Case Reports in Ophthalmology

Case Rep Ophthalmol 2022;13:1030–1035
DOI: 10.1159/000527910
Received: September 16, 2022
Accepted: October 31, 2022
Published online: December 22, 2022



**Case Report**

# Very Challenging Cases to Diagnose: Concealed Foreign Bodies in the Upper Palpebral Conjunctiva Should Always Be Kept in Mind in Unresolved, Long-Lasting Chronic Ocular Pain

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**Keywords**
Concealed foreign body · Upper palpebral conjunctiva · Unresolved long-lasting chronic ocular pain · Case report

**Abstract**
Ocular pain is a common complaint, and anything that stimulates the sensory nerve terminals innervating the eye, the peripheral axons of neurons located in the trigeminal ganglion, can cause it. An undetected ocular foreign body sometimes masquerades as a common condition such as dry eye or other frequencies, which can misguide both the doctor and the patient into an endless cycle of ineffective therapies and incomplete diagnoses. In recent years, as the concept of neuropathic pain has become more widely recognized, cases of idiopathic ocular pain in which the actual cause of the discomfort is a foreign body seem to be increasingly misdiagnosed as neuropathy. This report reviews cases in which hidden foreign bodies were responsible for unresolved, long-lasting chronic ocular pain. All records referencing the phrase "foreign body removal" were extracted from the outpatient clinic notes recorded by the author (H.T.) between 2016 and 2018 at Ashikaga Red Cross Hospital using the search engine of the computerized record system. There were 3 cases that were very difficult to diagnose: (1) a very minute iron shard in a 72-year-old female cataract surgery patient, (2) a deeply hidden eyelash in a 60-year-old female with varicella-zoster virus-related keratoconjunctivitis, and (3) an extremely small grain of sand in an 83-year-old female diagnosed with dry eye. In all cases, the foreign body was detected in an area of the upper palpebral conjunctiva without typical pathognomonic signs.

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Removing the foreign bodies led to immediate and dramatic relief of long-lasting, previously unresolved chronic ocular pain.



## Introduction

Ocular pain is a common complaint, and it is critical to select an appropriate approach to resolve it [1–3]. Ocular pain can be a symptom of many ophthalmic diseases, such as dry eye, corneal ulcers, infectious keratitis or conjunctivitis, and eye-related inflammatory immune disorders. Anything that stimulates the sensory nerve terminals innervating the eye, the peripheral axons of neurons located in the trigeminal ganglion, can cause ocular pain [4]. In clinical settings, the causes of ocular pain are commonly diagnosed by referencing the circumstances in which they occur. An undetected ocular foreign body sometimes masquerades as a common condition such as dry eye, which can misguide both the doctor and patient into an endless cycle of ineffective therapies and incomplete diagnoses. In recent years, the concept of neuropathic pain, which is described as pain caused by a lesion or disease of the somatosensory nervous system [5] or a direct injury or functional disturbance of the neural elements involved in the detection and processing of nociceptive stimuli [6, 7], has become increasingly recognized, which may exacerbate the situation of misdiagnosed foreign bodies; cases of idiopathic ocular pain, in which the actual cause of the discomfort is a foreign body, seem to be increasingly misdiagnosed as neuropathy. These misdiagnoses sometimes pose a critical problem in which the issue goes unresolved and can persist indefinitely until the actual cause, a concealed foreign body, is removed. This report reviews cases in which hidden foreign bodies were ultimately responsible for long-lasting, unresolved chronic ocular pain.

## Case Report

### *Materials and Methods*

All records referencing the phrase “foreign body removal” were extracted from the outpatient clinic notes recorded by the author (H.T.) over 26 months between January 1, 2016, and February 28, 2018, at Ashikaga Red Cross Hospital in Japan using the search engine of the computerized record system. The records were reviewed to identify cases where foreign bodies were responsible for unresolved chronic ocular pain.

