REFLECTIONS FROM THE LEFT EYE pdf

1: Flickering light in eye after Cataract surgery | Cataract | Eyes | Community | Patient

Call the doctor about vision problems if you: Have symptoms of retinal detachment such as floaters or flashes of light in your vision. You need immediate treatment to save vision in that eye.

When you look at an object you see it because light reflects off the object and enters your eye. Your eye focuses this light into an image on the layer of the eye called the retina. Structure of the eye The clear front of your eye is called the cornea. This transparent disc sits over the pupil and iris, protecting them and letting in light. It is highly sensitive. The cornea also forms the first part of the process of focusing what you look at into an image on the back of your eye see below. The coloured part of your eye is called the iris. The iris is made up of muscle fibres which help to control the size of the pupil. The pupil is not an actual structure but the circular opening in the middle of the iris. The pupil appears as the dark central part of the eye. The pupil can change size through changes in the iris in order to regulate the amount of light going through it. In darkness your pupils will get bigger to allow in more light. The retina is a layer on the inside of the back of the eyeball. It contains highly specialised nerve cells. These convert the light which is focused there into electrical signals. These are then passed through the optic nerves to the parts of the brain which process vision and build up the picture that we see. Near the centre of the retina is the macula. The macula is a small highly sensitive part of the retina. It is responsible for detailed central vision, the part you use when you look directly at something. It contains the fovea, the area of your eye which produces the sharpest images of all. The white of your eye is called the sclera. This is a hard protective layer which covers all the eyeball except the cornea. The next layer beneath the sclera, between the retina and the sclera, is called the choroid. The choroid contains lots of blood vessels which provide oxygen and nutrients to the retina below. At the front of the eyeball the choroid connects with the ciliary body. The ciliary body is a part of the eye which includes the ciliary muscle which changes the shape of the pupil by changing the shape of the iris and the ciliary epithelium, which produces aqueous humour. This is the liquid that fills the front of the eye. Aqueous humour is made continuously. It circulates through the front part of the eye and then drains away through an area called the trabecular meshwork, near the base of the iris. In order for an object to be seen, the light coming from the object must hit the retina. Structures in the eye bend the light rays entering the eye so that when they reach the retina they are focused. The cornea and lens both help to do this. The cornea gives the initial bend to the light but the lens is the fine tuner. The lens can change shape with the help of the ciliary body which contains fine muscle fibres that pull on it. Depending on the angle of the light coming into it, the lens becomes more or less curved convex. This alters its strength and allows it to focus the light correctly on to the back of the eye. This is very similar to the action of a lens in a camera which focuses the light on to the film. The globe of the eye needs to keep its shape so that light rays are focused accurately on to the retina. Most of the eye is therefore filled with a jelly-like substance called the vitreous humour. Eye movements The movement of each eye is controlled by six muscles that pull the globe of the eye in various directions. They work together in a synchronised way. For example, to look left, the lateral rectus muscle of the left eye pulls the left eye outward and the medial rectus of the right eye pulls the right eye towards the nose. At the same time levator palpebrae superioris lifts the upper eyelid. The eyelids The upper and lower eyelids help to protect the eye, and keep its surface moist. The upper eyelid is more mobile and is attached to a special muscle, called the levator palpebrae superioris. This muscle allows you to control the upper eyelid. Eyelids help to spread the tear film across the eye by blinking. They also produce a special oil which slows down the evaporation of the tear film. The eyelids are made up of several different layers, including the conjunctiva. The conjunctiva is a clear layer which lines the inside of your eyelid and covers the white of the eyeball. When the blood vessels in this conjunctiva become enlarged they can be seen, giving a bloodshot appearance. Eyelashes help to stop debris and direct sunlight from entering the eyes. Tear formation The sensitive surface of the eye needs to be kept moist. The eyes are in constant contact with your eyelids. Without lubrication, the friction between the two layers of conjunctiva would cause rubbing. To prevent this, and to help remove debris, the eye produces a tear film. The tear film is made up from three layers - the main middle watery layer, the thin outer oily lipid layer and the thin inner

layer of mucus. Eye with eyelid detail.

