

## Case Report

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# Large Number of Eyelashes in the Lacrimal Sac Found by Dacryoendoscopy: A Case Report

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### Keywords

Eyelash · Lacrimal sac · Dacryoendoscope · Sheath

### Abstract

Foreign objects sometimes enter the lacrimal sac. Here, we report the case of a patient with many comb-shaped eyelashes in the lacrimal sac and discuss the potential of using dacryoendoscopy to detect and remove foreign bodies from the lacrimal apparatus. A 65-year-old woman with a teary eye underwent dacryoendoscopy. There was no abnormality in the canaliculi. The internal ostium was blocked by a large number of black, comb-shaped eyelashes. Numerous bunched eyelashes covered with small white debris were found in the upper part of the lacrimal sac. No eyelash bundles were present from the lower lacrimal sac to the nasolacrimal duct, and the mucosa was normal. The saline was able to pass through; however, the lower part of the nasolacrimal duct was narrowed into a funnel shape. We widened it with a sheath while observing the endoscopy images. Eyelashes were flushed from the lacrimal sac through the nasolacrimal duct using the sheath and saline flow. A lacrimal tube was placed for 2 months and removed, and then the patient healed without dacryocystorhinostomy.

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### Introduction

Patients often come to the outpatient clinic with symptoms of increased tearing and ocular discharge; however, we generally do not suspect that there is something in the lacrimal duct that causes symptoms. Lacrimal surgeons have found dacryoliths [1] and iatrogenic products [2, 3] in the lacrimal sac. There has also been a previous report of a single eyelash in a dacryolith removed via dacryocystorhinostomy (DCR). This is the first report of a large number of

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eyelashes in the lacrimal sac found and treated via dacryoscopy [4–6]. The CARE Checklist has been completed by the authors for this case report, provided as supplementary material (for all online suppl. material, see [www.karger.com/doi/10.1159/000528637](http://www.karger.com/doi/10.1159/000528637)).

## Case Report

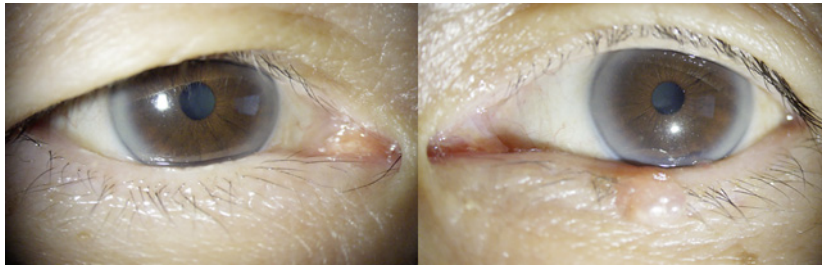
A 65-year-old woman presented for consultation with a 1-month history of epiphora and discharge of the right eye. The patient had no history of ophthalmologic problems or use of eye drops as well as of eyelash perms, eyelash extensions, or other eyelash cosmetic procedures and had not worn eye makeup for more than 10 years. She was in good health and had no mental illness related to trichotillomania. A slit-lamp microscopic examination revealed that she had no conjunctivitis or eyelash baldness. The tear meniscus height was slightly elevated in the right eye (Fig. 1). The upper and lower puncta were open. Irrigation saline fluid was refluxed through the opposite punctum without mucus which did not pass to the nasopharynx. We diagnosed her with common canalicular obstruction and decided to perform dacryoscopy-assisted intubation.

