Let's start with congenital nasolacrimal obstruction (NLDO)…
In congenital nasolacrimal duct obstruction, where is the site of obstruction?
In congenital nasolacrimal duct obstruction, where is the site of obstruction typically located? **At the distal end of the NLD**
Congenital nasolacrimal duct obstruction: Stenosis at the distal end of the system
In congenital nasolacrimal duct obstruction, where is the site of obstruction typically located? At the **distal end of the NLD**.

In congenital NLDO, the valve at the distal end of the NLD is imperforate. What is the eponymous name of this valve?
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The (spiral) valve of Hasner
Congenital Nasolacrimal Duct Obstruction and Dacryocele

Spiral valve of Hasner
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What percent of newborns have an imperforate valve of Hasner?
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*Huh? If 50% of newborns are imperforate (ie, have an obstructed NLD), why are only 5% diagnosed with NLDO? Unobservant ophthalmologists?*
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OK, but why don’t these infants have diagnose-able NLDO in the interval before they spontaneously perforate?
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OK, but why don’t these infants have diagnose-able NLDO in the interval before they spontaneously perforate?
The lacrimal glands don’t start producing significant tear volume until ~6 weeks post-partum. (Have you ever noticed that, when they cry, newborns don’t shed tears?) And the relative absence of tear-volume during this interval means that the signs of NLDO cannot develop, and thus most cases of congenital NLDO never become clinically apparent.
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Speaking of: What is the classic sign of congenital NLDO?
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Speaking of: What is the classic sign of congenital NLDO? **Epiphora with sticky, mucopurulent discharge**
Bilateral nasolacrimal duct obstruction with epiphora and periocular crusting
In congenital nasolacrimal duct obstruction, where is the site of obstruction typically located? At the distal end of the NLD.

Speaking of: What is the classic sign of congenital NLDO? Epiphora with sticky, **mucopurulent discharge**

*What does the mucopurulent-ness of the discharge indicate?*
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*What does the mucopurulent-ness of the discharge indicate?*
*It indicates there is a smoldering, chronic infection in the nasolacrimal sac.*
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*What percent of congenital NLDO infants get infected?* Essentially all of them, until/unless the obstruction is resolved.
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How much does this ongoing, chronic infection bother the infant? Seemingly not at all, and this nonchalance is an important clue that one is dealing with typical NLDO. That is, if the infant seems distressed by their ophthalmic condition, or is fussy, the diagnosis of ‘typical NLDO’ should be questioned.
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*Why is the infection rate so high?*
Think about it—distal obstruction means tears get into the sac, but can’t get out. Thus, stasis is the order of the day. And stasis of the protein-rich tear renders it an ideal ‘broth’ in which bacteria can flourish.
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It would suggest the blockage is above the sac, at the puncta or canalicular apparatus.
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Speaking of: What is the classic sign of congenital NLDO? Epiphora with sticky, mucopurulent discharge.

What blinding condition must always, always, ALWAYS be ruled out in an infant with epiphora?
A

**Congenital Nasolacrimal Duct Obstruction and Dacryocele**

- In congenital nasolacrimal duct obstruction, where is the site of obstruction typically located? At the distal end of the NLD
- Speaking of: What is the classic sign of congenital NLDO? **Epiphora** with sticky, mucopurulent discharge

*What blinding condition must always, always, ALWAYS be ruled out in an infant with epiphora? Glaucoma.* Epiphora is part of the ‘classic triad’ in the presentation of congenital glaucoma.
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**Glaucoma.** Epiphora is part of the ‘classic triad’ in the presentation of congenital glaucoma.

*What are the other two findings in the classic triad?*

--Epiphora

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*What are the other two findings in the classic triad?*
-- Epiphora
-- Photophobia
-- Blepharospasm
Congenital glaucoma

Congenital Nasolacrimal Duct Obstruction and Dacryocele

Epiphora (note also the large corneas, as well as the hazy cornea OD)

Photophobia/blepharospasm
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- Your NLD obstruction patient has a congenital heart defect. Should prophylactic antibiotics be given prior to probing?
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Your NLD obstruction patient has a congenital heart defect. Should prophylactic antibiotics be given prior to probing? Yes, because probing produces a transient bacteremia.
Congenital Nasolacrimal Duct Obstruction and Dacryocele

Now we’ll switch from NLDO…
Now we’ll switch from NLDO…to Dacryocele.
Now we’ll switch from NLDO…to Dacryocèle.

