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CLINICAL ARTICLE

# CANALICULITIS CAUSED BY LACRIMAL CONCRETIONS. CASE REPORT

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**Abstract**

Canaliculitis is inflammation of lacrimal canaliculus. It is a very uncommon condition which is usually misdiagnosed and mistreated. *Actinomyces israelii* is the most common pathogen, which causes chronic inflammation in the upper parts of the tear drainage system. Due to long-term infectious inflammation canalicular concretions are formed, which can obstruct the lacrimal outflow system. General complaints of the patients include watering, purulent discharge, eye redness, swollen eyelid. We present 3 clinical cases of persistent canaliculitis which needed surgical treatment to rescue from the conditions leading to successful outcomes.

***Keywords:*** *Canaliculitis, Canalicular concretions, 3-snip canaliculotomy, Actinomyces israelii, Epiphora, Discharge*

## Introduction

Canaliculitis is a chronic infectious inflammation of the upper, lower or common canaliculi. Sometimes both canaliculus can be included.[1,2] Primary canaliculitis is oftenly calculous, the most common infectious agent is *Actinomyces israelii* gram positive bacteria. Secondary canaliculitis is plug related, the main pathogen is *Pseudomonas aeruginosa*. It occurs after silicone plug insertion in patients with dry eye disease. Symptoms include epiphora, conjunctivitis, purulent discharge, eyelid mattering, pouting punctum. Other findings include sulfur granules extruded from the punctum via massage or during canaliculotomy. Examination should include palpation of the medial canthal region and eyelids, slit lamp examination. Histopathological and microbiological examination of the concretions can also be held. Medical management with antibiotics may temporarily improve symptoms, but recurrence or persistence of disease is common. Surgical management is a definitive treatment for canaliculitis. The different surgical options include punctal dilation, punctoplasty with curettage, canaliculotomy, canaliculotomy with intubation.[3]

Our purpose is to compare the clinical features and surgical treatment efficiency between patients with a

long history of canaliculitis. A total of 3 consecutive patients with similar symptoms and disease development were included. The charts of patients were reviewed for age, sex, duration of symptoms, history of lacrimal system intervention or canalicular injury, treatment and surgery features.

## Case presentation

### Case 1

A 65-year-old female presented to the Malayan Eye Center with complaints of left eye watering, persistent purulent discharge, eye redness and swollen eyelid (Figure 1A). Complaints started 5 years ago, there is no history of plug insertion or eyelid injury. According to the patient's relatives, conservative treatment with topical antibiotic drops and ointments had temporary positive results and after a while the complaints returned.

On a slit lamp examination, we saw swollen hyperemic upper punctum, hyperemic conjunctiva, the pressing over the canaliculus projection revealed mucopurulent discharge (Figure 1B). A clinical diagnosis was left eye upper canaliculitis. 3-snip canaliculotomy with canaliculi irrigation was made to the patient, which reveals multiple concretions (Figure 2 A, B).

Concretions have been sent for histopathological examination (HPE), which showed presence of crystal structures, inflammatory cell infiltrates (lymphocytes, plasma cells, histiocytes) and seromucinous glands. This is the proof that the reason for persistent canaliculitis is the chronic inflammatory process and not the metabolic changes as we can see during cholelithiasis or urolithiasis. After the operation our patient showed positive postoperative results and no recurrence of complaints (Figure 2C).


