

EDITORIAL

A.I. in Eye Care : Shaping the Future of Modern Ophthalmology

In today's fast-paced world, the silent threat of eye disease demands more than traditional approaches. A confluence of cutting-edge technology, medical breakthroughs and a data-driven mindset has created a paradigm shift. Artificial Intelligence (A.I.) is at the forefront of this revolution-transforming eye care treatments with unprecedented precision, accessibility and personalized treatment. The new era is not just about reacting to symptoms, it's about anticipating them before they even manifest. This editorial explores the transformative potential of AI in ophthalmology, highlighting its benefits and the considerations it brings.

A.I. is revolutionizing the field of ophthalmology, bringing significant advancements in diagnosis, treatment, and patient care. Eye hospitals are increasingly adopting A.I. technologies to enhance their services and improve patient outcomes and management of eye diseases.



Once Nuclear weapons, Now A.I.: India's External Affairs Minister

Dr Subrahmanyam Jaishankar, India's External Affairs Minister's observations at the Kautilya Economic Conclave, held in New Delhi on 6th October, assumes great significance. He

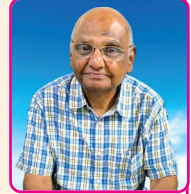
expressed grave concern about the advancement and integration of Artificial Intelligence technologies in all walks of life and business sector and cautioned about the possible threats of A.I. also. He says "**Once Nuclear Weapons, Now A.I.**" dominating the world. A.I. will be the most profound global factor influencing the entire world. He compared the threat of A.I. than nuclear weapons which dominated the entire world in earlier generations and added that A.I. will conquer the world in the next 10 years and change the face of the globe if not properly integrated the A.I.

(Source Eenadu (Business) 06.10.2024)

One of the most significant impacts of A.I. in ophthalmology is in the field of diagnostic imaging. A.I. algorithms, particularly those based on deep learning, have demonstrated remarkable accuracy in analyzing medical images such as fundus photographs and optical coherence tomography (OCT) scans. These A.I.-powered tools can detect early signs of eye diseases like diabetic retinopathy, glaucoma, and age-related macular degeneration (AMD) with a level of precision that rivals,

(cont...8th page)

Sri M Ramdas Nominated as Chairman of Sankar Foundation Board of Trustees



The Board of Trustees of Sankar Foundation has unanimously nominated Sri M Ramdas as the Chairman of the Trust Board.

A distinguished senior advocate, Sri Ramdas has been a Trustee of Sankar Foundation since 1997. His contributions have significantly advanced the foundation's growth in this region and establishing it as a premier eye care provider. He has guided the organization through periods of substantial change, ensuring clear strategic direction and robust governance. With his leadership, expertise, and experience, Sri Ramdas will continue to steer the Foundation towards new heights, driving it to achieve excellence in eye care.



Sri Atmakuri Krishna Kumar nominated as Managing Trustee of Sankar Foundation

Sri Atmakuri Krishna Kumar, the elder son of the Founder of Sankar Foundation, Late Sri Atmakuri Sankar Rao, has been nominated/elected as the Managing Trustee of Sankar Foundation, effective from 26th October 2024. This decision was made during the 172nd Trust Board meeting held on 26th October in Visakhapatnam, chaired by Sri M Ramdas, Chairman of the Board.

The meeting was attended by Sri Atmakuri Krishna Kumar, Sri Atmakuri Vijaya Kumar, Prof A Prasanna Kumar, and Sri A Ramkumar (participated via video conference from the USA.)

Sri Krishna Kumar, who holds a Master's degree in Applied Economics from Andhra University, has served on the Board for over 13 years. He is known for his soft-spoken nature and humane approach. Under his leadership, the Foundation has made significant strides towards excellence. With his extensive experience and leadership, Sri Krishna Kumar is expected to elevate the Foundation to greater heights, fostering a culture of innovation and enhancing the hospital's reputation through outreach programs and partnerships.

Performance at a Glance

Total Eye Surgeries 4,61,345 Since Inception

Total OP Screened 26,83,520 Since Inception

A FESTIVE ATMOSPHERE MARKS DUSSEERAH

The staff at Sankar Foundation celebrated Dusserah with great enthusiasm by performing a puja in the hospital creating a serene and festive atmosphere. The event was marked by vibrant decorations, traditional rituals, and a sense of unity among the staff. The festive spirit was



palpable as everyone came together to celebrate this auspicious occasion, making it a memorable day for all. The Maintenance Department staff attired in a traditional dress, organized the event where all the departments took part in the



Women expressing joy after having their vision restored



A group of women expressed their gratitude and happiness after having their vision restored through successful surgeries at Sankar Foundation. They collectively thanked the staff, especially the nurses, for their exceptional service. During the first half of this financial year, Sankar Foundation performed an impressive 7395 eye surgeries exclusively for women (out of 9131 surgeries) and this amounts to 58% under the Dr YSR Arogya Sree/Dr NTR Vydy Seva, DBCS scheme, all at no cost to the patients. This demonstrates the hospital's commitment to eliminating avoidable blindness among women in the North Coastal Districts of Andhra Pradesh.



celebrations. The Operation Theatre staff also celebrated Dusserah by praying to the God for the well-being of the staff and the hospital. The event was filled with devotion and joy, bringing everyone together in a spirit of unity and festivity. Sri K Radhakrishnan, GM (Admn & Operations), Dr Raveendra, Dr Ajay Sarma, Dr Sireesha, Dr KV Satyanarayana, HODs, doctors and large number of employees participated.