But first: Is dacryocèle as common as congenital NLDO?
Now we’ll switch from NLDO…to Dacryocele.

But first: Is dacryocele as common as congenital NLDO? No, it is far less common.
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Does it present unilaterally, or bilaterally?
Now we’ll switch from NLDO…to Dacryocele.

But first: Is dacryocele as common as congenital NLDO? No, it is far less common

Does it present unilaterally, or bilaterally? It is 50:50 shot... in about % of cases
Now we’ll switch from NLDO…to Dacryocele.

But first: Is dacryocele as common as congenital NLDO?
No, it is far less common

Does it present unilaterally, or bilaterally?
It is **unilateral** in about **75%** of cases
When and how does dacryocele present?
When and how does dacryocèle present? At birth, as a bluish cystic swelling in the lacrimal sac region.
Congenital Nasolacrimal Duct Obstruction and Dacryocele

Dacryocele
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*Do dacryoceles present with sticky, mucopurulent epiphora a la congenital NLDO?*
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Dacryocèle. Note that the swelling below the medial canthus
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If the superior portion of the sac is called the fundus, what is the rest of the sac called?
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Yes. The portion extending above the medial canthus is part of the fundus of the sac, which is defined as that part of the sac superior to the duct of the common canaliculus.

If the superior portion of the sac is called the fundus, what is the rest of the sac called?
The body
Lacrimal sac anatomy

Congenital Nasolacrimal Duct Obstruction and Dacryocele
When and how does dacryocele present? At birth, as a bluish cystic **swelling in the lacrimal sac region**

*Do dacryoceles present with sticky, mucopurulent epiphora a la congenital NLDO?*  
No. In fact, they generally don’t have much epiphora at all.

*Is the swelling above, or below the medial canthus?*

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*OK, given that a portion of the sac extends above the medial canthus, why don’t dacryoceles (or swelling secondary to congenital NLDO, for that matter) present with swelling above the medial canthus?*
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Because the lacrimal-sac fundus has a fibrous ‘cap’ that prevents it from distending
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*What is the name for such a presentation?*

It depends on the contents of the herniation. If it’s meninges, it’s called a **meningocele**. If it’s brain tissue, it’s an **encephalocele**. If both are present, it’s a **meningoencephalocele**.
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Congenital Nasolacrimal Duct Obstruction and Dacryocèle

Nasal encephalocele
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OK then smart guy, what should be done?
Neuroimaging
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In addition to its relation to the medial canthus, what other finding should alert you to the possibility that one of these ‘oceles’ is present?
If the mass is pulsatile.

If you suspect the presence of one of the -oceles, what confirmatory test should be performed? Fine needle biopsy, perhaps?
Um, no. Just no. Please don’t stick a needle (or anything else) into what may be the brain.

OK then smart guy, what should be done?
Neuroimaging
When and how does dacryocystocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Does it have an angry, inflammatory appearance initially?
When and how does dacryocele present? At birth, as a **bluish cystic swelling** in the lacrimal sac region.

*Does it have an angry, inflammatory appearance initially?*

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When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

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*Why call it a mucocele?*
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*Why call it a mucocele?*
It may be filled with mucus.
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Mucus? How could it be filled with mucus?
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Why call it a mucocele? It may be filled with **mucus**.

Mucus? How could it be filled with mucus? The epithelium of the lacrimal sac contains cells, which secrete it.
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Give three synonyms for dacryocele: Mucocele; dacryocystocele; amniotocele.

Why call it a mucocele? It may be filled with mucus.

Mucus? How could it be filled with mucus? The epithelium of the lacrimal sac contains goblet cells, which secrete it.
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Give three synonyms for dacryocele: Mucocoele; dacyrocystocele; amniotocele

Why call it an amniotocele?
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Give three synonyms for dacryocele: Mucocele; dacyrocystocele; **amniotocele**

*Why call it an amniotocele?*
It may be filled with amniotic fluid.
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Give three synonyms for dacryocele: Mucocele; dacryocystocele; amniotocele.