2: Eye Pain - Is It an Emergency?

"Instead, the child is probably looking off to the right of the camera, and the white reflection occurs in the left eye because the optic nerve is lined up perfectly with the camera and the flash." "Overwhelmingly, the most common cause of an abnormal red reflex is refractive error," said Dr. Michael Repka, MD, Johns Hopkins Hospital.

Also by bone measurement, it is revealed that the apparition of the Blessed Virgin of Guadalupe was 4 feet, 8 inches tall. Bernadette at Lourdes in , whose height was also 4 feet, 8 inches. She spoke these words to him: You will tell him exactly what you have seen and admired, and what you have heard. She told him to return to the bishop the following Sunday and repeat her appeal to him a second time. When the Blessed Virgin appeared to Juan a third time, he told her that the bishop wanted some proof of her apparitions. He even took an out-of-the-way path to try to avoid the most holy Mary so that he could accomplish his mission. The Blessed Virgin appeared to him anyway and told him not to worry; that his uncle would be cured. She said to him: Here is the text of her message to Juan Diego: Do not be troubled or weighed down with grief. Do not fear any illness or vexation, anxiety, or pain. Am I not here who am your Mother? Are you not under my shadow and protection? Am I not your fountain of life? Are you not in the folds of my mantle? In the crossing of my arms? Is there anything else you need? Do not let the sickness of your uncle worry you because he is not going to die of his sickness. At this very moment, he is cured. Now it was winter and the presence of roses in December, especially at that location, was miraculous. She told Juan to place the roses in his ayate or tilma, a sort of a front and back cape, which was made out of coarse cactus cloth. When he was admitted into the presence of Bishop Zumarraga, Juan opened his tilma right in front of him. The Castilian roses cascaded to the floor between the two men. It was the same image that appears at the beginning of this story. It is important to realize that Our Lady of Guadalupe was appearinginvisibly in the room at the same time that Juan opened his tilma in front of Bishop Zumarraga. In the years following the apparition, because of the graces from God that came through Our Lady of Guadalupe, almost the entire population of Aztecs and Myans were converted to Christianity. More than years have passed since Our Loving Mother appeared to Juan Diego on the hill of Tepayac, in a northeast suburb of what is now Mexico City. During those centuries and decades, three basilicas have been constructed in honor of Our Lady of Guadalupe. But the story does not end. After about fifty years the cloth disintegrates and breaks up into small pieces. It has survived floods, fires, explosions and other various hazards. Scientists are always baffled as to how the image of Our Lady of Guadalupe was applied to the cactus cloth. It is simply too rough in texture to paint visual depictions of tiny and delicate anatomical structures. In May of , studies by infra-red photography were undertaken by Dr. Callahan, a research biophysicist at the University of Florida. He ruled out brush strokes, over-painting, varnish, sizing, or even preliminary drawings by an artist in the body of the image. Damage from the flood was apparent at the edges of the tilma. He concluded that the original image on the tilma has qualities of color and uses the weave of the cloth in such a way that the image could not be the work of human hands. With the aid of computer technology, some investigators have imaged human figures in the corneal reflections. For example, some scientists say that there are four or more persons imaged in the corneal reflections of the right eye. For the following presentation we did not use an imaging computerbut simply outlined the corneal images in Photoshop. The reason that we claim seeing only two human silhouettes in the corneal reflections is that we only outlined images that were contained within the corneal area of the eye. The sclera, the white portion of the eye, does not reflect images as does the cornea, which has the dark background of the iris and the pupil to create a mirror effect. Above is the un-retouched photographic print of the image of Our Lady of Guadalupe that we scanned for the following presentation. It is an extremely high quality fine-grain print that was processed in Mexico City in the s. However, if one could scan the actual tilma of St. Jaun Diego, one would find that much more information would be available from the image. We will include a footnote at the end of this presentation regarding the technical aspects of the work performed. Following are labeled images of the eyes of the apparition that were miraculously imprinted on the tilma of St. Every retouched image will be paired with a technically-identical un-retouched image. Below, from top to bottom, are retouched and

un-retouched images: Retouched corneas are on the top and un-retouched corneas are on the bottom.

