An Inside Look: Oculoplastics and "Droopy Eyelids"

By Payton Boere, BS | Faculty Mentor: Alison Watson, MD

What procedures or surgeries come to mind when thinking about the ophthalmic subspecialty "oculoplastics"? Is it a brow lift? Removal of an orbital tumor? Or complete orbital reconstruction following a traumatic accident? As it turns out, all of these procedures fall under the umbrella of oculoplastics!

In writing this article, I had the pleasure of speaking with Dr. Alison Watson, an oculoplastic attending surgeon at Wills Eye Hospital, all about this exciting and innovative specialty. During our discussion, she said that one of the things she loves most about this field is its diversity, including the range of procedures she gets to perform and patients she is able to treat. While there are procedures common to all oculoplastic surgeons, such as cosmetic and functional eyelid surgery to address both upper and lower eyelid malposition, reconstruction following periocular cancer resection, along with nasolacrimal surgery, Dr. Watson explained that this specialty also provides the surgeon the liberty to mold their practice to suit their preferred niche and interests. Some may choose to focus on orbital surgeries including reconstruction following trauma and management of orbital tumors, whereas others develop a more cosmetically based practice. At Wills Eye, Dr. Watson feels fortunate to practice across the breadth of the specialty with some of her favorite surgeries like orbital fracture repairs and cosmetic brow and forehead lifting falling on opposite ends of the spectrum. Dr. Watson said that oculoplastics is a rewarding field for many reasons, but often eyelid surgery particularly empowers her to "optimize the vision of [her] patients, while also playing a role in helping them feel better about themselves."

Dr. Alison Watson earned her medical degree at Sidney Kimmel Medical College before going on to complete her intern year at Lankenau Medical Center and ophthalmology residency at Wills Eye Hospital. She then completed her combined American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) and American Academy of Cosmetic Surgery (AACS) accredited oculofacial plastic and orbital surgery fellowship at TOC Eye and Face in Austin, Texas. She has received many awards and honors as well as participated in an international surgical mission in Vietnam.

Credit: Wills Eye Hospital

Not only is there diversity in the range of surgeries oculoplastic surgeons get to perform, but also an array of presentations that can lend themselves to any given procedure. To elaborate on

this point, let's take a deep dive into one of the most commonly treated problems by oculoplastic surgeons: droopy eyelids. Now, depending on your familiarity with this subspecialty, you are probably wondering what constitutes a droopy eyelid—is it by appearance or function? What is the etiology—do eyelids droop due to congenital abnormalities or aging? What kind of patients commonly present with eyelid drooping—are they younger, older, have an underlying condition, or is this commonly an isolated presentation? As you may have guessed, droopy eyelids can present to the office of an oculoplastic surgeon in numerous ways.

When a patient comes to Dr. Watson with droopy eyelids, she first aims to define what this complaint means to the patient. For some it means that their eyelids feel heavy, others are bothered by the physical appearance of the aging brow and eyelid complex, or still others may have true obstruction of their visual axis from their lid position, brow position, or redundant skin. If it is a pediatric patient, the droopy lid position is often congenital. Parents may seek intervention not just because of the asymmetric lid appearance, but also because the child could be experiencing an obstruction to their visual axis, a change in their refraction due to the weight of the lid on the cornea, or they might be adopting an anomalous head tilt position to compensate for their visual obstruction. Once she gains an understanding of the patient's complaint and gathers a patient history, a physical examination will be performed. As part of all physical eye exams, visual acuity, pupillary reflexes, ocular motility, globe position, and intraocular pressure are assessed.