What is the key anatomic difference between congenital NLD obstruction and dacryocele?
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

Give three synonyms for dacryocele: Mucocele; dacryocystocele; amniotocele.

What is the key anatomic difference between congenital NLD obstruction and dacryocele? NLD obstruction involves obstruction at only one site (below the sac), whereas in dacryocele there is obstruction at two sites—one below the sac, but another above it.
With a dacyrocystocele, there is a functional blockage **proximally** as well as a blockage **distally**. This leads to fluid accumulation (amniotic fluid and mucous produced by the lacrimal sac glands) causing distention.
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But if there is obstruction above the sac, how does fluid get into it in the first place?
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Dacryocystocele: Note the kinking of the canaliculus
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But if there is obstruction above the sac, how does fluid get into it in the first place? Frequently the above-sac obstruction is something impermanent—the classic cause being kinking of the common canaliculus. Such an obstruction acts as a one-way valve—fluid can pass into the sac, but cannot escape in retrograde fashion via the same route.
Congenital Nasolacrimal Duct Obstruction and Dacryocele

Dacryocystocele: One-way valve effect
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OK, what if the obstruction above is impassable, eg, in atresia of the canalicular system? A dacryocele can’t form, can it?
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OK, what if the obstruction above is impassable, eg, in atresia of the canalicular system? A dacryocele can’t form, can it? It can, because as mentioned previously, goblet cells of the lacrimal sac secrete mucin, which can accumulate in the sac and thereby produce a dacryocele.
When and how does dacryocele present? At birth, as a bluish cystic swelling in the lacrimal sac region.

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How does a nasal mucocele relate anatomically to the dacryocele?

A nasal mucocele is usually connected to the dacryocele, forming a dumbbell-shaped lesion.
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How is a nasal mucocele diagnosed? Via a nasal speculum exam. Look yourself, or ask ENT to.

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A nasal mucocele
Bilateral intranasal cysts in a patient presenting with a unilateral right dacryocèle: A) 1-month-old infant with a right-sided mass below the medial canthus. B) CT of the sinuses with bilateral intranasal cysts below the inferior turbinates. C) Endonasal, endoscopic view of each intranasal cyst below the inferior turbinates.
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OK, the patient has a nasal mucocele—so what? Sounds like an ENT problem to me. Why should I care? Infants are obligate nasal breathers (or at the least, they have a very strong preference for nasal breathing). A nasal mucocele will interfere with respiration, especially during feeding. Be sure to ask the mother about feeding problems: whether the infant ‘snuffles,’ or stops breathing; or seems excessively fussy and frustrated while feeding.

What is the treatment for a nasal mucocele? Get ENT to marsupialize it.
Congenital Nasolacrimal Duct Obstruction and *Dacryocele*

- When and how does dacryocele present? *At birth, as a bluish cystic swelling in the lacrimal sac region*

- Give three synonyms for dacryocele: *Mucocele; dacryocystocele; amniotocele*

- What is the key anatomic difference between congenital NLD obstruction and dacryocele? *NLD obstruction involves obstruction at only one site (below the sac), whereas in dacryocele there is obstruction at two sites—one below the sac, but another above it*

- What nasal finding is associated with dacryoceles? *A nasal mucocele*

- What happens, almost inevitably, by age two weeks or so?
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What nasal finding is associated with dacryoceles? A nasal mucocele.

What happens, almost inevitably, by age two weeks or so? The dacryocele becomes infected.
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*Is this infection similar to the smoldering, low-grade infection seen in congenital NLDO?*
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Is this infection similar to the smoldering, low-grade infection seen in congenital NLDO? No, it is much more acute and severe in its presentation.
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How is dacryocele managed?
- Pre-infection:
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- Pre-infection: Massage and topical abx; probing if needed
- Infected: Systemic abx and surgery
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Why are systemic antibiotics needed?

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Why are systemic antibiotics needed? With their immature immune systems, infants this young are relatively immunocompromised. Thus, without systemic abx, a severe local infection (ie, dacryocystitis) can quickly become a severe disseminated one.

What is meant by ‘surgery’?

Probing + marsupialization of the nasal mucocele.

Is transcutaneous I&D a reasonable option?

No. I&D runs a significant risk of producing a persistent fistula. Do not I&D a dacryocele!
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