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എഡിറ്റോറിയൽ

പുതുവർഷപുലരിയുടെ ഊഷ്മളത മായുംമുമ്പേ ഇൻസൈറ്റിന്റെ പുതിയ ലക്കം അനന്തപുരിയിലെ 24-ാം സംസ്ഥാന സമ്മേളന വേദിയിൽ നിങ്ങളുടെ കൈകളിൽ എത്തിക്കുവാൻ കഴിഞ്ഞതിലുള്ള ചാരിതാർത്ഥ്യത്തോടെ എല്ലാവർക്കും പുതുവർഷാശംസകൾ നേരുന്നു.

ഒരു ചരിത്രശക്തിക്കും അടിമപ്പെടാതെ GOAK എന്ന പ്രസ്ഥാനത്തോട് ഓരോ അംഗവും കാണിക്കുന്ന സ്നേഹം, ഇൻസൈറ്റിന് പതിവിൽ കൂടുതൽ ലേഖനങ്ങൾ അംഗങ്ങളിൽ നിന്നും ലഭിച്ചുകൊണ്ടിരിക്കുന്ന സ്ഥിതി-ഇവയെല്ലാം കേരള ഗവൺമെന്റ് ഒപ്റ്റോമെട്രിസ്റ്റ്സ് അസ്സോസിയേഷനെ ഇതര സർവ്വീസ് സംഘടനകളിൽ നിന്നും വ്യത്യസ്തമാക്കുന്നു.

സിൽവർ ജൂബിലി ആഘോഷിക്കാൻ തയ്യാറെടുത്ത് നിൽക്കുന്ന നമ്മുടെ സംഘടനക്ക് ക്രിയാത്മകമായ നിർദ്ദേശങ്ങൾ അംഗങ്ങളിൽ നിന്നും പ്രതീക്ഷിക്കുന്നു. ശാസ്ത്രപരവും, സാഹിത്യ പരവും, കലാപരവുമായ കൂടുതൽ ലേഖനങ്ങൾ പ്രതീക്ഷിക്കുന്നതോടൊപ്പം ഇതുവരെ കിട്ടിയ നിർലോഭമായ സഹകരണത്തിന് നന്ദിയും കടപ്പാടും അറിയിച്ചുകൊള്ളുന്നു.

ബി.ആർ. സുധീഷ്
എഡിറ്റർ

PRESIDENT'S VOICE

പ്രിയ സുഹൃത്തുക്കളെ,

കേരളാ ഗവൺമെന്റ് ഒപ്റ്റോമെട്രിസ്റ്റ്സ് അസ്സോസിയേഷന്റെ 24-ാമത് സംസ്ഥാന സമ്മേളനം തലസ്ഥാന നഗരിയിൽ വച്ച് വിപുലമായി നടത്തുവാനാണ് തീരുമാനിച്ചിരിക്കുന്നത്. അതിലേയ്ക്കായി ഓരോ അംഗങ്ങളേയും സ്വാഗതം ചെയ്തുകൊള്ളുന്നു.

നമ്മുടെ സംഘടനയുടെ ശക്തമായ ഇടപെടലുകൾ ചില പ്രധാനപ്പെട്ട കാര്യങ്ങൾക്ക് സമ്മർദ്ദം ചെലുത്തുവാൻ സാധിച്ചിട്ടുണ്ട്. കേരളാ ഗവൺമെന്റ് ഒപ്റ്റോമെട്രി കൗൺസിൽ രൂപീകരിക്കുക, സ്റ്റേറ്റ് കോ-ഓർഡിനേറ്ററുടെ നാമകരണം സ്ഥിരപ്പെടുത്തുക, മെഡിക്കൽ എഡ്യൂക്കേഷൻ ജീവനക്കാരുടെ നാമകരണം മാറ്റുക തുടങ്ങിയ ഒട്ടനവധി കാര്യങ്ങൾക്ക് ഗവൺമെന്റിൽ ശക്തമായ സമ്മർദ്ദം ചെലുത്തി വരുന്നുണ്ട്.

പുതിയ തസ്തികകൾ സൃഷ്ടിക്കുക, പ്രൊമോഷൻ റേഷ്യോ 1:1:1 ആക്കി പുതുക്കി നിശ്ചയിക്കുക, ശമ്പള കമ്മീഷൻ അപാകതകൾ പരിഹരിക്കുക തുടങ്ങിയ മുൻഗണന അർഹിക്കുന്ന കാര്യങ്ങൾക്കു വേണ്ടി സംഘടന ശക്തമായി ഇടപെടുന്നുണ്ട്.

കേരളാപാരാ മെഡിക്കൽ കോൺ ഫെഡറേഷനിൽ അംഗമാവുകയും അതിൽ നമ്മുടെ സംഘടന മറ്റു സംഘടനകളെക്കാളും ശക്തമായ സംഘടനയാണെന്ന് തെളിയിക്കുവാൻ നമുക്ക് സാധിച്ചു. അതിൽ വളരെ അഭിമാനം നമുക്ക് ഓരോരുത്തർക്കും ഉണ്ട്. അതിൽ സംഘടനയുടെ പ്രസിഡന്റ് എന്ന നിലയിൽ അഭിമാനം തോന്നുന്നു.

അന്ധതാ നിയന്ത്രണം എന്ന മഹത്തായ കർമ്മമാണ് നാം ഓരോരുത്തരിലും കടപ്പെട്ടിരിക്കുന്നത്. നമ്മുടെ ന്യായമായ ആവശ്യങ്ങൾക്കു വേണ്ടി സംഘടന എപ്പോഴും നിങ്ങളോടൊപ്പം ഉണ്ടായിരിക്കുമെന്ന് അറിയിച്ചുകൊണ്ട് പുതിയ ആവശ്യങ്ങൾ പങ്കുവെയ്ക്കുവാനും അവകാശങ്ങൾ നേടിയെടുക്കുന്നതിനും വേണ്ടി നമ്മൾ ഒരുമിച്ച് മുന്നേറുവാനും അഭ്യർത്ഥിച്ചുകൊണ്ട് സംഘടനയ്ക്കു വേണ്ടി പ്രവർത്തിക്കുന്ന എല്ലാവരെയും അഭിനന്ദിച്ചുകൊണ്ട് എല്ലാവർക്കും പുതുവത്സരാശംസകൾ നേർന്നുകൊണ്ടും നിർത്തട്ടെ.

പി.എസ്. സുഗുണൻ
പ്രസിഡന്റ്

FROM SECRETARY' S DESK

പ്രിയ സുഹൃത്തേ,

കേരള ഗവൺമെന്റ് ഒപ്റ്റോമെട്രിസ്റ്റ്സ് അസ്സോസിയേഷൻ കർമ്മ രംഗത്ത് ഒരു വർഷം കൂടി പിന്നിടുകയാണ്. ഈ പുതുവർഷത്തിൽ 24-ാം സംസ്ഥാന സമ്മേളനത്തോടനുബന്ധിച്ച് പ്രസിദ്ധീകരിക്കുന്ന ഇൻസൈറ്റ് നിങ്ങൾക്ക് മുന്നിൽ സമർപ്പിക്കുന്നതിൽ അതീവ സന്തോഷമുണ്ട്. കഴിഞ്ഞ സമ്മേളനത്തിന് ശേഷമുള്ള ചുരുങ്ങിയ കാലയളവിനുള്ളിൽ ഒപ്റ്റോമെട്രിസ്റ്റുകളുമായി ബന്ധപ്പെട്ടുള്ള നിരവധി പ്രശ്നങ്ങളിൽ ഇടപെടാൻ സാധിച്ചിട്ടുണ്ട്. ജില്ലാ ഓഫ്താൽമിക് കോ-ഓർഡിനേറ്ററുടെ മൂന്ന് പ്രൊമോഷനുകൾ നടന്നു കഴിഞ്ഞു. Sr Optometrist Gr. I പ്രൊമോഷനുകൾ ഉടനെ തന്നെ നടക്കുന്നതാണ്. നമ്മുടെ തന്നെ സഹപ്രവർത്തകരിൽ ചിലർ ട്രാൻസ്ഫറിനു വേണ്ടി നടത്തുന്ന അന്യായമായ ഇടപെടലുകളാണ് പലപ്പോഴും ട്രാൻസ്ഫർ/പ്രൊമോഷനുകൾ വൈകുന്നതിന് പ്രധാന കാരണം. നിലവിലുള്ള Optometrist Gr. II ഒഴിവുകൾ (2015-16) പി.എസ്.സി.ക്ക് റിപ്പോർട്ട് ചെയ്യണമെന്ന് ആവശ്യപ്പെട്ടിട്ടുണ്ട്. കൂടാതെ 2016-ൽ 12 റിട്ടയർമെന്റ് വേക്കൻസികളും ഉണ്ടാകും.

ശമ്പളകമ്മിഷൻ ചർച്ചയിൽ ഒരു മണിക്കൂർ ലഭിച്ചുവെന്ന് അവകാശപ്പെട്ടവർ അതിന്റെ ഫലമൊന്നും റിപ്പോർട്ടിൽ കണ്ടില്ലെന്ന് മനസ്സിലാക്കുമെന്ന് കരുതുന്നു. മന്ത്രിസഭാ ഉപസമിതി അവർക്ക് ലഭിച്ച പരാതികളൊന്നും പരിശോധിച്ചിട്ടില്ല. ഇനി റിപ്പോർട്ട് നടപ്പിലാക്കുമ്പോൾ അനോമലി കമ്മിറ്റി ഉണ്ടാകുമെന്ന് പ്രതീക്ഷിക്കാം. അതുകൊണ്ട് പ്രയോജനമൊന്നും ഉണ്ടാകാറില്ല. ശമ്പളകമ്മിഷൻ റിപ്പോർട്ടിൽ പൊതുവിൽ പാരാമെഡിക്കൽ ജീവനക്കാർക്ക് അവഗണനയാണ്. ഇതിൽ ശക്തമായി പ്രതികരിക്കുന്നതിന് കോൺഫെഡറേഷൻ ഓഫ് പാരാമെഡിക്കൽ ഓർഗനൈസേഷൻ നടത്താൻ ഉദ്ദേശിക്കുന്ന സമര പരിപാടികളിൽ ഓരോരുത്തരുടെയും സഹകരണം പ്രതീക്ഷിക്കുന്നു. പൊതുവായുള്ള വിഷയങ്ങളിൽ ഒരുമിച്ച് നിന്ന് പൊരുതുവാനുള്ള വിവേകം വൈകിയാണെങ്കിലും ഈ വിഭാഗം സംഘടനകൾക്ക് ഉണ്ടായത് ശുഭകരമാണ്. കമ്മീഷന്റെ രണ്ടാം ഘട്ട റിപ്പോർട്ടിൽ കൂടുതൽ പ്രതിലോമകരമായ നിർദ്ദേശങ്ങൾ അടങ്ങിയിട്ടുണ്ട്. ക്യാഷ്വൽ ലീവ് വരെ വെട്ടിക്കുറയ്ക്കുന്ന ശുപാർശകളാണ് നൽകിയിട്ടുള്ളത്.

2000 ത്തിന് ശേഷം സർവ്വീസിൽ കയറിയവരുടെ പ്രൊവിഷണൽ സീനിയോറിറ്റി ലിസ്റ്റ് പ്രസിദ്ധീകരിച്ചിട്ടുണ്ട്. അതിലെ എന്തെങ്കിലും അപാകതകളോ, കുറവുകളോ ശ്രദ്ധയിൽ പെട്ടിട്ടുണ്ടെങ്കിൽ കഴിവതും വേഗം ഡിപ്പാർട്ടുമെന്റിൽ അറിയിക്കേണ്ടതാണ്. ഒക്ടോബർ മാസത്തിൽ കോഴിക്കോട് നടന്ന ഐറിസ് - 2015 ൽ പങ്കെടുത്ത് പ്രസ്തുത പരിപാടി വൻ വിജയമാക്കിത്തീർത്ത എല്ലാവരോടും നന്ദി രേഖപ്പെടുത്താൻ ഞാൻ ഈ അവസരം വിനിയോഗിക്കുന്നു. പ്രസ്തുത ക്ലാസ്സുകളുടെ DVD ആവശ്യമുള്ളവർ ജില്ലാ കൺവീനറുമായി ബന്ധപ്പെടേണ്ടതാണ്.

