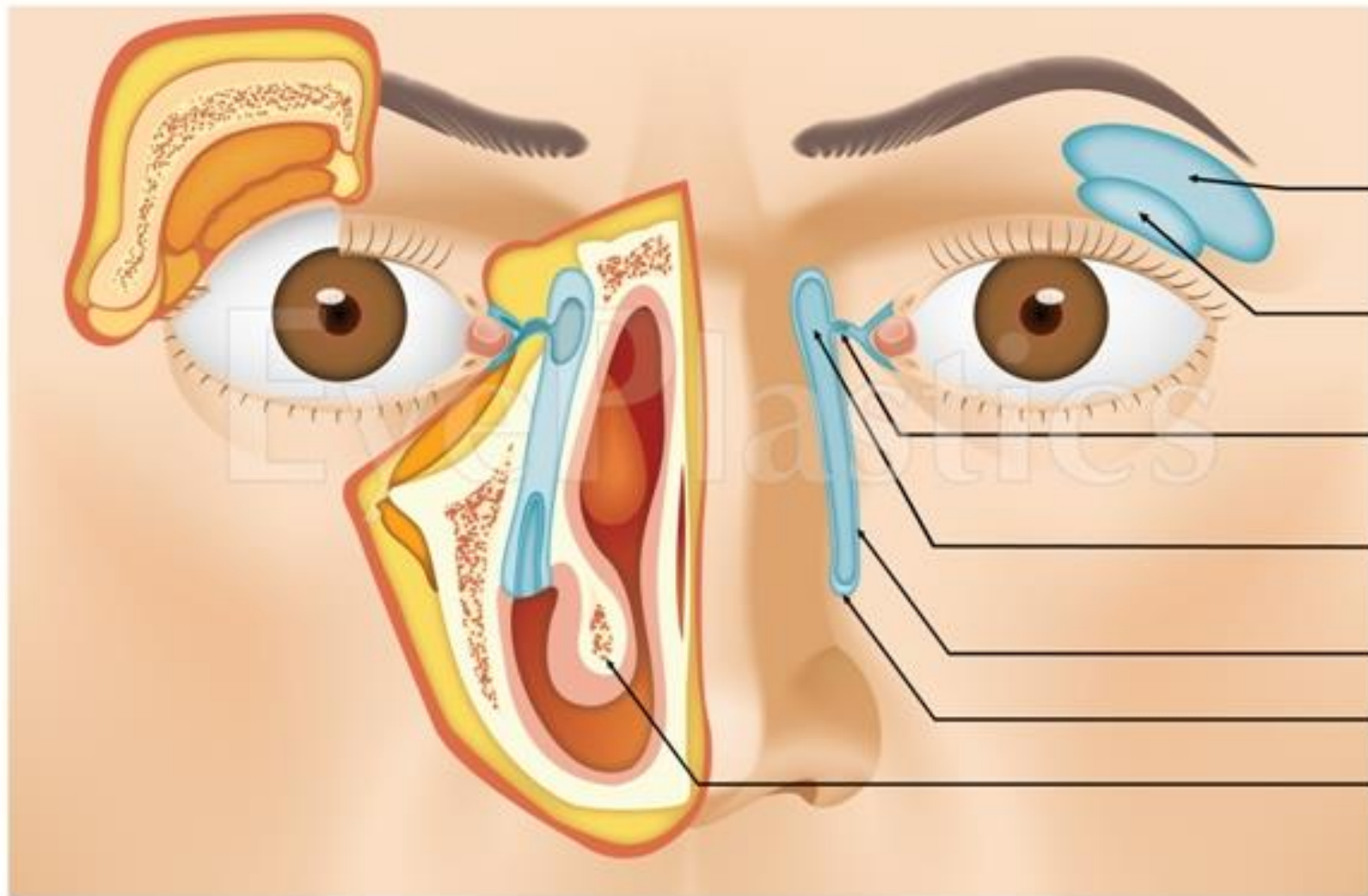


The background features a light gray gradient with several realistic water droplets of various sizes scattered across the surface. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text is centered on the page.