DO YOU KNOW?

What You Don't Know about Eye Health Could Harm You

Most people are unaware of basic facts that could protect them from vision loss. For example, only about one-third of Americans know that eye diseases can steal your sight before you notice symptoms. That's because your brain adapts to vision loss, making it difficult to notice the decline - something that less than half of adults realize.

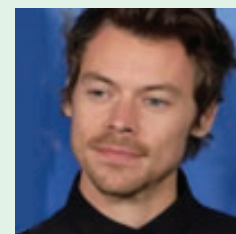
- Many forms of **glaucoma** have no warning signs. You may lose most of your vision before you realize you're affected. That's because the disease begins so gradually.
- People with **diabetic retinopathy** may not notice vision problems at first. But eventually this disease can cause blindness.
- Sudden **blurriness** or trouble **seeing colors** and fine details can signal **age-related macular degeneration (AMD)**. Symptoms usually appear suddenly and **worsen rapidly**.

How many nerves are in the eye?

Six cranial nerves innervate motor, sensory, and autonomic structures in the eyes. The six cranial nerves are the optic nerve (CN II), oculomotor nerve (CN III), trochlear nerve (CN IV), trigeminal nerve (CN V), abducens nerve (CN VI), and facial nerve (CN VII).

Which celebrity has the best eyes?

Harry Edward Styles (30), an **English Singer** has the most beautiful eyes. The sea foam green hue, combined with the symmetry of his face, equals one stunning pair of eyes. Miley Cyrus and Rihanna can also be found in the top 5 most loved celeb eyes in the UK.



What is the newest technology for eye exams?

Digital retinal imaging is a noninvasive method for capturing detailed images of the retina. For example, ultra-wide field retinal imaging can capture up to 200 degrees of the retinal surface area. Many digital eye exams can aid in diagnosing diseases like diabetic retinopathy and glaucoma.

(Inputs: **K Bangar Raju**, Dy General Manager (PR & Liaison))

World's First Face and Whole-Eye Transplant Marks Major Surgical Breakthrough

- Innovative microvascular bypass techniques restored blood flow to the transplanted eye.
- The surgery marks a breakthrough for future eye transplant possibilities and vision recovery.

A surgical team successfully performed the world's first combined face and whole-eye transplant, marking a significant advancement in transplant surgery. The operation, performed on a military veteran, involved more than 140 medical professionals and **showcased the potential for future eye transplant procedures.**

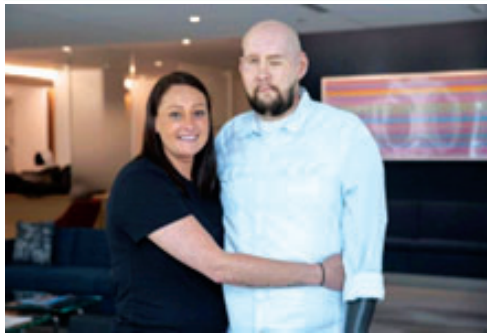
By using innovative microvascular techniques, the team restored blood flow to both the face and the transplanted eye, ensuring its viability. While sight restoration wasn't the goal, this achievement opens new possibilities for complex transplants and future advancements in vision recovery.

A detailed presentation of how an New York University Langone Health surgical team performed the world's first combined face and whole-eye transplantation will be presented at the American College of Surgeons (ACS) Clinical Congress 2024 in San Francisco, California, according to American College of Surgeons.

Their achievement demonstrates the feasibility of transplanting an entire eye alongside a face transplant. This operation, performed recently, showcases the potential for future eye transplant procedures and marks a significant advancement in vascularized composite all transplantation (VCA).

This type of transplantation is particularly challenging since, unlike organ transplants that involve just one type of tissue, like a kidney or heart, VCA involves transplanting a complex combination of different tissues - skin, muscle, blood vessels, nerves, and sometimes bone - all in one piece.

Led by Eduardo D. Rodriguez, MD, FACS, director of the face transplant



Aaron James after the combined face and whole-eye transplant.

Credit: Haley Ricciardi/NYU Langone Health program at NYU Langone Health, the surgery involved a multidisciplinary team of more than 140 medical professionals.

The transplant was performed on Aaron James, a 46-year-old military veteran from Arkansas, who suffered extensive facial and eye injuries from a high-voltage electrical accident.

According to the researchers, the primary goal was to ensure the transplanted eye remained viable, and the innovative techniques used were critical to achieving that outcome. The team focused on optimizing blood flow, a key factor for the long-term success of such a complex transplant.

