Getting the Most Out of Your New Retinoscope

Part # BSRETH1

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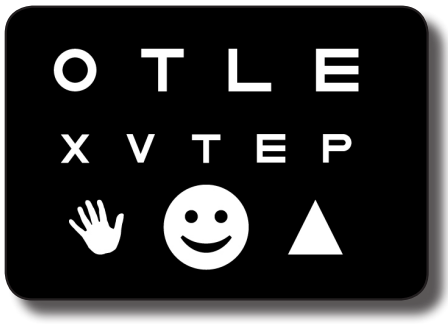

It has been many years since we have seen a true spot retinoscope on the market for use by eye care professionals. First a little on why one should consider a native "spot" scope. The original scopes were all spots (a uniform circular field of illumination, which gets larger in diameter the further away from the target it is aimed) and nearly all of the procedures developed by the early users of retinoscopes were done with spots. The Monocular Estimation Method or MEM is one exception, developed by Dr. Harold Haynes and was done with a streak retinoscope.

The spot, unlike the streak, has a fixed focal length. There is no collar or sleeve to be manipulated either in an up or down configuration, nor is there a directional quality to the reflex other than that seen in the reflex of asymmetric optics of the patient. The spot's uniform light source gives a standard illumination and quality from which comparisons are made. Having a light source, which does not change removes one important variable when observing the reflex. Essentially, the spot scope is used to look at two major aspects of the retinal reflex. The first is quantitative or the optics of the system(s) and the second is qualitative.

Quantitative - Optics

The first thing everyone learns about using a retinoscope is that it is an objective way to estimate the optics of a system/eye. If you center the light in a system and then move the scope handle in a way that moves the light source up and down relative to the system being scoped, the direction of movement and the relative speed of movement of the reflex tells you about the optics of the system.

Note: Beginners often move their head up and down or side to side. This is incorrect. The head should remain steady in space and the retinoscope is tipped up and down with the top of the scope resting on your eyebrow, for example when checking the vertical axis. Generally, you only need to move the scope a small amount to move the circle of light so that the center is just above and then just below the center of the eye being scoped. The goal is to get fine enough control of the scope to move the circle up and down so that the pupil is always illuminated by the light from the scope.

Example: When tipping the bottom of the scope away from your face, thus raising the circle of light, move the light only so far so that the lower edge of the circle just hits the lower edge of the patient's pupil. When tipping the lower part of the retinoscope towards you, moving the circle of light downward, stop just as the upper part of the circle lines up with the upper part of the patient's pupil.

Now the way the optics of the spot scope works, if the movement of the reflex moves WITH the direction you are moving the scope, you would need to add plus to neutralize the reflex in the meridian of movement. If the movement of the reflex moves in the opposite direction, or AGAINST, you would need to add minus to neutralize the reflex in the meridian of movement. With the spot scope you can easily move from one meridian to another simply by changing the direction you move the scope. For checking the horizontal axis you would twist slightly the handle from side-to- side while keeping the upper part on your eye brow. There is no need to move anything else, such as the collar or sleeve, which is part of the streak scope.

Cylinder Axis

As you gain experience with the spot scope, you will begin seeing what "pro" users see as a banding effect when the scope is first aligned onto the eye being scoped. This banding is seen as a distortion of the round circular light reflex to a type of oval or band. You will quickly begin seeing this band and know right away what axis to probe for the cylinder. The more stark the "band" the higher the amount of cylinder, as a general rule.

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Qualitative

Many of the near point or dynamic retinoscopy techniques involve observation of the brightness of the reflex. There are many theoretical constructs for why one might see brightness changes in the reflex and it is beyond the scope of this piece to delineate the exact nature of these. Know that theories have been based on changes in accommodation, changes in the dilation of the circulatory vessels in the retina; particularly the capillaries changing the orientation of the red blood cells from one orientation to another thereby absorbing different amounts of light at different times, to the most popular and current theories based on reflectance changing in proportion to the numbers of action potentials in the neural nets of the retina: the more activity the higher the degree of reflectance being the guide.

Why the large hole in the back of the scope?

A significant difference between the current model offered by Bernell and prior models of spot scopes is the 13 mm hole in the back of the scope where one usually found a small observation hole, most often with a plano dust cover in place. In the early 1990's, Dr. Paul Harris modified his Welch Allyn scope by disassembling it and drilling out the back. This was done specifically to allow video recording of different forms of retinoscopy for teaching purposes. When done, it was thought to be, just for this purpose. However, what he noticed is that the prior small observation port was acting as a field stop, limiting the amount of the world seen through the scope. Once the hole had been opened up, he noticed that it was easier to know where he was looking, that more visual field was available, which made fusion of the right and left images easier, thus allowing both eyes to remain open. As a result of keeping both eyes open, fusing, and having a bigger field of view, he found he was able to look more easily during retinoscopy procedures for longer periods of time.

Initially some experienced retinoscopist's found that using the new open design required some systematic, very slight, off-axis pointing of the scope. Some of this was from a small design flaw in the alignment of the mirror in the first design of the scope, which has since been fixed. However, the majority of this was from the user not positioning him/herself in the middle of the large aperture opening in the back of the scope. As you first being to use the scope make sure to move yourself slightly relative to the opening up and down and right and left to find the sweet spot for performing retinscopy **techniques.** As well, you might like to try using the scope with both eyes open.

When a spot isn't a spot

Some manufacturers claim that a spot bulb may be placed into a streak head and you end up with a spot scope. It is true that you will end up with something that is "spot-like" but our experience shows that this does not work as well as a pure or true spot scope, like the Bernell product. Most of these "conversion" scopes have a much smaller circular projection of the light in space and within that smaller circle of light; the light is not evenly distributed. The small circle of light becomes difficult to keep aligned on an eye during a technique such as stress-point retinoscopy (Kraskin – Harmon). It also makes for variations in the observed reflex, which are not secondary to something changing in the patient, but which seem more related to moving to different parts of the light.

Enjoy your new spot scope and the added insights it can help you gain into how your patient is using his/her visual skills.

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