REFLECTIONS FROM THE LEFT EYE pdf

3: Parenting and Child Health - Health Topics - Turned eyes (squint)

Leukocoria (also leukokoria or white pupillary reflex) is an abnormal white reflection from the retina of the eye. Leukocoria resembles eyeshine, but leukocoria can occur in humans and other animals that lack eyeshine because their retina lacks a tapetum lucidum.

Terminology[edit] Pupil is the dark circular opening in the center of the iris and is where light enters the eye. Based on analogy with a camera, pupil is equivalent to aperture, whereas iris is equivalent to the shutter. Pupillary reflex should have been named iris reflex, because iris is the actual muscular structure that responds to light and pupil is merely the passive opening formed by the active iris. Pupillary reflex is synonymous with pupillary response, which may be pupillary constriction or dilation. Pupillary reflex is conceptually linked to the side left or right of the reacting pupil, and not to the side from which light stimulation originates. Left pupillary reflex refers to the response of the left pupil to light, regardless of which eye is exposed to a light source. Right pupillary reflex means reaction of the right pupil, whether light is shone into the left eye, right eye, or both eyes. In contrast, the terms direct and consensual refers to the side where the light source comes from, relative to the side of the reacting pupil. A direct pupillary reflex is pupillary response to light that enters the ipsilateral same eye. A consensual pupillary reflex is response of a pupil to light that enters the contralateral opposite eye. Thus there are four types of pupillary light reflexes, based on this terminology of absolute left versus right and relative same side versus opposite side laterality: Neural pathway anatomy[edit] The pupillary light reflex neural pathway on each side has an afferent limb and two efferent limbs. The afferent limb has nerve fibers running within the optic nerve CN II. The afferent limb carries sensory input. Anatomically, the afferent limb consists of the retina, the optic nerve, and the pretectal nucleus in the midbrain, at level of superior colliculus. Ganglion cells of the retina project fibers through the optic nerve to the ipsilateral pretectal nucleus. The efferent limb is the pupillary motor output from the pretectal nucleus to the ciliary sphincter muscle of the iris. The pretectal nucleus projects crossed and uncrossed fibers to the ipsilateral and contralateral Edinger-Westphal nuclei , which are also located in the midbrain. Each Edinger-Westphal nucleus gives rise to preganglionic parasympathetic fibers which exit with CN III and synapse with postganglionic parasympathetic neurons in the ciliary ganglion. Postganglionic nerve fibers leave the ciliary ganglion to innervate the ciliary sphincter. The ipsilateral efferent limb transmits nerve signals for direct light reflex of the ipsilateral pupil. The contralateral efferent limb causes consensual light reflex of the contralateral pupil. Types of neurons[edit] The optic nerve , or more precisely, the photosensitive ganglion cells through the retinohypothalamic tract , is responsible for the afferent limb of the pupillary reflex; it senses the incoming light. The oculomotor nerve is responsible for the efferent limb of the pupillary reflex; it drives the iris muscles that constrict the pupil. Parasympathetic; Sympathetic; Sensory Retina: The pupillary reflex pathway begins with the photosensitive retinal ganglion cells , which convey information via the optic nerve , the most peripheral, distal, portion of which is the optic disc. Some axons of the optic nerve connect to the pretectal nucleus of the upper midbrain instead of the cells of the lateral geniculate nucleus which project to the primary visual cortex. These intrinsic photosensitive ganglion cells are also referred to as melanopsin -containing cells, and they influence circadian rhythms as well as the pupillary light reflex. From the neuronal cell bodies in some of the pretectal nuclei, axons synapse on connect to neurons in the Edinger-Westphal nucleus. Those neurons are the preganglionic cells with axons that run in the oculomotor nerves to the ciliary ganglia. Parasympathetic neuronal axons in the oculomotor nerve synapse on ciliary ganglion neurons. Short post-ganglionic ciliary nerves leave the ciliary ganglion to innervate the Iris sphincter muscle of the iris. For example, if a bright stimulus is presented to one eye, and a dark stimulus to the other eye, perception alternates between the two eyes i. Sometimes the dark stimulus is perceived, sometimes the bright stimulus, but never both at the same time. Using this technique, it has been shown the pupil is smaller when a bright stimulus dominates awareness, relative to when a dark stimulus dominates awareness. Similarly, it has been shown that the pupil constricts when you covertly i. Finally, a picture that is subjectively perceived as bright e. Schematic[edit] Referring to the neural pathway schematic diagram, the