# LACRIMAL SYSTEM

KAROLÍNA SKORKOVSKÁ



Lacrimal gland,  
orbital lobe

Lacrimal gland,  
palpebral lobe

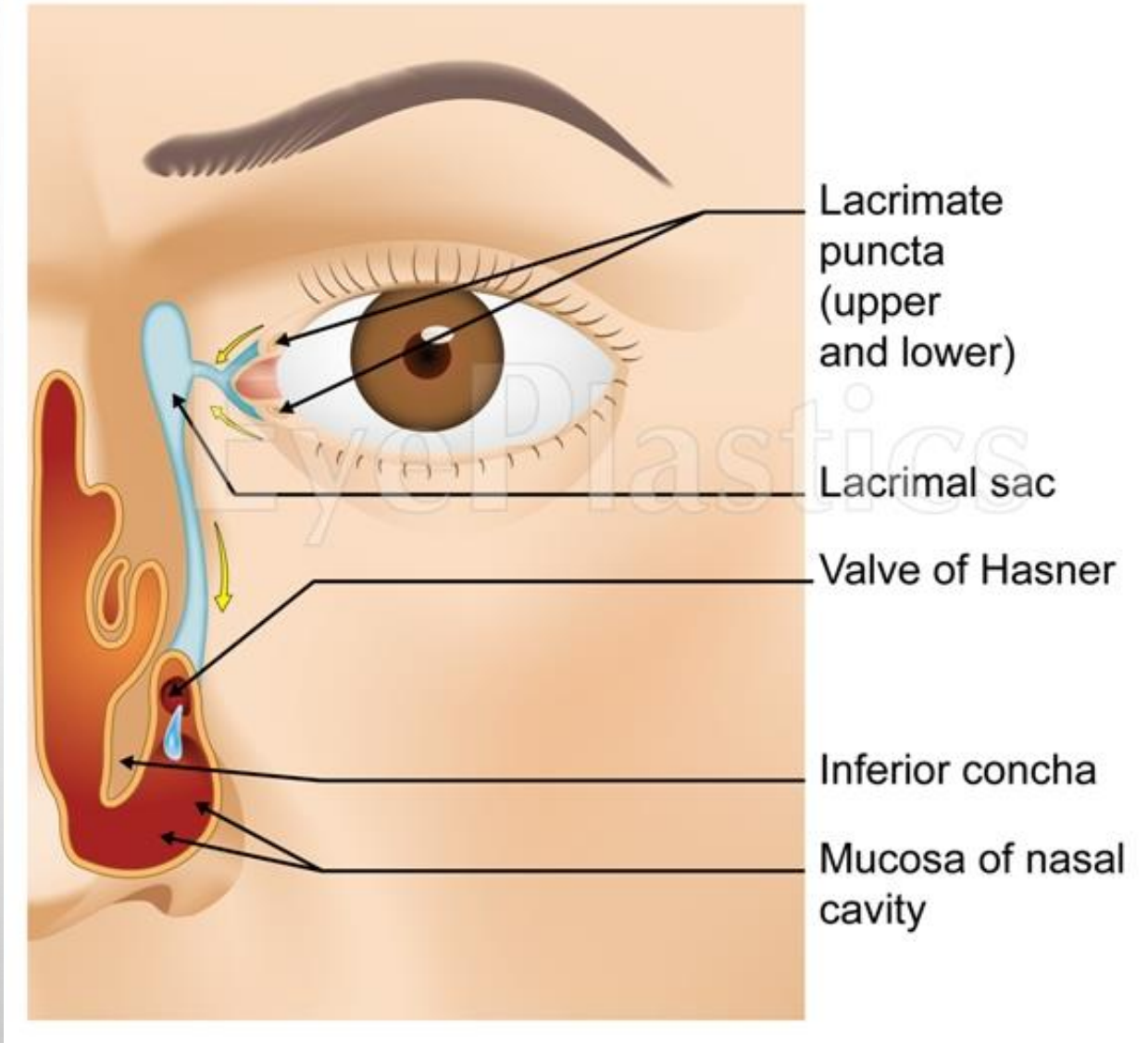
Common  
canaliculus

Lacrimal sac

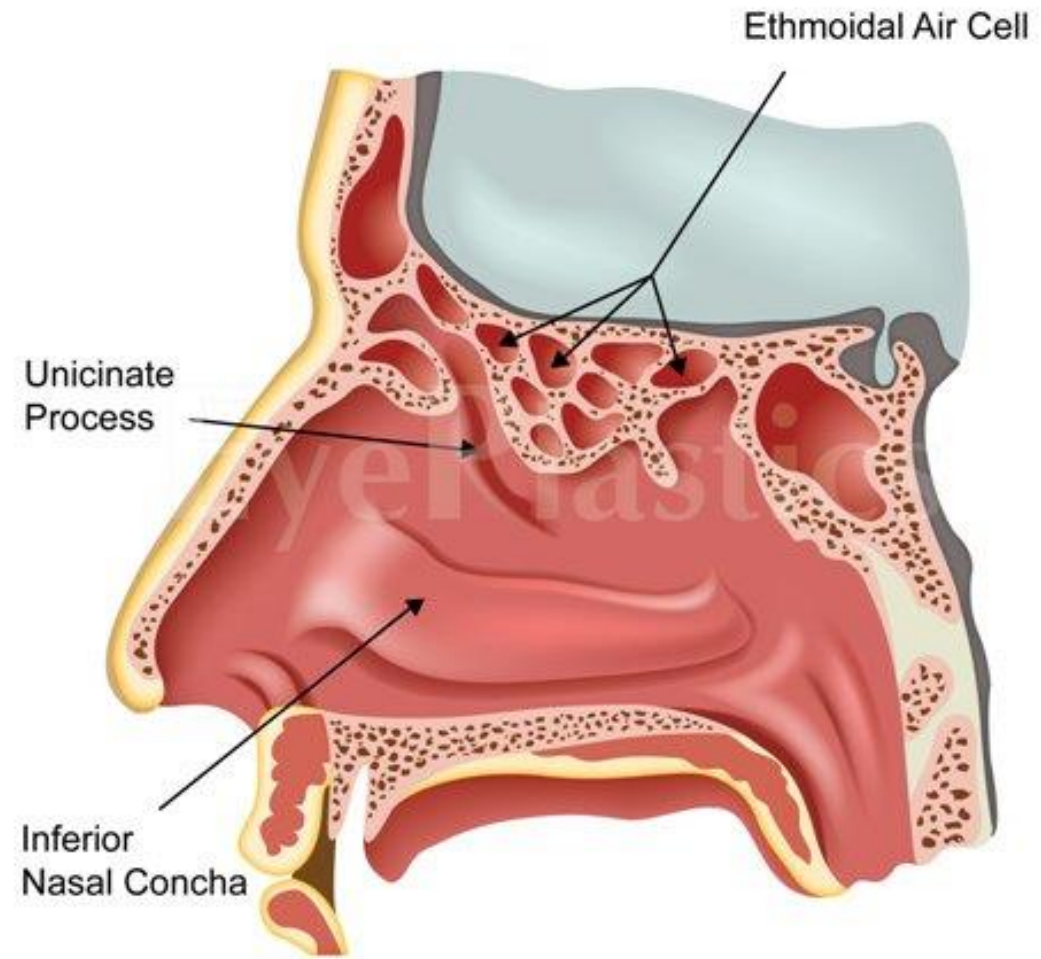
Lacrimal duct

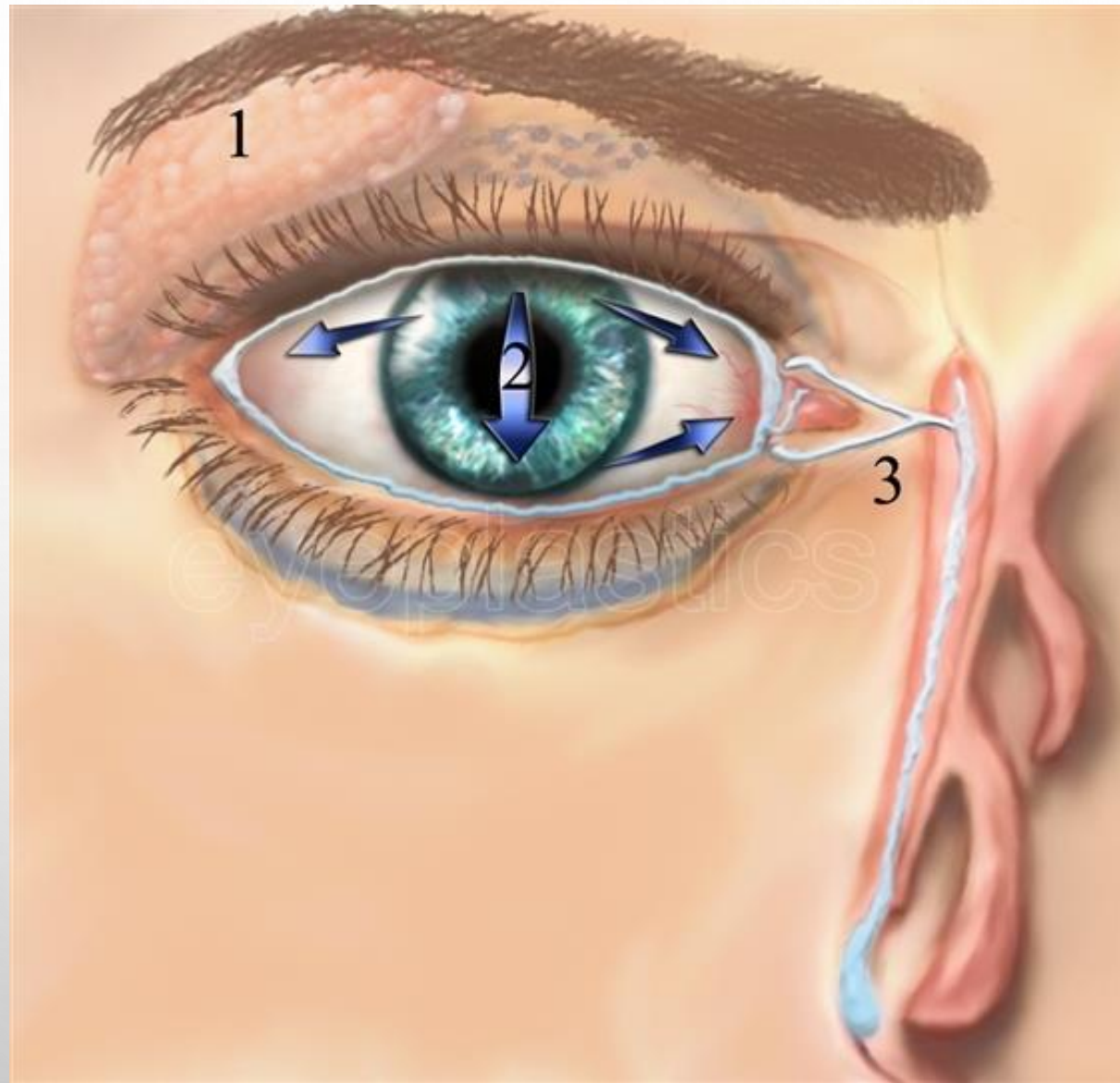
Valve of Hasner

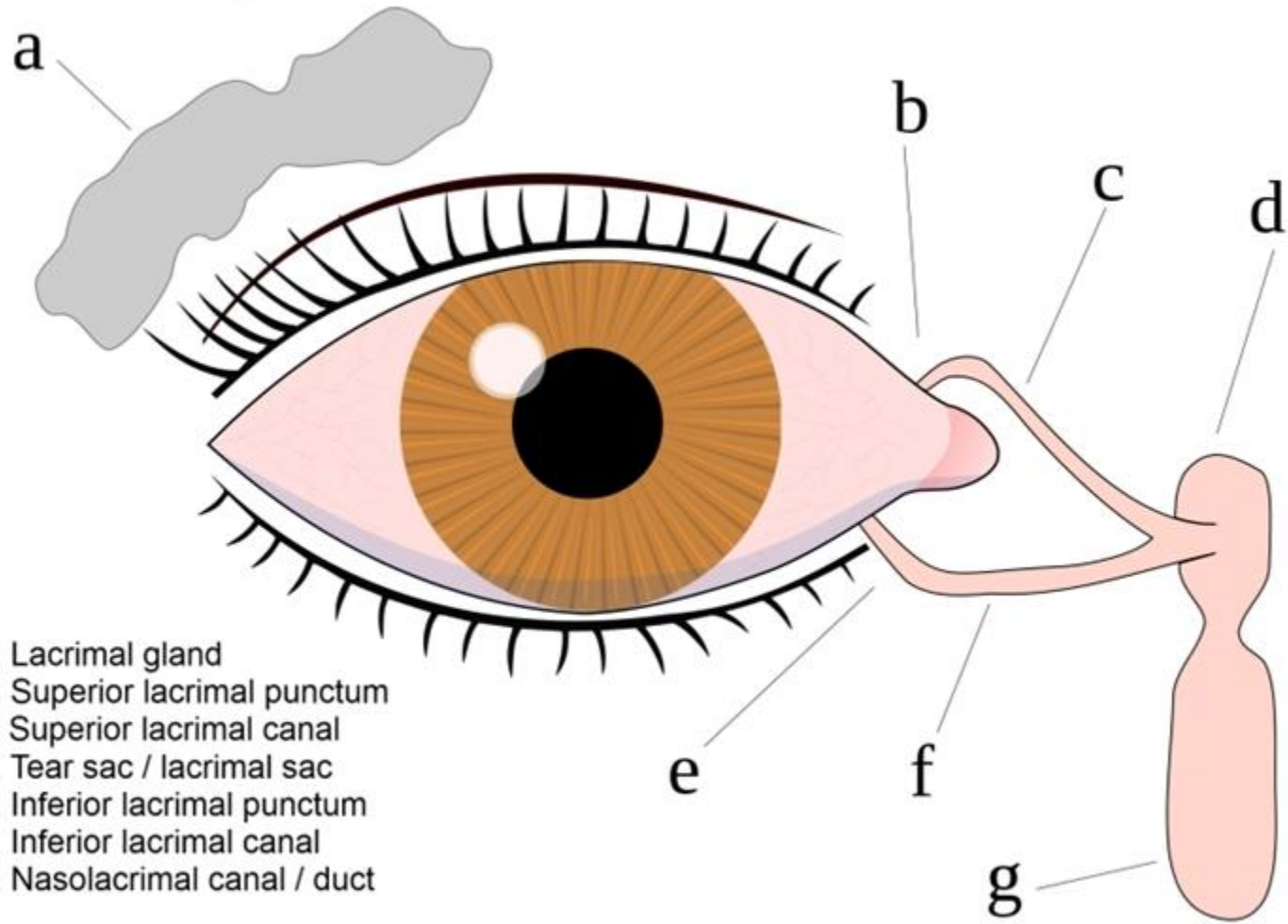
Inferior Turbinate



## Sagittal section







- a. Lacrimal gland
- b. Superior lacrimal punctum
- c. Superior lacrimal canal
- d. Tear sac / lacrimal sac
- e. Inferior lacrimal punctum
- f. Inferior lacrimal canal
- g. Nasolacrimal canal / duct

# LACRIMAL GLAND

- RESPONSIBLE FOR TEAR PRODUCTION
- DIVIDED BY THE LEVATOR APONEUROSIS INTO AN ORBITAL LOBE AND A PALPEBRAL LOBE
- SUPPLIED BY THE LACRIMAL NERVE WHICH IS A BRANCH OF THE OPHTHALMIC DIVISION OF THE TRIGEMINAL NERVE.
- THE LACRIMAL GLAND SECRETES TEARS THAT ARE DRAINED THROUGH A SERIES OF DUCTS - LACRIMAL PAPILLAE, CANALICULI, LACRIMAL SAC AND NASO-LACRIMAL DUCT.
- THE CANALICULUS JOINS THE LACRIMAL SAC AT AN ANGLE WHICH IS PROTECTED BY THE VALVE OF ROSENMULLER.

# EVALUATION OF TEARING – HISTORY OF SYMPTOMS

- UNILATERAL VS. BILATERAL
- NASAL/SINUS/FACIAL FRACTURE OR SURGERY
- BLOODY TEARS/PAIN WITHOUT INFLAMMATION: RULE OUT TUMOR
- NASAL POLYPS, SINUSITIS
- HAY FEVER
- EXTERNAL OCULAR IRRITATION
- BELLS PALSY
- OTHER



# ETIOLOGY OF EPIPHORA

- surface irritation/reactive hypersecretion (conjunctivitis, keratitis, etc.)
- outflow obstruction
- inadequate drainage
- Vth nerve stimulation: external/corneal disease, pseudoepiphora (dry eye syndrome, conjunctivitis, blepharitis, uveitis, entropion, trichiasis, thyroid eye disease, post-Bell's palsy; crocodile tears,...)