### *Results*

There were 51 cases where foreign body removal was performed during the observation period. These foreign bodies included eyelashes, sand, wood, metal, exposed lithiasis conjunctivae, insects, string, dust, and unidentifiable objects. Among patients in whom foreign bodies were responsible for the long-lasting, unresolved ocular pain, we identified the following 3 cases whose causes had been misidentified at first: (1) a very minute iron shard in a 72-year-old female cataract surgery patient, (2) a deeply hidden eyelash in a 60-year-old female with varicella-zoster virus (VZV)-related keratoconjunctivitis, and (3) an extremely small grain of sand in an 83-year-old female diagnosed with dry eye. In all cases, the foreign body was detected somewhere in the upper palpebral conjunctiva without typical pathognomonic signs. Removal of the foreign bodies led to immediate and dramatic relief of long-lasting, unresolved chronic ocular pain.

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## Case Details

*Case 1*

A 72-year-old female underwent cataract surgery on November 2, 2018, at Ashikaga Red Cross Hospital. She complained of postoperative eye pain 1 day after surgery. There was no substantial difference in the appearance of the eye, including corneal staining on slit-lamp microscopic examination. At first, on the basis of her symptom, she was diagnosed with postoperative pain caused by a corneal surgical incision, and she was prescribed routine postoperative eye drops. However, an undetected foreign body, a very minute iron shard on the upper palpebral conjunctiva (Fig. 1a1 and 2) that was challenging to see, was ultimately found and removed 1 month after surgery, leading to complete relief of the unresolved chronic postoperative ocular pain immediately. During a 6-month follow-up period after surgery, there was no recurrence of ocular pain.

*Case 2*

A 60-year-old female diagnosed with VZV-related keratoconjunctivitis at the dermatology department in Ashikaga Red Cross Hospital was referred to the ophthalmology department on September 6, 2016. She had severe eye pain with diffuse corneal staining and was diagnosed with VZV-related trigeminal nerve neuralgia. She was prescribed antiviral ointment and steroidal eye drops. As the therapy regimen was being tapered, the frequency of antiviral ointment application was changed in response to the pain level. However, at the 6-month follow-up visit after the first diagnosis, a deeply hidden eyelash (Fig. 1b1 and 2) was finally exposed and detected in a deep area of the upper palpebral conjunctiva with the "shaking technique" (Fig. 1b3 and 4). Its removal led to immediate and dramatic relief of chronic pain. During the additional follow-up period of 6 months, no recurrence of ocular pain was reported.

*Case 3*

An 83-year-old female consulted with Ashikaga Red Cross Hospital on May 19, 2017. At her previous eye clinic, she had been diagnosed with dry eye and prescribed eye drops for 6 months to alleviate ocular pain. At the first visit to Ashikaga Red Cross Hospital, there was no substantial abnormality in the appearance of the eye, including corneal staining. Nevertheless, a minute grain of sand was detected on the upper palpebral conjunctiva during a thorough slit-lamp microscopic examination. Removal of this very small foreign body (Fig. 1c1 and 2) led to the immediate disappearance of the long-lasting, unresolved chronic ocular pain. There was no recurrence of pain after the procedure.

## Discussion

We identified cases in which foreign bodies were responsible for long-lasting, unresolved chronic ocular pain by using the search engine of the computerized record system of the hospital. In postoperative cases, such as case 1, surgical injuries or pre- and postoperative sanitization of the eyes are often considered one of the causes of ocular pain. In cases occurring after an infection, such as case 2, the lesions caused by the responsible pathogens are usually regarded as the cause of ocular pain. In patients diagnosed with some ocular conditions, as in case 3, the disease under treatment is often taken to be the cause of pain. Although these diagnoses are valid in most cases, a foreign body concealed in the upper palpebral conjunctiva, such as a very minute iron shard possibly broken off a surgical instrument (case 1), a deeply hidden eyelash (case 2), or an extremely small object such as a

