EPIPHORA:
A STRATEGY FOR SOLVING THE COMMON COMPLAINT

JORDAN KEITH, OD, FAAO

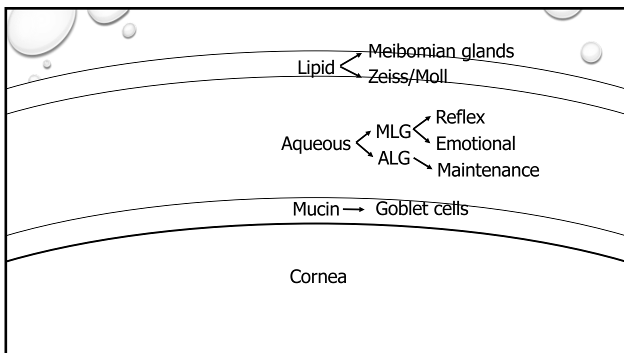
MINNEAPOLIS, MN

EYE CARE CENTER
www.eyecarecenters.net

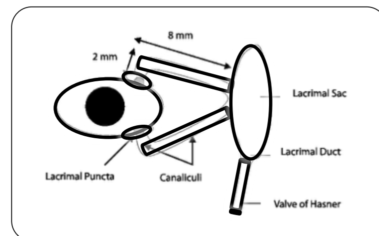
Maple Grove   Fridley   Maplewood

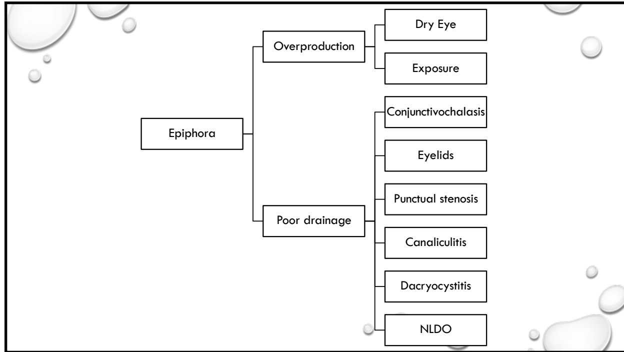
OBJECTIVES

- Recall normal anatomy of tear production and drainage
- Identify causes of overproduction of tears
- Identify causes of reduced drainage of tears
- List treatment options to prevent epiphora



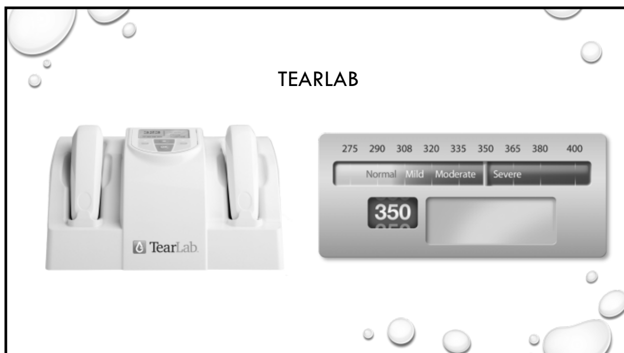
NASOLACRIMAL DRAINAGE SYSTEM





"Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface."

Lemp MA. The Definition and Classification of Dry Eye Disease. DEWS. The Ocular Surface. 2007; 5(2)