The team developed a microvascular bypass technique to maintain blood flow to the transplanted eye. This bypass used nearby blood vessels, specifically the superficial temporal artery and vein, which were rotated to connect to the transplanted eye's ophthalmic artery and vein.

This innovative approach minimized retinal ischemia (loss of blood flow) and simultaneously restored blood flow to the face and eye, addressing a major challenge in eye transplantation.

The other Key Surgical Achievements include:

- **Reduced Ischemia:** The bypass technique shortened the time without blood flow, protecting the transplanted eye.
- **Enhanced Blood Flow:** Post-surgery tests confirmed strong blood flow to the retina and other critical areas.

- **Surgical Precision:** Customized cutting guides ensured precise alignment and preserved the intricate structures of the eye and surrounding tissue.

"The successful transplantation of a face and whole eye demonstrated that with the right surgical techniques, a whole-eye transplant is feasible and can maintain long-term viability," said Bruce E. Gelb, MD, FACS, associate professor, department of surgery, at NYU Grossman School of Medicine.

"Aaron James, the patient, was made aware that while sight restoration was not the goal, maintaining a healthy, vascularized eye represented a critical breakthrough that could significantly impact the feasibility of similar procedures in the future."

(The news was sourced from: neurosciencenews.com on October 18, 2024)

Performance at a Glance October 2024

BASE HOSPITAL

➤ Total Eye Surgeries	3048
➤ Cataract Surgeries	2245
➤ Retina Surgeries	80
➤ Retina Injections	148
➤ Glaucoma Surgeries	19
➤ Cornea Surgeries	195
➤ Pediatric Surgeries	04
➤ Orbit & Oculoplasty	51
➤ Total OP Screened	11,888

BRANCHES

➤ Srikakulam Eye Surgeries	416
➤ OP Screened	1744
➤ Maddilapalem Surgeries	116
➤ OP Screened	1313
➤ Gajuwaka Surgeries	34
➤ OP Screened	1160
➤ Madhurawada Surgeries	14
➤ OP Screened	611

➤ Total 43 Outreach free eye camps conducted and screened 2624 patients and Performed 1084 surgeries

WORLD SIGHT DAY OBSERVED

Sankar Foundation Team visits NIT AP to Propel AI Innovations in Eye Care



Sankar Foundation recently signed a Memorandum of Understanding (MOU) with NIT AP-Tadepalligudem to collaborate on AI-based research in the field of eye care. To further this partnership, a team from Sankar Foundation visited the NIT Tadepalligudem Campus on 22nd October 2024 to advance the research efforts between both parties. The aim of this collaboration is to leverage the combined strengths and expertise of both parties to advance the frontiers of science and technology in Ophthalmology. The team from Sankar Foundation includes Sri K Radhakrishnan, GM, Dr. T Raveendra, Director of CQI & Research and Head of Glaucoma, Prof. P Krishna Prasad, Director of Medical Education, Dr. T Krishna, Head of Retina Services, Dr. Ajay Sharma, Senior Retina Consultant, Sri V Ramesh Kumar, DGM (PC & CS), and Sri Vasanth Naidu, CPD. They visited NIT AP-Tadepalligudem to further the research initiatives.

The team members held discussions with the management of NIT on how to advance the collaboration on Artificial Intelligence research in eye care. Participants from NIT included Prof. G Ravikiran Reddy, Dean R&C, Prof. S Karthick, Dean SCAIR, Dr. Jayaraman, Dean Planning & Development, Prof. Himabindu, Head of the Department of Computer Science & Engineering, and Prof. Phani Krishna K, Assistant Professor of Electrical Engineering held discussions with Sankar Foundation team. Dr. T Raveendra and Dr. Ajay Sharma interacted with the students, apprising them of the hospital's infrastructure facilities and potential in the collaboration.



Every year World Sight Day, observed on the second Thursday 10th of October, provides us with an opportunity to reflect on the state of eye health, especially in the WHO South-East Asia Region. Vision loss remains a significant public health concern in our Region, affecting millions of people of all ages.

This year the focus of the Day is children whose eye health is fundamental to their development, education, and overall well-being. Today we prioritize protecting their vision for a brighter and healthier future. Addressing children's eye health is critical to achieving multiple Sustainable Development Goals (SDGs). Globally, at least 2.2 billion people live with a near or distance vision impairment, of which 30% live in our region, bearing a substantial portion of this burden. At least 1 billion cases of vision impairment could have been prevented or has yet to be addressed, especially through interventions like spectacles or cataract surgeries. Globally, it is estimated that the number of children and adolescents with myopia is expected to increase by 200 million between the years 2000 and 2050.

This underscores collective drive towards a region where eye care is accessible to all. Another pivotal step forward is the WHO SPECS 2030 initiative, launched in May 2024. This initiative aims to ensure that everyone who requires refractive error correction through spectacles can access quality, affordable services. For the South-East Asia Region, where uncorrected refractive errors are a leading cause of vision impairment, this initiative is vital. We anticipate that it will reach over 800 million people globally, including millions within our region.



