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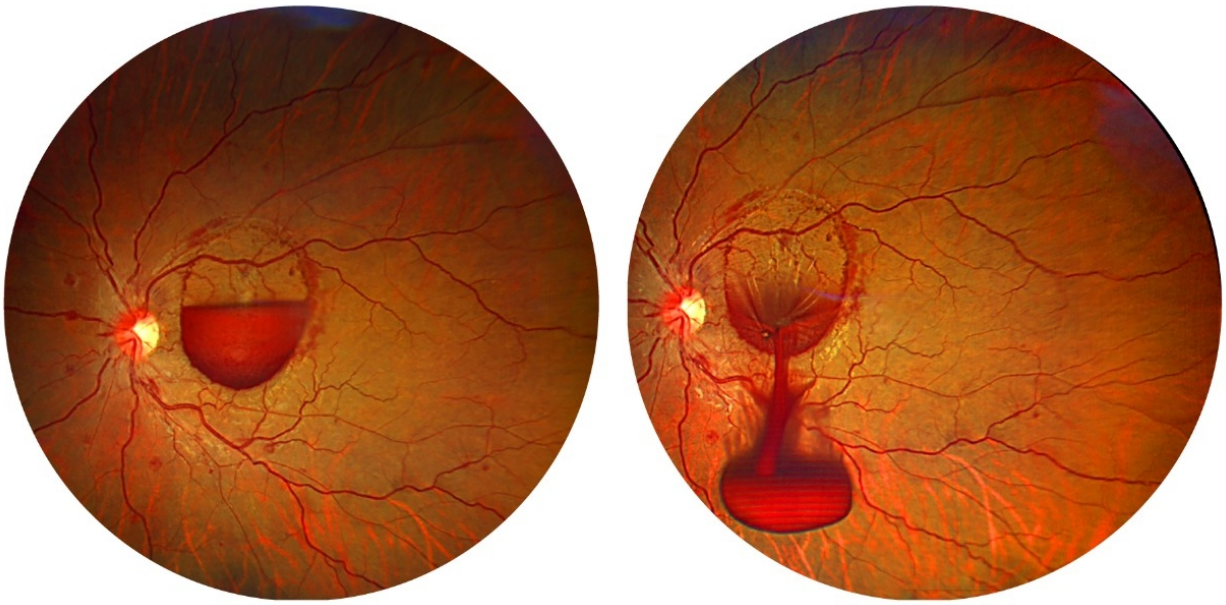

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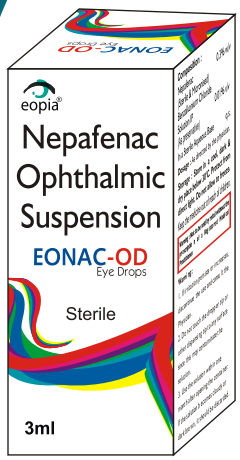

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Ist ROS- Rajasthan
Ophthalmic Society Conference
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"Sometimes all it takes is a good old self pic to bring back hundreds of great memories"

Contents

President Desk

Dr. KAMLESH KHILNANI
Professor and Dr. Kamlesh Khilani
President, ROS
Email: khilanikamlesh@gmail.com

It gives me immense pleasure to write this message for the upcoming RJO 2023.

The ROS should live up to its primary role of providing an academic platform to support the rising aspirations of Ophthalmologists from the state. The Editorial board has gradually but definitely taken all steps to meet this challenge. It is really inconceivable in the modern era to think of young Ophthalmologists, both in private or institutional setup, to be successful without keeping pace with newer techniques, latest appliances and medical research. This is a small endeavor in that direction

I congratulate and express my gratitude to Dr Arvind Chauhan , Editor for bringing out an excellent issue of RJO 2023.

Dr. KAMLESH KHILNANI
President, Rajasthan Ophthalmological Society

Secretary Desk

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Hon. Secretary UPCHAR, Jodhpur
Email: drgulamali@gmail.com

Dear esteemed members of the Rajasthan Ophthalmological Society,

I hope this message finds you in good health and high spirits. We are thrilled to present the quarterly issue of our Rajasthan Ophthalmological Society (ROS) Journal for 2023.

As always, our journal is dedicated to fostering the dissemination of critical research, advancing medical techniques, and promoting best practices in the field of Ophthalmology across the vibrant state of Rajasthan. This quarter's issue is a testament to the incessant pursuit of our members towards enhancing the quality of eye care in our society.

We are deeply thankful for your continued contributions and engagement, without which this journal would not be possible. The sharing of knowledge is a powerful tool, and we are incredibly proud to provide this platform for the betterment of ophthalmic care in Rajasthan.

We encourage all members to submit their research, case reports, and articles for upcoming issues. The deadlines for the submissions will be communicated separately. Your contribution helps us enrich our collective understanding and pushes the boundaries of ophthalmological science and practice.

Finally, as we continue to navigate these challenging times, we are reminded of the importance of our community. The resilience, dedication, and compassion you have shown throughout this period reaffirm our belief in the power of unity and shared purpose.

Thank you for your unwavering commitment to society and ophthalmology. We hope you find the content of this quarter's journal enlightening and beneficial to your practice.
Best regards,

DR GULAM ALI KAMDAR
Secretary, Rajasthan Ophthalmological Society

Editor Desk

Dr. ARVIND CHOUHAN (MS)
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CLIMATIC DROPLET KERATOPATHY: A CALL FOR AWARENESS AND PREVENTION IN THE FACE OF CLIMATE CHANGE

Climatic droplet keratopathy (CDK) is an acquired and possibly debilitating corneal degenerative condition that is common in areas with high levels of sunshine and dry weather. CDK has become a significant problem as global temperatures rise and environmental circumstances change.

This editorial aims to shed light on this condition, its causes, its impact, and the urgent need for awareness and preventive measures.

Climatic Droplet Keratopathy has many other names such as Bietti's band-shaped nodular dystrophy, Labrador keratopathy, spheroidal degeneration, chronic actinic keratopathy, oil droplet degeneration, elastoid degeneration and keratinoid corneal degeneration.

ROLE OF ENVIRONMENT

CDK is characterized by the gradual progressive deposition of yellowish corneal subepithelial deposits. These deposits can hinder visual acuity and lead to discomfort, impacting the quality of life for affected individuals.

CDK predominantly affects males in their forties. Prolonged exposure to ultraviolet (UV) radiation is a primary contributor to CDK. Geographical regions with high sunlight intensity, such as the Mediterranean, Middle East, and certain parts of India like western Rajasthan, report higher prevalence rates. Strong winds, low humidity, and dry climates further exacerbate the condition. Studies have also found Vitamin C deficiency as a contributing factor. Additionally, genetic predisposition may play a role in some cases.

GRADUAL PROGRESSION

Initially, the multiple tiny and tightly confluent translucent subepithelial deposits are localized close to the temporal and/or nasal limbus. Gradually, the haziness spreads over the inferior 2/3rds of the cornea, giving a tarnished appearance.

Advanced cases present with clusters of golden subepithelial droplets of different sizes, some of them 1 mm in diameter, covering the cornea as the disease progresses. Areas of vascularised anterior stromal opacification or fibrosis may be observed.

Once the central cornea is densely compromised, the severe visual loss that ensues may be definitive in these patients. In the advanced stages of the disease, a decrease in corneal sensitivity may lead to corneal trophic changes, perforation, and permanent visual loss.

A grading system proposed by Johnson and Ghosh describes the clinical features of CDK.

Trace: A small number of lesions, found in one eye or only one end of interpalpebral strips in each eye bilaterally

Grade 1: Lesions involving the interpalpebral cornea horizontally but not involving the central cornea

Grade 2: Central corneal involvement without affecting visual acuity

Grade 3: Central corneal involvement with a decline in visual acuity

Grade 4: Grade 3 features with lesion elevation

PROTECTION FROM SUNLIGHT

Individuals living in regions prone to high UV exposure should adopt proactive measures. Wearing UV-protective sunglasses, broad-brimmed hats, and using artificial tears or lubricating eye drops can shield the eyes from harmful radiation and maintain moisture levels. Regular eye examinations are vital for early detection and prompt management.

Creating awareness about CDK is paramount. Healthcare professionals and eye care organizations must collaborate to educate the public about the risks, symptoms, and preventive measures associated with CDK. Public health campaigns and community outreach initiatives can play a pivotal role in disseminating information and encouraging proactive eye care practices.

Management involves lubricating eye drops or artificial tears for symptom relief. In cases where visual impairment is significant, surgical interventions like superficial keratectomy, phototherapeutic keratectomy, lamellar keratoplasty, or penetrating keratoplasty may be considered.

Further research into CDK is necessary to enhance our understanding of the condition's pathophysiology, genetic factors, and treatment options. Investigating innovative treatments, such as targeted medications or interventions, could pave the way for more effective management strategies.

TO CONCLUDE

Climatic droplet keratopathy represents a growing concern for eye health in regions exposed to intense sunlight and dry climates. It is imperative to raise awareness, promote preventive measures, and support research efforts to understand better and manage this condition. By prioritizing eye care and taking proactive steps to protect against UV radiation, we can strive to minimize CDK's impact and safeguard individuals' vision worldwide.

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Dear Authors and Reviewers,

I hope this message finds you all in good health and high spirits. As the associate editor of this journal, I would like to express my gratitude to everyone who has contributed their research and expertise to our publication.

As the associate editor, it's our role to maintain the highest standards of scholarship. We rely heavily on the expertise and diligence of our reviewers. Your thoughtful and thorough evaluations and commitment to review process are critical in ensuring the quality and integrity of our journal and the wider academic community.

I would like to encourage all authors to carefully review our submission guidelines and formatting requirements before submitting their work. This will help us to ensure a smooth and efficient review process, on time and error free publication and increase the likelihood of acceptance.

As always, if you have any questions or concerns, please do not hesitate to reach out to our editorial team. We are committed to providing a supportive and collaborative environment for our authors and reviewers.

We are also pleased to announce that we are now accepting submissions for image competition and a column for “Art beyond ophthalmology”. If you wish to, please do not hesitate to get in touch with us.

Thank you again for your contributions to our journal, and we look forward to continuing to work with you in the future and publishing next issue soon.

Best Regards

Dr Raj Shri Hirawat
Associate Editor- Rajasthan Ophthalmological Society

"Practices Among Glaucoma Patients Attending Tertiary Care Hospital"

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Abstract
Introduction: Glaucoma is the second leading cause of blindness around the globe, accounting for up to 8% of total blindness. In India, Glaucoma is one of the major causes (5.5%) of irreversible blindness. Health literacy is an essential component of empowering individuals and their families. Material and method: This cross-sectional, hospital-based study was conducted among 200 consecutive glaucoma patients who attended the OPD or Indoors at Department of ophthalmology, JLN Medical College and Hospital, Ajmer. Result: Total 200 glaucoma patients were interviewed. Of which 130(65%) were male, and 70(35%) were female, with mean age 59.7+11.2 years. 167(83.5%) patients were taking their medication daily, in which 137(68.5%) were taking it timely.113(56.5%) patients were storing their medication hygienically at a cool and dry place. Only 50(25%) patients washed their hands before instilling eye drops. 138(69%) patients kept time gap between instilling two eye drops. 161(80.5%) patients were not using eye drops which were opened for >40 days. 100(50%) patients were able to afford the cost of medication. 180(90%) patients family members were not screened for Glaucoma. 165(82.5%) patients timely visited their ophthalmologist. 55(27.5%) patients were aware to bring their glaucoma diary in their next doctor visit. Conclusions: In this study, we found that most of the patients were practicing in right manner only with regular medication, regular ophthalmologist visit, and not using eye drops vial >40 days old, while other practices need to be improved. Keywords: Practices, Glaucoma

Introduction
The word "glaucoma" is derived from the ancient Greek word glaukos, which means 'shimmering'[1]. Glaucoma is a group of disorders, characterized by a progressive optic neuropathy that result in a characteristic appearance of the optic disc and a specific pattern of irreversible visual field defects that are associated frequently but not invariably with raised intraocular pressure (IOP)[2-3]. Glaucoma is the second leading cause of blindness around the globe, accounting for up to 8% of total blindness[4]. In India, Glaucoma is one of the causes (5.5%)[5] of irreversible blindness. More than 90% of cases of Glaucoma remain undiagnosed in the community[6]. In sustainable developmental goals (SDG), 3rd goal includes the promotion of universal health coverage, which provides opportunities to include eye health services[7]. Health literacy is an essential component of empowering individuals and their families. Glaucoma is avoidable with early detection and timely intervention[3]. World Glaucoma Week is celebrated from 10 to 16 March with the main objective to eliminate glaucoma blindness by motivating people to have regular eye check up. First-degree relatives (FDRs) of glaucoma patients have a ten-fold increase in risk of Glaucoma[5].

Aim
To evaluate the practices in glaucoma patients with their demographic features and prevention of associated blindness. It serves as behaviour diagnosis of the community.

Materials and methods
Study design: Hospital based, Cross-sectional study.
Study area: Regional area of Ajmer.

Study population: Glaucoma patients who attend the OPD/IPD in Department Of Ophthalmology, JLN medical college, Ajmer.

Study period: Data collection was taken after taking approval from Research Review Board, and Ethics Committee.

Sample size: A sample of 177 cases was calculated at 95% confidence and precision level of 5% to verify the 13.3 % prevalence of glaucoma awareness in the population (as per seed article)[8].

The sample size has been enhanced & rounded off to 200 cases. This sample size is also adequate to cover all other study variables.

Sampling technique: This cross-sectional, hospital-based study was conducted after Institutional Ethics Committee approval, work carried out among 200 consecutive glaucoma patients who presented at the out-patient/in-patient at Department of ophthalmology, JLN Medical College and Hospital, Ajmer. All the patients were diagnosed with Glaucoma and started on treatment for the same. After obtaining informed consent, the patients were interviewed according to a pre-tested standard proforma which contained 10 close-ended questions by study investigators to assess their practices about Glaucoma
.

Inclusion criteria
1. Both male & female patients having Glaucoma
2. Age 40 years or above

Exclusion criteria
1. Any other intraocular disease except Glaucoma
2. Congenital and Juvenile Glaucoma
3. Not willing to give consent for this study

Statistical analysis: The data so collected were entered into Microsoft Excel version 2013 and statistically analyzed using Primer.

Result

Total 200 glaucoma patients were interviewed. Of which 130(65%) were male and 70(35%) were female. The mean age was 59.7±11.2 years. 101(50.5%) patients were from urban backgrounds. 10(5%) patients were aware about family history of Glaucoma. 167(83.5%) patients were taking their medication daily in which 137(68.5%) were taking it timely while 62(31%) patients were not punctual for their medication. 113(56.5%) patients were storing their medication hygienically at cool and dry place. Only 50(25%) patients washed their hands before instilling eye drops. 138(69%) patients kept a time gap between instilling two eye drops, while 27(13.5%) were sometimes, and 35(17.5%) were not keeping any time gap between two eye drops. 161(80.5%) patients were not using eye drops vial, which were opened for >40 days. 100(50%) patient were able to afford the cost of medication while 24(12%) were sometimes do to and 76(38%) were not able to afford the cost of mediation. 180(90%) patient's family members were not screened for Glaucoma, while only 5 (2.5%) patients got their family members screened for Glaucoma, and few family members were screened in rest 15(7.5%). 165(82.5%) patients timely visited their ophthalmologist. 55(27.5%) patients were aware to bring their glaucoma diary in their next doctor visit, while 64(32%) sometimes brought and 81(40.5%) never brought their glaucoma diary. A significant association was found for better practices in urban patients [OR=3.3(95% CI:1.8-6.1), P=0.00], in higher educational status [$\chi 2$=15.8, df=2, P=0.00] and in higher socio economic class [$\chi 2$=10.2, df=4, P=0.04] while sex of patient [OR=0.8(95% CI:0.4-1.5) p-value = 0.62], and age [t=0.06 (95% CI:-3.3-3.5), P=0.95] had no significant difference (p-value<0.05).

Discussion

Shan Li et.al. (2020)[9] study found that the mean age is 68.6±15.0 years, while in this study mean age was 59.7±11.2 years. Tripathi S et al. (2017)[10] study showed that out of 198 patients enrolled, 30.8% were females, 30.8% were in the age group of 61-70 years age group, 60.1% had an urban background, while in this study, 35% were female, 29% belongs to age group 60-70 years and 50.5% were urban. Raiturcar TP et al. (2019)[11] stated that 72% were using the anti-glaucoma medications regularly, and 70% were following up regularly, and only 32% had brought their family members for glaucoma screening. In a study by Biradar P et al. (2019)[12] 80% understood the need for regular medications, 40% required the need for regular ophthalmologist visits, 66% were using the medications regularly, and 80% were on regular follow-up. While in this study, 83.5% were using the anti-glaucoma medications regularly, 82.5% were following up regularly, only 2.5% screened their family, and 7.5% screened few members of family. In Mohindroo C et.al. (2015)[13] study, only 61.4% of subjects knew that the eye drops should be stored in cool and dry place, and nearly 30% participants believed that two eye drops could be instilled back to back while in this study 56.3% subjects knew that the eye-drops should be stored in cool and dry place and 31% participants believed that two eye-drops could be instilled back to back. Tripathi S et al. (2017)[10] study found that the level of education and socioeconomic status were statically significantly related to practice in medication (p-value<0.05). In his study, we also found that level of education, socioeconomic class, and urban residence were statically significantly related to practice.

