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Approach to Chalazion and Stye

Developed by John Liu and Dr. Nawaaz Nathoo for PedsCases.com.
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Introduction:

Hi everyone! My name is John and I'm a recent graduate from medical school at UBC, and a current research fellow in ophthalmology at the University of Toronto. Today's podcast was designed with the help of Dr. Nawaaz Nathoo, an ophthalmologist in Vancouver, BC, and is designed to provide you with an overview of an approach to chalazia and styes. As these two ocular issues are commonly found in children, it is important to learn more about their diagnosis, management, and also the ability to distinguish them from other possible diagnoses when encountering a red eye.

Let's begin with the learning objectives. We have FOUR learning objectives to cover today. There will also be four sections to this podcast, with a clinical case presented at the beginning, which we will follow up with at the end.

Here are the learning objectives.

Learning Objectives

1. Distinguish between a chalazion and a stye in their clinical presentation, underlying pathophysiology, diagnosis, and management
2. Demonstrate an approach to advise and educate patients on effective methods of treating a chalazion and/or stye
3. Generate a differential diagnosis for patients with a red, swollen eyelid
4. Discuss when to refer a chalazion and/or stye to an ophthalmologist

I hope you find this podcast educational and entertaining, and I hope you enjoy this STY-le…of learning. *chuckle*

So, without further ado, let us BEGIN! *Play sound*

Case
We will begin our discussion about chalazia/stye with a case.

A 13-year-old boy named Timmy presents in your office, complaining of a red, swollen left eyelid. He states there is pain when he presses on his upper eyelid and he feels like his eyelid is drooping. His parents state that this has been present for about 1 week now, and it doesn't seem to be getting better. They are worried that it is something serious. Timmy also says that he's had red cheeks for a while now, and his parents also mention that Timmy has always blushed very easily.

On physical exam, the patient is afebrile, well-appearing, and cooperative. A cranial nerve exam reveals that CN II – XII are intact, including extraocular eye movements and visual acuity. On inspection of the left eye, you notice a localized red nodule on the middle of the inner upper eyelid of the patient's eye. There is mild ptosis of this eye. The nodule is firm, immobile, and the boy grimaces when you press on it. There is no swelling at the medial canthus or anywhere else on the upper eyelid. The right eye appears normal. You also notice some erythematous patches underneath both the boy's eyes, and some faint redness diffusely spread around his cheeks and nose.

The patient is otherwise healthy with no chronic medical conditions and takes no medications.

What is your diagnosis and what will you tell Timmy & his parents?

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1. General difference between a chalazia and stye (hordeolum)

To approach that case properly, let's review what a chalazia and stye really are. Chalazia and styes are both disorders of the eyelid. Now, the medical term for a stye is a hordeolum (spelled "h-o-r-d-e-o-l-u-m", hordeolum). So, from here on out, I will be using the word hordeolum to refer to styes. Just know that they are the exact same thing. The word "stye" may just be more familiar amongst patients.

As a chalazion and a hordeolum are both disorders of the eyelid, they often present similarly as a swollen, red nodule in the upper or lower eyelid. However, their differences are defined in their underlying pathophysiological processes. To understand this, it helps to clarify the anatomy of the eyelid. The posterior portion of the eyelids have a row of meibomian glands along the lid margin. Meibomian glands are a sebaceous gland that produce meibum, an oily substance that prevents evaporation of the eye's tear film. Anterior to the meibomian glands are the hair follicles, from which eyelashes grow. A chalazion is due to a sterile obstruction of the meibomian glands, resulting in a lipogranuloma formation – in other words, it's not an infection, it's just a blocked oil gland. A chalazion is usually slower growing. Hordeolum, on the other hand, is due to an infection and tend to appear faster. When we break hordeolum down even further, you can have an "internal" hordeolum, which is an infection of the meibomian gland, or an "external" hordeolum – which is an infection of the hair follicle. Because

hordeola are infections, a main differentiating factor is they are often more painful than chalazia.(1)

A useful mnemonic to remember this is that if you look at the word chalazion, it's spelt with a "ch-", so that makes me think of "chill". Chalazions are "chill" because they're not infected. Whereas a hordeolum or stye is not as chill, because it is infected. If it helps for you to remember the difference as a "chill-"azion, then feel free to pronounce it that way in your head!

Both a chalazion and hordeolum can cause significant irritation to children and distress to their parents or caregivers. They are both particularly common in patients with dry eyes, chronic blepharitis, or rosacea. Additionally, they can both cause ptosis and induced astigmatism.(2)(3)

When it comes to diagnosing a chalazion or a hordeolum, they are both a clinical diagnosis. There are not usually any tests or biopsies involved. However, when evaluating a patient with swelling of their eyelid, it is important to rule out other or more serious conditions – which we'll get to later on in this podcast.