At Sankar Foundation: Sankar Foundation Eye Hospital, in collaboration with Sun Pharma, observed World Sight Day on October 10, 2024. This year's theme, "Children, love your eyes," emphasized the importance of eye health and aimed to eliminate the stigma around corrective eyewear for children. The observance included various activities such as free eye check-ups, awareness sessions on eye health, and distribution of spectacles to children. The event was a significant step towards promoting eye health and preventing avoidable blindness in the community.

Despite this progress, challenges remain. Vision impairment due to uncorrected refractive errors is on the rise, fueled by changing lifestyles that emphasize near-vision activities and reduce outdoor pursuits. With the increasing prevalence of diabetes in our region, diabetic retinopathy is emerging as a significant threat to eye health. Strengthening diabetic retinopathy management is essential to protect the vision of millions of people and reduce the long-term burden on our health systems.

On this World Sight Day, we reaffirm our commitment to overcoming the critical barriers that exist and, achieving universal eye health coverage by 2030. Together, we can create a future where blindness and vision impairment are no longer a barrier to quality of life in our region, according to Saima Wazed, Regional Director, WHO South-East Asia Region.

Medical Team from Angola, West Africa, Visits Sankar Foundation for Advanced Surgical Training

A team of doctors from Angola (West Africa) visited Sankar Foundation on 24th October to gain more knowledge on Phaco surgeries and pre- and post-operative protocols for cataract surgeries.

The team included Dr Joana Solange, Dr Julio Kapukula, Dr Mario Milengo, Dr Fernando Armando, Sri Samir Ismael, and Sri Nagapandi from Aurolab. They visited the OTs and Centre for Professional Development (CPD) and interacted with Dr Raveendra, Director of CQI & Research

and Head of Glaucoma, Dr Krishna, Head of the Retina Department, Dr Manjuvalli, Dr Alekya, Dr Urvasi, Dr Yashaswini, and Dr Anuja.

They witnessed Phacoemulsification surgeries performed by the surgeons and apprised on the use of other equipments and instruments. They were impressed with the quality of the surgeries and the speed at which the doctors were performing.

The discussions covered several protocols for conducting cataract surgeries, and the visitors were

apprised of the surgical facilities in the OTs and the service activities of the foundation.



A team of doctors from Angola interacting with Dr Raveendra and the staff of Sankar Foundation.

Computer Vision Syndrome : A MODERN DIGITAL EYE AILMENT



Dr. Sowmya Peri
Cornea Consultant

In today's technology-dominated world, most people spend a large portion of their day in front of digital screens. Whether it's for work, entertainment, or education, our reliance on computers, smartphones, and tablets has grown tremendously. While these devices provide numerous advantages, they also introduce new health challenges. One of the most prominent issues is Computer Vision Syndrome (CVS), also known as Digital Eye Strain.

What is Computer Vision Syndrome? Computer Vision Syndrome involves various vision issues that develop after long periods of using digital devices. Unlike printed text, which offers clear, stable images, screen content is often pixelated and subject to subtle flickering. The text on screens lacks sharp, defined edges, forcing the eyes to work harder to maintain focus. This constant need for focusing and refocusing strains the eyes.

Under normal conditions, a person blinks 15-20 times per minute. However, when using screens, the blink rate can drop by up to 50%, leading to dry eyes. This dryness exacerbates discomfort and strain. Additional contributors include poor lighting, glare from the screen, improper viewing distances, and long periods of screen use without breaks.

Symptoms of Computer Vision Syndrome : The symptoms of CVS can vary based on individual factors and the amount of time spent in front of screens. Some common symptoms include:

- 1. Eye Strain:** A tired or achy feeling in the eyes after prolonged use.
- 2. Dry Eyes:** The reduced blink rate while using screens often leads to dry, irritated eyes.



3. Blurred Vision : Difficulty focusing on the screen or when shifting focus from the screen to distant objects.

4. Headaches: Persistent headaches, particularly around the eyes and temples, due to extended eye strain.

5. Neck and Shoulder Pain: Poor posture and improper screen positioning can lead to musculoskeletal discomfort.

6. Increased Sensitivity to Light: Extended screen time can increase light sensitivity, especially after prolonged eye strain.

These symptoms are typically temporary, but if left unaddressed, they can worsen and become chronic with continued screen use.



If you spend more than 2 hours daily in front of a computer, you have 90% chance to suffer from digital eye strain

Symptoms of digital eye strain

Headaches	Dry or watery eyes
Sore or irritated eyes	Blurred or double vision
Trouble focusing	Increased sensitivity to light
Pain in the neck, shoulders, or back	

RISK FACTORS FOR CVS

➡ **Excessive Screen Time:** Spending more than two hours per day on digital devices significantly raises the risk of experiencing CVS symptoms.

➡ **Viewing Distance:** Keeping the screen too close or too far from the eyes forces the eyes to work harder, increasing strain.

➡ **Poor Lighting Conditions:** Harsh lighting or excessive screen glare can worsen discomfort.

➡ **Pre-existing Vision Problems:** People with uncorrected vision issues like nearsightedness, farsightedness, or astigmatism are more likely to experience CVS symptoms.