Conclusions

In this study, we found that most of the patients were practicing in right manner with regular medication, regular ophthalmologist visit, and not using eye drops vial >40 days old, while other practices need to be improved. Glaucoma can cause irreversible blindness and is often detected in very late phase, so screening is the only tool for early diagnosis. In this study, we found very few patients got their family members screened for Glaucoma. Strategies such as intensifying one-on-one counseling, formation of glaucoma patient groups should be utilized to improve the practices of glaucoma patients(8-9). Developing of new technologies (like mobile app) can also improve record keeping, reminder for medication and follow-up.

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Table - 1 Demographic profile of patients :

Profile	n=200 (%)
Age (yrs)	
40 to <50	43 (21.5%)
50 to <60	53 (26.5%)
60 to <70	58 (29%)
70 to <80	39 (19.5%)
>80	7 (3.5%)
Sex	
Male	130 (65%)
Female	70 (35%)
Residence	
Rural	99 (49.5%)
Urban	101 (50.5%)
Education status	
Uneducated	48 (24%)
Primary education	40 (20%)
Upper primary (6-8)	34 (17%)
Secondary (9-10)	23 (11.5%)
Sen. secondary (11-12)	21 (10.5%)
Graduate	34 (17.5%)
Socio-economic status (Modified B J Prasad 2021)	
Class 1	35 (17.5%)
Class 2	67 (33.5%)
Class 3	65 (32.5%)
Class 4	25 (12.5%)
Class 5	8 (4%)
Occupation status	
Unskilled	52 (26%)
Semiskilled	20 (10%)
Skilled	26 (13%)
Professional	7 (3.5%)
House wife	68 (34%)
Unemployed / Retired	27 (13.5%)
Systemic disease	90 (45%)
Allergy	7
Thyroid	6
COPD	9
Diabetes	47
Hypertension	53
CAD	2
Habit	65 (32.5%)
Alcohol	4
Tobacco	55
Tobacco + Alcohol	6
Family History	10 (5%)

Table-2 Practice profile of patients:

Practice	Right N (%)	Wrong N (%)	Sometime N (%)
1. Regular medication	167 (83.5%)	0	33 (16.5%)
2. Timely medication	137 (68.5%)	1 (0.5%)	62 (31%)
3. Drug storing	113 (56.5%)	37 (18.5%)	50 (25%)
4. Hand wash before using eye drops	50 (25%)	97 (48.5%)	53 (26.5%)
5. Time gap between two eye drops	138 (69%)	35 (17.5%)	27(13.5%)
6. Using open eye drops vial > 40 days	161 (80.5%)	12 (6%)	26 (13%)
7. Afford the cost of medication	100 (50%)	76 (38%)	24 (12%)
8. Family members screening	5 (2.5%)	180 (90%)	15 (7.5%)
9. Regular ophthalmologist follow up	165 (82.5%)	17 (8.5%)	18 (9%)
10. Aware to bring glaucoma diary on each doctor visit	55 (27.5%)	81 (40.5%)	64 (32%)

Figure 1: Practice profile of patients

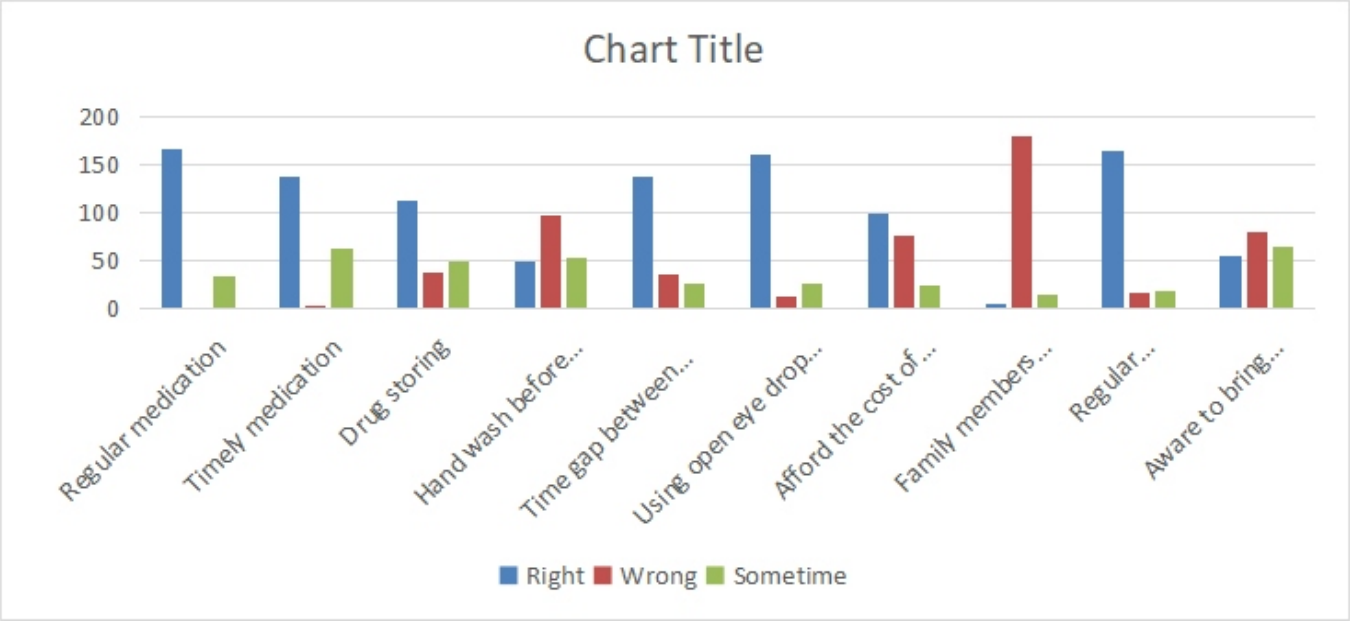

Table 2: Determinants of practices for glaucoma

Grade	Good practice *n*=137, *n* (%)	Poor practice *n*=63, *n* (%)	Validation
Gender Male Female	87 (63.5%) 50 (36.5%)	43 (68.3%) 20 (31.7%)	OR=0.8(95% CI:0.4-1.5), *P*=0.62
Residency Urban Rural	80 (58.4%) 57 (41.6%)	21 (33.3%) 49 (77.7%)	OR=3.3(95% CI:1.8-6.1), *P*=0.00
Education Up to primary (upto 5th) Schoolling (6 to 10th) High school/College	49 (35.8%) 40 (29.2%) 48 (35%)	39 (61.9%) 17 (27%) 7 (11.1%)	2=15.8, df=2, *P*=0.00
SES* Class 1 Class 2 Class 3 Class 4 Class 5	31 (22.6%) 47 (34.3%) 40 (29.2%) 15 (10.9%) 4 (3%)	4 (6.3%) 20 (31.7%) 25 (39.7%) 10 (15.9%) 4 (6.4%)	2=10.2, df=4, *P*=0.04
Age, mean ± SD	59.8 ± 11.2	59.7 ± 11.2	t=0.06 (95% CI:-3.3-3.5), *P*=0.95

*SES: Socio economic status [Modified B J Prasad scale revised for year 2021 (Base year 2016 = 100)], *P*<0.05 is statistically significant. SD: Standard deviation, OR: Odds ratio, CI: Confidence interval

Original Article

"Stop and Think - Pentacam versus Sirius The Scheimpflug imaging systems"

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Abstract

Purpose This study aims to evaluate the measurements of the corneal tomography by two Scheimpflug-based devices the Pentacam HR and the Sirius CSO and to assess the interdevice variability in 3 groups of study subjects prediagnosed Keratoconus (KCN), Forme fruste keratoconus(FFKCN) and subjects with ≥2 D of Astigmatism . Patients and Methods Patients were recruited prospectively and divided into 3 groups of 20 eyes each. Measurements with the Oculus Pentacam and Sirius CSO were performed. For every eye, the following parameters were analysed statistically K1 (flattest keratometric reading - anterior), K2 (steepest meridian anterior), Kmax, thinnest pachymetry, pachymetry at apex, highest front and back elevation. Result- 60 eyes from individuals aged 08-40 years were evaluated. Group 1 had 20 eyes, including 8 males and 8 females with clinically prediagnosed keratoconus; Group 2 had 20 eyes, including 10 males and 10 females with diagnosed FFKCN; Group 3 had 20 eyes, including 10 males and 8 females with ≥2 D astigmatism. The mean K1 difference between the measurements of Pentacam and Sirius was 1.02 ± 1.53 in KCN group, 1.63± 1.36 in FFKCN group and 0.86 ± 1.02 in group with ≥2D astigmatism. The mean K2 difference between the measurements of Pentacam and Sirius was 0.75 ± 2.38 in KCN group, 1.35 ± 1.92 in FFKCN group and 0.6 ± 1.53 in group with ≥2D astigmatism. The mean Kmax difference between the measurements of Pentacam and Sirius was 0.56 ± 1.02 in KCN group, 0.36 ± 2.19 in FFKCN group and 0.52 ± 1.06 in group with ≥2D astigmatism. The mean thinnest pachymetry difference between the measurements of Pentacam and Sirius was 5.44 ± 11.42 in KCN group, 2.21 ± 12.96 in FFKCN group and 4.6 ± 11.14 in group with ≥2D astigmatism. The mean apex pachymetry difference between the measurements of Pentacam and Sirius was 1.26 ± 14.11 in KCN group, 1.99 ± 13.41 in FFKCN group and 4.79 ± 14.43 in group with ≥2D astigmatism. The mean Anterior and Posterior elevation difference between the measurements of Pentacam and Sirius was 5.01 ± 10.34 , 2.31 ± 21.43, respectively in Group 1,0.81 ± 11.43, 1.85 ± 19.32 respectively in Group 2 and 0.47 ± 11.88, 0.67 ± 21.32 respectively in Group 3.The difference was statistically significant. Conclusion All the measurements between both the imaging modalities showed a significant positive correlation. Sirius produces keratometry readings higher than pentacam in KCN and FFKCN group and comparable readings in group with Astigmatism. Corneal thickness, Front and back elevation were higher in Pentacam than Sirius measurements in patients with KCN and FFKCN and almost comparable in subjects with only astigmatism. These tomographic systems could not be used interchangeably in clinical diagnosis and follow-up.

Introduction

Keratoconus (KCN) is the most common progressive asymmetric, bilateral, corneal ectatic disorder that arises due to biomechanical and structural defects in corneal collagen organization(1), which leads to irregular astigmatism and decreased visual function. Early detection of FFKCN and KCN is performed by corneal tomography, clinical and bio-microscopic examination.

The reduced visual quality leads many patients with KCN to present at refractive surgery centres for alleviation of their symptoms by LASIK(2). KCN and FFKCN are contraindications for LASIK because of the high risk of postoperative ectasia(2,3). Early detection may lead to early intervention and prevent any refractive surprises.

The imaging mechanism in both tomographic devices is different so that the HR Pentacam(Oculus Optikgeräte GmbH, Wetzlar, Germany) uses a rotating scheimpflug camera, and the Sirius tomography system (Costruzioni Strumenti Oftalmici, Florence, Italy) combines two mechanisms of the scheimpflug rotating camera with Placido disk topography to image the anterior segment of the eye.

Scheimpflug principle states that in order to get a higher depth of focus, the picture plane, the objective plane, and the film plane should be moved in such a way that they cut each other in one line or one point of intersection, known as the Scheimpflug intersection.

For a detailed analysis of the cornea, up to 100 scheimpflug images can be captured with the HR Pentacam during the rotating scan, while the 25 scheimpflug images and 1 Placido disc image captured using the Sirius. Sirius Scheimpflug analyzer is based on Placido disc and a mono rotating Scheimpflug system for corneal photography. The machine has 22 Placido rings which enhance anterior surface measurements, analyses>100 000 points, and cover 12mm zone of cornea(4). Around 25 Scheimpflug images and 1 Placido disc image are acquired in less than 1 sec. The Sirius captures 21632 elevation points on front surface and 16000 on the posterior surface.

Patients and Methods

Patients in the age group of 8 to 40 years who presented with pre diagnosed keratoconus or FFKCN and astigmatism ≥2 D at the Out Patient Department of the department of Ophthalmology JLN hospital Ajmer were recruited prospectively.

Inclusion criteria were the presence of Keratoconus and Forme fruste keratoconus diagnosed according to Amsler Krumeich and Belin ABCD classification system and astigmatism ≥2D. Patients with a history of previous ocular injury, previous ocular surgery, other corneal diseases, and other ectatic diseases like Pellucid Marginal Degeneration were excluded.

Measurement System

To detect the differences between the two devices, we included 60 eyes in the age group of 08- 40 years. Group 1 had 20 eyes, including 8 males and 8 females with clinically prediagnosed keratoconus; Group 2 had 20 eyes, including 10 males and 10 females with diagnosed FFKCN; Group 3 had 20 eyes, including 10 males and 8 females with ≥2 D astigmatism. Measurements were first performed using the Pentacam HR (Oculus OptikgerateGmbH, Wetzlar, Germany). The subject was asked to place his/her chin on the chin rest and the forehead against the headrest. The subject was asked to open both eyes and look at the fixation target. The examiner aligned the joystick until the rotating Scheimpflug camera automatically captures 25 single images within 2 seconds for each eye. After 15-20 min of rest, a measurement was made using the Sirius system. Following parameters were assessed for every eye, K1, K2, anterior mean K, anterior Kmax, pachymetry at the thinnest location, pachymetry at the apex, the highest anterior corneal elevation and the highest posterior corneal elevation in the 3-mm pupillary area.

Statistical analysis: Data was represented in the form of tables and analysed with the help of descriptive statistics. The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program. The variables were assessed using unpaired "t" test. Descriptive statistics included computation of percentages, means and standard deviations. Level of significance was set at $P \leq 0.05$.

Results

All the measurements between both the imaging modalities showed a significant positive correlation. Sirius produces keratometry readings higher than pentacam in KCN and FFKCN group and comparable readings in group with astigmatism. Corneal thickness, Front and back elevation were higher in Pentacam than Sirius measurements in group with KCN and FFKCN and almost comparable in group with only astigmatism. These tomographic systems could not be used interchangeably in clinical diagnosis and follow-up. The measurements with Sirius and Pentacam were done with different types of software, so the different algorithms used by the manufacturers lead to different results for the evaluation procedure. For the Pachymetry maps, Pentacam uses the Cartesian Coordinate System whereas Sirius uses the Polar Coordinates System . For the Elevation maps, pentacam uses best fit sphere (bfs) as reference surface whereas sirius uses best fit toric aspheric as a reference surface.