Overall, you should know that a chalazion and a hordeolum may honestly look quite similar most of the time. And at the end of the day, it might not matter too much which one it is…and the reason why, is because the initial management of both is quite similar. And that brings us to the second section…

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2. Treatment

Let's talk about treatment. The most effective first-line treatment of a chalazion or hordeolum is warm compress. Warm Compress. Warm Compress. You'll probably hear this a lot, but it's because it can be very effective when done correctly! Oftentimes patients comment that they can be quite bothersome to do, and often difficult depending on the age and cooperation of the child, but the important thing is to really keep at it consistently. The recommendation is to hold the warm compress on the eyelid for 5-10 minutes at a time, 3-5 times a day.(1) However, in a young child, this may be difficult – in these cases, the more you can do it the better. Some warm compress is better than none!

Patients can use many types of materials for their warm compress – for example a face cloth with warm water, a tea bag, or even filling an old sock with uncooked rice, heating it in the microwave for 30 seconds, and then using that as the warm compress. The sock option might work well because the beads of rice are able to conform to the shape of the patient's eyelid. In children, this also may be more enjoyable, as a squishy sock with rice in it can be a fun toy they can play with, if it's perhaps decorated with one of their favourite socks!

Warm compresses work because they dilate the meibomian glands to improve flow so that the hardened oil that is blocking the duct is allowed to drain and heal.(2)(3) Therefore, there are two keys to a good warm compress: one is warmth, the other is the compression.

In terms of the warmth, it should feel warm to the touch but not be hot enough to burn your skin or be uncomfortable.

The other key is compression. This is something that often gets missed, both for children and adults. It's important to put firm pressure on the eyelid, not just rest the face cloth or teabag on the eyelid. If you don't feel a bit of pressure on your eyeball, you probably aren't using enough pressure.

Most chalazia and hordeola will resolve using this technique within weeks to months. In general, eyelid hygiene routines will work to treat and prevent the formation of new chalazia/hordeola. Mild cleansers such as commercial eyelid scrubs or even diluted baby shampoo can help break up debris on the eyelashes blocking the meibomian glands, and daily warm compress, even in the absence of any active chalazia or hordeola can be a good preventative measure. Recommend for caregivers to incorporate this into the child's nightly hygiene routine especially if children are prone to recurrence.

In some cases, it may be necessary to provide low dose systemic antibiotics in severe or recurrent cases.(4) In adults, typically doxycycline is used. However, using tetracyclines in general is contraindicated in children under 12 years of age due to concerns with teeth and bone development, so this should be reserved for the older pediatric age group. Other times, anti-inflammatory eye drops, ointments, or an injection into the eye may be needed.(5) Sometimes, it may be necessary to refer to an ophthalmologist to see what options are necessary…but before we get there, it's also important to consider what else the diagnosis could be, and to rule out other conditions of a swollen eyelid. And again, that brings us to the third section…

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3. Differential

It's important to consider other diagnoses of the swollen red eyelid in a child. Although there are many different things it could be, a few top diagnoses should be kept in mind.

The first thing to touch on is **dacryoadenitis and dacryocystitis**. These two are inflammatory or infectious conditions affecting specific spots of the lacrimal system of the eye. Dacryoadenitis refers to inflammation or infection of the lacrimal gland (which is in the lateral aspect of the upper eyelid) and can be associated with other conditions, such as sarcoidosis, Wegener's granulomatosis, thyroid ophthalmopathy, and Sjogren's syndrome.(6) So, it may be important to keep this diagnosis in mind if a child has any of those existing conditions. When it becomes infectious, it is often due to viruses in

children. Generally, one would find a well-circumscribed tender mass in the upper outer lid where the lacrimal gland sits; although the eyelid may look edematous and inflamed overlying the lacrimal gland, you wouldn't expect to find a discrete lump in the eyelid the way you would for a chalazion/hordeolum.

Dacryocystitis, on the other hand, is more common and occurs when there is an infection or inflammation with the lacrimal sac and duct which would localize to near the medial canthus. Acquired dacryocystitis usually begins when the lacrimal sac becomes partially or completely obstructed, and tears are unable to move into the nasal cavity. This stasis results in overgrowth of bacteria, causing an infection. In contrast to chalazia/hordeola, you would expect the infection to be localized to the medial canthus of the eye and there may be some reflux through the punctum when you press on the swollen area near the medial canthus. We should note that there is a congenital form of dacryocystitis, typically due to a dacryocystocele.(6) This would present in the first few days of life and often requires prompt surgical intervention.