# ETIOLOGY OF EPIPHORA

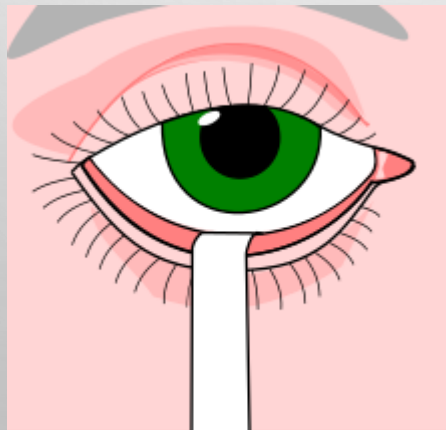
- PUNCTAL PROBLEMS (AGENESIS, STENOSIS)
- CANALICULAR PROBLEMS (COMMON CANALICULUS OCCLUSION, TRAUMA, INFECTION, AUTOIMMUNE – PEMPHIGOID)
- CANALICULITIS (ACTINOMYCES, SULFUR CONCRETIONS)
- CONGENITAL

# EXAMINATION OF THE LACRIMAL SYSTEM

- check puncta for stenosis, position
- conjunctival injection
- trichiasis
- position of the eyelids (entropion, ectropion, lagophthalmos)
- keratopathy
- check VII nerve
- push on sac, look for discharge

# EXAMINATION OF THE LACRIMAL SYSTEM

- tear evaluation (meniscus, tear break up time)
- Tear strips without anesthesia (Schirmer 1 – baseline and reflex secretion)
- tear strips after anesthesia (basal tear secretion - Schirmer 2)
- DYE DISAPPEARANCE TEST (DDT) FLUORESCEIN TO BOTH FORNICES,  
LOOK WITH BLUE LIGHT FOR ASYMMETRY AFTER 5 MIN.



# EXAMINATION OF THE LACRIMAL SYSTEM

- LOWER PUNCTAL DILATION AND IRRIGATION, NOTING STENOSIS
- REFLUX AROUND CANULA OR OUT SUPERIOR PUNCTUM WITHOUT LACRIMAL SAC DISTENSION = COMMON CANALICULUS BLOCK
- IF NO REFLUX BUT W/PAIN LACRIMAL SAC DISTENTION = NASOLACRIMAL DUCT OBSTRUCTION
- IF REFLUX AND DRAINAGE TO NOSE = PARTIAL NASOLACRIMAL DUCT OBSTRUCTION



# EXAMINATION OF THE LACRIMAL SYSTEM

- PROBING
  - DIAGNOSTIC PROBING OF ADULT UPPER SYSTEM (PUNCTA, CANALICULI, LAC SAC) TO FIND LEVEL OF OBSTRUCTION, NOT TO PROBE NASOLACRIMAL DUCT
- DACRYOCYSTOGRAM (DCG)
  - GOOD FOR ANATOMY, NOT PHYSIOLOGY EVALUATION
- CT

# DACRYOADENITIS

- SYMPTOMS INCLUDE PAIN, TENDERNESS AND SWELLING OF THE LATERAL ASPECT OF THE EYELID
- MAY OCCUR WITH SYSTEMIC DISEASES SUCH AS SJOGREN'S, SARCOIDOSIS, SYPHILIS, TB, LYMPHOMA, EBV, ZOSTER
- SYSTEMIC ANTIBIOTIC THERAPY