CAUSATIVE MECHANISMS

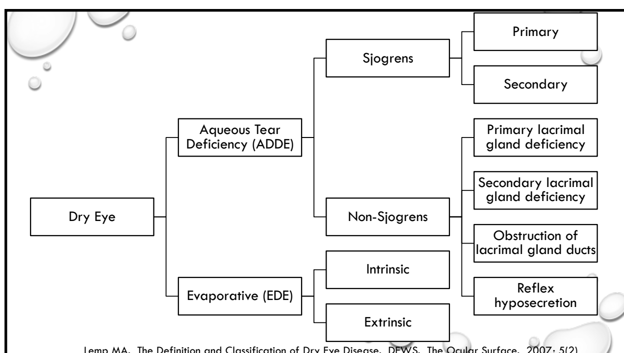
TEAR HYPEROSMOLARITY

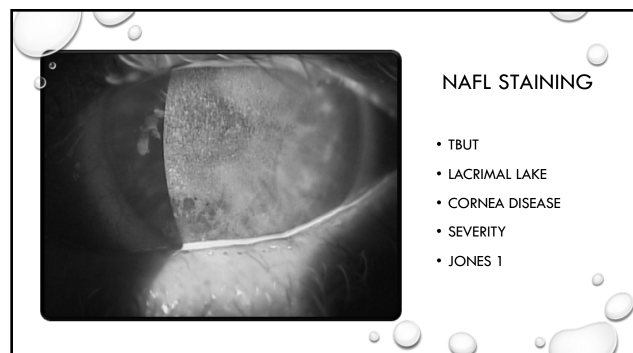
- RESULTS IN AN INFLAMMATORY CASCADE THAT DAMAGES THE OUTER SURFACE AND RELEASES INFLAMMATORY MEDIATORS INTO THE TEARS

TEAR FILM INSTABILITY

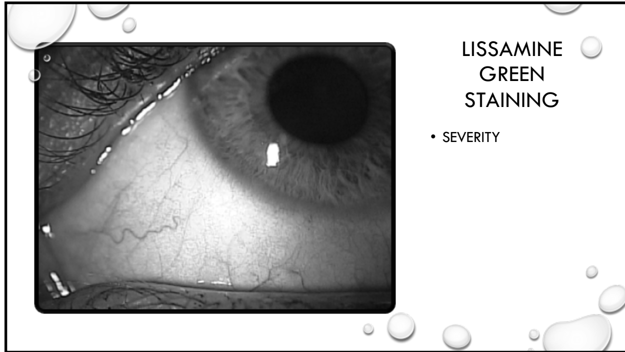
- CAN ARISE SECONDARY TO TEAR HYPEROSMOLARITY OR CAN BE THE INITIATING EVENT IN THE DISEASE PROCESS

Lemp MA. The Definition and Classification of Dry Eye Disease. DEWS. The Ocular Surface. 2007; 5(2)





LISSAMINE GREEN STAINING



- SEVERITY

SJOGREN'S SYNDROME NEW DIAGNOSTIC CRITERIA (2 OF 3)

- Positive serum anti-SSA and/or anti-SSB OR [positive RF AND ANA ≥ 1:320]
- Ocular staining score (OSS) ≥ 3
- Presence of focal lymphocytic sialadenitis with focus score ≥ 1 focus/4 mm^2 in a labial salivary gland biopsy

Shiboski SC et al. American College of Rheumatology Classification Criteria for Sjögren's Syndrome: SICCA Cohort. Arthritis Care Res (Hoboken). 2012 April ; 64(4): 475–487

SICCA Ocular Staining Score

Staining pattern score:

Right Eye

Lissamine Green (conjunctiva only) Grade	Dots	Fluorescein (cornea only) Grade	Dots
0	0-9	0	0
1	10-32	1	1-5
2	33-100	2	6-30
3	>100	3	>30

Left Eye

Lissamine Green (conjunctiva only) Grade	Dots	Fluorescein (cornea only) Grade	Dots
0	0-9	0	0
1	10-32	1	1-5
2	33-100	2	6-30
3	>100	3	>30

Extra points–fluorescein only: (Mark all that apply and add to fluorescein score)

Right Eye:
- ☐ +1 - patches of confluent staining
- ☐ +1 - staining in pupillary area
- ☐ +1 - one or more filaments

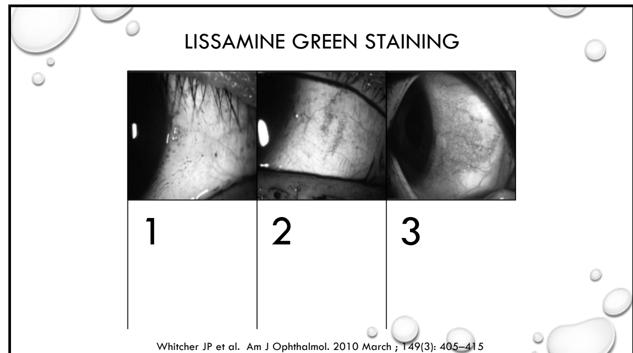
Left Eye:
- ☐ +1 - patches of confluent staining
- ☐ +1 - staining in pupillary area
- ☐ +1 - one or more filaments

Total Ocular Staining score: ☐☐ ☐☐

Total ocular staining scores of 3 to 12 per eye assess the range of severity for keratoconjunctivitis sicca.