***Figure 1.*** *Canaliculitis (A), pressing over the upper punctum reveals purulent discharge (B)*

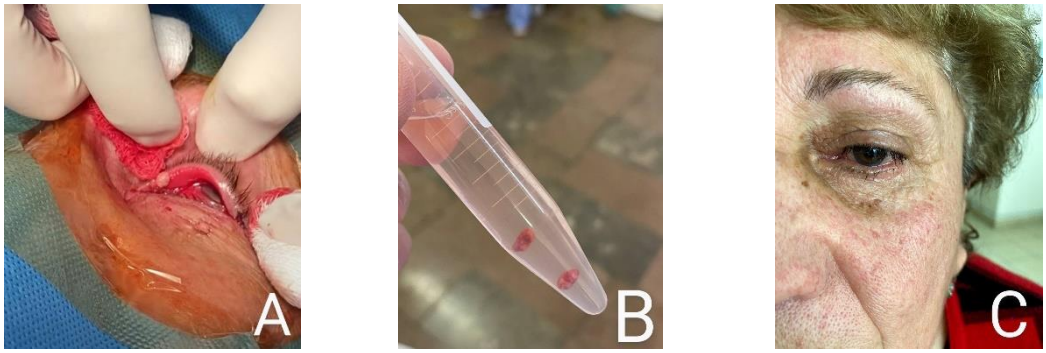


***Figure 2.*** *Concretions found during operation(A), concretions have been sent for HPE (B), 1 week post-op(C)*

**Case 2**

A 62-year-old male presented to Malayan Eye Center with long term complaints of left eye watering, heavy purulent discharge, lower eyelid retraction, upper eyelid mass for 2-3 years (Figure 3A). There was a history of failed conservative treatment with large amounts of topical antibiotics and other eye drops, out of desperation he even rubbed alcohol on his eyelids. On examination we saw upper pouting punctum, lower eyelid retraction and mucopurulent discharge coming out of upper punctum during upper canaliculus press (Figure 3B). The diagnosis was left eye canaliculitis, granuloma and lower eyelid retraction.

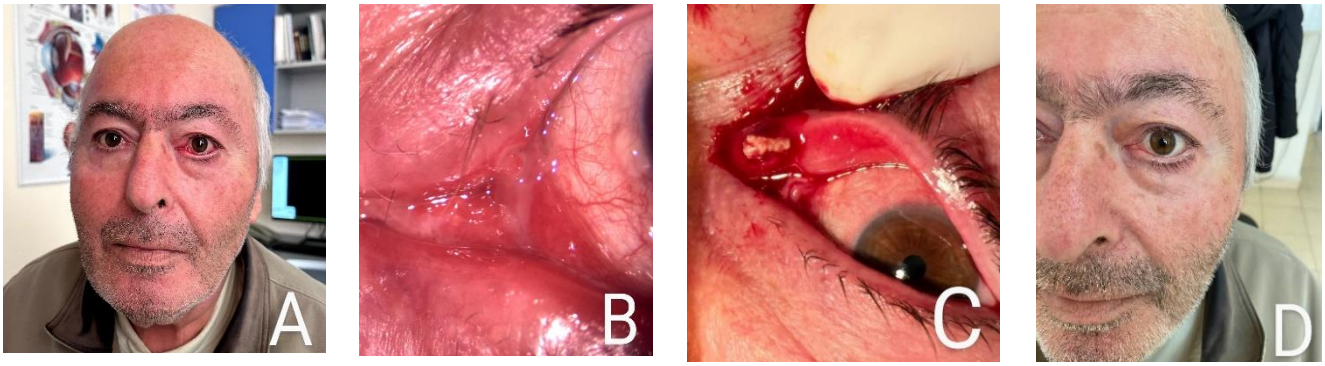


***Figure 3.*** *Left eye upper canaliculitis and lower eyelid retraction (A), upper canaliculitis with granuloma(B), concretions found during 3-snip canaliculotomy (C), 1 week after operation (D) 3-snip canaliculotomy with granuloma removal and lower eyelid diamond excision were performed sequentially. Concrements were extracted from the upper canaliculus during the operation (Figure 3C). As a result, all the complaints successfully disappeared (Figure 3D).*

**Case 3**

A 73-year male presented to Malayan Eye Center with complaints of right eye recurrent purulent discharge, epiphora and lower eyelid mass for the past 2 years *(Figure 4A)*.

He had received different topical medical treatment with no resolution. A clinical diagnosis of right eye canaliculitis was made. A 3-snip canaliculotomy with irrigation was performed to the patient, which revealed heavy concretions *(Figure 4B).*

1 week after the operation, we see a completely clean eyelid and a happy patient without any complaints *(Figure 4C).*


***Figure 4.*** *Right eye lower canaliculitis (A), canaliculus concretions (B), 1 week post op (C)*

## Discussion

Canaliculitis is an inflammation of lacrimal canaliculus. It is a very uncommon, often misdiagnosed and mistreated disease. Studies have demonstrated female preponderance; more common age is over 50 years old. It is usually monolateral and can mimic many other common ocular conditions. Inflammation is usually caused by infection; the most common pathogen is *Actinomyces israelii*. Other less common pathogens include Candida albicans, Nocardia asteroides, Aspergillus, HSV, VZS, Staphylococcus, Streptococcus and others. Canaliculitis is generally calculous and caused by concretions which obstruct the tear outflow system. Concretions have a completely inflammatory character and they are formed due to persistent infectious inflammation inside the canaliculus. Canaliculi due to their narrow and complex structure create a favorable environment for the persistence of infectious-inflammatory processes and the formation of concretions.[4,5]

Patients usually present with chronic unilateral red eye, epiphora and discharge, which can be from simple watery consistency to mucopurulent. Patients may describe months of these symptoms and a history of antibiotic treatments with no results. The patient may typically describe a swollen mass on the medial eyelid margin.

