes with ROP[10]. The most commonly reported anti-VEGF agent, bevacizumab, has been shown to have significant benefit in treating ROP in zone I, but not posterior zone II, stage 3 plus disease when compared with conventional laser therapy in the BEAT-ROP trial[11]. However, results from the trial also demonstrated a 4% risk of delayed recurrence at a mean of 16 weeks' post-injection of bevacizumab, suggesting that close monitoring is required until complete vascularization of the retina has occurred.

Advantages of intravitreal anti-VEGF therapy compared with conventional laser therapy include reduced treatment time, avoidance of a general anaesthesia, suitability in infants with poor fundal view due to anterior segment involvement, which avoids ablation of and allows further vascularization of the peripheral retina especially in posterior disease, and possibly better refractive outcomes[12]. However, the ideal dosing, optimal technique of injection, risk of reactivation and long-term systemic safety are still unknown and remain important

concerns associated with the use of intravitreal anti-VEGF therapy for ROP. We want to report our data regarding the outcomes of babies with APROP treated with anti VEGF monotherapy followed by PRN rescue laser.

Methods

A retrospective chart review was performed on consecutive infants screened for ROP at Bangabandhu Sheikh Mujib Medical University from May 012 to May 2015. According to the American Academy of Paediatrics guidelines published in 2013 30, infants born at or below 30 weeks of gestational age (GA) who had a birth weight of less than 1500 g, or those with an unstable clinical course and deemed high risk by their attending neonatologist, were screened. Age at initial examination was at post-menstrual age (PMA) of 31 weeks or 4 weeks after

birth for those born at a GA of 28 weeks or more. Mydriatic fundal examination using binocular indirect ophthalmoscopy was used for all screenings. Treatment was performed in all cases of Type 1 ROP (defined as zone I: stage 3, or stage 1 or 2 with plus disease; or zone II: stage 2 or 3 with plus disease)11 or worse. Conventional laser therapy was the treatment of choice, but intravitreal anti-VEGF was offered in selected cases, such as aggressive posterior retinopathy of prematurity (APROP), and cases with poor pupil dilation and/or media opacity whereby laser therapy could not be performed. Bevacizumab was used intravitreal. With all aseptic precaution, Inj. Bevacizumab (0.625 mg in 0.025ml) was given 1 mm from the limbus. If necessary in both eyes, the injections were given simultaneously in presence of a

paediatric anaestehetist and neonatologist. The baby was not given any general anaesthesia, rather the baby was wraped in such a way that he/ she could not move and an assistant hold the head of the baby with comfort. The needle was introduced straight towards the posterior pole to avoid any inadvertent touch to the crystalline lens.

In accordance to the International Classification of Retinopathy of Prematurity, APROP was defined by its posterior location (zone 1 or posterior zone 2), prominence of plus disease, modest-appearing peripheral retinopathy and rapid deterioration that may not progress through the classic stages31. All treated infants were examined until total regression of ROP and full vascularization. Laser therapy was performed if possible when there was persistent disease or recurrence.

Intravitreal bevacizumab injection was performed as follows. Written informed consent was obtained from the parents. A topical anaesthetic was applied, standard aseptic eye preparation with 5% betadine was performed, a lid speculum was inserted and intravitreal injection of 0.625 mg/0.025 ml bevacizumab with a 30-gauge needle was given. In all infants, injections were performed 1 mm post-limbus. Central artery perfusion was confirmed after the injection. Infants were examined 1 day after the procedure and regularly thereafter according to their clinical condition until regression of ROP and full vascularization of the retina was observed. The babies were followed up on 1st day, 3rd day and 7th day. Rescue laser was performed to the avascular retina after 7 days if there was no change in the status of ROP. Laser was performed 360 degrees and all the peripheral ishchaemic retina was ablated with DIODE indirect laser in single or multiple sessions. Examination under anaesthesia was performed in each baby at 6 month interval.

Data collection and analysis were performed using Microsoft Excel (Redmond, WA) and PASW Statistics for Windows 18.0 (SPSS Inc., Chicago). The data was summarized using descriptive statistics, and the Mann-Whitney test and Fisher's exact test were used to test the differences between infants who received different treatments and those with different outcomes.

The study was conducted with Institutional Review Board approval and adhered to the tenets of the Declaration of Helsinki.

Results:

538 infants were screened over a 36-month period. 43 eyes of 22 infants were diagnosed as APROP and received Injection Bevacizumab on the day of diagnosis. The mean gestational age and birth weight of all infants who received treatment for AROP were 26 weeks 6 days (SD 1.8 weeks) and 987.5 g (SD +236.1 g) respectively. These infants had multiple systemic co-morbidities, including necrotizing enterocolitis (33%), sepsis (100%), bronchopulmonary dysplasia (89%) and patent ductus arteriosus (67%), requiring blood transfusion (100%) and oxygen therapy (100%). Out of the 86 eyes of 43 infants that received treatment 68 eyes needed rescue laser. The babies were followed every week and looked for the regression of APROP. The laser was done if there was no regression of tortuosity of vessels, if there was no sign of vascularization in zone 3 on subsequent follow up. Nine cases (18 eyes) did not need additional laser in whom blood vessels grew up to periphery, and vascular tortuosity decreased. The APROP regressed in the remaining 34 cases in whom laser was required. All babies were followed up for at least 2 years. Cycloplegic refraction done in all 43 babies. Among the nine babies who underwent only injection, 2 developed low myopia and 7 were emmetropic. Out of 34 babies who underwent laser, 23 babies needed spectacle correction and the mean spherical correction was -4.5 Dioptre. The mean duration of follow-up was 24 months (range 9 months to 36 months). All the babies showed regression of ROP and there was no recurrence.

Discussion:

Results from our study demonstrate a significant rate of regression of ROP after initial treatment with intravitreal Bevacizumab monotherapy. The most important finding is no recurrence in 24 months in 9 babies who were treated with this monotherapy. Intravitreal Bevacizumab may be useful as an initial treatment option in challenging cases of ROP, such as APROP, poor pupil dilation or media opacity when conventional laser therapy is suboptimal or not possible. However, close monitoring is important and adjunctive laser therapy is needed subsequently in a

majority of cases. In our study, 68 out of 86 eyes treated initially with intravitreal Bevacizumab monotherapy had persistent disease requiring adjunctive laser therapy. Younger gestational age, lower birth weight and younger age at initial treatment were significantly correlated with the use of intravitreal Bevaciizumab versus laser therapy alone in our series. Despite the younger gestational age, lower birth weight and more aggressive

disease in the Bevacizumab group versus laser alone group, there was no statistically significant difference in final outcome. Possibly due to the small number of cases, we did not detect any statistically significant difference in gestational age or birth weight between those with and without disease recurrence after initial Bevacizumab injection. The use of intravitreal Bevacizumab for the treatment of ROP has been described in several case reports and series with variable results. Cardo Dani et al., described in 2012 6 APROP cases treated with initial Bevacizumab therapy[13]. 3 cases needed rescue laser and 3 cases regressed with single injection. In Turkey, Husseyin Yetik et al., reported total 238 eyes of APROP. With initial single injection ROP regressed in 227 eyes (95.4%). Then they did not go for laser, rather put second injection in remaining 11 eyes. They found complete regression in 7 eyes. With third injection the remaining 4 eyes also became fully cured with regression of ROP[14]. In another study, Murat Gunay et al., followed 48 eyes of 25 infants for 24 months who needed Intravitreal Bevacizumab and 30 eyes of 15 infants who needed laser for aggressive posterior ROP. They studied the refractive status at 2 years. They found the babies who were treated with single dose intravitreal Bevacizumab were less myopic (-0.42 D +3.42 D). The babies with history of laser indirect ophthalmoscope had significant more myopia (-6.66 D+4.96 D) (P=0.001)15. Our results cannot be directly compared to these two studies, however, as in our series only patients with more aggressive forms of ROP were offered Bevacizumab injection. Supplementary laser therapy and intravitreal Bevacizumab were performed to control the vascular component, as at that point there was no significant tractional component. In this case, the subretinal fluid resolved after the injection. However, we would like to note that caution is needed when considering the use of intravitreal anti-VEGF in advanced ROP especially when there is membrane proliferation. Honda et al.[16] reported a patient with acute contraction of the proliferative membrane that resulted in funnel-like retinal detachment after intravitreal bevacizumab for stage 4A ROP. This is postulated to be due to rapid neovascular involution with accelerated fibrosis in response to decreased levels of VEGF. In our series, no injection-related complications were reported in cases where the injection was performed 1 mm post-limbus. The injection site for intravitreal injections in premature infants is not as well defined as in adults, and various injection sites ranging from 0.5 mm to 2.5 mm[17] post-limbus have been reported. We did not choose 2.5 mm post-limbus, as this is trans-retinal with a possible risk of causing retinal breaks and detachment. Our results indicate that intravitreal injection at 1 mm post limbus may be safer than 0.5 mm post-limbus in premature infants.

No systemic complications following intravitreal anti-VEGF injection for ROP have been reported to date. Theoretically, systemic blockade of VEGF may result in long-term effects on the development of premature infants. Compared to the BEAT-ROP study on intravitreal bevacizumab that demonstrated a 4% risk of recurrence at a mean of 16 weeks post-injection[18], our results on intravitreal bevacizumab also seem to indicate a higher risk of recurrence (60%) at an earlier time point (mean 7 weeks 4 days). Studies have shown that VEGF is not the only growth factor that is up-regulated in ROP[19]. This may explain why inhibition of VEGF alone does not induce regression in all cases of ROP and that disease recurrence requiring supplementary laser treatment may be needed.

Laser treatment has been well-described as a cause of advanced refractive errors in severe cases of ROP[20]. Conversely, studies have reported IVB treatment leads to lower degrees of myopic refraction than laser ablation. SE values of -1.04 D and -0.98 D have been reported

in 1-to 2-year-olds in some studies[21]. The BEAT-ROP group recently reported refractive outcomes following IVB therapy in infants with a mean age of 2.5 years. This study demonstrated a mean SE of-1.51 D and -0.58 D following IVB therapy, and -8.44 D and -5.83 D following laser treatment, for Zone I and posterior Zone II ROP, respectively[22]. These previous studies and the present study observed lower

SE values following IVB therapy (0.42 D) compared to laser photocoagulation therapy (-6.66 D). The development of higher refractive errors following laser ablation is well-known. Studies have shown laser treatment of ROP is associated with shallower anterior chambers and thicker lenses in addition to higher degrees of myopic refraction[23]. Contrary to this finding, it has been postulated that the development of retinal vasculature following IVB therapy may maintain ocular growth factor expression leading to normalization of anterior segment development and decreased myopia. However, further studies including ocular biometric assessments are required to fully evaluate this relationship. Anisometropia is the predominant risk factor for the development of amblyopia in children following laser ablation for severe ROP[24]. The present study demonstrated significantly higher rates of refractive anisometropia following laser treatment compared to IVB monotherapy.

Conclusion: Intravitreal injecction of Avastin is a good treatment choice in APROP. Not all cases need laser and favorable cases can be followed up. However, in our series, a substantial number of babies needed rescue laser. Limitations of the present study include its retrospective design, the lack of ocular biometry, data from a single institution and the low number of subjects. However, we were able to demonstrate IVB monotherapy was associated with significantly lower degrees of myopic refraction and a decreased incidence of refractive anisometropia compared to laser ablation in infants with APROP. Larger cohort studies from different geographical regions with long-term follow-up are required to validate the efficacy of IVB monotherapy for the treatment of APROP.

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Functional Outcomes and Patient Satisfaction after Laser in Situ Keratomileusis for Correction of High Myopia

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Abstract:

Purpose: *Purpose: To assess the patient satisfaction and functional outcomes after laser in situ keratomileusis for correction of high myopia.*

Setting: *Department of ophthalmology, Bangabandhu Sheikh Mujib Medical University, Shahbag , Dhaka and LASIK sight center, Dhaka.*

Methods: *In this questionnaire-based, cross-sectional study, an anonymous 17-item Questionnaire was forwarded to 30 consecutive patients in a prospective study who had LASIK for high myopia by a single surgeon at a single center. The questionnaire used visual analog scales, anchored at each end by an adjectival descriptor. The mean preoperative myopia was -7.37 diopters ±1.88 (SD). Hundred percent of eyes (100% of patients) achieved post-LASIK uncorrected visual acuity of 6/9 or better.*

Results: *A 100% reply rate was achieved. The most common motivating factor for pursuing LASIK was to improve UCVA (100%); only 50% rated improved cosmesis as an important motive.100% patients reported functional improvement across the spectrum of visual tasks assessed, 100% felt their UCVA was as good as anticipated, 100% were satisfied with the speed of visual improvement, 100% achieved the goals for which they had surgery, 100% reported an improved quality of life, and 100% were satisfied with the overall outcome of LASIK.*

Conclusion: *Using an anonymous, wide-ranging questionnaire, high levels of functional improvement and satisfaction with the speed of visual recovery and outcome were reported by patients after LASIK for high myopia.*

Key words: *High myopia, LASIK, Functional outcomes, Satisfaction.*

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Introduction:

Myopia or short sight is that form of refractive error wherein parallel rays of light come to a focus in front of the sentient layer of the retina when the eye is at rest. (Abrams, 1993). Myopia is one of the common causes of visual disturbance among the adult population. A refractive error of more than -6 D constitutes high myopia. (Kanski and Bowling, 2011). Prevalence of myopia in adults in Asian countries is about 22% to 49%. In Bangladeshi adults over 21 years were reported to be 23.8%.(Bourne et al,2004; Saw et al,2002).Prevalence of high myopia in Bangladesh 1.8%(Bourne et al,2003)

Options for correcting myopia includes spectacles , contact lenses and refractive surgeries like radial keratotomy (RK), photo-refractive keratectomy (PRK) , Laser epithelial keratomileusis (LASEK), Laser in situ keratomileusis (LASIK) (Kanski and Bowling, 2011) . Although vision can be restored towards 6/6(20/20) with spectacles or contact lenses in most myopic patient but not in high myopia .High myopic patient usually cannot tolerate full spectacle correction (Abrams,1993). Contact lenses are also not free of hazards. RK can correct myopia upto -5D only with best results . PRK can correct myopia upto -6D only. LASEK works well with low corrections.

LASIK is superior to other conventional options. It can correct myopia of up to 12 D, hypermetropia of up to 4 D and astigmatism of up to 5 D depending on corneal thickness. LASIK offers good results in cases of moderate and high myopia (Kwitko et al1996;Bas et al,1991)

LASIK gives permanent unaided vision. Patient becomes independent of spectacles and contact lens. It improves the quality of life of a person by freeing of spectacles and contact lenses and enable to show improved performances in daily activities. These have immense impact on personal, social and family life and thereby his productivity in different aspects also improves. With the advent of newer technology, LASIK is now-a-days almost free of complications.

In an area of ophthalmic surgery in which the patient generally presents with healthy eyes and a normal or near normal corrected visual acuity prior to surgery, a high level of postoperative satisfaction is desirable. Patient satisfaction after LASIK ranges from 82%to 98% .(Marinho et al, 1996,MCGhee et al , 2000, Knorz et al,1998 and Bailey et al., 2003.). A proven relationship exists between patient satisfaction and use of a medical service, (Roghmann et al.,1979). and dissatisfied patients may choose to move from 1 service provider to another (Weiss and Senf.,1990). Satisfied patients are also more likely to comply with treatment regimens (Kincey et al.,1975). Properly constructed satisfaction studies can provide important feedback about the quality of care provision and communication to the health care provider,(Hall and Dornan.,1988). enabling patient-directed improvements in the service.

Satisfaction is not a 1- dimensional concept. Questionnaires based on visual analog scales, anchored by adjectival descriptors have been demonstrated to provide a greater range of patient response and have been used successfully in other areas of eye -care provision. (McCormack et al., 1988, Papas and Schultz., 1997, Weed and McGhee., 1998).

Myopic patients presenting for refractive surgery may have different psychological profiles and expectation than patients having other ophthalmic procedures. (Quah et al., 1996; Geerling et al.,1997, Erickson et al.,1995,Kidd and stark and McGhee et al., 1997). We had used prospective questionnaire studies to assess reasons for seeking treatment and satisfaction with outcome (McGhee et al.,1996) psychiatric distress and self esteem (Kidd et al.,1997) and factors that determine choice of excimer laser treatment (Orr et al.,1998)

The necessity for a more precise assessment of subjective quality of vision and patient satisfaction after refractive surgery has increased. As LASIK has become the most popular refractive surgical procedure performed today because of its safety ,efficacy, quick visual recovery and minimal patient discomfort ,sufficient numbers of high myopic patient have been undergoing LASIK procedure .It is rational to conduct research to see functional outcomes and patient satisfaction of LASIK performed on high myopic patients .Few studies have been conducted in Bangladesh to see the efficacy and effectiveness of LASIK in general but none specifically on high myopia. On this ground, the current study has been designed to see the functional outcome and patient satisfaction after LASIK for correction of high myopia .This study would help the service providers and researchers to refer more evidences of multiple aspects of patients functional visual outcomes and satisfaction outcomes after LASIK for correction of high myopia of Bangladesh.

Methods

A cross sectional study was conducted in Department of Ophthalmology, BSMMU & LASIK sight center, Dhaka From January 2013 -March 2014 on Highly myopic patient attending in dept. of Ophthalmology, BSMMU & LASIK sight center Dhaka, fulfilling inclusion and exclusion criteria .The IRB of BSMMU approved the study prior to its commencement. All patients were informed about the nature of the study and informed consent was taken before enrollment. Purposive sampling technique was applied and 30 patients were included, who had undergone bilateral LASIK for correction of high myopia. Pre-LASIK refractive status and post-LASIK refractive status of same patients was studied to see the difference and its visual and functional impact. .All treatments was performed by a single surgeon at LASIK sight center, Dhaka.The patient was examined meticulously preoperatively and post operatively at 1st and 30th POD. Patient responses to questionnaires regarding functional outcomes and patient satisfaction was collected by the investigator at 30th POD. After compilation, the data was presented in the form of tables, figures and graphs, as necessary. A probability ' p' value of <0.05 was considered significant.

Variables of outcome measures: Demographic variables: Age: Adult (18 years to 35 years). Sex: Male and Female, Occupation ,Distribution of myopia: High myopia (-6D to -12D)

Outcome measure:-Functional outcomes in respect to reading in day light, reading in artificial light, watching TV. Satisfaction outcomes in respect to uncorrected sight as anticipated, currently wearing spectacles or contact lenses, speed of improvement of vision, achievement of goals of treatment, improvement of quality of life, satisfaction with overall outcome.By a 17-question visual analog questionnaire which was adapted from a 34-item questionnaire that had been used to assess functional, psychological, and satisfaction outcomes of laser in situ keratomileusis for high myopia (McGhee et al 2000). This questionnaire had been validated by an expert review (ophthalmologist and Biostatistician active in the field) in BSMMU, Bangladesh, under the guidance of Department of Public Health and Informatics of BSMMU after a pilot study.(In pilot study 34-item questionnaires was given to 10 patients and responses to questionnaire was analysed and a 17-item questionnaire was adapted and had been validated by an expert review (ophthalmologist and Biostatistician) .Questionnaire based functional and satisfaction outcomes of LASIK for correction of high myopia was measured by linear visual analog scales anchored at each end by an adjectival descriptor. The patient were respond by marking a cross at the desired point on a designated line (Figure:1).Responses for each question was divided into 1 of 4 equal categories. These categories were defined by the location of the response on each line as :(1)Very positive (7.55-10.00),(2) Positive (5.05-7.50),(3) Negative (2.55-5.00);(4) Very negative (0.00-2.50). No neutral responses were accepted; on rare occasion in which the patient response fell exactly on 1 of the divisions, the response was classified in the lower, less positive, of the 2 categories. Higher scores represents positive responses and lower scores represents negative responses. Mean score was taken for analysis.

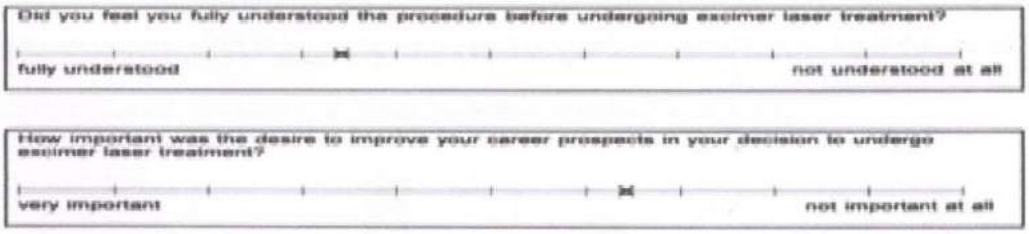

Figure 1. (McGhee) Two examples of the question format used throughout the questionnaire. Patient responses were recorded with a cross on a linear visual analog scale, anchored at each end by an adjectival descriptor.

Results and Observations

A total 30 patients 60 eyes having high myopia have undergone LASIK were included in this study. Patients were selected non randomly (purposely) of both sexes and age ranging 18 to 35 years. Patients were assessed on 1st POD and 30th POD .Patient responses to questionnaires were collected at 30th POD by the investigator.

Table-I: Age distribution of the patients

Age in years	Frequency	Percentage
18-22	7	23.33
23-27	17	56.67
28-32	4	13.33
32+	2	6.67
Total	30	100.00
Range	18-35	
Mean±SD	25.5±4.18	

Table-1 Results were expressed as number (percent)
Observation is that 80% of the patients were in between 18-27years

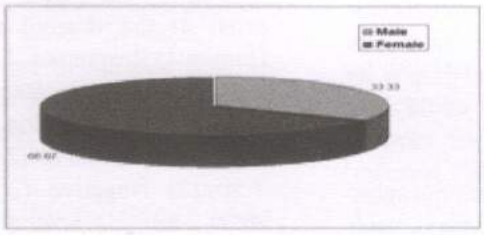

Table-2 Sex distribution of the patients, (Pie diagram) shows that about 66.67% were female and 33.33% were male. Female were clearly dominant (66.67%) in this study.

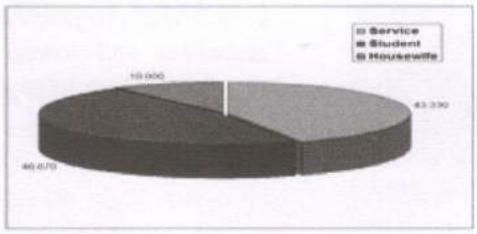

Table-3 Occupation of the study subjects (Pie diagram) shows that maximum (46.67%) subjects were students followed by service holders (43.33%).

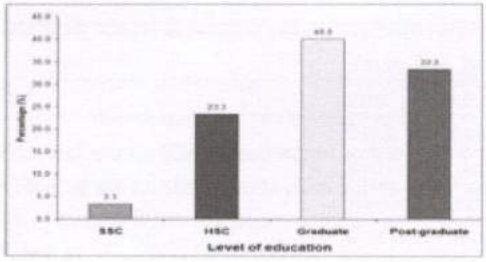

Figure-4: Level of education among the subjects (Bar diagram) shows that maximum (40.00%) subjects were Graduate followed by (33.33%) Post-graduate.

Table-2: Distribution of patients by spherical equivalent before and after LASIK operation (1st POD)

	No of eyes	Minimum dioptre	Maximum dioptre	Mean dioptre	SD	P-value
Spherical equivalent Pre-operative	60	6.00	12.00	-7.37±	1.88	<0.001**
Spherical equivalent Post-operative	60	0.00	1.00	-.242±	0.401	

P value measured by paired t-test, ** = Significant

Table-2 shows that the pre -LASIK minimum spherical equivalent power was -6.00 D and post -LASIK it was0.00D.The maximum spherical equivalent power was -12.00D and post-LASIK it was±1.00D. The mean spherical equivalent power was -7.37D and -0.242D before and after surgery respectively while standard deviation was 1.88 and 0.401D and it was highly significant (p value < 0.001)

Table-3: Comparison between pre-LASIK Best Corrected VA and post-LASIK uncorrected VA at 1st POD

Visual Acuity	Pre-LASIK BCVA		Post-LASIK UCVA		P-value
	No of eyes	%	No of eyes	%	
6/6	54	90.00	34	56.67	<0.001 **
6/9	5	8.33	19	31.67	
6/12	1	1.67	6	10.00	
6/18	0	0	1	1.66	
6/24	0	0	0	0	
6/36	0	0	0	0	
6/60	0	0	0	0	
Total	**60**	**100.00**	**60**	**100.00**	

P value measured by Chi-square test ,(p<0.001) , **= Significant, It may also reached by paired t-test

Table -3 Results were expressed as number (percent) (n = 60, p value was <0.001).

Observation is that Post–LASIK UCVA e" 6/9 in 88.34% & 6/18 UCVA in 1 eye.

Table-4: Comparison between pre-LASIK BCVA and post-LASIK UCVA at 1st POD (Log MAR)

Visual Acuity Log MAR	BCVA Preoperative (n=30) Mean±SD	UCVA Postoperative (n=30) Mean±SD	p value
Right eye	0.0219±0.069	0.1019±0.125	<0.001**
Left eye	0.0180±0.055	0.0880±0.116	<0.001**

p value measured by Paired t-test, **= Significant

Table-4 shows that Pre LASIK (Log MAR) BCVA was Mean ±SD 0.0219±0.069 , 0.0180±0.055 whereas Post -LASIK UCVA it was Mean±SD0.1019±0.125, 0.0880±0.116 in R/E, L/E respectively

It was statistically significant (p value <0.001), n=30.

Table-5: Distribution of the patient by spherical equivalent at 30th POD of LASIK

	No of eyes	Minimum dioptre	Maximum dioptre	Mean dioptre	SD
Spherical equivalent post-LASIK	60	0.00	±1.00	-.242±	0.401

Table-5 shows that At 30th POD, the residual refractive error was maximum ±1.00D, minimum 0.00D & Mean±SD-

p value measured by Paired t-test, **= Significant

Table-4 shows that Pre LASIK (Log MAR) BCVA was Mean ±SD 0.0219±0.069 , 0.0180±0.055 whereas Post -LASIK UCVA it was Mean±SD0.1019±0.125, 0.0880±0.116 in R/E, L/E respectively

It was statistically significant (p value <0.001), n=30. 0.242±0.401D.It was statistically significant.

Table-6: Comparison between pre-LASIK BCVA and post-LASIK UCVA at 30th POD.

Visual Acuity	Pre-LASIK BCVA		Post-LASIK UCVA		P-value
	No of eyes	%	No of eyes	%	
6/6	54	90.00	38	63.33	<0.001**
6/9	5	8.33	22	36.67	
6/12	1	1.67	0	0	
6/18	0	0	0	0	
6/24	0	0	0	0	
6/36	0	0	0	0	
6/60	0	0	0	0	
Total	**60**	**100.00**	**60**	**100.00**	

P value measured by Chi-square test, **= Significant

Table6 shows that pre-LASIK BCVA was 6/6 in 90. 00% whereas Post -LASIK UCVA was 6/6 in 63.33% and there was no 6/12 Post -LASIK UCVA .It was statistically significant (p value <0.001), n=60.

Table-7 : Comparison between pre-LASIK BCVA and post-LASIK UCVA at 30th POD

Visual Acuity	Pre-LASIK BCVA		Post-LASIK UCVA		P-value
	R/E	L/E	R/E	L/E	
6/6	27	27	18		
6/9	2	3	12	10	
6/12	1	0	0	0	
6/18	0	0	0	0	<0.001**
6/24	0	0	0	0	20
6/36	0	0	0	0	
6/60	0	0	0	0	
Total	**30**	**30**	**30**	**30**	

P value measured by Chi-square test, **= Significant

Table-7 Observation is that there was no 6/12 Post -LASIK UCVA at 30th POD ($p < 0.001$), n=30.

Table-8: Comparison between pre-LASIK BCVA and post-LASIK UCVA at 30th POD (Log MAR)

Visual Acuity Log MAR	BCVA Preoperative (n=30) Mean±SD	UCVA Postoperative (n=30) Mean±SD	p value
Right eye	0.0219±0.069	0.720±0.0896	0.005**
Left eye	0.0180±0.055	0.0600±0.086	0.006**

p value measured by Paired t-test, **= Significant

Table-8 shows that Pre LASIK(Log MAR) BCVA was Mean ±SD 0.0219±0.069 whereas Post -LASIK UCVA it was Mean±SD0.720±0.0896 in R/E. Table -11 also shows Pre -LASIK(Log MAR) BCVA was Mean±SD 0.0180±0.055 whereas Post -LASIK UCVA it was Mean±SD0.0600±0.086 in L/E . It was statistically significant ($p < 0.01$),(n=30).