Table 1: Scheimpflug camera data obtained in both devices in Group 1 (n=20)

Measured Mean values	PENTACAM	SIRIUS	MEAN DIFFERENCE
K1 (3 mm)	47.78 ± 5.36	48.8 ± 4.76	1.02 ± 1.53
K2 (3 mm)	52.37 ± 4.81	53.12 ± 4.88	0.75 ± 2.38
Kmax	58.49 ± 5.62	59.05 ± 5.11	0.56 ± 1.02
Apex Pachymetry (µm)	465.78 ± 74.41	464.52 ± 70.87	1.26 ± 14.11
Thinnest Pachymetry (µm)	440.72 ± 47.36	425.28 ± 40.67	5.44 ± 11.42
Anterior elevation	24.82 ± 9.44	19.81 ± 9.25	5.01 ± 10.34
Posterior elevation	40.81 ± 12.95	38.5 ± 28.88	2.31 ± 21.43

Table 2: Scheimpflug camera data obtained in both devices in Group 2 (n=20)

Measured Mean values	PENTACAM	SIRIUS	MEAN DIFFERENCE
K1 (3 mm)	44.19 ± 5.92	45.82 ± 7.64	1.63 ± 1.36
K2 (3 mm)	46.24 ± 5.41	47.59 ± 4.82	1.35 ± 1.92
Kmax	48.62 ± 4.26	48.98 ± 5.62	0.36 ± 2.19

Apex Pachymetry (µm)	495.71 ± 23.92	493.72 ± 27.81	1.99 ± 13.41
Thinnest Pachymetry (µm)	490.69 ± 22.77	488.48 ± 35.63	2.21 ± 12.96
Anterior elevation	17.28 ± 8.14	16.47 ± 7.28	0.81 ± 11.43
Posterior elevation	25.18 ± 14.81	23.33 ±15.79	1.85 ± 19.32

Table 3: Scheimpflug camera data obtained in both devices in Group 3 (n=20)

Measured Mean values	PENTACAM	SIRIUS	MEAN DIFFERENCE
K1 (3 mm)	44.02 ±6.31	44.88 ± 5.72	0.86 ± 1.02
K2 (3 mm)	45.48 ± 5.72	46.08 ± 6.36	0.6 ± 1.53
Kmax	45.73 ± 3.62	46.25 ± 4.92	0.52 ± 1.06
Apex Pachymetry (µm)	561.45 ± 37.40	556.66 ± 45.26	4.79 ± 14.43
Thinnest Pachymetry (µm)	555.48 ± 34.50	550.88 ± 33.45	4.6 ± 11.14
Anterior elevation	11.28 ± 4.94	10.81 ± 8.52	0.47 ± 11.88
Posterior elevation	15.18 ± 15.92	14.51 ± 19.85	0.67 ± 21.32

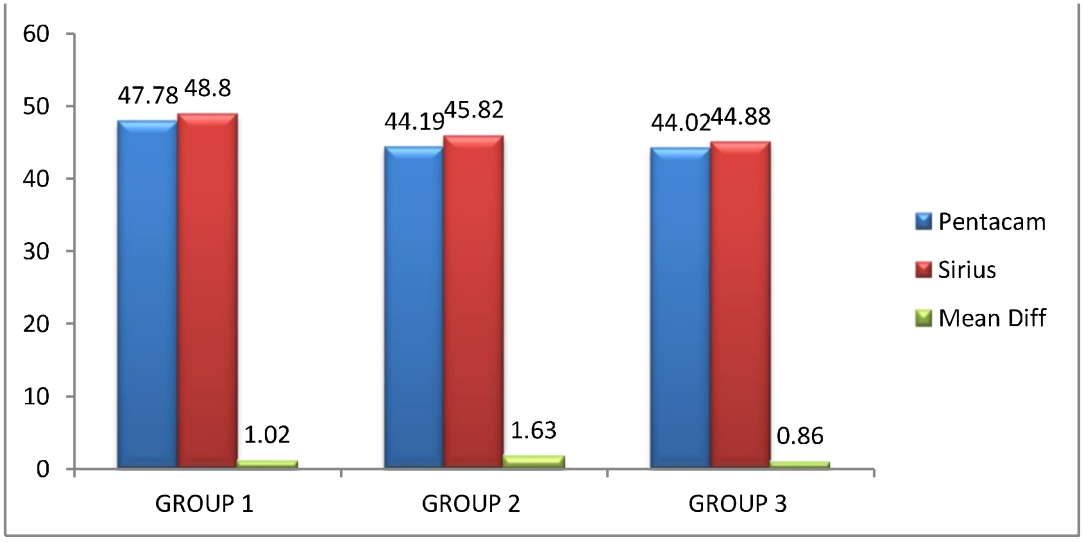

Fig 1: Measured mean values of the flattest keratometric reading – anterior (K1) in 3 groups

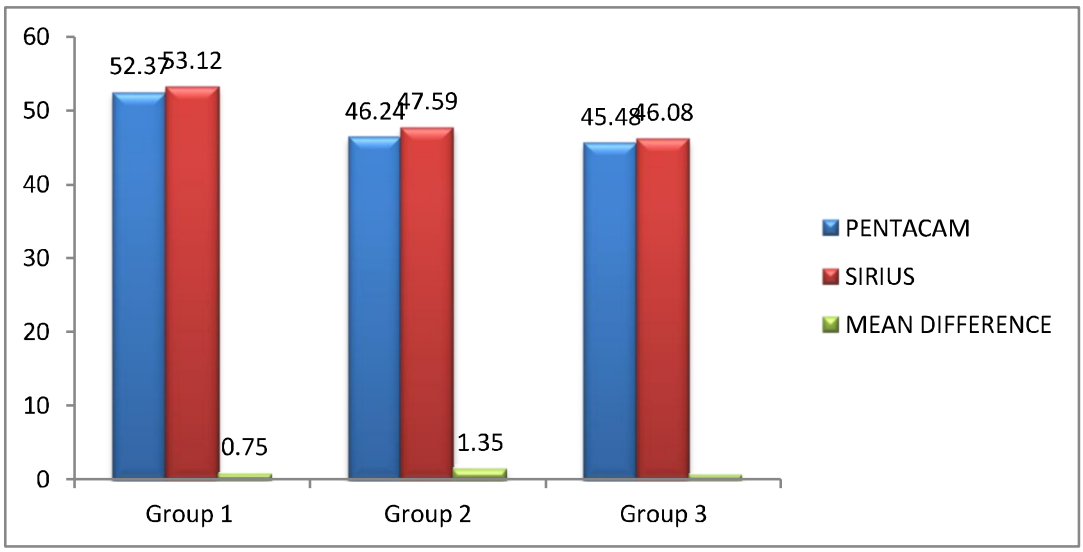

Fig 2: Measured mean values of the Steepest Keratometric readings (K2) in 3 Groups

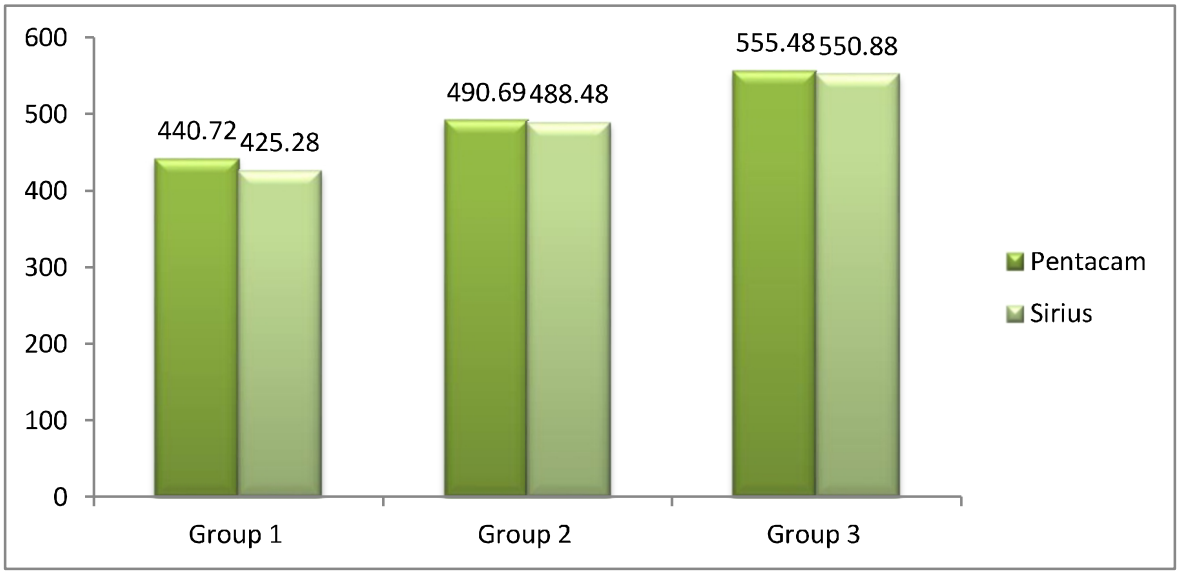

Fig 3: Mean Thinnest Pachymetry in Pentacam and Sirius in 3 Groups

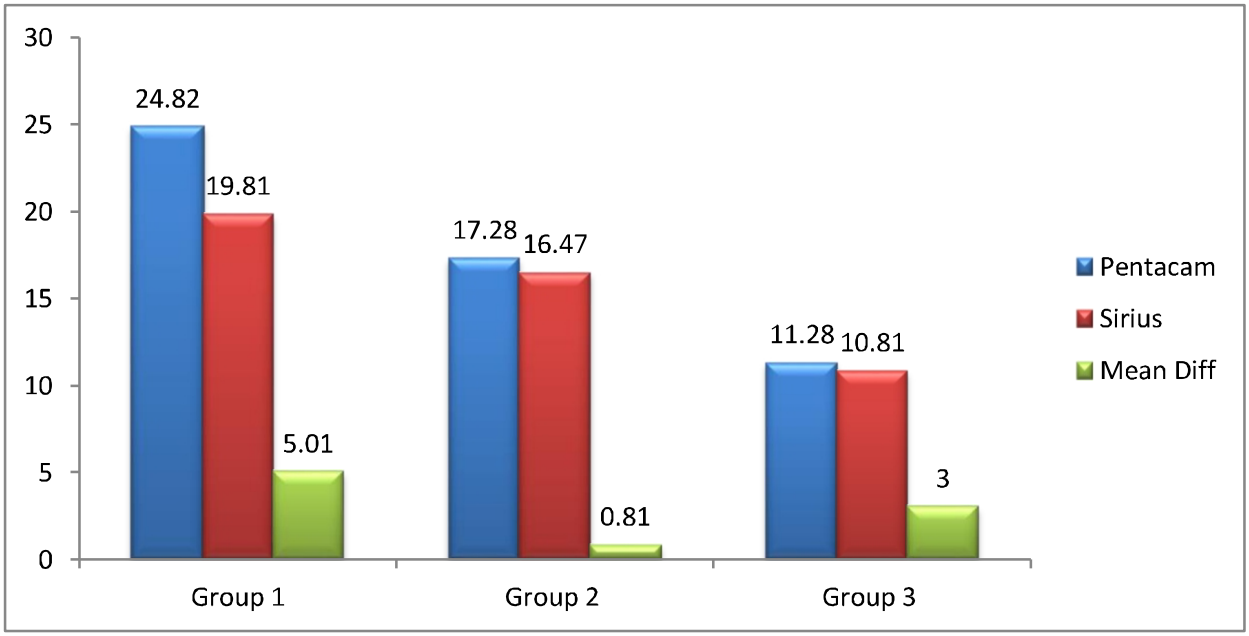

Fig 4: Measured mean Anterior elevation in Pentacam and Sirius in 3 Groups

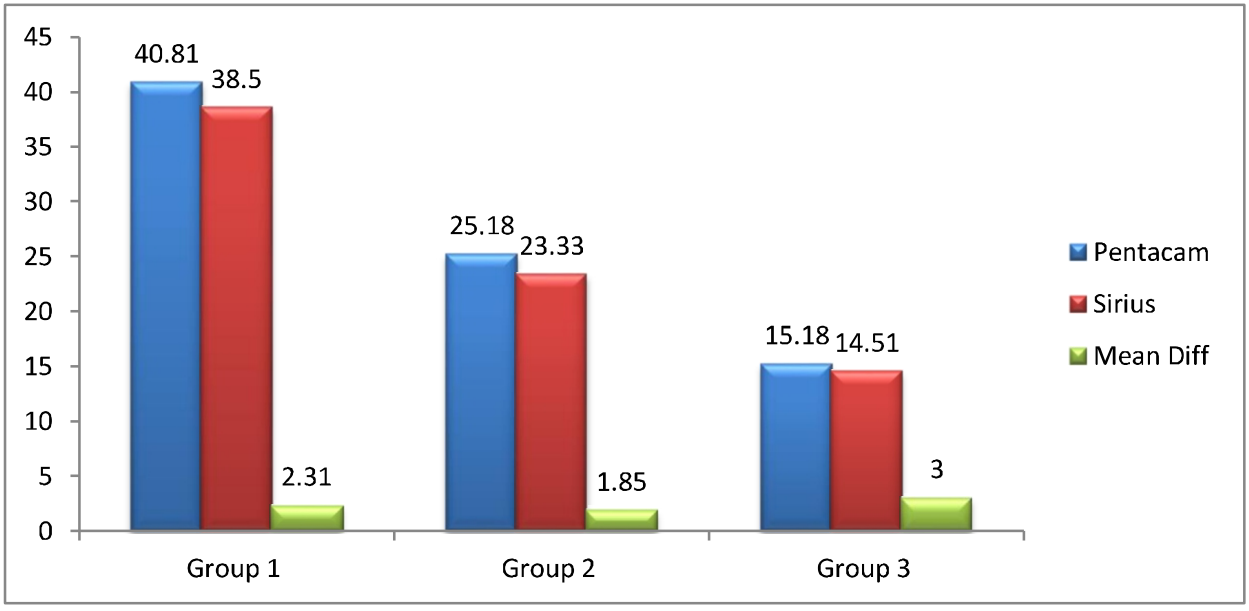

Fig 5: Measured Mean Posterior Elevation in Pentacam and Sirius in 3 Groups

Discussion

CORNEAL TOPOGRAPHY is the representation of geometrical properties of cornea, which includes only the anterior corneal surface.

CORNEAL TOMOGRAPHY is the three dimensional characterisation of the entire cornea which includes anterior as well as posterior corneal surface.

PENTACAM	SIRIUS
Based on Scheimpflug camera imaging	Based on combinations of Placido rings and Scheimpflug camera imaging Allows more accurate detection of anterior surface parameters because of placido incorporation with scheimpflug camera
Obtains corneal thickness from 8-10mm of cornea	Obtains full corneal thickness
Gives detailed BELIN AMBROSIO ENHANCED ECTASIA DISPLAY for easy detection of keratoconus . Also gives special thickness profile unique to pentacam	Employs an internal algorithm for classification into normal , suspect , abnormal or keratoconus compatible
Reference surface – Best Fit Sphere	Best Fit Toric Asphere
Measures elevation from reference surface	Measures Δz : point by point difference along
Recommended cut off values published	the z axis Δz : No recommended cut off values
True elevation	Not true elevation
GULLSTRAND RATIO Ratio of radius of curvature of back to front NORMAL - 83% or 0.83	Ratio of radius of curvature of Ant to post NORMAL - 1.18 -1.22

The discrepancy between the measurements of the Pentacam and Sirius tomographic systems may be due to
A-Both Scheimpflug-based tomography systems use different accuracy standards for measuring relevant parameters.
B-The imaging mechanism in both tomographic devices is different- the HR Pentacam (Oculus Optikgeräte GmbH, Wetzlar, Germany) uses a rotating scheimpflug camera, and the Sirius tomography system (Costruzioni Strumenti Oftalmici, Florence, Italy) combines two mechanisms of the scheimpflug rotating camera with Placido disk topography to image the anterior segment of the eye.
C-Sirius and Pentacam use different types of software, so the different algorithms used by the manufacturers lead to different results for the evaluation procedure.
D-The elevation points evaluated in these two systems also differ from each other.
E-For a detailed analysis of the cornea, up to 100 scheimpflug images can be captured with the HR Pentacam during the rotating scan, while 25 scheimpflug images and 1 Placido disc image can be captured using the Sirius.
These tomographic systems could not be used interchangeably in clinical diagnosis and follow-up.

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Original Article

"Role of freeze-dried amniotic membrane in management of persistent epithelial defect on dry eye disease"

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Abstract

Purpose: To report the outcome of freeze-dried amniotic membrane for persistent epithelial defects (PED) in moderate to severe cases of dry eye disease. Methodology: This retrospective-prospective observational study included consecutive patients of dry eye disease with PED treated with freeze dried amniotic membrane and bandage contact lens. Included were patients with an epithelial defect that did not respond to conventional treatment. Excluded were the patients who failed to follow up. Results: 30 eyes of 30 patients with mean age of 38.8 years (21-58 years) were included in this study. The main etiology of PED was superficial punctate keratitis (n=7/30), followed by chemical burns (n=4/30), limbal stem cell deficiency (n=4/30), and neurotrophic keratitis (n=3/30). The remaining cases were exposure keratitis, vernal keratitis, filamentary keratitis, GVHD, simple herpetic keratitis (n=2/30) respectively, Sjogren's syndrome (n=1/30), herpes zoster keratitis (n=1/30). Time from PED presentation to amnion treatment was 39.1 days (range 16-90 days). The amnion was absorbed within 2 weeks in 100% of the cases. Following insertion of the amnion, resolution of the PED was achieved in 26/30 eyes (86.6%) without the need for additional interventions within 20.7 days (range 7-35 days) with no complications recorded. Conclusion: Dried amniotic membrane achieved resolution of PEDs secondary to various etiologies of dry eye disease in 86.6% of eyes, with a significant improvement in vision demonstrated. Further studies are needed to assess long-term safety and effectiveness.

Introduction

The corneal epithelium serves as a protective barrier against infections and maintains a smooth optical surface. 1 If the epithelium is damaged, it can lead to corneal erosion, which increases the risk of infection and can impair vision. Normally, the epithelium undergoes a repair process that involves various factors such as growth regulation, cellular signaling, proliferation, migration, and remodeling of the extracellular matrix. However, when corneal epithelial defects persist for more than 10-14 days despite standard treatment, it is known as Persistent Corneal Epithelial Defects (PEDs). Possible causes of PEDs include faulty epithelial adhesion, deficiencies in limbal stem cells, inflammation, neurotrophic components, and idiopathic or hereditary disorders.