സംഘടന 24-ാം സംസ്ഥാന സമ്മേളനം 2016 ജനുവരി 10-ാം തീയതി തിരുവനന്തപുരത്ത് വച്ച് നടക്കുന്നു. സംഘടനയുടെ പ്രവർത്തനങ്ങൾ പൂർവ്വാധികം ഭംഗിയാക്കുന്നതിന് പ്രസ്തുത സമ്മേളനത്തിൽ പങ്കെടുത്ത് നിങ്ങളുടെ അഭിപ്രായങ്ങളും നിർദ്ദേശങ്ങളും അറിയിക്കണമെന്ന് അഭ്യർത്ഥിക്കുന്നു. കേരളത്തിലെ ഒപ്റ്റോമെട്രിസ്റ്റുകളുടെ ഉന്നമനത്തിനായി കഴിയുന്നതെല്ലാം ചെയ്യുമെന്ന് ഉറപ്പ് നൽകിക്കൊണ്ട് ,

അഭിവാദനങ്ങളോടെ,

ആർ. ബിനോയ്
ജനറൽ സെക്രട്ടറി

A-Scan Biometry

1. Introduction

A-scan ultrasound biometry, commonly referred to as an A-scan, is a routine type of diagnostic test used in ophthalmology. The A-scan provides data on the length of the eye, which is a major determinant in common sight disorders. The most common use of the A-scan is to determine eye length for calculation of intraocular lens power.

A-scan is a one dimensional scanning technology (while B-Scan is two dimensional). It is also known as 'Amplitude scan' as the amplitude of the signal is taken as the scan output.

Fig 1: A-Scan Vs B-Scan wave form

2. Principle

A-Scan uses the phenomena of sound reflection. The same technique used by Bats, Whales and even the Submarines.

Whenever a sound wave moving in air hits a solid surface, it reflects off it. This reflected sound is called an echo. The same applies to a sound wave moving through water and hitting an obstacle. If we know the speed of sound in the medium it travel, we can calculate the distance to the obstacle.

The A-scan probe contains an ultrasonic transducer that projects a thin sound beam that travels through liquid or tissue. Ultrasound waves do not travel through air but travels freely through fluid and soft tissues. However, ultrasound is reflected back (it bounces back as 'echoes') when it hits a more solid (dense) surface. So, as ultrasound 'hits' different structures in the body of different density, it sends back echoes of varying strength which corresponds to the acoustic impedance of the surface it hits. The reflected echoes are converted to electric signals and amplified. The amplified output is given to the monitor for display.

The frequencies most often employed for diagnostic work are between 2.5 MHZ and 20 MHZ. Higher the frequency greater the resolution, but the depth of the sound penetration decreases.

In an A-Scan report, the X axis represents the time, while Y Axis represents amplitude of the reflection i.e. how strongly the sound is reflected. This is why A-Scan is also known as Amplitude scan (Fig: 2).

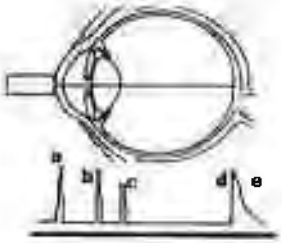

Fig 2: A-Scan output

3. A-Scan system components

A-Scan system contains the following components.

Pulse Generator

The pulse generator produces the electrical pulses that are applied to the transducer. The pulses will have a typical frequency of 10MHz, but the frequency can be adjusted in the machine. The size of the electrical pulses can be changed which will change the intensity and energy of the ultrasound beam.

Transducer

The transducer is the component of the ultrasound system that is placed in direct contact with the patient's body. It alternates between two major functions: (1) **producing ultrasound pulses** and (2) **receiving or detecting the returning echoes.** Within the transducer there are one or more piezoelectric elements. When an electrical pulse is applied to the piezoelectric element it vibrates and produces the ultrasound. Also, when the piezoelectric element is vibrated by the returning echo pulse it produces a pulse of electricity.

Amplifier

Amplification is used to increase the size of the electrical pulses coming from the transducer after an echo is received. The amount of amplification is determined by the gain setting.

Display system

Display system consists of an image processor and display. The digital image is processed to produce the desired characteristics for display. This includes giving it specific contrast characteristics and reformatting the image if necessary.

4. A-Scan Methods

Three different A-Scan methods are used, namely

Applanation A-Scan

A-scan biometry by applanation requires that the ultrasound probe be placed directly on the corneal surface (Fig: 3). This can either be done at the slit lamp or by holding the ultrasound probe by hand .Cornea is anesthetized and patients should look directly at the red fixation light.Even in the most experienced hands, some compression of the cornea is unavoidable; this typically being 0.14 mm - 0.28 mm.

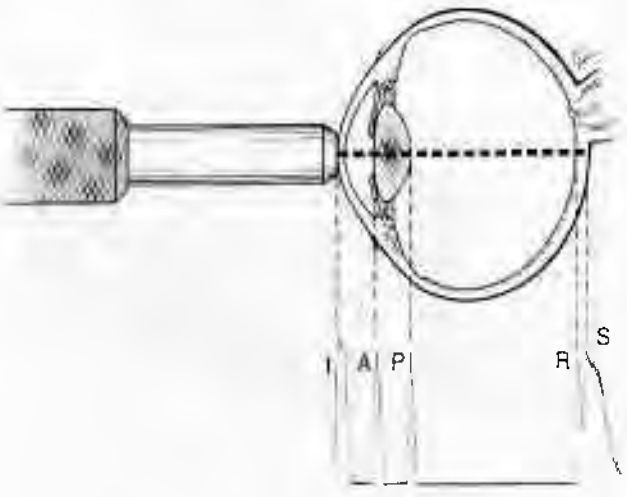

Fig 3: Applanation A-Scan

Immersion A-Scan

With the immersion A-scan technique, the probe tip does not come into contact with the cornea. Instead, the ultrasound beam is coupled to the eye through fluid. Because there is no corneal compression, the displayed result more closely represents the true axial length. (Fig: 4)

The immersion technique requires the use of a **Prager Scleral Shell.**

The patient lies supine; looking up at the ceiling and the scleral shell is placed between the eyelids and centered over the cornea. The scleral shell is then filled with a 40-60 mixture of Goniosol and Dacriose and the probe tip is placed into the solution. Align the ultrasound beam with the macula by having the patient look at the probe tip fixation light, then simply take your readings as usual.

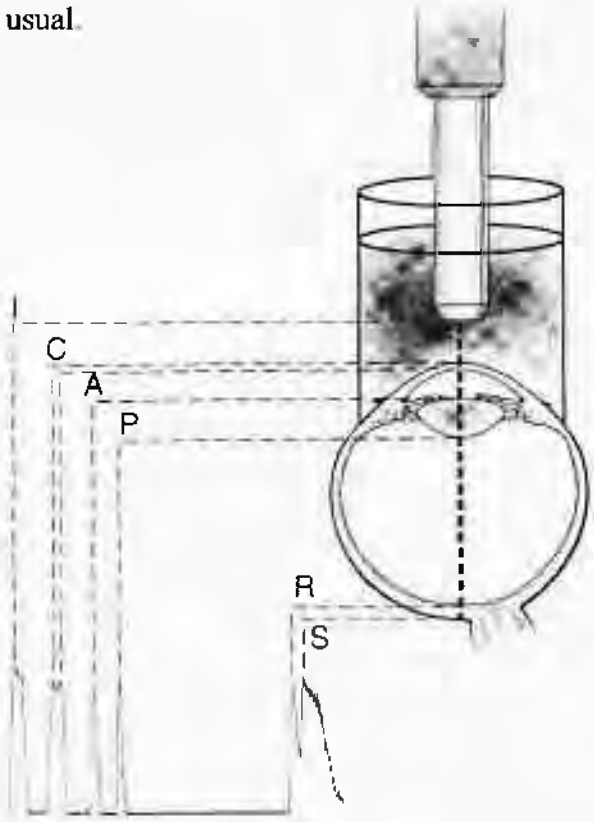

Fig 4: Immersion A-Scan

5. Potential sources of error

Applanation and immersion A-Scan techniques are prone to errors. Average Axial Length of Normal Eye 23.06 mm and this can be vary between 22.0 to 24.5 mm. The errors in scanning will result either a short measurement or a long measurement.

Reasons for short measurement	Reasons for long measurement
1. Corneal Compression	1 Air bubbles within fluid
2. Sound velocity too slow	2. Sound velocity too fast
3. Misalignment of Sound Beam	3 Misalignment of Sound Beam
4. Gain set too high	4. Gain set too low
5. Lens measured too thin	5. Lens measured too thick
6. Macular Thickening/detachment	6. Posterior staphyloma eccentric to Macula

LASER INTERFEROMETRY (Non-contact Method) Laser interferometry uses an optical device that measures the distance from the corneal vertex to the retinal pigment epithelium. They are different from traditional A-scan ultrasonography because they use infrared Laser light to calculate axial length, keratometry and anterior chamber depth, all in one machine.

Laser Interferometry has several advantages over traditional immersion and applanation A-scan ultrasonography. They have lower technician dependence and are rapid tests. In addition, they do not have contact with the cornea, which reduces the variability caused by corneal compression that occurs in applanation A-scan.

Laser Interferometry, however, does have limitations. Measurements are difficult and may be inaccurate through dense cataracts or corneal scars or edema. In addition, it cannot be used in patients who are unable to fixate. IOL master from Zeiss and LENSTAR LS 900 made by Haag-Streit are machines based on Laser Interferometry.

6. Comparison of A-Scan methods

Of the three methods, Laser Interferometry is the most accurate. It is having a deviation of +/- 0.01mm in the measurement. Applanation A-Scan is having a deviation of +/- 0.24mm while immersion A-Scan is having a deviation of +/- 0.12mm in the measurement.

The below table shows a comparison of ultra sound A-scan and Laser Interferometry for other features.

Feature	Ultrasound	Laser Interferometry
Posterior staphyloma	Difficult	Yes
Silicone oil	Difficult	Yes
Pseudophakia	Variable	Yes
Brunescent lens	Yes	No
Central PSC plaque	Yes	No
Vitreous hemorrhage	Yes	No
Central corneal scar	Yes	No

7. Characteristics of a Quality A-Scan

Five Principle echo spikes should present, as shown in Fig: 5

- Ø Corneal (C)
- Ø Anterior Lens Spike (A
- Ø Posterior Lens Spike (P)
- Ø Retina (R)
- Ø Sclera & orbital fat (S)

Fig 5 : A sample A-Scan output

Echo heights are adequate if anterior lens echo is 90% or more of maximum height. Posterior lens echo is between 50% & 75% of maximum.

Retinal echo is 75% or more of maximum echo rise angle must be clear. The take off of the retinal spike must be clean and forms a 90° angle from the lease line.

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ORTHOKERATOLOGY

Prameela A Nair

Orthokeratology is a process that uses custom designed gas permeable contact lens to temporarily reshape the contour of the cornea in a controlled manner to correct ametropia.

Orthokeratology nick named as ortho-k, corneal reshaping (CR), corneal refractive therapy (CRT) or vision therapy.

This method can be used as an alternative to eye glass, refractive surgery or for those who prefer not to wear contact lens during day.

Ortho-k prescribed for two purposes

1) Ortho-k lenses used to correct myopia up to -6.00D, less grades of astigmatism and hyperopia and even presbyopia
2) Research demonstrated that ortho-k lens designs slow the progression of myopia and also can reduce existing myopia, hyperopia and presbyopia

Selection of patients for ortho-k lens

1) Most people with mild to moderate myopia and those with a cylindrical value preferably half the spherical value are good candidate for ortho-k
2) For those who suffer from DRY EYE, making contact lens wear impossible are good candidate for ortho-k.
3) Those who like to enjoy sports, work out, hike, swim or ski without wearing glasses or day time lenses, ortho-k lenses are the options
4) If you have a job that requires excellent vision without contact lens or glass(law enforcement, life guard etc.) ortho-k is the option.
5) If you dislike wearing contact lens or glasses during day time ortho-k lenses can prefer.
6) If you are interested in LASIK but not a good candidate, can prefer ortho-k.
7) Youngsters age between 8-12 with progressive myopia and most adolescents and adults are good candidate for ortho-k, although best success is with people under age 40.

