

VIEWPOINT

DYNAMIC RETINOSCOPY – MORE THAN A SNAPSHOT

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INTRODUCTION

Retinoscopy has long been an integral part of the vision examination. It was one of the first of the objective clinical findings to be performed by eye care professionals.¹⁻⁴ Static fogging and cycloplegic distant retinoscopies along with static and dynamic nearpoint retinoscopies offer objective measures of the refractive status of the eye.^{5,6} However, the two varieties differ in several respects. The static methods determine one view of the basic optical system of each eye, individually, when viewed at optical infinity. Dynamic retinoscopies are, with the exception of the Monocular Estimate Method (MEM), binocular procedures that are usually performed at near viewing distances. Further, as the term implies, during static retinoscopies, the patient is thought to be passive, while dynamic retinoscopies require varying levels of patient cognitive activity. As such, dynamic retinoscopies can provide the clinician with information and insights regarding the patient's abilities and level of visual processing at the chosen distance.⁷⁻²² It is the dynamic aspects of retinoscopy that is most interesting to me and to this aspect of retinoscopy, I direct my attention.

Dynamic Retinoscopies

The optometric literature has discussed dynamic retinoscopies for decades.⁹⁻²⁶ Two dynamic retinoscopies have been described in the Analytical Analysis examination sequence. One is performed at 20 inches (#5), the other at 40 inches (#6). In both, the patient is seated behind the phoropter and actively views letters.²² Other dynamic retinoscopies that are not phoropter based include Book, Bell, Stress, MEM and Nott.²⁸⁻⁴⁰ Each technique has its own testing protocol and individual end points.

The majority of distance and dynamic retinoscopic techniques have been developed to determine the perceived endpoint, i.e., where the color, brightness, or motion of the reflex reaches the expected endpoint. Accurate measurements of these endpoints are an integral part of determining the most appropriate optical prescription for the patient. I propose that there are additional factors, or nuances that can give the clinician insights and other information regarding the working of the visual system. This is particularly true for any dynamic retinoscopy. These factors go beyond finding endpoints, and are based on various qualitative aspects of the retinoscopic reflex. Observing and utilizing these nuances requires a good deal of practice and begin with a basic assumption in clinical thinking. My experiences of performing at least three retinoscopies on every patient for the last 37 years has, I believe, brought me a better understanding of the nuances of dynamic retinoscopy.

It is important to conceptualize that the endpoint in static, and even dynamic retinoscopy, to a point is a snapshot of the optical system of the eye at a particular point in time. On the other hand, carefully observing the qualitative aspects of the dynamic retinoscopic reflex over a more extended time period (usually 30-40 seconds), can be compared to a video revealing additional aspects of the patient's visual processing. The content of the video will change, or fluctuate, depending upon the participation of the patient during the procedure.

Observing the qualitative aspects of dynamic retinoscopy is not new. Getman described in detail many of the changes that can take place.¹² Apell and Streff described changes in the reflex related to Book and Bell Retinoscopy in their Child Vision Care series in the early 60s.²⁶

Kraskin described the changes in Stress-point Retinoscopy in his book, *Lens Power in Action*.⁴⁰ However, I believe such observations have not fully achieved their rightful place in optometric practice, or in the optometric literature. It is in this spirit that I offer this article.

Rapport

Although generally not stated, the major goal in evaluating and manipulating the retinoscopic reflex by lens application is to assist the patient in coming to rapport with the task at hand. Rapport has long been used to describe the patient's ability to engage in the task, as evidenced through the visual process. Determining the level of rapport involves observation and evaluation of the quantitative dioptric changes AND the qualitative aspects of the reflex as the patient is involved in a particular task. Good rapport suggests that the patient is efficiently engaged in that task as determined by the characteristics of the reflex. Poor rapport suggests that the patient is inefficiently involved, and this person will manifest different observable qualitative aspects of the reflex that the clinician should carefully observe.^{10-12,25,33,36}

When rapport is achieved, there is a symmetrical equality of the qualitative aspects of each eye's reflexes that include motion, color, and brightness. Clinicians will develop their subjective scales for color and brightness with practice and experience. My observations have been that when the patient is in rapport, the reflexes are equal, light orange in color; the reflex is bright and the pupil is fully illuminated. This reflex can vary slightly and still indicate good rapport.

