Nasolacrimal Duct Obstruction

WHAT IS A TEAR DUCT OBSTRUCTION?

Tears normally drain from the eye down the nose through the tear duct or nasolacrimal duct. If one looks in the mirror the openings of the tear ducts could be seen in the corners of the upper and lower eyelids. They look like 2 small dots, one in the upper lid, one in the lower lid and are called puncta. Tear duct obstruction prevents tears from draining through this system normally [See figure 1]. If the tear duct is blocked, there will be backflow of tears and discharge from the eye.

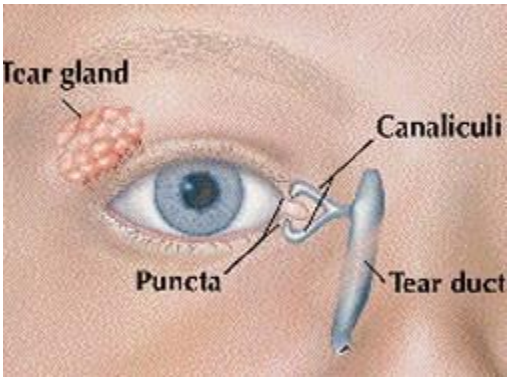

Fig. 1: Tears normally drain through small openings in the corners of the upper and lower eyelids called puncta.

WHAT CAUSES NASOLACRIMAL DUCT OBSTRUCTION IN CHILDREN?

The most common cause is a membrane at the end of the tear duct (valve of Hasner) that is present in about 50% of newborns but it normally disappears soon after birth. Other causes of blocked tear ducts in children include:

- Absent puncta (upper and/or lower eyelids)
- Narrow tear duct system
- Infection
- Incomplete development of the tear duct that does not communicate with the nose.

HOW COMMON IS NASOLACRIMAL DUCT OBSTRUCTION?

Over 5% of infants have clinical symptoms of nasolacrimal duct obstruction affecting one or both eyes. Most (approximately 90%) clear spontaneously during the first year of life.

WHAT ARE THE SIGNS/SYMPTOMS OF TEAR DUCT OBSTRUCTION?

Blockage of the drainage system causes tears to well up on the surface of the eye and overflow onto the eyelashes, eyelids, and down the cheek. This usually occurs within the first month of life.

The eyelids can become red and swollen (sometimes stuck together) with yellowish-green discharge when normal eyelid bacteria are not properly "flushed" down the obstructed system. Severe cases result in a serious infection of the tear duct system (dacryocystitis).

CAN A TEAR DUCT OBSTRUCT INTERMITTENTLY?

The severity of the signs can vary under different conditions such as upper respiratory illnesses ("colds" or nasal congestion) or outdoor exposure such as wind or cold. If a child has a cold, or allergies he or she may have increased tearing or discharge because the inside of the nose is swollen and blocks the tear duct.

HOW IS TEAR DUCT OBSTRUCTION DIAGNOSED?

A history of tearing and discharge at a very early age is strongly suggestive of a blocked tear duct. An ophthalmologist is able to perform certain tests in the office to confirm the diagnosis. It is important that the eyes be examined for uncommon but important other causes of tearing in infants including childhood glaucoma.

WHAT IS THE TREATMENT OF A BLOCKED TEAR DUCT?

Fortunately, tear duct obstruction resolves spontaneously in a high percentage of cases before the age of 8 to 10 months. When obstruction is persistent, one or more of the following treatments may be recommended: tear duct massage, topical antibiotic eye drops, tear duct probing, balloon tear duct dilation, and tear duct intubation.

HOW DOES TEAR DUCT MASSAGE WORK?

Tear duct massage can be performed at home to help the tear duct open. The caregiver uses firm pressure with the index finger in a downward movement over the tear duct, located medially to the eye (Figure 2). The hydrostatic pressure normally causes reflux of the mucus and tears through the puncta, thus preventing superinfection in the tear sac. It may also help open the membranes that block the tear duct at the opening in the nose.

Fig. 2: Tear duct massage is performed by applying firm pressure in a downward motion.

WHEN SHOULD TOPICAL ANTIBIOTICS BE USED?

Antibiotic eye drops or ointment may be used to treat severe discharge or mattering around the eye. The medication does NOT open the blocked tear duct and symptoms will recur when the eye drops are discontinued. It is encouraged to avoid long term use of antibiotics.

WHEN SHOULD TEAR DUCT PROBING BE PERFORMED?

If the tear duct remains blocked after 8 to 10 months of age, there is much less of a chance for the obstruction to resolve on its own and a procedure such as nasolacrimal duct probing may be performed.

HOW DOES TEAR DUCT PROBING WORK?

A smooth probe (resembling a thin straight wire) is gently passed through the tear duct and into the nose. Using probes of progressively larger diameters can widen a tear duct system and eliminate membranes that block it. Adding a stent increases the success rate by preventing recurrence of the tear duct blockage.

WHAT TYPE OF ANESTHESIA IS USED FOR TEAR DUCT PROBING?

Many pediatric ophthalmologists can offer a tear duct probe in the office using topical anesthetic drops under a year of age. Older children will need a brief general anesthetic in an outpatient surgery setting to tolerate the procedure. Sometimes a tube or a balloon stent is added to the tear duct probe under anesthesia to improve success of the procedure.

HOW SUCCESSFUL IS TEAR DUCT PROBING?

Tear duct probing is generally very successful, which is increased by adding a stent. The procedure can be repeated but sometimes a more involved operation may be needed to open the tear duct system by surgically creating a communication between the tear duct and the inside of the nose (dacryocystorhinostomy, DCR).

COMPLICATIONS: DACRYOCYSTITIS

Dacryocystitis is a rare complication that can occur in a blocked tear duct. It manifests as a painful, red swollen nodule over the tear duct with mucopurulent discharge sometimes associated with systemic signs like fever and malaise. This is a medical emergency needing systemic antibiotics and admission to the hospital.

COMPLICATIONS IN A NEWBORN: DACRYOCELE/ DACRYOCYSTOCELE/ AMNIOCELE

If the tear duct is blocked both in the upper and lower part, amniotic fluid gets trapped in it and manifests in the first 6 months of life as a bluish nodule over the tear duct known as a Dacryocele or Dacryocystocele or Amniocele (Figure 3). It is almost always associated with intranasal cysts that puts the child of risk for respiratory distress especially if bilateral, therefore it is an emergency/ urgency. As infants are obligates nasal breather prompt surgery should always be considered. Nasal endoscopy with cyst removal is an important tool in the management of these infants. If it gets infected it should be treated in the hospital with intravenous antibiotics.

Fig. 3: Dacryocele/ Dacryocystocele/ Amniocele in an infant with development of dacryocystitis.