

## Evaluation of the Patient with Involutional Ptosis

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Ptosis is a condition common to many patients and will frequently be seen in your comprehensive ophthalmology or oculoplastics clinic. While there are many different kinds of ptosis you may encounter, the most common type you will see in your adult patients is *involutional ptosis*, and this is the type we will address here. Involutional ptosis is due to aging changes in the levator muscle and its aponeurosis. During your assessment it will be important to establish the patient's chief complaint and history, obtain photos, take specific measurements and perform visual field testing.

To understand the steps in evaluating a patient with ptosis, it is helpful to have a good grasp of the normal anatomy, terms and measurements as they relate to the upper eyelid and levator muscle. Although there will be variability among normal individuals, in the large majority of patients the upper eyelid margin rests at or just below the superior corneal limbus. The distance from the upper lid margin to the central cornea (visual axis) is known as the marginal reflex distance or MRD. The MRD typically measures 4-5 mm. The distance from the upper lid margin to the lower lid margin is known as the palpebral fissure distance and measures about 9 mm.

Upward movement of the eyelid is secondary to function of the levator. The upper eyelid skin crease is created by the levator inserting into the skin. The height of the crease measures around 7-8 mm in men and 8-10 mm in women. Finally, it is important to remember that the levator muscle provides about 15 mm of eyelid excursion from downgaze to upgaze, and this amount of excursion is known as the levator function. It is of the utmost importance that you familiarize yourself with these terms and normal measurements.

Now let's look at the patient who presents with involutional ptosis. Many would say that the first part of the examination is to obtain the chief complaint. While that, in essence, is true, it cannot be over-emphasized that you should first place the patient at ease and establish the best rapport possible. This will go a long way in providing the patient with confidence and an assurance they are "in the right place."

The next step is to find out why they have come to the clinic. Be sure to record the main problem. When patients have a number of complaints, it is fine to record each of them, but I recommend asking, "Of those symptoms you mention, which is the one you would most like corrected if possible?" If the patient's main complaint has to do with drooping of the eyelids you must next determine if the patient is bothered only by the appearance of the eyelid or if they feel it actually affects their vision. This is a critical distinction and will be the difference in whether the patient will have cosmetic surgery or surgery which is of medical necessity. Be certain to never lead the patient. Simply ask them if the drooping affects their vision. If they answer, "yes" or "no" it is important to record. If they're not

sure, then I would ask whether they have trouble seeing out of their periphery, trouble reading<sup>2</sup>, or whether they ever lift their eyelid higher with their finger in order to see better. Record this information. Other pertinent questions are whether they have any other symptoms such as dry eyes or double vision, how long has the condition existed, does anything make it better or worse, or whether or not the condition changes depending on their circumstances or the time of day. Do they have tiredness, fatigue or headaches? Also ask whether they have had eyelid surgery or intraocular surgery in the past.

Now you are ready to examine the patient. Be certain not to dilate the patient until after their eyelids have been evaluated, photos have been taken, and the proper measurements recorded. The first step in examining the patient is to simply observe them. You will do this when establishing your rapport and taking their history. Notice if the patient keeps their brows elevated (or "cranked" upward), which they may do in order to decrease the amount of eyelid drooping. Notice if they have redness or frequent blinking. Notice if they have a partial or incomplete blink. Notice if they have redundant skin (dermatochalasis) hanging over their eyelid margin. Dermatochalasis may actually be their only problem or it may be coexistent with true ptosis or eyelid drooping. The two conditions, ptosis and dermatochalasis, are completely different and should be distinguished.

Once you have recorded their general, or external, appearance, you may proceed with the exam. Be certain to examine the pupils, extraocular motility, and confrontational visual fields in all circumstances as these may show clinical findings associated with the ptosis. Next you are ready to take the specific measurements we have already touched upon. The measurement of the palpebral fissure has largely been replaced by measuring the MRD, but I mentioned it earlier because some physicians will still want you to record the palpebral fissure distance. Measure the palpebral fissure by placing a millimeter ruler from the upper to lower eyelid margin with the patient looking ahead in primary position.