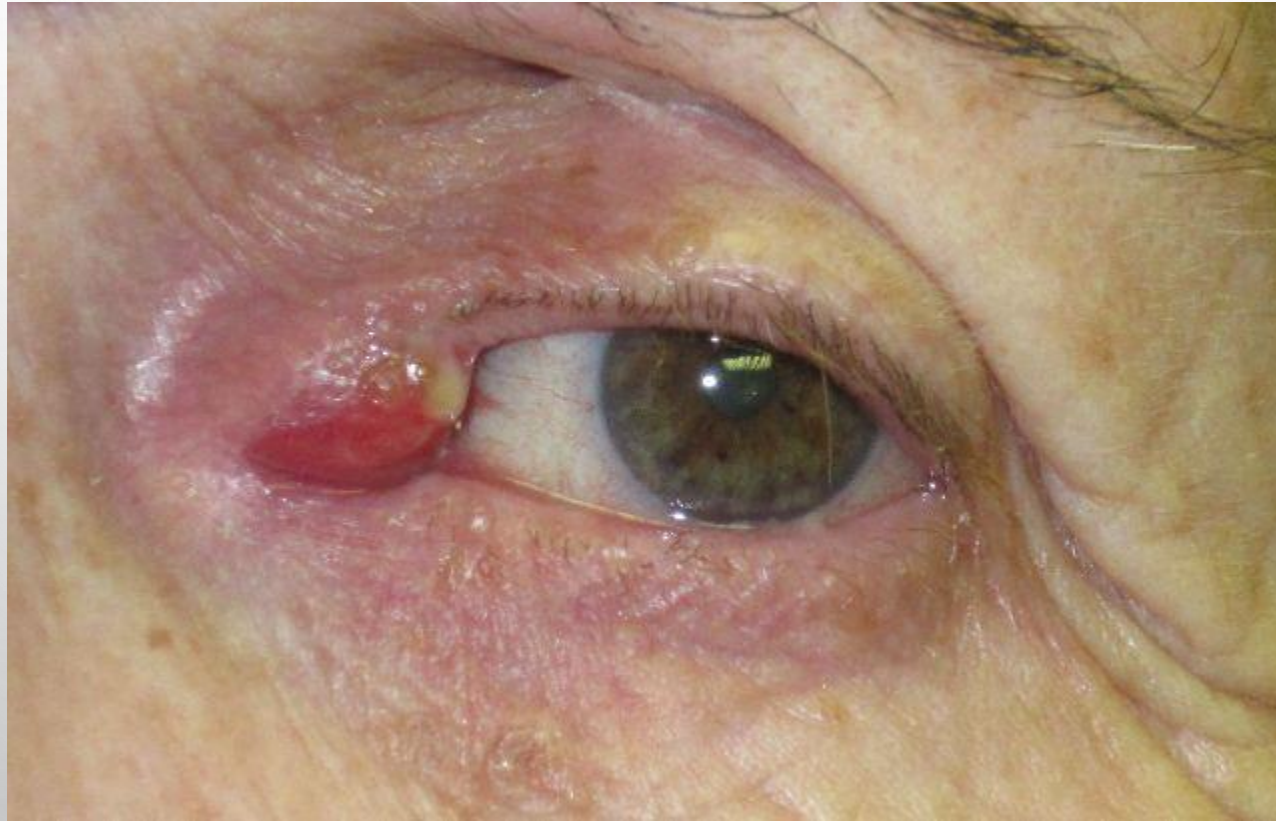
# DACRYOADENITIS



# CANALICULITIS

- COMMONLY AFFECTS INDIVIDUALS OVER THE AGE OF 50 YEARS
- CAUSED DUE TO OBSTRUCTION WITHIN THE CANALICULUS, THE PRESENCE OF A FOREIGN BODY OR THE PRESENCE OF DIVERTICULUM WHICH HARBOURS BACTERIA WITHIN IT
- THE MOST COMMON CAUSE OF CANALICULITIS IS ACTINOMYCES ISRAELII. HOWEVER, THE OTHER CAUSES CAN INCLUDE ASPERGILLUS, CANDIDA ALBICANS AND EVEN HERPES SIMPLEX AND HERPES ZOSTER VIRUS.
- INFECTION BY THESE ORGANISMS RESULTS IN THE FORMATION OF TINY STONES THAT ARE RICH IN SULPHUR. THESE STONES FORM LITTLE POCKETS THAT UNFORTUNATELY ARE NOT AFFECTED BY THE ANTIMICROBIAL PROPERTIES OF TEARS

# CANALICULITIS



# CANALICULITIS - TREATMENT

- WARM COMPRESSES AND MASSAGE
- ANTIBIOTIC OINTMENTS
- SURGERY – REMOVAL OF THE SULFUR CONCREMENTS

# DACRYOCYSTITIS

- ACUTE ONSET, TEARING (FROM NASOLACRIMAL DUCT OBSTRUCTION), REDNESS, PURULENT DISCHARGE, TENDER SWOLLEN LACRIMAL SAC
- PAINFUL SWELLING IN THE INNER CORNER OF THE EYELIDS
- MANY ETIOLOGIES, ALL CAUSE NASOLACRIMAL DUCT OBSTRUCTION WITH OBSTRUCTION OF DRAINAGE FROM LACRIMAL SAC TO NOSE

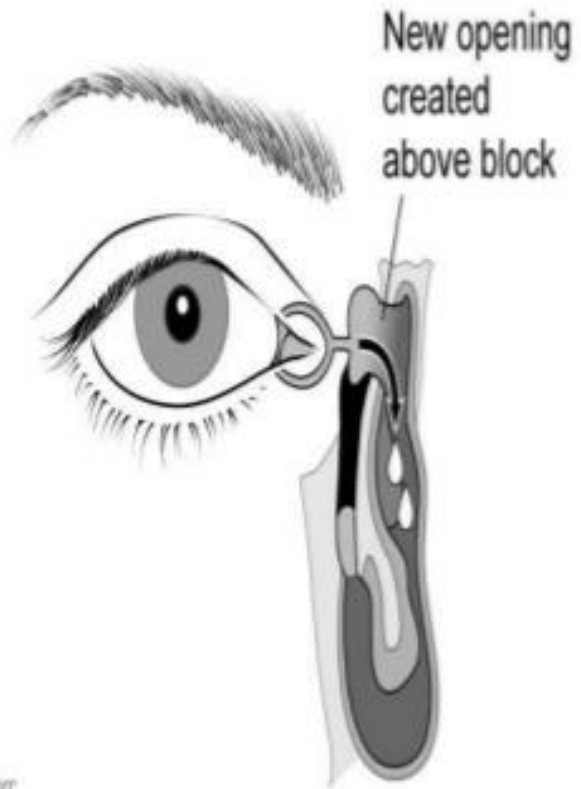
# DACRYOCYSTITIS



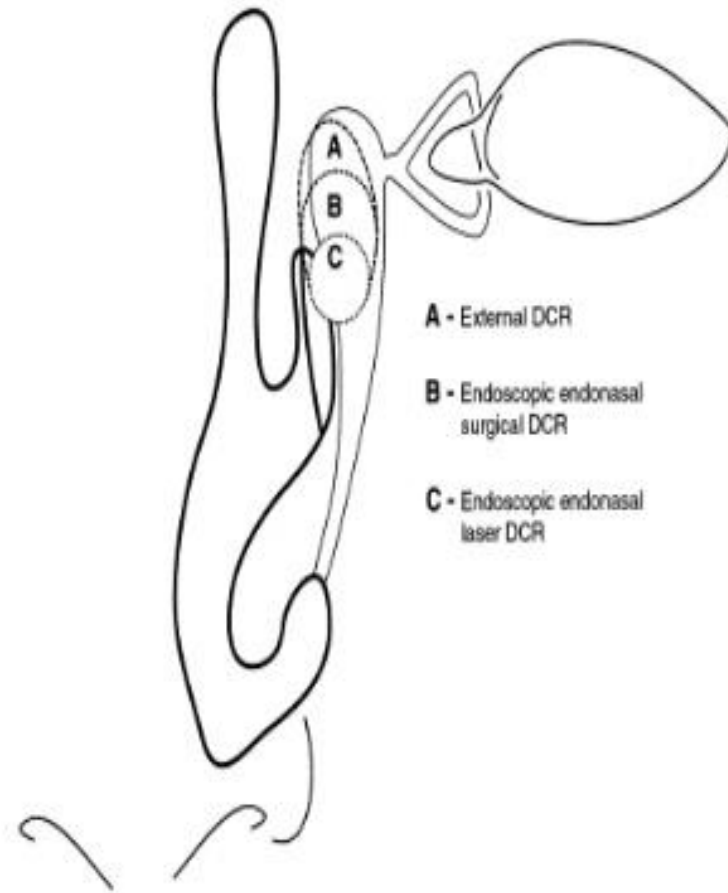
# DACRYOCYSTITIS - TREATMENT

- WARM COMPRESSES
- ORAL/IV ANTIBIOTICS, TOPICAL ONLY LIMITED VALUE
- INCISION DRAINAGE IF LOCALIZED ABSCESS
- MOST NEED DACRYOCYSTORHINOSTOMY AFTER ACUTE INFECTION SUBSIDES