Upon focused physical examination of lid drooping, whether congenital or acquired, the initial step is to determine if the patient has true ptosis, meaning that the muscles that raise the eyelid are not working properly, or pseudoptosis in which some form of asymmetry between the eyes is causing one lid to appear droopy when it is not. To evaluate this, looking at the overall appearance of the face is essential. This includes evaluating brow symmetry, excess skin, or presence of a mass on either eyelid. In addition, a measurement known as a marginal reflex distance (MRD) is acquired. A MRD is a measurement of the distance from the margin of the eyelid to the central corneal reflex, where light falls on the pupil (Figure 1). There are a few main causes of ptosis that are necessary to consider when performing a physical exam for lid dropping, such as:

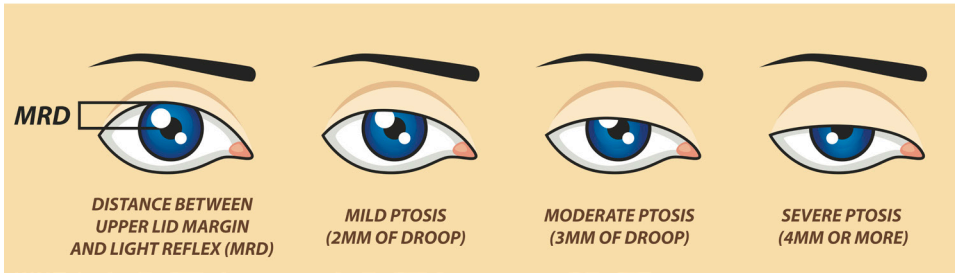

Figure 1. Marginal reflex distance and degree of ptosis.[1]

1. **Aging**: As a result of aging, the attachments of the muscles responsible for raising the eyelid may undergo involutional changes and have a compromised vector of pull resulting

in drooping. Excessive eye rubbing and longstanding contact lens wear can contribute to and accelerate these changes.

2. **Neurogenic**: Problems involving innervation to the muscles lifting the lid could be causing lid drooping. Oculoplastic surgeons must always look for pupil abnormalities or asymmetries as this could be an indication of a neurologic problem associated with ptosis. These include Horner's Syndrome (Figure 2a) or a Cranial Nerve III Palsy. Autoimmune conditions such as myasthenia gravis (Figure 2b) can also cause ptosis through its compromise of normal activity at the neuromuscular junction. Because both upper eyelid levator muscles are innervated from a common nucleus, pseudoptosis can arise in conditions like Thyroid Eye Disease in which pathologic retraction of one eyelid causes contralateral drooping of the normal eyelid. This response is named Hering's phenomenon.
3. **Myogenic**: Causes of myogenic ptosis are systemic issues that lead to muscle weakness, such as chronic progressive external ophthalmoplegia or muscular dystrophy.
4. **Mechanical**: Commonly, the eyelid drooping may be mechanical in nature due to redundant skin, brow descent, or a mass lesion in the orbit on the lid influencing the lid position.

After comprehensive orbit and eyelid assessment, a focused examination of ocular health is also important to perform. Before considering eyelid elevation, Dr. Watson will inspect a patient's ocular surface as lid elevation can lead to dryness. Therefore, ensuring the patient has adequate closure, corneal sensation, and an upgoing Bell's reflex are all important parts of the exam. Furthermore, Dr. Watson emphasized the importance of evaluating lateral canthus tension and integrity. If a patient has ectropion or lower lid retraction that goes unnoticed, raising the upper eyelid can compromise ocular surface protection, so these lower eyelid malpositions should be addressed concomitantly or prior to raising the upper lids. To quantify the severity of the impact of upper lid position on peripheral vision, a visual field (HVF) test can be performed. This test assesses the degree of improvement in the superior visual field when the patient's lids are manually

Figure 2a. *(top)* Partial right inferior ptosis in a child due to Horner's Syndrome, a condition caused by a disruption in a nerve pathway between the brain and the eye and/or face on one side.[2] **2b.** *(bottom)* Right partial superior ptosis and compensatory left lid pseudo-retraction in an adult with commonly coexisting thymoma, a tumor of the thyroid, and myasthenia gravis, an autoimmune condition characterized by an attack on postsynaptic acetylcholine receptors at the neuromuscular junction.[3]

taped upwards. The patient focuses on a central target and clicks to respond when they identify periodic flashes of light in the periphery. The patient will take the test twice per eye, once with no assistance in lifting the lid and once with the lid taped up to physically open the visual field. Thus, a quantifiable comparison of their current field of vision and what it could be post-treatment is obtained.