1. Management of persistent corneal epithelial defects (PEDs) involves a step-by-step approach that depends on the underlying cause. Various non-surgical treatments are available, such as optimizing the ocular surface, using bandage contact lenses, employing blood-derived products like autologous serum and platelet-rich plasma, punctal plugs, scleral contact lenses, and cenegermin. 2 If non-surgical methods are not effective, surgical options can be considered, including epithelial debridement, amniotic membrane transplant (AMT), and corneal stem cell transplant. 4

Amniotic membranes are known to contain numerous growth factors that facilitate wound healing, provide a scaffold for re-epithelialization, and possess anti-inflammatory properties. 5 As a result, they have been proven to be effective in the treatment of PEDs. 6,7 Commercially available amniotic membrane implantation such as the cryopreserved ProKera has shown promising results in treating bacterial keratitis, alkali burns, 9 partial limbal stem cell deficiency, 10 acute toxic epidermal necrolysis, 11 and PEDs. 12

Freeze and vacuum dehydrated amnion tissue are also recently introduced, which can be easily stored and transported at room temperature. 13 This study is the first to evaluate the efficacy of suture less dehydrated amniotic membrane treatment for PEDs in Western Rajasthan, India.

Methods

Source of data - A hospital-based retrospective-prospective observational study (mixed design cohort study) to evaluate the role of freeze-dried amniotic membrane in reducing signs and symptoms of DED associated with ocular surface involvement. The study will be conducted for a period of five months, from June 2022- November 2022, in the department of Ophthalmology, Dr. S. N Medical College, Mathura Das Mathur Hospital, with due permission from the Institutional Ethical Committee and Review Board after taking written informed consent from the patient. The study included patients who did not experience sufficient resolution of the defect following ocular surface optimization and treatment with a BCL, as per the Global Consensus guidelines for managing Limbal Stem Cell Deficiency. This optimization process addressed any underlying comorbidities of the eyelid and conjunctiva, reduced toxicity from topical medications, lowered inflammation through various medications, improved tear function with preservative-free artificial tears and/or autologous serum, and treated underlying meibomian gland dysfunction. Patients with less than three months of follow-up were excluded from the study.

Data collection:Prior to surgery, demographic information such as gender, age, and laterality was recorded. Other baseline data collected included best-corrected visual acuity (BCVA), the cause of the persistent epithelial defect (PED), any systemic

comorbidities, the size of the PED measured in square millimeters with fluorescein staining and cobalt flue filter, the duration between PED presentation and amnion treatment, the time it took for the PED to resolve after amnion treatment, follow-up time, and BCVA after resolution. Recurrences of the PED, any complications, or adverse events that occurred during the follow-up period were also documented.

Amniotic membrane :- Amniocare-D, a dehydrated amniotic membrane that does not require sutures, was stored at room temperature before use. Patients were given proparacaine hydrochloride 0.5% eye drops, and after five minutes, a lid speculum was inserted, and cellulose sponges were used to dry the cornea. In our experience, proper adhesion of the amniotic membrane to the corneal surface requires the corneal surface to be dry. A 9.0 mm circular amniotic membrane disc was placed over the center of the cornea to cover the entire epithelial defect. However, care should be taken to prevent the amnion from folding on itself, which can be achieved by using a second non-toothed curved forceps to smooth it onto the corneal surface immediately after placement. After 2 to 5 minutes, a sterile BCL was placed over the amnion and dried with cellulose eye sponges. Adequate positioning of the amnion and BCL was confirmed at the slit lamp 5 minutes later.

Patient follow-up: - Patients were monitored every 1-3 weeks after the insertion of the amniotic membrane until the epithelial defect was resolved. During each visit, the area of the PED and BCVA were documented. If the PED showed adequate but incomplete resolution after the absorption of the amniotic membrane, the BCL treatment was continued.

Study outcome : - The main objectives of the study were to assess the rate and duration of PED resolution, as well as any changes in BCVA and incidence of serious adverse events.

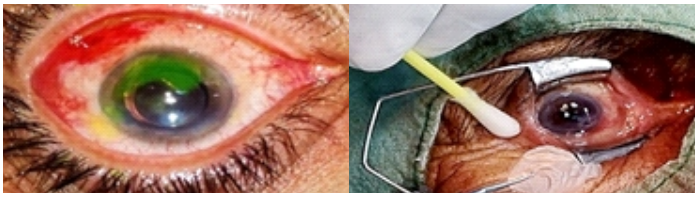
Results

30 eyes of 30 patients with mean age of 38.8 years (range 21-58 years) were included in this study, of which 23.33% (n=7) were of female gender and 76.67% (n=23) were males. The mean follow-up time of 45.66 days (range 21-89 days).

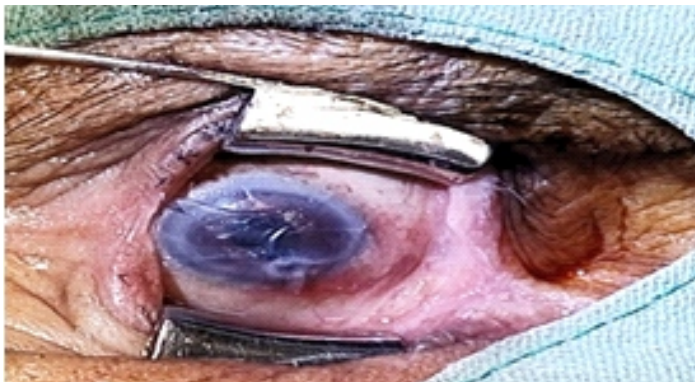
PED etiologies: - The main etiology of PED was superficial punctate keratitis (n=7/30), followed by chemical burns (n=4/30) and limbal stem cell deficiency (n=4/30), neurotrophic keratitis (n=3/30). The remaining cases were exposure keratitis, vernal keratitis, filamentary keratitis, GVHD, simple herpetic keratitis (n=2/30) respectively, Sjogren's syndrome (n=1/30), herpes zoster keratitis (n=1/30). PED duration: - Time from PED presentation to amnion treatment was 39.1 days (range 16-90 days), with the area of the PED being 9.48 mm2 (range 1-30 mm2). The amnion was absorbed within 2 weeks in 100% of the cases. Following insertion of the amnion, resolution of the PED was achieved in 26/30 eyes (86.6%) without the need for additional interventions within 20.7 days (range 7-35 days) with no complications recorded.

Complications and adverse events :-No issues occurred during the amniotic membrane placement or during subsequent follow-up. None of the patients complained of discomfort with the application of amnion and BCL on their ocular surface. There were no instances of PEDs recurring during the follow-up period.

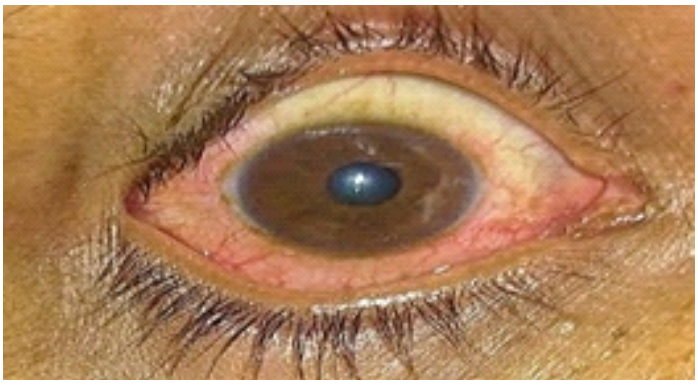
Figure 1 :
Dry amniotic graft with bandage contact lens-



Pre-operative image of PED Intra-operative image before dry AMG



Intra-op image after AMG



Healed epithelial defect after 21 days

Discussion

This study is an observational analysis of the effects of dehydrated amniotic membrane transplantation on persistent epithelial defects (PEDs) in dry eye disease patients who have not responded to traditional treatments. In our study, we observed complete resolution of PEDs in 26 out of 30 eyes (86.66%) for various reasons, although incomplete recovery was observed in three cases, and one case of epithelial disorder in dry eye disease did not improve. The severity and persistence of multiple corneal erosions prevented complete healing in these cases. 73% of participants in our study showed significant improvement in corneal transparency, which is associated with improved visual acuity, emphasizing the healing properties of amniotic membrane grafts.

Previous studies on the effects of ProKera, 12 a type of amniotic membrane graft, have reported varying success rates and complications, including eye pain and headaches. The current study evaluated the use of dry amniotic membrane (Amniocare-D), a readily available amnion graft, for PEDs and reported an 86.66% resolution rate without any reports of pain or discomfort. Use of a bandage contact lens to secure the graft and the absence of a conformer ring may have improved patient comfort. The Amniocare-D was fully absorbed after a few weeks, which may make it a more appropriate option for monocular patients. The study also observed an improvement in best-corrected visual acuity postoperatively, likely due to the resolution of PEDs that involved the visual axis.

In a 2021 study by Michael Mimouni, Tanya Trinh, Nir Sorkin et al., BioDOPTIX amnion graft was used to treat patients with PED resulting from specific causes. After an average of 17.8 days, 89% of eyes achieved resolution of PEDs without any patient experiencing discomfort from the graft. There was also improvement in LogMAR BCVA from 0.94+ 0.88 to 0.37+0.25 (p=0.036). These findings were consistent with previous studies and our own study.

Another retrospective study by M McDonald et al. showed that self-retained CAM (cryopreserved amniotic membrane) could accelerate the recovery of corneal surface health in patients with mild and severe dry eye disease. A single placement of CAM for 5.4+2.8 days led to a significant improvement in DED symptoms and signs, with an overall significant reduction in DEWS scoring from 3.25+0.5 (baseline) to 1.44+0.6 at 1 week, 1.45+0.6 at 1 month, and 1.47+0.6 at three months. These findings were consistent with previous studies and our own study as well.

To sum up, the study demonstrates the efficacy of using dried amniotic membranes for treating different ocular surface disorders, especially persistent epithelial defects. The results indicate that dry amniotic membrane implantation is a safe, simple, convenient, and successful treatment for moderate to severe dry eye disease with multiple epithelial defects.

Declaration of conflicting interests :- The author declared no conflicts of interest with respect to the research, authorship, and/or publication of the article.

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The importance of posterior segment screening and prophylaxis of retinal lesions before refractive surgery

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Abstract : There are no framed guidelines for screening of patients but a general screening protocol which one could follow has been shown in figure 1.

Figure 1: Screening protocol before refractive surgery Screening ideally should be done by an experienced retina specialist as there is no substitute for an experienced doctor. Alternatively, an ultra-wide field fundus camera can be used to screen for peripheral retinal lesions. This modality has moderate sensitivity (about 57%) and high specificity (>99%) for screening of peripheral lesions.[8] Treatment Untreated patients who have peripheral lesions are at 10 times more risk of developing an RD than those who are administered prophylactic laser photocoagulation.[9] So it is prudent that treatment be taken up in patients having peripheral lesions that predispose to RD. These lesions according to review articles[9] are: (1) asymptomatic patients with peripheral lesions when monitoring is not possible (learning disability, living in remote area, etc.); (2) areas of retinal weakness if symptomatic/only-eye/retinal detachment in the fellow eye; (3) symptomatic breaks or persistent vitreoretinal traction; (4) operculated holes where vitreous is adherent to the hole margin; (5) horseshoe tears/giant tears/retinal dialysis. Or one could follow the Wilkinson CP recommendations for treatment (Table 1).

Recommendations :

1) All symptomatic and asymptomatic horse-shoe tears, operculated holes, lattice degeneration with retinal holes, atrophic holes Treat promptly

2) All symptomatic lattice degeneration without retinal holes and atrophic holes Treatment is usually recommended

3) All asymptomatic lattice degeneration without retinal holes, pigmented lattice degeneration, and atrophic holes Can be observed

4) Eyes with atrophic holes or lattice degeneration where the fellow eye has already developed retinal detachment Can be considered for treatment

Table 1: Recommendations for treatment of peripheral retinal degenerations for patients undergoing refractive surgery

It is also important to stress the fact that some studies[10] show a lack of efficacy for prophylactic treatment to areas of peripheral degeneration. But that is not the case, as it has been observed[11] that RDs that develop post-laser are not related to the previous lesions but to newer lesions that develop or a PVD that may theoretically induce a tear at the edge of a treated area.[4] Now after treatment with laser photocoagulation, the adhesive force of the retina reduces by 50% at 8 hours, but then it increases by 140% (beyond the normal) by 24 hours and becomes twice the normal between 3 days to 4 weeks.[12] Therefore, taking the patient for surgery at least 7 days post-photocoagulation is usually recommended.

Follow up It has been shown that the incidence of PVD post-surgery may vary from 2 days in 16% of cases and 85% within a month.[13] Also, in various studies[4] it was observed that most RDs occur around a period of about 11 months. Hence, even after a good surgery, the patient may experience an RD. As, myopic patients normally are at risk of vision-threatening complications such as macular hole, atrophy, choroidal neovascular membranes, and RDs regular follow-ups should be mandatory as a routine practice.

Conclusion:

It is obvious that at times that the process of rigorous screening of every patient at a high-volume center may sometimes be a problem. But in the litigious world that we live in today, it is prudent to properly counsel and inform the patients about the risks of RD and symptoms of flashes and floaters for better treatment acceptance by the patient and timely treatment if needed for the best possible outcomes. At the end of this discussion, we would like to end with a real-world example: It has been reported that a myopic patient scheduled for LASIK cancelled her appointment a week ahead of time. The day after which she had been scheduled for LASIK, she contacted the doctor for a sudden reduction of vision in one eye. On examination, the eye had experienced retinal detachment.[14] If this patient presented to you and there was no proper retinal exam or patient counselling what would the consequences be? Hence, the relevance of this discussion is important.

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Introduction

Retinopathy of prematurity (ROP) is a fibrovascular proliferative disorder that affects the development of peripheral retinal vasculature in pre-term and low birth weight babies. It continues to be a major cause of preventable childhood blindness all over the world. The initial signs are detectable by a few weeks after birth, and the condition progresses rapidly thereafter, suggesting a very narrow window of opportunity for treatment. Hence, timely detection and treatment are crucial to prevent the progression of disease to Stage 4 or 5 (when the prognosis is poor even after treatment). Out of 26 million annual live births in India, approximately 2 million are less than 2000 grams in weight and are at risk of developing ROP. The incidence of ROP in India is 38 - 51.9% in Low Birth Weight infants.

Pathogenesis

In a normal fetus, vascular development of the retina reaches the nasal periphery at 8 months of gestation and temporal periphery by 10 months of gestation. The vascular development of the retina occurs in two phases.

Phase 1 (True vasculogenesis): VEGF Independent

It occurs from 8-21 weeks of foetal development. Spindle cells (mesenchymal precursor cells) appear around the optic disc region. Then cords of spindle cells advance towards ora serrata which differentiate into capillaries which subsequently develop into arterioles and venules. Phase 1 is not under the control of Vascular Endothelial Growth Factor (VEGF).

Phase 2 (Angiogenesis): VEGF Dependant

It occurs from 22 to 40 weeks of development. Proliferating endothelial cells migrate from existing blood vessels to form new capillaries. Phase 2 is VEGF dependent. The fetus is in a hypoxic state in utero. As vascularisation is incomplete at birth in pre-term infants, and the infant is exposed to a hyperoxic state (outside environmental oxygen or supplemental oxygen provided in NICU), there is downregulation of VEGF. This causes vaso-obliteration and cessation of vessel growth, and the peripheral retina becomes avascular. This peripheral avascular retina stimulates a pathological release of VEGF in response to tissue hypoxia. This massive release of VEGF stimulates pathological neo-vascularisation and progression of ROP.

Risk Factors

Prematurity, low birth weight and supplemental oxygen administration are the most significant risk factors for ROP. Other risk factors are:

1. Multiple births
2. Concurrent illness
3. Anemia
4. Hyperglycemia
5. Frequent blood transfusion
6. Mechanical ventilation
7. Seizures
8. Apnea
9. Bradycardia
10. Intraventricular hemorrhage
11. Bacterial and fungal late onset sepsis
12. Light exposure

Classification

An international classification of ROP was published in 1984 and updated in 2005. The components of classification are as follows:

A. Location of disease: Each eye is divided into three zones to define the exact location.

- Zone I - circle, the radius of which extends from the disc to twice the distance from the disc to the fovea.
- Zone II extends from the edge of zone I peripherally to ora serrata nasal and equivalent area near the temporal equator.
- Zone III residual crescent of retina anterior to zone II temporally.

B. Extent of disease is specified by the number of clock hours of retina involved.

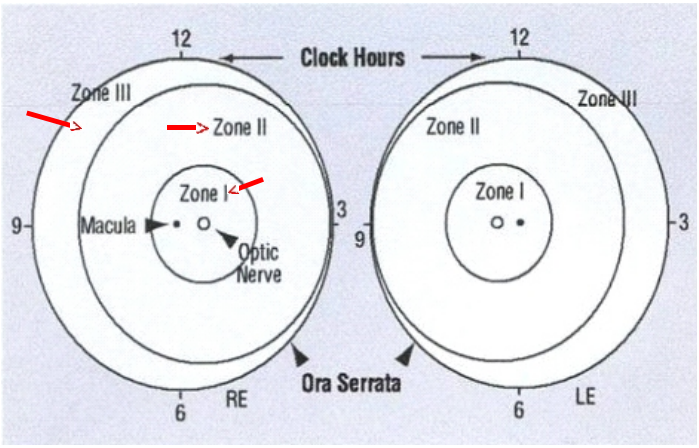


Figure 1: Depicts zone and extent of disease.