entire pupillary light reflex system can be visualized as having eight neural segments, numbered 1 through 8. Odd-numbered segments 1, 3, 5, and 7 are on the left. Even-numbered segments 2, 4, 6, and 8 are on the right. Segments 1 and 2 each includes both the retina and the optic nerve cranial Nerve 2. Segments 3 and 4 are nerve fibers that cross from the pretectal nucleus on one side to the Edinger-Westphal nucleus on the contralateral side. Segments 5 and 6 are fibers that connect the pretectal nucleus on one side to the Edinger-Westphal nucleus on the same side. Segments Segments 3, 4, 5, and 6 are all located within a compact region within the midbrain. Segments 7 and 8 each contains parasympathetic fibers that courses from the Edinger-Westphal nucleus, through the ciliary ganglion, along the oculomotor nerve cranial nerve 3 , to the ciliary sphincter, the muscular structure within the iris. Schematic diagram of pupillary light reflex neural pathway Left direct light reflex involves neural segments 1, 5, and 7. Segment 1 is the afferent limb, which includes the retina and optic nerve. Segments 5 and 7 form the efferent limb. Left consensual light reflex involves neural segments 2, 4, and 7. Segment 2 is the afferent limb. Segments 4 and 7 form the efferent limb. Right direct light reflex involves neural segments 2, 6, and 8. Segments 6 and 8 form the efferent limb. Right consensual light reflex involves neural segments 1, 3, and 8. Segment 1 is the afferent limb. Segments 3 and 8 form the efferent limb. The diagram may assist in localizing lesion within the pupillary reflex system by process of elimination, using light reflex testing results obtained by clinical examination. Clinical significance[edit] A medical halogen penlight used to observe pupillary light reflex. In addition to controlling the amount of light that enters the eye, the pupillary light reflex provides a useful diagnostic tool. It allows for testing the integrity of the sensory and motor functions of the eye. Light entering one eye produces a constriction of the pupil of that eye, the direct response, as well as a constriction of the pupil of the unstimulated eye, the consensual response. Comparing these two responses in both eyes is helpful in locating a lesion. Lack of response to light stimulation of the right eye if both eyes respond normally to stimulation of the left eye indicates damage to the sensory input from the right eye perhaps to the right retina or optic nerve. Normally, pupils react i. Lack of the pupillary reflex or an abnormal pupillary reflex can be caused by optic nerve damage, oculomotor nerve damage, brain stem death and depressant drugs, such as barbiturates. For example, if light is shone into left eye only, left pupil constriction is a direct pupillary light reflex, and simultaneous right pupil constriction is a consensual pupillary light reflex. Therefore, light shone into one eye causes ipsilateral direct pupillary light reflex and contralateral consensual pupillary light reflex. On testing light reflex for each eye, several patterns are possible. Left optic nerve, CN II, is completely transected somewhere in its course between retina and optic chiasma , therefore the left afferent limb is damaged. The rest of the pupillary light reflex neural pathway on both sides are otherwise intact. The ipsilateral direct reflex is lost. When the left eye is stimulated by light, neither pupils constrict. Afferent signals from the left eye cannot pass through the transected left optic nerve to reach the intact efferent limb on the left. The contralateral consensual reflex is lost. Afferent signals from the left eye cannot pass through the transected left optic nerve to reach the intact efferent limb on the right. The contralateral direct reflex is intact. Direct light reflex of right pupil involves the right optic nerve and right oculomotor nerve, which are both intact. The ipsilateral consensual reflex is intact. Consensual light reflex of left pupil involves the right optic nerve and left oculomotor nerve, which are both undamaged. Oculomotor nerve damage on one side: When the left eye is stimulated by light, left pupil does not constrict, because the efferent signals cannot pass from midbrain to the left pupillary sphincter. The contralateral consensual reflex is intact. When the left eye is stimulated by light, the right pupil constricts, because the afferent limb on the left and the efferent limb on the right are both intact The contralateral direct reflex is intact. When light is shone into right eye, right pupil constricts. The ipsilateral consensual reflex is lost. When the right eye is stimulated by light, left pupil does not constrict consensually. Lesion localization example[edit] For example, in a person with abnormal left direct reflex and abnormal right consensual reflex with normal left consensual and normal right direct reflexes , which would produce a left Marcus Gunn pupil , or what is called afferent pupillary defect, by physical examination: Left consensual reflex is normal, therefore segments 2, 4, and 7 are normal. Lesion is not located in any of these segments. Right direct reflex is normal, therefore segments 2, 6, and 8 are normal. Combining with earlier normals, segments 2, 4, 6, 7, and 8 are all normal. Remaining segments where lesion may be located are