## Dacryocystorhinostomy (DCR)



© 2004 Jane Oliver

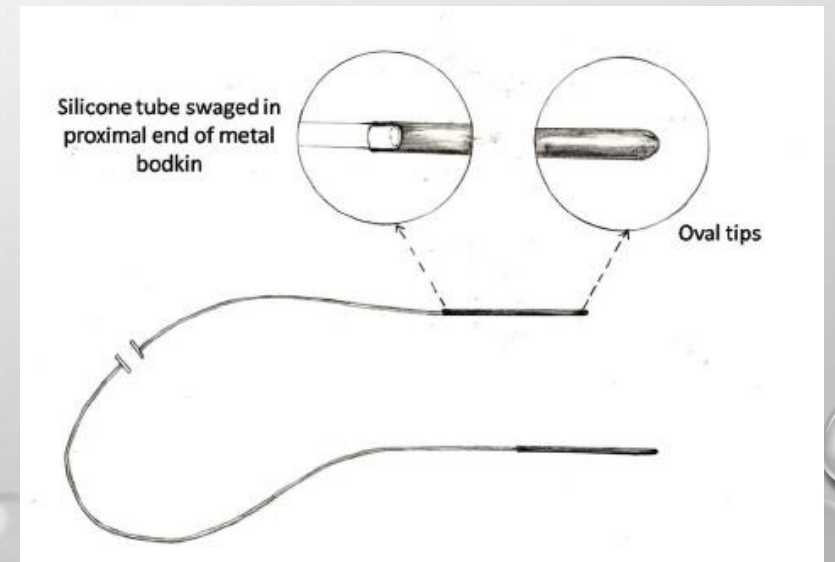
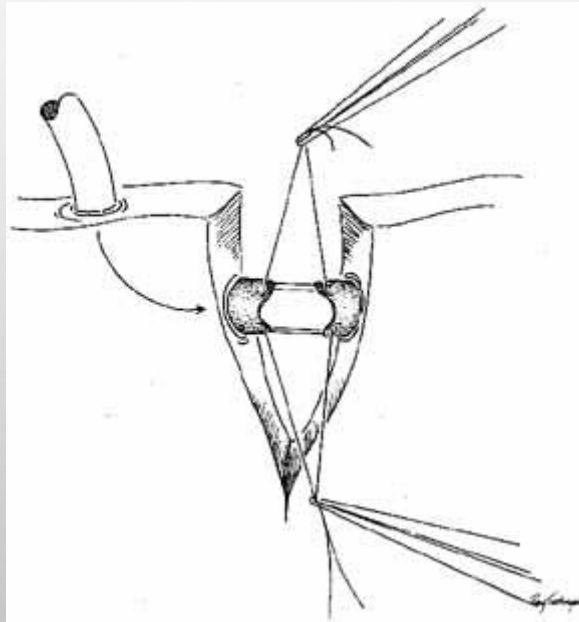
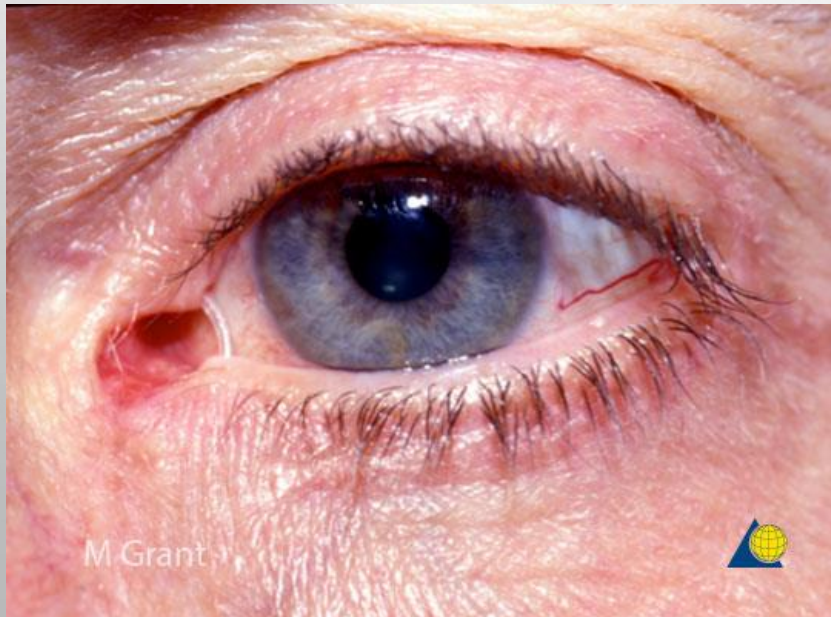