The second thing to touch on is **pre-septal cellulitis and orbital cellulitis**. Generally, children may appear more ill and possibly febrile with these conditions when compared to a chalazion/hordeolum. In addition, the eyelid swelling would usually be more diffuse than with a chalazion or hordeolum, and more tender.

As a quick reminder about these conditions - in pre-septal cellulitis, the infection is *in front* of the orbital septum. The patient may have swelling, redness, fever, or pain, but no pain with movement of the eye, and vision should be normal. This is in contrast to orbital cellulitis where the infection is *behind* the orbital septum, affecting the deeper tissues. With this condition, the child would be expected to have pain with movement of their eye, they may have double vision, or blurry vision, and proptosis. While pre-septal cellulitis is treated with oral or IV antibiotics, orbital cellulitis is a more serious condition often requiring urgent surgical attention.(7)

So if you have a patient who you think has a chalazion or hordeolum, but you find they have decreased visual acuity or limitations in extraocular eye movements, orbital cellulitis should be considered. Additionally, if a child is presenting with fever and more significant pain and swelling, and appears more ill, but has normal extraocular eye movements and vision, pre-septal cellulitis should still remain a consideration.

Finally, the last thing to touch on is **malignancy**. This is much rarer, but it is important to consider this as a possibility, as it can sometimes appear quite similar to a chalazion or hordeolum. Malignancy can also present with a focal nodular growth on the eyelid, which may or may not be discoloured. Malignant tumors may cause loss of eyelashes or distort the position of the eyelid.(8) If your patient has a lid lump that either looks abnormal or is refractory to conservative treatment, you should probably keep malignancy in the back of your mind.

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Of course, if you're ever unsure, or if you have a case of a stubborn swollen eyelid that just isn't resolving the way you hope, you can always refer to ophthalmologist. And that brings us to our fourth and last section…

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4. What ophthalmology can do

So now we are at our final section, which is how ophthalmology can help. Oftentimes, an ophthalmologist can surgically drain a refractory chalazia/hordeolum. They could also give steroid injections for swollen chalazia. Of course, the consideration for surgery is more complex in young children who won't tolerate procedures as easily as an older child or adult might. Alternatively, ophthalmologists may also prescribe antibiotics such as metronidazole or low dose systemic tetracyclines in older children as discussed earlier.(9) Generally, however, conservative treatment is much more preferred in children.

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Back to the case

In the case presented at the beginning of this podcast, we must first consider that the patient appears well and healthy and is afebrile with a normal cranial nerve exam. This points away from a diagnosis of pre-septal or orbital cellulitis. There is a localized nodule on the middle of the upper eyelid, and it doesn't seem to be involved with the lacrimal sac, duct, or gland. Because it is tender to touch, you di agnose this as a hordeolum. The finding of the redness around his cheeks and under his eyes and the fact that the boy blushes very easily also arouses suspicion for rosacea, which would be a condition that would commonly predispose children to chalazia or hordeola. In particular, the subtype of ocular rosacea should be considered if a patient also endorses other ocular symptoms such as red, burning, itchy eyes, grittiness, blurred vision, or photophobia.

You advise Timmy and his parents that what he has is a stye (also known as a hordeolum). You tell him to hold a warm compress on his eyelid 3-5 times a day with some firm pressure. You also give him the idea to fill a sock with uncooked) rice and microwave it to press against his eye, which he seemed excited to do! However, you also offer for Timmy to come back in a few weeks for a follow-up. You advise that you are suspicious of Timmy having rosacea, and you want to follow him closely to see if symptoms for ocular rosacea develop. You tell Timmy's parents that overall this is nothing serious, although if the stye remains, blocks his vision, or more keep coming back, referral to an ophthalmologist is possible.

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Conclusion

And that's it! Let's review some of the key learning take-home points that we went over today.

1. A chalazion and a hordeolum are similar in presentation as nodule on an eyelid, although they are different in their underlying pathophysiological process. A chalazion is not an infection and tends not to be painful.
2. Warm compress is first line of therapy for both conditions to improve flow of meibomian gland secretions. Additionally, proper lid hygiene involving lid scrubs or dil uted baby shampoo can assist in treating and preventing chalazia/hordeola.
3. Considering other diagnoses of the swollen red eyelid is important; in particular, consider dacryoadenitis versus dacryocystitis, pre-septal cellulitis versus orbital cellulitis, and malignancy.
4. If a child presents with a refractory chalazion or hordeolum that doesn't go away with the suggested treatment, or you are concerned that something more serious is going on, you can always refer to an ophthalmologist.

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Thank you for listening to our podcast! And thank you to Dr. Nawaaz Nathoo for supervising this podcast. I hope you enjoyed listening to this approach to chalazion and stye as much as I've enjoyed making it. Stay tuned for more podcasts to come!

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