segments 1, 3, and 5. Possible combinations and permutations are: Options b and c are eliminated because isolated lesion in segment 3 alone or in segment 5 alone cannot produce the light reflex abnormalities in question. A single lesion anywhere along segment 1, the left afferent limb, which includes the left retina, left optic nerve, and left pretectal nucleus, can produce the light reflex abnormalities observed. Examples of segment 1 pathologies include left optic neuritis inflammation or infection of the left optic nerve , detachment of left retina, and an isolated small stroke involving only the left pretectal nucleus. Therefore, options a , d , e , f , and g are possible. A combined lesion in segments 3 and 5 as cause of defect is very unlikely. Microscopically precise strokes in the midbrain, involving the left pretectal nucleus, bilateral Edinger-Westphal nuclei, and their interconnecting fibers, could theoretically produce this result.

REFLECTIONS FROM THE LEFT EYE pdf

4: Retina - Wikimedia Commons

A face image that is recovered from a reflection in the subject's eye is about 30, times smaller than the subject's face. Despite the low-res pixelated quality of this image, most of us can.

I was born in Maidstone, UK in I was a quiet, introverted child but had a vivid imagination. I get most satisfaction in life from being creative, be that writing, photography, cooking or making travel plans. I have been visually impaired since and only have usable vision in one eye. The doctors are baffled. I was supposed to have eye muscle realignment surgery. My writing roots Almost as soon as I could write, I was creating stories and poetry and found it easy and rewarding. I never gave up creating but I needed a breakthrough. So I wrote some song lyrics for a band I met on the cruise, and they have recorded the song. I now feel my time has come to shine! My style I am easily inspired! Some of my writing comes from personal experiences and emotions, some of my work is spiritual and some ideas come from merely a title! I also like to take photos as well as write, and again, am inspired by things I see in a different perspective to others. And also because that is a theme for some of my photography. Site Content Freelance work commissions As well as showcasing what I have created, I am also looking to write material on request. I can write song lyrics, personal poems for loved ones, to go in greetings cards, quotes to go on social media. Acknowledgements and thanks Heartfelt thanks to Jorge Tenesini, Dennis Atlas and the band of Bad Dreams for making one of MY dreams come true, by putting some of my lyrics into one of their songs. And to Facebook for providing a platform to put me in touch with people all over the world, including musicians. I also thank the people online who have supported and encouraged me. Thanks to Bill Skipworth, another partially sighted writer in Sheffield, who is a devoted Christian and helped re ignite my faith, as well as encouraging me with my writing and radio broadcasting! The Life Church in Maidstone for welcoming me back. Without him, none of this would have happened. And to all the bands and musicians who have enriched my life. Established bands, new bands alike.