C. Staging of disease: It is done according to degree of vascular changes. Each stage is defined by its location in zone & extent in clock hours for documentation.

- Stage 1 Demarcation Line: This line is a thin but definite structure that separates the avascular retina anteriorly from the vascularized retina posteriorly. The demarcation line is relatively flat, white and lies within the plane of the retina.
- Stage 2 Ridge: The ridge is the hallmark of stage 2 ROP. It arises in the region of the demarcation line, has height and width, and extends above the plane of the retina.

• Stage 3 Extraretinal fibrovascular proliferation (EPF): EPF or neovascularization extends from the ridge into the vitreous. It is continuous with the posterior aspect of the ridge. It is further subdivided into mild, moderate or severe depending on the extent of EPF infiltrating the vitreous.

• Stage 4 Partial retinal detachment: Stage 4 is divided into partial retinal detachment not involving fovea, stage 4A and involving fovea, stage 4B. Visual prognosis of stage 4B is poorer than 4A.

• Stage 5 Total retinal detachment: These retinal detachments are generally tractional and visual prognosis is the worst for stage 5 ROP.

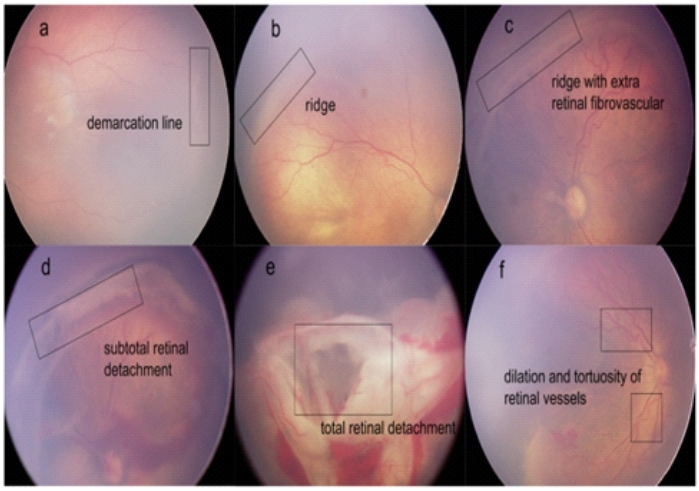


Figure 2 : Depicts staging of disease

Aggressive posterior ROP (AP-ROP): An uncommon, rapidly progressing, severe form of ROP is designated AP-ROP. If untreated, it usually progresses to stage 5 ROP. The characteristic features of AP-ROP are its posterior location, and prominence of plus disease, and it does not follow the stages mentioned above. It is observed most commonly in zone I but may also occur in posterior zone II.

Plus disease: It is an additional sign indicating the severity of active ROP. This includes increased venous dilatation and arteriolar tortuosity of the posterior retinal vessels and may later increase in severity to include iris vascular engorgement, poor pupillary dilatation (rigid pupil), and vitreous haze.

Pre-plus disease: It is defined as vascular abnormalities of the posterior pole that is insufficient for the diagnosis of plus disease but demonstrates more arterial tortuosity and more venous dilatation than normal.

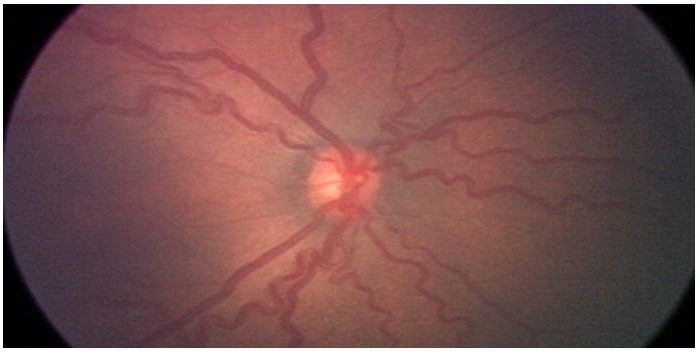


Figure 3: Depicts plus disease.

Screening of ROP

When to screen?

All babies who are at risk of ROP should be screened at 31 weeks post conceptional age or 4 weeks after birth, whichever is later.

Whom to screen?

Indian screening guidelines suggest screening of all infants who are-

1. Weighing less than 1750 grams
2. Less than 34 weeks of gestation
3. Birth weight greater than 1750 grams or greater than 34 weeks of gestation with additional risk factors like mechanical ventilation, prolonged oxygen therapy, hemodynamic instability or adverse respiratory or cardiac disease profile or sepsis.

How to screen?

The paediatrician calls the retinal specialist to NICU or refer the child to them at the end of the first month. The retinal specialist screens all the babies with the help of binocular indirect ophthalmoscope, 20 D or 28 D lens, scleral depressor and a pediatric speculum. 0.5% proparacaine eye drops are used for topical anaesthesia, and half-strength tropicamide (0.4%) plus phenylephrine (2.5%) eye drops are used for pupillary dilatation.

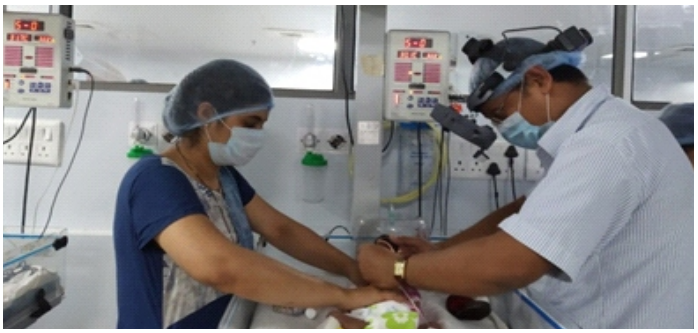


Figure 4: NICU screening of ROP

Recently, a new digital camera, RetCAM, is available for screening but is a very expensive tool. RetCAM is a digital camera for imaging the retina of infants. It is a mobile, self-contained system that can move easily around the hospital or office. It provides state-of-the art wide field paediatric retinal imaging (130 degrees). It has instant & accurate documentation, avoiding time-consuming retinal drawings. It is a very useful tool for explaining the infant's condition to the parents and getting their support for long-term follow-up.

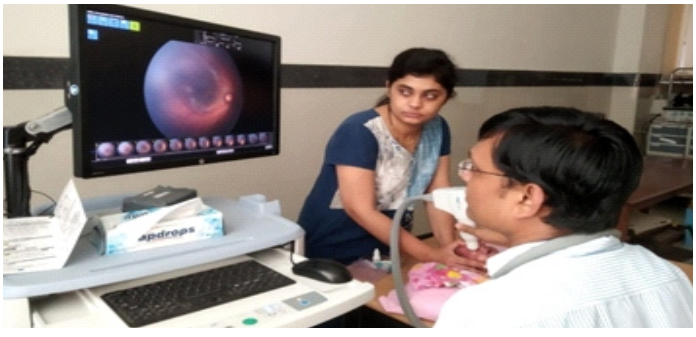


Figure 5: RetCAM screening of ROP.

Management of ROP

Management of ROP includes initiation of early treatment in those with the signs of progressing disease.

Early Treatment ROP (ETROP) study has divided pre-threshold ROP into

- High-Risk Prethreshold or Type 1 ROP: It should be treated immediately. It is defined as
- Zone 1 any stage with plus disease or
- Zone 1 stage 3 without plus disease or
- Zone 2 stage 2 or 3 with plus disease.
- Low-Risk Prethreshold Disease or Type 2 ROP: These eyes should be considered for treatment only if they progress to type 1 or threshold ROP. It is defined as
- Zone 1 stage 1 or 2 without plus disease or
- Zone 2 stage 3 without the plus disease.
- Rationale of treatment: Vasoformative factors (VEGF) are produced anterior to the vascular area, which causes neovascularisation at the junction of a vascular and avascular area. The larger the avascular area, the more is the production of vasoformative factors, and more is the neovascularisation.

The principle is to ablate the ischemic peripheral avascular retina so that it stops the release of VEGF or reduces the VEGF in the vitreous cavity.

1. Cryotherapy: It involves placing a cryoprobe on the sclera and giving multiple applications of cryo on the entire avascular retina anterior to the ridge. It requires general anaesthesia, has more local complications like severe lid edema, and for zone I cases, the cryoprobe cannot reach posteriorly because of the restriction caused by the conjunctival fornix.

2. Laser Photocoagulation: It causes ablation of peripheral avascular retina through indirect laser delivery system [diode red (810 nm) or green laser (532 nm) laser. It causes less local inflammation. The main advantages are that it can be performed under topical anaesthesia, systemic and local complications are much less compared to cryotherapy, and it can be done as outpatient procedure and posterior retina in zone I cases can be treated easily. Long-term side effects are myopia and astigmatism.

Laser or cryotherapy can only be done till stage 3 ROP. Management of stages 4 and 5 is surgical, and the final outcome is very poor for these stages. Surgical options available are Scleral buckling, Lens sparing vitrectomy and lensectomy and vitrectomy.

Role of anti VEGF in ROP

Anti- VEGF drugs (Bevacizumab and Ranibizumab) bind and block the VEGF and regress the abnormal blood vessels and allow the retina to undergo a more normal peripheral vascularisation. Anti-VEGF drugs have the advantage of bedside administration in NICU, and they show a rapid response with marked regression seen even on the next day. A 2 year follow-up data from the BEAT-ROP study shows that there is a decrease in the amount of myopia and astigmatism when compared with peripheral laser ablation. Following this landmark study, the use of anti-VEGF injections for management of APROP has increased worldwide.Anti-VEGF drugs can be used as monotherapy, combination or rescue therapy with laser and prior to vitreous surgery to reduce vascularization.

Conclusion

The treatment of ROP requires a quick and multidisciplinary approach by both paediatricians and retinal specialists. Making the parents understand the seriousness of disease ensures regular follow-up and fewer drops out to treatment.

Subluxated Soemmering's ring

Author : Dr Prateek Jain, Consultant, Global hospital institute of ophthalmology, Abu Road.

An 57-year-old male underwent manual small incision cataract surgery 12-years back and presented with progressive diminution of vision in right eye (RE). Post-mydriasis slit-lamp-examination of RE revealed subluxated Soemmering's Ring (SR) with stretched zonules, capsular phimosis and partially prolapsed polymethyl methacrylate(PMMA) intraocular lens(IOL) having superior haptic present in the bag. Patient had uncorrected visual acuity of 6/36 which improved to 6/9 after refraction. There was no history of ocular trauma. Systemic history was insignificant.

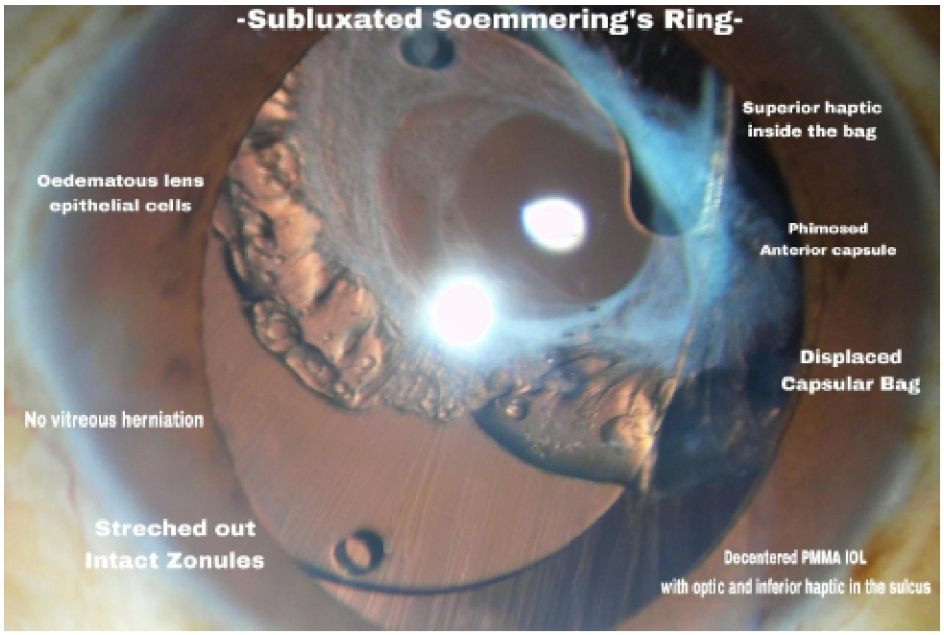
This unique ophthalmic image depicts simultaneous presence of subluxated Soemmering's ring with partial dislocated rigid PMMA IOL. Surprisingly, no vitreous prolapse was noted. Inferior haptic and prolapsed optic of IOL was found resting stable on the cushion of stretched zonules. Specular counts and Intra Ocular pressure(IOP) were with in normal limit. Fundus examination was unremarkable. Patient was prescribed glasses and asked for 6 monthly follow up to look for any corneal decompensation and IOP rise.

Soemmering first observed posterior capsule opacification in 1928 and described SR as deposits of retained equatorial lens epithelial cells which continue to proliferate and form new cortical fibers which eventually form a ring of cortical fibers between the posterior capsule and the edges of the anterior capsule remnant.[1,2]
The fusion between the anterior capsule and the posterior capsule protects the cells from the lytic aqueous humor. Hence, SR remains unharmed. (3)

The SR usually remains invisible lying behind the iris in the equator of the retro-lental space and being held in position by the zonules. It can be therefore seen only after dilating the pupil. As the central portion of the ring remains clear, there is no visual disturbance as a rule. (4)

But in this case, SR being subluxated was visible in undilated state and was responsible for the visual disturbance. According to Poos, the factors favouring dislocation of the SR are progressive myopia and ocular trauma which were absent in this patient. [4] Probably, it is spontaneous subluxation of SR secondary to capsular phimosis.

Fig 1: Slit lamp image of Subluxated Soemmerings Ring with illustration about associated findings.



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Navigation
Guided
Surgery
Data is preloaded into the computer
Location Coordinates, Maps
+ Real time updates

"A rare case report on Indian Rooster's Spur as Retained Intra ocular foreign body"

Dr. Akshika Dhamija[1], Dr. Arvind Chauhan[1], Dr. Shweta Meena[1]
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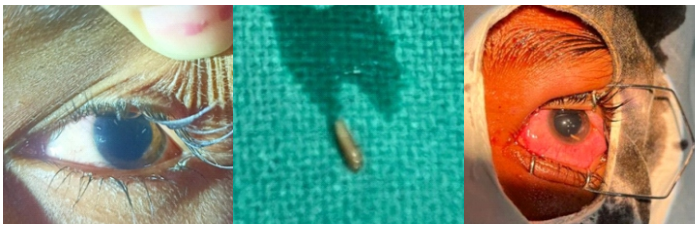
Introduction

Penetrating eye trauma is a potentially sight-threatening injury. The effect of injury depends on factors that include size and composition of the foreign body (FB) , force of entry into the eye, location of resulting wound, and final location of the FB. Metallic and magnetic objects are the most common Intra ocular foreign body (IOFB). Organic materials such as vegetative matter or cilia cause severe tissue reactions are highly contaminated and associated with significant risk of end ophthalmitis. Early diagnosis and removal of FB are essential for favorable outcomes. Most cases of FB in anterior chamber are detected by slit lamp examination. In some cases, FB in anterior chamber is impossible to detect without gonioscopy.

Case Report

A 9-year-old male child, resident of dist. Jodhpur Rajasthan presented to the eye department of MDM Hospital on 24th October with a history of trauma to left eye with Rooster's spur seven days back. There was retained spur of Indian Rooster in anterior chamber at 6'oclock position with mild corneal edema and anterior chamber reaction grade lll, and vision of the patient was up to 6/18 at the time of presentation. The patient consulted Community Health Centre 5 days back, where empirical antibiotics and antifungal drops were given, and patient was referred to MDM Hospital DR. S.N. Medical College, Jodhpur Rajasthan. Patient was admitted on 24th October and viral markers blood sugar and other relevant pre-op investigations were done which turned out to be normal. X-ray orbit and B-scan were done to rule out posterior segment FB. Anterior Segment-Optical coherence tomography showed shadowing of corneal layers corresponding to the location of FB. It suggested that FB penetrated the full thickness of cornea and extended into the AC. After obtaining informed consent, the patient was taken up for the removal of the FB in the operating room under topical anesthesia. Based on the AS-OCT findings, it was planned to remove the FB through the internal route. The pupil was constricted preoperatively with topical pilocarpine (2%) to prevent lens damage during the procedure. Betadine painting and draping were done, speculum applied and a side port made. Intracameral lignocaine was given. Viscoelastic and McPherson intraocular forceps were then used to remove the FB, taking care that it was removed in the same direction in which it had entered. The Anterior Chamber was washed to remove any viscoelastic and the port was hydrated. Intracameral moxiflox akin was given. Because the penetration line was small and oblique and seemed to close without any suture, the eye was closed with tight bandage. Next day dressing was opened and patient was given eye drop tobramycin and natamycin coverage to prevent infection and eye drop homide as cycloplegic for patient comfort. Intravenous antibiotics coverage was also given. On post-op day 3 patient was discharged with visual acuity of 6/12 and with no Anterior Chamber reaction.