➡ **Age :** Older individuals, especially those prone to dry eyes, are at greater risk of developing CVS.

Preventing and Managing Computer Vision Syndrome

While CVS may seem inevitable in our screen-heavy world, several steps can be taken to reduce its impact:

1. Follow the 20-20-20 Rule: Every 20 minutes, take a 20-second break to look at something 20 feet away. This helps relax the eye muscles and reduces strain.

2. Optimize Your Workspace: Position your screen 20-28 inches away from your eyes, with the screen's center slightly below eye level. Minimize screen glare by adjusting your workspace or using anti-glare protectors.

3. Blink More Often: Consciously blink more frequently to prevent dry eyes. If dry eyes persist, consider using lubricating eye drops.

4. Improve Lighting: Use soft lighting around your workspace and reduce harsh reflections on your screen. Control natural light using adjustable blinds or curtains.

5. Wear Appropriate Eyewear: If you wear prescription glasses or contacts, make sure they are suited for screen use. Special glasses designed to reduce glare and improve focus for digital work can help.

6. Regular Eye Check-ups: If you frequently use digital devices, schedule regular eye exams to detect any vision problems early. Your eye doctor can recommend lenses specifically designed for computer work.

CONCLUSION : In our increasingly digital world, Computer Vision Syndrome has become a common concern for many. Though CVS can cause discomfort and hinder productivity, its symptoms are generally manageable and preventable with proper care.

By incorporating healthy screen habits, optimizing your workspace, and prioritizing eye health, you can significantly reduce the impact of CVS. As technology evolves, understanding its effects on our bodies will remain crucial, highlighting the need for balance and mindful screen use in our daily lives.

In this article, we explore five significant milestones in the history of ophthalmology that have shaped the way we approach eye health and treatment.

Ancient Egyptian Eye Remedies

The ancient Egyptians, renowned for their advanced civilization and remarkable contributions to various fields, including medicine, had a profound understanding of eye health. Through meticulous observations and empirical knowledge, they developed a range of remedies and treatments for various eye conditions. These ancient Egyptian eye remedies offer a fascinating glimpse into the early practices of ophthalmology and the cultural significance placed on maintaining healthy vision.

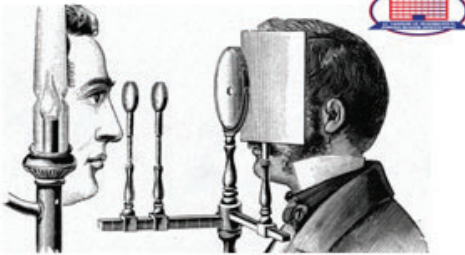
The Ebers Papyrus, one of the oldest and most well-preserved medical texts from ancient Egypt, provides valuable insights into the remedies employed by Egyptian physicians. Dating back to around 1550 BCE, this papyrus contains extensive information on different medical conditions, including eye diseases and their corresponding treatments. These early writings shed light on eye diseases, their symptoms, and treatment methods, laying the foundation for future advancements in eye care.

The Invention of the Ophthalmoscope

The invention of the ophthalmoscope marked a revolutionary milestone in ophthalmology, significantly enhancing the diagnosis and treatment of eye conditions. This medical instrument, used to examine the interior structures of the eye, was first developed in the mid-19th century by the German physician Hermann von Helmholtz.

The ophthalmoscope not only transformed eye examinations but also paved the way for further advancements in the field. It laid the groundwork for the development of other specialized instruments and diagnostic techniques, such as fundus

photography and Optical Coherence Tomography (OCT), which provide even more detailed and precise imaging of the eye's internal structures.



Development of Laser Eye Surgery

The development of laser eye surgery has transformed the field of ophthalmology and revolutionized the way vision problems are corrected. Laser eye surgery, also known as refractive surgery, aims to correct common vision issues such as nearsightedness, farsightedness, and astigmatism. The journey to the development of this groundbreaking procedure involved several key milestones and significant advancements in technology. The development of laser eye surgery has had a profound impact on the lives of millions of people worldwide. It has provided a long-term solution for vision correction, eliminating the need for glasses or contact lenses for many individuals. Laser eye surgery has not only improved visual acuity but also enhanced quality of life, allowing individuals to engage in activities without the limitations imposed by refractive errors.



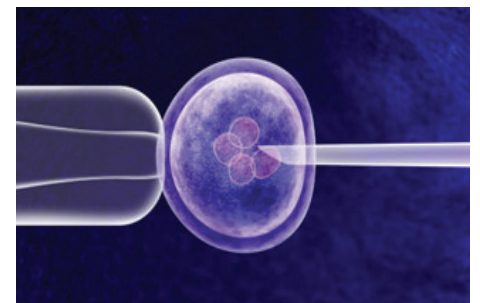
Advancements in Intraocular Lens Implants

Cataract surgery, one of the most common surgical procedures worldwide, has seen significant advancements with the introduction of intraocular lens (IOL) implants. The first successful IOL implantation in the 1940s marked a turning point in

cataract treatment. Since then, IOL technology has evolved, improving vision correction and reducing dependence on glasses or contacts. Today, multifocal and toric IOLs provide enhanced visual outcomes for patients with cataracts and other refractive errors. These advancements in IOL implants have greatly improved the outcomes of cataract surgeries and vision correction procedures.