Whitcher JP et al. Figure 2. Am J Ophthalmol. 2010 March ; 149(3): 405–415

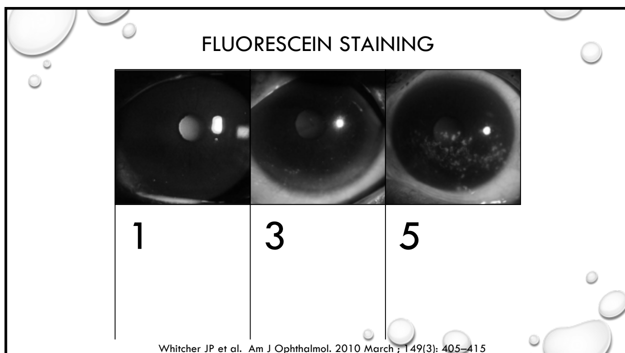
LISSAMINE GREEN STAINING



1 | 2 | 3

Whitcher JP et al. Am J Ophthalmol. 2010 March ; 149(3): 405–415

FLUORESCEIN STAINING



1 | 3 | 5

Whitcher JP et al. Am J Ophthalmol. 2010 March ; 149(3): 405–415

CONSECUTIVE PATIENTS WITH "PRIMARY" SS (N=163)

- 98% history of dry eye for average 10.4 years
- 25% extraglandular ocular manifestations
- 13% vision-threatening findings
- 42% extraglandular systemic manifestations

Akpek EK et al. Ocular and systemic morbidity in a longitudinal cohort of Sjögren's syndrome. Ophthalmology. 2015 Jan;122(1):56-61

Sjogern’s Syndrome has been shown to be an independent risk factor for the development of non-Hodgkin’s lymphoma (NHL)

Afflicting about 5%

Estimated to be 7-19 fold higher risk compared to general population

Fragkioudaki et al. Medicine. 2016 95:25

Observational Study

Medicine

OPEN

Predicting the risk for lymphoma development in Sjogren syndrome

An easy tool for clinical use

Sofia Fragkioudaki (MD)[a], Clio P. Mavragani (MD)[a,b,c,*], Haralampos M. Moutsopoulos (MD, FACP, FRCP, MACR)[b,c]

Abstract

Patients presenting with independent risk factors identified and their risk of NHL development:

- 2 risk factors had a 3.8% probability
- 3 to 6 risk factors had a 39.9% probability (OR (95%CI): 16.6 [6.5–42.5], P < 0.05)
- All 7 risk factors the corresponding probability reached 100% (OR [95%CI]: 210.0 [10.0–4412.9], P< 0.0001

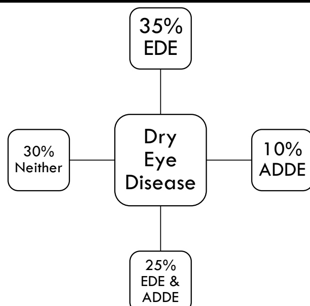
Fragkioudaki et al. Medicine. 2016 95:25

1. Introduction

Sjogren syndrome (SS) is a common systemic autoimmune disease usually confined in the exocrine glands (mainly salivary and lachrymal), leading to desiccation of oral and ocular mucosal tissues. Nevertheless, systemic manifestations can arise in a proportion of SS individuals[1] and B-cell non-Hodgkin lympho-

Although mucosa associated lymphoid tissue (MALT) mainly in the salivary glands is the prominent histological lymphoma type with a 1000-fold increased risk[4] among primary SS patients,[2,10] more aggressive subtypes including diffuse large B-cell lymphomas can also occur.[2,11]