REFLECTIONS FROM THE LEFT EYE pdf

5: The Eyes of Our Lady of Guadalupe

Polarized shades can keep your eyes safe from certain types of glare, like reflections from water. Ask your eye doctor about special types that can help reduce glare and correct eye problems.

A normal nasalward displacement of the corneal light reflex from the center of the pupil is called a positive angle kappa. A temporalward displacement is negative. The positive angle is the result of the temporalward projection of the pupillary axis into space relative to the visual axis. This angle is normally about 10 prism diopters in an adult and 20 prism diopters in a newborn infant. The reflex displacements are normally symmetrical in the two eyes, i. If you observe unequal angles in the two eyes this can mean that one eye is not fixating foveally. This condition is called eccentric fixation and it accompanies a condition called amblyopia. Amblyopia is a developmental anomaly that results in reduced visual acuity. Acuity is reduced in part because the patient uses a nasal retinal point to fixate with rather than the fovea of the amblyopic eye. This nasal eccentric fixation causes a temporalward displacement of the corneal light reflex and a negative angle Kappa. The acuity of the amblyopic eye can be approximated from the amount of eccentric fixation. The minimum angle of resolution in minutes of arc is approximately equal the eccentric fixation in prism diopters when it exceeds 1 prism diopter. A slight variation of the angle Kappa test is the Hirschberg test. In this test you have the subject fixate the penlight binocularly rather than monocularly and observe the symmetry of the corneal light reflections. If there is strabismus or eye turn in which only one eye foveates the target and the other eye deviates nasalward or temporalward, you will see the corneal light reflex of the turned eye displaced from the pupil center. If the eye deviates nasalward esotropia the reflex is displaced temporalward. If the eyes fixate binocularly and there is no deviation, then the angle Kappas should both be nasalward and equal. If one eye turns in resulting in a temporalward displacement of the corneal light reflex , its angle Kappa will be less positive or more negative than the angle Kappa in the other eye by the amount of the eye turn. This is a very crude measure that only senses large eye turns that are greater than 10 prism diopters or 5 degrees corresponding to 0. There are approximately 20 prism diopters per millimeter displacement. The penlight can also increase your sensitivity to observing nystagmus. You can also enhance your view by holding up a 5D lens or magnifier before the eye. Another way to detect and measure an eye turn is to conduct a cover test. In this test the patient starts out fixating a target with both eyes open. In the unilateral cover test, you cover one eye with a paddle, and if the remaining eye moves to pick up fixation, you assume that eye was turned away from the target during binocular fixation. This test is used to detect the presence of a strabismus an eye turn. Here you alternately occlude one eye and then the other and watch the eyes move as they alternate fixation. You can put prisms up before one eye until the movement stops. The neutralizing prism quantifies the magnitude of the eye turn. Most patients show some movement on the alternate cover test even if they do not have an eye turn. This movement is caused by a difference between the resting position of the eyes and the direction of the binocular fixation stimulus. Normally, convergence and divergence overcome this resting position and we do not have a strabismus. This relaxed deviation of the eyes under monocular viewing conditions is called the phoria. However, if the patient fails the unilateral cover test it is called a strabismus. Projection Tests and Diplopia There are also subjective techniques that utilize filters and distorting lenses for quantifying eye turns and phorias. You can put a distorting filter like a Maddox rod over one eye and ask the patient to align the image of the distorted line with another image seen only by the other eye. If the eyes are aligned, the targets appear superimposed. If they are misaligned, there is a phoria or tropia. The targets appear displaced in a direction opposite to the ocular deviation. Thus eso deviations cause the target to appear temporalward, and exo deviations cause it to appear nasalward. In effect, each eye has its own target and the patient moves the targets until they are both on the foveas. When this is done, you assume that the directions that the visual axes point in space as measured by any separation of these images indicates either a phoria or a strabismus also known as a tropia. Clinical use of Maddox rod. An entoptic phenomenon is a perception resulting from some structure within the eye. This pigment absorbs short "blue" wave lengths and passes long "red" wave lengths. The surrounding retina gets both long and short wavelength that are perceived as purple.