Orthokeratology process

If you are a good candidate for ortho-k, you will wear specially designed gas permeable lenses during sleep

You may need a series of temporary lenses to see properly until you reach the desired prescription. In most cases up to 3 pairs of lenses are required to achieve the maximum vision correction effect

In one or two week treatment phase, error is gradually reduced. Since the vision is changing during this period the patient need to wear disposable soft lenses during the day.

Once the treatment is over, the patient should wear gas permeable lenses at night only and see well during the day without any corrective lenses.

To maintain the effect, wear lenses at night once or twice a week. This variation in wearing time is due to flexibility of cornea.

Result from Ortho-k

The type and amount of refractive error that can be effectively managed with ortho-k differ case by case basis.

The time taken for maximum ortho-k effect depends on:

i) Corneal rigidity
ii) Amount of refractive error
iii) Tear quality and quantity
iv) Patient's expectation.

Some people have excellent vision (20/20 – 20/40) after a day or two of overnight ortho-k. Higher prescriptions can take 2 weeks or longer for maximum correction.

Advantage

Ortho-k great for sports

For people who are very active athletically, allows visual freedom to play sports without wearing eye glasses or contact lenses.

Myopia control

In addition to the benefit of lens free day time vision, ortho-k found to be effective to slow the progression

of myopia and also shown decrease in amount of existing myopia.

Lens Design

Ortho-k lenses are manufactured in high D.K. Material. Reverse zone lens design is used for orthokeratology, in which secondary curve is steeper than base curve. Steeper secondary curve provide space for the cornea to move as the central cornea is flattened, help in centration, reducing induced astigmatism and create a reservoir for tear exchange.

Three-zone lens design

First reverse zone lens produced were of three zone design consist of (1) optic zone (2) a reverse curve and (3) a peripheral curve.

- Optic Zone is usually 6.00mm diameter.
- width of reverse curve is 1.00 – 1.4 mm.
- peripheral curve is 0.4 mm wide.
- initial base curve is flatter than flat k by an amount just greater than refractive change required often + 0.50D.

For example:- if myopia is 2.00D then base curve radius 2.5D to 2.75D flatter than k and lens power is +0.50/ +0.75D.

As a result of flattening of central cornea, the fitting relationship change within few days. So a new lens with a flatter base curve have to be dispensed promptly to prevent distortion. Many fitters order 2nd pair at the time if initial order.

4-zone lens design

4-zone reverse zone lenses have an additional intermediate curve between the reverse and peripheral curve referred to as alignment curve, which align with peripheral cornea. With 4-zone lenses initial pair of lenses is expected to be used for entire course of treatment as well as for retainer wear.

4-zone lenses have overall diameter of 10mm to 11 mm, optic zone is 6.00mm in diameter, width of secondary curve is 0.6mm wide and steeper than base curve radius by 2 to 2.6 times.

Eg: if base curve radius 2.5 D flatter than K then reverse curve radius is 5.00 to 6.5D steeper than BC radius.

The third zone is alignment curve about 1.00mm width and fit in alignment with peripheral cornea. Alignment curve can be 0.25D flatter than central flat k.

The 4th zone is peripheral curve.

Fitting characteristic

A well centered fitting relationship with limited lens movement with the blink is important. Fluorescein pattern should exhibit central touch, paracentral clearance , mid peripheral touch, and minimal peripheral clearance.

The most important component of fitting is centration. Most successful patients achieve 20/20-20/25 vision maintain throughout the day

Once you pick your ortho-k retainer (mold) you will be instructed how to insert, remove and take care your vision retainer and the follow-up schedules are,

- Ø morning after first night wear
- Ø after 3rd night
- Ø after 7th night
- Ø After 2 weeks and routine eye evaluation every 3 months

Along with fit evaluation, newly corrected vision and topography should also perform if needed, until visual acuity stable all the day.

Throughout the initial fitting period orthokeratologist will monitor corneal health & effectiveness of treatment. At certain time fit can be modified to achieve goal.

Ortho-k should stopped immediately in

i) Any change in ocular condition in general
ii) Ocular discharge or blurred vision.
iii) Decreased wearing comfort
iv) Irritated or pain eyes

Handling and contact lens care

- Ø Hygiene is the key in ortho-k.
- Ø For cleaning chemical procedure is better over rubbing
- Ø Right and left lenses are given in two colors.
- Ø A drop of moisturizing solution could be instilled after ortho-k lenses inserted and also before taking them out in the morning.

Replacement interval

Since it is made of high O_2 permeable material these lenses should replace once in a year at least..

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B-SCAN USG

Kishor .T.K

B-Scan USG (Brightness Scan Ultra Sonography) is a noninvasive procedure which uses high frequency sound waves for the clinical assessment of various ocular and orbital diseases.

Ultrasound is the sound pressure with a frequency greater than the upper limit of human hearing. Human hearing frequency range is about 20 Hz - 20 KHz. In B-Scan USG , more than 10MHZ frequency sound waves are using. As the frequency increases the wavelength decreases and the wavelength of the ultrasound determines its depth of tissue penetration and resolution.

So larger is the frequency = Shorter its wavelength = Shallower its penetration = Better resolution of the resultant Echograph.

When sound waves passes through a medium , some part of it get absorbed by the medium, some part passes through, some part get reflected according to the density of the medium. In B-scan the reflected waves (ECHOS) are considering. As the density of the medium increases the reflections (ECHOS) also increases.

The eye is an ideal structure to perform USG because of its superficial fluid filled nature and of tissues of different densities like cornea aqueous humour, lens, iris, vitreous humour, retina etc. When sound waves from a B-scan USG passing through the eye we obtain echos of different strengths from different structures. These echos are converted to electric signals.

B-Scan USG is composed of four basic elements –

i. Pulser.
ii. Tranducer (Probe).
iii. Receiver.
iv. Display Screen.

The ultra sound waves from the pulser are sending in to the eye with a probe. While the sound waves are passing through different tissues of the eye we obtain echos of different strengths .These echos are converted to electric signals with the help of a piezo electric crystal of the probe. These signals are registered as dots , with brightness intensity that is proportional to the echo amplitude on a monitor.

The ultra sound imaging zones are divided in to three.

a) Hyperechoic.
b) Hypoechoic.
c) Anechoic.

Higher amplitude echos (Hyperechos) appears as white and lower amplitude echos (Hypoechos) appears as grey and absence of echos (Anechos) appears as black in colours on the monitor.

INDICATIONS:-

To examine intraocular structures with direct visualization of posterior segment is not possible

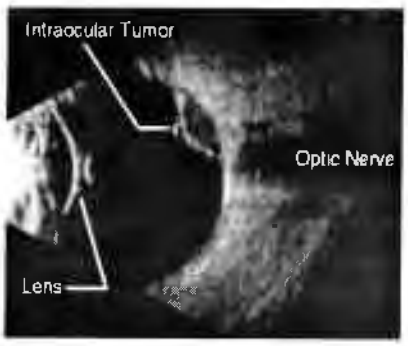
- Vitreous haemorrhage .
- Retinal Detachment.
- Intraocular tumours.
- Lens Dislocation.
- Retinoblastoma.
- Retinopathy of Prematurity (ROP).
- Intraocular foreign bodies.
- Ocular trauma.

PROCEDURE:-

- Close the eye and cover with sterile eye gel.
- Apply the transducer (probe) gently on the eye.
- Scan the retina for pathology.
- Evaluate the structures with the hyperechoic, hypoechic and anechoic images.

ADVANTAGES:-

- Non invasive.
- Real time image to the practitioner.
- Safe , no radiation .
- High resolution echography provides reliable and accurate assessment.
- Ideal for follow up lesion.



B-Scan Echograph of Intraocular tumor.

B-Scan USG

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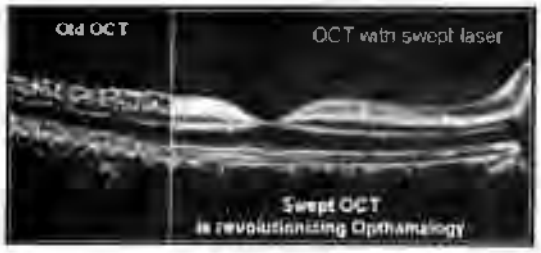
RECENT ADVANCES IN OCULAR DIAGNOSTICS

Recently, there have been several developments in imaging technologies that promise to extend our ability to image and evaluate the anterior segment of the human eye One of the most rapid developments in this field is the application of optical coherence tomography (OCT).

Swept source optical coherence tomography



Spectral-domain OCT (SD-OCT) had advantages over time-domain optical coherence tomography (TD-OCT) as it provide higher resolution (1 ¼m to 3 ¼m axial resolution with SD-OCT vs 10 ¼m with TD-OCT) and 3-D imaging possibilities. But it could not image choroid

Many diseases affecting the macula, such as age-related macular degeneration (AMD), are associated with choroidal dysfunctions Indocyanine angiography was the only method to understand choroidal dysfunctions till the date.

Swept-source OCT (SS-OCT; DRI-OCT, Topcon Japan) is the latest milestone in retinal and choroidal imaging To overcome scattering by the RPE, which disabled visualization of deeper lying structures, a longer wavelength was adopted for this machine (1050 nm vs 840 nm in SD-OCT), and photodetectors instead of CCD cameras led to a further increase in resolution (1 ¼m).

The scan speed in swept-source instruments is twice that of SD-OCT devices (100 000 A-scans/sec compared with 50 000 A-scans/sec), enabling faster acquisition of B-scans, thus allowing us to obtain widefield B-scans (12 mm vs 6–9 mm with conventional SD-OCT) and more accurate 3-D imaging of the vitreous, retina, and choroid. Wide scans make it possible to present the optic nerve and macula on the same scan. Simultaneous high-quality visualization of the vitreous, retina, and choroid is possible Choroidal layers that are hardly distinguishable in conventional SD-OCT become visible.

Using a longer wavelength also overcomes cataractous lens opacities and allows visualization of the macula in eyes with disabled fundus view This may enhance the ability to identify patients who will need additional vitreoretinal service besides simple cataract surgery

Swept-source OCT enables us to precisely visualize choroidal structure, which may enhance our knowledge of retinal diseases and is definitely advanced and advantageous compared to its predecessors

CASIA anterior segment OCT

The Cornea/Anterior Segment OCT SS-1000 "CASIA" is a non-contact, non-invasive three dimensional imaging system based on the principle of "Swept Source" OCT. This system achieves high resolution imaging of 10 ¼m (Axial) and 30 ¼m (Transverse) and high speed scanning of 30,000 A-scans per second.

The CASIA is indicated for cross sectional imaging of the anterior segment components of the human eye such as the cornea, the anterior chamber and the bleb segment of the sclera, and also for dimension measurements of these such as curvature, length, area and volume by computed analysis

The second advancement I would like to discuss here is about a perimetry method. We know the importance of fixation maintenance in any visual field measurement. Fixation difficulties are capable of causing huge errors in visual field assessment. A new type of perimetry called the 'Eye movement perimetry' does not require prolonged central fixation.

Eye movement Perimetry

Visually triggered saccade is the involuntary movement that happens in our eyes when something suddenly pops up somewhere in our visual field. The motion begins 200 to 300 ms after the stimulus, and continues for 50 to 150 ms with the eyes moving at from 300 to 500 degrees per second. Eye movement perimetry uses this movement of the eyes to measure visual field, rather than prohibiting motion, as is done with conventional visual field tests. The subject is asked to follow successive targets (white circles) appearing on the screen with their eyes. This eye movement is measured using a contactless eye-tracking system. The data is then analyzed, taking the eye position after the eye has moved over a target for a set period of time as the origin and recomputing the target positions. The results are used to display automatically, regions that are not visible within the visual field

For a person with macular splitting due to a brain hemorrhage, there will be half-blindness (hemianopsia) of one side visual field. Eye movement will not occur when the targets appeared in that visual field.