Poor rapport can be observed as a reduction in these quantitative and qualitative characteristics of each eye individually, or

as a difference between the two eyes. It is important to think of the reflexes as a unit rather than individual reflexes. When there is a difference between the two reflexes, the clinician can apply lenses that improve the qualitative and/or quantitative characteristics. The desired effect is to move both reflexes toward rapport.

If the patient does not meet the criteria for rapport, equal lenses are placed in front of both eyes with the goal of moving the reflex toward the desired aspect of rapport. If there is marked amount of with or against motion, the initial lenses would be the least amount of plus or minus that creates a move toward rapport.

When the initial lens application causes the targeted aspects of the reflex to move toward rapport, it frequently occurs with a slight brightening of the reflex(es). It indicates that the primary clinical intervention at this time could be "lens prescription only." Greater lens power can then be applied until the optometrist deems that an appropriate level of rapport is attained for that time.

When lens application does not move the targeted aspects of the reflex(es) toward rapport, treatment other than lenses would be more beneficial at this time. In this case, vision therapy (VT) could be one of the primary clinical interventions.

"Just look retinoscopy"

The various types of dynamic retinoscopy have individual protocols and purposes. The above discussion provides a method of evaluation of the retinoscopic reflex that can be used with any dynamic retinoscopy procedure.

Following the early writings of Getman, Apell and Streff, and others,^{12,20,23,25,26,28,30,31,33-35,39} I have developed a technique that is performed prior to refractive testing, including standard dynamic retinoscopy, and in particular, before distance refraction and without the patient's habitual lenses. It provides me with a quick look at the patient's basic near point status. It is a view that can later be considered in the context of the patient's overall ocular and visual evaluations. It becomes particularly useful with the clinician's preferred dynamic retinoscopy.

The patient views a target that is appropriate; a picture, individual letters on a card, or a finger puppet can be used. The patient is instructed to view the object, or instructed to find letters on a card. I then quickly observe the reflexes in each eye

and compare the brightness, color and motion. I monitor the qualitative aspects of the reflexes for several seconds. I record these findings and compare them to subsequent standard dynamic retinoscopy determinations. Monitoring the changes in the reflexes over time allows me to view the process as a video that represents the more extensive time based observations of color, brightness, and motion usually proposed for standard dynamic retinoscopies.

Case Examples

I recently examined an 8 month old. The infant showed marked with-the-rule astigmatism in the initial dynamic retinoscopy observation, *until* the baby started reaching for a finger puppet target. The reflex then moved to spherical, not momentarily, but for the entire time he was looking at and *reaching for* the target. The baby's response in this instance indicated a particular "looking response" for the passive task (with-the-rule astigmatism) but a much different, more active "looking response" for the new, reaching task (spherical). There was a different approach and/or purpose when the infant moved from passive looking to active reaching, manually and visually. It is evident, in this case, that the astigmatism measured was neither a stable nor structural finding. Guidance and developmental activities rather than a cylindrical correction was the appropriate initial therapy regimen prescribed for this patient.

Another child, a three year old, came in with a prescription for OD +4.50; OS +1.00 that had not yet been filled. During the course of monitoring retinoscopic changes there were frequent times that he showed the anisometropia, but the majority of the time he showed a response that was equal in both eyes. Although guidance and developmental activities were initiated in this instance, consideration could also be given to prescribing equal plus lenses. These observations are not only common, they seem to be more the rule than the exception.

In both of these cases the initial evaluation of the reflex's brightness, color and motion, the snapshot, indicated a very different refractive status than what was revealed over a greater time of observation, the video.

SUMMARY

The extension of distance static retinoscopy to near point dynamic retinoscopy allowed for an additional dimension in the visual examination of patients. Initially, dynamic retinoscopies provided a method to investigate the patient's near refractive status when engaged in varying degrees of static activities. This was done to determine the endpoint or neutrality of motion. A further progression was made by observing the qualitative aspects of the dynamic retinoscopic reflex, particularly color and brightness. This offered a means to gain insight into other aspects of the patient's visual processing.

Rapport has been used as the concept to indicate the level to which the patient is involved in the particular task. It is assessed by observing the color, brightness, and motion of the reflexes. I propose this level of rapport can change as the participation in the task changes. Observing these changes as a video can be a valuable guide when initiating a program of treatment for the patient. I have recommended the use of Just Look! Retinoscopy as a starting point in the optometric examination to make these observations.

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