Comparison of Rhinostomy Sizes at Surgery



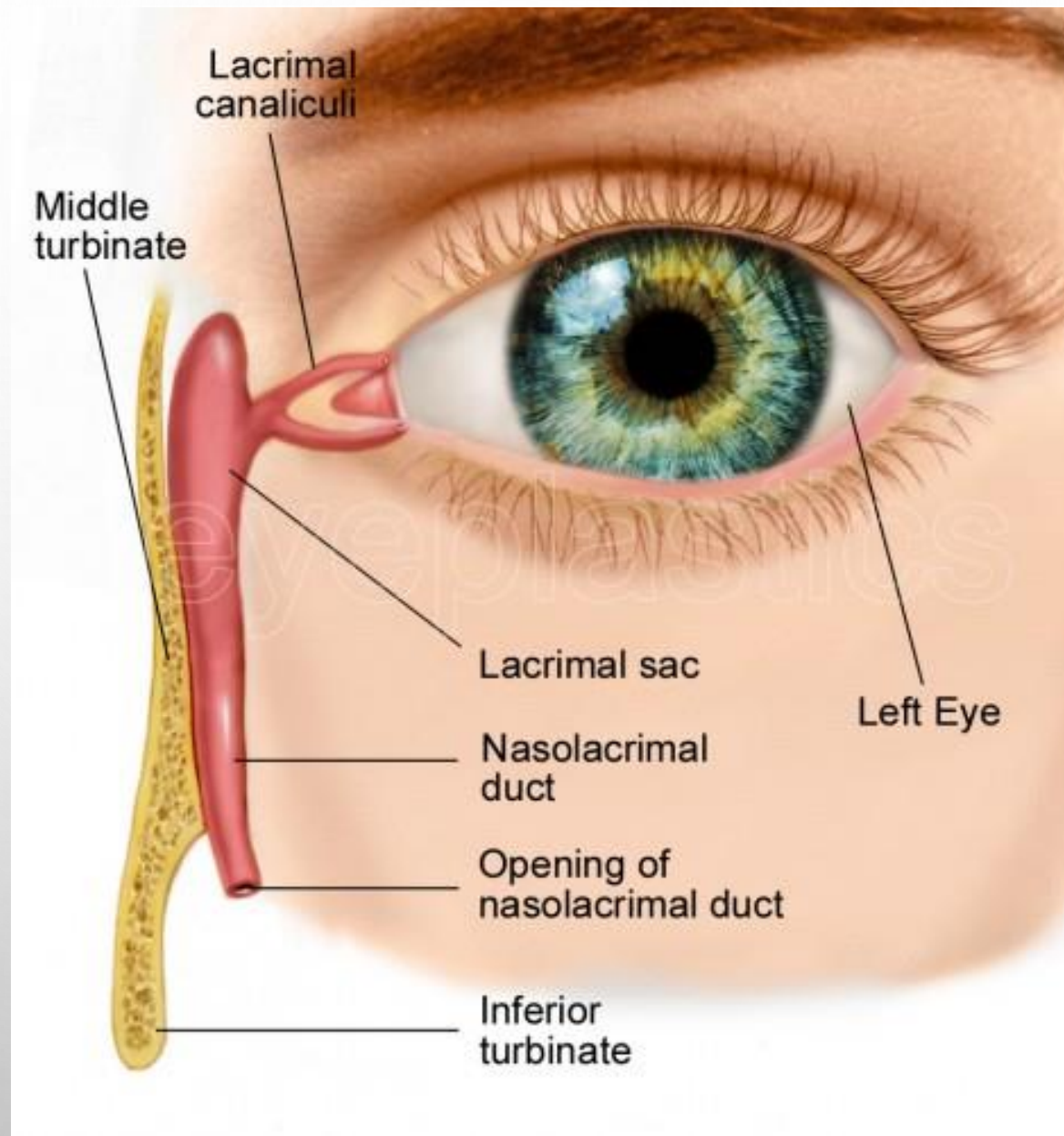
# LACRIMAL TRAUMA

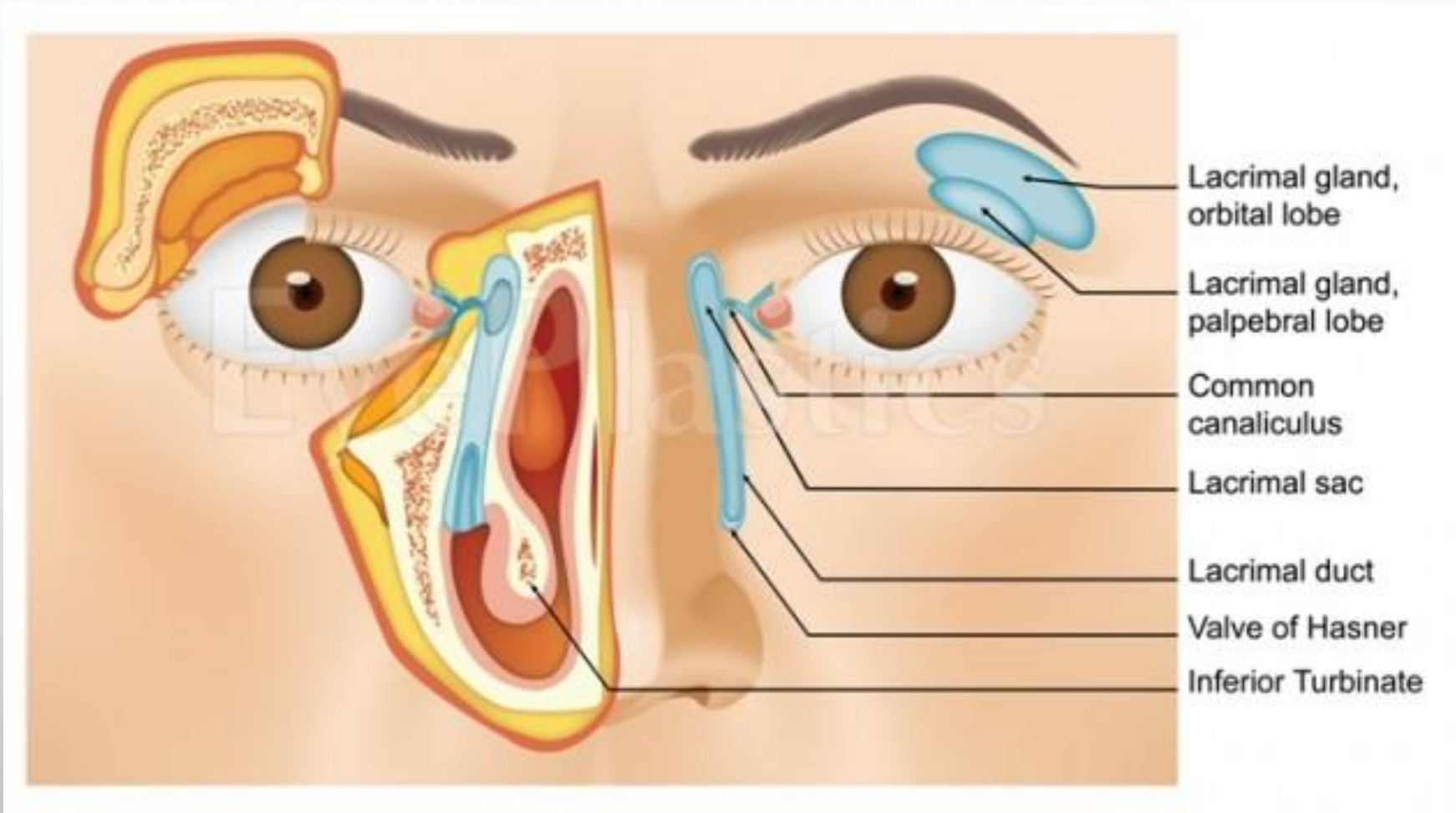
- REPAIR REQUIRES RE-APPROXIMATION OF THE EYELID AS WELL AS RE-APPROXIMATION OF THE LACRIMAL PATHWAYS; THIS IS BEST ACHIEVED WITH A STENT (MONO- OR BICANALICULAR), BEST WITH SILASTIC STENT

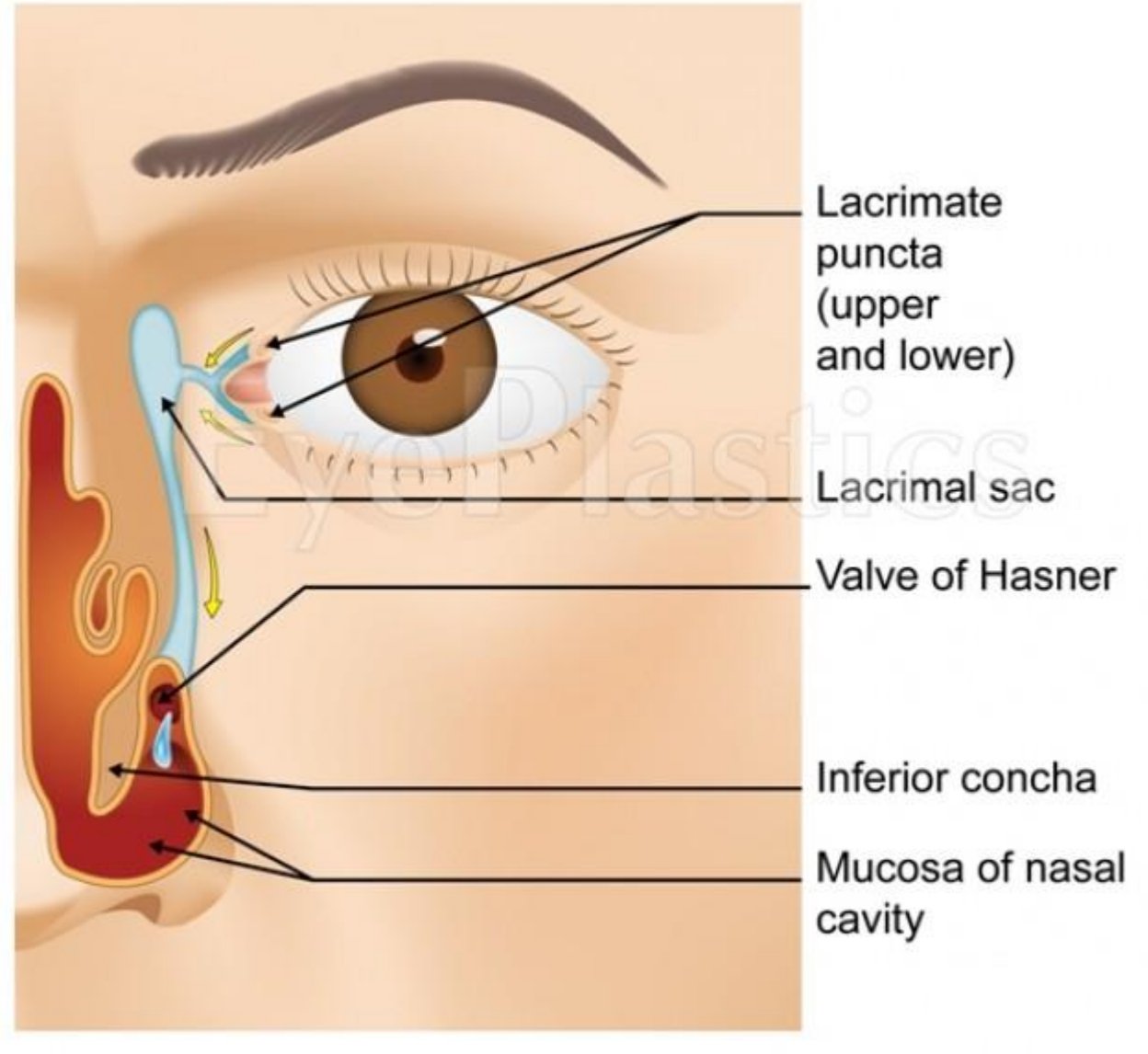


The background features a light gray gradient with several realistic water droplets of varying sizes scattered in the corners. The droplets have highlights and shadows, giving them a three-dimensional appearance. The title text is centered horizontally and positioned in the upper third of the slide.

# CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION







# SIGNS AND SYMPTOMS OF AN OBSTRUCTION

- The most common **symptoms** are excess tearing and mucous discharge
- not only will tears spill over the eyelids and run down the face, but the stagnant tears within the system can become infected
- This may lead to recurrent red eyes and infections.
- The excessive tearing can also produce secondary skin changes on the lower eyelids.

# CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION

- VERY COMMON IN INFANTS
- CHILDREN ARE FREQUENTLY BORN WITH AN OBSTRUCTION WITHIN THE "TEAR DUCT." IN FACT, 6% OF ALL CHILDREN ARE BORN BEFORE THEIR TEAR DUCTS ARE OPEN
- THE STAGNANT TEARS WITHIN THE "TEAR DUCT" OFTEN BECOME INFECTED CAUSING PUS (HEAVY MATTER) TO COLLECT BETWEEN THE EYELIDS

# CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION

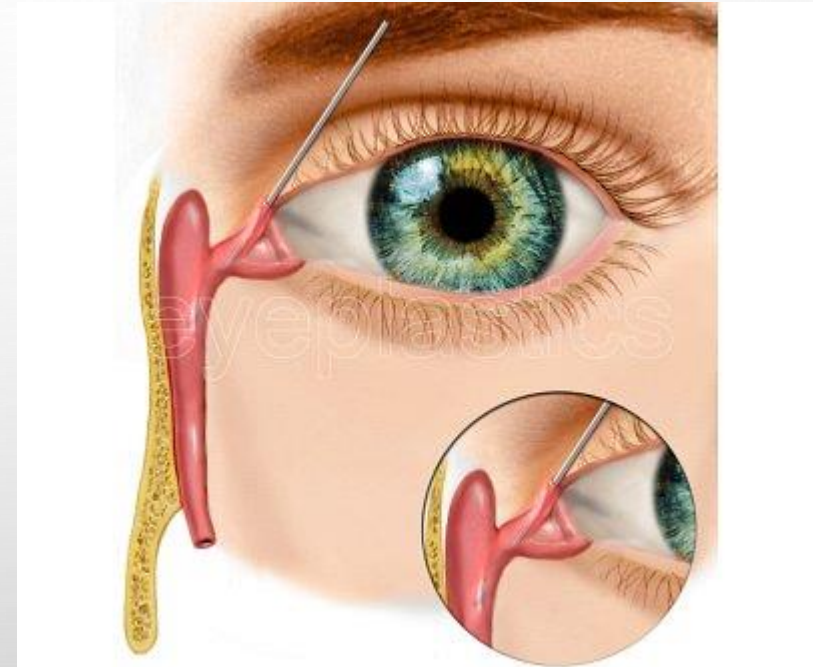
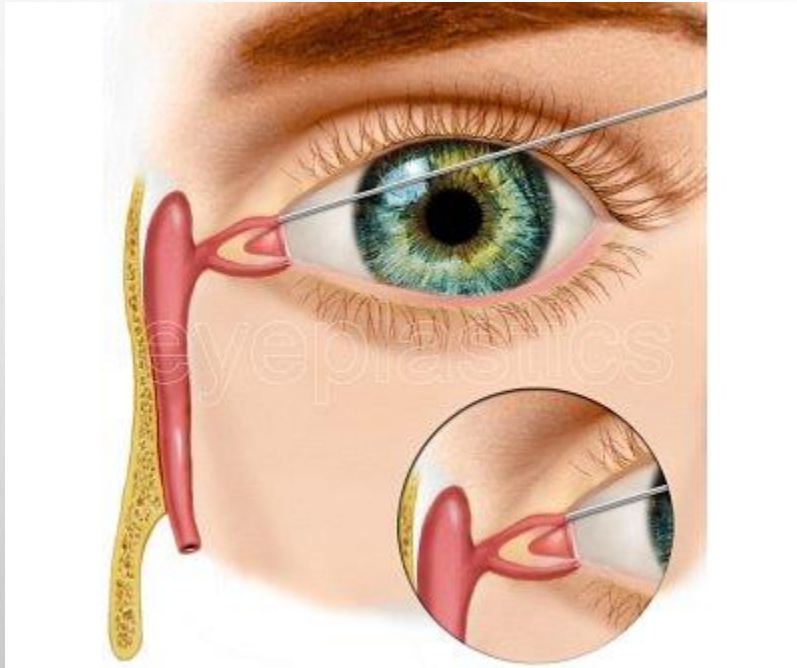
- ANTIBIOTICS MAY HELP SOME OF THE SYMPTOMS, BUT THIS IS NOT CURE FOR THE BLOCKAGE
- **SUCH OBSTRUCTIONS MAY RESOLVE SPONTANEOUSLY WITHIN THE FIRST FEW MONTHS OF LIFE. IN FACT, 95% OF THESE CHILDREN WILL SHOW RESOLUTION BEFORE THEIR FIRST BIRTHDAY. IF IT DOES NOT RESOLVE SURGERY MAY BE NECESSARY.**



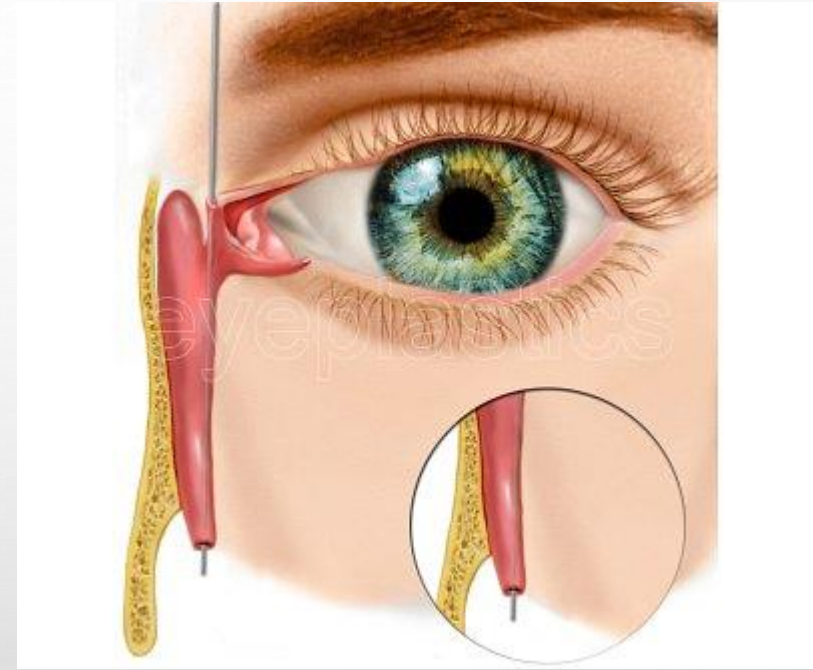
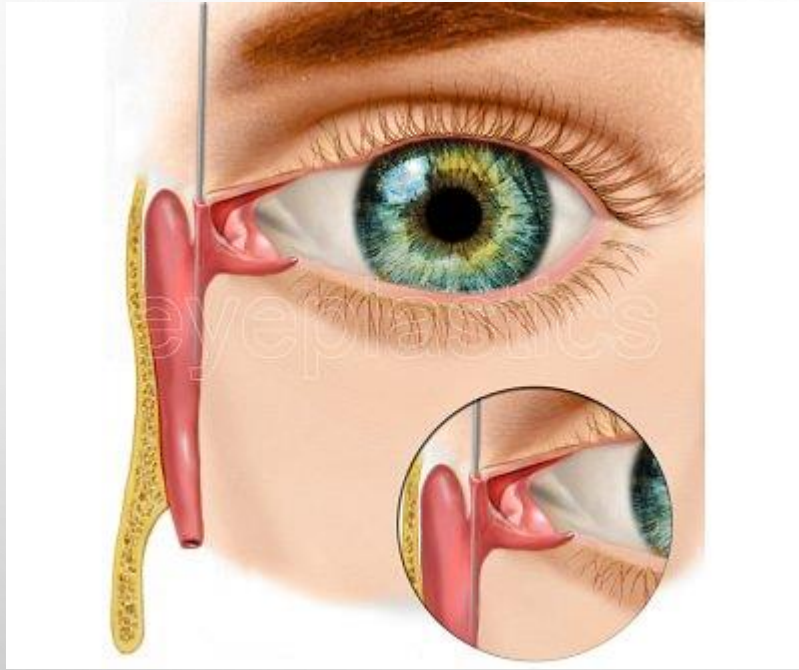
The slide features a light gray gradient background with several realistic water droplets of varying sizes scattered in the corners. The top-left and bottom-right corners have the highest density of droplets, while the top-right and bottom-left corners have fewer.

