

[MUSIC PLAYING]

EYDIE MILLER-ELLIS: Our next section is clinical evaluation of the glaucoma patient. Our assessment starts with taking a history in which risk-factor analysis is of key importance.

Then there is the eye exam with the key features being measurement of the intraocular pressure, evaluation of the anterior chamber angle with gonioscopy, evaluation of the optic disc appearance, as well as measurement of the central corneal thickness.

The visual field is then measured, usually using standard white-on-white automated perimetry. But other programs, such as short wavelength automated perimetry or frequency doubling technology can be used in patients who are glaucoma suspects.

Optic disc documentation and assessment is key, since appearance of the optic nerve is what we use to help monitor our patients. And so baseline stereophotographs are still very useful in terms of documenting the baseline appearance, looking at blood vessel patterns, as well as documenting optic disc hemorrhages.

However, computerized optic disc imaging and retinal nerve fiber layer analysis helps us get a more quantitative picture of the optic nerve and gives us valuable information to follow the patient over time.

So once we've done this optic nerve evaluation, documentation is key. And so I still do stereo optic disc photos. I think they are just a great way just to document really how the nerve looks in real life.

But computerized optic disc imaging certainly has been a technology that has been very useful in my practice for documenting the appearance and for following quantitative data over time.

What we need to remember is that disc change precedes visual field loss. And at least 30% of the retinal ganglion cells can be lost before a defect on standard white-on-white perimetry can be noted. So once again, please pay attention to the optic disc appearance, because preparametric glaucoma is real.

Just because they don't have a visual field defect doesn't mean they don't have other aspects of their vision that may be problematic for them, such as decreased contrast sensitivity or some issues with seeing at night. But the field, of course, still needs to be followed. But just remember, you can have glaucoma and have a normal visual field.

So how do we determine whether there's been progression? So first, we have to define what it is that we're looking for. And so progression is considered to be a real change in the visual field that is usually reversible.

And this is a decrease in the threshold that is measured in the field that is caused by the death or destruction of the retinal ganglion cells. And in order to be defined as glaucomatous progression, you have to eliminate other diseases or artifacts or problems that can cause loss.

So for example, if you have macular degeneration, you're going to have some loss in the macular region. If you've had ischemic optic neuropathy, if you've had a retinal detachment, if you have a hemorrhage or some other abnormality in the retina that could cause a visual field defect, that's not glaucoma. So you always have to make sure that it's optic nerve retinal ganglion cell dysfunction that has caused your defect.

So let's now look at how we classify the severity of glaucoma. And so as with any other pathological process, it can be divided into those patients who have mild, moderate, or severe glaucoma.

And so the first thing to notice that in the mild glaucoma group, it says it has glaucomatous optic nerve change with a normal visual field. So preperimetric glaucoma, nerve change with a normal field is mild.

Once you manifest a visual field defect, it's automatically a moderate case of glaucoma, because you have lost at least 30% of your retinal ganglion cells to get to that point.

And so if you have a visual field abnormality in one hemi-field that is not within 5 degrees of fixation, then that is considered a moderate defect. A severe defect is one where you have abnormalities, both superior and inferior or loss within 5 degrees of fixation.

So if you think of a patient who maybe just has a paracentral scotoma and the rest of their field looks quite good, they will be classified as having severe glaucoma, because that paracentral defect is much more likely to give them a functional impairment in their vision than a more peripheral defect.