When compared with conventional perimetry methods, results were found to correlate. Compared to other methods, much less time is required for the assessment, and the burden on both subject and clinician is greatly reduced relative to conventional perimetry. The assessment feels just like watching television, so it can be done easily, even for aged or disabled subjects, and it could even be used to perform perimetry on small children by using cartoon characters for the targets

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PTERYGIUM

Literally pterygium means 'a wing' Pterygium is a degenerative condition of the sub conjuntival tissues which proliferate as a triangular vascularised granulation tissue mass to invade the cornea involving the Bowman's membrane and superficial stroma, the whole thing being covered by conjunctival epithelium.

The common complaints of the patient is slowly progressive fleshy mass on the innerside of the white of the eye. Sometimes dimness of vision is present. Ocular movements may be restricted in case of severe form.

Aeitology of pterygium is not precisely known, but few factors are responsible

(a) Ultraviolet irridiaion:-

Pterygium is more common among farmers and out door workers.

(b) Hot sandy and dusty weather

(c) Pinguecula may be a precursor

Pterygium may be divided into 4 parts.

(a) Apex or head:- Apex of the triangular mass.

(b) Neck: Constricted portion at the limbus

(c) Body:- The remaining bulky part beneath the conjunctiva

(d) Cap:- A semilunar white opacity just infront of the apex or head (it may not be always present)

Types of pterygium:

1. True pterygium

a. Progressive

It is thick, fleshy with prominent vascularity and gradually increasing in size and encroaching towards the central part of the cornea (cap is present)

b. Atrophic

It is thin attenuated with poor vascularity. No progess is seen. Cap is absent.

2. Pseudo pteryguim:

It is found at any age. It is always stationary. It is an inflammatory process.

Visual problems with pterygim

a. Dimness of vision:- This is due to corneal astigmatism and obstruction of visual axis when the pterygium covers the pupillary area

b. Diplopia:-

This is rare and due to limitation of ocular movements

Treatment:-

Atrophic pterygium and if it is just on the cornea, it is better to left alone with periodic followup of the patient.

Progressive pterygium

1. Simple excision of pterygium with the conjuntiva and keeping the limbus and adjacent area bare
2. Sub conjunctival dissection of pterygium and excision

A pterygium cannot be removed without leaving a scar on the cornea as it involves the Bowman's membrane and superficial stroma. Recurrence after pterygium surgery may occur

In Recurrent pterygium

If pterygium actually reforms and extends towards the pupillary area, the apex should be freed and a lamellar graft inserted over the afftected area. Contact radiation by B rays may be carefully applied to the limbus. The dose should not exceed 2500 rad. given during the first week following surgery. Alternatively thiotepa 1:2000 solution may be given four times daily for 6 weeks

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RETINOPATHY OF PREMATURITY(ROP)

Dr. V.K.P. Geetha

ROP has been generally considered to be a disease of developed countries. But this does not hold true anymore. It is now emerging as an epidemic of childhood blindness.

ROP was first described as Retrolental fibroplasia by Tessy in 1942.Health was first to define a clean picture of RLF and combined the term ROP in 1951.The first epidemic of blindness occurred in 1940 and 1950 in USA and Western Europe and due to unmonitored supplemental O_2.The second epidemic started in 1970's in industrialized countries due to higher survival of extremely premature babies due to improvement in Neonatal care. Now the third epidemic of ROP is occurring in middle income countries of Latin America and Asia and this has features of both the previous epidemics.

Pathogenesis of ROP :-

The current theory of ROP pathogenesis is an extension of the two earlier theories (Classic theory and Gap function theory.)

ROP occurs in premature babies as retinal vasculation is not fully developed at birth. There are 2 phases in vascular development in infants.

I. True vasculogenesis (8-21 weeks of foetal development which is independent of Vascular Endothelial Growth Factor (VEGF)
II. Angiogenesis (22-40 weeks of development which is VEGF dependent.

Let us see what happens normally . Vascuarisation is incomplete at birth in premature infants. Avascular anterior retina causes physiologic hypoxia and VEGF release. Thus immature vessels grows normally.

In ROP, usually child is exposed to high oxygen levels after birth and there is down regularization of VEGF. This leads to vaso obliteration and cessation of vessel growth. When oxygen exposure is reduced, there will be pathological release of VEGF from new avascular retina. This leads to neovascularisation and ROP.

Risk Factors:-

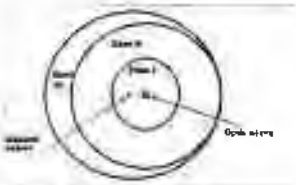
- Gestational Age
- Birth Weight
- Oxygen
- Height
- Steroid
- Vitamin E
- Surfactant

ROP is inversely proportional to the gestational age and birth weight. The higher the gestational age and birth weight, the lesser the incid of ROP. Unmonitored 100% O_2 has been proved to be harmful. When unblended O_2 is administered, the other risk factors becomes less important than amount of oxygen.

Classification of ROP regain assessment of following 4 parameters.

Stage ,location, extent and plus disc.

Location of disease, each eye is divided in 3 zones and staging of disease is done according to degree of vascular changes.



Stage I:- Demarcation line

Thin but definite structure separating avascular retina from vascular retina. This is a flat line and lies on the plane of retina.

Stage II:- Ridge

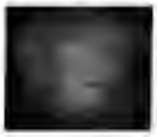
Extends out of plane of retina and has height, width and volume. There may be small tufts of Neovascularisation posteriorly (popcorn lesions)

Stage III:- Ridge with EFP

Extra retinal fibrovascular proliferation which could either be continuous or non continuous.

Stage IV:- Sub-total Retinal detachment

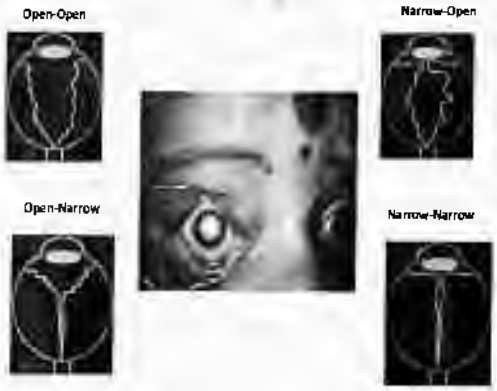
4A-RD not involving macula



Stage V:- Total Retinal Detachment

4B-RD involving macula

The funnel like appearance of anterior and posterior portions of RD is described as open or closed.



Extent of disease:-

Circumferential extent of ROP is indicated by sector involvement with 12- 30 degree sectors like 12 clock hours ,

eg :-3 O'clock is nasal in right eye whereas temporal in left eye and 9 O'clock is temporal in right eye and nasal in left eye.

Plus Disease:-

A sign indicating severity of ROP is Progressive Vascular incompetence seen as dilatation and tortuousity of posterior retinal vessels, engorged iris vessels, pupil rigidity and vitreous haze.

Aggressive Posterior ROP:-

It is an uncommon form of ROP, and is seen in smallest and most premature babies. This is also called Rash disease or Type II ROP which is having progression and poor outcome..

Natural cause of ROP:-

Onset of Retinopathy, is not likely to occurs before the baby reaches 32 weeks post menstrual age. Severe ROP occurred at around the same post menstrual age in babies regardless of birth weight.

Screening of ROP:-

Whom to screen?

Infants with a birth weight of less than 1500gms or gestational age of 32 weeks or less should be screened. In addition selected infants with a birth weight between 1500 and 2000 gms or gestational age of more than 32 weeks with an unstable clinical course.

Sickness Criteria:-

Multiple birth, blood transfusion, Respiratory distress syndrome, sepsis, intraventricular hemorrhage ,Intrauterine growth retardation anemia and seizures.

When to screen:-

31weeks post conceptional age or 4 weeks after birth which ever is later

30 day strategy:-

One session of retinal screening should be carried out before 30 day of life.

How to screen:-

Pupil should be dilated with 2.5% phenylephrine and 0 4% tropicamide.

Topical anaesthesia by 0 5% proparacane.

Indirect Ophthalmoscopy with scleral depression is the gold standard for screening.

Another easy option is Retcam, *ie*; Digital camera for imaging retina of infants.

Management:-

Non surgical intervention ,Laser surgical intervention , scleral buckling, lensectomy and vitrectomy.

Laser:-

Principle:-Ablation of ischemic peripheral retina which stops release of angiogenic factors.

A portable indirect infrared diode laser, frequency doubled and YAG laser or argon green laser can be used. The system used is laser indirect Ophthalmoscope. It should be done under supervision of a neonatologist or anesthesiologist.

Surgery is advocated if laser is unsuccessful in preventing the prognosis or patients detected in Stage 4 or Stage 5.

Recently intravitreal Bevacizumab monotherapy has been tried in severe aggressive posterior ROP and in failure of standard laser treatment.

ROP babies are not born blind. Nature has given a narrow window of opportunity for us to act .So it is our responsibility to screen all the preterm babies.

(Note: Now we have started ROP Screening at DH Palakkad)

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STRABISMUS AND AMBLYOPIA IN CHILDREN

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As eye care practitioners the optometrists must be vigilant while dealing with strabismus and amblyopia in children as it leads to permanent visual loss if not treated in time.

Strabismus

Orthophoria is the condition where in the actions of the muscles are balanced and coordinated to allow fusion in the brain. The brain fused the images from both eyes to produce a three dimensional image. For achieving Binocular Single Vision (BSV) three essential things are required. The first one is healthy macula which helps the formation of clear images. The second thing is the normal functioning of the ocular muscles which bring about fine adjustment which is necessary. The last thing is effectively working nervous mechanism which receives two impressions and blend them psychologically into one. The coordinated actions of the Extraocular muscles and nervous mechanism is necessary for good BSV.

The conditions of imbalance or misalignment is called strabismus (squint). When the imbalance is overcome so that proper alignment of the eyes is maintained under constrain the condition is called Heterophoria (latent strabismus). But if the muscular imbalance is too great or desire for fusion too weak vision in two eyes are unequal one eye deviates the condition is called Heterotropia.

In strabismus images received by the brain will manage in different ways. Sometimes the person will see two different objects in the same place and create visual confusion. Sometimes the person will see two images. The squinting eye normally produce blurred image and sometimes suppressed by the brain(Amblyopia).

Some children born with esotropia and it may be hereditary also. In some children strabismus develops later due to defective nervous or muscles or as a result of trauma. Some children develop esotropia when they are ages 3to6, because they are hypermetropic and need spectacles to help them restore vision and normal alignment. Sometimes strabismus develops due to serious diseases affecting the n rvous system of the eye. It is very important to note that Exotropia or Esotropia can be the first sign of Retino blastoma (cancer of the eye).Esotropia with drooping of the lid occurs due to nerve damage which can be a sign of brain tumour.

Treatment

Strabismus has to be treated according to the cause. Misalignment is measured and eye movement should be checked. Cycloplegic refraction must be done to asses full extent of Hypermetropia. In some children Hypermetropic spectacle correction straighten their eyes. A few children needed Bifocals to make sure their eyes stay straight when they are looking at near objects and in rare cases to make up for congenital absence of accommodation. Some children require surgery on their eyes to straighten their eyes.

Amblyopia

Amblyopia develops when the strabismus started at early stage and the brain has been continuously suppressing the image of the deviated eye. And if Amblyopia also develops in if there is high difference in refraction between the two eyes.

If Amblyopia is treated in time vision can be restorable as the brain and nervous system are capable of change during early days. Amblyopia is treated by forcing the brain to use the eye with reduced vision. This is done by covering the good eye with a patch to blur the vision in that eye. This is done for several hours and days to achieve the goal. By forcing the brain to use the deviated eye the visual cortex responsible for that eye receives additional visual stimules which allow to re-establish a normal vision. It is very important to note that some children with amblyopia is usually as a result of significant difference in refraction between two eyes. For such cases it should be corrected by glasses. It is very important to convince the parents and children about occlusion treatment.

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BE A SUCCESSFUL OPTOMETRIST ...