Whether a patient wants their droopy eyelids fixed for cosmetic or functional reasons, treatment is typically eyelid surgery. Prior to operating, Dr. Watson will work with the patient to go over their goals for surgery. This involves placing the patient in front of a mirror and illustrating to the patient the different contributing factors to their lid position, whether it be just eyelid ptosis or multifactorial with concomitant brow descent and/or redundant skin. If the patient is in need of surgery for functional purposes, a discussion about cosmetic improvement can also be had at that time depending on the patient's postoperative goals.

Surgical repair (Figure 3) of eyelid ptosis can be performed externally working on the levator muscle, or a posterior approach can be taken working on the eyelid muscles from the underside of the lid. The eyelid muscle work can be combined with an upper blepharoplasty for redundant skin removal depending on the patient's needs and goals. For external ptosis repair with blepharoplasty, the oculoplastic surgeon will design an incision based inferiorly on the natural eyelid crease. If the lid crease is ill-defined or elevated due to the patient's involutional changes, the marking is tailored to the patient's specific configuration at the new desired height of the lid crease. The superior aspect of the incision is then designed with care taken to ensure adequate skin will remain for complete lid closure and independent brow movement. The desired amount of skin, and in some cases orbicularis muscle and fat, will be removed. The incision permits direct access to the levator muscle which can be advanced or shortened to achieve the desired lid height and contour, which is checked and confirmed intraoperatively. Once in the optimal position, hemostasis is achieved and the lid incision is closed. The patient will return to clinic one week following surgery for an initial postoperative visit. If permanent

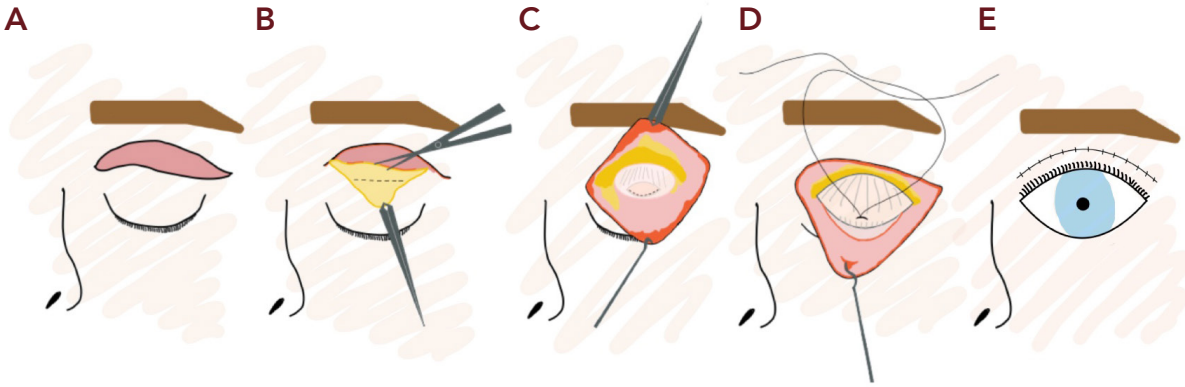

Figure 3. Ptosis repair surgical procedure. Incision placement is defined (A); skin, orbicularis muscle, and fat will be removed as necessary (B); access to the levator muscle is achieved (C); the muscle is advanced or shortened as indicated for surgical goals (D); hemostasis is achieved and the lid incision is sutured shut (E). *Illustration by Payton Boere.*

sutures were used, they will be removed at this time. The patient will then typically be followed over the course of the next three months to confirm excellent final healing.

Even in this "bread and butter" example of eyelid ptosis evaluation and management, it is clear that oculoplastics is an ophthalmic subspecialty filled with innovation and variety. This one surgical treatment can stem from a spectrum of medical conditions in patients of any age. As is true in all of medicine, obtaining a thorough patient history and performing a well-focused physical exam are essential for reaching a proper diagnosis and establishing treatment goals. However, only in oculoplastics can one improve a patient's vision, self-confidence, and facial anatomy all at once.

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