Gene Therapy for Inherited Eye Diseases

In recent years, groundbreaking advancements in gene therapy have offered new hope for individuals with inherited eye diseases. This innovative approach involves modifying or replacing faulty genes responsible for vision disorders. Luxturna, the first FDA-approved gene therapy for an inherited retinal disease, has shown promising results in treating Leber congenital amaurosis (LCA) by restoring functional vision. This revolutionary treatment holds immense potential for the future management of various genetic eye conditions.



The history of ophthalmology is a testament to human innovation and the relentless pursuit of better eye care. From ancient remedies to modern gene therapies, the milestones highlighted in this article showcase the remarkable progress made in understanding, diagnosing, and treating eye diseases. As we continue to push the boundaries of scientific knowledge, it is certain that ophthalmology will witness further advancements, improving the quality of vision and enhancing the lives of countless individuals worldwide.

(Inputs: **K Bangar Raju**,
Dy General Manager (PR & Liaison)
Sourced from: OBN Ophthalmology)

Diabetic Retinopathy: The Silent Threat to Vision in Diabetes Patients

Dr Srikanth S.
Junior Consultant
Retina Department



Diabetic retinopathy is a significant complication of diabetes, characterized by progressive retinal changes due to prolonged high blood sugar levels. Diabetic retinopathy (DR) primarily affects the small blood vessels in the retina, leading to a spectrum of lesions and is classified into non-proliferative (NPDR) and proliferative (PDR) stages. Early-stage NPDR involves microvascular changes, including microaneurysms, hemorrhages, and the breakdown of the blood-retinal barrier, resulting in retinal edema and hard exudates. As the condition progresses to PDR, abnormal blood vessel growth (Neovascularization) occurs due to extensive retinal ischemia, increasing the risk of severe vision loss.

RISK FACTORS: The risk factors associated with DR are poor diabetes control, long disease duration, pregnancy, hypertension, and nephropathy. Epidemiological studies, including the Wisconsin Epidemiologic Study of Diabetic Retinopathy and major clinical trials like the Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS), underscore the importance of maintaining optimal blood glucose levels and blood pressure to reduce the risk and progression of DR. These studies demonstrate that intensive glycemic control can significantly lower the incidence and progression of DR by reducing microvascular complications.

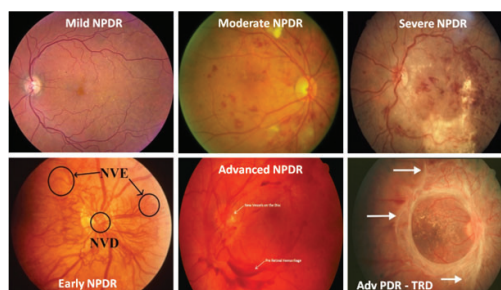
PATHOPHYSIOLOGY: Pathophysiologically, DR involves various mechanisms, including the loss of pericytes, thickening of the capillary basement membrane, and increased production of vascular endothelial growth factor (VEGF), which disrupts the blood-retinal barrier, leading to macular edema. Several biochemical theories explaining these changes, such as the roles of the aldose reductase pathway, advanced glycation end-products (AGEs), reactive oxygen species, and protein kinase C activation help in

understanding the pathophysiology. These pathways contribute to cellular damage, vascular leakage, and capillary non-perfusion, which collectively worsen retinal ischemia and neovascularization.

CLINICAL FEATURES & STAGING:

The Early Treatment Diabetic Retinopathy Study (ETDRS) classification system is pivotal for assessing Diabetic retinopathy. ETDRS divides diabetic retinopathy into five stages: mild, moderate, and severe non-proliferative diabetic retinopathy (NPDR), early proliferative diabetic retinopathy (PDR), and high-risk PDR.

- **Mild NPDR:** Characterized by the presence of at least one microaneurysm, it marks the earliest detectable stage of DR. However, criteria for more severe retinopathy are not met.
- **Moderate NPDR:** This stage involves the presence of more extensive hemorrhages and microaneurysms, and other signs like venous beading or intraretinal microvascular abnormalities (IRMA) that are not so extensive to satisfy the criteria for severe NPDR.
- **Severe NPDR:** Known for the "4-2-1" rule, where at least one of the following must be present: severe hemorrhages in all four quadrants, venous beading in at least two quadrants, or IRMA in at least one quadrant.
- **Early PDR:** Characterized by new blood vessel growth but does not meet the criteria for high-risk PDR.
- **High-risk PDR:** This stage includes neovascularization of the disc (NVD) or elsewhere in the retina, often accompanied by vitreous or preretinal hemorrhage and other complications like Retinal detachment and Neovascular Glaucoma.



The ETDRS scale, with its structured approach, has been instrumental in guiding the management and treatment protocols for diabetic retinopathy, including the timing of laser photocoagulation.