Discussion

The aim of this report is to present the diagnosis, management, and surgical intervention of retained IOFB. Vegetative matter or organic FB can cause severe tissue reactions. Hence, must be managed properly with anti-fungal and should be removed AS SOON AS POSSIBLE. Increased awareness about eye protection, improved surgical techniques, and advancements in bioengineering are responsible for improved outcomes in injuries with retained IOFB.

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" Late-onset Bleb-related Endophthalmitis"

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Introduction

Filtration surgery is widely employed for medically uncontrolled glaucoma. With the introduction of antimetabolites such as mitomycin-c and 5-fluorouracil, the success rate of filtration surgery has increased. However, several types of late-onset complications still develop in a significant number of cases, which should be of concern to both patients and ophthalmologists. One of these is a bleb-related infection in which bacteria invade through the filtering bleb and then through the functioning fistula between the bleb and the anterior chamber, and finally into the intra ocular tissues. This is a serious complication that can lead to permanent visual impairment. Bleb-related infection develops in the majority of cases after trabeculectomy and has become much more common due to the popularity of this procedure, but it can arise after any type of filtration surgery.

Case Report

A 44-year-old male patient came to ophthalmology OPD in JLN medical college Ajmer with complaints of redness and diminution of vision in left eye for three days. At the consultation, visual acuity in the left eye was hand movement with good light projection. Gross examination showed marked congestion with mucopurulent discharge in the left eye. IOP was 16 mmHg. Slit Lamp examination showed diffuse conjunctival congestion. At the superior limbal area there was an avascular thin-walled cystic bleb filled with dense inflammatory infiltrates with a necrotic center. Seidel's test was negative. The cornea was mildly edematous, and the anterior chamber (AC) had 4+ cells, 4+ flare, fibrin, and a 1-mm hypopyon. Peripheral iridectomy seen at 12 o'clock. Glow was absent. There was no view of the vitreous and retina on fundoscopy. The patient had a history of trabeculectomy with mitomycin-C in the left eye on 25/5/2021 and in the right eye on 6/4/2021 after having been diagnosed with chronic open-angle glaucoma. Fundus examination before surgery showed glaucomatous changes in the optic disc. IOP was not controlled with antiglaucoma medications. Three months after trabeculectomy IOP was 11 mmHg in the right eye, 8 mmHg in the left eye, while BCVA was 6/9 in the right eye and 6/12 in the left eye. Gram staining of AC tap showed many gram-positive cocci and gram-negative bacilli in clusters. Ocular Ultrasound showed membranous debris in the posterior segment. The patient was promptly started with Fortified Vancomycin and Amikacin eye drops every 5 minutes for 3 times than 1 hourly, Natamycin eye drop 1 hourly, and Atropine eye drop TDS. The patient showed no improvement, so vitreous tap was sent for culture, and intravitreal antibiotics (Vancomycin+Ceftazidime) were given. Pars plana vitrectomy was performed. On the third postoperative day, there was a significant decrease in congestion and AC reaction with the resolution of hypopyon. Patient was discharged on medications, including Fortified antibiotics, moxifloxacin and atropine eye drop.

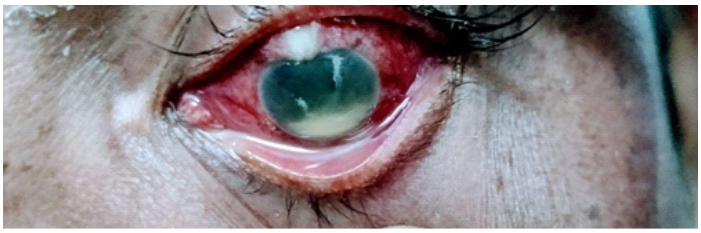

Figure 1: Showing marked hyperemic conjunctiva, opacified bleb, hypopyon with mucopurulent discharge.

Figure: 2 Showing membrane in posterior segment on USG.

Diagnosis

Late-onset Bleb-related endophthalmitis.

Discussion

The incidence of blebitis and endophthalmitis after trabeculectomy is higher than most other intraocular procedures (3). It has been estimated that the prevalence of acute postoperative endophthalmitis after any type of intraocular surgery is 0.093% (4), whereas the reported incidence of late postoperative bleb-related infections after trabeculectomy ranges from 0.4% to 6.9% in several studies over the past decade (3). After trabeculectomy with mitomycin, it is estimated that blebitis occurs with an incidence of 5.7% per year, whereas the incidence of endophthalmitis ranges between 0.8% to 1.3% per year (1, 5). Several risk factors have been associated with an intraocular infection after trabeculectomy. The inferior or nasally located bleb is one of the earliest recognized factors associated with bleb- related infection via exposure of the bleb to the bacteria-rich lacrimal lake (6). It has

been suggested that the presence of a high bleb and blepharitis increases the risk of bleb-related infection. Among the most important risk factors for bleb infection is the presence of bleb leakage (7). The pathogens from the tear film have direct access to the anterior chamber via the leaking bleb, thus bypassing the conjunctiva and the sclera. It is known that use of anti-fibrotic agents leads to a greater rate of late-onset bleb leakage than trabeculectomy without them. Histologically blebs after trabeculectomy with MMC have irregularities in the conjunctival epithelium, breaks in the basement membrane, and conjunctival and subconjunctival hypocellularity, which can all predispose to bleb leaks. A recent study has shown that MMC use is strongly associated with bleb- related infection (8).

The presence of MMC-augmented trabeculectomy made our patient susceptible to bleb-related endophthalmitis. Though the bleb was not actively leaking in the acute phase, the thin cystic and avascular nature of the bleb (figure 2), which was visible once the infection was controlled predisposed the eye to pathogen entry. It has been postulated that the combination of defects in the bleb's barrier function with altered conjunctival innate immune defense may play a role in the observed increased susceptibility to infection of antimetabolite-augmented trabeculectomy blebs (9).

Other risk factors associated with bleb-related infection are intermittent or chronic use of topical antibiotics beyond the immediate postoperative period (8), the use of systemic corticosteroids, juvenile glaucoma, silk conjunctival sutures, nasolacrimal duct obstruction, releasable sutures, pale-colored blebs, contact lens wear, younger age at the time of surgery and black race. In early bleb-associated endophthalmitis, the most common bacteria include the coagulase-negative Staphylococcus sp. and Propionibacterium acnes, which usually have a favorable prognosis for good visual acuity once the infection resolves (10). In contrast, late-onset bleb-associated endophthalmitis is usually caused by Streptococcus sp. and gram-negative bacteria such as Haemophilus influenza, which have a poorer prognosis for vision (11).

Bleb- related infection is an urgent condition that needs instant intensive treatment. It is essential to detect the disease early, distinguish the disease stage and identify the causative organism. The treatment should comprise a combined therapy of fortified topical, subconjunctival, or intraocular injection of antibiotics, and systemic antibiotic therapy depending on the severity of infection. Vitrectomy is mostly recommended when vitreous involvement is apparent or severe. Considerable controversy exists regarding the use of concomitant topical or intravitreal corticosteroids in the management of late-onset bleb-related infections. It is believed that these agents modify the inflammatory response and the resultant damage to ocular structures; however, no research has yet supported their use in this setting (12).

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Atypical presentation of Cat-Scratch neuroretinitis

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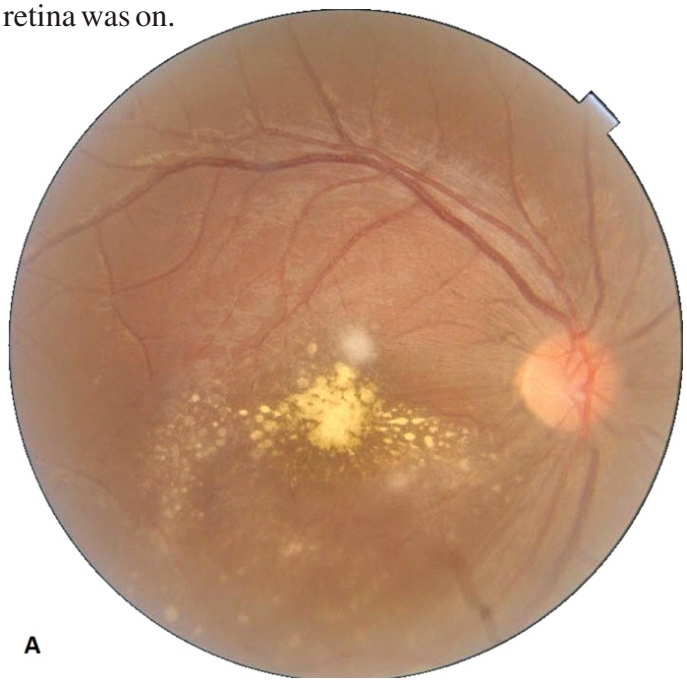
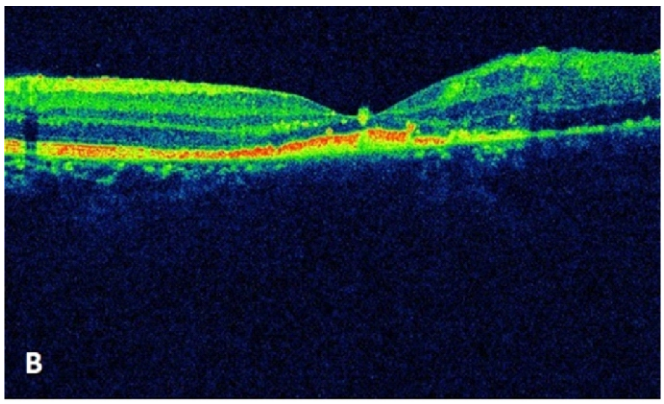
Case report

We report a case of a 24-year-old lady who presented with a diminution of vision in her right eye for 1 month. The best corrected visual acuity for the right eye was 6/24 for distance and N10 for near, and for the left eye, it was 6/6 and N6. The patient had a history of fever a week before the diminution of vision.
Clinical examination revealed a normal anterior segment examination. No signs of vitrits were seen.
On fundus examination, disc was normal in size, shape, and pink in color with a cup disc ratio of 0.3:1. Internal Limiting Membrane (ILM) folds were seen over Papillo-Macular Bundle (PMB) (Fig. A). The partial macular star was noted with hard exudate plaque at the fovea. Two yellowish-white retinitis lesions were noted superior and inferonasal to the fovea. No sub-retinal fluid was seen clinically and the periperhal retina was on.



Optical coherence tomography (OCT) revealed foveal atrophy with 157 micros of central foveal thickness (Fig. B). Hard exudates were seen and thickened RPE-Bruch's complex and Photo-receptor layer was noted. No subretinal fluid or diffuse retinal thickening was noted.



The patient brought blood investigation with her which showed raised ESR. The patient did not agree to get Fluorescein Angiography (FA) done. On palpation, sub-mandibular lymph nodes were enlarged. The patient was sent for Bartonella serology and Liver function test.

Also, the patient was started on Tablet Doxycycline 100 mg twice a day for 1 week and asked to review after a week with reports.

The literature search revealed a few isolated published case reports (1,2) on this clinical entity. Ours is a unique case having atypical features like the absence of disc edema and the absence of any subretinal fluid or retinal thickening. Although typical features like the presence of macular star, hard exudates, and unilaterality were there. Also patient has a cat as a pet at home. Declaration of patient consent The author certify that they have obatined all appropriate patient consent forms. In the form the patinet has / have given his/her consent for his/her image and other clinical information to be reported in the journal. The patient understand that their names and initials will not be publishesd and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflict of interest

No conflicts of interest

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"Epithelioid Choroidal Melanoma in a Middle-Aged male-A case report"

Dr. Jaishree Singh, Dr. Sangam, Dr. Mahendra Chaudhary, Dr. Pooja Kapadia, Dr. Anita Rani, Dr. Ekta Karhana

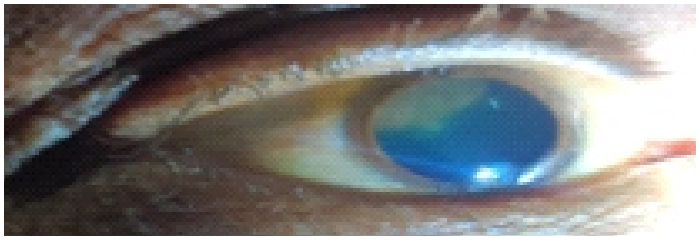
Abstract

Choroidal melanoma is a primary intraocular malignancy.Uveal melanoma is a life-threatening condition leading to systemic metastasis in approximately 25% to 40% of patients by 10 years. 1,2 Metastatic disease most often occurs in the liver (89%), followed by lung (29%), bone (17%), and skin (12%).We present a rare case of choroidal melanoma, in a 49-year-old adult who presented with two months history of headache and gradual diminution of vision, especially of inferior visual field in the right eye in our ophthalmology OPD and his investigations revealed a clinical diagnosis of choroid melanoma, which was further confirmed by histopathological finding from tissue harvested from enucleated right eye. Histopathology report presents epithelioid choroidal melanoma.

Background

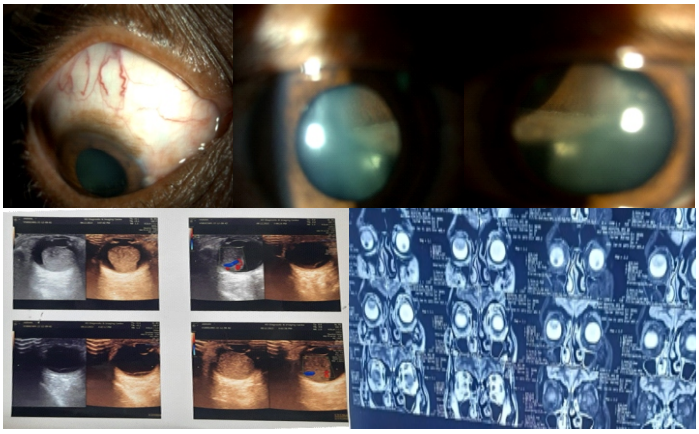
Ocular melanoma is the second most common type of melanoma after cutaneous melanoma. The most common primary intraocular malignancy is uveal melanoma. The large majority of ocular melanomas originate from uvea i.e., iris, ciliary body, and Choroid (95%), while conjunctival melanomas are far less frequent (5%) [1]. Annually around 6 million people are diagnosed with ocular melanoma [2]. Among uveal melanoma, choroidal melanoma is more common. And here, we are discussing a case of choroidal melanoma in an adult male aged 49 years old.

Here is the picture of the patient with choroidal melanoma.



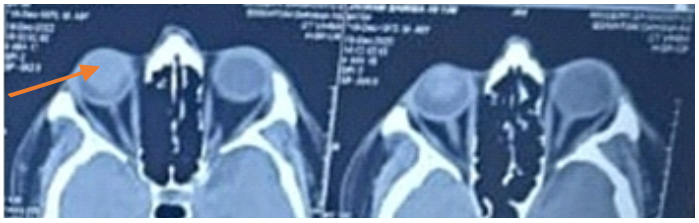
Case report

A 49-year-old male presented to the ophthalmology OPD with headache, right eye pain, and photopsia along with a gradual diminution of vision in the right eye, particularly inferior visual field loss of two months duration. His general and systemic examination was normal. Ophthalmic examination was carried out for both eyes; BCVA for right eye was 6/24, and BCVA for left eye was 6/6.The Intraocular pressure (IOP) of both eyes was within normal limits, with the right eye at 17.3mm Hg and the left eye at 12.2mm Hg with 5.5gm weight using Schiotz tonometer. Binocular Indirect ophthalmoscopy of the right eye showed disc within normal limits and a solid dark grey mass in the posterior segment (Choroid) with intense brown pigmentation, occupying posterior third of the vitreous chamber along with mild retinal detachment obscuring the macula. Left eye disc was within normal limits, and foveal reflex was seen. Slit lamp photography of right eye was done to observe the mass in posterior segment of right eye.



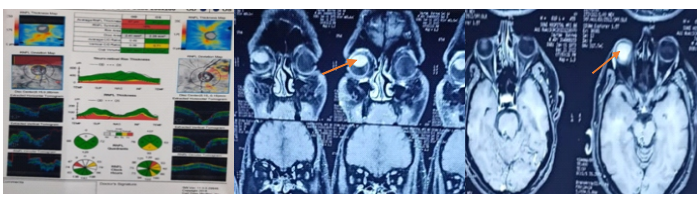
Patients right eye showing echogenic polypoidal mass on B scan image.