Table -9: Patient responses to reasons for having LASIK

Reasons	% of response (No. Pt)	Categories of responses (%)			
		Yes (No. Pt)	No (No Pt)	NA (No. Pt)	NC (No. Pt)
Improving uncorrected vision	100 (30)	100 (30)	0	0	0
Freedom from spectacles	100 (30)	96.67 (29)	3.33 (1)	0	0
Sports/leisure activities	100(30)	26.67 (8)	43.33 (13)	6.67 (2)	23.33 (7)
Problem with contact lenses	100 (30)	26.67 (8)	50 (15)	20 (6)	3.33 (1)
Cosmetic appearance	100 (30)	50 (15)	23.33 (7)	6.67 (2)	20 (6)
Improving career prospects	100 (30)	16.67 (5)	50 (15)	16.67 (5)	16.67 (5)

Table-9 shows that the reasons for having LASIK was 100% (n=30)for improving uncorrected vision,96.67%(n =29) for freedom from spectacles, 26.67% (n=8) for sports/leisure activities , 26.67% (n=8) problem with contact lenses, 50%(n=15) cosmetic appearance and 16.67%(n=5) for improving career prospects. Observation is that 100% patient doing LASIK for improving uncorrected vision, 96.67% for freedom from spectacles and 50% for cosmetic appearance.

Table-10 Patients recorded perception of their ability to perform each function after LASIK with uncorrected vision

Function	Percentage Responses (No. patient)	Mean Response ±SD	Categories of Responses (%)			
			Very positive (No. patient)	Positive (No. patient)	Negative (No. patient)	Very negative (No. patient)
Reading in daylight	100 (30)	8.63±1.093	80 (24)	20 (06)	0	0
Reading in artificial light	100 (30)	8.23±1.287	63.33 (19)	36.67 (11)	0	0
Watching TV	100 (30)	8.73±1.124	76.67 (23)	23.33 (7)	0	0

Table-10 Shows that a100%(n=30) reply rate was achieved in respect to all 3 functional outcomes. Among them for reading in day light with uncorrected vision very positive response rate was 80%(n=24) ,positive was 20%(n=06).,reading in artificial it was 63.33% (n=19) & 36.67%(n=11) , in watching TV it was 76.67% (n=23) & 23.33% (n=7) respectively. It is obvious that 100% reply rate was achieved in respect to all 3 functional outcomes and there was no negative or very negative responses in respect to all 3 functional outcomes.

very negative responses in respect to all 3 functional outcomes.

Table-11 Patient responses to satisfaction questions

Question	Percentage Responses (No. patients)	Mean Response ±SD	Categories of Responses (%)			
			Very positive (No. patients)	Positive (No. patients)	Negative (No. patients)	Very negative (No. patients)
Did you fully understand the procedure before treatment?	100 (30)	6.802±1.577	13.33 (4)	73.33 (22)	13.33 (4)	0
Is your uncorrected sight as good as anticipated?	100 (30)	8.808±1.131	80 (24)	20 (6)	0	0
Are you currently wearing spectacles or contact lenses?	100 (30)	1.696±0.660	0	0	0	100 (30)
How satisfied were you with the speed of improvement?	100 (30)	9.225±0.574	96.67 (29)	3.33 (1)	0	0
Did you achieve the goals for which you had treatment?	100 (30)	8.983±0.796	86.67 (26)	13.33 (4)	0	0
Has your quality of life improved?	100 (30)	8.933±0.931	83.33 (25)	16.67 (5)	0	0
How happy are you, overall, that you had the treatment?	100 (30)	9.108±0.742	93.33 (28)	6.67 (2)	0	0
Would you recommend the operation to a friend/family?	100 (30)	9.291±0.394	100 (30)	0	0	0

Table-11 shows that about 86.67% (n=26) patient understood the procedure prior to surgery (very positive 13.33%) and 100% (n=30) were highly satisfied with the speed of visual improvement following LASIK (very positive 96.67%).100% (n=30) felt that they had achieved the goals for which they had had LASIK(86.67% very positive).100%(n=30) felt that the quality of their life had improved(83.33% [n=25] very positive) after LASIK. 100%(n=30) were satisfied overall that they had had LASIK (93.33% [n=28] very positive) .100%(n=30) was not wearing spectacles / contact lenses (100% [n=30] very negative) after LASIK.100%(n=30) felt that they had achieved their sight as good as anticipated (80%[n=24] very positive).100% (n=30) replied that they would recommend the operation to their friends/family(100% [n=30] very-positive.

Observation is that 100% reply rate was achieved in respect to all 8 satisfaction outcomes. None of the patient wearing spectacles / contact lenses after LASIK, 100% subjects recommend the operation to their friends/family and 86.67% patient understood the procedure prior to Surgery

Extrapolation of these statistical analyses are constrained by the relatively modest sample size of 30 patients and 60 LASIK procedures.

Discussion

Among the refractive errors myopia is one of the forms which need correction whenever it causes visual impairment. There are several methods of correcting myopia the most commonly used remedy is by using spectacles in our country. However LASIK is becoming more popular to the people who want to live without spectacle or contact lens but with good quality of vision specially the young patient who fulfill the criteria of refractive surgery. The aim of the study was to assess the functional outcomes and patient satisfaction after LASIK for correction of high myopia.

This study was a cross-sectional ,self administered questionnaire based study. A 17-question visual analog questionnaire was adapted from a 34-item questionnaire that had been used to assess functional, psychological, and satisfaction outcomes of laser in situ keratomileusis for high myopia (McGhee et al 2000). The Questionnaire had been validated by an expert review (Ophthalmologist & Biostatistician) active in the field in BSMMU, Shahbag, Dhaka, Bangladesh after a pilot study, As there was no such previous study on Functional outcomes and patient satisfaction after LASIK for correction of high myopia in Bangladesh. The validated questionnaire was given to the study subjects to respond by marking a cross on a linear visual analog scale anchored at each end by an adjectival descriptors.

The correction of high myopia by LASIK is evolving as a well-liked corrective measure of visual impairment in Bangladesh. We evaluate 60 eyes of 30 patients.

In this study the mean age of the patients was 25.5±4.18 years (range of 18 to 35 years). A study conducted by Hejcmanova et al,(2006) and found mean age 26.3±2.2 years (range 21 to 39 years).The mean age of that study was similar to current study. A study conducted by McGhee et al,(2000) and reported mean age 40.2±9.9 years (range 21 to 57 years).Another study by Tahzib et al (2005) and found that mean age 43±10 years (range 21 to 67 years) .Both of the studies the mean age was higher to current study .It was due to variation of socio-economic status of the study subjects .

Out of 30 patient of present study 20 were female and 10 were male . A study conducted by Hejcmanova et al,(2006) with 53 patients 37 were female and16 were male . Both studies showed that female were almost twice than male .It was due to socio-cultural and cosmosis reason.

In this current study the occupation of the subject was 46.67% student,43.33% service holder and 10% housewife .It may reflect the socio-economic status of the study subject ,those who are involved in out-door works were more prone to do LASIK.

In this current study the Level of education of the subject was 40% graduate,33.33% post-graduate, It may also reflect the socio-economic status of the study subjects, the highly educated, upper class subjects were the maximum client of LASIK.

In current study mean pre-operative(pre -LASIK) refractive status was-7.37±1.88D (SE)(ranged -6.00 to-12.00D)and mean post-operative (post LASIK)) refractive status was-0.242±0.401D(SE) (ranged -0.00 to ±1.00 D) and it was statistically highly significant ($p<0.001$).A study by Miller et al (1998)where mean pre-operative(pre -LASIK)

refractive status was-5.89±0.23D (SE)(ranged -0.75to-16.00D) Another study by McGhee et al (2000) ,where mean pre-operative(pre -LASIK) refractive status was-10.7±4.4D (SE)(ranged -1.75 to-22.50D) and mean post-operative (post LASIK)) refractive status was-1.1±2.5D(SE) (ranged -0.6 to ±1.3 D) and it was almost similar to current study.

In this study about 98.34% of eyes (59 eyes) achieved post-LASIK uncorrected visual acuity of 6/12 or better ; 1 eye (1.66%) lost 3 lines of corrected Snellen visual acuity at 1st POD and it was due to corneal flap injury). A study by McGhee et al (2000), 76% of eyes (83% of patients) achieved post-LASIK uncorrected visual acuity (UCVA) of 6/12 or better; 1 eye lost 2 lines of corrected Snellen visual acuity.

In this study about 100% of eyes(60eyes) achieved post-LASIK uncorrected visual acuity of 6/9 or better at 30th POD ($p<0.001$) .A study by McGhee et al (2000), 76% of eyes (83% of patients) achieved post-LASIK uncorrected visual acuity (UCVA) of 6/12 or better; 1 eye lost 2 lines of corrected Snellen visual acuity. Another study by Knorz et al(1996),87.5% achieved post-LASIK uncorrected visual acuity (UCVA) of 6/12 or better; It was statistically significant ($P< 0.001$) .

In current study 100% reply rate was achieved. A study by McGhee et al(2000) 98% reply rate was achieved .It was similar to current study but another study by Miller et al (1998), a 53% reply rate was achieved and it was dissimilar to this study.

In this study most common motivating factors for pursuing LASIK was to improved UCVA 100% freedom from spectacles 96.67% and for cosmetic appearance it was 50%,In a study by McGhee et al (2000) it was about 89.6%,64.6% and58.3% respectively .It may be due to most of the current study subject used spectacles for their refractive correction. Khale and coauthors(1992) also found that the most common motivating factors for pursuing LASIK was to improved UCVA 88% .Freedom from spectacles 83% and for cosmetic appearance 49.44%.

In current study, A 100% (n=30) reply rate was achieved in respect to all 3 functional outcomes. Among them for reading in day light with uncorrected vision very positive response rate was 80%(n=24) ,positive was 20%(n=06),reading in artificial it was 63.33% (n=19) &36.67%(n=11), in watching TV it was 76.67% (n=23) & 23.33% (n=7) with mean±SD was 8.63±1.093,8.23 ±1.287,8.73±1.124 respectively . A study by McGhee et al (2000) A 98% reply rate was achieved . Among them for reading in day light with uncorrected vision very positive response rate was 66%(n=31), positive was 19.10%(n=09).,reading in artificial light it was 61.70% (n=29) &19.10%(n=9) , in watching TV it was 76.60% (n=36)&19.10% (n=9) with mean± SD was 7.6±2.5,7.3 ±2.5,8.4±1.6 respectively .In current study very positive response for reading in daylight is higher than McGhee study due to age factor as in McGhee study subjects were older than current study,(>54% were >40 years).

In this current study, A 100%(n=30) reply rate was achieved in respect to satisfaction outcomes. 100% (n=30) were highly satisfied with the speed of visual improvement following LASIK (very positive 96.67%)with mean response ±SD 9.225±0.574. 97.9% were highly satisfied with the speed of visual improvement with mean response ±SD 9.20±1.2 studied by McGhee et al (2000) . Another study by Michael et al (1996) showed100% were highly satisfied.

In this current study,100% (n=30) felt that they had achieved the goals for which they had had LASIK(86.67% very positive) with mean response ±SD 8.983±0.796. , 93.8% achieved the goals for which they had surgery with mean response ±SD 8.6±1.8 studied by McGhee et al (2000).,while another study by Tahzib et al(2005) showed 93.6% achieved the goals for which they had surgery with mean response ±SD 4.1±0.7.In current study reported higher level of goal achievement than other previous study due to younger age of the subjects.

In this study,100%(n=30) felt that the quality of their life had improved(83.33% (n=25) very positive) after LASIK with mean response ±SD 8.933±0.931 whereas, 97.9% reported an improved quality of life with mean response ±SD 8.5±1.7, a study by McGhee et al(2000).

In current study 100%(n=30) were satisfied overall that they had had LASIK (93.33% (n=28) very positive) with mean response ±SD 9.108±0.742 whereas ,97.9% were satisfied with the overall outcome of LASIK with mean response ±SD 9.2±1.0, a study by McGhee et al(2000) ..Another study by Hejcmanuva et al(2006) showed satisfaction with

final outcome was 91%; whereas Solomon et al (2008) showed satisfaction with final outcome was 95.4% (Ranged 87.2 to 100%). Higher satisfaction rate in current study was due to younger age of the subject than other studies.

In this study, 100%(n=30) was not wearing spectacles / contact lenses (100% [n=30] very negative) after LASIK with a mean ±SD 1.696±0.660. whereas in McGhee et al (2000) study it was about 63% with a mean ±SD 3.6±3.9.It was dissimilar to this study.In McGhee study the higher rate of wearing of spectacles/contact lenses were due to older age of the patient which includes presbyopic patient (>54% were >40 years).

In our current study 100%(n=30) felt that they had achieved their sight as good as anticipated (80%[n=24] very positive) with a mean ±SD 8.808±1.131 while another study by McGhee et al(2000) showed that it was 96% with a mean ±SD 8.6±1.7. Another study byTahzib et al(2005) showed 88.0% had achieved their sight as good as anticipated with mean response ±SD 4.1±0.7.

In my current study 100% (n=30) replied that they would recommend the operation to their friends/family (100% [n=30] very-positive with a mean ±SD 9.291±0.394 whereas in McGhee et al (2000) study it was about 98% (87.5 % very positive) with a mean ±SD 9.1±1.2. while another study by Tahzib et al(2005) showed 92.3% would do the surgery again with mean response ±SD 4.1±0.7.

In this current study about 86.67%(n=26) patient understood the procedure prior to surgery (very positive 13.33%) with mean response ±SD6.802±1.577 whereas in McGhee et al study it was100% with mean response ±SD 9.2±0.7.It was dissimilar to current study. Very positive lower response rate reflects lower level of health awareness in current study.

In this study, LASIK was highly effective and safe to correct high myopia .After LASIK surgery there was significant improvement of uncorrected visual acuity with resultant high level of visual functional improvement with consistent of high level of satisfaction outcomes among the study subjects. This recommends that facilities for LASIK needs to be extended at tertiary level of Public health services of Bangladesh to increase the easy access of the LASIK surgery.

Limitations of the study :-, This study was subjective and therefore did not attempt to address objective elements, relative smaller sample size, responses to questionnaire was collected at 30th POD.

Conclusion And Recommendation

This study reports that LASIK is the best option for correction of high myopia in terms of functional outcomes and patient satisfaction. To make the findings more representatives, sample size should be reasonably increased. So, further large scale study on the same issue are recommended to obtain more accurate and dependable outcome.

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Implantable Collamar Lens for Correction of Myopia with Astigmatism

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Abstract:

Purpose: *To explore the outcomes of implantable collamar lens for surgical correction of myopia and astigmatism.*

Methods: *Seventy four eyes of 42 patients, who were unsuitable for LASIK, were treated with implantable collamar lens implantation. In 58 eyes with a mean spherical equivalent (SE) of -14.5 diopters (D), the target was emmetropia; in 16 eyes with a mean SE of -23.75 D, the goal was a reduction in the myopia.The mean follow-up was 6.5 months.*

Results: *Best spectacle-corrected visual acuity was maintained or improved in all eyes. The mean postoperative SE in the 16 eyes was -3.50 D. In the 58 eyes targeted to achieve emmetropia, was achieved in 56 eyes (96.55%). Mean vaulting of the ICL over the crystalline lens was 322 um. Subtle, localized anterior subcapsular opacification was encountered in 1 eye. Eighteen eyes had an IOP higher than the preoperative level, which was managed by topical anti glaucoma medication.*

Conclusion: *Implantation of an ICL was effective in correcting myopia of up to -18.50 D. ICL also effective in reduction of spectacle dependency by reducing the number of high refractive error.*

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Introduction:

Spectacles and contact lenses are the most common way to correct refractive errors. Many adults with high myopia are unwillingand unable to use them because of discomfort from theirrefractive error and poor quality of vision. The higherthe refractive error, the higher the percentage of peoplewho are dissatisfied with those. Along with optimum comfort which better quality of vision, few factors are also indicate a permanent solution in the form of refractive procedure such as contact lens intolerance, and occupationalrequirements and cosmetic blemish in highly myopic eyes.

Corneal surgery for surgical correction of higher amounts of myopia has progressed over the past few years and shows the greatest promise.[1-3] but those become unsuitable for higher corrections because of large ablation depths, small ablation zones, increased aberrations, more chance of iatrogenic corneal ectasia and poor predictability.[3-4] Clear lens extraction for high and extreme myopia exposes the patient to the risk of retinal detachment and cystoid macular edema (CME).[5] Younger patients also face the problem of loss of accommodation.

Phakic IOL surgery has developed significantly to produce optimum result with minimum complication. Anterior chamber phakic IOLs are generally used to treat high myopia.[6] But they were not become popular due to high rate of complications such as glaucoma and endothelial cell loss.[7] Implantable contact lens has developed as a Posterior chamber phakic IOL for better ourcome as efficacy, safety, very minimum complications and delightful satisfaction.

Our purpose of the study to explore outcome of implantable contact lens in surgical correction of myopia with or without astigmatism, emphasis giving on efficacy, safety, vault, intraocular pressure, pigment dispersion, contrast sensitivity and patient satisfaction.

Methods

This study included 74 eyes of 42 consecutive patients, who were unsuitable for LASIK, scheduled for implantation of a phakic IOL (ICL) to correct high myopia. The patients were divided in two groups based on target of intervention. In group A, 58 eyes with preoperative mean spherical equivalent (SE) of -14.5 diopters (D) (range-7.50 to -18.00), the target was emmetropia. In group B, 16 eyes with a mean SE of -23.75 D (range -18.50 to - 29.00), the goal was a reduction in the myopia. The inclusion criteria were myopia of - 12 D or more in at least 1 eye, less than -12.00 but unsuitable for LASIK due to thin cornea, and contact lens intolerance. The exclusion criteria included visually significant cataract, glaucoma, diabetic retinopathy, and advanced systemic disease. The mean follow-up was 6.5 months.

The preoperative examination included uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), manifest refractions, keratometry, corneal topography, pachymetry, and biometry. Slitlamp microscopy, applanation tonometry, and dilated fundoscopy were also performed. 16 eyes with lattice degeneration were treated with laser photocoagulation prophylactically. The StaarCollamer posterior chamber phakic IOL (ICL - both V4b and V4c Model) was used in all patients. Lens power calculations were performed by Staar Surgical with preoperative measurements supplied by us. Horizontal corneal diameter was measured by digital surgical caliper.

All ICL implantations were done on an outpatientbasis using topical anesthesia. The ICL was implanted through 3.0 mm temporal clear corneal incision. Viscoelastic material was then removed from the anteriorchamber and exchanged for balanced salt solution. The clear corneal incision wasself-sealing in all cases. the eye was patched for 4 hours.

Postoperatively, combination steroid and antibiotic eyedrops were prescribed 4 times a day for 2 weeks. Each patient was observed on the first postoperative day and then 1 week, 1 month, 3 months, 6 months. In every post operative follow up, detail anterior segment and posterior segment evaluation were done. Anterior segment OCT done at 1 month, 3 months and 6 months to evaluate Vault in all cases.

Pigment dispersion was evaluated as mild, brownish iris pigment floating in anterior or posterior chamber, moderate as deposition on ICL and Severe as arranging linear pattern over ICL.

Residual refractive errors after ICL implantation were corrected using laser in situ keratomileusis-socalledbioptics. Bioptics was offered to patients whose preoperative refraction was more than -20.0 D as it was not possible to correct these eyes with the ICL only. One eye was correctedusing bioptics. These secondary refractive procedureswere performed 1 years after the ICL implantation. In1 eye, the initial phakic IOL was removed and the lens was removed with phacoemulsificationand implantation of an multifocal IOL in thebag. The refractive outcomes are those before secondarysurgical procedures.

All patients were advised to contact us and apply for an extra visit any time they feared a possible complication.Complications were analyzed as a measure of thesafety of the procedure.

Refractive outcome and postoperative UCVA and BCVA were analyzed as measures of efficacy of the procedure. The baseline manifest refractions and UCVA and BCVA were compared with the refractions and visual acuities at the last postoperative examination at least at 6 months. Stability of the refractive outcome was analyzed using a paired, 2-tailed Student t test of the mean spherical equivalent refractions at each postoperative examination. The results were calculated using Excel worksheet 2007software and statistically analyzed using SPSS Version 22. Differences were considered statistically significant when the P-value was less than 0.05.

The refractive outcome at 1 week, and 1, 3, and 6 months was analyzed. The refractive outcome in patients with at least a 6 month follow-up was evaluated as the primary measure of refractive stability.

Results:

The mean age of the patients at the time of surgery was 26 years (range 21 to 44 years).Both ICL V4b(in 17 eyes) and V4C (in 57 eyes)models are used according to the demand of the refractive correction. In case astigmatism more than 1D, Toric ICL (20 eyes) was used to give optimum result. Fig 1 shows number of different characteristics of ICL used in type and models.

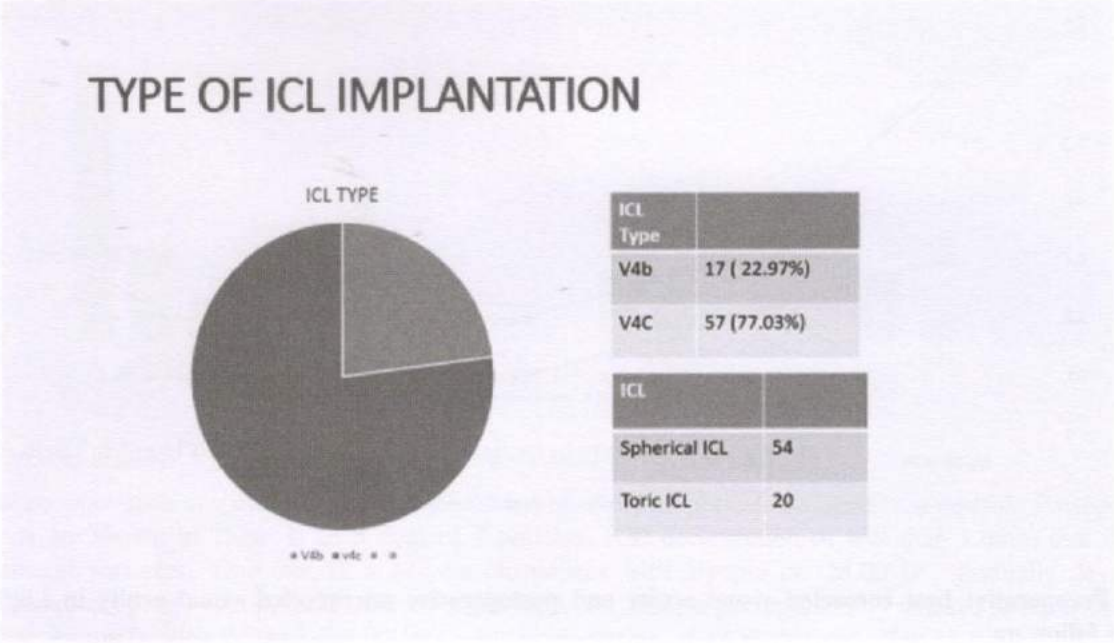

Fig 1: Number of different characteristics of ICL used in type and models.

At 6 month, the mean spherical equivalent refraction was -1.50 (range -0.25 to -7.0 D). In Group A, in which target was emmetropia, 56 (96.55%) eyes out of 58 eyes achieve the target. In Group B, mean refraction spherical equivalent was -3.50D. Both group maintain postoperataive refraction started from 1 month to 6 months. Figure 2 shows the mean refractive spherical equivalent in preoperative and post operative follow up period upto 6 months.

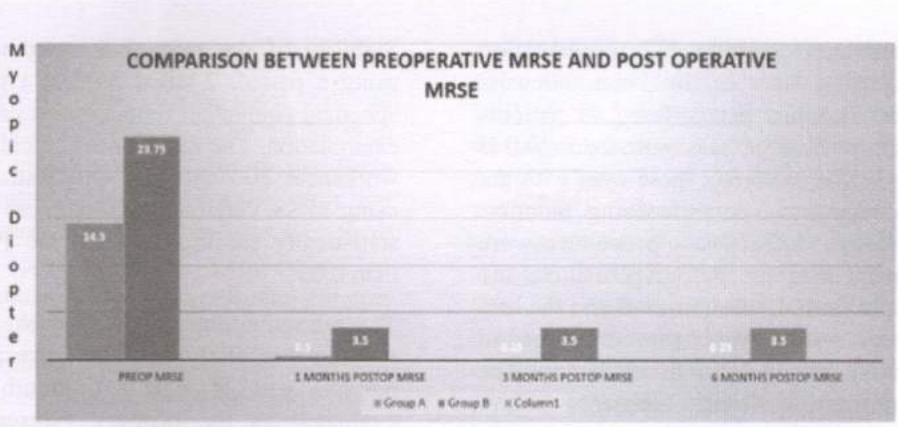

Figure 2: Mean refractive spherical equivalent in preoperative and post operative follow up period upto 6 months.

The preoperative UCVA was worse than LogMar 1.00 in all eyes. The preoperative Mean BCVA was LogMar 0.6 in Group B and LogMar 0.3 in Group A. After ICL implantation, from first postopervative day UCVA was satisfactory and improving more which become remarkably at 1 week followup. At 6 months followup Mean UCVA was improved to LogMar 0.2 in Group B and LogMar 0.1 in Group A. Fig-3 describe the preoperative best corrected visual acuity and postoperative uncorrected visual acuity in LogMarupto 6 months follow up

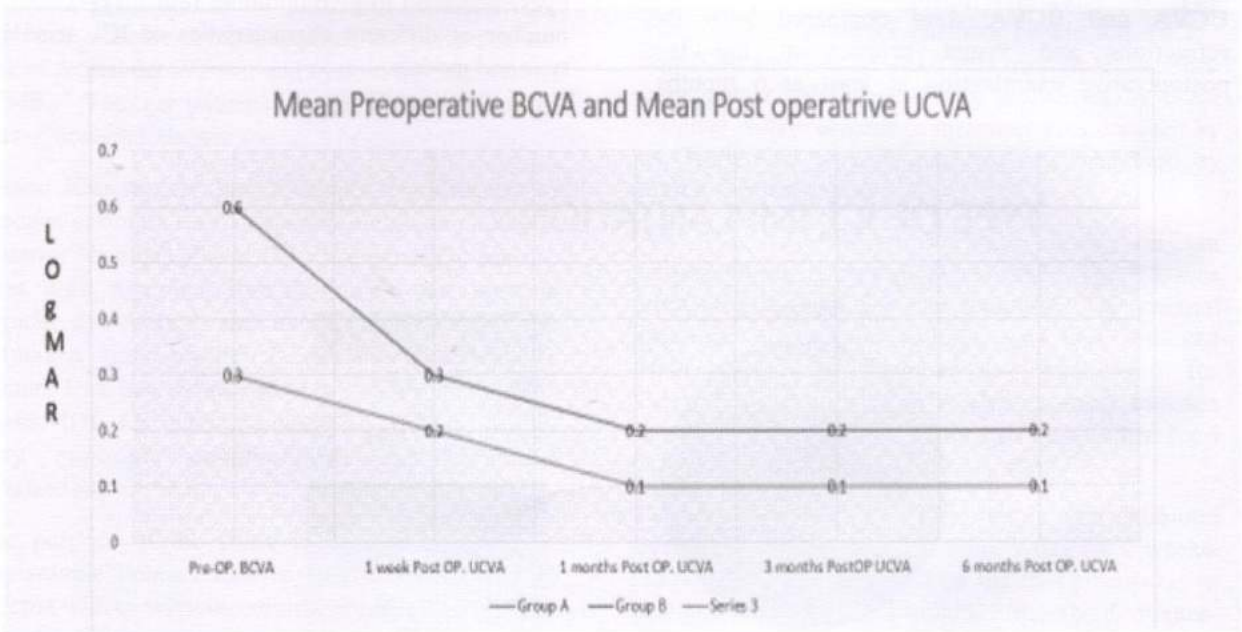

Fig-3: Preoperative best corrected visual acuity and postoperative uncorrected visual acuity in LogMarupto 6 months follow up

The mean preoperative IOP was 14.50 ±2.9 mm Hg and at 1 day, 15.00 ±5.50 mm of Hg. Pupillary block glaucoma was seen in 1 eye which was implanted V4b model without preoperative iridotomy, which was resolved with surgical intervention. The IOP remained within normal range in all eyes thereafter (Figure 4).

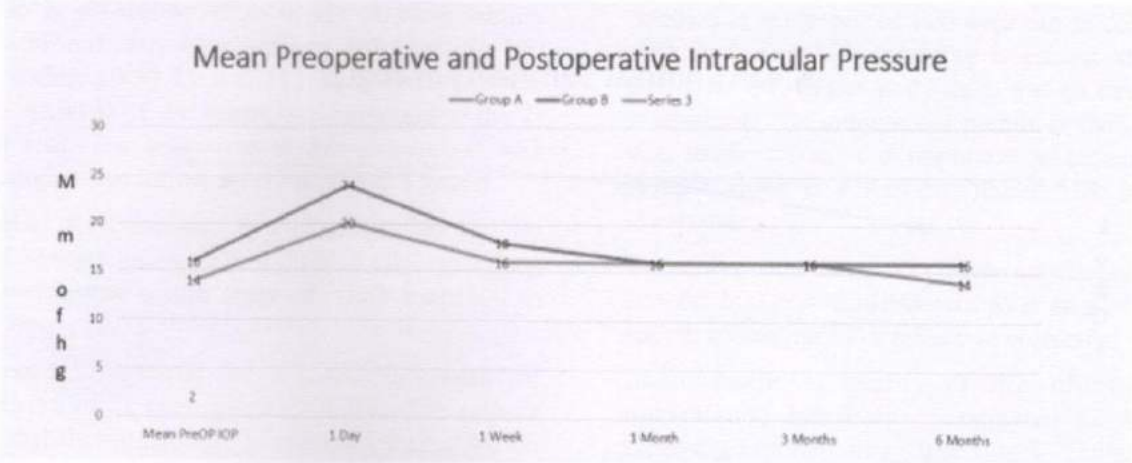

Fig-4: Intraocular pressure in mm of Hg at preoperative and postoperative period

In early postoperative period, only 2 eyes shows severe pigment dispersion and 4 eyes shows moderate pigment dispersion and 12 eyes shows mild pigment dispersion. Severe and moderate pigment dispersion were associated with those eyes, in which peripheral iridotomy done. But at 6 months follows there was no severe pigment dispersion. More any eyes was not associated with chronic rise of intraocular pressure or cystoid macular edema. So pigment dispersion was unremarkable and clinically not significant. Fig 5 shows the mean distribution of pigment dispersion in numbers of eyes.