Vision is the most important among the human senses. Beautiful things in the world are meant to be seen. Our eyes are important factor of our lives yet sometimes we just take it for granted and we do not care less about it. Taking care of our eyes can mean the difference between a dark and solitude world and a life of being able to see and appreciate the beauties of nature and everything else around us. The choice between the two depends merely on how we value eye care. Optometrists measure sight and are responsible for correcting vision problems. Using a combination of time-tested techniques, such as eye chart reading and ocular inspection, and newer methods that employ the latest technology, they evaluate each patient's eye health and vision quality and, if necessary, prescribe a particular corrective lens type and strength. This prescription may be for glasses, contact lenses, or increasingly, for corrective laser surgery. The goal of all optometrists is a patient who can see better and so live a more comfortable and safer life. Optometrists work with all range of patients - from infants to old aged.

There are many types of eye care professionals such as Ophthalmologist or Ophthalmic medical practitioner (A medical doctor who specializes in all aspects of eye care including diagnosis, management, and surgery of ocular diseases and disorders), Optometrist , Orthoptist (Specializes in diagnosis and management of ocular motility, amblyopia and binocular vision disorders, as outlined by the International Orthoptic Association. They also assist ophthalmologists in surgery and in most countries are accredited ocular sonographers), Ocularist (Specialize in the fabrication and fitting of ocular prostheses for people who have lost eyes due to trauma or illness), Optician (Specializes in the fitting and fabrication of ophthalmic lenses, spectacles, contact lenses, low vision aids and ocular prosthetics. They may also be referred to as an "optical dispenser", "dispensing optician", "ophthalmic dispenser"), Vision therapist *et al.*

An optometrist is defined by the World Council of Optometry (a member of the World Health Organisation) as follows: Optometry is a healthcare profession that is autonomous, educated, and regulated (licensed/registered), and optometrists are the primary healthcare practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection of disease in the eye, and the rehabilitation of conditions of the visual system. While Ophthalmologists are responsible for surgical treatment or ocular disease, Optometrists "provide comprehensive eye and vision care, which includes refraction and detection/diagnosis and limited management of disease in the eye." Optometrists refer to ophthalmologists patients requiring treatments such as ocular surgery, intraocular injections, and lasers. Orthoptists primarily work alongside ophthalmologists to co-manage binocular vision treatment, but also often do comprehensive eye and vision testing. Optometrists or optometric physicians are primary eye care and health professionals concerned with vision care. They are experts in determining one's refractive error and prescribing appropriate correction. They deal with vision screening (eye testing), diagnosis of visual problems, orthoptics and vision training, optometric counseling of patients with partial sight, colour blindness and hereditary vision defects, and designing and fitting of spectacles, contact lens and low vision aids. They also prescribe Vision therapy eye exercises to patients complaining of Visual symptoms such as squint etc.

Though Optometry goes hand in hand with Ophthalmology in treatment of Visual disorders, Optometrists should not be confused with ophthalmologists or dispensing opticians. An optometrist performs all the tasks of an ophthalmologist, short of surgery and prescription of medicines. Ophthalmologists are trained physicians specialized in eye and vision care who perform eye surgery, as well as diagnose and treat eye diseases and injuries. They conduct eye tests to examine a patient's vision and prescribe eyeglasses and contact lenses and provide vision therapy and low-vision rehabilitation. Apart from these, they also operate machines for work such as polishing edges, hardening and adjusting the

sizes of lenses. The important duties and tasks of an Optometrist are:

1) Examine eyes, using observation, instruments and pharmaceutical agents, to determine visual acuity and perception, focus and coordination and to diagnose diseases and other abnormalities such as glaucoma or color blindness.

2) Prescribe, supply, fit and adjust eyeglasses, contact lenses and other vision aids.

3) Educate and counsel patients on contact lens care, visual hygiene, lighting arrangements and safety factors.

4) Consult with and refer patients to ophthalmologist or other health care practitioner if additional medical treatment is determined necessary.

5) Eye care Education: It is high time to take an action against any form of eye diseases. Make aware of people to be well informed of several ways of keeping their eyes healthy. For this knowledge of the different kinds of eye diseases will also serve you an edge. Know the factors such as obesity, diabetics, smoking, medications, Ultraviolet light, and others that can cause eye diseases and avoid or protect your eyes from them and instruct to wear protective sunglasses, eyeglasses, or contact lenses to prevent your eyes from exposure to these factors.

Personal Skills necessary to optometrists are patience, manual dexterity and a confident manner. The essential characteristics to become a licensed optometrist are mechanical aptitude, good vision and coordination. Self-discipline, a disposition to serve others, work ethics characterized by dedication and persistence and the ability to deal tactfully with patients are some essential qualities to become a successful optometrist. Optometrists are trained professionals involved in the treatment of visual defects with the help of optical instruments.

An Interest in keeping the profession, attentiveness and accuracy, awareness of health and safety regulations, compassion for patients, strong ethics and never compromises a p atient's visual well-being, and general treatments, excellent communication skills, spends adequate time with patients and never rushes someone through an examination.

Some of the characteristics of a successful Optometrist are discussed below:

1. Patient centrism:

Maximize patient satisfaction.Most hospitals settle or demand to settle into a comfortable routine that is convenient for the doctor and staff and that relegates patient needs and desires to secondary concerns. Patients usually regard their personal relationship with a practice as more valuable than the purely technical advice they receive Because patients are not able to distinguish between a good or bad examination, they consider eye examinations a commodity available in many places. But they place high value on a practice that treats them as individual human beings. It's the quality of the personalized care they receive that patients remember and that causes them to return.The most effective optometrists find ways to build a human bond with each patient They take the time to treat each patient as an important and welcome guest whose welfare is the utmost concern of the practice.They take the time to learn about each patient's daily routine so that eyewear recommendations are optimal. They express sincere empathy for a patient's expressed and observed needs and put the patient's interest first. As you begin your optometric career, it's a good idea to reflect on the higher purpose of your daily work. Your job goes far beyond your role as a clinician taking measurements and making diagnoses. Your larger role is to preserve and improve the quality of patients' vision so that theireveryday lives are more fulfilling. Your education prepares you well for the clinical aspects of your role. You will need to hone your patient communication skills to prepare yourself to learn in depth about each patient's unique needs an equally important skill in your new career.

2. Leadership

The educational degree confers a justifiable respect from both patients and from the support

staff who will assist you in your work. You will soon discover that your professional effectiveness will have a lot do with howyou leverage the respect of staff members, throughyour personal leadership, to improve the quality of the care you jointly deliver. Depending on where you practice, your support staff could well consist of many people with minimal experience in eye care and with no training in customer service, who earn close to a minimum wage and have little motivation to perform at a high level. Like it or not, your success at satis fying patients and getting them to come back to see you will depend heavily onhow well you shape this human material to help you provide exceptional care. Truly effective optometrists devote a lot of time to their staff leadership roles, through personal example, formal training and daily coaching.

3. Goal setting

Success is always a personal choice, not something that happens accidentally to lucky or talented people. Success begins with a longterm vision that must then be translated into short term, concrete goals. Virtually every author of a self help book concludes that people who envision and define concrete goals for themselves are much more productive and lead morefulfilled lives than those who drift from day to day without a specific destination in mind. Without concrete goals, years can slip by as time is spent reacting to daily demands imposed by other people. Most have noble goals such as helping patients, making a nice living and having a nice retirement. But these goals are too vague and openended to stimulate exceptional performance in daily activities. They provide no objective, quantifiable way to assess day today if a goal is being achieved or not. So they lack the power to change daily behavior in a positive way. Long term success only comes from small daily achievements. As a freshly minted optometrist, it's important that you define your longrange goals in your professional life. What is the practice of your dreams? What do you envision to be the summary of your career accomplishment asyou retire? What end goal motivated you to invest four years of your life to become an optometrist?

After you have reached some conclusions about your ultimate destination, it's time to develop near term goals. What are the milestones along the path to your final destination that must be passed? What is your timetable for accomplishing your vision and reach the major milestones? What do you need to learn? What investments will you need to make? What do you need to accomplish this year? This quarter? This month? Today? As you answer these questions, write down your answers. It becomes your action plan and a basis for assessing your progress.

4. Optimizing time use

Time management is a basic business skill involving conscious allocation of time around the goals. Effective time management begins with clearly defined goals. People waste the most time tending to unimportant, yet urgent, tasks im posed by third parties that do not advance long range goals. They also waste time doing habitual, comfortable work that is unnecessary or could be more efficiently accomplished by someone else.The best performing optometrists have no more timeto spoil but they use every minute more effectively.

5. Continuous improvement

One distinguishing characteristic of optometrists who have built large, thriving practices is that they cons tantly challenge the effectiveness of their office routine, seeking ways to do things better.

They are early adopters of new technology. As they go about their daily work, they pay attention to the little things that aren't quite working as well as they might and they note them down for later discussion with the staff. They constantly experiment with new ideas, not worrying that some will fail. They understand that mistakes can teach as much as successes. It is all too common in medical practice that professionals and staff settle into a comfortable routine and resist any change to it. While this may reduce stress, in a world of rapid change, standing still means you are falling behind. Seeking continuous improvement also means learning from colleagues. It is valuable to visit the practices of successful hospitals to see what they do. It also pays to have a network of colleagues with whom you can share ideas and clinical topics

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The Key Word

There is a word known to everything me and **you,**
Pronunciation is not hard to **do.**
Could be written with **ease,**
but mean a little **crazy.**
Only because it is a word in **dictionary,**
that cannot be manufactured in a **factory.**

Now just gone for a **voyage,**
Only to get it out of dictionaries's **page.**
Completed my voyage round the **world,**
But no where I got the **word.**
But always happy to **say,**
I found its secrecy on each and every **day.**
Really it is a **secret,**
It is the key to success if well set.
I never found the **world,**
But I met those, who found the **word.**
They are all named as **successful,**
Only because they knew the secret **in full.**

Asked which is the **word ?**
Asked where is the **word ?**
It is not **dependent,**
I will call it **"Confident".**

By
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Taluk Hospital iritty

Kavitha P
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കാഴ്ചക്കപ്പുറം

ഇംഗ്ലീഷും മലയാളവും ഔദ്യോഗിക ഭാഷയായിരുന്ന കേരളത്തിൽ മലയാളം മാത്രമായിരിക്കും ഇനി ഔദ്യോഗിക ഭാഷ എന്ന് പത്രത്തിൽ വായിച്ചപ്പോഴാണ് കാഴ്ച പരിശോധനയെപറ്റി ഒരു ചെറുകുറിപ്പ് മലയാളത്തിൽ എഴുതിയാലോ എന്ന് ആലോചിച്ചത്. പല വികസിത രാജ്യങ്ങളിലും അവരവരുടെ ഭാഷയിലാണ് വിദ്യാഭ്യാസം. പഠിക്കുന്ന പല കാര്യങ്ങളും പ്രായോഗിക തലത്തിൽ കൊണ്ടു വരുവാൻ അതിലൂടെ കഴിയുമെന്ന് വിശ്വസിക്കുന്നവർ ഏറെയുണ്ട്.

പഠിക്കുന്ന പല കാര്യങ്ങളും പ്രായോഗിക തലത്തിൽ കൊണ്ടു വരുവാൻ കഴിയാത്തത് മാതൃഭാഷയിൽ പഠിക്കാത്തതു കൊണ്ടാണ് എന്ന് ഈയുള്ളവൾക്കും പലപ്പോഴും തോന്നിയിട്ടുണ്ട്. കാഴ്ച പരിശോധനയിൽ ഫോഗിങ്ങിന്റെ (ആ വാക്കിന് ആരെങ്കിലും ഒരു മലയാള പരിഭാഷ നിർദ്ദേശിക്കുമോ ?) പ്രാധാന്യം, ഹൃസ്വദൃഷ്ടരിലും ദീർഘദൃഷ്ടരിലും ഫോഗ്ഗിങ്ങ് പ്രയോഗിത്തിലെ വ്യത്യാസങ്ങൾ എന്നിവയാണ് ഞാൻ പറയുവാൻ ശ്രമിക്കുന്ന കാര്യങ്ങൾ.