Patients are asked to fixate a point in the purple field and indicate the location of the pink spot relative to the fixation point. If it is displaced, eccentric non-foveal fixation is suggested. When you view an illuminated field through a rotating Polaroid filter you will see a small rotating brush at the point of fixation. The orderly arrangement of fibers acts like a polarizer so that if light entering the eye is polarized it is mainly transmitted by fibers lying in the plane of polarization. When the Polaroid filter rotates the transmitted orientation appears to rotate in space about the point the fovea is directed. Eccentric fixation can be measured in the same way as done with the Maxwell spot. You can buy these cobalt color filters and rotating Polaroid filters from Bernell corporation for use in clinical practice. Objective eye measurement techniques There are many clinical instruments that allow you to take objective records of eye position and store them on a computer disk for future record. In the past these were used for reading analysis and visual training of binocular disorders, however, in the future it may serve the diagnosis of neurological disorders. EOG is based upon the dipole properties of the eye. The cornea has a positive 10 to 30 millivolt charge compared to the back of the sclera. Silver chloride electrodes are placed on the nasal and temporal canthi and they are used to sense the proximity of the positive apex of the cornea. Charge on electrodes varies as proximity of cornea changes during secondary gaze. EOG is probably the most widely used clinical objective eye movement recording device. It is sensitive to one degree eye movement and it works on non-communicative patients like infants. Its disadvantage is that it is also sensitive to muscle action potentials coming from the orbicularis oculus when the child cries and from the temporal lobe muscles when the child sucks from a pacifier or bottle. You can get around these problems by recording as soon as the child wakes, and has been fed and changed. You have about 20 more minutes before it becomes tired and cranky again. You will need some kind of record or data storage apparatus like a strip chart or computer that digitizes the voltage analogs of eye movements. Typically you will measure OKN and fixational eye movements in the infants under 4 months of age. Infrared Reflection limbal trackers: This technique is much more sensitive than EOG. Light reflected from the limbus moves with the eye because the center of curvature of the cornea is anterior to the center of rotation of the eye. Thus as the eye rotates, the cornea is translated. If the center of the cornea was coincident with the center of rotation of the eye, the eye would be a perfect sphere and the reflection of an external light source would not move when the eye rotated. The reflected light is sensed by a light sensitive diode that varies its resistance as it receives light. This variation in resistance shunts various amounts of voltage and it is possible to get a voltage analog of eye position. Infrared limbal tracker devices are used mostly in adults because the infrared sensors must be attached near the eyes with spectacle frames. Video based systems pupil trackers: These devices are analyzing the image of the corneal light reflex and pupil center. They track the change in shape of the pupil and the displacement of the center of the pupil or position of the corneal light reflex. They are more remote than the infrared systems and they also are equally good at measuring horizontal and vertical eye movements because they analyze the pupil center rather than the eye limbus. Video cameras can be mounted in a helmet and move with the head. They can also combine the position of the eye with the scene viewed by the subject to indicate where in the scene someone is fixating. This type of analysis is useful in analyzing information used in heading perception such as with pilots or drivers. Laboratory eye measurement techniques Search Coil: It is also possible to get extremely precise measures of eye position of 1 arc min using a coil of copper wire mounted in a contact lens, much like an erg electrode. A subject sits in a magnetic field and as the coil on the eye rotates with the eye a small voltage is generated in the coil, much like it was in your elementary physics class. The voltage can be calibrated to indicate eye position. Such a device is used to measure saccadic eye movements with a high degree of spatial and temporal resolution. The disadvantage of this device is that the contact lens can only be worn for 20 minutes before corneal swelling occurs. It fits tightly to prevent slippage when the eye rotates. A related corneal contact lens device attaches a small mirror to the eye on a contact lens. This technique has been used primarily to stabilize the retinal image. An image is reflected off the mirror and back into the eye through an optical system that moves the image with the eye. The stabilized image is unaffected by eye movements and researchers are able to measure visual perception without retinal image smear. It is possible to get very good position accuracy without the contact lens with an infrared reflection sensor that measures the position of both the first and fourth Purkinje images. The first image is influenced by