# TREATMENT OF CONGENITAL OBSTRUCTIONS

# PROBING



# PROBING

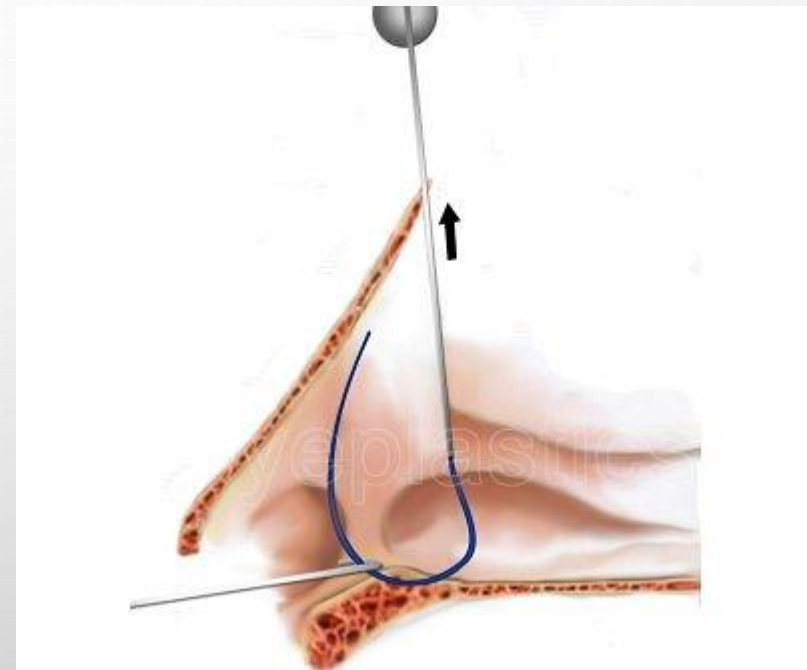
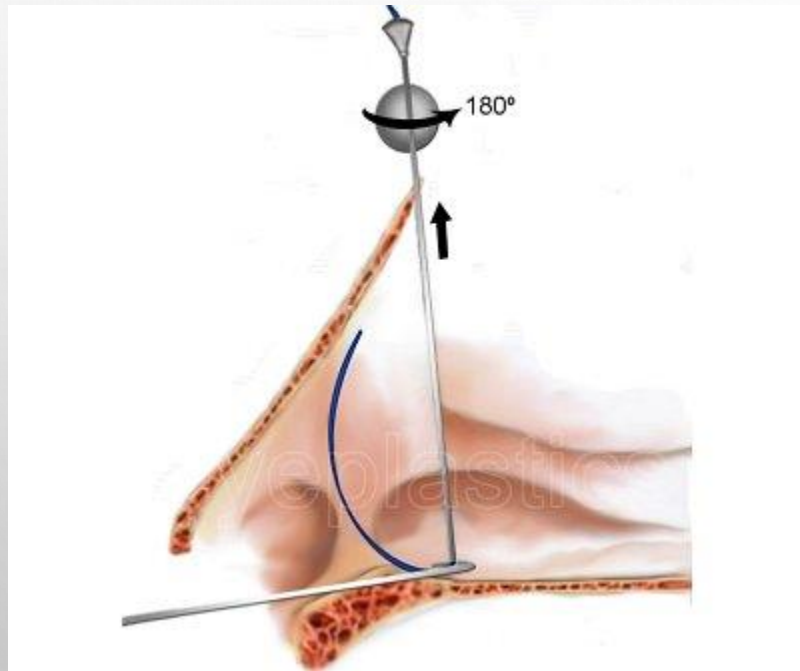


# SILICONE INTUBATION

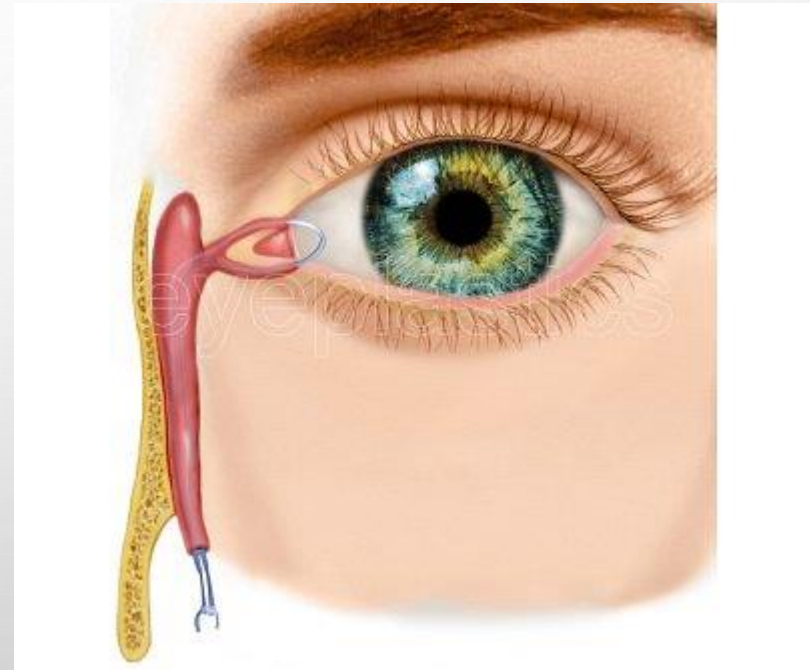
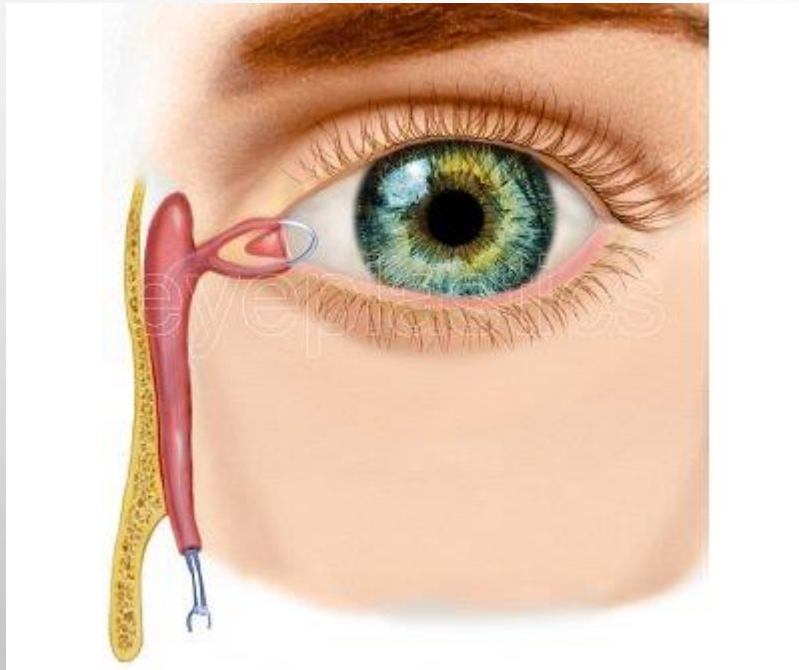
- SILICONE STENTS (INTUBATION) ARE USED TO KEEP THE LACRIMAL PATHWAY OPEN.

THE STENT MAY BE PLACED THROUGH BOTH THE UPPER AND LOWER SYSTEM (BI-CANALICULAR STENT) OR THROUGH EITHER THE UPPER OR LOWER SYSTEM (MONO-CANALICULAR STENT).

# SILICONE INTUBATION



# SILICONE INTUBATION



# CONGENITAL OBSTRUCTION

- DIFFERENT THERAPEUTIC APPROACH IN EUROPE AND USA
- IN EUROPE INFANTS ARE TREATED WITHIN THE FIRST MONTH OF LIFE
- IN USA TREATMENT IS DELAYED AFTER THE FIRST YEAR OF LIFE

THANK YOU FOR YOUR ATTENTION