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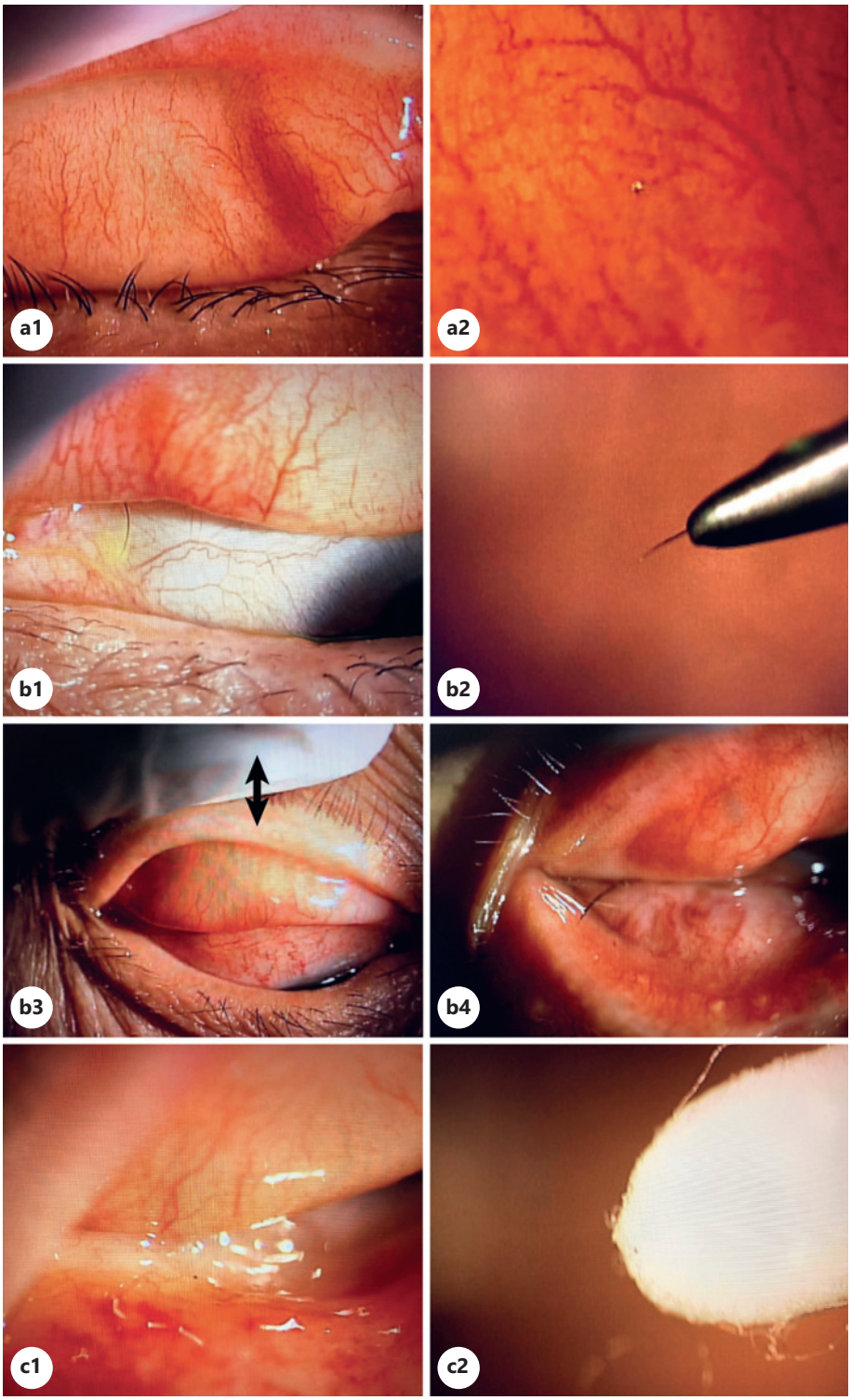


**Fig. 1.** Foreign bodies that were responsible for long-lasting, unresolved chronic ocular pain. A very minute iron shard (**a1**, **a2**), a deeply hidden eyelash (**b1**, **b2**), and an extremely small grain of sand (**c1**, **c2**) are shown. The "shaking technique," the gentle massage of the evaginated palpebral conjunctiva upward and downward, was used to expose and detect a concealed, deeply hidden eyelash (**b3**, **b4**). Foreign bodies can be so small or located in such hard-to-access areas of the eyeball that even highly experienced ophthalmologists may fail to detect them on slit-lamp microscopic examination.