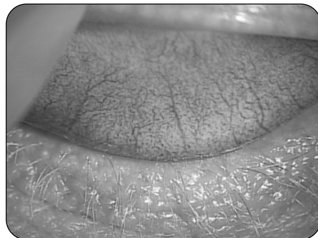
Lymphomagenesis in the setting of autoimmunity and



Lemp MA. Cornea. 2012 May;31(5):472-8

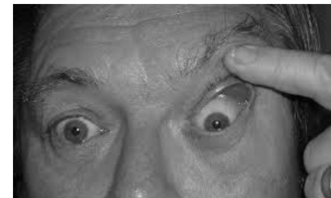
DRY EYE TREATMENT

OBESE MALE/RED WATERING EYES EVERY MORNING



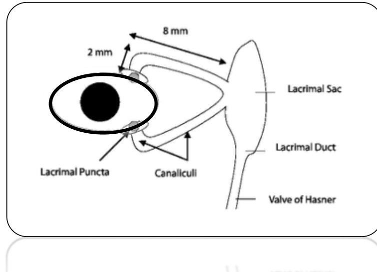
FLOPPY EYELID SYNDROME

- MOST COMMON IN OBESE MALES WITH SLEEP APNEA
- 5.7% (N=12/209) PATIENTS WITH SLEEP APNEA HAVE NTG



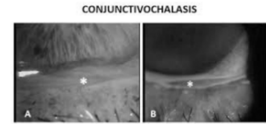
Lin PW et al. J Glaucoma. 2011; 20(9): 553-8

LACRIMAL LAKE DISRUPTION



CONJUNCTIVOCHALASIS

- Often Overlooked
- Two Mechanisms for causing epiphora
  1) More common: interference by the redundant conjunctiva with the inferior tear meniscus
  2) Less common: occlusion of the inferior punctum by the redundant conjunctiva



Meller D, Tseng SCG. Survey of Ophthalmology. 1998; 43(3): 225-32

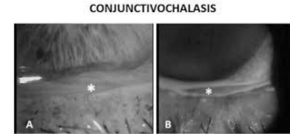
CONJUNCTIVOCHALASIS

Meller D, Tseng SCG. Survey of Ophthalmology. 1998; 43(3): 225-32

CONJUNCTIVOCHALASIS

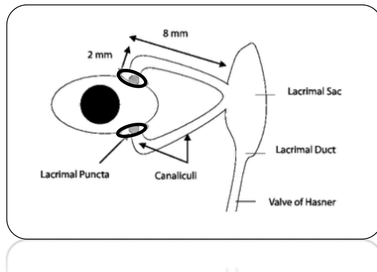
Treatment

- Artificial tears
- Steroids
- Surgery

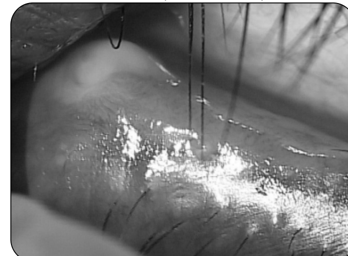


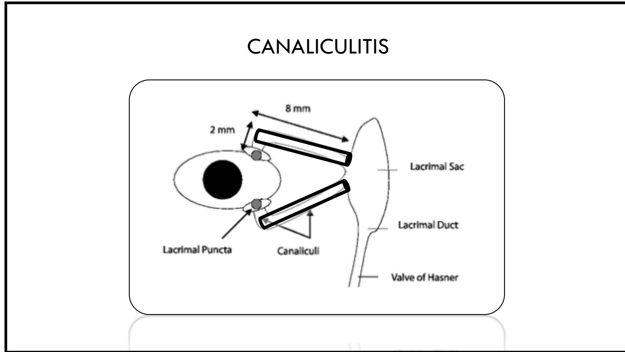
Meller D, Tseng SCG. Survey of Ophthalmology. 1998; 43(3): 225-32

