

# Rupture of the lacrimal sacculus of oculi sinistra with rupture of the palpebra oculi sinistra

Vina Teresia<sup>1</sup>, Oktarina Nila Juwita<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Tarumanagara University, Jakarta

<sup>2</sup>Department of Ophthalmic Health Sciences, RSUD RAA SOEWONDO, PATI, Central Java

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## ABSTRACT

This research aims to analyze the case of rupture of lacrimal sacculus of oculi sinistra with rupture of the palpebra oculi sinistra. The research method used qualitative with a case study approach. Data collection was carried out using primary and secondary methods. Primary was carried out through direct observation, while secondary data was obtained through journal literature and books. Case illustration: a 58 years old woman complained of pain in her left eye ± 1 day ago due to a traffic accident, that was a motorbike collision accompanied by lacerations and bleeding in the lower eyelid near the nose. Physical examination revealed that the patient appeared moderately ill, comatose, GCS 15, blood pressure: 160/90 mmHg, pulse frequency: 70x/minute, respiratory frequency: 20x/minute, temperature: 36,8<sup>0</sup> C, and BMI: 23,4 kg/m<sup>2</sup> is overweight. Physical examination of the eyes superior and inferior eyelids have edema (+), tenderness (+). In the lacrimal punctum, there was a tear in the vertical direction measuring ± 1.5 cm and bleeding. The palpebral fissure is the horizontal size = 30 mm and the vertical = 7 mm. The patient's treatment was planned to involve recanalization of the lacrimal sacculus of oculi sinistra accompanied by palpebral hecting under general anesthesia. The 0.5% optiflox (levofloxacin 1 mg) eye drops were administered 1 drop/hour OS, methylprednisolone 3 x 4 mg tablets PO, levofloxacin 1 x 500 mg tablet PO, and amlodipine 1 x 10 mg tablet. This case report shows that rupture of lacrimal sacculus of oculi sinistra and rupture of the palpebra oculi sinistra occurred due to indirect blunt trauma. Complications can be prevented by carrying out appropriate management and control of risk factors.

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## Corresponding Author:

Vira Teresia,

Professional Doctor Program, Faculty of Medicine,

Tarumanagara University,

Jl. Letjen S. Parman No.1, RT.6/RW.16, Tomang, Kec. Grogol petamburan, Kota Jakarta Barat, Daerah

Khusus Ibukota Jakarta 1144, Indonesia

Email: virateresia09@gmail.com

## INTRODUCTION

Trauma is one of the etiologies of disease that most often causes the appearance of disease manifestations in the form of traces or injuries to human body (Campbell et al., 2022; Singh et al.,

2021). Palebral rupture becomes one of its clinical manifestations. Eye trauma is an emergency that needs immediate treatment. Palebral rupture is one of the signs of eye trauma and only surgery can repair tissue damage. However, the emergency aspect of the patient lies in the scleral rupture (Ma et al., 2019; Singh et al., 2021).

The success rate of canalicular repair ranges from 20-100% (Bai et al., 2017; Karadeniz Ugurlu et al., 2020). In this case, the success rate increases to 86-95% with microscopic reanastomosis of severed canaliculi with silicone intubation of the lacrimal system (Sadiq et al., 2015). The majority of patients undergo canaliculi laceration repair have anatomical and functional success as well as anatomical. Functional success was considered to be the lack of postoperative epiphora and the ability to irrigate the lacrimal system successfully. Patients can also experience ptosis that can be treated with surgery, depending on the level of ptosis and its impact on the patient's quality of life (Phelps, 2022). For most patients who require laceration repair canaliculi, it achieves cosmetic and functional success. These include a lack of epiphora and a dysfunctional lacrimal system. The success rate for injuries involving the lacrimal apparatus may be as high as 82% (Sadiq et al., 2015).

Lacerations with the canalicular system involve the periorbital muscles, which can affect overall eyelid function (Kennedy et al., 1990). The most frequently cited complications of canalicular repair include pain, bleeding, infection, scarring, ptosis, or the need for additional procedures at a later time. Complications of canalicular surgery are few, but include premature extrusion of the stent material (followed by canalicular obstruction), cheese-wiring of the silicone tube at the level of the punctum, pyogenic granuloma, and epistaxis (nosebleeds). Patients sometimes may require a second surgery to treat epiphora, entropion, ectropion, or poor eyelid position. Poor healing or inadequate repair may result in corneal exposure or eyelid indentation. Failure to repair the canaliculi may also result in poor drainage of the nasolacrimalis duct (SETHI et al., 2000). Upper eyelid lacerations can damage the levator muscle and/or its aponeurosis with the tarsus, resulting in dehiscence levator aponeurosis and upper eyelid ptosis. Patients with post-operative complications may require frequent follow-up and/or additional surgery (Phelps, 2022).

Laceration of the canaliculi are identified by direct observation of lacerations in the medial punctum or by examination (usually with a Bowman probe or irrigation cannula) of the canalicular system. For children, examination under anesthesia with dilation and probing may be necessary to confirm the diagnosis (Anggraini & Al, 2015; Hart, 1980; Koprowski & Foster, 2018; Kujundžić, 2020; Radnot & Gabriel, 1980). Severe medial lacerations are through medial to lateral displacement of the canthus alert the clinician to underlying lacrimal system damage. The proximal end of the laceration is easily identified using a Bowman probe, but the distal/nasal canalicular portion is often more difficult to identify. The surgeon begins by cleaning the wound and looking for white circular tissue in the pink area of the orbicularis muscle. If this is not easily identified, fluorescein or air can be injected through the cannula 27 gauge to the opposite punctum. The surgeon can observe the appearance of dye or bubbles (when the desired nasal canaliculus is submerged) originating from the nasal canaliculus (Phelps, 2022). Based on the above literature, the purpose of this study is to analyze the case of rupture of the lacrimalis sac oculi sinistra with rupture of the palera oculi sinistra.