both rotation and translation of the eye, and the fourth image is mainly influenced by translation. The difference between the motion of the two is a good measure of pure eye rotation. This device is excellent for long term non-invasive measures of small eye movements. Its main disadvantage is that it has a whiplash artifact of ocular lens motion during saccades. In addition, the tracker itself is very large, and the head must remain fixed inside the apparatus. However, it is excellent for laboratory measurements of slow eye movements like pursuits and vergence and for steady eye position.

6: Eye Reflections as Accidental Stereoviews | Griffonage-Dot-Com

After all, its reflection in the subject's left eye shows a vaguely headlike protrusion at the top (too high up to appear in her right eye, if I'm interpreting the correspondences between the reflections correctlyâ€”i.e., identifying the "blob" under the "head" with the "blob" at the top of the other reflection).

7: How to test for the red reflex in a child

Most eye doctors use autorefractor's routinely to develop a starting point that they may then compare to retinoscopy or traditional phoropter refraction. Wavefront refraction - Wavefront refraction uses an abberrometer to measure higher order refractive problems of the human optical system.

8: How to Draw Realistic Human Eyes: 7 Steps (with Pictures)

reflections - the human side of optometry When You Can't Fix It Being a doctor can sometimes mean being helpless in the face of tragic news. ROGER BLANK, O.D., VERNON HILLS, ILL.

9: Pupillary light reflex - Wikipedia

Inflammation inside the eye (uveitis) and recent intraocular surgery are also risk factors for developing floaters in the eye. Tests and Diagnosis Most causes of new floaters and flashes can be determined through a clinical exam by an ophthalmologist.

REFLECTIONS FROM THE LEFT EYE pdf

Rita pmp 7th edition Nomination. Hearing, Ninety-first Congress, first session, on Hubert B. Heffner, of California Karma of materialism Neurological and psychiatric The professor Emma Afghanistan, operations Italy, balanced on the edge of time Letters of a civic guard Green dog goes home Creating a self-narrative of strength, purpose, and possibility Reel 195. Haley-Hall, J. Schools make a difference Highland Railway: People and Places The Northwood Conspiracy Branding ethics: negotiating Benettons identity and image Janet Borgerson, Martin Escudero Magnusson, and Striving For the Whole Duty Of Man IEEE conference record-abstracts The contribution of critical scholarship to ministerial efficiency, by G. B. Foster. Healing is a Choice Evaluating your results Casualties of the lifestyle revolution: Playboy, the permissive society and womens liberation. German in 32 lessons V. I. Graeco-Roman to early modern ethics A Most Unconventional Courtship (Harlequin Historical Series) The Ayurvedic Year The Walworth Parricide A study of some Michigan Indians Sarah E. E. Perine. Socialsecurity gov ha 501 A learners guide to Pintupi-Luritja Human Relations Representative Wisdom, compassion, and charity : the lotus sutra and Augustine Leo Lefebure Montana Ghost Stories A prophecy about moving west Architectonics of humanism The invisible art scott mccloud Short history of Yugoslavia from early times to 1966 Nine bells for a man Baa Baa Black Sheep (Sign Sing-Along (Sign and Sing-Along) 44 Questions for Black America