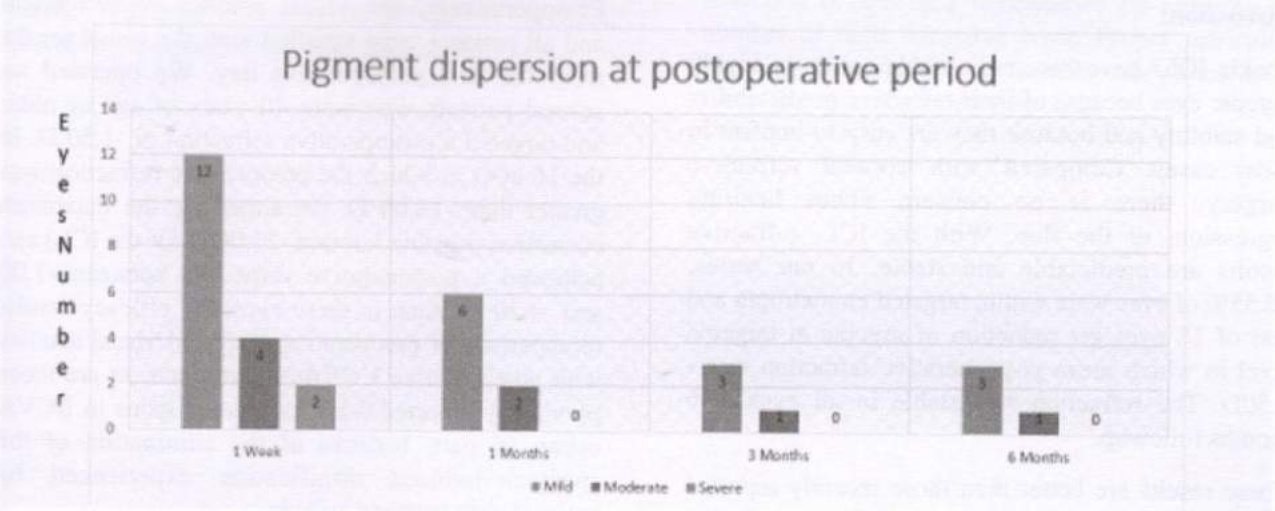

Fig 5: Mean distribution of pigment dispersion in numbers of eyes.

There were no operative or perioperative complications, and all implantations were uneventful. Postoperative complications are shown in Table 1. In 3 eyes of 2 patients, ICL decentration of less than 1.0mm that did not require treatment was seen. One eye, in a 44-year-old patient with myopia of -28.00 D , gradually developed anterior subcapsular opacity that became visually significant at 3 months postoperatively and led to removal of the ICL and phacoemulsification of the original lens with implantation of an multifocal IOL in the bag. The latter surgery was uneventful; at the first postoperative day, the BCVA returned to LogMar0.1 . Another 2 patients show mild anterior subcapsular opacity in 2 eyes without reduction of uncorrected visual acuity and kept under observation. Axial rotation needed in only 1 patients.

Mean Contrast sensitivity was found preoperatively LogCS 1.65. which was increased gradually upto 2.1. Fig 6 Shows comparison of contrast sensitivity at postoperative follow up period.

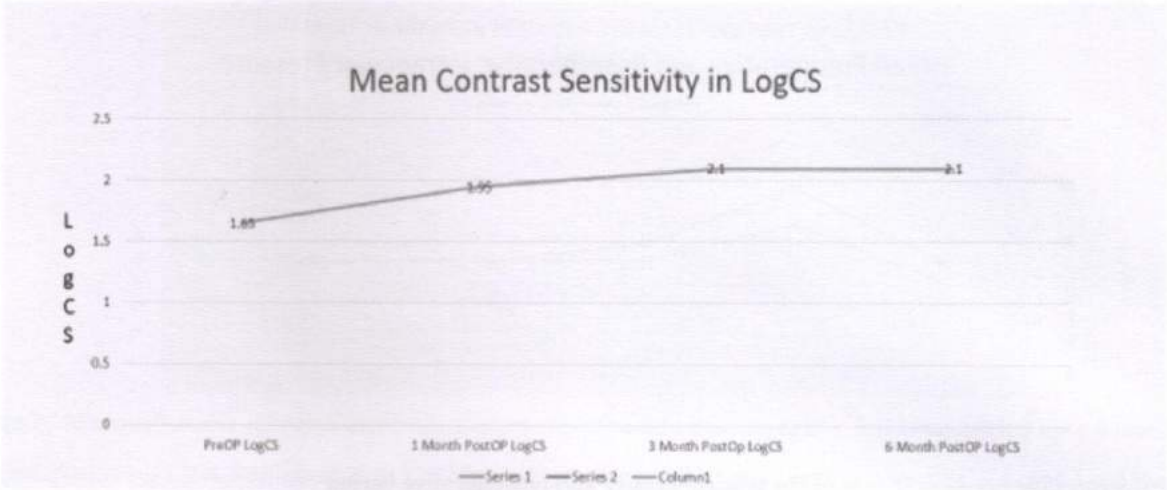

Fig 6: Comparison of contrast sensitivity at postoperative follow up period.

Vaulting is a very significant factor for development of complications. We found Low vault (< 150 μ) in 8 cases, Moderate vault (150-700 μ) was found in 60 cases and High vault, more than 700 μ was found in 6 eyes only. Low vault associated with more chance of anterior subcapsular opacity and high vault associated with more pigment dispersion and subsequently glaucoma.

Discussion:

Phakic IOLs have become a viable option in highly myopic eyes because of their refractive predictability and stability and because they are easy to implant in most cases. Compared with corneal refractive surgery, there is no concern about healing, regression, or the flap. With the ICL, refractive results are predictable and stable. In our series, 96.55% of eyes were within targeted emmetropia and rest of 16 eyes get reduction of myopia at targeted level in which mean post operative refraction was -3.50D. The refraction was stable in all eyes at 6 months followup.

These results are better than those recently reported for LASIK procedures in a similar population (myopia between _9.0 and _22.0 D); the predictability and refractive stability were 66.0% and 77.0%, respectively.8Our predictability results were better (96.4%) if we excluded the eyes in which myopia was greater than -18.00 D, which is beyond the level of correction the ICL can address completely. We believe the limitations in predictability in highly myopic eyes were due to the difficulty of performing exact spectacle refraction in these pathologic eyes, many of which had posterior staphylomas. Thus, these deviations from the targeted refraction were entirely expected.

Postoperatively, the visual acuities wereexcellent and all patients were satisfied with the visual results from the first postoperative day. We operated on several patients who were 40 years of age or older and targeted a postoperative refraction of -1.50 D. In the 16 eyes in which the preoperative refraction was greater than -18.00 D, we aimed for the maximum correction possible (around -17.00 D for the ICL) and achieved a postoperative refraction between -1.00 and -4.50 D. Also in these eyes, the efficacy results (comparison of preoperative corrected visual acuities with postoperative UCVAs) were good, as are those previously reported.9-10The marked gains in BCVA occur, in part, because of the elimination of the spectacle-induced minification experienced by patients with extreme myopia.

Our safety results compare favorably with those of corneal refractive surgery, in which relatively few complications are reported.11-12

Lee et al13 described, the postoperative logMAR uncorrected distance visual acuity (UDVA) was 0.30 (approximately 6/12) or better in 254 eyes (90.4%), 0.10 (approximately 6/7.5) or better in 238 eyes (84.7%) and 0.00 (6/6) or better in 170 eyes (60.5%). In our study, predictability was achieved in 96.55 cases.

Alfonso et al14shows High levels of predictability were achieved early after surgery; 163 eyes (86.7%) were within ±0.50 D and 182 eyes (96.8%) were within ±1.00 D of the attempted correction at the 1-month visit. The improvement was maintained over the postoperative follow-up (r2=0.953 at 5 years).

Gonverset al15concluded in their study that 150 ?m should be regarded as a lower limit of safe vault.Zeng et al16suggested a safe range of vault from 100 to 1,000 ?m.

Bhikooet al17 replaced one ICL for "low vault" of 180 ?m out of 72 eyes operated (1.4%). The authors noted that they subsequently changed their criterion for replacement to vault ,150?m.

ICL exchange for insufficient or excessive vault in the absence of complications remains a matter of medical judgment. On the other hand, excessive vault in the presence of compromised anterior chamber angle function and insufficient vault in the presence of visually significant cataract are indications for surgical intervention.Gonvers et al shows that low vault, together with higher levels of myopia, constitute risk factors for ASC cataract.15

Sanders et al18reported two eyes out of 526 (0.4%) with increased IOP requiring treatment at 3 years postoperative. In our study there was no case to treat continuously for more than 1 month. In the context of ICL implantation, it is important to remember that myopia alone is a well-established risk factor for glaucoma.

Refractive outcomes was such excellent as these support McLeod et al19described it as an "optically superb correction." For refractive correction.

Improvement in quality of life following ICL implantation has been investigated by Ieong et al,20who reported that "Implantable Collamer lens implantation provided significant gains across a broad range of life activities and is clearly a life changing intervention for many patients with high myopia.

Conclusion:

Implantation of an ICL was effective in correcting myopia of up to -18.50 D. ICL also effective in reduction of spectacle dependency by reducing the number of high refractive error. Proper meticulous planning and selection of suitable case is the prime factor for optimum safest outcome.

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Pain Response and Follow up of Diabetic Retinopathy Patients Undergoing PRP using Pattern Scan Laser System

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Abstract:

Purpose: *To assess the pain responses of patients with proliferative diabetic retinopathy (PDR) undergoing pan retinal photocoagulation (PRP) using pattern scan laser (PASCAL)..*

Methods: *Patients diagnosed with PDR were randomly assigned to undergo PASCAL photocoagulation treatment. PRP was performed using the multi-shot mode with a spot size of 200 µm and a pulse duration of 20 ms to obtain a white-grayish spot on the retina. Parameters were same for all patients. After 5 min of PRP application, patients were asked to verbally describe their pain perception as either "none," "mild," "moderate," "severe," or "very severe" using a verbal rating scale (VRS) and visual analog scale (VAS) by indicating a score from "0" to "10," representing the severity of pain from "no pain" to "severe pain"*

Results: *A total of 60 eyes of 60 patients (20 females and 40 males) diagnosed with PDR were treated. The mean age of patients was 62.22 ± 9.19 years, and the mean diabetes duration was 195.47 ± 94.54 months. The mean number of laser spots delivered during PRP was 392.70 ± 54.33 in the PASCAL group (p=0.57). The difference in pain responses between patients in PASCAL groups was significant with regard to the mean VRS (1.47 ± 0.69; p=0.042) and mean VAS (2.97 ± 1.35, p=0.034) scores*

Conclusion: *Pain responses in patients undergoing PRP laser with PASCAL with a 20-ms pulse duration were significantly lower.*

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Introduction:

Diabetic retinopathy is the leading cause of vision loss in the elderly(1). Almost 95% of diabetes-related visual impairment, however, is preventable by early diagnosis and photocoagulation therapy(2).

Laser photocoagulation is a proven treatment for retinal pathologies and has been used for more than 60 years to treat a variety of diabetic retinopathies, microaneurysms, and macular edemas. Before the advent of multi spot laser systems, photocoagulation protocol required surgeons to administer a series

of single-spot laser burns(3,4). When used for grid therapies or panretinal photocoagulation (PRP), which require the delivery of multiple spots, conventional laser treatment is time-consuming and tiring for both patient and surgeon. Furthermore, single-spot treatment is associated with several side effects (such as retinal edema and visual field defects) and can be painful for patients. The advent of multiple spot lasers, such as PASCAL has changed the face of laser photocoagulation, making it safer, easier, and more effective.

Pan retinal photocoagulation (PRP) is painful, and a substantial number of patients are therefore undertreated and at an increased risk of developing blindness (5). Compared with the widely used conventional laser, new technologies provide more comfortable, less harmful and time-saving treatments because of sub-threshold and multi-shot laser photo coagulators (6,7).

The pattern scan laser (PASCAL); is a new generation semi-automatic and multi-shot photocoagulator, which uses either a single or predetermined pattern array with pulse durations as short as 10-30 ms(8,9).PRP laser using shorter laser pulses, cause relatively less thermal damage to adjacent retinal tissues and are therefore possible to produce relatively less painful photocoagulation.

In this study, we sought to compare pain responses in patients undergoing PRP with PASCAL for PDR.

Methods

Among patients presenting with visual complaints between June and September 2017, those diagnosed with PDR were enrolled in the study.

The inclusion criteria were as follows: being older than 18-years, having a diagnosis of diabetes mellitus type 1 or 2, and presenting with a high risk of PDR. A high risk of PDR was defined as neovascularization of the optic disc, neovascularization associated with vitreous or preretinal hemorrhages (NVEs), or neovascularization greater than one-half of the disk area in size accompanying vitreous or preretinal hemorrhage regardless of NVE location.

Patients with a low risk of PDR, those with poor compliance, and pregnant women were excluded. Additionally, patients with a history of focal/grid photocoagulation or PRP, orbital trauma or surgery; those presenting with inflammatory signs; those with significantly increased corneal or lens thickness; and those with vitreous hemorrhage were also excluded.

All patients were subject to the following assessments: slit-lamp biomicroscopy, intraocular pressure measurement with Goldmann applanation tonometry, fundus fluorescein angiography, and ophthalmologic examination including fundus assessment.

Laser application

All patients were treated by the same surgeon and underwent a single PRP session. Treatments were performed under topical anesthesia.

The spot size (200 μm) and pulse duration (20 ms) used to obtain a white-grayish spot on the retina were identical in both procedures. To objectively compare pain responses, PRP was used in the multi-shot mode (3X3 matrix) and was applied within similar retinal areas, and the total number of spots delivered was equivalent.

Pain perception

After 5 min of PRP application, patients were asked to verbally describe their pain perception as either "none," "mild", "moderate", "severe", or "very severe" through a verbal rating scale (VRS). Additionally, they were asked to specify the severity of pain through a visual analog scale (VAS) by indicating a score from "0" to "10," representing the severity of pain from "no pain" to "severe pain."

Statistical analysis

Statistical analyses were performed using the SPSS (Statistical Package for Social Sciences Inc., Chicago, IL, ABD) version 17.0 software. Data distribution was assessed by the Kolmogorov-Smirnov test. Comparisons were performed using the Mann-Whitney U test and t -test for independent samples.

Results

A total of 60 eyes of 60 patients (20 females and 40 males) diagnosed with PDR were treated. The mean age of patients was 62.22 ± 9.19 years, and the mean duration of diabetes was 195.47 ± 94.54 months. Patient demographics are presented in table 1. There were no significantly differences between the groups in terms of mean age, gender, and mean diabetes duration.

Table 1 Demographic characteristics of study individuals

	PASCAL	P
Gender (F/M)	12/18	0.270*
Age (mean ± SD)	61.1 ± 9.1	0.351**
Duration of diabetic disease (mean ± SD)	184.1 ± 87.8	0.480**

*= chi-square test;
**= independent t-test.

The mean number of laser spots delivered during PRP was group and 392.70 ± 54.33 in the PASCAL group. The difference was not significant (p=0.57).

The pain response between patients in the PASCAL groups was significant with regard to mean VRS 1.47 ± 0.69, respectively; p=0.042) and mean VAS 2.97 ± 1.35, respectively; p=0.034) scores (Table 2).

Table 2 Pain scores associated with PASCAL laser treatments

	PASCAL	P
Verbal score	1.47 ± 0.69	0.042
VAS	2.97 ± 1.35	0.034

VAS= visual analog scale; p= Mann-Whitney U test

While no patients in the PASCAL group reported "no pain" in the VRS assessment,. A total of 11 of 30 patients reported experiencing moderate or severe pain during PASCAL laser treatment. None of the patients in either groups reported "very severe pain." Patient distribution according to VRS is presented in figure 1.

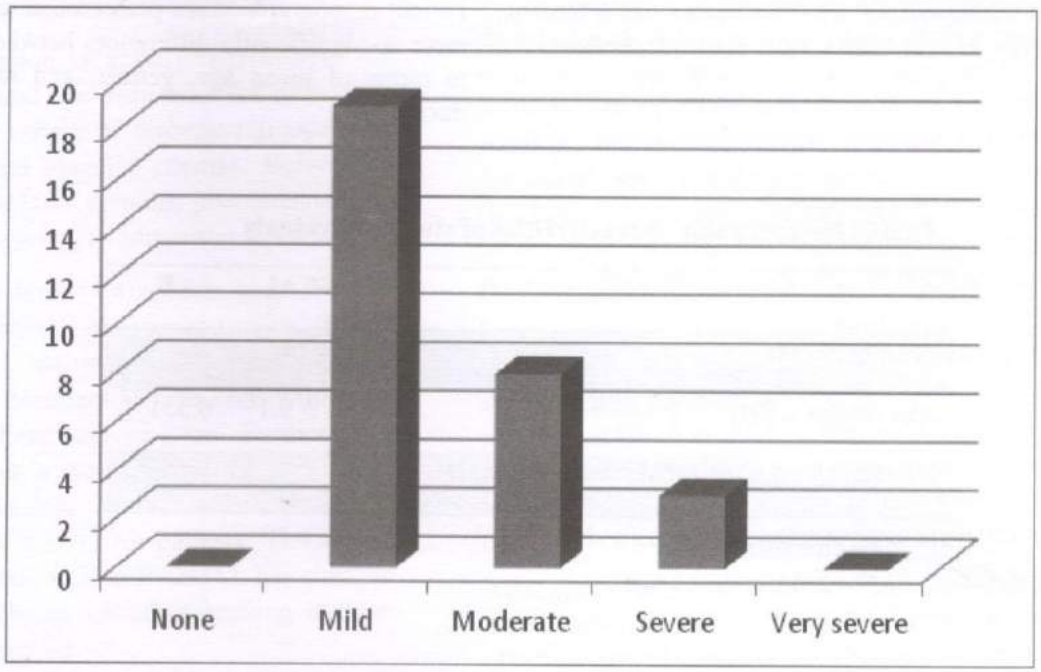

Figure 1 Number of patients subject to photocoagulation treatment by laser systems (PASCAL) according to expressed verbal score.

Discussion

The advent of photocoagulation in 1967 was a critical step in the treatment of diabetic retinopathy and maculopathy(12). PRP treatment may cause considerable pain and discomfort in some patients and may consequently yield reluctance to continuing treatment sessions, thus leading to visual deterioration. By changing laser parameters, however, it may be possible to improve comfort and reduce pain(13). In the current study, we found that patients undergoing PRP treatment with the PASCAL system experienced significantly less pain with a pulse duration of 20 ms.

The Diabetic Retinopathy and Early Treatment Diabetic Retinopathy studies, using the multi-shot mode with short pulse duration, thereby providing shorter, less demanding, and less painful treatment sessions(16). Furthermore, studies have shown that a short pulse duration does not negatively influence PRP treatment efficacy(16-18).

Targeting the retinal pigment epithelium while preserving adjacent photoreceptors through micro-air bubble formation formed around melanosomes is a novel target therapy modality of laser photocoagulation. The critical threshold between thermal and mechanical damage is 50 ms(19-21). Owing to the use of shorter pulses, novel laser therapy techniques cause only mechanical but not thermal damage, limiting the damage to the retinal pigment epithelium and preserving the inner retinal layers and sensory-rich chorioretinal tissues(17). Consequently, patients usually report less pain, most probably because retinal sensitivity is better preserved as compared with pain in conservative approaches(9,17). Recent studies have consistently shown that patients treated with the PASCAL laser system modalities experienced less pain as compared with those treated with conventional laser treatment modalities(9,10,17,22).

Response to pain among individuals may vary depending on factors such as culture, gender, threshold of pain, degree of fundus pigmentation, and history of previous laser treatment(17,26). None of the patients included in this study had a previous history of laser treatment. Additionally, randomization provided a more objective assessment of pain. Nevertheless, these factors may still, in part, account for the difference observed in the perception of pain.

While the relatively small number of spots delivered may appear to be a limitation, the main purpose of the study was to compare pain responses and not treatment efficacy. In the Diabetic Retinopathy Clinical Research Network (DRCR.net) clinical trial, no clinical difference was found when comparing PRP in one session versus that in four sessions in terms of pain perception(27). One limitation was the small sample size. Additionally, we followed all patients and performed the second and third treatment sessions after one week at the latest and eventually completed PRP treatments within one month at the latest.

To conclude, the new, navigated laser approach provided by the PASCAL system enables the delivery of multiple laser spots in a relatively shorter time with improved accuracy and efficacy, significantly reducing pain and improving patient compliance.

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Prevalence of Age Related Macular Degeneration Among the Patients Aged over 50 years attending OPD of SSMC & Mitford Hospital, Dhaka.

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Abstract:

Purpose: *To find out the prevalence of ARMD among the patients, aged above 50 years attending at OPD of SSMC & Mitford hospital.*

Methods: *It was a population based observational descriptive study carried out in the Department of Ophthalmology, Sir Salimullah Medical College & Mitford Hospital, Dhaka. Total 200 sample were taken. The screening for presence of age related macular degeneration (ARMD) followed by some sort of visual impairment, presence of drusen, RPE atrophy, geographical atrophy and choroidal neovascularization. As a diagnostic tools Snellen's chart, Amslergrid chart and ophthalmoscope were used. In suspected cases colour fundus photography, FFA and OCT of macula were done. The diagnosis of ARMD features was based on grading of fundus transparencies according to inernational classification system in which all features of maculopathy related to age are named ARM and its late stages (ie. atrophics or neovascular macular degeneration) are named ARMD.*

Results: *This study shows maximum patients (42.5%) were in 50-59 years age group. The average age was 63.30±10.07 years and 58.5% were male and 41.5% were female. Regarding distribution of visual acuity, 64% had BCVA 6/6 (B/E), 36% had BCVA 6/6 (One eye), 17% had BCVA <6/6 (B/E) and 19% had BCVA < 6/6 (one eye). The most common disease was found with refractive error (64%) then cataract (13%), ARMD (7.5%) and diabetic retinopathy (4%). It was observed that the prevalence of ARMD was 7.5%. Analysis revealed that ARMD significantly higher in >60 years of age group (P<0.05). It was observed that ARMD was more common in male than female. The difference was statistically not significant (P>0.05). Dry ARMD significantly higher (86.67%) than wet ARMD (13.33%). Results also found that ARMD had significant association with hypertension and diabetis mellitus (<0.05), but significant association with smoking (P>0.05) only for male.*

Conclusion: *The results of our study show that the of ARMD is slightly higher in male than female and more common in >60 years age group than <60 years age group and dry ARMD is significantly higher than wet variety.. The future results of this research project will hopefully contribute towards an increased focus on the growing number of individuals with*

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Introduction:

Age related macular degeneration is the leading cause of severe visual loss in the western world among the people over 50 years of age. It was found to be second only to cataract as the cause of severe visual loss[1]. The projected number of people with age-related macular degeneration in 2020 is 196 million increasing to 288 million in 2040[2]. In Bangladesh, average life expectancy is 69.5 years and above 50 years population is 1,81,38,7309(11.48%)[3].

Many studies have contributed to the knowledge that age related maculopathy (ARM) is a frequent eye disorder in the elderly. Its end stages are referred to as Age related macular degeneration. ARMD, have been shown to be the most common cause of irreversible blindness in western world2,3.4 .Quality of life in developed countries is very high. Average life expectancy is in USA 79.8 years, UK 81 years Germany 81 years, Japan 84.6 years and in France 81.5 years[5]. Due to high life expectancy ARMD is the leading cause of severe visual loss in the western world, among the people over 50 years of age[6].

The global prevalence of ARMD accounts for 8.7% of all blindness worldwide and is the most common cause of blindess in developed countries5,[7].

UN estimates the number of people with ARMD at 20-75 million worldwide. WHO estimation is 8 million people are with severe visual impairment due to ARMD. The projected number of people with ARMD at 2020 is 196 million (95% CI 140-261), increasing to 288 million in 2040 (205-399)[8]. It was found to be second only to cataract as the cause of severe visual losses. In USA it is responsible for around 54% of severe sight loss in Caucasian, 14% in Hispanic and 4% in black individual. In UK significant visual impairment from ARMD affects 4% of population aged 75 years and 14% of the over 90 years of age[9]. The prevalence was similar in all three Asian ethnic group, Chines 7.3%, Malay 7.7% and Indian 5.7% among the people over 50 years of age. The prevalence increased with age and was higher in men[10].

The Indian subcontinent is one of the most populated region in the world. Given the projected rapid population growth and ageing of the population age-related macular degeneration is likely to emerge as a major public health threat in the near future. However, existing literature on ARMD is scarce . Data on AMD in India show prevalence ranging from 1.8% to 4.7% 10. Blindness prevalence studies in Pakistan, Bangladesh and Nepal have also reported rate of 2.1% to 8.7% for all blindness attributable to ARMD[10].

In perspective of Bangladesh quality of life is improving. Infectious diseases is almost controlled11. Average life expectancy is now 69.5 years (Population Census-2008). Total population in Bangladesh is 15,80,02,875. Above 50 years population is [11]. 48% that is 1,81,38,73014. Among this large number of population how many people are suffering from ARMD is unknown because no definite survey is available. Only above study conclude the prevalence of ARMD in this region is likely to follow a trend similar to that seen in the developed world in the coming years[10]. Eye care policies should therefore make provisions for this chronic age-related eye disease. In addition, there is an urgent need for more data on the prevalence of ARMD in Bangladesh.

The aim of this study is to describe the prevalence of ARMD in Bangladesh among above 50 years aged population which will help to create awareness about this devastating disease. So that eye care policies should therefore make provision for this chronic age related eye disease.

Methods

This observational descriptive cross sectional study was done on the patients aged over 50 yrs attending OPD of SSMC and Mitford Hospital, Dhaka from July 2014 to June. In Bangladesh total population were 158002875. Among them above 50 years population was 11.48% ie. 18138730 people were study population. Sample size determination depends on time and resources. As prevalence of ARMD is not known in our country, so estimated population was calculated by using the following statistical formula : n= z2 pq (1-p)/d2 Using the above formula the expected sample size, n=384. But due to short study period sample size was limited to 200.The screening for presence of ARMD was done by using some sort of visual impairment, presence of Drusen, RPE atrophy, geographical atrophy and neovascularization. As a diagnostic tools Snellen's

chart, Amsler Grid chart and ophthalmoscope were used. In suspected cases colour fundus photography, FFA and OCT were done. FBS & PPBS were done for Diabetes mellitus. BP measures routeinly. The diagnosis of ARM features was based on grading of international classification system (Smith W et al., 1995) in which all features of maculopathy related to age are named ARM and its late stages (ie.atrophics or neovascular macular degeneration) are named ARMD. Collected data were checked, edited & then processed - Statistical Package for Social Sciences (SPSS) version 19.0 was used for data analysis. Statistical significance was set at $p<0.05$. Structured questionnaires were prepared for this purpose, which was include all the variables of interest.

Results

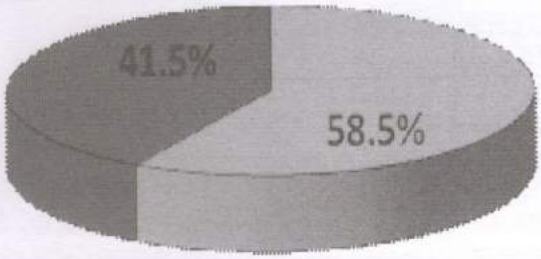

Fig.: Sex distribution of the study subject (n=200).