The diagnosis of canaliculitis is clinical. The punctum has a classic, red swollen appearance "pouting punctum". Pressure over the punctum or the canaliculus will express purulent discharge confirming the diagnosis. Other diagnostic methods that may be used include histopathological examination (HPE), microbiological culture, ultrasound biomicroscopy (UBM), dacryoendoscopy, dacryocystography.

Conservative management includes warm compresses, topical and systemic antibiotics, local massage, irrigation or syringing.[6] All these may temporarily improve symptoms, but recurrence or persistence of disease is common. Surgical treatment, especially punctoplasty or canaliculotomy, is generally considered a definitive treatment for canaliculitis.

## Conclusion

All of our 3 patients had concretions inside their canaliculus, which revealed only after canaliculotomy. All patients were presenting a long history of disease and failed conservative treatment with topical antibiotics. In our 3 patients example we saw that medical treatment has low efficiency in canaliculitis, and even if the symptoms disappear after medical treatment, they are very likely to return. The only definitive treatment is surgical. 3-snip canaliculotomy is little invasive to punctum and canaliculi and is a highly effective surgical procedure for patients with recurrent canaliculitis.

## Disclosure

### *Conflicts of interest and financial disclosures*

The author declares that he has no conflict percent and there was no external source of funding for present research.

### *Source of funding*

The work was not funded.

### *Ethical approval*

The study was approved by the University ethics committee and was conducted in accordance with the Declaration of the World Medical Association. Informed consent Patients were informed verbally and in writing about the study and gave written informed consent.

### *Informed consent*

Informed consent was obtained from all individual participants included in the study.

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## ԱՐՑՈՒՆՔԻ ԿՈՆԿՏԵՄԵՆՏՆԵՐՈՎ ԱՌԱՋԱՑԱԾ ԿԱՆԱԼԻԿՈՒԼԻՏ: ԿԼԻՆԻԿԱԿԱՆ ԴԵՊՔ


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[3] Երևանի պետական բժշկական համալսարանի ակնաբուժության ամբիոնի օրդինատոր, Երևան, Հայաստան



**Ամփոփում**

Կանալիկուլիտը արցունքատար կանալների բորբոքումն է: Սա շատ հազվագյուտ հիվանդություն է, որը սովորաբար ենթարկվում է սխալ ախտորոշման և բուժման: *Actinomyces israelii*-ն ամենահաճախ պաթոգենն է, որն առաջացնում է արցունքատար համակարգի վերին հատվածների խրոնիկական բորբոքում: Որպես ձգձգված խրոնիկական բորբոքման հետևանք առաջանում են կանալիկուլյար կոնկրեմենտներ, որոնք հանգեցնում են արցունքատար ուղիների օբստրուկցիայի: Պացիենտների հիմնական գանգատներն են արցունքահոսությունը, թարախային արտադրությունը, աչքի կարմրությունը, կոպի այտուցը: Մենք ներկայացնում ենք խրոնիկ կանալիկուլիտի 3 կլինիկական դեպք, որոնք վիրահատական միջամտության կարիք ունեին խուսափելու համար բարդություններից և բարեհաջող ելքի հասնելու համար:


## КАНАЛИКУЛИТ, ВЫЗВАННЫЙ СЛЕЗНЫМИ КОНКРЕМЕНТАМИ. КЛИНИЧЕСКИЙ СЛУЧАЙ


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**Аннотация**

Каналикулит это воспаление слезных канальцев. Это очень редкое заболевание, которое обычно неправильно диагностируется и подвергается неправильному лечению. *Actinomyces israelii* самый частый патоген, который вызывает хроническое воспаление в верхних отделах слезных путей. В последствии длительного инфекционного воспаления образуются каналикулярные конкременты, которые приводят к обструкции слезоотводящей системы. Основные жалобы пациентов это слезотечение, гнойные выделения, покраснение глаза, отек века. Мы представляем 3 клинических случая хронического каналикулита, которые нуждались в операционном вмешательстве чтобы избежать осложнений и достичь успешного результата.