grain of sand (case 3), could be the actual cause of the ocular pain. In cases such as these representative situations, the long-lasting, unresolved chronic ocular pain often disappears immediately after the causative object is removed. Owing to the sensitive nature of the ocular surface, even a very minute foreign body could cause intolerable pain in patients. Thus, many patients present with ocular pain in clinical settings. These foreign bodies can be located in hard-to-access areas of the eye, such as the deep area of the upper palpebral conjunctiva, where even highly experienced ophthalmologists may fail to detect them under slit-lamp microscopic examination. Corneal injury staining such as linear scratches, a typical pathognomonic sign due to a foreign body in the upper palpebral conjunctiva, was often missing, as in the three representative cases presented here. When a patient complains of unresolved chronic ocular pain, a thorough check-up such as double evagination (evagination of the evaginated upper eyelid), repeated evagination, or gentle massage of the upper evaginated palpebral conjunctiva upward and downward (the author, H.T., has named this procedure the "shaking technique"; Fig. 1b3 and 4) with slit-lamp magnification must be performed to avoid overlooking foreign bodies of any kind, which are sometimes located in deep areas of the upper palpebral conjunctiva. The clinician must also irrigate the eye with saline solution and use a drop of fluorescein to detect transparent foreign bodies, such as pieces of glass or plastic; these materials can be difficult to detect otherwise.

There is a possible limitation to this study. Although all records that referenced "foreign body removal" were extracted by the search engine associated with the record system, there may have been cases whose notes did not include the keywords and consequently were not detected by the search. For this reason, the total number of patients identified might be smaller than the actual number. However, this issue does not interfere with the intention of the current case-study report.

In conclusion, every clinician must always keep in mind the possibility of a concealed foreign body in the eye that is challenging to see, especially in an area that is difficult to examine, such as the cul-de-sac of the upper palpebral conjunctiva, before diagnosing a patient with ocular pain caused by other conditions. The CARE Checklist has been completed by the author for this case report and is attached as supplementary material (for all online suppl. material, see www.karger.com/doi/10.1159/000527910).

## Acknowledgment

We thank the members of the Ashikaga Red Cross Hospital staff who were involved in this study.

## Statement of Ethics

We adhered to the tenets of the Declaration of Helsinki. This study protocol was reviewed and approved by the Ethics Committee of Ashikaga Red Cross Hospital, approval No. [2017-22]. Written informed consent was obtained from the patients for publication of the details of their medical cases and any accompanying images.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

## Funding Sources

No funding or sponsorship was received for this study or for the publication of this article.

## Author Contributions

Hirotaka Tanabe conceived the study, collected the data, analyzed the results, and wrote the manuscript.

## Data Availability Statement

All data relevant to the study are included in this article.

## References

1 Lee AG, Al-Zubidi N, Beaver HA, Brazis PW. An update on eye pain for the neurologist. Neurol Clin. 2014 May;32(2):489–505.
2 Ringeisen AL, Harrison AR, Lee MS. Ocular and orbital pain for the headache specialist. Curr Neurol Neurosci Rep. 2011 Apr;11(2):156–63.
3 Waldman CW, Waldman SD, Waldman RA. A practical approach to ocular pain for the non-ophthalmologist. Pain Manag. 2014 Dec;4(6):413–26.
4 Belmonte C, Acosta MC, Merayo-Lloves J, Gallar J. What causes eye pain? Curr Ophthalmol Rep. 2015 Jun;3(2):111–21.
5 Merskey H, Bogduk N. Classification of chronic pain: descriptions of chronic pain syndromes and definitions of pain terms. Seattle: IASP Press; 1994.
6 von Hehn CA, Baron R, Woolf CJ. Deconstructing the neuropathic pain phenotype to reveal neural mechanisms. Neuron. 2012 Feb;73(4):638–52.
7 Devor M. Response of nerves to injury in relation to neuropathic pain. In: McMahon S, Koltzenburg M, Tracey I, Turks D, editors. Wall and Melzack's textbook of pain. Philadelphia: Elsevier; 2013. p. 905–27.