We performed dacryoscopy using a commercial scope (RUIDO FT-203F DD10 [10,000 elements]; Fiber Tech Co., Ltd., Tokyo, Japan). Lidocaine eye drops (4%) were used for conjunctiva and intracanalicular anesthesia, and infratrochlear nerve block was performed with 2% lidocaine. After expanding the punctum, a dacryoscopic probe with a sheath [7] (Fig. 2) was inserted into the upper punctum. Saline was injected through the water channel to obtain a better view. There was no abnormality in the canaliculi (Fig. 3a). The internal ostium was blocked by a large number of black, comb-shaped masses (Fig. 3b). The dacryoscope was able to successfully cross the internal ostium by pushing the eyelashes with the sheath. Numerous clumping eyelashes, covered with small white debris, were found in the lacrimal sac. No eyelash bundles were present from the lower lacrimal sac to the nasolacrimal duct, and the mucosa was normal (Fig. 3c). Saline could pass through; however, the lower part of the nasolacrimal duct was narrowed into a funnel shape. We widened it with the sheath while observing the endoscopy images. Using a dacryoscope with a sheath, the eyelashes were directed downward toward the nasolacrimal duct (Fig. 3d) which easily flowed through the lower opening under the pressure of the sheath and saline (Fig. 3e). After confirming that there were no eyelashes in the lacrimal duct, a lacrimal tube (LACRIFAST CL Short, Rohto Pharmaceutical Co., Ltd., Osaka, Japan) was inserted.

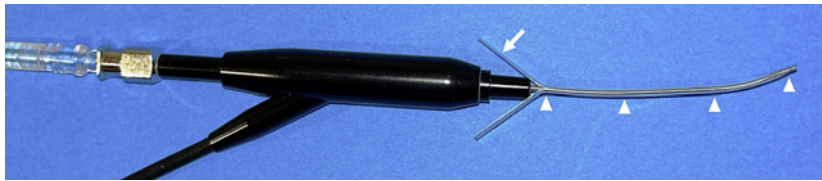
Lacrimal syringing was performed every 2 weeks for 2 months. The tube was removed 2 months postoperatively, and the lacrimal pathway was explored using a dacryoscope. There were no eyelashes in the lacrimal pathway, and the lumen was clean. The patient continues to improve and shows no sign of epiphora or discharge.

## Discussion

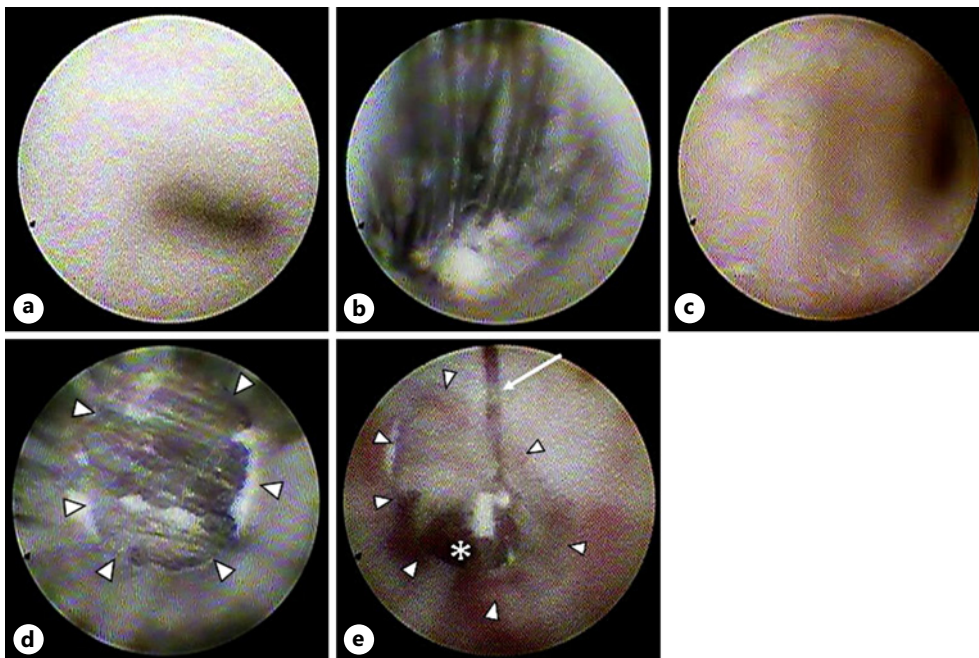
In this case, a large number of eyelashes had accumulated in the lacrimal sac. We sometimes see eyelashes straying into the lacrimal punctum. Nagashima reported 88 cases of eyelash impactions in lacrimal puncta among 34,256 outpatients [8]. Tears enter the lacrimal sac through the lacrimal punctum via the negative pressure created by the movement of the orbicularis oculi muscle associated with blinking [9, 10]. There is also the Krehbiel flow phenomenon [11], which is the continuous suction of tears from the lacrimal punctum when the eyelids are open. It is thought that the lashes may have been carried along these tear streams through the lacrimal punctum and into the lacrimal sac.