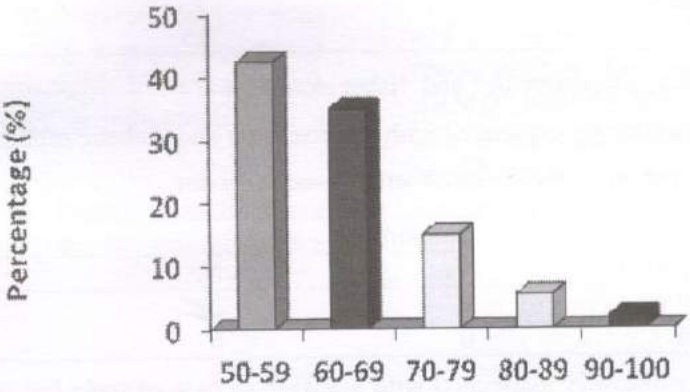

Fig.: Age distribution of the study subject (n=200)

Figure shows age distribution of the study subject, maximum (42.5%) were in 50-59 years

Percentage of patients diagnosed with ARMD (n=200)

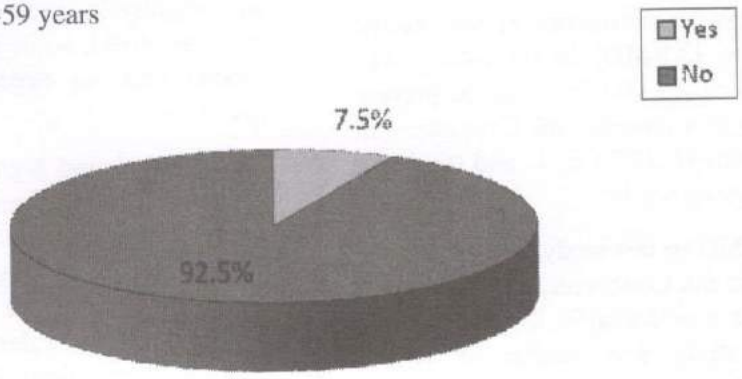

Fig. 22: Percentage of patients diagnosed with ARMD (n=200), It was observed that the prevalence of ARMD was 7.5%.

Table I: Distribution of different type of ARMD (n=15)

Age	No of the patients	Percentage (%)	P value
Dry	13	86.67	
Wet	2	13.33	0.002

Table shows dry ARMD significantly higher (86.67%) than wet ARMD (13.33%).

Table II: Association of ARMD with age (n=15)

Age	No of the patients	Percentage (%)	P value
50-59	3	20.0	
60	12	80.0	0.002

It was observed that higher incidence of ARMD was in ?60 years age group than 50-59 years. Analysis revealed that ARMD was significantly higher in ?60 years age group (P<0.05).

Table III: Association of ARMD with systemic disease (n=15)

Systemic disease	No of the patients	ARMD		P value
		Yes	No	
Hypertension	21	14	7	0.001
Diabetes mellitus	18	12	3	0.001
Smoking	22	7	15	0.207

Data were analyzed using chi-square test and fisher exact test

Table shows that ARMD was significantly associated with hypertension and diabetic mellitus patients (<0.05).

Table iv : Association of ARMD with smoking (n=15)

ARMD	No of the patients	Smoking		P value
		Yes	No	
Male	9	7	2	0.003
Female	6	0	6	

Table shows that ARMD was significantly associated with smoking in case of male but not in female, due to all the female patients were nonsmoker in this study.

Discussion

This study shows that the prevalence of age related macular degeneration (ARMD) in this study was 7.5%.The prevalence of ARMD found in the present study was similar to that reported for Caucasians in the European Eye Study (EUREYE)[11]. and for Asian Japanese in the Hisayama Study[12].

The prevalence of AMD in this study was also lower than that in a study in the Caribbean, where a 28.7% prevalence of AMD was found[13]. In general, the prevalence in our study was similar to those documented for Hispanic and Asian populations (range 7.1%-13.6%) [14], but lower than those found in white populations (range 9.3%-43.1%)[15,16,17,18]

In this study ARMD distribution according to sex was slightly more frequent in male than in female (60% vs. 40%), while the incidence was strongly age related and, as expected, significantly increased (p<0.05).

This study found higher ARMD prevalence to >60 years age group than <60 years age group. The prevalence of ARMD in our study was higher than that reported in any previous study conducted anywhere else in the world.. Huang et al. (2014) reported the prevalence rates of ARMD among Chinese populations using data from studies that followed the Wisconsin Age-Related Maculopathy Grading System after age-standardized prevalence of participants aged >65 (except the Handan Eye Study that was conducted in individuals aged >60 years).

Shihpai Study included Chinese individuals aged >65 years, and the difference in the prevalence of late AMD between the two studies may be due to differences in the occupations[19] and eye care[20] of individuals in Puzih and Shihpai.

In contrast, the Reykjavik Study in Iceland, which included participants living above the arctic circle, found that the prevalence of late AMD was 9.5% among participants aged >60 years and 30.8% among those aged >80 years.

In the present study, 73.33% having ARMD had visual acuity of < 6/12. Very few data exist on the prevalence and causes of ARMD in only population-based study in Africa using an internationally recognised grading system and digital retinal photographs. Although data from Rapid Assessment of Avoidable Blindness surveys exist, these cluster AMD with other poserior segment eye diseases, and so no direct comparisons can be made with the findings from this study. A Nigerian survey used similar methodology, including a population-based approach and fundus photographs; however, retinal imaging was performed only in individuals with a visual acuity of >6/12 21.

In our study, advanced age, hypertension for more than 10 years, and exposure to sunlight were associated with ARMD. Other characteristics such as diabetes mellitus .Smoking was significantly associated with ARMD oniy in case of male patient. Several previous studies have reported hypertension as a risk factor for AMD. The pathogenic mechanism of AMD has not yet been elucidated, but prolonged filling of choroidal capillaries and thickening of Bruch's membranes can be seen in patients with AMD[22].

A habit of smoking cigarettes has been identified as a risk faqctor for ARMD in women[23] in Caucasians and the Japanese. However, in our study, a current habit of smoking or previous smoking was not associated with ARMD in women. Our finding is consistent with the results of studies conducted in Shihpai[24].

Conclusion

This study showed that, the prevalence of ARMD was 7.5%. ARMD was more common in >60 years age group than <60 years age group with male predominance. Dry ARMD was 86.67% and wet ARMD was 13.30%. ARMD had significant association with hypertension and diabetes mellitus. Significant association with smoking was also seen in male patients.

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Profile of Ocular Surgery in a Secondary Level Hospital of Bangladesh

Md. Nazrul Islam[1], Md. Khalid Hossain[2], Nuzhat Choudhury[3].

Abstract:

Purpose: *To study the profile of ocular surgery in a secondary level Hospital (250 Beded General Hospital, Tangail) of Bangladesh.*

Methods: *Prospective observational cross sectional study conducted from 1st December 2015 to 30th November 2016 at 250 Beded General Hospital, Tangail. All the operations was done in eye OT with all aseptic precautions under L/A & were recorded in a registrar book.*

Results: *A total of 1053 operations were done at ophthalmology dept. of 250 beded general hospital, tangail from 1st. December 2015 to 30th november 2016. Among them 438 (41.60%) were male & 615 (58.40%) were female. Majority of the pts. belongs to 50 & above 50 yrs. of age.789 (74.93%). Most of the operations are cataract surgery (SICS with PC IOL) 689 (65.43%). Pterygium excision & conjunctival grafting 40 (3.80%) Only pterygium excision 12 (1.14%) DCR with intubation 10 (0.95%). DCT 04 (0.38%). Chalazion Incision & curretage 37 (3.51%) Injury repair 35 (3.32%) Others (F. body removal, Drainage of lacrimal abscess & Excision of some growth etc.)226 (21.46%)*

Conclusion: *Most of the operations done in secondary level hospital are SICS with PC IOL which are curable & prevent blindess which is main target of vision 2020. There are lackings of proper planning, statistics, insufficient manpower, standarized MIS in eye care in our country which are very essential for eye health services for prevention of blindness.*

Keyword: *Ocular surgery in a secondary level hospital of Bangladesh.*

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Introduction:

Blindness is one of the many problems which hinder our economic development. Blind people become burden not only to the family but also to the society and to the nation. The present study was conducted with the aim of determining the ocular surgery in a secondary level public eye care facility and to formulate proper planning and to prevent avoidable blindness. Pts. Come here from district town, upzilla & village level. Majority of the pt. received surgical treatment successfully.

A small number of pts. Were referred to specializsd hospital in Dhaka for proper investigatins, diagnosis & treatment.

Table 1: Gender & age distribution

Age	Male	Female	Total
Below 50 yrs. 264 (25.07%) & 50 & above 50 yrs. 789 (74.93%).	438 (41.60%)	615 (58.40%)	1053 (100%)

Table 2: Monthwise number of operations

Name of month	Number of operation
December 2015	65
January 2016	64
February 2016	47
March 2016	86
April 2016	100
May 2016	87
June 2016	111
July 2016	96
August 2016	107
September 2016	61
October 2016	121
November 2016	114

Table 3: Types of surgery & number

SICS with PC IOL	DCR with Intubation	DCT	Excision of pterygium & conjunctival graft	Only Pterygium excision	Incision & curretage of chalazion	Injury repair	Others
689 (65.43%)	10 (0.95%)	4 (0.38%)	40 (3.80%)	12 (1.14%)	37 (3.51%)	35 (3.32%)	226 21.46%)

Table 4: Distribution of cataract surgery according to age & sex

Age	Male	Female	Total
Below 50 yrs. 164 (23.80%) & 50 to above 50 yrs. 525 (76.20%)	324 (47.02%)	365 (52.98%)	689 (100%)

Table 5: According to site of cataract operations

Rt. Eye	Lt. Eye	Total
370 (53.70%)	319 (46.30%)	689 (100%)

Table 6: Types of cataract

Types of Cataract	Number	Percentage%
Senile Cataract	668	(96.95%)
Presenile Cataract	10	(1.45%)
Traumatic Cataract	o4	(0.58%)
Complicated Cataract	05	(0.73%)
Dev. cataract	02	(0.29%)

Table 7: Alloted man- power in Ophthalmology dept.

Name of post	Alloted post	Present
Senior Consultant	One	One
Junior consultant	One	One
M.O	Nil	Nil
Asstt. Registrar	Nil	Nil
OT Sister	One	One
Aya	One	One
Cleaner	One	One

Discussion:

This prospective observational cross sectional study was doneamong 1053 pts. at 250 Beded General Hospital, Tangail, a district level hospital of Bangladesh from 1st December 2015 to 30th November 2016 for one year. In this study female are predominent than male. Majority of the pts. Are 50 & above 50 years of age. Rt. Eye were more than Lt. eye. Majority of the cataract pts. were senile cataract. Man-power were very poor. Logistics supply not sufficient.

Most of the cataract pt. have good vision after cataract surgery. Few have poor vision due to per-operative & post-operative complications Which may be due to lack of proper per-operative & post operative maintainance of aseptic precautions, hygene, proper applications of medications.

Conclusion:

Most of the ocular surgery in secondary level hospital are satisfactory. So, proper planning, statistics, standarized MIS, sufficient man-power are necessary to give more & better services for prevention of avoidable blindness to gain vision 2020.

Evaluation of Host Factors, Etiology and Treatment Outcome of Fungal Keratitis.

Mahmooda Rahman[1], Md. Bahauddin Molla[2], A.S.M.M. Quadir[3]

Abstract:

Introduction: *Corneal diseases are one of the major causes of visual loss and blindness, second to cataract. Fungal keratitis (keratomycosis) is a fungal infection of the cornea. It primarily affects the corneal epithelium and stroma, although the endothelium and anterior chamber of the eye may get involved in more severe disease. Amongst corneal diseases, microbial keratitis is a major blinding disease.*

Objective: *This study was conducted to determine the epidemiological characteristics, demography of patient and treatment outcomes of Fungal Keratitis after treating by medication only in OPD, Cornea department, NIO.*

Methods: *Prospective Observational type study was done on all diagnosed patients of fungal keratitis, from January 2012 to December 2012, in Cornea department, NIO. All Patients identified had undergone detailed microbiological investigations, including KOH& Gram stain. Patients received therapy for fungal keratitis. All patients were advised to visit cornea clinic for follow up on 5th and 21st day. Information including patient's age, clinical presentation, methods of diagnosis and treatment and outcome were abstracted from the medical records..*

Results: *110 patients were diagnosed with fungal keratitis (10% KOH mount positive). Of the 110 patients, 73(66.36%) were male, 41 patients (37.27%) in the study were in the age group of 30-40yrs. The rural people were found to be mostly affected 81 (73.64%) followed by semi urban 19.09%. 76 patients in this study were agricultural workers (69.10%). Ocular trauma in 81 patients (73.64%) was identified as a high risk factor, 52 patients (47.27%) presented within 7 days. Follow up on 5th day with medication shows no perforation, healing in 39 cases (35.45%) 44 cases shows improvement or working (40.00%) and no response/ no improvement in 27 cases 24.55%. Follow up at 21st day 78 cases healed (70.91%), not healed but satisfactorily improved cases were 25(22.73%). Two cases developed perforation (1.82%) and referred for immediate surgical management.*

Conclusion: *Fungal infections of the cornea continue to be an important cause of ocular morbidity, particularly in the agricultural communities of the developing world. Early diagnosis with prompt identification of the pathogenic organism is mandatory to initiate appropriate therapy and thereby reduce morbidity. The prescription of topical steroids by the primary care physician or ophthalmologist should be discouraged for the treatment of infections of unknown etiology.Fungal keratitis should be suspected in cases of keratitis that do not respond to antibacterial agents' especially in cases of vegetative Trauma or extended wear contact lens usage.*

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Introduction:

Ophthalmologists working in a humid tropical Environment are aware of how serious the problems of corneal ulcers caused by fungi can be. Often the onset follows a minor injury to the cornea in an agricultural worker, progresses slowly, and may be treated with traditional remedies before the sufferer presents with an advanced ulcer at an eye clinic. A prolonged period of pain and time unable to work follows, which subsistence farmers can often not afford, ending in perforation of the cornea and evisceration or enucleation of the eye.[1] Fungal organisms can penetrate through the corneal stroma without perforation of the cornea resulting in an infectious hypopyon or endothelial plaque. The problem is that the majority of antifungal medications have very poor penetration especially in the face of an intact epithelium. Unlike bacterial keratitis, the corneal epithelium overlying a stromal fungal infection can heal despite the presence of active infection.[2]

Mycotic keratitis has been reported from many different parts of the world,[5, 6] particularly tropical areas, where it may account for more than 50% of all ocular mycoses,[7] or of all cases of microbial keratitis.[8]

Two basic forms have been recognized: that due to filamentous fungi (especially Fusarium and Aspergillus), which commonly occurs in tropical and subtropical zones, and keratitis due to yeast-like and related fungi (particularly Candida).[9]

Keratitis due to filamentous fungi is believed to usually occur following trauma, the key predisposing factor, in healthy young males engaged in agricultural or other outdoor work; traumatizing agents of plant or animal origin (even dust particles) either directly implant fungal conidia in the corneal stroma or abrade the epithelium, permitting invasion by exogenous fungi. Environmental factors (humidity, rainfall, wind) greatly influence the occurrence of filamentous fungal keratitis and may also determine seasonal variations in frequency of isolation and types of fungi isolated.[7-10]

Less frequent predisposing factors include immunological incompetence, prior administration of corticosteroids or antibacterial agents, 'allergic conjunctivitis', and the use of hydrophilic contact lenses.[8, 11-12]

It is not known whether the use of traditional eye medicines specifically predisposes to filamentous fungal keratitis. Conversely, in keratitis due to Candida albicans and related fungi, there is usually some pre-existing ocular (e.g. insufficient tear secretion, defective eyelid closure) or systemic (e.g. diabetes mellitus, immunosuppression) condition; this type of keratitis may also supervene on a pre-existing epithelial defect because of herpes keratitis or abrasions caused by contaminated contact lenses.[11]

Incidence: Fungal keratitis is primarily seen in tropical climates and is rare in temperate areas. Its incidence is between 6%-20% of all microbial keratitis cases depending on the geographic location.[13,14] Traditionally, it is considered a disease of rural areas and is frequently caused by trauma with vegetative material. However, the major risk factor in developed countries is contact lens use at this time.15 Its incidence has been reported to be increasing due to widespread use of contact lenses, especially bandage contact lenses, and topical steroid usage.[15,16] While tropical climates show a preponderance of filamentous fungi, temperate climates show higher percentages of yeast infections.[11-13]

Rationale of the research:

There is limited data available which interlinks between etiological factor and treatment outcome by fungal keratitis.

Objectives:

1 General Objectives:

To identify the epidemiological features, laboratory findings and treatment outcomes of Fungal Keratitis after treating by medication only.

2 Specific Objectives:

To determine specific species of fungus.

To evaluate demography of patient.

To determine best choice of therapy.

To evaluate outcome of treatment specifically with medicine (without surgical intervention)

Related Previous Studies:

In 1998 Rahman M R, Johnson G J, Husain R, Howlader S A, Minassian D C conducted a study on corneal ulcers with fungal hyphae patients in Chittagong Eye Institute and Training Complex. The outcome measures were healing at 21 days and presence or absence of toxicity. If there was not a favorable response at 5 days, "treatment failure" was recorded and the treatment was changed. 71 patients were recruited to the trial, of which 35 were randomized to chlorhexidine and 36 to natamycin. None of the severe ulcers was fully healed at 21 days of treatment, but three of those allocated to chlorhexidine eventually healed in times up to 60 days. Of the non-severe ulcers, 66.7% were healed at 21 days with chlorhexidine and 36.0% with natamycin, a relative efficacy (RE) of 1.85 (CL 1.01-3.39, p = 0.04). Equal numbers of Aspergillus(22) and Fusarium (22) were grown. The Aspergillus was the most resistant to either primary treatment. There conclusion was Chlorhexidine may have potential as an inexpensive topical agent for fungal keratitis and warrants further assessment as a first line treatment in situations where microbiological facilities and a range of antifungal agents are not available.[1]

Saha S, Banerjee D, Khetan A, Sengupta J conducted a study on patients with microbial keratitis at Priyamvada Birla Aravind Eye Hospital in West Bengal, India from January to December 2008. 289 patients of microbial keratitis included in the study, 110 patients (38.06%) were diagnosed with fungal keratitis (10% KOH mount positive). Of the 110 patients, 74 (67.27%) fitted the study inclusion criteria (10% KOH mount and culture positive). Forty five of 74 patients (60.81%) in the study group were in the older age group (>50 years). Ocular trauma in 35 cases (47.29%) was identified as a high risk factor and vegetative injuries in 17 cases (22.97%) were identified as a significant cause for fungal keratitis. Maximum organism source was from corneal scrapings in 41 cases (55%). The predominant fungal species isolated was Aspergillussp (55.40%) followed by Candida albicans14 cases (18.91%) and Fusariumsp. in 8 cases (10.81%). Agricultural activity related ocular trauma was the principal cause of mycotic keratitis and males were more commonly affected. Thirty of 74 cases (40.55%) of the culture positive patients healed with corneal scar formation with medical treatment whereas 44 cases (59.45%) required therapeutic keratoplasty.[17]

Xie L,Dong X,Shi W Conducted a study from January 1996 to December 1999 in Shandong Eye Institute and Hospital, Qingdao 266071, PR China. In their study seventy of the 108 patients were male and 38 were female with an age distribution as follows: four patients (3.7%) were less than 20 years old, 52 patients (48.2%) were between 21 and 40 years old, 43 patients (39.8%) were between 41 and 60 years old, and nine patients (8.3%) were older than 60 years. Ninety two patients were farm workers and 16 had other occupations. The patients arrived at their hospital between 5 and 40 days (average of 21.3 days) after the onset of the infection. Fifty three of the patients (49.1%) had reported a recent history of injury to the cornea and contact with plant material or soil. Nineteen of the patients (17.6%) had been treated with topical steroids before infection and 36 of the patients (33.3%) were unable to provide a cause for their infection. Fifteen of the eyes (13.9%) had a corneal ulcer less than 6.0 mm in diameter. Thirty nine eyes (36.1%) had ulcers between 6.1 and 8.0 mm in diameter. Fifty four eyes (50%) had ulcers greater than 8.0 mm in diameter. Four of the corneas (3.7%) perforated.[18]

Materials and Methods:

1. Type of study: Observational type study.

2. Place of study: Cornea department, National Institute of Ophthalmology (NIO), Dhaka.

3. Period of study: From January 2012 to December 2012, (12 months).

4. Study population: All diagnosed patients of fungal keratitis in NIO.

5. Selection criteria:

(A). Inclusion criteria: Patients of diagnosed fungal keratitis clinically and by KOH stain with positive growth for same fungus in solid media.

(B). Exclusion criteria:

-Patients having visual defect due to other causes.

-Patients with suspected or confirmed viral keratitis, corneas at risk of perforation (where corneal scrapes were not possible)

6. Sample size & procedure: At least 100 cases Purposive sampling.

7. Study procedure:

All patients of fungal keratitis seen at the cornea clinic, National Institute of Ophthalmology and Hospital from July 2011 to June 2012 were identified. Patients thus identified were under detailed microbiological investigations. Patients had received simultaneous therapy for fungal keratitis. Information including patient's age, clinical presentation, methods of diagnosis and treatment and outcome were abstracted from the medical records.

8. Statistical analysis

Data analysis was performed by MS Excels. The table and graphs summarized the critical information with regard to the patient's age, sex, history of injury or previous eye disease, prior treatment, description of the ulcer on admission, organisms cultured, therapy and final outcome.

9. Questionnaire: Basic core, Expanded and optional variables of fungal keratitis and its ultimate were self-reported by the subjects in a Questionnaire which includes pts. demography, nature of injury, previous eye diseases.

10. Ethical implications: Prior to the commencement of this study, the research protocol were approved by the ethical committee of NIO, Dhaka. Verbal patient consent was obtained but written consent was not considered appropriate as the study did not involve any deviation from routine diagnostic or treatment protocol. Patients were excluded from the study if they did not agree to investigation and treatment.

Results

Table-1: Sex distribution of the patients (n=110)

Sex	No of patients	Percentage (%)
Male	73	66.36%
Female	37	33.64%
Total	110	100%

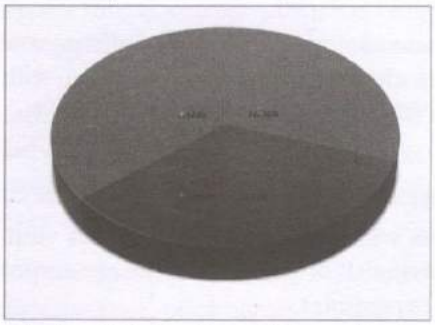

Fig. 1: Sex distribution of the patients

Table-2: Age distribution of the patients

Age group (years)	No of patients	Percentage (%)
1day-20yrs	11	10.00%
21-30 yrs.	28	25.45%
31-40 yrs.	41	37.27%
41-50 yrs.	17	15.45%
51-60 yrs.	8	7.27%
60+ yrs.	5	4.56%

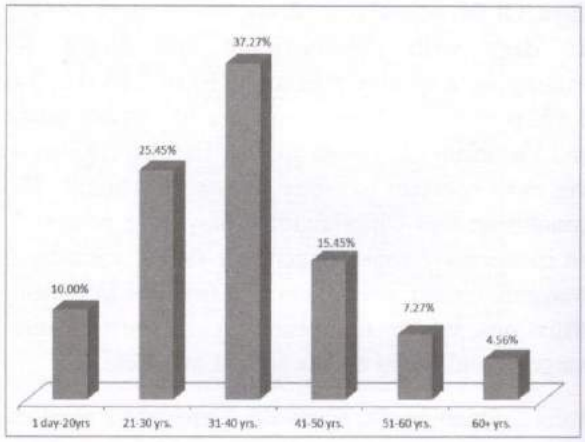

Fig. 2: Age distribution of the patients

Table-3: Distribution of the patients (n=110) in accordance to residence

Inhabitants	No. Of Cases	Percentage
Rural	81	73.64%
Semi Urban	21	19.09%
Urban	08	07.27%

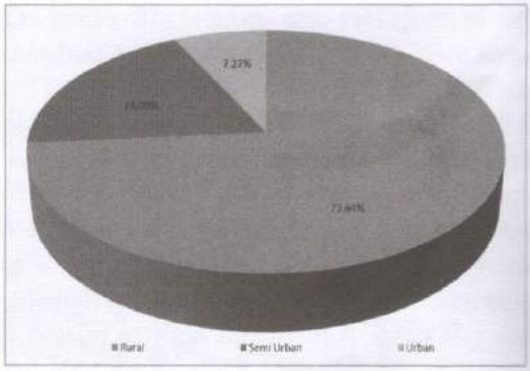

Fig-3: Distribution of the patients in accordance to residence

Table-4: Occupational distribution of the patients (n=110)

Occupation	Number	Percentage
Agricultural & related	76	69.10%
Household & Indoor	34	30.90%

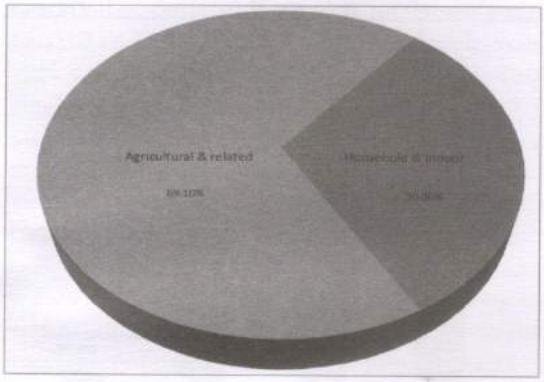

Fig-4: Occupational distribution of the patients

Table-5: Etiological distribution of the patients (n=110)

Etiology	No.	Percentage
Trauma	81	73.64%
Pre-existing corneal ulcer	10	9.09%
Contact lens wear	01	0.91%
Unknown	18	16.36%

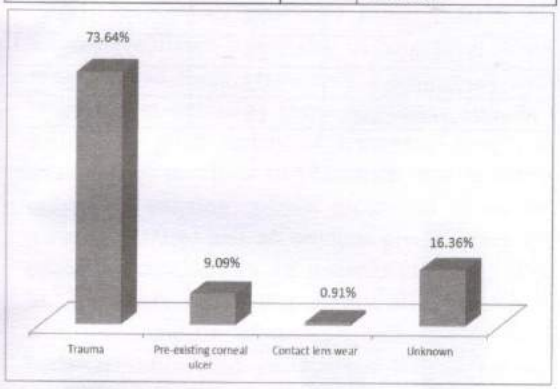

Fig-5: Etiological distribution

Table-6: Distribution of cardinal features presented by patients

Cardinal features	Number of cases
Redness	110
Foreign body sensation	108
Pain	106
Dimness of vision	77

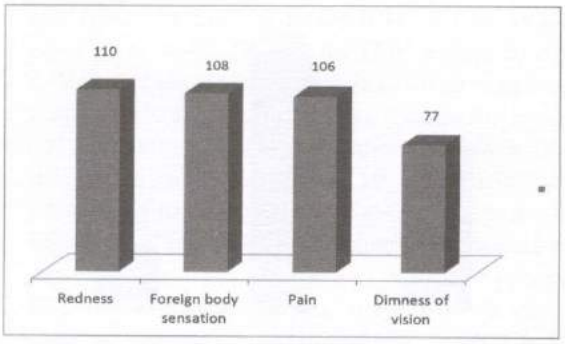

Fig-6: Distribution of cardinal features presented by patients

Table-7: Distribution of duration of symptoms (n=110)

Period	No.	Percentage
Within 7 days	52	47.27%
8-14 days	42	38.18%
15-20 days	12	10.91%
21-30 days	4	3.64%

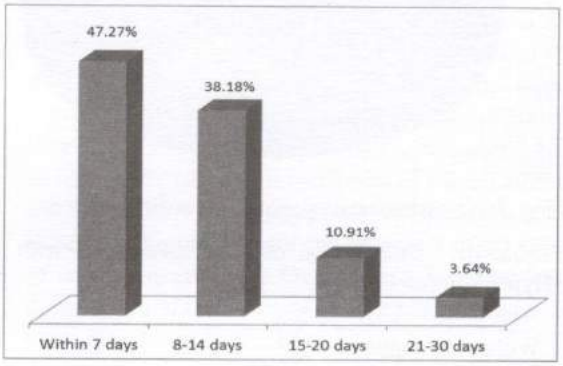

Fig-7 Symptoms duration

Table-8: Distribution of Visual acuity (Uncorrected) on day of presentation

Visual acuity	No. of cases	Percentage
6/6- 6/18	38	34.55%
6/24- 6/60	59	53.63%
Worse than 6/60	13	11.82%

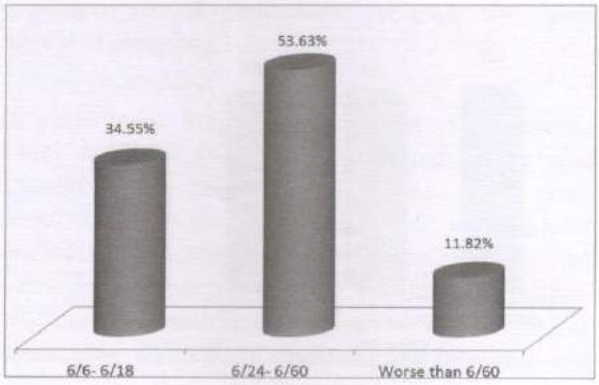

Fig-8: Distribution of Visual acuity on day of presentation

Table-9 Patients Distribution according to ulcer on 1stday.

