

Case 8

History of Present Illness

A 36-year-old, morbidly obese man noted pain behind his right eye and along his right temple for 3 months. It is constant with intermittent worsening for several hours at a time. The pain worsens with eye movement upward and with touching the eye. He denies vision loss, tearing, redness, eyelid swelling, double vision, or intracranial bruit. He has significant photophobia, but no phonophobia or osmophobia. He denies nausea or vomiting. He notes a history of temporal mandibular joint (TMJ) issues. He underwent an MRI and MRV brain, which showed a partially empty sella. He has tried prednisone starting at 100 mg daily with taper over several weeks, rizatriptan, and acetazolamide without benefit.

<i>Past medical and ocular history</i> Diabetes mellitus Hypertension Gastric ulcer Sleep apnea Depression	<i>Past surgical history</i> Sinus surgery Colonoscopy Appendectomy Cholecystectomy
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<p><i>Medications</i> Simvastatin Losartan Trazodone Prednisone 10 mg Lamotrigine Insulin Fluoxetine Clonazepam Vitamin D Rizatriptan Cetirizine Multivitamin</p>	<p><i>Family history</i> Diabetes Hypertension Migraine</p>
<p><i>Social history</i> Never smoked, casual drinker, works at a computer all day</p>	<p><i>Review of systems</i> Dry mouth Pain with chewing Shortness of breath with exertion Diffuse joint pain Diffuse muscle aches Low back pain Diarrhea on and off for years Reflux type pain for past few weeks</p>

Examination

Acuity with correction

Right eye: 20/25-1
 Left eye: 20/20

Pupils

Equal, round, briskly reactive, no afferent defect

Color vision

Normal

Intraocular pressure

Right eye: 19 mmHg
 Left eye: 21 mmHg

External exam

No edema, no redness, no ptosis
 Severe tenderness to palpation deep to the right superomedial orbital rim

Eye motility and alignment

Normal, but pain with eye movement up and down when looking to the left

Slit lamp examination

Normal, no injection, corneal staining

Visual field

Normal

Fundus examination

Normal, no diabetic retinopathy

Neurologic examination

Normal

Discussion

Ophthalmic Perspective: Dr. Lee

“Pain with eye movements” often represents a knee-jerk reaction for optic neuritis. Indeed, optic neuritis can also have tenderness to palpation of the globe. However, in this case, the patient is not complaining of visual loss nor demonstrating evidence of optic nerve dysfunction (color vision loss, afferent pupillary defect, visual field defect, acuity loss). The pain from optic neuritis may last up to 2 weeks, so this would be incredibly atypical. Other causes for pain with eye movements would include myositis (inflammation of an extraocular muscle), trochleitis, or orbital inflammation/infection. Of course, pain is such a squirrely symptom that patients with migraine, dry eye, and occipital neuralgia may complain of pain with eye movement as well—i.e. the symptom is not specific!

The patient is not demonstrating evidence of orbital inflammation such as proptosis, eyelid edema, conjunctival redness, or swelling. This could represent myositis or trochleitis. The trochlea is a fibrous band in the superomedial orbit through which the superior oblique tendon passes. Some patients may suffer inflammation of the trochlea and develop acute on chronic pain, worsened by eye movement. The patient herein has exquisite tenderness over the area of the trochlea, which strongly supports the diagnosis. Often, inflammation of the trochlea cannot be observed on neuroimaging or ultrasonography and is predominantly a clinical diagnosis. Myositis can affect the muscle belly or tendinous insertions of any of the six extraocular muscles. This causes enlargement and enhancement of the affected muscle on CT, MRI, or orbital ultrasound.

Normally, I would not order an MRI since I feel strongly that this is trochleitis. However, since we have it, I would take a look at the MRI for any missed eye muscle inflammation or fat stranding in the orbit. If this appears normal or if I do not have an MRI, then I would offer the patient an injection of corticosteroids to the trochlea. In many cases, patients are worried about an injection to the periocular region so I might offer a course of oral steroids or indomethacin. If the patient fails this, then they often opt for the injection at that point. I inject 0.5–1.0 mL of triamcinolone 40 mg/mL using a 25-gauge ½ in. needle. Triamcinolone is a suspension, so you cannot use a 30-gauge needle because it will not pass through. There have been case reports of periocular injections causing central retinal artery occlusions, so others use dexamethasone 4 mg/mL. Dexamethasone is short acting and triamcinolone is long acting, which is why I like to use it. Some of my colleagues mix the corticosteroids with 0.5 mL lidocaine 1 or 2% (without epinephrine) in the same syringe for a total of 1 mL. Lidocaine, if injected into an eye muscle will cause severe myotoxicity. Fortunately, it is the tendon that runs through the trochlea and there is a lower chance of a myotoxic event.

If you are going to give the injection, make sure the needle is directed superomedially and you draw back before injecting since the supraorbital vein lies temporal to the trochlea. Generally, the injection does not hurt, it does not bleed, and does not get infected. More than one injection may be required, but I like to wait at least 30 days between injections. It is my belief that everyone is entitled to get trochleitis once in their life and do not require a workup. If it is recurrent, then one could consider evaluation for rheumatoid arthritis, lupus, and sarcoidosis.