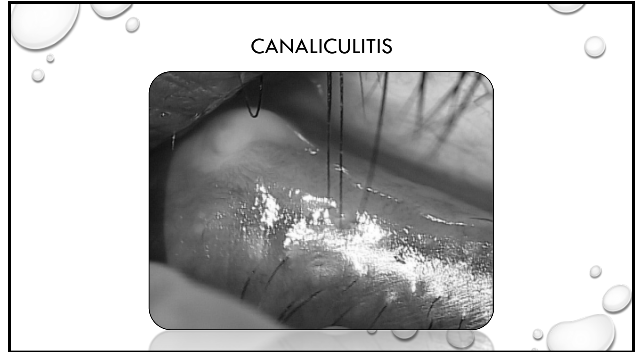
PUNCTAL STENOSIS



EPIPHORA WITH MUCOPURULENT DISCHARGE, REDNESS, PAIN







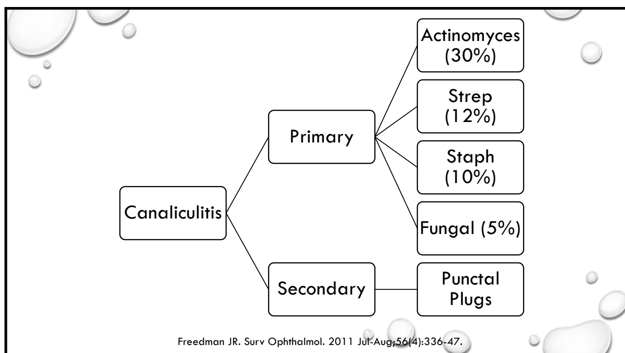
"If the literature accurately reflects clinical practice, it would appear that it is more common to misdiagnose patients with canaliculitis than to identify this condition."

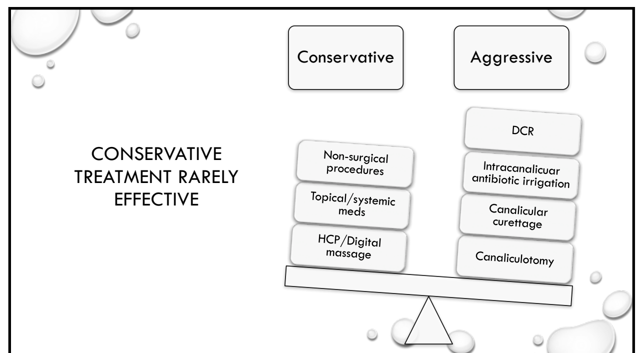
Freedman JR. Surv Ophthalmol. 2011 Jul-Aug;56(4):336-47.

THINK CANALICULITIS IF…

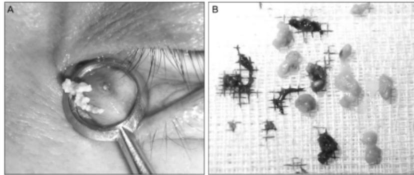
- CHRONIC PURULENT CONJUNCTIVITIS
- HORDEOLUM
- CHALAZION
- DACRYOCYSTITIS
- BLEPHARITIS

Park JH, et al. Figure 1. J Korean Ophthalmol Soc. 2013 Oct;54(10):1481-1487





INTRACANALICULAR CONCREATIONS (DACRYOLITHS, SULFURE GRANULES, CASTS)

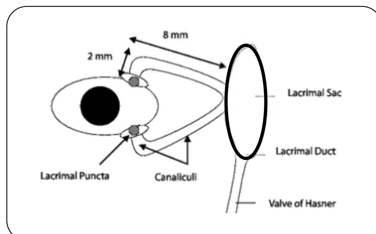


Park JH, et al. Figure 4. J Korean Ophthalmol Soc. 2013 Oct;54(10):1481-1487

"Concretions present may prevent antibiotics from eradicating bacterial source by virtue of obstruction of flow and protection of bacteria within stones. Thick mucopurulent and particulate discharge and abscess-like accumulation of infected debris are responsible for resisting penetration of topical and systemic antibiotics, canalicular stasis and infection."

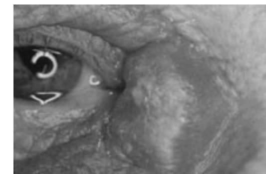
Lin SC et al. Acta Ophthalmol. 2011 Dec;89(8):759-63.