Layers involved	No. of Cases	Percentage
Superficial	48	43.64%
Deep	62	56.36%

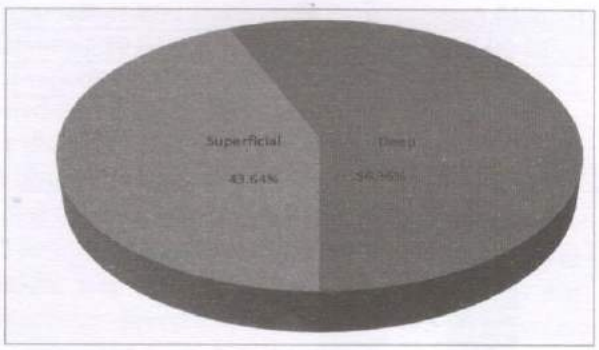

Fig-9: Distribution of patients according to ulcer

Table-10: Distribution of ulcer associated with Hypopyon (n=110)

Association of hypopyon	No.	Percentage
Without hypopyon	87	79.10%
With hypopyon	23	20.90%

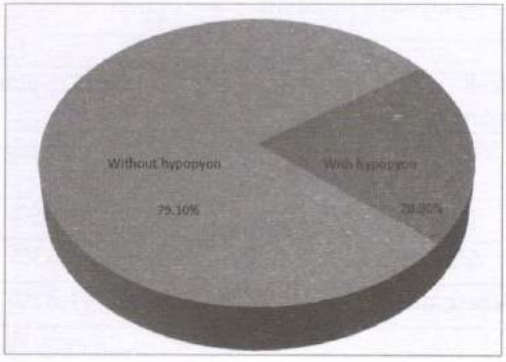

Fig-10: Distribution of ulcer associated with Hypopyon (n=110)

Table-11: Distribution of patients status on follow up on 5th day with medication (n=110)

Clinical status	No. of Cases	Percentage
Healing	39	35.45%
Working	44	40.00%
No change	27	24.55%
Perforation	0	0.0%

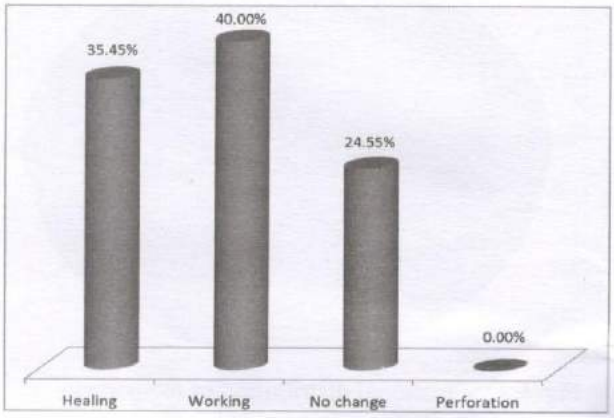

Fig-11: Distribution of patients status on follow up on 5th day with medication (n=110)

Table-12: Distribution of patients status on follow up on 21st day with medication (n=110)

Clinical status	**No. of Cases**	**Percentage**
Healing	78	70.91%
Working	25	22.73%
Perforation	02	1.82%
Non returned cases	15	13.64%

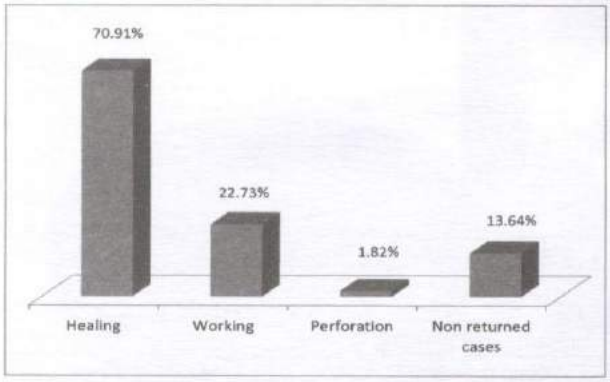

Fig-12: Distribution of patients status on follow up on 21st day with medication (n=110)

Discussion:

From January 2012 to December 2012, 110 patients were diagnosed as fungal keratitis based on clinical findings as well as observation of fungal filaments in KOH mount and Grams staining in Cornea department, National Institute of Ophthalmology (NIO), Dhaka. There were more male patients (73/110 I.e. 66.36%) compared to female patients (37/110 i.e.33.64%) in our study. The female to male ratio was almost double (1: 1.97) [Figure 1]. This is similar with Study conducted by S Saha et. al.17 The highest number of patients involved was from age group 31-40 years. They are the valuable earning members not only for their families but also for the country [Figure 2].Similar observation in a study by L Xie et. al.18 Our study revealed that rural people affects most (81/110 i.e. 73.64%) followed by semi urban 19.09% and urban 7.27%.This reflects necessities of ophthalmologists at primary health care system. The study revealed that the majority of the patients in this study were agricultural workers (76/110 i.e. 69.10%)[Figure 4]. Trauma was the leading predisposing factor while the wearing of contact lenses was least commonly related to the fungal keratitis. There was a history of trauma in 81 patients (73.64%) [Figure 5]. Similar observation in study by S Saha et. al.17 One third of the cases had injury with vegetative material and directly related to agricultural works and only twelve of the cases involved, suffered injury due to household material. We also had three cases with a history of foreign bodies from animals. These explained that in our region, the great variety of sources of fungal exist and are not confined to plantation and agricultural only. Pre- existing corneal ulcer was found in 10 patients (9.09%) and no obvious predisposing factor could be identified in 18 patients (16.36%) [Figure 5]. The study shows that almost all patient present with the complain of redness, followed by foreign body sensation and pain rather than Dimness of vision (77/110) [Figure 6].Though most of the patient (52/110 i.e. 47.27%) presented within 7 days, but more than half of the patient attended ophthalmic OPD later [Figure 7] i.e. 38.18% by 8-14 days, 10.91% by 15-21 days and 3.64% by 22-30 days. On the day of presentation most of the patients (59/110 i.e. 53.63%) had a visual acuity of 6/24-6/60, almost one third (34.55%) with 6/6-6/18, a few 11.82% cases were worse [Figure 8]. This [Figure 6, 7, 8] reflects that people are not aware of dimness in visual acuity due to acute condition like redness and foreign body sensation. On slit lamp bio-microscopy most of the ulcers were deep (62/110 i.e. 56.36%) in comparison to 48 out of 110 i.e.43.64% cases were superficial [Figure 9]. Examination also revealed that most of cases of ulcer were without hypopyon 79.10%.Ulcer with hypopyon only in 23 out of 110 cases (20.90%) [Figure 10].Follow up on 5th day with medication shows no perforation, healing in

39 cases (35.45%) 44 cases shows improvement or working 40.00%and no response/ no improvement in 27 cases 24.55%.

Conclusion:

Fungal keratitis should be suspected in cases of keratitis that do not respond to antibacterial agent's especially in cases of vegetative Trauma or extended wear contact lens usage. Early treatment is usually adequate to control the infection These observations emphasize that it is critical that rural populations be adequately served by eye care physicians and that farm workers be cautioned about the need for protective eyewear and eye care following injury. Furthermore, the correct treatment and referral by local ophthalmologists to a major eye hospital such as ours is critical. The prescription of topical steroids by the primary care physician or ophthalmologist should be discouraged for the treatment of infections of unknown etiology. Overall, we feel that early diagnosis and anti-fungal therapy are critical for controlling fungal keratitis.

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Appendices

Patient details:

Patient ID number:

Name:

Age: Sex: M /F

Address :

Occupation:

Ophthalmic history:

Trauma: Dacrocystitis :

Previous Eye surgery :

Contact lens wear :

Ocular surface disorder :

Trichiasis :

Does the patient have a history of diabetes? Y/N.

If yes, for how long _____

If other diseases, give details:

Current topical antibiotic Y /Nspecify _____

Current topical antifungal Y / Nspecify _____

Current topical steroid Y / Nspecify _____

Presentation:

Date of presentation: ___/____/____

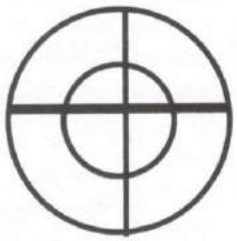
Eye: RE / LE / Bilateral

Duration of symptoms: _____days

Visual Acuity (uncorrected): Right _____ Left _____

BASE - LINE EXAMINATION

Ulcer size:



Lid Oedema :Mild /Moderate/Severe

Depth of Ulcer: Deep/Superficial

Depth of infiltrate: Anterior stroma/Midstroma/Posterior stroma

Hypopyon: Absent/Present, Height _____mm.

REVIEW:

Date: _____/____/____ Eye : RE / LE / Bilateral

Visual Acuity: Right _____Left _____

MICROBIOLOGY RESULTS

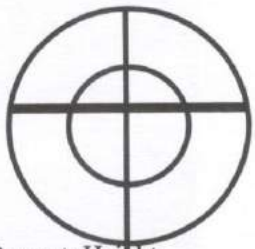
Gram stain :_____date ___/___/___

KOH: _____date ___/___/___

Culture (BA)_____date ___/___/___

Culture (SDA)_____date ___/___/___

Ulcer size :



Hypopyon: Absent /Present; Height _____mm.

Assessment:

Healing	Working	No change	Perforation

Bilateral Extensive Persistent Pupillary Membranes and Surgical Management

Md. Amiruzzaman[1], Md. Shafi Khan[2], Md. Nazrul Islam[3], ASM Moinuddin[4], Mohammad Ibn Abdul Malek[5], Rajeeb Alam[6]

Abstract:

Purpose: *Exuberant persistent pupillary membranes (PPM) are rare in adult eyes. We report the case of a 30-year-old lady diagnosed with bilateral, profuse, persistent pupillary membranes and dimness of vision described as an increased feeling of darkness in the surroundings. The patient claimed that her vision in both eyes was apparently reduced and darkly surrounding prior to excision of the membranes. There were no documented systemic illnesses. Family history was unremarkable. On examination, uncorrected visual acuity was 6/9 in both eyes. The intraocular pressure was 12mm Hg in the right eye and 10 mm Hg in left eye. On anterior segment examination, both eyes had clear corneas, deep and quiet anterior chambers, and no synechiae. Both eyes showed a dense network of tissue, more gross and exuberant, running from the iris surface and spreading over the pupils. There was no view of the fundus in undilated pupil, while in dilated condition fundus oculi did not reveal any abnormality.*

Keywords: *Persistent pupillary membranes, Surgical excision*

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Introduction:

Clinically, persistent pupillary membranes (PPM) are the most commonly occurring congenital anomaly, seen in up to 95% of normal newborn babies.[1] These PPMs may not affect vision unless the pupillary opening is less than 1.5 mm in size. A small opening affects visual acuity due to the decreased retinal illumination and diffraction.[2]

During embryological development, the iris initially forms as a solid sheet of mesodermal tissue known as the pupillary membrane, composed of vessels and mesenchyme and lies ventral to the lens. On the dorsal part of the lens, the hyaloid vessels form a network around the posterior lens capsule. These vessels extend anteriorly to anastomose with the network of vessels in the pupillary membrane. The pupillary membrane vessels are derived mainly from the anterior ciliary arteries. This hyaloid vascular network that forms around the developing lens is known as the tunica vasculosa lentis (TVL).[3] The hyaloid vasculature reaches its greatest development at around 10 weeks of gestation. By the end of fourth month, the TVL and hyaloid artery regress. The pupillary membrane itself begins to regress in the sixth month and disappears completely by the eighth month of gestation.

Case Report

A 30-year-old lady presented to the cornea clinic of Ispahani Islamia Eye Institute And Hospital, with a complaint of an appearance of the pupil unlike others, dimness of vision described as an increased feeling of darkness in the surroundings, in herboth eyessince childhood. There were no documented systemic illnesses. Family history was unremarkable. On examination, uncorrected visual acuity was 6/9 in both eyes. The intraocular pressure was 12mm Hg in the right eye and 10 mm Hg in left eye. On anterior segment examination, both eyes had clear corneas, deep and quiet anterior chambers, and no synechiae. Both eyes showed a dense network of tissue, more gross and exuberant, running from the iris surface and spreading over the pupils. There was no view of the fundus in undilated pupil, while in dilated condition fundus oculi did not reveal any abnormality.

The patient underwent surgical excision of the PPM of both eyes, she experienced an immediate brightening of the surroundings, with unaided 6/6 vision, and a normal circular appearance of the pupil.There were no peroperative or postoperative complications, despite a high probability of haemorhage from the highly vascularized iris. Fortunately, the excision of the membranes was uneventful.

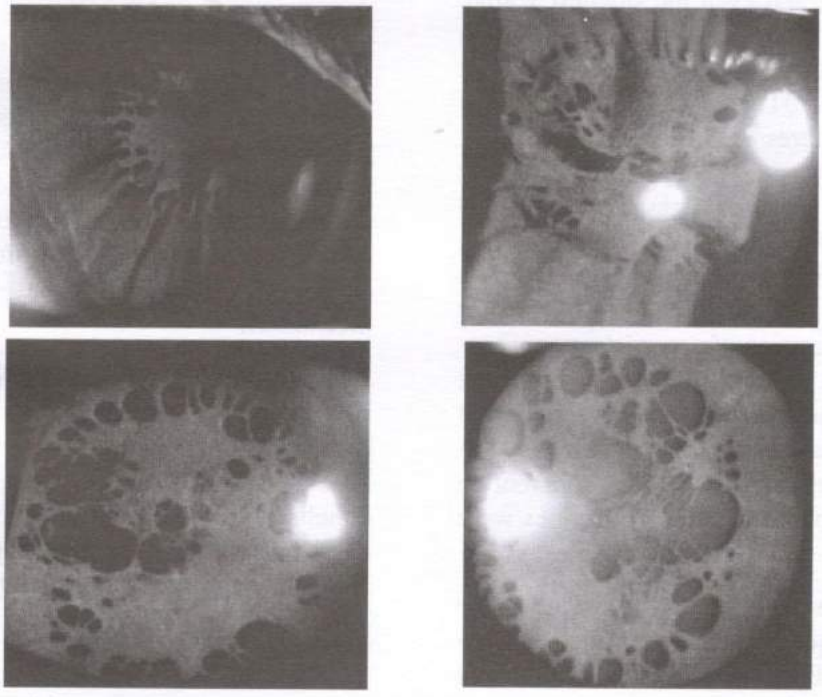

Figure 1: Preoperative photographs of right and left eye with PPM and following dilatation.

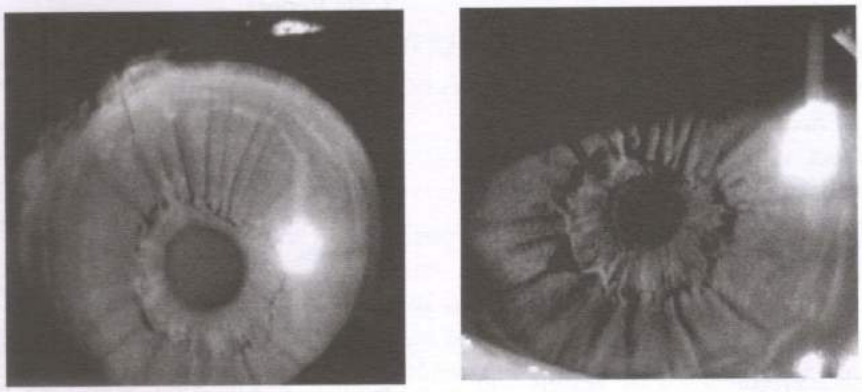

Figure2: Right eye and left eye immediately after surgical excision of PPM

Discussion:

Clinically, persistent pupillary membranes (PPM) are the most commonly occurring congenital anomaly, seen in up to 95% of normal newborn babies.[1] In one study of PPMs, 39 cases were followed up. Of these, only 5 were found to develop poor visual acuity. Four had unilateral deprivational amblyopia, while one case had bilateral anisometropic amblyopia. Thus it appears that most cases with PPMs are not significant enough to have visual complaints and so might go undetected.[4]

Since the use of the slit-lamp microscope, the diagnosis of persistent pupillary membrane has become very frequent, and even the smallest vestige of the condition can easily be recognised. It has a variety of presentations and althoughfrequent (according to Staehli, 31 percentof all cases),[5] it extremely rarely interferes with the patient's vision, and therefore usually does not require surgical intervention. The first operated cases were published by Wiegmann (1916).[6] He operated on four eyes of a pair of twins, and vision was reported to improve following surgery. Mawas and Terrien (1922).[7] refer to a histological examination of a persistent pupillary membrane which was removed by operation and, in this case too vision had improved. In a case reported by Noji (1930),[8] optical iridectomy was performed as the persistent pupillary membrane was adherent to the lens capsule and partial lenticular opacities were present.

Management of PPMs depends on the extent of the membrane and consequently the size of the pupillary opening. Small PPMs can be managed conservatively. A regimen of mydriatics, refractive correction, and patching for amblyopia has been employed successfully in some cases.[9] PPMs have also been disrupted using the Nd:YAG laser. However, a number of reports have shown the presence of blood vessels in these PPMs. Therefore, photodisruption of these membranes can lead to hyphaema; the procedure also carries the risk of cataract formation and pigment dispersion.[10] Finally, PPMs can be excised surgically. However, surgical management also carries the risks of anesthesia, intraoperative bleeding, intraocular infection, and cataract formation.[11]

Our patient experienced dimness of vision which was described as a dark appearance of the surroundings, and an abnormal appearance of the pupil. The main concern of the patient was cosmetic appearance, and a dark perception of the surroundings. Taking that into consideration, and considering the extensive nature of the membranes (rendering laser likely to fail), the decision to undergo surgical correction was made. Considering the discomfort felt by the patient, surgery was carried out taking appropiate precautions.

This case illustrates that normal visual development can occur despite inadequate pupillary openings as a result of PPMs. There was no evidence of amblyopia in either eye of this patient, which leads us to conclude that adequate light reached the retina despite very small pupillary openings in both eyes. No bleeding observed during intraoperatively.

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Diabetic Vitrectomy a Different and Difficult Experience

Md. Abdur Rakib[1], A B M Shamsudduha[2]

Abstract:

Diabetic retinopathy is one of the leading causes of blindness , both in the developed and developing countries across the globe.33 % of Type 1 and 17 % of Type 2 diabetics will develop proliferative retinopathy within 15 years following their diagnosis as a diabetic .Diabetic retinopathy , along its long journey , brings along with it an array of complications which ultimately requires surgical management, such as , Pars Plana Vitrectomy (PPV). Surgical procedure of diabetic patients is quiet difficult and the postoperative outcome is unfortunately not always satisfactory.

Purpose: *To study the anatomical and functional changes obtained from 30 eyes of 30 patients who underwent Pars Plana Vitrectomy for severe proliferative diabetic retinopathy.*

Place of study: *Department of Ophthalmology, BIRDEM Hospital, Dhaka, Bangladesh & Harun Eye Hospital, Dhaka, Bangladesh.*

Study Period: *From January 2013 to December 2014 with mean follow up period of six months.*

Indications: *Indications for pars plana vitrectomy were: vitreous hemorrhage in 20 eyes, tractional retinal detachment in 5 eyes, vitreous hemorrhage and tractional retinal detachment in 5 eyes.*

Surgical Procedure: *After taking informed consent, all the patients underwent PPV. The surgical procedure consisted of pars plana vitrectomy with delamination, segmentation or membrane peeling. In 15 eyes, the surgery was combined with silicone-oil tamponade.*

Follow-up after surgery: *All the patients were reviewed on postoperative 1st day, 7th day, 15th day, 30th day, 45th day, 75th day then 105 days, 120 days & 180 days following the surgery. On the consecutive follow ups examination included measurement of best corrected visual acuity, slit lamp examination, fundus examination by indirect ophthalmoscopy.*

Results: *After the follow-up for 6 to 17 months the visual acuity improved in 15 eyes, was unchanged in 10 eyes, and became worse in 5 eyes. The retina was completely attached in 28 eyes at the time of the last review. In the postoperative period, vitreous hemorrhage occurred in 5 eyes, ocular hypertension occurred in 4 eyes and cataract developed in 5 eyes.*

Conclusion: *Pars plana vitrectomy for diabetic complications differs from conventional approaches , in that relief of retinal traction must be attained by adequate dissection of peripheral fibrovascular tissue. Anatomic success rate tended to be better than functional success rate in high-risk severe proliferative diabetic retinopathy. So when severe fibrovascular proliferation occurs, complete removal of anteroposterior traction could only improve the anatomic success rate of the vitrectomy in most of the cases.*

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Introduction:

The prevalence of diabetes is increasing worldwide[1], and some patients with diabetes will eventually undergo vitrectomy for the late complications of proliferative diabetic retinopathy,

diabetic vitrectomy. The complications associated with Diabetes Mellitus comes hand in hand with the duration of the disease and due to the recent advancement of medical science, the blessing of prolong lives of these patients come with the curse of the various complications arising from long-term microvascular pathological changes. The major sensitivity factors for microangiopathy are the duration of the disease and its metabolic control.

Diabetic retinopathy is one of the leading cause of blindness. The incidence of blindness due to diabetes has been reported to be 64 per 100.000 diabetic population/year [2]. Thirty three percent of type 1 and seventeen percent of type 2 diabetics will develop proliferative retinopathy within 15 years of the diabetes following diagnosis . Retinopathy develops in 60% of cases with type II diabetes and 10% of the cases have proliferative characteristics amongst them. This rate is much higher in type I diabetics[3,4]. The overall incidence of Proliferative Diabetic Retinopathy (PDR) was 16.2 per 1000 person/year[5].

Vitrectomy is performed in the cases with PDR where fibrovascular proliferation progresses despite panretinal photo coagulation.To perform the surgery, the surgeon should not wait for the tractional detachment of macula and development of vitreous hemorrhage (VH), these being the most common indications of vitrectomy [6].

With the addition of new indications to the previous ones, such as, traction and rhegmatogenous detachment and VH, in recent years, vitrectomy is being performed in earlier stages[7]. The primary objective of surgery is particularly to achieve a useful visual acuity. Another important goal of vitrectomy is to prevent further progress of diabetic neovascular process and hence, to achieve a long-term anatomical and functional success[8]. While taking surgical decisions prior knowledge of prognostic factors affecting visual acuity is valuable.

Predicting visual acuity after surgery may be difficult because

the surgical outcome seems to be variable in the first year following surgery, but no studies yet have tried to estimate prognostic factors based on long-term visual acuity observations.

Another problem arises when counselling patients regarding the risk of cataract surgery after diabetic vitrectomy. Vitrectomy is known to accelerate cataract formation in general ; cataract reduces visual acuity and complicates retinal evaluation and treatment if required, thus indicating surgery.

In this study, the anatomical and functional outcomes of the surgery on a group of subjects who underwent pars plana vitrectomy due to severe proliferative retinopathy, which is an extremely advanced stage of the diabetic eye disease, have been evaluated.

Methods

In our study, 30 eyes of 30 cases included who had severe proliferative diabetic retinopathy and were diagnosed as vitreous haemorrhage and/or tractional retinal detachment. All the cases underwent conventional 20 Gauge pars plana vitrectomy. One surgeon performed all the surgeries at the Department of Ophthalmology, BIRDEM Hospital, Dhaka, & Harun Eye Hospital, Dhaka, Bangladesh during the period, from January 2013 to December 2014 with mean follow up period of six months.

The age ranged from 40-69 years in the 10 females and 39-72 years in the 20 males. While 10 of the cases had Type I DM and 20 had Type II DM. The mean duration of diabetes was 8.31±4. 96 years and 15.31±7. 49 years amongst them, respectively, and the preoperative mean follow up period of the cases was 12.36±3. 61 months.

Table-1 (Age Distribution):

AGE	MALE	FEMALE
40-50 YEARS	10	3
51-60 YEARS	6	5
61-75 YEARS	4	2

Table-2(Types,duration of diabetes):

DURATION OF DIABETES	TYPE-1 DIABETES	TYPE-2 DIABETES
5-10 Years	6	2
11-14 YEARS	3	15
>14 YEARS	1	3

The following procedures were performed:

All cases underwent a detailed and comprehensive ophthalmological examination including measurement of visual acuity, slit lamp examinations of anterior segment and the vitreous and fundus examinations by using a double aspheric fundus lens (Volk, 90 diopter) and Indirect ophthalmoscope after attaining mydriasis with the combination of 0.8% Tropicamide and 5% Phenylephrine. B-Scan ultrasonography were carried out in all cases where the posterior segment could not be seen.

Reduced vision due to vitreous haemorrhage was considered as the main indication, even if there was no detachment in the macula. Also, surgery was performed in the cases with traction retinal detachment and VH, even without posterior vitreous detachment. To sum up, our surgical indications were classified under 3 stages and headings: 1)vitreous hemorrhage in 20 eyes, 2)tractional retinal detachment with severe fibrovascular proliferation in 5 eyes,3)vitreous hemorrhage and tractional retinal detachment in 5 eyes.

Table-3 (Indications for PPV):

INDICATIONS	TYPE -1 DIABETES	TYPE-2 DIABETES
VITREOUS HAEMORRHAGE	14	06
TRACTIONAL RETINAL DETACHMENT	03	02
TRACTIONAL RETINAL DETACHMENT AND VITREOUS HAEMORRHAGE	01	04

Although the most frequent indication of vitrectomy was VH, the presence of other proliferative findings were more important than VH in deciding for surgery.

All of the cases were operated under local anesthesia. The Accurus vitrectomy machine by Alcon was used which also consisted of a phaco-fragmentation unit, diathermy, halogen light source, silicone and air pump in addition to vitrectomy. 532 nm wavelength Nd:YAG laser machine by Carl Zeiss was used for endolaser photocoagulation, and the Balance salt solution with the addition of 1/1000 was used for infusion.

240 silicon bands were applied in 10 cases (33.33%) after circumferential perilimbal peritomy and pars plana vitrectomy was performed with classical triple procedure. The removal of all vitreous opacities, the resection of the posterior hyaloid and vasoproliferative tissue completely, the separation of all membranes and bands between the vitreous base and optic nerve head, the removal of epiretinal membranes from the retina as far as possible, the segmentation of immovable fibrous tissue as separate islands, and the internal drainage of subretinal fluid were performed .Silicon-fluid perfluorocarbon exchange was performed in 15 cases (50%), where 5000 cst silicon oil was used.The operation was terminated with the repair of sclerotomies and peritomies.

The postoperative follow-up period of the cases ranged from 8 months to 18 months and the mean was 9.01±3.43 months.

Result:

The distribution of the number of cases and duration of diabetes with respect to operation indications has been given in Table 1. The most frequent surgical indication is VH, which develops subsequent to PDR.

The preoperative and postoperative visual acuities in the eyes have been given in table-4.

Table-4 (Preoperative and postoperative Visual acuity):

VISUAL ACUITY	PREOPERATIVE	POSTOPERATIVE
HM,PL+,PR+	18(60%)	08(26.66%)
COUNTING FINGER 1 feet to 3 feet.	08(26.66%)	12(40%)
COUNTING FINGER 3 feet to <6/60	02(6.66%)	06(20%)
6/60-6/36	01(3.33%)	04(13.33%)

It is seen from this table that the surgery resulted in an increase visual acuity (When the visual acuity of a case was at the HM, PL+ level, an increase of counting finger 1 foot or higher in the visual acuity after the operation; or when the visual acuity of a case was at the level of reading letters on the Snellen chart, success in reading one or more lines in addition to the preoperative line reading) for 50% of the eyes, it did not bring about any change in 33.33% of the eyes, and it reduced the visual acuity in 16.66% at the end of a 3 month follow-up period.

The postoperative complications encountered in 20 eyes were as follows : raised intraocular pressure in 4 eyes (13.33%), cataract developed in 5 eyes (16.66%),Vitreous haemorrhage in 5 eyes(16.66), preretinal hemorrhage in 1 eye(3.33%), hyphema in 1 eye (3.33%), corneal edema-epithelial defect in 2 eyes (6.66%), development of total retinal detachment in 1 eye (3.33%), leakage of silicone oil under retina in 1 eye (3.33%).

Table-5: (Postoperative Complications)

POSTOPERATIVE COMPLICATIONS	NUMBER OF EYE	PERCENTAGE
Raised Intraocular Pressure	4	13.33%
Cataract	5	16.66%
Vitreous Haemorrhage	5	16.66%
Preretinal Haemorrhage	1	3.33%
Hyphema	1	3.33%
Corneal Oedema	2	6.66%
Total Retinal Detachment	1	3.33%
Leakage of Silicon oil	1	3.33%

The anatomic success was in 28 eyes ,where as the functional success-visual acuity increase were in 15 eyes.At the end of the mean follow-up period of 9.01± 3.43 months, the anatomic success, in other words, the reattachment of retina and/or the removal of existing VH and intravitreal opacities were achieved in 28 eyes.It was observed that total retinal detachment developed in 1 case and silicon oil slippage under the retina in 1 case.