40 വയസ്സിനു താഴെ പ്രായം, 6/6 കാഴ്ച, അടുത്ത് കാണുവാൻ ബുദ്ധിമുട്ട് എന്ന് പറയുമ്പോൾ പറയുന്നലധികം പ്രായം ഉണ്ടാവും എന്നാണ് നാം ആദ്യം സംശയിക്കുന്നത്. 6 മാസം മുമ്പ് ഹൃസ്വദൃഷ്ടിക്ക് കണ്ണട കുറിച്ചു നൽകിയ കുട്ടിക്ക് വീണ്ടും കാഴ്ച കുറവ്, 6/6 കാഴ്ചയുള്ള വ്യക്തിക്ക് സ്ഥിരമായി തലവേദനയും കണ്ണുവേദനയും, കുറച്ച് സമയം വായിക്കുമ്പോൾ ഉറക്കം വരുക ഇങ്ങനെയുള്ള പരാതികൾ പലപ്പോഴും നമ്മുടെ ഓ.പി. കളിൽ പരിഹരിക്കപ്പെടാറില്ല. ഇത്തരം പരാതികൾക്ക് ശമനം ലഭിക്കുവാൻ ഫോഗ്ഗിങ് രീതി അവലംബിക്കേണ്ടതുണ്ട്.

ദീർഘദൃഷ്ടി

ദീർഘദൃഷ്ടിയുള്ളയാളുടെ കണ്ണുകൾ ചെറുതായിരിക്കും. നേത്ര പടലത്തിൽ വീഴേണ്ട പ്രതിബിംബം പിന്നിലായി വീഴുന്നതുമൂലം കണ്ണിന് പ്രതിബിംബത്തെ കൃത്യമായി കേന്ദ്രീകരിക്കുവാൻ കഴിയുന്നില്ല. അങ്ങനെയുള്ളപ്പോൾ അക്കോമഡേഷൻ ഉപയോഗിച്ച് മാത്രമേ നേത്ര പടലത്തിൽ കേന്ദ്രീകരിക്കുവാൻ കഴിയുകയുള്ളൂ. പ്രായമായവരിൽ ഇത് കഴിഞ്ഞു എന്ന് വരില്ല.

സാധാരണ ഗതിയിൽ നമ്മുടെ കണ്ണുകൾ ദൂരെയുള്ള വസ്തുവിനെ കാണുമ്പോൾ വിശ്രമാവസ്ഥയിലും അടുത്തുള്ളവയെ കാണുമ്പോൾ അക്കോമഡേറ്റ് ചെയ്തുമാണ് ഇരിക്കുന്നത്. പ്രകടമല്ലാത്ത ദീർഘദൃഷ്ടി (latent hyperopia) ഉള്ള വ്യക്തി അക്കോമഡേറ്റ് ചെയ്താണ് അടുത്തും അകലെയുമുള്ള വസ്തുക്കളെ കാണുന്നത്. എല്ലാ സമയത്തും അക്കോമഡേറ്റ് ചെയ്യുന്നതിനാൽ കണ്ണുകൾ പെട്ടെന്ന് ക്ഷീണിക്കുന്നു.

അതുകൊണ്ടാണ് അവർക്ക് പലതരത്തിലുമുള്ള ബുദ്ധിമുട്ടുകൾ (Asthenopic Symptoms) ഉണ്ടാവുന്നത്. ഈ അവസ്ഥയിൽ നാം ഇതിനെ ഭാഗികമായി മാത്രം പരിഹരിച്ചാൽ മതിയാവില്ല. ഇത് പരിഹരിക്കണമെങ്കിൽ 6/6 കാഴ്ചയുണ്ടെങ്കിൽ പോലും ആ വ്യക്തിയ്ക്ക് നാം ഫോഗ് ചെയ്ത് അവർ സ്വീകരിക്കുന്ന പരമാവധി + പവർ കൊടുക്കേണ്ടതുണ്ട്.

ഉദാഹരണം:

സമതുലദൃഷ്ടി (Emmetropia) ഉള്ള വ്യക്തി ദൂരെ കാണാൻ അക്കോമഡേറ്റ് ചെയ്യുന്നില്ല. അടുത്ത് +2D അക്കോമഡേറ്റ് ചെയ്യുന്ന സ്ഥാനത്ത് +1D ലേറ്റന്റ് ഹൈപറോപ്യ ഉള്ള വ്യക്തി ദൂരെ കാണാൻ +1D യും അടുത്ത് കാണാൻ +3D യും അക്കോമഡേറ്റ് ചെയ്യേണ്ടി വരുന്നു. ഈ വ്യക്തിയ്ക്ക് അടുത്തുള്ള കാഴ്ചകുറവ് മാത്രം പരിഹരിച്ചാൽ അവളുടെ കണ്ണുകൾക്ക് അകലെ കാഴ്ചയിൽ സാധാരണ വ്യക്തിക്ക് ലഭിക്കുന്ന വിശ്രമം പോലും ലഭിക്കാതെ വരുന്നു.

Subjective refraction:

6/6 കാഴ്ചയുള്ള വ്യക്തിയ്ക്ക് പ്രകടമല്ലാത്ത ദീർഘദൃഷ്ടി ഉണ്ടോ എന്ന് അറിയുവാൻ ട്രയൽ ഫ്രേമിൽ ഒരു കണ്ണടച്ച് മറ്റതിൽ +0.25 വെയ്ക്കാം. കൂടുതൽ തെളിയുന്നു അല്ലെങ്കിൽ വ്യത്യാസമില്ല എന്ന് പറയുകയാണെങ്കിൽ + ലെൻസുകൾ വീണ്ടും കൂട്ടാം. ഇങ്ങനെ ചെയ്യുമ്പോൾ ഫോഗിങ് ആവശ്യമാണ്. രശ്മി വക്രതാ പരിശോധന (refraction) ചെയ്യുന്നുണ്ടെങ്കിൽ അതിൽ കിട്ടുന്ന മൂല്യവും വർക്കിംങ് ദൂരവും ചേർത്ത് ആദ്യം തന്നെ ആരംഭിക്കാം. ഇത് ഓരോ കണ്ണിനും വെവ്വേറെ ചെയ്യേതുണ്ട്.

ഉദാ: റിഫ്രാക്ഷൻ മൂല്യം +1 വർക്കിംഗ് ദൂരം +1.5; +2.5- യിലോ +3- യിലോ ഫോഗിങ്ങ് തുടങ്ങാം.

ഒരു കണ്ണിൽ ചെയ്യുമ്പോൾ മറ്റെ കണ്ണ് വലിയ ഒരു പവർ ഉപയോഗിച്ച് ഫോഗ് ചെയ്യാം. ചെയ്യുന്ന കണ്ണിലെ പവർ +0.25 നിരക്കിൽ കുറച്ചു കൊണ്ടു വരുകയാണ് അടുത്ത പടി. ലെൻസ് മാറ്റി മാറ്റി വക്കുമ്പോൾ അടുത്ത ലെൻസ് വച്ചതിനു ശേഷം മാത്രമേ ഇരിക്കുന്ന ലെൻസ് മാറ്റാവു. എന്ന പ്രത്യേകം ശ്രദ്ധിക്കേണ്ടതുണ്ട്. ഒരു ലെൻസ് വയ്ക്കുന്നതിനു മുമ്പ് ഇരിക്കുന്നത് മാറ്റിയാൽ വീണ്ടും അക്കോമഡേറ്റ് ചെയ്യും എന്നത് നാം പലപ്പോഴും മറന്നു പോകുവാൻ ഇടയുള്ള സംഗതിയാണ്.

വ്യക്തമായി വായിക്കാൻ കഴിയുന്ന പവറിൽ നിർത്താം. അതു വീണ്ടും കുറയ്ക്കുവാൻ ശ്രമിക്കേണ്ടതില്ല. വീണ്ടും അടുത്ത കണ്ണ് ഇതുപോലെ ചെയ്തിട്ട് രണ്ട് കണ്ണും തുറന്ന് കാണിക്കുമ്പോൾ 6/6 വായിക്കുവാൻ സാധിക്കണം. ഇങ്ങനെയുള്ളവരോട് നിരന്തരം കണ്ണട ഉപയോഗിക്കേണ്ടതുണ്ടെന്ന് നിർദ്ദേശിക്കുകയും വേണം.

ഹൃസ്വ ദൃഷ്ടി

ഹൃസ്വദൃഷ്ടിയുള്ളവരുടെ കാര്യത്തിൽ നാം ശ്രദ്ധിക്കേണ്ടത് മിഥ്യാ ഹൃസ്വദൃഷ്ടി (pseudo myopia) ഉണ്ടാകാതിരിക്കാനാണ്. സ്വാഭാവികമായും കുട്ടികളും മുതിർന്നവരും ഭൂരിഭാഗവും ദീർഘദൃഷ്ടർ ആയിരിക്കും. സമതുലദൃഷ്ടി (Emmetrope) ആയ ഒരു വ്യക്തിയുടെ കണ്ണിനു മുമ്പിൽ നെഗറ്റീവ് ലെൻസ് വയ്ക്കുമ്പോൾ അവർ അക്കോമഡേറ്റ് ചെയ്യുവാൻ ആരംഭിക്കും. ഇത് തടയാൻ രണ്ട് കാര്യങ്ങൾ ചെയ്യാം.

1) ആദ്യമായി കണ്ണട വയ്ക്കുന്ന ഒരാൾക്ക് നെഗറ്റീവ് പവർ കൊടുക്കുമ്പോൾ റ്റിനോസ്കോപ്പ് പരിശോധന ചെയ്യുക.
2). ഫോഗ് ചെയ്ത് പവർ നിശ്ചയിക്കുക.

ഇത് ചെയ്യുമ്പോൾ ചെറിയ പവറിൽ തുടങ്ങി -0.25 നിരക്കിൽ കൂട്ടികൊണ്ടു വരുകയാണ് വേണ്ടത്. അക്ഷരങ്ങൾ വായിക്കുവാൻ കഴിയുന്നേടത്ത് നിർത്താം. കൂടുതൽ തെളിച്ചമെന്നോ അക്ഷരങ്ങൾ ചെറുതായി കാണുന്നു എന്നോ പറയുന്ന നിലയിൽ വീണ്ടും പവർ കൂട്ടരുത്. ഹൃസ്വദൃഷ്ടിക്കാരെ അണ്ടർ കറക്ട് ചെയ്യുന്നതാണ് നല്ലത്.

ഇരുനിറ പരിശോധന (Duochrome Test) ചെയ്യുന്നതു വഴി ഈ രണ്ട് സാഹചര്യങ്ങളിലും പവർ കൃത്യമാണോ എന്ന് നമുക്ക് ഉറപ്പാക്കാം. ദീർഘദൃഷ്ടിക്കാർ പച്ച അക്ഷരങ്ങൾ കൂടുതൽ വ്യക്തമായി അല്ലെങ്കിൽ രണ്ടും ഒരുപോലെ കാണും ഹൃസ്വദൃഷ്ടിക്കാർ ചുവന്ന അക്ഷരങ്ങൾ കൂടുതൽ വ്യക്തമായി കാണും.

ഹൃസ്വദൃഷ്ടിയുള്ള കണ്ണുകളിൽ വസ്തുക്കളുടെ പ്രതിബിംബം എപ്പോഴും നേത്രപടലത്തിനു മുമ്പിൽ ആയിരിക്കും. അതിനാൽ അവർ വീണ്ടും അക്കോമഡേറ്റ് ചെയ്യില്ല- അക്കോമഡേഷൻ കാഴ്ച അവ്യക്തമാക്കുകയേ ഉള്ളൂ. ഈ അവസ്ഥയിൽ സാധാരണയിൽ കൂടുതൽ പവർ ഉള്ളതിനാൽ വളർച്ചയുടെ ഒരു ഘട്ടത്തിലും പവർ കുറയുകയില്ല. കുറയണമെങ്കിൽ വെള്ളെഴുത്ത് ആരംഭിക്കണം. ഒരു നെഗറ്റീവ് പവർ കണ്ണട വെയ്ക്കുന്ന വ്യക്തി കണ്ണടയില്ലാതെയും അത്രത്തോളം തന്നെ വായിക്കുമെങ്കിൽ അത് മിഥ്യാ ഹൃസ്വ ദൃഷ്ടി (pseudo myopia)ആണെന്ന് നാം മനസ്സിലാക്കണം. ഇവരിൽ ഡയലേറ്റഡ് റിഫ്രാക്ഷൻ തന്നെ ചെയ്യണം.