Diabetic Macular Edema (DME) is another major concern in DR and the leading cause of vision loss among diabetic patients. DME occurs due to leakage from damaged retinal blood vessels, resulting in fluid accumulation and retinal thickening in the macula, the central part of the retina responsible for sharp vision. It can be classified based on the location and severity of edema relative to the macula: mild, moderate, or severe. Optical coherence tomography (OCT) is widely used to detect DME, revealing retinal thickening, cystoid macular edema, and loss of normal retinal layers. The management of DME often includes Anti-VEGF therapy and Laser treatment (in selected cases), aimed at reducing macular thickness and improving visual outcomes.

MANAGEMENT: Management of DR emphasizes early detection through regular ophthalmic examinations, especially for those with long-standing diabetes. Treatment strategies for DR include medical, laser, and surgical options. Anti-VEGF therapies are increasingly utilized to manage diabetic macular edema and PDR by inhibiting abnormal blood vessel growth and reducing vascular permeability. Panretinal photocoagulation (PRP) remains a standard treatment for PDR, aiming to reduce neovascularization by ablating ischemic retinal areas. In advanced cases, vitrectomy may be necessary to address complications like vitreous hemorrhage and tractional retinal detachment.

CONCLUSION: In summary, diabetic retinopathy is a serious diabetes-related complication that can lead to vision loss if left untreated. Proper diabetes management, regular eye screenings, and timely interventions are crucial to preventing or slowing the progression of DR, thereby preserving visual function.

ఎన్ఐటిలో శంకర్ ఫౌండేషన్ ఎంవోయూ

చేపగుండు, మృగేంద్రులు: కృత్రిమ మేషలో కంటి వైద్యం రీత్యా నిర్ధారణలు శంకర్ ఫౌండేషన్ కంటి ఆసుపత్రి ముందుకు వేసినది ఫౌండేషన్ జనరల్ మేనేజర్ కె.రాధాకృష్ణన్ తెలిపారు. ఆసుపత్రి అర్థ సంవత్సర ప్రగతిపై శనివారం ఫౌండేషన్ నిర్వహణలో శనివారం సమావేశం నిర్వహించారు. ఈ సందర్భంగా ఆయన మాట్లాడుతూ కృత్రిమ మేషలో గ్రేహా న్యూని నిర్ధారణ వర్తకాలు నిర్వహించేందుకు లాభపర్చినా, తెలంగాణ ఎన్ఐటిలో సమర్థత ఎంవోయూ కుదుర్చుకోవడం జరిగిందన్నారు. ఇకపై సూత్రం



మాట్లాడుతున్న రాధాకృష్ణన్

అయ్యాండు స్పష్టంచేసు కోసం ఈ అవ్వందం బుధుర్నకోవడం జరిగిందన్నారు. ఇప్పటికే ఉత్తరాంధ్రలో అత్యధిక శస్త్రచికిత్సలు (1,58,297) జరిగిన అనుపల్లిగా శంకర్ ఫౌండేషన్ నిలిచిందన్నారు. సిబ్బంది కృషితో శ్రీశాకుంతల, మధిరపాలెం, గజపాడు, మధురపాడులో శాఖలు ఏర్పాటు చేసుకోగలిగిందన్నారు. బుద్ధుర్నకోవడం మధ్య శాఖలు ప్రారంభించేందుకు సుదీర్ఘ ప్రక్రియను అనుసరించారు. కృషి చేస్తున్నారన్నారు. ఈ ఏడాది ఏప్రిల్ నుంచి సెప్టెంబరు వరకు 15,714 శస్త్రచికిత్సలు చేశామన్నారు. సమావేశంలో ప్రజా సంబంధాల ఆధికారి బంగారాజు పాల్గొన్నారు.