Discussion

Owing to the better management of diabetic patients, their life expectancy is increasing. Unfortunately the pathological changes which occurs in Diabetes Mellitus is directly proportional to the duration of the disease. Hence with increasing life expectancy comes the burden of complications along with it. Now a days one of the most important causes of blindness is diabetic eye disease both in the developed and the developing countries. The number of cases with diabetic blindness increases by a 12% annual addition of new cases(9). As Retinopathy is a progressive disorder, the available important method of treatment is the application of laser photocoagulation as for as possible. The objective of preoperative photocoagulation is to facilitate the control of vascular proliferative process. When the proliferative retinopathy is not arrested with photocoagulation, pars plana vitrectomy is an accepted method of treatment. The outcomes of vitreous surgery in eyes where intensive photocoagulation has been done are more satisfactory(8). In the advanced stages of DR, the external laser photocoagulation treatment could no longer be applied in the presence of preretinal and vitreous hemorrhage and extensive fibrovascular vitreoretinal tractions.

Despite the intensive photocoagulation applied preoperatively, the proliferations were observed to continue in majority of our cases. At this stage, vitreoretinal surgery and additional intraoperative endolaser photocoagulation is necessary (12).

At present,the most frequent indications of diabetic vitrectomy are vitreous Haemorrhage and tractional retinal detachment encompassing the macula. The situation is generally dominated by fibrotic membranes in which new vessel formations are subsidiary and stationary. A reduction in the visual acuity and metamorphopsia begin when the detachment advances into the vascular arcade. Surgery is necessary at this moment and it should be performed as soon as possible. Because the ischemic damage develops in the inner retinal layers, the external retinal layers, on the other hand, are under detrimental threat (9).

Surgery is required in the presence of peripheral traction and rhegmatogenous detachment with or without the involvement of macula. Some of these cases are accompanied by chronic persistent or recurrent VH (14).

With the control of the proliferation process, visual acuity improves to a better degree in the long term. More than half of these cases who might also have VH in addition to severe neovascularization and fibrosis are operated on in the early period, and serious complications are encountered in the case of late therapy (8, 16).

The existence of VH is an important indication of vitrectomy. The most frequent indication for surgery was also VH developed as a consequence of PDR in 66.66% of our cases, which was followed by traction retinal detachment either combined with VH or alone. VH may be caused by either the vitreous tractions and the active neovascular disease associated with fibrovascular proliferation or it may appear during acute tractional detachment or together with posterior vitreous detachment without new vessel formation. Furthermore, venous occlusion and retinal tears may also be the cause of hemorrhage in diabetics (9).

According to the data by the Diabetic Retinopathy Vitrectomy Study Group, while the hemorrhage disappeared in only 20% of the cases, additional posterior segment complications requiring surgery developed in 10%, hemorrhage continued in 43% at a severity requiring surgery at the end of a one-year follow-up period, and 6% died due to systemic complications. As a result, vitrectomy is necessary in 53% of the diabetic VH cases followed up for a year. Where VH exists, early surgery should be considered especially for the cases that have progressive rubeosis iridis and progressive fibrovascular proliferation(12, 16).

The existence of cataract before and after surgery is an important problem .In some cases, cataract development occurs as a surgical complication (18). In phakic cases where vitrectomy is performed, cataract may develop in cases reaching a rate of 20-35%. Long duration of operation, surgical trauma and reoperations, use of intraocular tamponade materials and hemocyderinic effects of intraocular hemorrhage are the factors contributing to cataract formation. In our study, 5 cases developed Cataract within 3 months,including 2 eyes in which silicon oil was

used.In order to perform surgery on the cataract, which is generally posterior and subcapsular, it is recommended that at least 6 months should be allowed to elapse following the vitrectomy. Hutton et al. have reported achieving high visual acuity increase by adopting the above recommendation [19]. In a case that underwent vitrectomy, an important complication caused by cataract extraction was, the risk of developing neovascular glaucoma and iris neovascularization , the prevalence of which increases 3-4 times [20].

The discussions on the use of silicone oil have not come to an end, although it is commonly used in diabetic vitrectomy. The most important and common indication of silicon use in diabetic vitrectomy is the existence of tractional retinal detachment [21].

The major complications encountered following diabetic vitrectomy are VH, retinal detachment, cataract and rubeosis iridis development .Reoperation is necessary for 10-30% of the cases due to various complications [23]. The most important indication for reoperation is VH, which generally appears in the early days after the first operation. The rate of post vitrectomy VH has been reported to vary between 3.3% and 69.2% (24,25). Recurrent VH develops at the rate of 60% in eyes undergoing diabetic vitrectomy. Fibrovascular ingrowth, sclerotomy site or anterior hyaloid proliferations could be the source of this hemorrhage (26). In our study,5 eyes (16.66%) developed recurrent VH.

The indication and timing of reoperation depend on the pathology and complications accompanying VH [27].

Reoperation was required in 8.5% of Brown's cases, where the cause responsible for reoperation was recurrent VH, rhegmatogenous retinal detachment and glaucoma in 51%, 44% and 5% of the cases, respectively [28]. Reoperation was performed in our study because of various reasons such as recurrent VH in 4 (13.33%) eyes, cataract development in 4 (13.33%) eyes, recurrent detachment in 2 (6.66%) eyes, and silicone leakage under the retina in 1 (3.33%) eye.

The postoperative development of retinal detachment is also one of the most severe complications of diabetic vitrectomy. The detachment appearing in 5-10% of the cases could be caused by atrophic retinal tears, the late contractions of vitreous incarcerations and peripheral tractions due to anterior hyaloidal proliferations. The postoperative retinal detachment was observed 2 (6.66%)eyes.The use of silicone may be needed in the tears posteriorly localized and associated with traction [29].

The intraocular pressure increase after vitrectomy has been reported to vary between 1.6% and 8.1% (23, 24, 30), being 13.33% in our cases.

While the rate of anatomic success obtained using only scleral buckling methods in the treatment of retinal detachment cases with severe proliferative retinopathy was 19-23%, it was 75% when the method was applied in association with pars plana vitrectomy [31]. The rate of anatomic success was 82.93% in the cases with severe PDR, where we applied the scleral encircling and vitrectomy.

Generally the rate of functional success by surgery is 40-63% in the cases with PVR. In recurrent cases, on the other hand, the success rate is much lower [32-35].

Han suggests that the visual results are not satisfactory although the postoperative stabilization rate of retina behind the equator is 100% in DR with severe proliferations. Equatorial and more anteriorly localized fibrovascular proliferations decrease the rate of success. It may be required to relax the tractions as much as possible, apply the buckling and retinotomies, if necessary [36]. The functional results are not satisfactory in the cases where proliferations covering the macula exists, even if detachment is not present [6].

In De Bustros's progressive PDR series, visual acuity increase was achieved in 70% of the cases, while it was reduced in 22% of the cases, and it was unchanged in 8% of the cases. The visual prognosis was better in cases who were under the age of 40, whose preoperative visual acuity was higher than 5/200, and who had no iris neovascularization. While the prognosis of a case in diabetic vitrectomy is related with the severity of retinopathy during the first diagnosis, the presence or absence of detachment in the macula and duration of the existence of detachment, the period between the occurrence of VH and surgery is not so important (37).

Visual prognosis after vitrectomy performed in severe diabetic retinopathy depends on the final macular function. Surgery indicated for VH without macular detachment , produced, in most cases, a good visual acuity. On the other hand, vitrectomy done for tractional macular detachment was followed by poor visual prognosis (39, 40). In Turkey, a remarkable number of cases with advanced stage and high-risk severe proliferative

retinopathy either gets admitted very late to centers or are referred there. Even though anatomical success is achieved with surgery in such cases, functio results are not satisfactory.

The authors came to the conclusion that the rate anatomical and functional success may be increa with the use of new medical agents decreasing effects of diabetes and preventing the development reproliferations, and developing more id intraocular tamponade materials.

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Vitrectomy with Gas Temponadefor Optic Disc Pit Maculopathy

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Maliha Sharmin[4], Tanzina Islam[5], Kamrul Hasan Sohel[6], Tanvir Ahmed[7]

Abstract:

Purpose: *To evaluate the surgical outcome of optic disc pit maculopathy.*

Design of the study*: Retrospective interventional study.*

Methods: *Eleven eyes of 11 patients with optic disc pit maculopathy underwent pars plana vitrectomy with PVD induction with perfluoropropen(14%) gas temponade with laser at temporal margin of optic disc. Patients were followed using OCT of macula for anatomical changes and visual acuity recorded for functional improvement.*

Results: *Complete retinal attachment occurred in 11 eyes with mean post-operative vision 1.0 logMAR .mean time required for intra retinal and sub-retinal fluid was 8 months. One patient developed full thickness macular hole post operatively.*

Conclusion: *Vitrectomy with PVD induction with perfluoropropen(14%) gas temponade with laser treatment improve vision in optic disc pit maculopathy.*

Key Wards: *microbiological etiology, epidemiological factors,infective keratitis.*

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Introduction:

Optic disc pit is congenital disc abnormality secondary to a colobomatous malformation of the optic nerve head. They typically appear as a solitary, oval, gray-white depression located in the infero-temporal segment of the optic disc. Optical coherence topography has confirmed the observation of Lincoff et al[1] that there was a frequently a retinoschisis like a separation of the retina present during the development of serous macular detachment[2]. However the pathogenesis of the optic disc pit maculothay remains unclear. The natural history of optic disc pit maculopathy is poor: 80% of eyes will end up with visual acuityof 20/200 or worse[3]. Even if spontaneous resolution occurs, vision often remains reduced because of outer layer lamellar holes or pigment epitheliopathy, particularly when there is long standing serous detachment.

Multiple approaches for the management of optic disc pit-related maculopathy have been suggested, including laser photocoagulation, intravitreal gas injection, macular buckling,and pars planavitrectomy. The treatment of the optic disc pit maculopathy remain controversial. The use of peripapillary laser therapy to produce a barrier of the chorioretinaladhensions at the disc border with or without intravitreous gas injection often is unsucessful and the repeated treatment is needed[4]. Lincoff et al[5] reported that intravitreal gas injection alone can induce pneumatic displacement of the outer layer detachment and can improve central vission. However this beneficial effect may be only temporary, because recurrence of macular invoivement caused by fluid movement into the subretinal space from persistent inner layer separation has been shown by OCT[2].

Hirakata et al[6] reported that the induction of posterior vitreous detachment and gas tamponade without lasser treatment for optic pit maculopathy is effective in reattaching the retina and improving visual acuity[7].This finding suggested that vitreous traction around the optic disc pit may cause passive fluid migration into the intraretinal space through the pit.There are several reports suggest that vitrectomy combined with laser photocoagulation and gas tamponade may be more effective than external lasertherapy alone particularly in eyes with several visual loss8. The purpose of this. study was to examine the outcome ofvitrectomy with PVD with endolaser with gas tamponed for the treatment of optic disc pit maculopathy those failed after primary lase therapy.

Methods

11 eyes of 11 consecative patients with optic disc pit maculopathy who brought treatment at Ispahani Islamia eye institute hospital, Bangladesh were reviewed in this study. This study had Ispahani Islamia eye institute and hospital (IIEI&H) review board approval & records were reviewed retrospectively.

Best corrected visual acuity (BCVA) was recorded and indirect funduscopy and slit lamp biomicroscopy using a 78D non contactlense were perfromed before and after surgery.The OCT images of the eyes were obtained using stratus OCT, OCT 4000 Cirrus to evaluate posterior retinal changes during follow up.

Surgery was performed for worsening BCVA or for the development of macular detachment. Surgeries were performed by 3 surgeons between 2012-2015 and patient was followed up for 6 to 30 months after surgery. Vitrectomy was performed with the intension of releasing vitreous traction at the optic disc pit. Twenty gauze vitrectomy was performed in all eyes. Posterior vitreous detachment was initiated by suction over the optic disc. To limit retinal damage secondary to surgical manipulation, special attention was given to separating the posterior hyaloid gently over schisis like areas. Triamcinolone acetonide was used during surgery to visualize better the posterior cortical vitreous.

After complete vitrectomyendolaser done along the temporal margin of the optic disc pit. Then the Air Fluid exchanges injection perfluoropropane (14%) gas and post operatively face down positioning for 1 week was maintained.

Result

The clinical characteristics of all 11 patients are shown in table 1.1 and clinical photograph of representative patients are shown in fig 1.1. Schitic change was present in all the patient. Neither PVD nor vitreomacular or vitreopapillary traction was observed in any eyes preoperatively by fundus biomicroscopy& OCT findings.

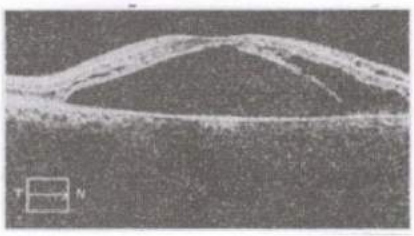
Table1.1: Pre operative characteristics of eye with optic disc pit maculopathy

Characteristics	Value
Mean patient age (range) years	26(18-34)
Gender, no % Men women	 7(63) 4(37)
Mean preoperative visual acuity(logMAR)	0.8(0.4-1.2)
Inner retinal fluid, no(%)	10(90)
Outer retinal fluid , no(%)	11(100)
Macular detachment, no(%)	11(100)
Outer layer lamellar hole, no(%)	9(81)

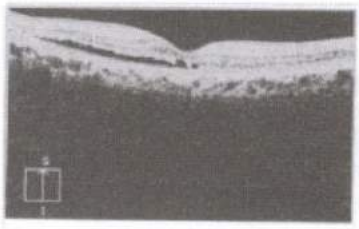
Complete retinal attachment was achieved in 11 eyes. These eyes required about 5-15(mean 8 months) months to reach this state. Observation by OCT,after reduction of the inner retinal fluid there was a slow reduction of outer retinal fluid and macular detachment(fig1.2). Preoperative and recent BCVA are shown in table 1.1 and 1.2 . Despite evidence of residual shallow inner layer and outer layer detachment, VA started to improve within few months in all eyes. Improvement in VA 0.8-1.2 logMAR(mean 1.0 logMAR) was documented. Post operative VA improvement was more in the eye with better pre operative VA but duration of symptoms does corrective little with post operative visual outcome.Postoperativ transient rise of IOP which was managed with topical and oral antiglaucoma medication.

Table1.2: Post operative characteristics of eye with optic disc pit maculopathy

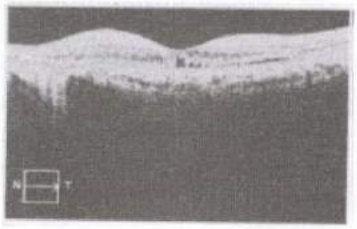
Characteristic	value
Mean follow up after surgery (months)	15(6-30)
Mean postoperative visual acuity, logMAR	1.0(0.8-1.2)
Complete resolution of fluid in & under the fovea , no(%)	10(90)
Mean time to resolution of fluid in and under the central macula(range),months	8(5-15)
Development of full thickness macular hole after surgery	1(9)

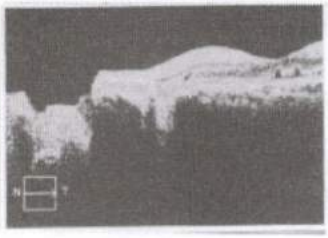


Fiq 1: (a) Pre operative OCT Macula



(b) 6 months Post operative OCT (Macular Oedema resolving)





(c). (d) 8 months Post operative OCT

Discussion:

In this study we were not able to confirm Lincoff et al's[2] postulation of optic disc pit maculopathy. However Lincoffet(5) al[5] reported on the sucessful use of intravitreal gas temponade without vitrectomy to induce pnumatic displacement of the outer layer detachment and improve central vision. OCT findings have suggested that fluid may continue to flow from the remaining inner layer separation to the outer layer detachment[2]. Because vitreoretinal traction is an important factor in the pathogenesis of macular detachment associated with an optic disc pit, Vitrectomy with complete PVD induction is essential for the treatment of these eyes. Vitreous traction may play a critical role in the development of these detachments[7], although we were unable to detect any vitreomacular or vitreopapillary traction by OCT. The added use of gas tamponade probably helps to push fluid from inner layer separation into the outer layer detachment. We applied lase photocoagulation at optic disc pit margin.In our patients to make chorioretinaladhension to prevent further fluid migration from pit to inner retinal layer and subsequently subretinal space.

Favourable visual and anatomical outcome has been reported using virectomy with gas temponade and without laser application and vitrectomy[7] without lase and gas temponade.R3Favourable visual and anatomical outcomes have also been reported using macular buckling in Theodossiadis's series of 9 consucutive patients with optic disc pit maculopathy[9]. Recently Theodossiadis and Theodossiadis[10] have also reported on OCT findings in 26 eyes treated with scleral buckling, with resolution of macular detachment noted in 24 eyes.

Vitrectomy with gas temponade, with or without laser application to the margin of the pit, for macular detachment associated with an optic pit has been reported[8]. However these series did not achieve VA results has good as those of the current study, and had higher rates of reoperation.In the current study we did complete vitrectomy with PVD with gas temponade to displace sub macular fluid and laser phctocoagulation at the pit margin and achieved good visual and anatomical outcome. We believe that assuring a complete PVD induction during surgery plays a pivotal role in achieving these results which will be further strenghten by gas temponade and laser scaring at pit margin.

Spontaneous resoulation of the macular detachment associated with optic nerve pit is also known to occur in approximately 25% of untreated patients[11]. However cystic retinal degeneration, macular hole formation, and retinal pigment epithelial atropy often limit visual recovery in these cases. Over half of eyes with macular detachments experience a decrease in VA to 20/100 or less within 5 years12. In contrast, although the time to best VA took close to 8 months in most patients eyes eventually achieved a post operative VA of 1.0logMAR or greater. Furthermore we found that VA started to improve after surgery despite the continued, albeit decreased, presence of inner layer separation and outer layer detachment in the fovea by OCT. This suggests that mild improvements in the foveal contour alone may lead to improved vision and that long term observation is essential postoperatively in these eyes.

In conclusion, vitrectomy with modern surgical techniques for creating PVD in young patients and gas temponade with laser photocoagulation can lead to successful reattachment of the macula and improvement in central vision in eyes with optic disc pit maculopathyalthouh most eyes required almost one year to reach this state.

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Traumatic Posterior Lenticonus: Misdiagnosis or Do we Miss the Diagnosis?

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Abstract:

Purpose: *Human crystalline lens is the second most important structure for refraction of light. It is surrounded by lens capsule which is the thickest basement membrane secreted by the lens epithelial cells. It is composed of type-IV collagen. Lens capsule covers the epithelium anteriorly and lens fibers posteriorly. This transparent structure is vulnerable to mild degree of blunt trauma to penetrating injury.It reacts to trauma by opacification of its cortex or capsule with or without capsular disruption. This opacification may be reversible or irreversible depending upon nature and severity of the injury. Lenticonus is an unusual presentation of trauma to the lens.It is the localized bulging of the lens capsules and the underlying cortex that can reach a diameter of 2-7 mm. The curves may occur anteriorly or posteriorly following blunt or penetrating injury. We report 2 cases of posterior lenticonus following trauma.*

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Case 1:

A young man of 28 years old presented in our clinic with repaired sclerocorneal injury in left eye following penetrating injury with sharp metallic nail. He was treated accordingly with oral and topical antibiotic and steroid. He was sent to our clinic for fundus evaluation. On examination his visual acuity in left eye was 6/60, mild conjunctival congestion, irregular central astigmatism with too tight central stitches, dilated pupil, pigments on lens capsule. There was posterior subcapsular cataract with conical projection of posterior capsule with cortex at posterior pole (Fig.1).Anterior capsule was intact. There was few vitreous cells and retina was normal. On indirect ophthalmoscopy there was no tear at the site of sclerocorneal injury. B- scan ultrasonogram confirmed the small pouch in the posterior capsule. (Fig.2) He was diagnosed as traumatic posterior lenticonus with cataract and planned for cataract surgery after 2 month following complete resolution of uveitis.

Figure- 1: Irregular corneal anterior surface with posterior lenticonus

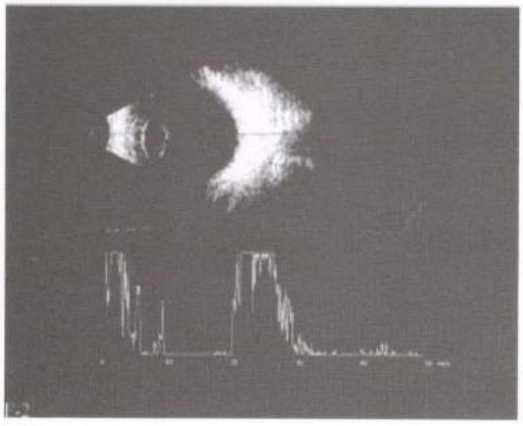

Figure-2: B- scan ultrasonography showing hyperechoic posterior lens capsule within pouch in vitreous cavity.

Case 2:

A young boy of 20 years old attended to our clinic for fundus check up for reduced vision in right eye following blunt trauma.On examination visual acuity in right eye was 6/36, cells in A/C +,normal iris, PSC with bulging of posterior capsule in vitreous cavity.(Fig.3) Anterior capsule was intact. Fundus reveals normal findings. He was treated for traumatic uveitis and later on for traumatic lenticonus with cataract.

Figure-3: Posterior subcapsular cataract with conical projection of posterior lens capsule.

Discussion

Lenticonus is differentiated from lentiglobus in which the bulging involves the entire lens surface. Biomicroscopically lenticonus is characterized by a transparent, localized, sharply demarcated conical projection of the lens capsule and cortex, usually axial in location. In an early stage , retro-illumination shows an oil droplet configuration. Using a narrow slit, the image of a conus is observed. In a more advanced stage associated subcapsular and cortical opacities appear or fish tail sign (lenticular cortex hanging in vitreous cavity after posterior capsular dehiscence) and atoll sign(advanced posterior lenticonus with intact posterior capsule) may be found.In early stage , retinoscopy reveals a pathognomonic scissors movement of the light reflex due to the defferent refraction in the central and the peripheral area of the lens. A-scan ultrasonography may reveal an increased lens thickness and B scan ultrasonography may show herniated lenticular material, suggestive of lenticonus. Both of our cases were traumatic origin and associated with posterior-subcapsular cataract. So oil droplet sign or scissor reflex of retinoscopy could not be elicited.

Anterior lenticonus is usually bilateral condition mostly related to Alport syndrome, though it can occur after trauma1. On the other hand posterior lenticonus is a purely ocular anomaly in which the lenticonus is congenital defect not associated with systemic disease2,3.In most patients the anomaly occur unilaterally in a sporadic manner2,4,5. Non traumatic posterior lenticonus is also been reported to be associated with other ocular and systemic congenital anomalies with the prevalence of 1 to 4/100000 children6. Most cases of non traumatic posterior lenticonus are diagnosed between 3 to 15 years of age present with anisometropic or meridional amblyopic, strabismus and cataract. In contrast our patients were relatively older and presented with reduced vision for cataract(case-1) or attended for posterior segment evaluation(case-2) with definite documented history and sign of ocular trauma within short period.

The pathogenesis of posterior lenticonus remains unclear. Various hypotheses have been postulated for posterior lenticonus like rupture of the posterior lens capsule resulting from hyaloid artery traction, congenital weakness of the posterior capsule, aberrant hyperplasia of the sub capsular epithelium overlying the cone, disturbances in the tunica vasculosalentis, vitrifies or an overgrowth of posterior lens fibers that produces a phakoma of the lens7.In bilateral cases a genetically determined congenital weakness of the posterior lens capsule has been proposed8, although none of them could be proved2,4.

In traumatic posterior lenticonus , the pathogenesis may be rupture of posterior lens capsule. But in case of intact posterior capsule we hypothesis that the vitreous contraction may be the pathogenic mechanism. Blunt or penetrating trauma to the eye causes vitrifies & shrinkage of vitreous body which cause traction or herniation of the elastic posterior lens capsule of young patient. Rapid cataract formation, specially posterior subcapsular cataract may be a contributing factor. The elastic posterior lens capsule herniated posteriorly to accommodate the rapidly growing opaque lens fibers. Tipshus et al9 reported a case of traumatic posterior lenticonus but did not hypothesized the mechanism of the disease. Rosen EC10 postulated that lamellar separation of cortex from posterior capsule allow the capsule roll up and herniated in vitreous cavity

because of its loss of resistance.

In conclusion, though traumatic lenticonus is uncommon but it is underreported because our focus towards associated cataract and other ocular morbidity. Meticulous examination may help diagnosis and appropriate management during surgery.

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Surgical Management of Optic Disc Pit Maculopathy- A Case Report

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Abstract:

Purpose: *To describe a case of surgically managed serous macular detachment due to an optic disc pit.*

Design*: Retrospective case series*

Methods: *Case Report.*

Case Summary: *A 24-year-old male presented to the Retina department of Ispahani Islamia Eye Institute and Hospital with the complaints of a painless blurring of vision for <1month in his right eye.There were no other symptoms, and no history of trauma was present. On examination, best corrected visual acuity was 6/36 for distance and N12 for near for right eye and 6/6 and N6 for left eye. Clinical examination revealed the presence of optic disc pit with serous macular detachment in his right fundus. OCT demonstrated the presence of subretinal fluid and a schisislike cavity was seen between the inner and outer retina, a feature consistent with optic disc pit maculopathy. FFA demonstrated the leakage at the optic disc but absence of leakage at fovea. Considering the visual loss, and the poor visual prognosis of untreated cases, a decision was made to go for surgical intervention. Pars plana vitrectomy was performed, with peeling of the internal limiting membrane without any laser at tbe temporal border of disc at the end of the procedure. Subsequent post surgery follow up revealed the progressive decline in subretinal fluid on OCT, with disappearance of the schisis cavity, and improvement in best corrected visual acuity to 6/12 after 6 months of surgery and 6/9 after 1 year of surgery.*

Conclusion: *Pars Plana vitrectomy in association with peeling of the internal limiting membrane appears to provide good outcomes both anatomical and functional in cases of optic disc pit - associated maculopathy. However, the patient must be counseled regarding expectations following surgery, and warned about the long duration of recovery. Considering the poor course of untreated serous macular detachment, early surgery appears to be a good management alternative for the condition.*

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Introduction:

Pit of the optic nerve head is a rare congenital anomaly first described in 1882 by Wiethe[1]. They are most commonly found at the infero-temporal aspect of the optic disc, but may also be found elsewhere, including centrally in about 20% of cases. Serous macular retinal detachment is associated with 25% to 75% of optic nerve head pits[2,3,4]. Using the cross-sectional retinal imaging provided by optical coherence tomography (OCT), several authors have confirmed the concept of a bilaminar structure with schisis-like retinal changes overlying a more central neurosensory retinal detachment[5,6].

The pathogenesis of the optic disc pit maculopathy is unknown. It has been proposed that the vitreous could be the origin of the subretinal fluid, considering the higher incidence of posterior vitreous detachment in eyes with optic disc pits and retinal detachment[8]. The transfer of the dye from the vitreous cavity to the sub-retinal space has been demonstrated in animal models. However, these studies failed to identify, in the sub-retinal space, any glycosaminoglycan, an important component of the vitreous[9].

Others believe the cerebrospinal fluid should be considered as the source of sub-retinal fluid in eyes with pits[10], although no animal or human model has demonstrated a connection between the pit and the subarachnoid space. Other possibilities would be leakage from the choroid or from vessels within the pit[12].

On the other hand, the management of this entity has also been controversial, since no treatment has clearly proved more advantageous than the others. However, the low incidence of this entity makes it difficult to obtain series large enough to determine the efficacy of the vitrectomy-laser-gas procedure, and other treatment modalities and be able to suggest a procedure of choice.

The objective of this report is to describe a successfully surgically managed case of macular detachment with optic disc pit.

Case Report:

A 24-year-old man presented to the retina department of Ispahani Islamia Eye Institute and Hopital with a history of painless, progressive reduction of central vision of the right eye of <1-month duration. There was no history of trauma. His medical history was not significant. Ophthalmic examination showed best corrected visual acuity was 6/36 for distance and N12 for near for right eye and 6/6 and N6 for left eye. Both pupils were reacting normally to light, and intraocular pressure was normal. Slit lamp biomicroscopy was unremarkable on both eyes.

Dilated fundus examination of the right eye revealed oval, grayish-yellowish crater-like depression on the temporal aspect of the optic disc suggestive of optic pit along with serous macular detachment [Figure 1]. There was a thinning of the retinal layers giving the impression of a pseudo macular hole. In addition there was a scar mark outside the infero-temporal arcade.

OCT demonstrated the presence of subretinal fluid with central thickness measuring 508 μm and a schisis-like change was seen between the inner and outer retina, a feature consistent with optic disc pit maculopathy[Figure 2]. FFA demonstrated the leakage at the optic disc but absence of leakage at fovea.

The patient underwent standardized three ports pars plana vitrectomy and ILM peeling together with air fluid exchange using C3F8 but no argon endo-laser was done temporal to the disc.

Three months after the surgery, the patient's BCVA was 6/24 and retina examination showed reduction in the subretinal fluid documented both clinically and by OCT (central macular thickness of 374 μm) [Figure 3]. At 1 year, his BCVA improved further to 6/9 with almost total resolved subretinal fluid demonstrated by fundus examination [Figure 4] and OCT (central macular thickness measuring 281 μm) [Figure 5].