'B scan' ultrasound of right eye was carried out to confirm the finding and assess the size of the mass and extent of intraocular involvement; The mass turned out to be arising from the Choroid with a dome-shaped polypoidal echogenic lesion approximately 15.2*15.0 mm seen in vitreous cavity in right posterolateral aspect. Peripheral vascularity was seen. Occupying more than a third of the posterior segment of the right eye. Mild subretinal fluid collection present (max thickness =1.6mm).



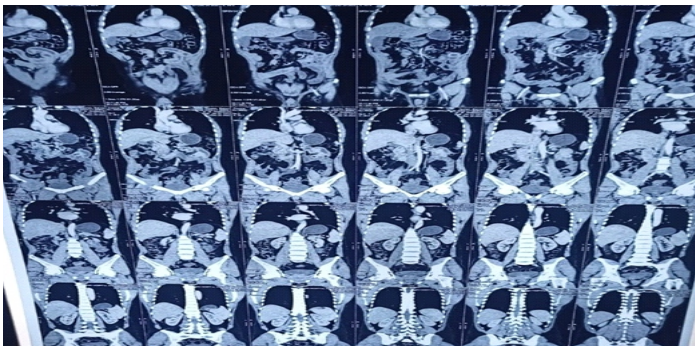
These findings further needed to be correlated with orbital CT Scan findings given above.

Optical Coherence Tomography (OCT) imaging of the right eye was unattainable because views of the optic nerve and macula were obstructed.

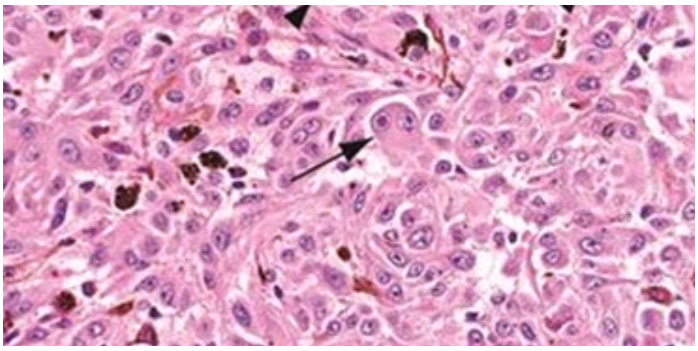


MRI with contrast showed right side intraocular mass arising from the posterolateral Choroid.

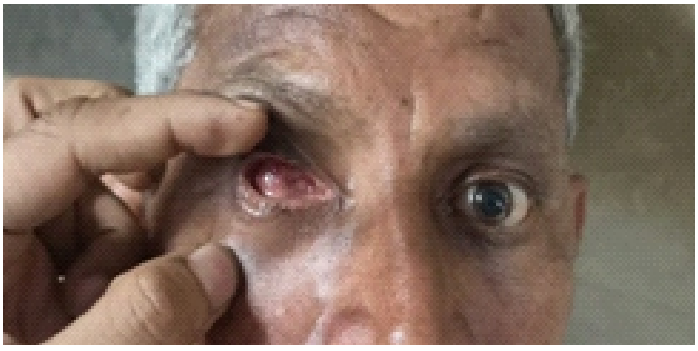
MRI confirmed the mass to be choroidal growth limited within the posterior chamber arising from the posterolateral side of the Choroid of the right eye. Considering the imaging diagnosis and clinical findings, a diagnosis of choroid melanoma was made categorized as T3a, which stage IIB according to the American Joint committee on cancer.
CT Scan of thorax and abdomen show no metastasis.



The management of choroidal melanoma involved enucleation of the right eye, and the enucleated eye and its mass were subjected to histopathological examination. The histopathological report confirmed Choroid Melanoma of epithelioid type, and its anterior border between ciliary body and equator and posterior border between equator and optic disc.



After enucleation of right eye patient was given advice for follow-up regularly as to rule out metastasis later in course of disease.



After enucleation of the right eye.

Discussion

Melanomas of the uveal tract can be divided into the lesions of the anterior and the posterior tract; the anterior tract melanoma involves the iris, whereas the posterior tract melanomas involve the ciliary body and the choroid layer. Most common among them is choroidal melanoma. This is a very rare disease with an incidence of 5-6 cases per million of population.[3] Clinically the presentation of choroidal melanomas is variable. In general, anterior choroidal melanomas have a delayed presentation because of slow growth however, clinical signs and symptoms can present earlier. Patients of choroidal melanoma usually present with blurring of vision. Patient may experience painless and progressive visual field loss as the peripheral melanoma enlarges. Floaters and at times 'balls of light' are experienced by subjects in case of necrosis of tumor or hemorrhage in the adjoining areas. Severe pain may be experienced with impingement of tumor mass on ciliary nerves or due to acute angle closure glaucoma. Not infrequently, the patient remains asymptomatic until the tumor has grown sufficiently to become necrotic and produce complications such as endophthalmitis, massive intraocular hemorrhage, and/or secondary glaucoma.Choroid layer being devoid of lymphatics hence majority of the choroidal melanomas spread by a haemotogenous route mainly from the liver. [4] The melanoma disrupts thearchitecture of the retina and its vascular supply, which leads to subretinal fluid accumulation.There is a strong association of exudative retinal detachment with choroidal melanoma.[5]Clinically, CM can present as a dome- or a mushroom-shaped mass or be lobulated. Presentation as a diffuse mass occurs in <5%. [6] Usually, they are pigmented in 55% of cases, mixed pigmentation in 30%, and predominantly amelanotic in 15%. [7] The overall prognosis of malignant melanoma of the uvea is based on several factors; however, the malignant melanoma can be said to have an intermediate prognosis, mortality being close to 50% 15 years after enucleation [8]

The modified Callender's classification of uveal melanomas has four categories:
1. Spindle cell-type tumors comprising 45% of all choroidal melanomas.
2. Pure epithelioid cell Melanomas 5% (rare occurrence).
3. Mixed cell melanoma 45% (comprising of spindle cell and epithelioid cell types).
4. Necrotic melanoma 5% (predominant cell type unrecognizable).

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Dr. Shakshi Jain

Signs of Thyroid Eye Disease

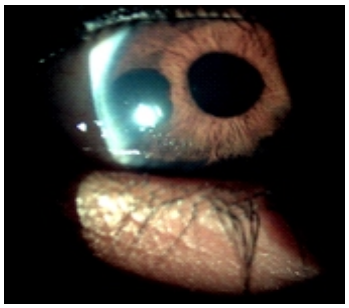
Goldzeiher's sign

Darlymple sign

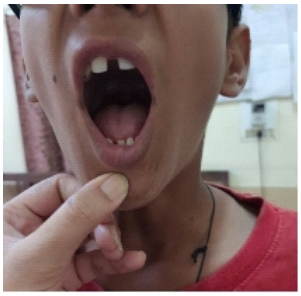
Ballet sign

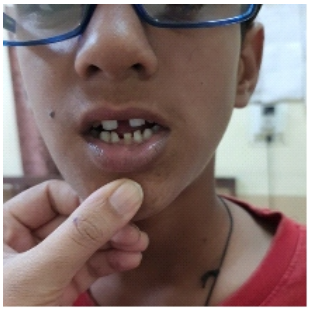
Von Graefe's sign

"RIEGER'S SYNDROME"

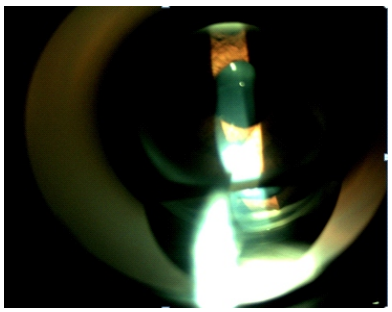


Polycoria and ectropion uveae





Microdontia



Peripheral anterior synechiae

Dr Ayushi Gupta
JLN Medical College Ajmer

World Sight Day Poster of ROS Unveiled by Dr Raghu Sharma, Hon. Health Minister of Rajasthan

"Early Death Among Doctors" How to Reverse this Trend?

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During the past few years, the sudden death of young ophthalmologists in India shocked the entire ophthalmic fraternity. Recently, the sudden demise of Kolkata-based ophthalmologist due to massive myocardial infarction came as shocking, sad news for ophthalmic colleagues. Similarly, few young, highly skilled, and talented eye surgeons from NABHA, Punjab, Jhunjhunu, Rajasthan, and a few others, succumbed before the age of 45-50 years. Sudden early deaths have frequently been reported among medical professionals during the past few years.[1-3] This indicates an alarming trend of the sudden death of doctors and is also closely associated with stress/burnout, a sedentary lifestyle, long working hours, and socio-economic factors.

Sudden deaths among medical professionals?

One of the most important reasons is overwork, stress, lack of physical activity, and lack of regular health checkups. Young and middle-aged doctors are in a critical period of their family and professional career development. Not only do they hope to make breakthroughs in clinical services as well as academic research, but they also face pressure from patients and their families. The escalation of contradictions between doctors and patients has also become an increasing mental burden in the practice of many medical professionals.

Middle-aged doctors have heavy familial responsibilities, such as paying the bank loan for medical/ophthalmic practice, supporting parents, rearing children, and making mortgage payments, which cause them to work harder (six to seven days a week) without any breaks. Deteriorated working environment, serious violence against doctors, and decreased patient physician trust also intensified the sense of "stress/burnout" in doctors. Male medical professionals, especially in a surgical specialty and operative care, have larger overloads and longer working hours, which may be the primary cause of death. Besides, incorrect stress relief manners also affect doctors' heaths, such as excessive alcohol consumption, smoking, and long-term energy drink consumption. Lack of exercise and obesity also increase the risk of acute myocardial infarction and stroke. Medical professionals usually neglect regular medical checkups themselves, which results in some potential diseases not being timely detected, such as diabetes, coronary artery disease, hypertension, hyperlipidemia, hyperuricemia, etc.

Cancer has figured prominently in the Indian Medical Association study as a causative agent for premature death among medical professionals.[4] However, a direct relationship between doctors' premature death and cancer needs to be examined more precisely through well-conducted studies. Theoretically, medical professionals are exposed to various occupational and environmental factors that may increase cancer risk. Doctors are a unique group of individuals who are routinely exposed to multiple carcinogens, such as

ionizing radiation and various chemicals. Exposure to high doses of diagnostic and therapeutic ionizing radiation is known to increase the incidence of various cancers, like those of the thyroid and the ovary. The high incidence of differentiated thyroid cancers among doctors specialized in various disciplines of radiology is testimony to this. Even young residents in the specialty are reported to be associated with a higher incidence of cancers. Besides radiation and chemicals, the other factor known to cause cancer among doctors is stress itself. Stress caused by a heavy workload, burnout syndrome, compassion fatigue, and chronic sleep deprivation can cause cancer.

In addition to cardiac ailments and cancer, suicide among Indian doctors is a concern and remain one of the important cause of sudden death among medical students/residents and young medical professionals. The medical profession is considered more stressful, but mental health is still a subject of taboo in the medical profession in the Indian context. Medical professionals have a higher suicide risk, 2.5 times more than the general population. [4,5]

How to Reverse this Trend?

Every effort should be made to promote a healthy work-life balance, especially for residents-in-training and female doctors/medical professionals. The important issues need to be addressed, and the nobility of the profession must be restored where health care is not merely a commercial commodity, and doctors aren't money-making machines. Their compassion and empathy need to be preserved, and their grievances are taken into consideration. Medical professionals overlooking their health and ignoring the early warning symptoms is the other primary reason behind premature death. Having greater knowledge and a better understanding of mental and physical health issues, doctors must not undermine their own well-being for the sake of their profession or other things. They will do no good to their patients if they aren't taking adequate care of themselves first. This is why the phrase heal thyself is used by doctors frequently. [4]

The onus is on medical professionals/ophthalmologists to take responsibility for their own health. They must not be reluctant to seek advice from specialists among their colleagues and not attempt to treat themselves. Those known to be genetically prone to vascular disease must pay attention to addressing modifiable risk factors and effective lifestyle changes that could contribute to a catastrophe. Those known to have cancers running in families must subject themselves to stringent cancer-screening programs. Medical professionals /ophthalmologists must function humanely, doing justice to the nobility of their profession and not sidestepping their responsibilities and accountability toward patients. They must keep open the channel of unconditional communication founded on honesty, truth, and readiness to accept responsibility for patients and their families.

We suggest that each and every ophthalmologist/doctor should take responsibility for his/her own health. Medical professionals/ophthalmologists should regularly perform aerobic exercise or connect with families and friends for support instead of excessive smoking and drinking. Besides, regular medical checkup (blood pressure, blood sugar, ECG, Echocardiography, etc) is an effective approach to detecting and decreasing the risk of some potential diseases such as diabetes, coronary artery disease, hypertension, and stroke. Government, non-government organizations, medical/ophthalmic societies, and media should help to improve the working environment and re-establish doctor-patient trust, which may further decrease the sense of "stress/burnout" for doctors. A change of lifestyle and healthy work-life balance adding yoga, exercise, and meditation to reduce stress, maintain quality eating, and maintain body weight can save many young doctor/ophthalmologist lives.

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"The important question isn't how to keep bad physicians from harming patient; it's how to keep good physicians from harming patients. Medical malpractice suits are a remarkably ineffective remedy. Fewer than 2 percent of the patients who had received substandard care ever filed suit. Conversely, only a small minority among patients who did sue had in fact been victims of negligent care. And a patient's likelihood of winning a suit depended primarily on how poor his or her outcome was, regardless of whether that outcome was caused by disease or unavoidable risks of care. The deeper problem with medical malpractice is that by demonizing errors they prevent doctors from acknowledging & discussing them publicly. The tort system makes adversaries of patient & physician, and pushes each other to offer a heavily slanted version of events."

Dr. Atul Gawande, Complications: A Surgeon's Notes on an Imperfect Science

Medical professionals are now accountable to the public under the Consumer Protection Act (COPRA), 1986, which came into force in 1988. The act recognizes a consumer's right to safety, information, choice, redressal, consumer education, and to be heard. The inclusion of medical services under COPRA has evoked scathing criticism from medical professionals, which argues doctors will have to practice "Defensive Medicine" while treating/operating patients and undertake multiple consultations. Medical professionals will also be forced to insure themselves heavily against malpractice suits.

Alarming Rise in Consumer Cases:

India is witnessing an alarming rise in medical negligence cases filed in consumer courts against hospitals and medical professionals. According to published reports [1-4] , there is a 110% rise in the number of medical negligence cases reported every year. The majority of medical negligence cases filed in consumer courts involve obstetrics and gynecology followed by cases related to orthopedics, and other medical and surgical branches.[1-4] Heavy compensation was ordered in some of these cases. In a judgment given in October 2013 on medical negligence, the Supreme Court awarded compensation amounting to Rs. 11 Crore to a victim, which was to be paid by the doctors and the private hospital deemed responsible for the wrongful death of a patient. This landmark decision was by far the largest compensation award in the history of Indian medical negligence litigation. The National Consumer Disputes Redressal Commission (NCDRC), New Delhi, on August 26, 2022, awarded an exemplary compensation of Rs. 1 Crore to the parents of a 6-year-old child. The child was admitted for squint eye correction surgery and died while undergoing squint surgery at an Eye Hospital in Chennai. In July 2015, the Supreme Court ordered a compensation of Rs 1.7 Crore to a girl who lost vision soon after birth due to medical negligence by doctors of a government hospital in Tamil Nadu.

The medical profession is considered to be one of the noblest professions in the world. While Indian medical infrastructure is being noticed and praised on the global map, yet within the country, the doctor-patient relationship is deteriorating, and the medical setup is facing extensive problems, with medical litigation fast becoming one of the most serious of all issues. Medical professionals are no longer regarded as infallible and beyond questioning. We live in a culture in which displeased patients have increasingly turned to litigation as a means of obtaining redress from perceived deficiencies in the quality of care received from their treating physicians. Consumer cases are increasing not only for the medical branches dealing with life and death (emergency medical branches) or dealing with two lives (such as obstetrics and gynecology) but also for doctors working in OPD/daycare set up like ophthalmology, dental surgery, dermatology, and diagnostic branches like radio-diagnosis, pathology are also increasingly facing consumer cases/litigations.

How to Minimize Consumer Cases & How to Safeguard Medical Professionals?

Despite the best possible care, best intentions, and best medical practices, some complications are bound to occur, and at these times, compassionate care, effective communication with the patients and attendants is the key to avoiding these complications from becoming lawsuits. While communicating with these patients, we need to be honest and sympathetic but not overly defensive. It helps to clearly admit that a problem has occurred rather than being evasive. However, the responsibility doesn't end with good communication; we need to do our best to ensure that the complications are handled well or referred to the right place at the right time. Support the patient at this time by explaining to the attendants, helping to take the patients elsewhere, etc. The right attitude, compassion, and communication at this crucial time can make a huge difference to the reaction of the patients and avoid litigation despite unfavorable outcomes.

Timely referral to an expert is vital for managing a difficult situation or any specific disease. Never criticize or disapprove of treatment or surgery done by your professional colleague in front of patients or relatives, as it can provoke them to file malpractice lawsuits. The increased cost of healthcare service delivery has ultimately led patients to have higher expectations from medical care providers. Combined with the increased awareness and the availability of means to vocalize their grievances, patients can highlight cases of negligence even for the smallest deficiency in the service.