നാം നമ്മുടെ ജോലി നന്നായി ചെയ്യുമ്പോൾ, കുറേ അധികം വ്യക്തികളുടെ ജീവിത കാഴ്ചകൾ നിറമുള്ളതും മനോഹരവും ആകും എന്നതാണ് നമ്മുടെ ജോലിയിൽ നമുക്ക് ലഭിക്കുന്ന നിർവൃതി.

സ്നേഹാദരങ്ങളോടെ,
ദീപ്തി എൽസ ഏബ്രഹാം
ജനറൽ ആശുപത്രി, തലശ്ശേരി

OPTO TIPTS

1. Crystalens is an accomodating 10L manufactured by Bausch & Lomb which accomodates in the same way as the normal crystaline lens.
2. Apart from rods and cones, 2% of the nerve ganglions in the retina are also photosensitive and its signals are used to resize the pupil.
3. Hemeralopia is the inability to see in bright light due to defective cones (just opposite of Nyctalopia- Night Blindness)
4. Human and primate eyes have 1 fovea, hawks have 2, cats and dogs do not have fovea, but a central band called visual streak.
5. Gold fish (Carassius auratus) can see ultra violet & infra red light. It can also recognise owner's face and voice.

ഓർമ്മകളും ഗദ്ഗദങ്ങളും

ഇടറുമെൻ മൗനം അറിയുന്നുവോ-
ഇരുൾമൂടിവെച്ചൊരെൻ മുകമൗനം
അറിഞ്ഞിട്ടുമെന്തിനേ
അറിയാത്ത ഭാവത്തിൽ
തുടരുന്ന ഗദ്ഗദം ഉദിർക്കുന്നു നീ
തിരയുന്നതെന്തു നീ കാലത്തിനോളങ്ങളിൽ
ഏങ്ങോ ഒഴുകിപ്പോയ വെൺമുത്തുകളോ ?
ഓർമ്മകൾ കൂട്ടമായ് എന്നടുത്തെത്തുന്നു
നേരിയ കാറ്റിന്റെ ചുംബനം പോൽ
നോവിന്റെ ഗീതമെന്നിൽ മുഴക്കി-
കൊണ്ടിടറുന്നു വീണ്ടും ദുഃഖങ്ങളേറ്റു വാങ്ങുവാൻ

എ.പി. വിശ്വനാഥൻ
താലൂക്ക് ഹോസ്പിറ്റൽ
പൊന്നാനി

DIABETIC RETINOPATHY

Sujatha R. Nair

The eye is a mirror that reflects the health of a person. Here you see almost all diseases in miniature, and from the peculiar structure of the eye, you see them as though, through a glass many of the little wonderful details in the nature of the morbid processes.

Diabetes mellitus (DM) is one of the leading causes of blindness all over the world. Diabetic retinopathy is recognized as one of the target diseases for vision 2020 in India. Even though DR is the cause of blindness due to diabetes in the majority of patient it affects in a variety of ways.

1. Changes of refraction - occuringdepending of the level of blood sugar increase in bloodsugar lead to myopia anddecrease in blood sugar from high levels to Hypermetropia.
2. Increased risk of developing glaucoma, retinal vascular occlusions and ischemic optic neuropathy.
3. Increased risk of developing iridocylitics.
4. Increased risk of ocular infections.
5. Early onset of age- related cataract or true diabetic cataract in uncontrollable diabetics.
6. Oculo motor nerve palsies

Diabetic retinopathy can affect both insulin Dependent Diabetic mellitus (Type 1) and Non-insulin dependent (type II)- but type 1 is more commonly affected. The disease results in generalized macro and micro vascular complications. Micro vascular complication due to microangiopathy is directly linked to glycaemic control and affects the kidneys, eyes and peripheral nerves. Macro vascular complications are not directly linked to the level of hyperglycemia and affect the heart, brain and limbs. A characteristic picture is seen in the fundus, but in elders it may be complicated by, ateriosclerosis and hypertension or even renal disease. Almost all patients with type I disease develop a retinopathy in 15 years. In those with type II diabetic the risk of diabetic retinopathy increases with duration of diabetes accompanying hypertension. Smoking people with dabetes is at a risk of 20-25 times blindness that normal population. This is important to screen all diabetics annually by examining the dilated fundus, so as to start therapy as early as possible. Strict control of diabetes helps to stabilise the retinal changes.

Pathogensis

Histopathology shows thickening of basement membrane, loss of inter mural pericytes and progressing closure of retinal capillaries. The Initial loss of pericytes leads to dilation of the vessels, seen as micro aneurysms and a break down of blood retinal barrier allowing leakage of vascular tissue into the surrounding tissue. Oedema is present around such areas as well as hard exudates and small localized deep haemorrhages known as dot and blot haemorrhages. In addition there is an increased aggregation of platelets causing capillary non perfusion. Extensive closure of the capillaries lead to ischemia of the retina. The body attempts to re-establish blood supply by opening up shunt vessels-intra retinal micro vascular abnormalites (IRMA) that leads to neovascularisation at the border between well and poorly perfused retinal areas. This neovascular tissue is more friable and bleeds easily.

Poor control of DM is assoiciated with an earlier onset of diabetic retinopathy. Retinopathy is common but not invariable after the diseases for 10 years and affects the patient after lasted 20 year and thus it affects both the young and the old, for it is the diabetic age and not the chronological age that is

important. Uncontrolled systemic hypertension, poor renal status and smoking are other risk factors that adversely affect diabetic retinopathy.

The earlier changes of background diabetic retinopathy or non proliferative diabetic retinopathy (NPDR) affects small blood vessels wich leads to microaneurisms, sometimes in vast numbers which appear as the minute round dots like cluster of grapes. This is an early sign of diabetic retinipathy. Oedema is not marked, but hard white exudates are present. And this stage is associated with glomerulosclerosis in the kidney (Kimmelstiel Wilson Nephropathy). The management consist of good metabolic control of diabetic together with attended renal problems on sytemic hypertension.

CSME- Clinically significant Macular Oedema.

It is oedema or hard exudates present within 500 mm of the foveal center. The leakage can be focal or diffused maculopathy. Ischemic maculapathy is a result of ischemic changes at the macula. The patient may complaint on decrease in vision but would also have normal vision. CMSE is best recognized by slit lamp biomicroscopy using a +90 D. or +78 D lens. Treatment is by photocoagulation using argon diode, frequency doubled YAG laser. Fluorescein angiography identifies area of leakage which can then be photocoagulated directly if focal, or by light intensity burns in a grid pattern over the posterior pole avoiding the foveal avascular zone.

Circinate Retinopathy:-

is due to chronic oedema involving a considerable area of the retina at and around the macula, with massive changes in retina itself. It occurs in elderly people. A girdle of bright white patches with crenated boarder appears around the macula, made of aggregation of macrophages full of lipds. Treatment may be effective if the source of macular leakage can be local and destroyed by photocoagulation. Intravitreal steroid and anti VEGF agents are also used as therapeutic alternatives in patients.

Proliferative Diabetic Retinopathy (PDR)

About 2/3rd of Type I diabetics are likely to develop PDR over three decades. The neovascularisation arises from the optic nerve head and a long the large vessels as well as elsewhere. Such fibrovascular tissue may lie flat on the retina or attach itself to the posterior vitreous face leading to vitreous traction, retinal separation and tearing of blood vessels. This is the commonest cause of vitreous haemorrhage in adults. Extension of the neovascular process into the anterior segment with neovascularisation of the iris (Rubeosis Iris) and angle leading to neovascular glaucoma.

The treatment available for PDR is photocoagulation of the ischemic areas to reduce the metabolic demand. This releives the retina of oedema and hard exudates, improves its function and also causes the regression of new vessels, thus inhibiting haemorrhage. Patients with high risk for severe visual loss require pan retinal photocoagulaxtion. This is done using a retinal laser lens,which gives a large field of view.

In diabetics, the long term visusal results of PRP are most encouraging. neovascularization of the iris usually regresses after laser therapy, but neovascular glaucoma is the major cause of visual failure along with tractional retinal detachment. Successful visual results require long term follow up with repeated photocoagulation of recurrent neovascularisation and macular leaks.

Several anti-VEGF agents, such as Avastin and lucentis have been developed and are being used in diabetic retinopathy. Triamcinolone acetonide is used in the treatment of diabetic macular oedema, in a intravitreal dose. In more advanced PDR vireo retinal surgery is the treatment of choice. Early removal of vitreal haemorrhage prevent the development of additional Neovascularisation. Tractional retinal detachement is treated by excising as much fibro vascular tissue from the retinal surface as possible and

sealing any retinal breaks with laser and an internal tamponade.

Prognosis:-

The damages that produced by DR is irreversible. The purpose of all forms of treatment is to delay worsening of DR and thus to conserve as much residual vision as possible . Hence it is important for diabetic patients to undergo detailed retinal examination even if there is no visual problems. It is important that DR is detected early before significant damage to retina and vision has occurred.

Patient education is an important aspect in the management of DR

1. Excellent glucose control is beneficial in any stage of DR. It slows down the progression of diabetic complications in the eye.
2. Smoking also should be strictly prohibited. It may cause reduced oxygen supply to the retina which may lead to further complications
3. Visual symptoms such as change in vision, redness and pain could be the manifestation of disease progression and should be reported immediately.
4. Other systemic diseases such as hypertension, renal disease, hyperlipidemia may contribute to the progression of retinopathy and should be taken care of
5. DM and DR are progressive conditions which require a regular followup with a physician and an ophthalmologist to detect any changes that may benefit appropriate treatment.

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P.V. Sujatha

ഒട്ടേറെ പേരെ മരണത്തിലേക്കും അതിലേറെ പേരെ വെളിച്ചത്തിന്റെ ലോകത്തു നിന്നും നിത്യമായ അന്ധതയിലേക്കും തള്ളിവിട്ട വൈപിൻ വിഷമദ്യ ദുരന്തത്തിന്റെ ഭീകരമുഖം നേരിൽ കണ്ട രക്തസാക്ഷികളിലൊരാളായ ഒരു ചെറുപ്പക്കാരന്റെ ആത്മനൊമ്പരങ്ങൾ