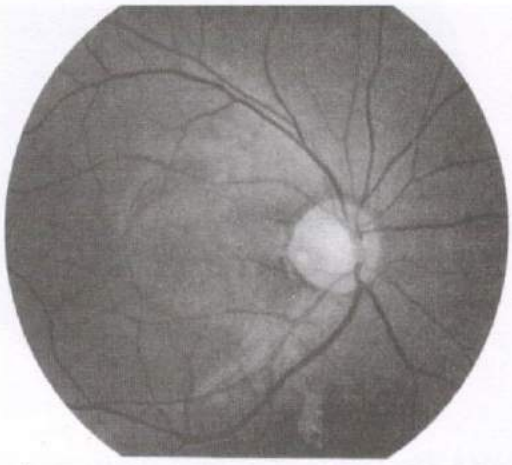

Fig 1 : At presentation fundus photo showing optic disc pit with serous maculopathy in right eye

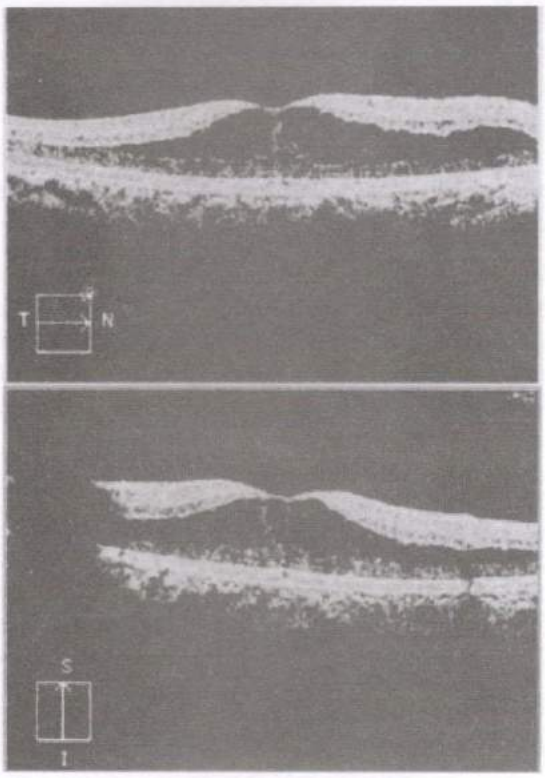

Fig 2 : OCT at presentation showing serous detachment and schisis like changes

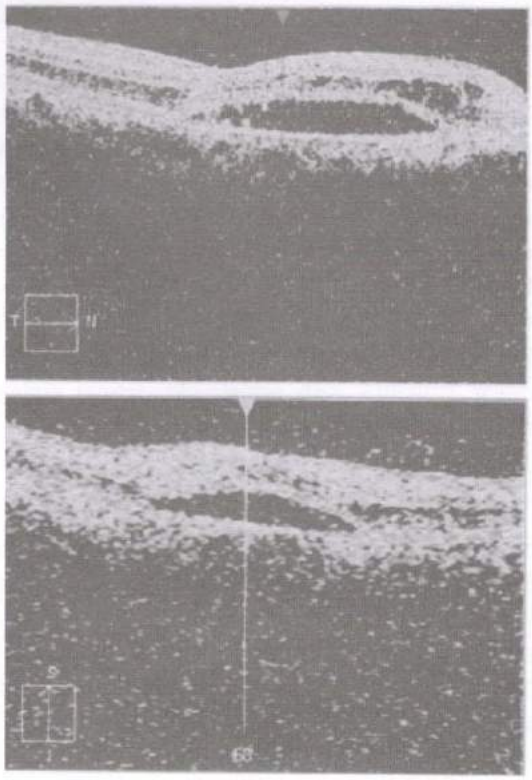

Fig 3 : OCT after 6 month of operation showed decreasing sub-retinal fluid

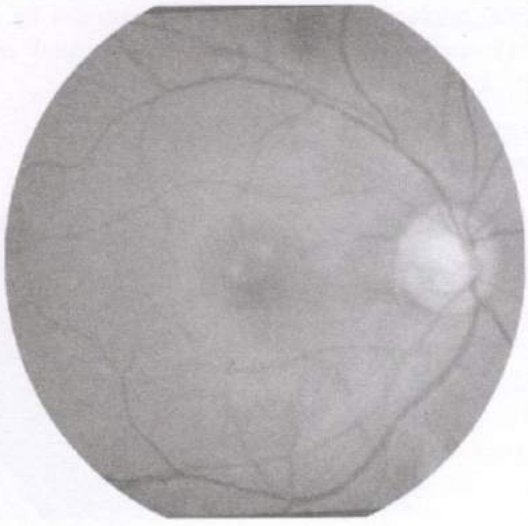

Fig 4 :After 1 year of surgery fundus photo showing almost resolved subretinal fluid

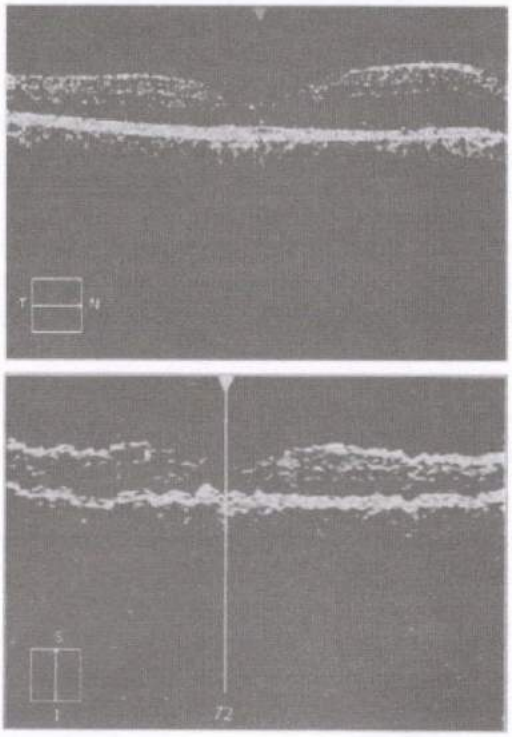

Fig 5 : OCT after 1 year of surgery showing almost resolved subretinal fluid

Discussion:

A large temporal optic disc pit is most often associated with serous sensor y retinal detachment. The source of the sub-retinal fluid is controversial. In one report, scanning laser ophthalmoscopy revealed a cyst-like structure terminating at the pit in the premacular vitreous[5]. During ocular movement, this structure moved vigorously and seemed to exert traction on the pit. This traction on the pit may be a significant factor in the development of serous macular detachment in these patients[6]. A tear in the diaphanous tissue overlying the optic disc pit is responsible for the development of serous macular detachment and is consistent with findings in similar conditions, such as retinal detachment in association with chorioretinal coloboma.

A number of treatment options have been reported to treat serous retinal detachments that may occur in combination with optic disc pits which include laser photocoagulation with or without intravitreal tamponade using gas or silicone oil[7]. Several cases of resolution of subretinal fluid after photocoagulation have been reported, but the resolution might take upto 6 months[8]. Possible side effects of laser photocoagulation near the disc include paracentral scotomas, non-improvement of visual acuity, and low success rate in resolution of serous macular detachment.

Tractional forces could explain the delay of macular detachment in young adulthood and the frequency of treatment failure after laser photocoagulation and gas tamponade. Vitrectomy with ILM peeling and gas tamponade without any additional laser photocoagulation seems to be sufficient for the treatment of optic disc pit maculopathy[4,7]. Recently, Jalil et al. has described a new surgical approach of draining subretinal fluid in optic disc pit maculopathy using 42-gauge cannula[9].

In our case we treated serous macular detachment complicating optic disc pit in a young male patient using standard vitrectomy wit ILM peeling without laser showed very good functional and anatomical improvement at 1 year follow-up

Pars Plana vitrectomy in association with peeling of the internal limiting membrane appears to provide good outcomes both anatomical and functional in cases of optic disc pit - associated maculopathy. However, the patient must be counseled regarding expectations following surgery, and warned about the long duration of recovery. Considering the poor course of untreated serous macular detachment, early surgery appears to be a good management alternative for the condition.

Although large studies are required to evaluate surgical technique, the implementation of large-series studies remains a challenge because of the rarity of cases of optic disc pit maculopathy.

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Bardet Biedl Syndrome with Hypothyroidism- A Case Report

Md. Masud Reza[1], Ashraf Sayeed[2], Ferdous Akhter Jolly[3], AB Shamsuddoha[4]

Abstract:

Purpose: *Bardet Biedl Syndrome is a rare autosomal recessive condition with a wide spectrum of clinical features. The accepted major criteria for diagnosis include retinal dystrophy, obesity, polydactyly, male hypogonadism, mental retardation and renal dysfunction. Here we are reporting a case of Bardet Biedl Syndrome with hypothyroidism.*

A 12 year old male patient presented with night blindness and ataxia. Examination revealed a moon shaped face, acanthosis nigricans, polydactyly in both upper & lower limb, central obesity, small testicular size, absence of the axillary and pubic hairs, gynecomastia severely impaired social adaptive functioning and retinitis pigmentosa. The central nervous system examination showed dyslexia, ataxia, delayed speech. The laboratory reports showed that the patient had hypothyroidism.

Key Words: *Bardet Biedl Syndrome, Hypothyroidism, Obesity, Retinitis pigmentosa, Autosomal recessive disorder.*

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Introduction:

Bardet Biedl Syndrome is a rare autosomal recessive disorder.

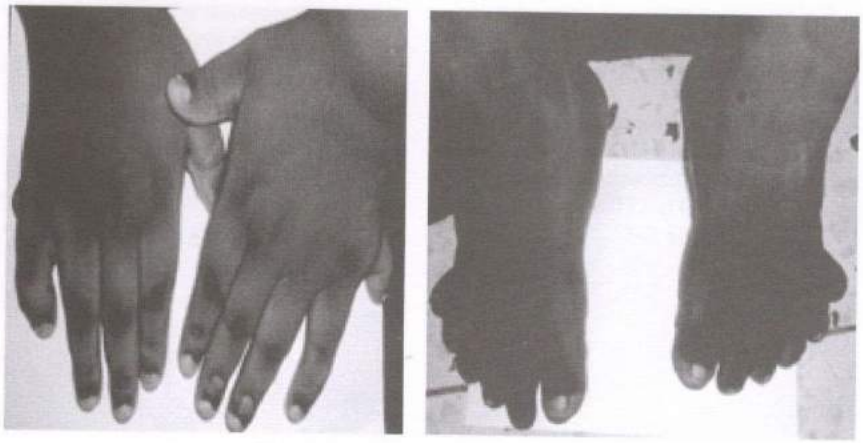
It was first described by Bardet and Biedl in the 1920. The principal manifestations are rod-cone dystrophy (Retinitis pigmentosa), postaxial polydactyly central obesity, mental retardation, hypogonadism, and renal dysfunction. Other features not always present include hepatic fibrosis, diabetes mellitus, neurological, speech and language deficits, behavioral traits, facial dysmorphism, dental anomalies and developmental delay.

There is widespread controversy whether Bardet Biedl syndrome and Laurence -Moon syndrome are separate entity or whether they are simply phenotypic variation of the same disorder. We are presenting here a case of BBS which is rarely encountered in clinical practice.

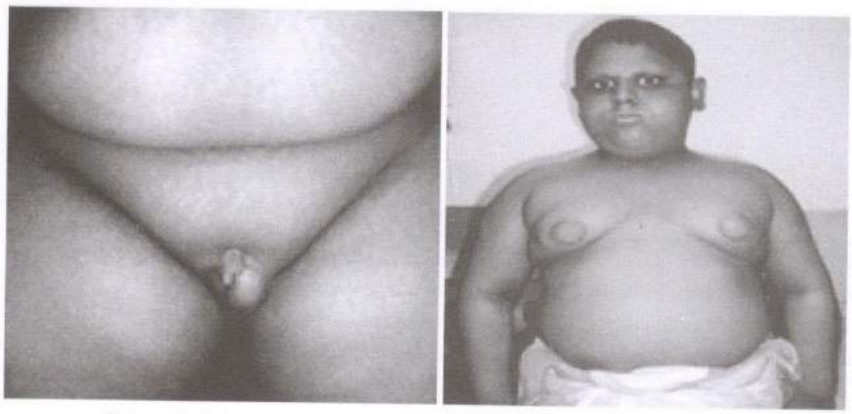
Case Report:

Md. X, a 12 year old male attendant ophthalmology outpatient department in BIRDEM General Hospital with the complaints of night blindness, ataxia & learning difficulties. He born with polydactyly in both upper & lower limb. After 5 years of age patient complaints of difficulty in learning. He is the second children from a non-consanguineous marriage. His parents are healthy, as are his other brother. On examination he was found to be obese with a BMI of 31.9. Other findings were polydactyly of all four limbs, gynecomastia, micropenis with normal testis, gait ataxia and retinitis pigmentosa on fundoscopy. There was no clinical evidence of spastic paraparesis.

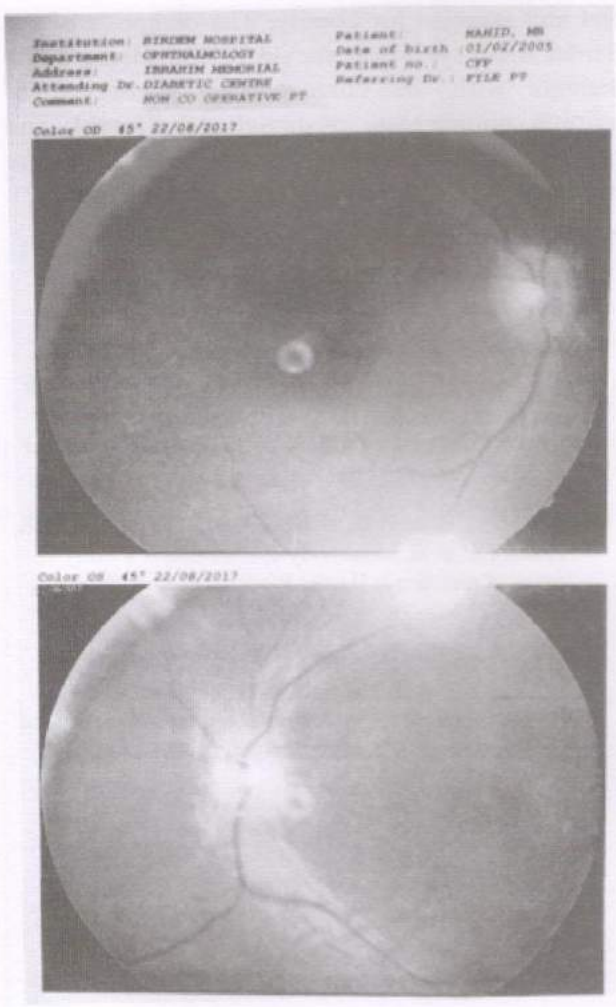
Laboratory examination including Complete blood count, bleeding time, clotting time, random blood sugar, lipid profile, chest X ray, ultrasonogrsphy of whole abdomen, serum testosterone, leutenizing hormone were found to be normal. But his thyroid stimulating was increased.



Picture 1: Polydactyly in both limb



Picture 2: Right side-Hypogonadism, Left side-Central obesity,gynecoastia.



Picture 3: Color fundus photography.

Table-1: Modified diagnostic criteria3 and clinical manifestation in case.

Primary Features	**Case**
Rod-cone Dystrophy	+
Polydactyly	+
Obesity	+
Learning Disabilities	+
Hypogonadism in males	+
Renal Anomalies	-
Secondary Features	
Speech disorder/Delay	+
Strabismus/cataracts/astigmatism	-
Brachydactyly/ syndactyly	-
Developmental delay	+
Nephrogenic diabetes insipidus	-
Ataxia/poor coordination/imbalance	+
Mild spasticity	-
Diabetes mellitus	-
Dental crowding/hypodontia/small roots	-
Left ventricular hypertrophy/congenital heart disease	-
Hepatic fibrosis	-

Discussion:

The Bardet-Biedl syndrome is an autosomal recessive disorder with a wide range of clinical features. The primary clinical features include rod-cone dystrophy, polydactyly, central obesity, cognitive impairment, male hypogonadism, complex female genitourinary malformations and renal dysfunction[1,2]. The secondary features include speech disorders or delays, eye abnormalities like strabismus, cataract and astigmatism, brachydactyly or syndactyly, developmental delays, ataxia, Diabetes Mellitus, craniofacial dysmorphism, nephrogenic diabetes insipidus, hepatic fibrosis and congenital heart disease[3]. Beales et al., have suggested that the presence of four primary or three primary plus two secondary features is diagnostic[3]. The rare associations include hypothyroidism, Hirschsprung's disease, epilepsy, genital anomalies, anal stenosis and an abnormal dentition. Our patient had polydactyly, obesity, retinitis pigmentosa, hypogonadism, mental retardation i.e four primary and one secondary clinical features. Hypothyroidism was the presenting clinical feature, which made this case very rare.

The Bardet-Biedl syndrome (BBS) phenotype is seen in individuals with mutations in 14 different genes[5]. BBS1 accounts for 25- 30% cases. The exact pathogenesis of BBS is unknown. It has recently been recognized that the proteins which are coded for by the BBS4, BBS6, BBS8, and the BBS10 genes are expressed in the basal body of the cilia and that BBS is now regarded as one of the 'ciliopathies' [6,7,8]. The gene products are probably

involved in the signaling pathway in the cilia; and the abnormalities interfere with a normal development, resulting in the diverse pathological effects of the syndrome. The management of BBS is supportive and it includes training and rehabilitation for blind patients and for those with specific learning disabilities, hearing aids for deafness, and diet and exercise for obesity. The diagnosis of the Bardet Biedl syndrome should be considered in the patients with the characteristic phenotype of retinitis pigmentosa, postaxial polydactyly, and central obesity. Hypothyroidism can be a rare complication.

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Thyroid Eye Diseases- A Case Report

Fareen Farzana Amin[1], Md. Abdur Rakib[2], Sharmina Alauddin[3]

Abstract:

Purpose: *This is a case report of thyroid eye disease.*

The case report presents a patient aged 38 years with the history of sweating, sleeplessness and palpitations for last one year and gradual protrusion of both eyes for 6 months with rapid progression for last 1 month. It was associated with dimness of vision in both eyes (R>L) for about 1 month. She was diagnosed as having thyroid eye disease.

The case was treated with oral prednisolone and carbimazole, and improved.

Early diagnosis and treatment needs for better outcome.

Key words: *Thyroid ophthalmopathy, thyrotoxicosis.*

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Introduction:

Thyroid eye disease, also known as Thyroid Associated Ophthalmopathy (TAO) or Grave's orbitopathy, is an organ specific autoimmune disorder associated with a thyroid disease that targets the extraocular muscles and retrobulbar tissues. It may be present in hyperthyroid, hypothyroid or euthyroid state. Hyperthyroidism is the most common cause of thyroid ophthalmopathy. Pary was the first to describe a case of thyroid enlargement with protrusion of eyes in 1825. In the early 20th century thyroid ophthalmopathy was described as Graves' disease named after Sir Robert Graves'. Since thyroid ophthalmopathy is an autoimmune disorder, it results in inflammation, oedema and fibrosis of orbital tissue. It is a syndrome consisting of hyperthyroidism, moderate thyroid enlargement, ophthalmopathy and dermopathy. It is more common in women than men in a ratio over 5:1. It generally presents during 4th and 5th decade of life while it can affect neonates and elderly. Men are affected late age and this may be more severe.

Case report

A 38-year old housewife, was referred to BIRDEM's Eye out patient department from Endocrine out patient department on 4 January, 2017 with the complaints of gradual protrusion of both eyes for 6 months with rapid progression for last 1 month. It was associated with dimness of vision in both eyes (R>L) for about 1 month. She also noticed lid retraction and mild conjunctival congestion over the insertion of lateral rectus muscle in both eyes (Fig-1).

Figure 1: Bilateral proptosis and lid retraction

General examination showed pulse rate of 104/min. No enlargement of thyroid gland. And no lymphadenopathy. There was presence of thyroid acropathy, pretibial myxedema, leg oedema, exaggerated ankle and knee jerks, and regular menstrual history. Systemic examination revealed tachycardia.

On ocular examination her best corrected visual acquity was 6/24 in right eye and 6/9 in right eye. Color vision was impaired in both eyes (R>L) (Red and green are more affected), restricted abduction in both eyes and relative apparent pupillary defect was present in both eyes. There were mild conjunctival hyperemia, lid retraction and proptosis in both eyes (Fig-2). The intraocular pressure was 16 mm of Hg in both eye. Fundus was within the normal limit in both eyes.

Regarding the investigations hormones assay reveal T3 =3.87 ng/dl (0.51 -1.62 ng/dl), T4=27.5 µg/dl (4.5-12µg/dl), TSH= <0.02µIU/ml (0.51-1.62 µ IU/ml). Thyroid scan shows increase uptake in homogeneous pattern and no enlargement of thyroid gland. ESR was 40 mm in 1st hours.

In right eye, visual field reveal paracentral scotoma and in left eye, visual field was normal (Fig-2).

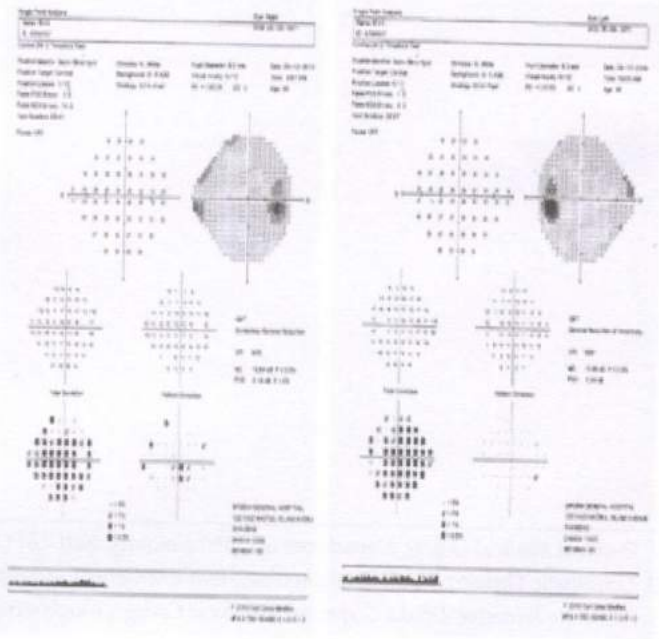

Figure 2: Visual Field Report

No abnormality was detected in color fundus photograph (Fig-3).

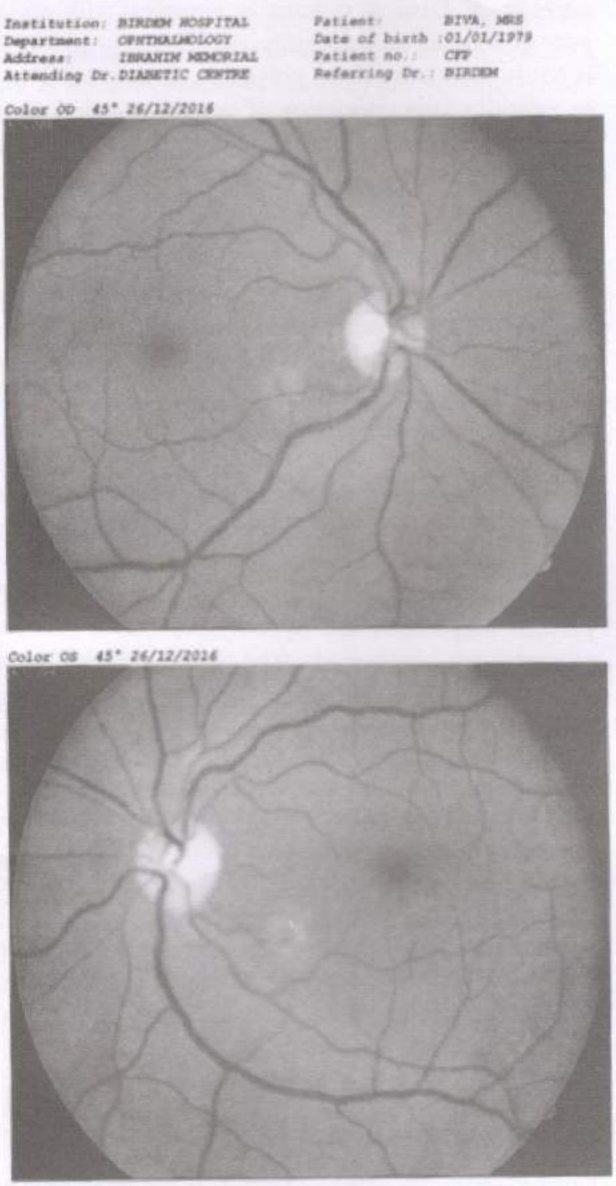

Figure 3: Colour Fundus Photograph

CT Scan of Brain and Orbit show symmetrical thickenings and enlargement of the muscle belly of all the recti muscle on both eyes, however the tendimeous insertions are spared. Optic nerve in both sides are normal in course and caliber (Fig-4).

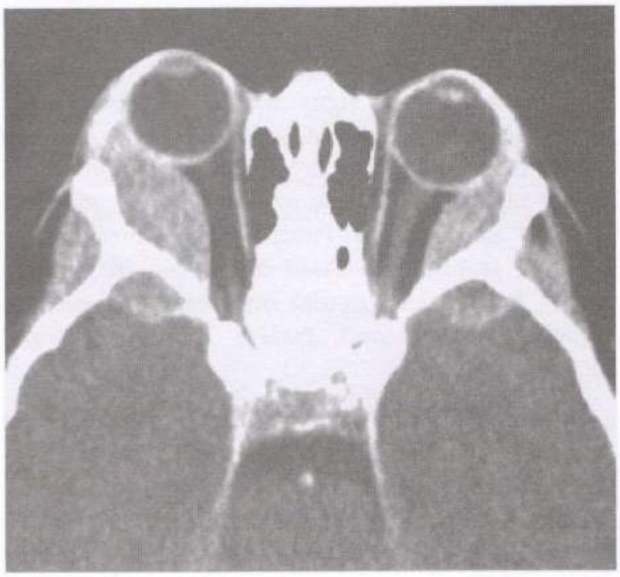

Figure 4: CT Scan of Brain and Orbit

Less screen chart shows restricted abduction in both eyes (Fig-5).

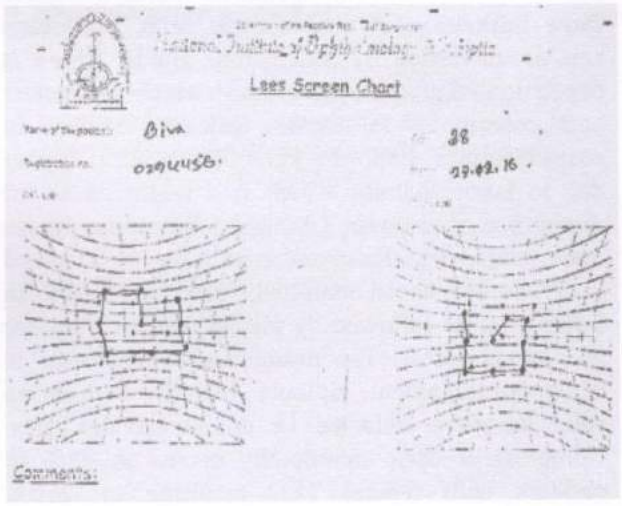

Figure 5: Less Screen Chart

Then the diagnosis was established as thyroid ophthalmopathy. The patient was treated with oral prednisolone (1mg/kg), carbimazole (30mg in divided doses) and propanolol (40 mg twice daily). She was followed up two monthly and the patient's condition gradually improved.

Discussion

Thyroid ophthalmopathy is an autoimmune condition in which specific signs include diffuse goiter, ophthalmopathy, thyroid acropathy and pretibial myxoedema. Although thyroid ophthalmopathy can occur rapidly over a few weeks, in most cases it is gradual and insidious. Patients exhibit many of the clinical features discussed above but in addition many have extrathyroidal manifestations such as ophthalmopathy and rarely, dermopathy and acropathy.

A diffuse goiter is present in the majority of cases but its absence does not rule out thyroid ophthalmopathy as the thyroid gland may be normal size in around 3 percent. It is usually symmetrical, there may be an overlying palpable thrill and a bruit may often be heard. The bruit results from the increase blood flow to thyroid. In our patient symmetrical goiter is present.

The circulating antithyroglobulin, autoantibodies react with thyroid derived thyroglobin attached to eye muscle membranes. The interstitial spaces of muscle show infiltration of mononuclear cells, fibroblasts and accumulation of oedematous fluids. There is deposition of glycosaminoglycans which bind water and contribute to tissue oedema leading to eoxophthalmos. Exposure keratitis can occur further due to lagophthalmus which is a major cause for diminution of vision in TAO apart from compressive optic neuropathy. Extraocular muscles are involved in TAO. The most commonly affected muscle in Inferior rectus followed by medial, superior, levator and lateral rectus. The muscles affected results in ocular misalignment, diplopia. Inability to look up when the eye is adducted, i.e. double elevator palsy. Compressive optic neuropathy occurs in <5% of patients with typical TED resulting in slowly progressive fulminant visual loss. It occurs due to compression from the oversized recti and orbital fat causing compartment syndrome at the apex of orbit. It is characterized by decrease in vision, colour vision, contrast sensitivity and relative afferent papillary defect. The characteristic visual fields show central scotoma with inferior accurate defects. The optic nerve head examination may vary from being normal to having disc oedema, pallor or optic atrophy.