Table 8.1 ICHD 3 Diagnostic criteria for trochleitis

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- A. Periorbital and/or frontal headache fulfilling criterion C
 - B. Clinical and/or imaging evidence of trochlear inflammation
 - C. Evidence of causation demonstrated by *at least two of the following*:
 1. Unilateral ocular pain
 2. Headache is exacerbated by movement of the eye, particularly downward in adduction
 3. Headache is significantly improved by injection of local anesthetic or steroid agent into the peritrochlear region
 4. In the case of a unilateral trochleitis, headache is localized ipsilateral to it
 - D. Not better accounted for by another ICHD-3 diagnosis
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Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders: 3rd edition (beta version). *Cephalalgia*. 2013;33:629–808

Neurologic Perspective: Dr. Digre

Trochleitis is not rare, but it is not common either. The ICHD 3 beta suggests that the diagnosis can be made by having the pain resolve after an injection of the trochlea (see Table 8.1 for ICHD 3 criteria). In fact, he really meets all of the criteria for trochleitis. It is important to know that trochleitis can also worsen migraine. He does not really sound like he has migraine headache (even though he has a family history of migraine), and that is probably why the rizatriptan was not successful. However, trochleitis can also contribute to migraine. In fact, the patients that I have seen usually have underlying migraine. Having migraine does not keep an individual from having trochleitis and looking for causes that make headaches more chronic can really be helpful—get rid of the trochleitis and the continuous irritation of the trigeminal nerve, and the chronic migraine may improve. Many of the cases reported by Smith et al. had concurrent migraine. The other condition that he has is TMJ. However, in this case the pain would not be in the eye, but in the jaw. I think the key here was palpation of the trochlea during the examination that helped to make the diagnosis. It is also important to not over diagnose trochleitis. One study showed that individuals with migraine had tenderness around the trochlea and this is not trochleitis, but they propose that migraine causes sensitization of the superior oblique muscle and this irritation may worsen migraine.

Non-ophthalmic/Non-neurologic Perspective

We think it is important to palpate around the eye in patients with eye pain especially in the area of the trochlea, the lacrimal gland, the supraorbital, and infraorbital nerve (Fig. 8.1). Usually, the eye should appear white and quiet as in this case. There often is no swelling in the superonasal eyelid. The key to the diagnosis will be palpation of the trochlear region and the history of pain with eye

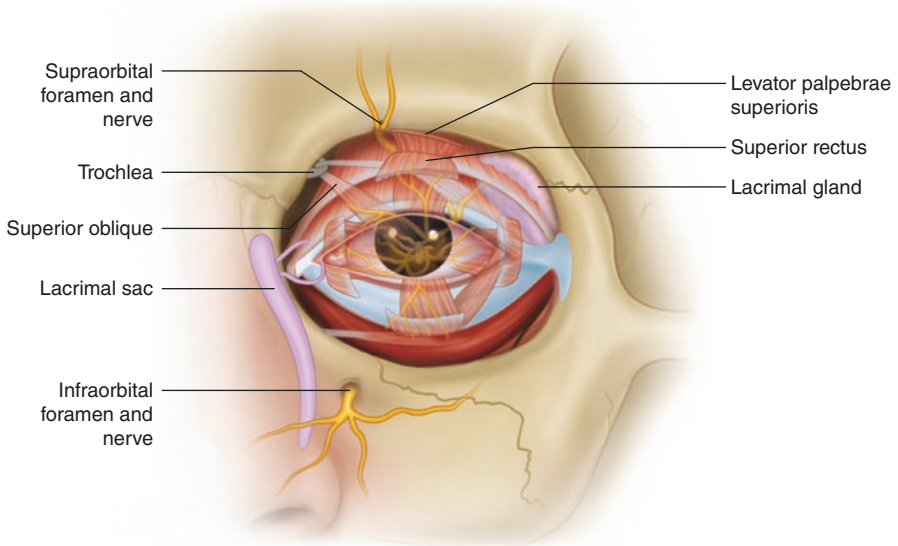


Fig. 8.1 Anatomy of trochlea. The trochlea sits under the superonasal orbital rim. Note the location of the supraorbital and infraorbital nerves, which can become inflamed in other disorders. The lacrimal gland sits under the superotemporal orbital rim

movements. Not all ophthalmologists or pain specialists will deliver this trochlear injection so you may want to ask around before sending the patient to someone. Neurologists may not be familiar with the diagnosis and usually will not give periocular injections.

Follow Up

Review of his MRI showed that the trochlea was not imaged (not uncommon) on the axial or coronal views. The patient elected for a trial of indomethacin without benefit. An injection of 1 mL of triamcinolone 40 mg/mL on a 25-gauge ½ in. needle was delivered to the area of the patient's trochlea. There was no bleeding. The patient noted gradual improvement in the pain over the course of 1 week. He returned for a repeat injection 1 month later because of a recurrence of pain (not to the same level as before). He remained pain-free at 6 months follow up. *Final diagnosis: trochleitis or primary trochlear headache.*

For Further Study

1. Fernández-de-Las-Peñas C, Cuadrado ML, Gerwin RD, Pareja JA. Myofascial disorders in the trochlear region in unilateral migraine: a possible initiating or perpetuating factor. *Clin J Pain*. 2006;22(6):548–53.
2. Pareja JA, Sanchez del Rio M. Primary trochlear headache and other trochlear painful disorders. *Curr Pain Headache Rep*. 2006;10:316–20.
3. Smith JH, Garrity JA, Boes CJ. Clinical features and long-term prognosis of trochlear headaches. *Eur J Neurol*. 2014;21:577–85.
4. Yangüela J, Pareja JA, Lopez N, Sánchez Del Río M. Trochleitis and migraine headache. *Neurology*. 2002;58(5):802–5. PubMed PMID: 11889246.