The MRD is measured by using a transilluminator (muscle light) or a pen light along with the millimeter ruler. Ask the patient to look straight ahead into the distance. This can be achieved by directing the patient to look past your head as you position yourself in front of the patient. Be certain the brow is relaxed and you have stabilized the action of the frontalis muscle by placing your finger or thumb on the superior brow without pushing the brow downward. The light should be bright enough to create a corneal reflex, but not so bright as to cause squinting. Shine the light into their eyes while holding the transilluminator in a straight line with patient's nose. The distance from the light reflex to the margin of the upper eyelid is the MRD.

The skin crease is measured next. In most patients with involutional ptosis the skin crease will be higher than normal. In a few cases the eyelid crease may be absent and that should be noted as well. The crease height is the distance from the upper lid margin to the skin crease and can also be measured with a millimeter ruler.

While all of the above measurements are important, accurate measurement of the levator function must be stressed. This measurement will help determine the type of ptosis the patient has and will help your surgeon best determine how to approach the repair. When measuring the levator function you must keep the frontalis and brow from moving. Do this by placing your thumb at the superior brow cilia without pushing downward. In your opposite hand place a millimeter ruler and hold it next to the patient's eye near the central eyelid. Have the patient look downward as far as possible. Then measure the excursion of

the lid as you have the patient look upward as high as possible without any head movement. In cases of involutional ptosis, you will find that the patient has normal or relatively normal levator function even though the eyelid droops. This is because, even though the muscle functions properly, it has either slipped from its original insertion or has thinned and stretched considerably.

The final element in your examination will be obtaining visual fields. If it is obvious the patient is there for cosmetic reasons you will not need to perform formal visual fields. Visual fields are essential and required by all payers to document that the ptosis is medically or visually significant. Visual fields may be obtained by using an automated Humphrey perimeter or a Goldmann perimeter. You may find a few physicians who use a tangent screen. The Goldmann perimetry has been shown to have advantages over automated perimetry, because in experienced hands, the Goldmann examination time may be as much as five times faster and may be slightly more sensitive.<sup>3</sup>

Performing accurate visual field exams takes practice and experience. This is because several factors contribute to an accurate visual field besides simply putting the patient "through the paces" so to speak. Be certain the patient is relaxing their brows. You must also observe that the patient is not squinting or pushing their lids down further against the headrest.

Most importantly, realize that a patient with very little ptosis should not have a significantly decreased visual field. If you find that a patient with only a small amount of ptosis has a greatly decreased visual field, you should reassess how you have set the patient up and how you are performing the exam, or possibly consider visual problems caused by conditions other than ptosis. The corollary is also true. A patient with so much ptosis that the lid is covering the pupil should have a baseline visual field that is approximately equal to or less than 0 degrees. In other words, when performing the visual fields, recognize that the results should correlate a great deal with the amount of ptosis seen clinically. This correlation has been demonstrated by Meyer, Linberg, *et al.* in a study where they painted contact lenses to simulate various eyelid positions. The amount of visual field loss could be calculated for different degrees of ptosis. For example, an MRD of +1mm corresponded to a 40% impairment of the superior visual field.<sup>4,5</sup>

Learning the above methods for ptosis evaluation, will go a long way toward decreasing your examination time of patients with ptosis and providing an accurate evaluation for the physician. In addition, the more you become familiar with these terms and methods, the more informative and helpful you will be for both the patient and physician. These skills take time and practice. I would encourage you to seek out instruction from an experienced technician. Watch as they perform the examinations. Next perform these tests under their observation. Finally, perform these tests on your own and practice, practice, practice.

### **Bibliography**

1. Nerad JA, Krachmer JH. *Oculoplastic Surgery: The Requisites in Ophthalmology*. St. Louis Mo: Mosby, Inc; 2001:157-172.
2. Patipa, M. Visual field loss in primary gaze and reading gaze due to acquired blepharoptosis and visual field improvement following ptosis surgery. *Arch Ophthalmol*. 1992;110:63-67.

3. Riemann CD, Hanson S, Foster JA. A comparison of manual kinetic and automated static perimetry in obtaining ptosis fields. *Arch Ophthalmol.* 2000;118:65-69.
4. Federici TJ, Meyer DR, Lininger LL. Correlation of the vision-related functional impairment associated with blepharoptosis and the impact of blepharoptosis surgery. *Ophthalmology.* 1999;106:1705-1712.
5. Meyer DR, Linberg JV, Powell, SR, Odom JV. Quantitating the superior visual field loss associated with ptosis. *Arch Ophthalmol* 1989;107:840-3.