Thyroid ophthalmopathy tends to run in families, and a high concordance rate in monozygotic twins suggests a genetic contribution to the aetiology. The genetics of Graves' disease is complex with some gene conferring susceptibility and other protection. It is likely that Graves' is a polygenic disease occurring as a result of the interaction of several genetic loci in association with environmental factors. Cigarette smoking is a strong risk factor for TAO.

Many patients with hyperthyroidism have involvement of the eyes. Clinically detectable eye involvement is present in around 30%, while imaging such as MRI will provide evidence in a much larger proportion. In the majority of cases eye disease is mild; however in some cases it may be severe. In approximately three-quarters of cases, Graves' disease will develop either a year before or a year after eye problems begin, but no occasions this problems may be longer. In this cases one may falsely conclude that one is looking at a case of 'euthyroid Graves' ophthalmopathy'. At diagnosis 5 percent of patients are hypothyroid and 5 percent patients are euthyroid. The ophthalmopathy is characterized by swelling of extraocular muscles. Our patient complaints gradual protrusion and dimness of vision in both eyes.

As the disease progresses there is change in physical appearance with periorbital oedema and a staring expression caused exophthalmos and eyelid retraction. The disease occurs in two phase: a dynamic active phase and a quiescent phase. Unfortunately, even when well-treated and quiescent patients do not always achieve a return in physical appearance to the premorbid state.

Regarding treatment, we have two options - (i) conservative and (ii) surgery.

Conservative: To quit smoking- this has been proved to most important reversible factor. Though not proven but normalization of thyroid levels can be done. For corneal exposure, lubricants, taping and protective shields can be tried and if necessary tarsorrhapphy can be done. For diplopia, Fresnel prisms or occlusion therapy should be considered. Systemic steroids: To decrease orbital inflammation oral steroids in a dose of 1-1.5 mg/kg can be given for a suggested maximum period of 2 months. Intravenous pulse methyl prednisolone can be considered as an alternative. Radiation: The radiation

therapy works on the similar mechanism of decreasing inflammation. Typical dose of 2000 rad for each orbit 200rad/day given over a period of 10 days. It generally improves vertical motility. Radiation retinopathy can occur as a side effect. Orbital decompression: It enlarges the existing space by partial removal of bony walls and periosteum. The most commonly done decompression involves the posteromedial wall followed by floor and lateral wall.

For this patient we have treated the patient with oral prednisolone (1 mg/kg) for 2 months. Then, we gradually tapered the dose.

Thyroid ophthalmopathy is a vision threatening ocular disease. But early diagnosis and treatment needs for better prognosis and to save the sight.

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Ectrodactyly-Ectodermal Dysplasia-Cleft Syndrome with Bilateral Chorio-Retinal Coloboma

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Abstract:

Purpose: *We report one sporadic Ectrodactyly-ectodermal dysplasia-cleft Syndrome (EEC Syndrome) with bilateral chorio-retinal coloboma from Bangladesh. Also we describe that necessary multidisciplinary approach for the management of such complex syndrome is possible in a developing country like Bangladesh.*

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Introduction:

EEC Syndrome is a rare genetic disorder. Symptoms can vary greatly from one person to another. Affected individuals often have abnormalities affecting the limbs including ectrodactyly, a condition in which part or all of the central digits (fingers or toes) are missing. A groove or gap in the upper lip (cleft lip) and a groove or gap in the roof of the mouth (cleft palate) may also occur. The ectodermal dysplasia component refers to abnormalities to structures that arise from the outermost layer of the embryo (ectoderm). In EEC syndrome, this generally affects the hair, teeth, nails, skin and sweat glands. Individuals with EEC syndrome can also develop a variety of additional symptoms including abnormalities of the genitourinary system and the eyes. Intelligence does not seem to be affected. Most cases of EEC syndrome are caused by mutations of the p63 gene and are either new (spontaneous) mutations or are inherited as autosomal dominant disorders[2,5].

Case report:

We took a detailed history (e.g. history of unilateral cleft lip and palate repair, conservative treatment for hydronephrosis and recurrent urinary tract infection) and evaluated the clinical manifestations (e.g. hand ectrodactyly, feet ectrodactyly, abnormal teeth and enamel hypoplasia) and finally clinically diagnosed the case as Ectrodactyly-ectodermal dysplasia-cleft Syndrome. Consanguinity was negative and no positive family history.

Complete ophthalmic evaluation revealed congenital nystagmus, bilateral microcornea, bilateral chorio-retinal coloboma and bilateral simple myopia.

Figure # Microcornea, Repaired Cleft Lip & Palate

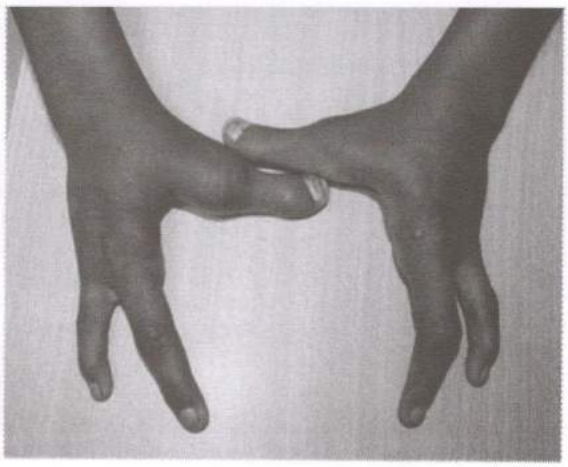


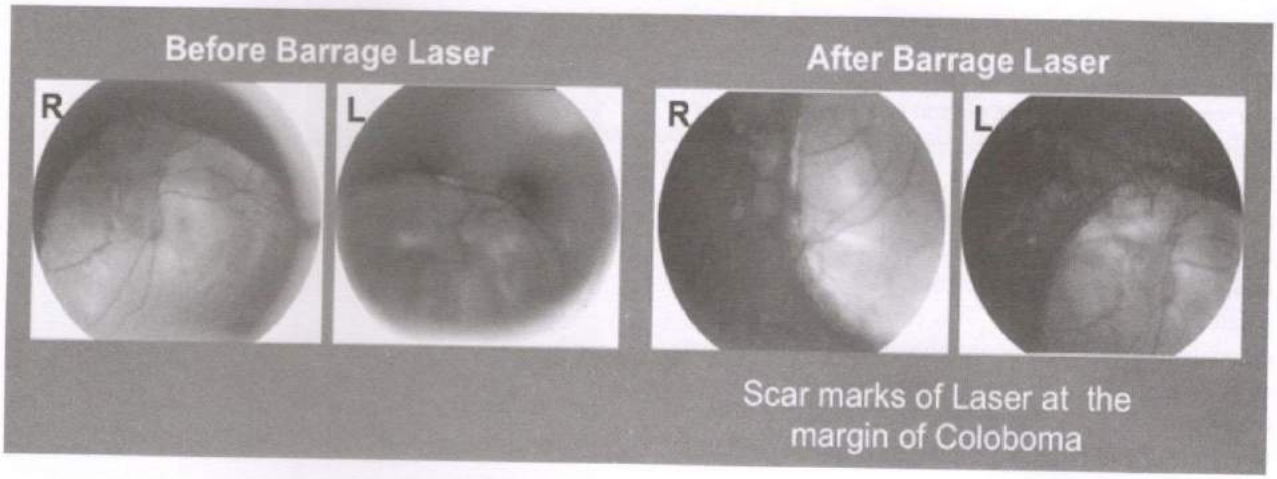
Figure # Hand Ectrodactyly

Figure # Feet Ectrodactyly

Result:

Barrage laser was done around the bilateral chorio-retinal coloboma to prevent retinal detachment in future. After the Barrage Laser patient's unaided visual acuity in the right eye was 6/36 and in the left eye was 6/24. Spectacles were given but no improvement of visual acuity. The boy is maintaining good school work in a local school at eighth standard. Low vision counseling was done and they advised to sit in the first bench.

Parents were advised to consult Pediatric Medicine Specialist at regular interval.



Ocular Findings				
	Before Barrage Laser		After Barrage Laser	
	Right Eye	Left Eye	Right Eye	Left Eye
Visual Acuity	1/60	1/60	6/36	6/24
Ocular Motility	Congenital Nystagmus present			
Refraction	−3.00 D Sph	−3.00 D Sph	−4.50 D Sph	−2.50 D Sph
Anterior Segment examination ↓ Slit lamp	Bilateral Microcornea with HCD 10 mm and VCD 9.5 mm			
IOP	10 mm Hg	10 mm Hg	12 mm Hg	12 mm Hg
Fundus ↓ Indirect Ophthalmoscopy	Bilateral Chorio-Retinal Coloboma; Disc & Macula involved		Scar marks of Laser was seen at margin of Coloboma	

IOP = Intra Ocular Pressure, HCD = Horizontal Corneal Diameter, VCD = Vertical Corneal Diameter

Discussion:

Dacryocystitis secondary to congenital lacrimal duct anomalies was noted by Cockayne in the first published report of the EEC syndrome[1]. Other patients reported in the ophthalmic and general literature have had varying combinations of blepharitis, conjunctivitis, corneal scarring, and pannus with photophobia, and poor lacrimal and meibomian secretion. Blue irides and albinoid features are said to be common, as is entropion with trichiasis and in some

cases madarosis. Most of these affected structures are ectodermally derived, and it is not surprising to see such features in a condition with widespread ectodermal dysplasia manifest elsewhere as skin, hair, nail, and teeth changes. The lacrimal drainage apparatus is also derived from surface ectoderm and commonly affected[4]. Despite its ectodermal origin, the crystalline lens has not been found to be abnormal. Macular dystrophy was reported[3].

The cornea is partially derived from ectoderm; so there may be tear film and lid abnormalities, there may be trichiasis and an obstructed lacrimal drainage apparatus harbouring potentially pathogenic organisms and ultimately these all lead to spontaneous corneal ulcer and finally might cause corneal perforation[5].

Particularly in this patient with EEC syndrome there was chorio-retinal coloboma which is due to failure of the ectodermal optic vesicle fissure to close[6].

Conclusion:

The EEC syndrome is a rare disorder with autosomal dominant inheritance, variable expression and in some families there is lack of penetrance. We present the different clinical manifestations along with literature review with emphasis on the ocular findings. This patient must be followed long-term, as progressive visual impairment may be the most disabling feature of the syndrome.

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Struck on the Eye
A Case Report of Chloroquine Induced Maculopathy

Intesar Farque[1], Md. Abdur Rakib[2], Sharmina Alauddin[3]

Abstract:

Purpose: *The inevitable toxic effect on retina as a result of prolong use of antimalarial therapy for SLE and RA has been reported for many years. Retinopathy may be divided into reversible premaculopathy and irreversible true retinopathy. Risk factors for the development of toxicity are daily dosage related to body weight, total cumulative drug dosage and the specific drug used. The daily dosage of chloroquine should not exceed 4 mg/kg lean body weight a day. Exceeding the total dosage of 300 g increases the risk. The daily dosage of hydroxychloroquine should not exceed 6.5 mg/kg lean body weight a day with increased risk when the duration of treatment exceeds 8 years (1330 g for a patient of 70 kg). Regular dilated fundus examination, visual field testing using Amsler grid test and automated central 10-2 perimetry (to a red test object) is advised to detect reversible premaculopathy.Here Chloroquine andHydroxychloroquine toxicity due to excessive cumulative dosage is discussed in such a case.*

Key words : *Chloroquine, hydroxychloroquine, retinal toxicity*

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Introduction:

Antimalarial drugs chloroquine and hydroxychloroquine have been used since the 1950's to treat inflammatory disorders, such as systemic lupusErythrematosus and rheumatoid arthritis. Soon after their introduction for chronic use, concerns arose about their ocular safety. The relationship between chloroquine and retinal toxicity was first reported by Cambioggi in 1957 in a patient undergoing treatment for systemic lupus erythematosus (5). Since that report, the retinal damage produced by chloroquine (Nivaquinet) and hydroxychloroquine (Plaquenilt) has become probably the most feared of all ocular toxic drug reactions. The risk of retinal toxicity has caused many rheumatologists and dermatologists to abandon or severely restrict the use of these agents .Then again there are instances where the use of these drugs stands to be the only logical solution to treat the patients , as the benefits outweights the possible adverse affects. Here we present a case report and outline the retinal side effect of antimalarial drugs.

Case Report

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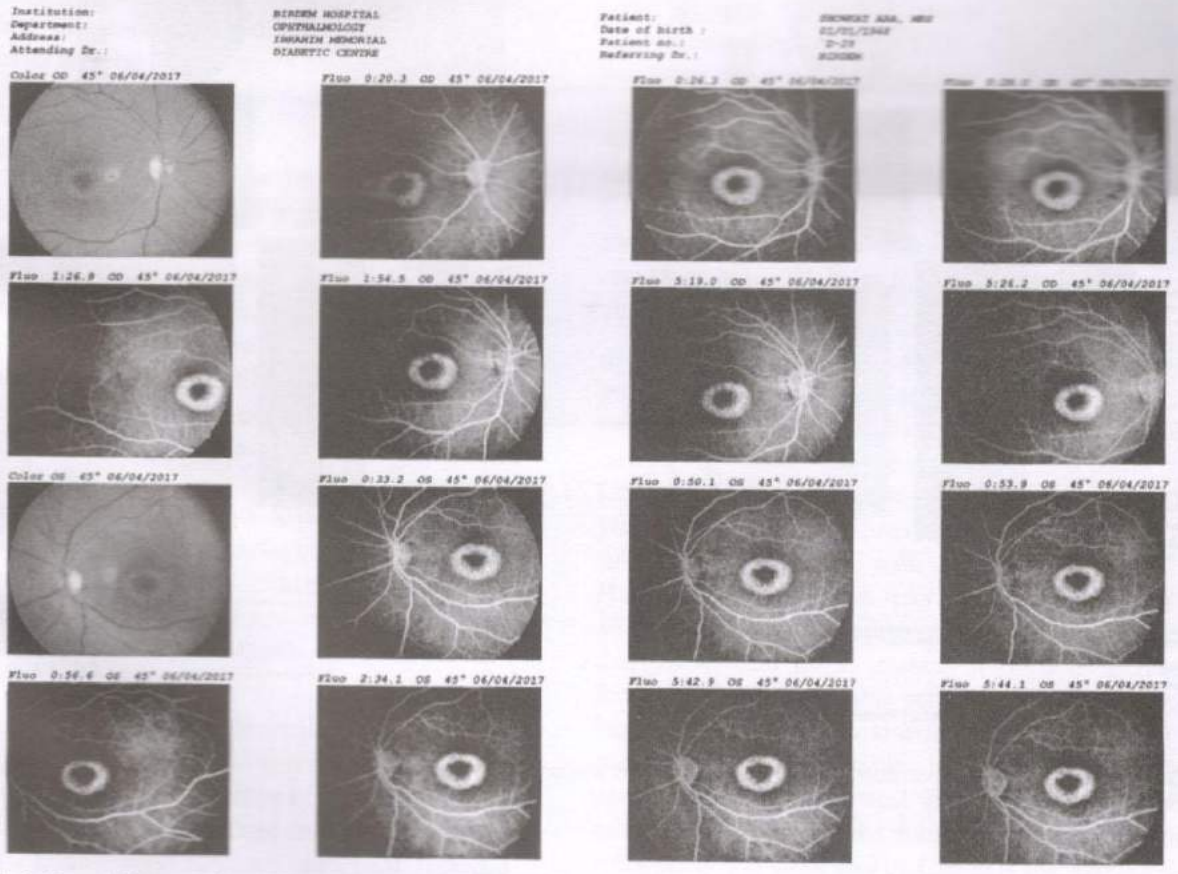

Fig 1. Case 1. Fluorescein angiogram of right eye (left) and left eye (right) showing window defects in a bull's eye pattern

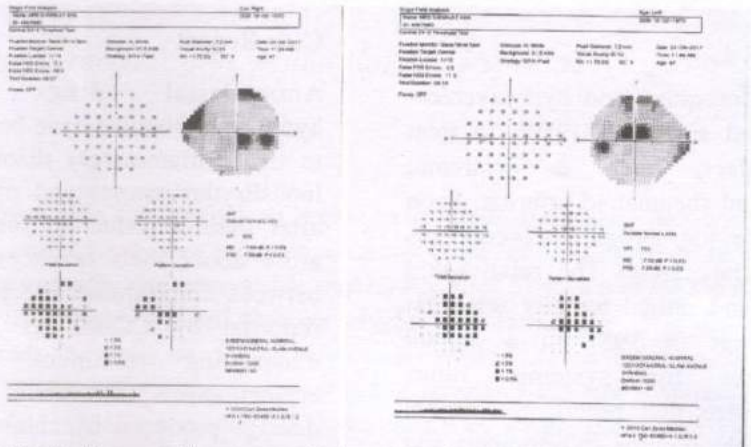

Fig 2. Static perimetry demonstrates Paracentral scotomata (right eye) and central scotoma (left eye) on testing with a white test object in the right eye (left) and the left eye (right) (Humphrey Field Analyzer 24-2).

On Ocular Coherence Tomography (seen in Fig.3) the loss of foveal contour was evident along with loss of IS / OS junction and thinning of the outer retina in the parafoveal regions in both the eyes

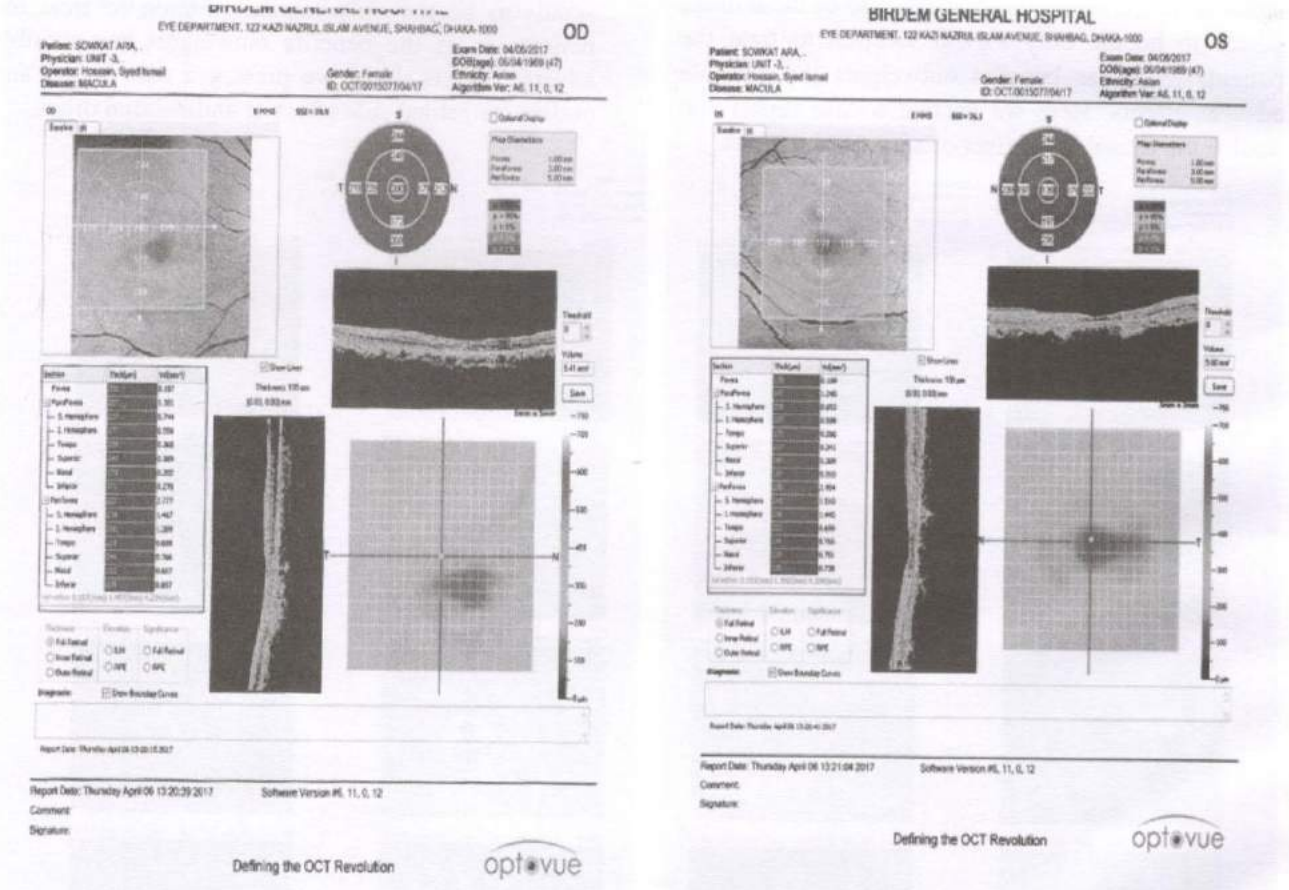

Fig 3. OCT shows loss of foveal contour along with loss of IS/OS junction in both the eyes.

Discussion

Chloroquine toxicity: Retinal toxicity due to Chloroquine and Hydroxychloroquinemay be separated into premaculopathy and true maculopathy. Premaculopathy consists of fine pigmentary stippling or mottling without loss of visual acuity. There is visual field loss to a red test object with the parafoveal 10 degrees being the initial site of visual field defects. It usually reverses after the medication has been stopped and has never been reported to start or to progress after the drug discontinuation (22).

True retinopathy is associated with more prominent pigmentary changes, which may include a bull's eye lesion: granular pigmentation of the macula surrounded by a clear zone of deep pigmentation surrounded in turn by another ring of pigmentation (22). Pigmentary changes are mild or even absent in patients with skin type I and II (reddish and blond hair).

With more extensive damage to the retina, the arterioles show generalized attenuation and segmental constriction with pallor of the optic disc. A fine granularity of the retina and prominent choroidal pattern in the periphery may also occur (16). Scotomata are evident with suprathreshold white test objects and visual acuity may be lost. Changes are often permanent and may even progress after the medication is stopped (2,21).

There is no general consensus on the minimum findings needed to define true maculopathy. Currently, there are 2 commonly cited definitions of ocular toxicity. Bernstein's definition requires the development of persistent paracentral or central visual field scotomata to suprathreshold white stimuli and a duration of treatment of > 9 months (2). Easterbook advocated the use of bilateral, reproducible, positive field defects that can be shown by 2 different visual field tests, Amsler grid test and an automated 10-degree visual field test, as definitive evidence of retinal toxicity (10). In the absence of visual field changes, the pigmentary changes must consist of actual retinal pigment epithelial loss, sometimes resembling a bull's eye lesion (20). Several maculopathies share phenotypic similarities with (hydroxy)-chloroquine retinopathy.

Premaculopathy should be differentiated from macular changes associated with age-related macular degeneration. True maculopathy should be differentiated from combined cone and rod dystrophies, classical cone dystrophies, neuronal ceroid lipofuscinosis, Stargardt's disease and fenestrated sheen macular dystrophy (23). The most common presenting symptoms of antimalarial retinopathy are difficult reading, photophobia, blurred distance vision, central visual field scotomas and entopic phenomenons. Since patients are asymptomatic despite abnormal fundi or visual field defects in the reversible premaculopathy stage, the ophthalmologist's challenge is to detect evidence of retinopathic changes before irreversible damage develops.

Examination and testing: Numerous tests have been proposed for screening, and the variety suggests lack of an ideal one. a) Color vision testing has generally been found to be unhelpful. Color vision is essentially undisturbed in early cases of retinopathy as tested with the Farnsworth 15 color Hue test and with the pseudoisochromatic H-R-R color plates (16). Others have found normal color vision even in the presence of scotomas or macular mottling (14,19). b) Fundoscopy: With early retinopathy the foveal reflex is lost and fine pigmentary stippling or mottling is present. Since early age related macular degeneration exhibits similar findings, the differential diagnosis is difficult leading to overdiagnosis of drug induced toxicity (16). c) Fluorescein Angiography (FA): the development of scotomas precedes abnormalities detected by FA.FA may help to distinguish the macular changes associated with antimalarial retinopathy (8). Visual field testing may not be reliable in elderly patients, in these cases FA may be useful. As pigmentary changes are mild or almost absent in patients with skin type I and II (reddish and blond hair), FA helps to identify subtle pigmentary alterations.

d) Visual Field Testing: Automated static threshold perimetry has revealed pericentral visual field defects in patients with antimalarial retinopathy. Studies comparing automated and non-automated static and kinetic perimetry indicate that automated perimetry yields the greatest sensitivity in assessing macular function in patients with retinopathy (9). The Humphrey 10-2 program tests 68 points in the central 10 degrees of vision. Results could be further enhanced using a red test target, making it possible to reveal scotomata in the reversible premaculopathy stage (22). Non-automated static or kinetic perimetry is helpful in patients who are unable to perform automated perimetry due to physical limitations or low test reliability. The use of the Amsler grid in chloroquine retinopathy was suggested by Carr et al (6). The Amsler

grid is an excellent means of screening for early antimalarial retinopathy. It will pick up very small scotomata even before they can be demonstrated by kinetic and static field testing (7,13). The standard Amsler grid, the red Amsler grid and the poster-sized one meter modified Amsler grid can be used (2,22). The Amsler grid is simple, inexpensive, reproducible, and self-administrable by a cooperative patient, making it an excellent screening test.

e) Electro-Oculography (EOG): Since the electro-oculogram reflects the metabolic integrity of the retinal pigment epithelium, it was believed that EOG would detect early retinal changes in patients receiving antimalarial drugs. However, the prognostic significance of the test is quite limited. A poor correlation between macular changesandtheEOG, highinterindividual-variability over a period of time, preexisting low EOG values among patients with rheumatoid arthritis and the influence of the disease activity itself on EOG results limit its usefulness as a screening test (3,8).

f) Flash-Electroretinogram (ERG): ERG findings are normal when macular damage alone is present and diminish only as diffuse retinal damage occurs. There is no evidence that ERG can be of real value in predicting the onset of retinal damage (22).

Dosage schedule and retinopathy: A number of factors have been implicated in the development of retinopathy. The important contributors are daily dosage, total drug dosage, renal and liver function, genetic predisposition and the specific drug used. a) Daily dosage: Mac Kenzie has shown that the risk of retinopathy can be reduced by calculating the daily dosage according to body weight. In overweight individuals one should use the ideal or lean body weight based on age, sex and height. For hydroxychloroquine the daily dosage should not exceed 6.5 mg/ kg lean body weight/ day. For chloroquine the daily dosage should not exceed 4 mg/ kg lean body weight/ day. Exceeding the recommended daily dosage sharply increases the risk of retinal toxicity (12,17). b) Cumulative dosage: Retinal changes are uncommon in patients taking the recommended daily dosage of chloroquine if the cumulative dosage does not exceed 300g (12). With hydroxychloroquine, toxicity on low daily dosage has occurred only when the duration of treatment exceeded 8 years (1). c) Renal and liver function: Patients taking a fixed daily dosage corresponding to Mac Kenzie's guidelines might be overdosed if hepatic and renal failure is present (24). d) Genetic predisposition: Some individuals with an ABCR mutation may be predisposed to retinal toxicity when exposed to chloroquine or hydroxychloroquine even at recommended daily dosage (23).

Follow-up strategy: For practical purposes a simple screening protocol for antimalarial retinotoxicity may be used. The initial examination within 1 year of onset of treatment provides baseline observations for 27 any subsequent changes (12,15). Patients should be asked about visual symptoms. Visual acuity for far and near should be measured. A careful funduscopic examination of the macula for fine pigmentary disturbances should be performed. Suprathreshold scotomata can be detected with the Amsler grid test and quantitatively tested with the automated static perimetry using the red test object and central 10-2 program (12,24). Periodic ocular examination is recommended even if the dose safety guidelines are respected because of this drug's retinotoxic history and the possibility of nondrug-related ocular disease in associated systemic diseases. Patients taking chloroquine should be reviewed yearly (11). Different opinions concerning the interval of screening for patients on hydroxychloroquine are found in the literature. Some authors recommend yearly follow-up only after 5 - 10 years of treatment where others suggest a follow-up program after 2 years of treatment (4,11-13). Self-testing using the Amsler grid test once a month has become a recommended procedure (2).

Conclusion

Chloroqouine and Hydroxychloroquine ,after being administered for a prolong period results into various ocular findings, retinal toxicity being one of the debilitating outcomes. The important risk factors are daily dosage according to body weight and the total drug dosage. Correlating drug dosage to the patient's weight has shown to reduce the risk of retinopathy. Regular ocular examination and frequent screening are necessary to detect reversible premaculopathy. Patients should be instructed to screen themselves at home once a month using the Amsler grid test to detect the onset of pericentral or paracentral visual changes. Ophthalmological assessment consisting of visual acuity measurement, dilated fundus examination and automated central 10-2 perimetry (to a red test object) should be performed at baseline and follow-up.

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