Nasolacrimal Duct Obstruction

Increased Tear Production and Dry Eyes

The eye has two sets of structures that produce tears. Smaller tear glands help maintain a baseline level of moisture on the surface of the eye. Unfortunately, inflammatory conditions like rheumatoid arthritis, Sjogrens disease as well as aging and menopause lead to decreased tear production. As tear production diminishes, the surface of the eye starts to dry out. Further, inflammation of the oil glands along the edge of the eyelid, common in patients with rosacea, also causes early breakdown and evaporation of the tear film. The brain senses the eye is both dry and irritated and in turn signals the main tear gland to flush the eye. As a result, the dry eye paradoxically tears and becomes watery. Patients with dry eyes note intermittent tearing of the eyes during activities like reading, driving, watching TV, using a computer or going outside on a windy day. These all cause the eye to dry out because the eye blinks less during these activities. The treatment for dry eyes includes 1) replacing tears with artificial lubricants which can be bought over the counter, 2) medications like Restasis that decrease inflammation in tear glands and encourages natural tear production to resume and finally 3) plugging of the tear drain system, so that even when scarce tears can stay longer in and around the eye surface.
Other causes of increased tear production exist like allergies, infections and eyelashes poking the eye. These conditions can often be found during examination.

**Blocked Tear Drain**

While most patients with tearing have some form of dry eye, another important cause of tearing is a blocked tear drain. The tear drain has an entrance in the inside corner of both the upper and lower lids. They join together to form the tear drain duct that runs from the inside corner of the eye into the nose. The presence of the drain explains why we taste our tears or eye drops. An obstruction of the drain can be congenital or acquired later in life.

Congenital tear drain obstructions occur in 6% of newborns and fortunately 90% of these resolve on their own in the first year of life. Other conditions may cause tearing in newborns, thus all babies with tearing should be examined. During the first year of life massage of the tear drain along with intermittent use of topical antibiotics (if there is discharge) is the best course of action. After age one, surgery that involves probing the tear drain under anesthesia, is utilized to open the drain. This surgery is over 90% successful. In the few cases that fail to respond, a second surgery can be performed with the insertion of a temporary stent or dilation of the system using a special balloon probe. Rarely is bypass surgery of the tear drain needed in children, but it is highly effective.
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Acquired tear drain obstructions most commonly occur in adults, especially after the age of 50. Still, younger individuals may develop scarring from a bad infection or other problem in the eye. Patients with a blocked tear duct almost always complain of constant tearing from the eye that runs down their face. This diagnosis is made in the office after a thorough exam and several office tests. When an obstruction is present in the adult patient, probing, balloon dilation, and stenting can sometimes be used; however, most patients require tear drain bypass surgery, known as Dacryocystorhinostomy or DCR. This is done in the room. Two approaches can be used: either an external incision on the side of the nose can be used to open the system from the outside to the inside of the nose, known as "open DCR," or, working from the inside, the system can be opened from the inside to the outside, thus avoiding an external incision procedure known as "endoscopic DCR." Open DCR has proven to have a higher success rate than endoscopic DCR, nonetheless, these are both procedures that have proven to improve patients' symptoms.

Nasolacrimal duct obstruction diagnosis usually requires one or more in-office tests by the ophthalmologist. This may include a dye disappearance test, whereby fluorescein dye is placed on the eye surface, and the disappearance between the two eyes is compared. A second test for obstruction of the nasolacrimal duct might include irrigation of the tear drainage pathways. This non-painful test is completed by placing a small, blunt irrigating syringe just inside the initial opening of the tear duct, and irrigating fluid (water or saline) through the tear drainage system. If the nasolacrimal duct is determined to be relatively or completely obstructed, a DCR procedure is often appropriate.

The DCR procedure reconnects the tear draining system with the inside of the nose. A small incision is usually placed approximately midway between the corner of the eye and the bridge of the nose. The lacrimal sac is located, incised, and then connected to the nasal mucosa, creating a new tear drainage pathway. Tiny plastic tubes (stents) are then placed in the newly created tear drainage pathway for a few months to prevent scarring of the tear drainage ducts, which might otherwise result in failure of the surgery. The tubes can usually be removed in the office with little if any discomfort or need for anesthesia.

Subtle appearance of an open DCR surgery scar two months after surgery.