**Fig. 1.** Slit-lamp photos of both eyes. The height of the tear meniscus is approximately 0.3 mm on the right and 0.2 mm on the left. The right tear meniscus is higher than the left.



**Fig. 2.** A macroscopic image of the dacryocystoscopy loaded with a sheath. We cut an 18-gauge catheter and used it as a sheath for the dacryocystoscopy. The arrowhead is the part of the dacryocystoscopy covered by the sheath. The part of the arrow can be pinched with a finger or forceps. When this part is held and moved, the sheath can be moved in front of the dacryocystoscopy and the eyelashes can be moved while looking through the dacryocystoscopy.



**Fig. 3.** Photograph of the inside of the lacrimal duct as seen through the dacryocystoscopy. **a** The superior canaliculus was normal. **b** The internal ostium was blocked by a large number of eyelashes. The whitish debris was attached to the eyelashes. **c** No eyelash bundles were present from the lower lacrimal sac to the nasolacrimal duct, and the mucosa was normal. **d** The dacryocystoscopy is surrounded by a sheath (arrowhead), which is shifted slightly forward and pushed and changed the direction of the eyelashes. **e** Some eyelashes (arrow) had become trapped at the blind end. The valve of Hasner was opened, and the sheath (arrowhead) and the eyelashes were pushed out into the nasal cavity (asterisk).

The lower part of the lacrimal sac moves differently from the upper part, and the nasolacrimal duct does not have active dynamic tear conduction. Therefore, we speculated that for some reason, the trapped lashes did not flow downward but accumulated in the upper part of the lacrimal sac.

There were many white deposits on the eyelashes. Dacryoliths with hair nuclei have been found and reported not only in the lacrimal sac but also in lacrimal gland ductules [12, 13]. Mano reported that the core proteins of dacryoliths can be characterized by immune and inflammatory responses, as confirmed by the top 20 abundant proteins [14]. In this case, we may have observed the process of inflammation against a foreign substance, the eyelash, that leads to the formation of dacryoliths.

A major limitation of this case report is that we were unable to capture a macrophotograph of the reported eyelashes. This is because the eyelashes had flowed cleanly out of the nasolacrimal duct; when we later examined the nasal cavity with a nasal endoscope, there were no eyelashes present. Another limitation is that the reason why many of the lashes got caught remains unresolved.

DCR is often performed for lacrimal duct obstruction. Recently, a dacryoscopy, which enables clear observation of the lacrimal duct, has been developed. When the sheath is used with the dacryoscopy, it becomes easier to operate. Therefore, in this case, we were able to perform a less invasive dacryoscopic treatment in outpatient surgery without DCR. Dacryoscopy can be used to detect and remove foreign bodies from the lacrimal apparatus.

## Statement of Ethics

This retrospective review of patient data did not require ethical approval as per local/national guidelines. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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The authors did not receive any funding for this work.

## Author Contributions

Akemi Iwasaki and Yoichi Manabe evaluated the findings of patients and collected data. Akemi Iwasaki performed the surgery and wrote the manuscript.

## Data Availability Statement

All data analyzed in this study are included in this article. Further inquiries can be directed to the corresponding author.

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