DACRYOCYSTITIS

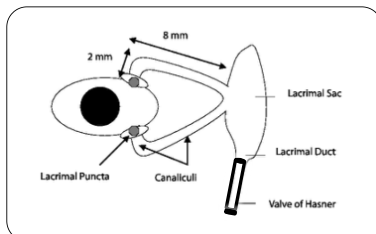


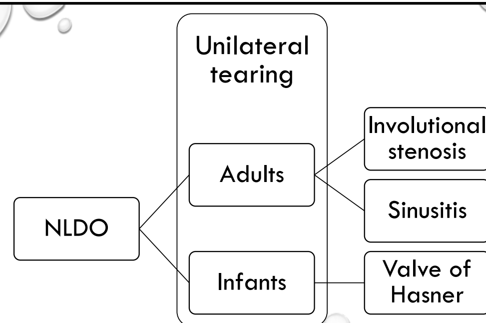
ACUTE DACRYOCYSTITIS

- TREATMENT
  - WARM COMPRESSES
  - TOPICAL/ORAL ANTIBIOTIC
  - NO SURGERY OR D & I IF ACUTE
- MOST COMMONLY RESULTS FROM A NLDO



NASOLACRIMAL DUCT OBSTRUCTION (NLDO)





Congenital NLDO is estimated to occur in 20% of infants and most commonly resolve in 1 year.

MacEwen CJ, Young JD. Epiphora during the first year of life. Eye (Lond). 1991; 5:596–600.

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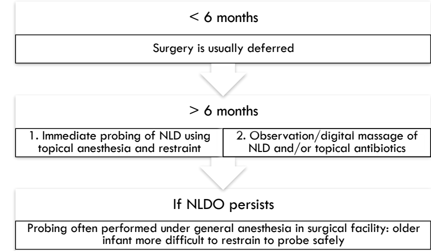
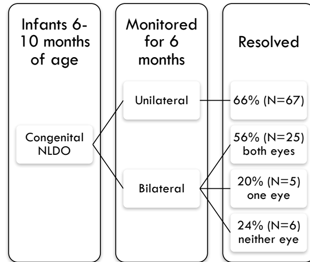


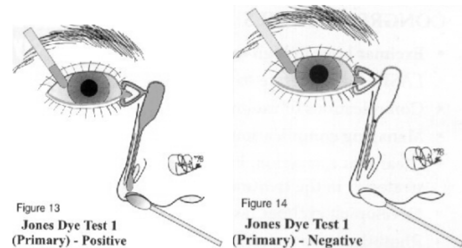
MacEwen CJ, Young JD. Epiphora during the first year of life. Eye (Lond). 1991; 5:596–600.