The best way to handle consumer cases/medico-legal issues is by preventing them by 6 Cs: Checklist, Cost, Consent, Counseling, Complications Management, and Coverage by Insurance.[3-7]

The WHO Surgical Safety Checklist is an often-used example of a surgical checklist intended to ensure safe surgery and minimize complications. Train your entire team to follow the checklists and protocols. Examine each and every patient very carefully. Ask for the previous medical records and never forget to take a complete history of systemic illness, drug allergy, previous surgery or trauma, etc.

It is important to counsel and explain to each and every patient about the surgery, cost, outcome after surgery, need for follow-up, and possible complications. The preoperative stage entails taking valid informed consent (video consent in all high-risk cases) of the patient for executing the proposed treatment, taking and recording the history of the patient, carrying out a proper examination, diagnosis, and investigations, pre-anesthetic check-up, detailed counseling, complete systemic investigations (and clearance for surgery) and then proceeding with treatment.

Always take the help of an anesthesiologist for monitoring vital parameters after taking patients to the operation theater. The surgeon and entire team should be vigilant to minimize the complications encountered during the surgery in the operation theater, accidents, drug reactions, and mishaps experienced while operating (for example, surgery in the wrong patient/wrong eye/the wrong side, implanting the wrong prosthesis/IOL/implant), death during operation, and other similar incidents. Always document all operative notes, follow-up advice, detailed instructions about using the medications/eye drops, and communication about the postoperative complications etc. Several medical professionals use abbreviations and short forms instead of detailed notes, and this needs to be avoided, especially in the instructions for the patients.

Always explain the prognosis/complications/adverse outcomes in simple words using language spoken by patients. It may be helpful to write about the treatment details/prognosis/outcome in the regional language on the discharge/follow-up records so the patient (and his relatives) can read and understand clearly.

Coverage by Insurance (Professional Liability Insurance) :

Medical professionals must cover themselves under professional liability insurance. One may take medical societies' help for bulk purchases and reduce the premium. A group of doctors can always negotiate better terms with the insurer than any individual. If the Insurance company is being changed, one should always insist on the retroactive cover.

Training of Your Team :

Periodical training/checking of your staff members and operation theater (OT) team is a must to ensure they follow the checklist and protocols to minimize any

error(s) when the patient is taken for surgery. Double-check the patient records, investigation reports, consent signed by the patient, site of operation, and medical records related to systemic illness, etc., before taking the patient to the operation theater. Always check the prosthesis/implant/intraocular lens type and its power, carefully inspect the irrigating solution for any floating particles, and always cross-check the date of expiry of drugs and devices. In ophthalmology, for example, train your entire OT team to always follow the practices to minimize postoperative endophthalmitis, such as application of adhesive drapes, pre-operative cleaning of the eye and peri-ocular area with 5% povidone-iodine solution, and instillation of one drop of povidone-iodine solution after completion of intraocular surgery.

Avoid unnecessary conversation (including jokes, irrelevant talk, scolding your staff, etc.) in the operation theater premises in the presence of a patient (or relatives) scheduled for any procedure or surgery. Exercising utmost care while performing any surgery under topical or local anesthesia is important as the patient is actively listening to all conversations and may (wrongly) correlate negligence in case of a lack of desired results.

Take Home Message:

The number of cases against medical professionals for malpractice is increasing because of increased internet awareness ('Dr. Google') among patients. While very few cases may be legitimate and based on clinical negligence exercised by doctors, most medical professionals are wrongfully accused because of the lack of public understanding. The ophthalmic professionals must communicate empathetically, emphasize diligent service delivery and also maintain proper records about the patient history, consent, and treatment. This practice will bring down the alleged incidents of malpractice and will protect medical professionals from fake lawsuits.

It is imperative to take substantial measures to ensure due diligence while performing surgical procedures, follow the provided guidelines, and take all necessary measures before performing any surgery in the hospital. Following surgical checklists, protocols, proper documentation (maintaining medical records), taking informed consent, communication about the outcome of the procedure or treatment, timely referral of the patient (in case of any complication), and obtaining adequate professional liability insurance coverage are a few important tips to minimize the risk of litigation against medical professionals and medical professionals.

There is an urgent need to evaluate the manner in which India chooses to address medical negligence/errors. In addition to the fear of defensive medicine, increasing insurance premiums, and rise in costs for patients, it is time we are aware of the inequity that the present system perpetuates. Systemic deficiencies such as very heavy malpractice/litigation costs, delayed and protracted litigation, as well as dependence on judicial discretion do not provide effective justice to victims and could harm medical professionals and hospitals as well. In a developing country like India, where there is an abysmally low investment in health, the paucity of trained human resources, a huge gap between urban and rural health care, and poor political/administrative will to improve the health sector, it would be wise to implement a no-fault liability system within the public health sector and also to have caps on the amount of compensation after carrying out due research and discussion. The government also needs to act and invest in health care (at least 5 percent of GDP) before it is too late.

India needs to overhaul the present system of addressing medical negligence using all of the above-mentioned solutions effectively. Medical **professional bodies of India should ask the ministry of law to cap compensation for malpractice.** *It is time for the Indian Medical Association (IMA) and other medical societies to work together to ensure the safety of practicing medical professionals and hospitals.*

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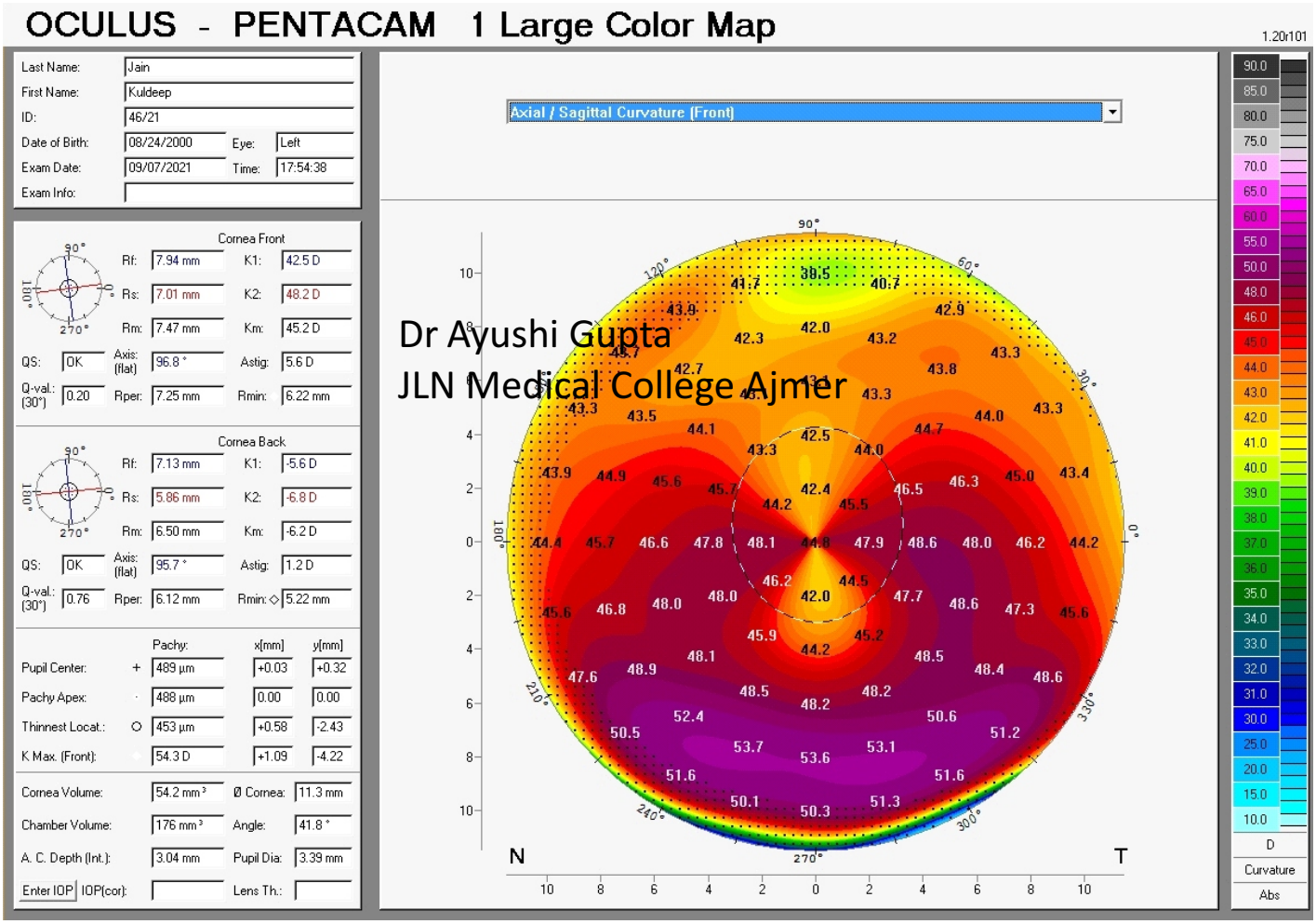
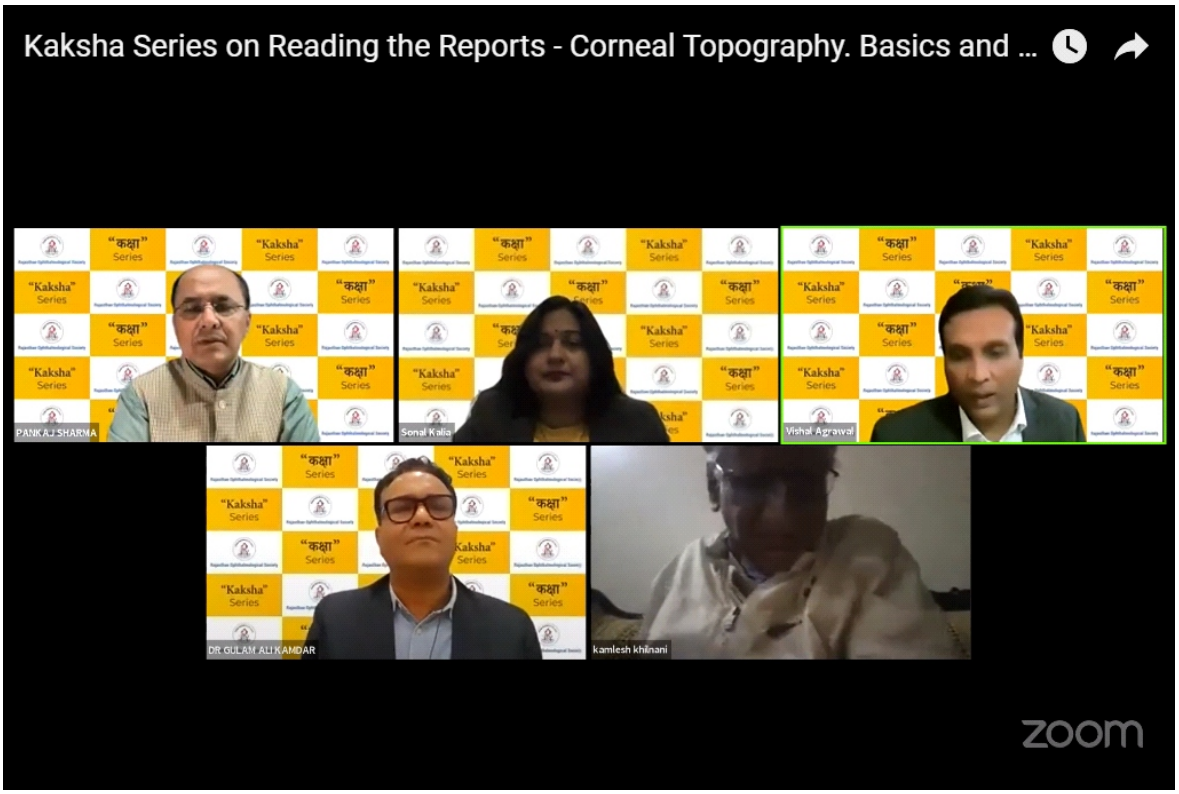
JLN Medical College, Ajmer





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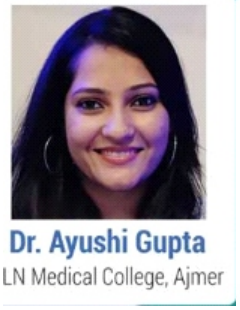

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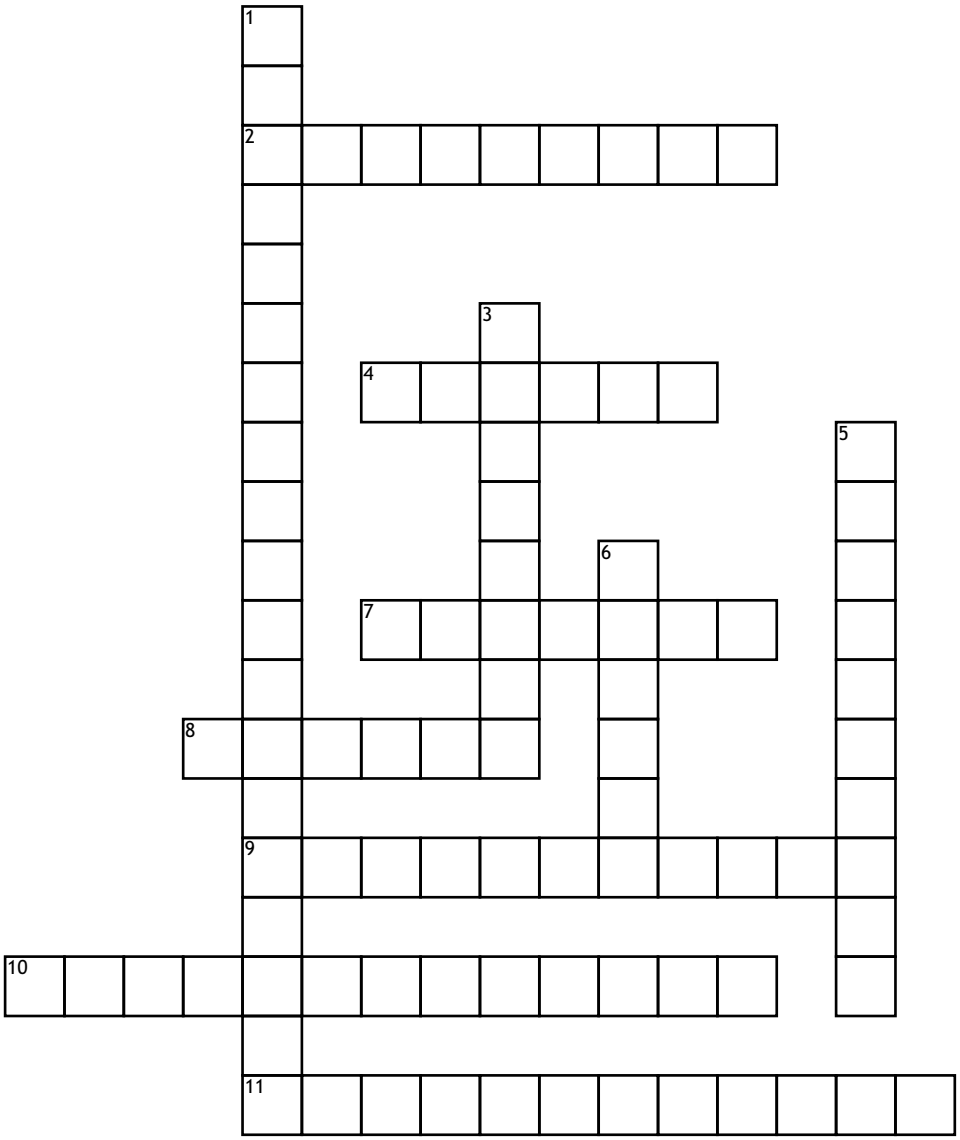
Eye Care



Across

2. The normally transparent lens becomes cloudy.

4. The tough, white part of the eye.

7. A thin structure that lines the inside of the sclera.

8. The light-sensitive membrane on which images are cast by the cornea.

9. The eye isnt able to focus properly because of an irregularly curved cornea or lens.

10. The gland that secretes tears into ducts that empty into the eye.

11. Transmitted to the brain through the optic nerve.

Down

1. Light-sensing cells of the macula begin to malfunction.

3. Abnormally high pressure leads to irreversible damage of the retina and optic nerve.

5. The muscles of the eyes are weak or don't function properly.

6. A transparent tissue that bends and focuses light before it enters the lens.

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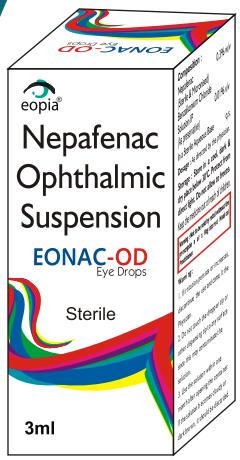

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