നിനച്ചില്ലൊരിക്കലും

നിറക്കാഴ്ച്ചകൾ നിറഞ്ഞൊരെൻ മാനസം
കൂരിരുട്ടിന്റെ തീരത്തണയുമ്പോൾ
ഇനിയൊരാളിനും വന്നുഭവിക്കല്ലെ
എന്നുമെൻമനം തേങ്ങുന്നു പിന്നെയും.
കത്തിനീറുന്ന നോവിന്റെ ചൂടിനാൽ
വ്രണിതമായൊരീ ആത്മാവിൻ വിങ്ങലിൽ
അനുവേത്തിന്റെ തീക്ഷണമാം പൊള്ളലിൽ
എന്നുമെൻ മനം തേങ്ങുന്നു പിന്നെയും.
കൈക്കോട്ടെടുത്തും ചുമടെടുത്തും
കല്ലുംമണ്ണുമായിഴചേർന്നു ഞാൻ
സ്വച്ഛന്ദമായൊരീ ജീവിതം നെയ്യുമ്പോൾ
നിനച്ചില്ലൊരിക്കലുമീ ദുരന്തം.
കാരുണ്യ മൂർത്തിയാം അമ്മയെയും
പോറ്റിവളർത്തിയെൻ അച്ഛനെയും
നോവിലും ചിരിയിലും പങ്കാളിയായ്
കൈപിടിച്ചെത്തിയെൻ പത്നിയെയും
ജീവന്റെ ജീവനായ് ഞാൻ കാത്തു പോന്നെൻ
ഓമനപൈതലാം മക്കളേയും
ജീവിത വീഥിയിൽ താങ്ങും തണലുമായ്
കർമ്മനിരതനായ് വാണ കാലം.
കത്തുന്ന ചൂടിലും പാതി മഴയിലും
പാടത്തും തൊടിയിലും കെട്ടിടം പണിയിലും
പകലന്തിയോളം പണിയെടുത്തി
ട്ടല്ലലേൽക്കാതെ കാത്തെൻ കുടുംബത്തെ.
വെയിലേറ്റു വാടിത്തളർന്ന നേരം
ചാഞ്ഞവെയിലിന്റെ ചാരത്തിരുന്നു
കുട്ടരോടോന്നിച്ചു മദ്യപിച്ചിടുമ്പോൾ
നിനച്ചില്ലൊരിക്കലും ഈ ദുരന്തം.
സിരകളിൽ ലഹരി പടർന്ന നേരം
ഒരിക്കലും നിനച്ചില്ലൊരിക്കലും ഞാൻ
നേത്ര നാഡിയെ തകർക്കുമീ വീര്യം
തുടച്ചുനീക്കുമെൻ കാഴ്ചയാം ജ്യോതിയെ.
സാർത്ഥമാകുമെൻ ധന്യ ജന്മത്തെയും
സ്വച്ഛമായെൻ കുടുംബത്തെയും
തച്ചുടച്ചൊരു പളുങ്ക്പാത്രം പോൽ
നിനയ്ക്കാത്തനേരത്തീ ദുരന്തം.
ആലംബമില്ലാതെൻ കുടുംബം
ജീവിത വീഥിയിൽ തട്ടിത്തടയുമ്പോൾ
ഒന്നിനുമൊന്നിനും ത്രാണിയില്ലാതെ
എന്നുമെൻ മനം കേഴുന്നു പിന്നെയും.
നിറക്കാഴ്ചകൾ നിറഞ്ഞൊരെൻ മാനസം
കൂരിരുട്ടിന്റെ തീരത്തണയുമ്പോൾ
ഇനിയൊരാളിനും വന്നു ഭവിക്കല്ലേ
എന്നുമെൻമനം തേങ്ങുന്നു പിന്നെയും.

P.V. Sujatha
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NATIONAL PROGRAMME FOR CONTROL OF BLINDNESS

Krishna Kumar V. K.

National Programme for Control of Blindness (NPCB) was launched in the year 1976 as a 100 % centrally sponsored scheme with the goal to reduce the prevalence of blindness from 1.4 % to 0.3 % by the year 2020.

Goals and Objectives of NPCB in the XII Plan

To reduce the backlog of Blindness through identification and treatment of blind at primary, secondary and tertiary levels based on assessment of the overall burden of visual impairment in the country.

Develop and strengthen the strategy of NPCB for "Eye Health" and prevention of visual impairment through provision of comprehensive eye care services and quality service delivery.

Strengthening and upgradation of RIOs to become centre of excellence in various sub-specialties of ophthalmology.

Strengthening the existing and developing additional human resources and infrastructure facilities for providing high quality comprehensive Eye care in all Districts of the country.

To enhance community awareness on eye care and lay stress on preventive measures.

Increase and expand research for prevention of Blindness and visual impairment

To secure participation of Voluntary Organizations / private practioners in eye care.

Major reasons for prevalence of blindness in India

- The overall increase in population
- The life expectancy for both males and females has steadily increased
- A major proportion of aged population in rural areas have poor access to eye care facilities in India
- Inadequate availability of trained health personnel
- The poor nutritional status of mothers and young children predisposes the pre-school children to nutrition blindness.
- Adverse environmental conditions and domestic unhygienic conditions predispose to high infection rates.
- Lack of community awareness and poor health seeking behavior.
- The prevalence of myths and misconception about surgeries hamper the achievement of programme objectives.

Strategies of Government

- Comprehensive eye care services addressing major blinding causes: cataract, Refractive errors and low vision, childhood blindness, corneal blindness, glaucoma, diabetic retinopathy etc...
- Development of eye care services and improvement in quality of eye care by training of personnel, supply of high tech equipments, strengthening follow up services and monitoring of services.
- Decentralized implementation of the schemes through state and district health societies
- Involvement of voluntary organization in various NPCB activities.
- Participation of community and Panchayati raj institutions in organizing services in the rural area.
- Screening of school going children for identification and treatment of refractive errors with special attention to underserved areas.
- Promoting eye donation, processing and utilization of donated eyes for treatment of corneal blindness.
- Free treatment to poor patents through qualified government and nongovernmental organizations.
- Public awareness about prevention and timely treatment of eye ailments.

Schemes available

- Non –recurring grant in aid for expansion / upgradation of eye care units
- Non – recurring grant in aid for setting up/ strengthening of eye bank and eye donation centers
- Non-recurring grant in aid for setting up/ strengthening vision centers.
- Recurring grant in aid for performing free cataract operations in hospital.
- Recurring grant in aid to eye banks and eye donation center.

Activities in Kerala

Though Kerala is small when compared to other states in India, it plays a major role in the achievement of

various programme of NPCB. Eye Donation fortnight, World Sight Day, World Glaucoma week etc...Are being observed very well every year in all District of Kerala by the hard work of the team members of NPCB of the District. District Mobile Ophthalmic Units are posted with a permanent Ophthalmologist so that cataract service can be improved by the transportation of patients from the camps sight to the Hospital and back. The Mobile eye units can provide more eye camps in rural areas. Diabetic Retinopathy detection camps, IEC activities are also now a routine part of Mobile units.

During the year 2014-15 Kerala could achieve 1, 43,778 cataract surgeries (target was 1,36,120) with the help of Govt., NGO and Private Hospitals, 11,79,824 school children were undergone vision screening and trained 4,889 teachers by Optometrists in Government sector, issued 11,718 spectacles free of cost, collected 1,974 cornea ,done 1,150 Keratoplasty etc...

How you can help!

You as an Optometrist can play a very critical and catalytic role in achieving the overall objective of National Programme for Control of Blindness (NPCB) such that blindness ceases to be a public health problem in the country.

- ❖ Advocacy and IEC for programme activities in tribal, rural, urban slums and urban areas.
- ❖ Increasing level of information about personal hygiene, facial cleanliness, eye diseases and
- ❖ Management amongst patients, their family members, community and health personnel.
- ❖ Dispelling myths, misconception and taboo associated with eye donation.
- ❖ Motivating people to pledge their eyes for donation after death.
- ❖ Identifying, motivating, transporting and supporting eye patients to undergo free treatment in Government health facility or NGO Hospital.
- ❖ Creating and maintaining an enabling environment of trust, health and happiness for socially and economically blind persons such that they can lead a satisfying life.
- ❖ Identifying and referring school and out-of-school children for management of refractive errors and other eye diseases to nearest health institutions equipped with eye care services.

Krishna Kumar V. K.
State Ophthalmic Co-ordinator
DHS, Thiruvananthapuram

ഒരു തിരി നാളം

സായന്തന സൂര്യൻ തൻ ചെപ്പിൽ
ചാലിച്ച കുങ്കുമം വാരി വിതറവെ
അലറിക്കുതിക്കുന്ന തിരമാലകൾ
തീരത്തോട് വിട ചൊല്ലവേ
അന്ധകാരത്തിൻ വഴികൾ തിരയുന്ന
ഉണ്ണി, അമ്മ തൻ മടിയിൽചായവെ
മെല്ലെ മൊഴിഞ്ഞു എന്താണമ്മെ
മണ്ണും വിണ്ണും പൂക്കളും പൊയ്കയും
ചിത്രശലഭങ്ങളും നിറങ്ങളും
എങ്ങനെയാണ് എൻ അമ്മതൻ
കോമള വദനം, എങ്ങനെയാണ് അമ്മെ ഞാൻ
ഒന്നിനും ഉത്തരമില്ലായിരുന്നു
ഉത്തരം അന്വേഷിച്ചു നടന്നു ഉണ്ണി
മാറോടു ചേർത്തു പൊട്ടികരഞ്ഞു മാതാവ്
ഒത്തിരി വെളിച്ചം ആ പിഞ്ചുപൈതലിൻ
നയനങ്ങളെ തഴുകിയെങ്കിൽ.
വസന്തങ്ങൾ പലതു പിന്നിട്ടു
പൂവിൽ നിന്നും മധു നുകരുന്ന
പൂമ്പാറ്റയെ കൈകുള്ളിലാക്കാൻ മറ്റൊരു
പൂമ്പാറ്റ കണക്കെ പുറകെ ഓടിയവൻ,
തുള്ളിച്ചാടി പായുന്ന പൈക്കിടാവിനൊപ്പം
തൊടിയിൽ അങ്ങോളമിങ്ങോളം പാഞ്ഞവൻ
ഭൂമി തൻ നിറങ്ങൾ അറിഞ്ഞവൻ
മാരിവില്ലിന്റെ സുന്ദരതയും
ഉണ്ണി തൻ കണ്ണുകൾക്ക് വെളിച്ചം
ദാനമായി വരമായി നൽകിയ
ആ മഹാനുഭാവനു ഒരായിരം
സ്നേഹപൂക്കൾ സമർപ്പിക്കുന്നു.

REMANI
Optometrist
PHC Kurathikkad

LIST OF ALLIED AND HEALTHCARE PROFESSIONALS

The Allied and Healthcare professions to be considered under this bill are as listed below. *

A. Healthcare Professions

1. Optometry
2. Physiotherapy
3. Occupational Therapy
4. Nutrition Sciences
5. Physician Associate and Assistants

B. Allied Health Professions

6. Cardiology, vascular and pulmonary Technology
7. Medical Laboratory Sciences
8. Medical Radiology and Imaging Technology
9. Neurosciences Technology
10. Non- direct and Administrative services
11. Primary Care and community services
12. Radiation Therapy
13. Renal Technology
14. Surgical and anesthesia related technology
15. Trauma Care Services

The above mentioned groups account for over 44 job profiles in the allied and healthcare space, which are as follows-

A. Healthcare Professions

1. Optometry
   a. Optometrist
2. Physiotherapy
   a. Physiotherapist
3. Occupational Therapy
   a. Occupational Therapist
4. Nutrition Sciences
   a. Nutritionist
   b. Dietitian
5. Physician Associate and Assistants
   a. Physician Associates and Assistants

B. Allied Health Professions

6. Surgical and anesthesia related technology
   a. Anesthesia assistants and technologist
   b. OT technologist
   c. Endoscopy technologist
7. Medical Laboratory Sciences
   a. Cyto-technologist
   b. Dermatology/STD /leprosy lab technologist
   c. Forensic technologist
   d. Hemato-technologist
   e. Histo-pathologist
   f. Phlebotomist
   g. Medical and clinical lab technologist
8. Medical Radiology and Imaging Technology
   a. Radiographer
   b. Radiologic /Imaging technologist
   c. Diagnostic Medical sonographer
9. Renal Technology
   a. Urology technologist
   b. Dialysis Therapist
10. Radiation Therapy
   a. Radiation Therapist
   b. Medical dosimetrist
   c. Nuclear medicine technologist
11. Trauma Care Services
   a. Emergency medical technologist (paramedic)
   b. Critical care/ICU technologist
12. Neurosciences Technology
   a. EEG/END technologist
   b. EMG technologist
   c. Neuro lab technologist
   d. Sleep lab technologist
13. Cardiology, vascular and pulmonary Technology
   a. Cardiovascular technologist
   b. ECG technologist
   c. ECHO technologist
   d. Perfusionist
   e. Pulmonary function (PFT) technologist
   f. Respiratory therapist
14. Non- direct and Administrative services
   a. Biomedical engineers and technologist
   b. Medical assistant
   c. Medical secretaries
   d. Medical transcriptionist
   e. Health Management Information System Managers
15. Primary Care and community services
   a. Blood bank technologist
   b. Counselor- Integrated Behavioral Health Counselors, Palliative counselors etc.
   c. Sanitary Health Inspectors

*** NOTE: Additions / Removals from this list is proposed to be done through Rules to be framed in this regard by the Central Government.**