INFANTS 6-10 MONTHS OF AGE WITH NLDO MONITORED FOR 6 MONTHS



PEDIG. Arch Ophthalmol. 2012; 130(6):730–734

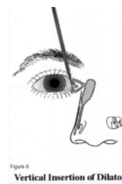
JONES I

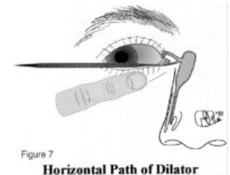


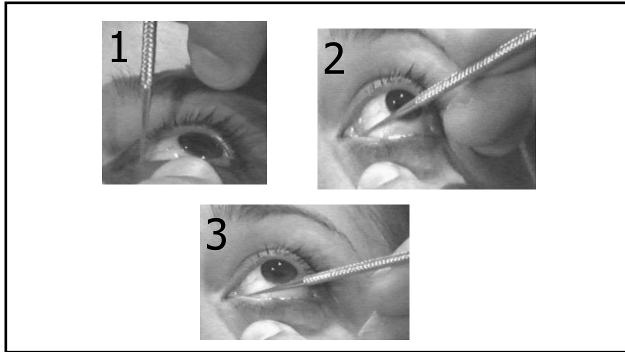
DILATION

- DILATORS
  - STAINLESS STEEL
  - PUNCTAL PLUG INSERTERS
- MAY PROVIDE RELIEF IF PROBLEM IS PUNCTAL STENOSIS

DILATION





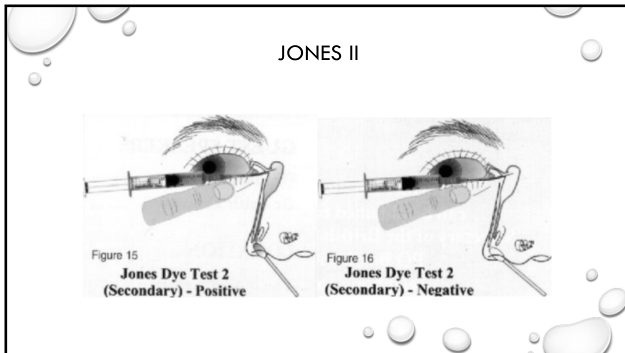


IRRIGATION

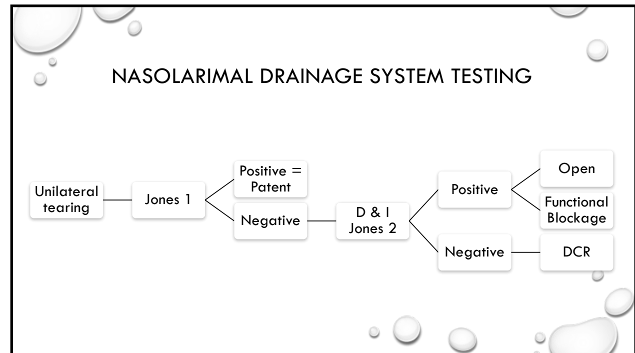
MATERIALS

- LACRIMAL CANNULA
- STERILE 3ML SYRINGE
- STERILE SALINE

JONES II



NASOLARIMAL DRAINAGE SYSTEM TESTING



DILATION & IRRIGATION

OUTCOMES

- IF <u>OPEN</u> LACRIMAL DRAINAGE SYSTEM, PATIENT WILL TASTE/FEEL SALINE
  - BLOCKAGE NOT PRESENT AND ANOTHER CAUSE OF EPIPHORA SHOULD BE EVALUATED
  - BLOCKAGE WAS RELEASED DURING D & I
  - POSSIBLE FUNCTIONAL BLOCKAGE

DILATION & IRRIGATION

OUTCOMES

- IF <u>BLOCKED</u>, MAY HAVE DIFFICULTY DEPRESSING PLUNGER OR FLUID MAY REGURGITATE FROM INFERIOR OR SUPERIOR PUNCTA
  - INFERIOR REFLUX: INFERIOR CANALICULUS BLOCKAGE
  - SUPERIOR REFLUX: COMMON CANALICULUS OR LACRIMAL SAC
    - IF THIS OCCURS, PRESS SUPERIOR PUNCTUM AGAINST ORBITAL RIM TO OCCLUDE AND IRRIGATE AGAIN

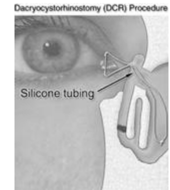
DILATION & IRRIGATION

OUTCOMES

- FUNCTIONAL BLOCKAGE
  - PATENT SYSTEM UNDER HIGH-PRESSURE IRRIGATION
  - PATHWAY COLLAPSES UNDER LOW-PRESSURE SITUATIONS OF NORMAL TEAR DRAINAGE
    - JONES DYE TESTS USED TO HELP DIFFERENTIATE FUNCTIONAL BLOCKAGE VS. PATENT SYSTEMS

DACRYOCYSTORHINOSTOMY (DCR)

- SURGICAL PROCEDURE TO RESTORE THE FLOW OF TEARS FROM THE LACRIMAL SAC TO THE NOSE WHEN THE NASOLACRIMAL DUCT DOES NOT FUNCTION



SUMMARY

- CHECK FOR DISEASES THAT CAUSE REFLEX TEARING
- ASSESS NASOLACRIMAL DRAINAGE SYSTEM

Contact information
Jordan.Keith@eyecarecenters.net