కంటి వైద్య సేవల్లో శంకర్ ఫౌండేషన్ అద్భుత ప్రగతి



శంకర్ ఫౌండేషన్ కంటి ఆసుపత్రి

నింహాచలం: జీవీఎంసీ 93వ వార్షిక నాయుడుతో బుధోని శంకర్ ఫౌండేషన్ కంటి ఆసుపత్రి 2024 ఏప్రిల్ నుంచి సెప్టెంబరు వరకు కంటి వైద్య సేవల్లో అద్భుతమైన ప్రగతి సాధించిందని డీజీఎం కె.బంగారాజు శనివారం తెలిపారు. గడిచిన ఆరు నెలల కాలంలో మొత్తం 15,714 శస్త్రచికిత్సలు, వివిధ పథకాల కింద 13,194 కంటి శుక్రం అవరేపణను నిర్వహించినట్లు చెప్పారు. లక్షకు పైగా రోగులకు కంటి వైద్య పరీక్షలు చేశామన్నారు. సామాజిక క్లబ్ రీవీల్ భాగంగా 276 ఉచిత నేత్ర వైద్య శిబిరాలను ఉత్తరాంధ్ర జిల్లాల్లోని కుగ్రామాల్లో నిర్వహించి 17,612 కంటి వైద్య పరీక్షలు చేసినట్లు వెల్లడించారు. 1997లో ఆసుపత్రిని స్థాపించిన నాటి నుంచి 2024 సెప్టెంబరు వరకు 26,66,463 మందికి 4,58,297 కంటి రోగ నిర్ధారణ పరీక్షలు నిర్వహించినట్లు పేర్కొన్నారు. హాస్పిటల్ బ్రాంచ్ శ్రీశాకుంతలలో 11,567 మందికి పరీక్షలు చేసి 2,917 శస్త్రచికిత్సలు చేశామన్నారు. మద్దిలపాలెం శాఖలో 8,067 మందికి ఓపీ స్క్రీనింగ్, 699 మందికి శస్త్రచికిత్సలు, గజపాడు శాఖలో 6,601 మందికి ఓపీ స్క్రీనింగ్, 161 మందికి శస్త్రచికిత్సలు, మధురపాడు శాఖలో 3,747 మందికి ఓపీ స్క్రీనింగ్, 68 మందికి శస్త్రచికిత్సలు నిర్వహించినట్లు వివరించారు. నాణ్యమైన కంటి వైద్య సేవలు అందించడంలో శంకర్ ఫౌండేషన్ ప్రజలకు మరింత చేరువైందని జనరల్ మేనేజర్ కె.రాధాకృష్ణన్ పేర్కొన్నారు. ఈ సందర్భంగా ఉద్యోగులు, వైద్యులను అభినందించారు.

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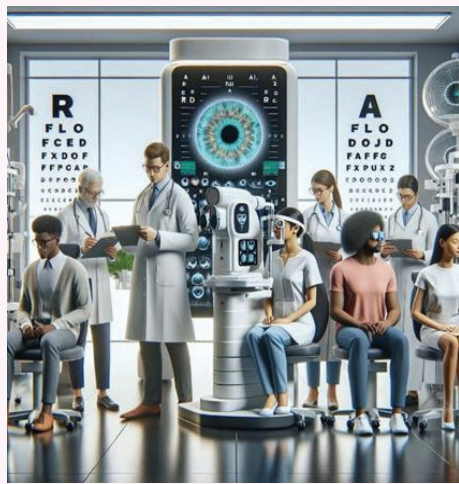
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A.I. in Eye Care : Shaping the Future of Modern Ophthalmology

and sometimes surpasses, human experts. This early detection is crucial for timely intervention and can significantly reduce the risk of vision loss.

In line with its commitment to adopting the latest technologies, Sankar Foundation has recently signed a Memorandum of Understanding (MOU) with NIT Andhra Pradesh - Tadepalligudem to collaborate on Artificial Intelligence (A.I.)- based research in the field of eye care. The initial phase of this collaboration will focus on developing A.I.-based screening algorithms for Diabetic Retinopathy (DR) and glaucoma. Sankar Foundation is always at the forefront in adapting new technologies in its eye care management to showcase the talent of our professionals in providing high quality treatment to patients of different ages.



Healthcare professionals must be trained to interpret A.I.-generated data and incorporate it into their clinical decision-making processes. Furthermore, the reliance on A.I. systems raises questions about the potential for reduced human oversight. While A.I. can enhance diagnostic accuracy, it is essential to maintain a balance between automated systems and human expertise. Ophthalmologists should continue to play a central role in patient care, using A.I. as a tool to augment their skills rather than replace them.

The latest trends in A.I. integration into eye care management include the development of A.I. screening systems and deep learning networks. For instance, A.I. screening systems like Eye Art have received approval in the European Union for detecting diabetic retinopathy, AMD, and glaucomatous optic nerve damage.

Furthermore, A.I. is revolutionizing surgical training in ophthalmology. A.I.-powered simulations and real-time feedback are helping ophthalmologists enhance their surgical skills, leading to better surgical outcomes and improved patient safety. A.I. is also being used to predict systemic health issues based on eye health data. A.I. models are being developed to detect not only eye diseases but also to predict the risk of systemic conditions such as heart attacks, stroke, and Parkinson's disease. This holistic approach provides valuable insights into a patient's overall health and can lead to more comprehensive care.

Despite these promising benefits, there are challenges to address, such as ensuring data quality and availability for training A.I. models. However, the potential of A.I. to transform eye care is immense, offering new ways to diagnose, treat, and prevent eye diseases while improving the overall quality and efficiency of ophthalmic care.

A.I. software in ophthalmology holds great potential in helping physicians automate the diagnostic process, according to Dr. T.Y. Alvin Liu, assistant professor of ophthalmology at the Johns Hopkins Medicine Wilmer Eye Institute and director of the Wilmer Precision Ophthalmology Center of Excellence. Screening of diabetic retinopathy, which involves damage to the retina's blood vessels, is a key use case for A.I., especially considering the exponential increase in the incidences of diabetes, Liu notes.

A.I. is paving the way for a new era in eye care. As A.I. technology continues to evolve, it holds the promise of further advancements that will benefit both patients and healthcare providers, ultimately leading to better eye health and improved quality of life.

K. Bangar Raju
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