## RESEARCH METHOD

The research method used qualitative with a case study approach (Mack, 2005; Moleong, 2018; Sugiyono, 2020). Data collection was carried out using primary and secondary methods. Primary was carried out through direct observation, while secondary data was obtained through journal literature and books (Awwabiin, 2021). Data was obtained using secondary data, namely from books and scientific articles. Data analysis techniques by evaluating and selecting literature sources according to the relevance of the research objectives.

## RESULTS AND DISCUSSIONS

A 58 years old woman complained of pain in the left eye  $\pm$  1 day ago due to a traffic accident, that was a motorbike collision accompanied by lacerations and bleeding in the lower eyelid near the nose. Physical examination revealed that the patient appeared moderately ill, compositentis, GCS 15, blood pressure:  $160/90$  mmHg, pulse frequency: 70x/minute, respiratory frequency: 20x/minute, temperature:  $36.8^{\circ}\text{C}$ , and BMI:  $23.4 \text{ kg/m}^2$  is overweight. Physical examination of the eyes on the superior et inferior palpebra, there is edema (+) and tenderness (+). On the lacrimal punctum, there is a tear in the vertical direction with a size of  $\pm 1,5 \text{ cm}$  and bleeding. The palpebral fissure was found to be horizontal = 30 mm, and vertical = 7mm.



Figure 1. Photo of the right eye and left eye

A 58 years old woman complained of pain in the left eye since  $\pm$  1 day SMRS. From the history, the patient complained of pain and continuous tears mixed with blood in the left eye since  $\pm$  1 day ago due to a traffic accident, that was a motorcycle collision where when the patient fell to the asphalt, the patient's helmet glass was detached and broken from her helmet with the patient as a passenger, and her son as a motorist. The patient reported pain in his left eye with a VAS score of 6 accompanied by tearing, and bleeding on the lower eyelid near the nose. The patient's left eye was slightly red, but the patient's vision was not reduced. The patient also complained that the outer cheek near the left eye had bruises, and blisters that caused pain with VAS 5. The patient has a history of uncontrolled hypertension, and she often eats salty foods. On physical examination, the patient appeared moderately ill, compositentis, GCS 15, blood pressure:  $160/90$  mmHg, pulse frequency: 70x/min, respiratory frequency: 20x/min, temperature:  $36.8^{\circ}\text{C}$ , and BMI:  $23.4 \text{ kg/m}^2$  which is overweight. There was hematoma and vulnus excoriatum on the zygomaticus region of the sinistra temporal os, signs of inflammation. The sinistra genu region at look showed excoriation, erythematous, and inflammatory signs. In feel, tenderness is found, and there is periarticular muscle spasm. In move, active and passive ROM of the sinistra genu articulatio is slightly limited due to pain.

Table 1. Ophtalmologis status examination

	OD	OS
Visus	3/60	3/60
IOP	17 mmHg	18.5 mmHg
Palpebra Movement	All Directions Symmetrical Normal	All Symmetrical Directions The upper and lower palpebra show edema (+), tenderness (+). In the lacrimal punctum, there is a tear in the vertical direction with a size of $\pm 1,5 \text{ cm}$ and bleeding. The palpebral fissure measures horizontal = 30 mm, and vertical = 7 mm
Cts	Hypermia (+)	Hypermia (+)
Cti	Hypermia (+)	Hypermia (+)
Cb	Normal	Secret (+), Conjunctival Injection (+)
C	Normal	Normal
CoA	Adequate	Adequate
P	Round, isochore, 3 mm, RC (+)	Round, isochore, 3 mm, RC (+)

	OD	OS
I	Brown	Brown
L	Pure, shadow test (-)	Pure, shadow test (-)
F	Normal	Normal

On the supplementary examination on October 23, 2023, leukocytosis was found, and a chest X-ray revealed cardiomegaly. The diagnosis in this case is rupture of the lacrimal sac oculi sinistra and rupture of the palpebra oculi sinistra, immature senile cataract ODS in the right eye, hematoma, Vulnus Excoriatum Regio Zygomaticum Os Temporal Sinistra, vulnus Excoriatum Regio Genu Sinistra, as well as uncontrolled Grade II hypertension. The differential diagnosis carried out was a facial fracture and laceration of the edge of the eyelid. In this case, the definitive management is Pro Recanalization of the Lacrimal Saccus Oculi Sinistra + Hecting the Palpebra/General Anesthesia. The planned management included the administration of optiflox 0.5% (Levofloxacin 1 mg) eye drops 1 drop/hour OS, methylprednisolone 3 x 4 mg tablets PO, levofloxacin 1 x 500 mg tablet PO, and amlodipine 1 x 10 mg tablet.

**Table 2.** Prognosis results

	OD	OS
Ad Vitam	Bonam	Bonam
Ad Function	Bonam	Dubia ad Bonam
Ad Sanationam	Bonam	Dubia ad Bonam

**Discussion**

Canaliculi laceration repair is commonly performed until complete healing. Patients are first examined one week after repair or as needed depending on the patient's condition. Any silk sutures placed on the edge of the eyelid can be removed approximately 10 to 14 days after surgical intervention. Patients may wear eye protection while they sleep and are advised to avoid rubbing the eyelids for two weeks after surgery. The monocanalicular silicone stent can be removed approximately 8-12 weeks after surgical repair. The silicone stent can be removed easily at the slit-lamp by using forceps to pull the stent collar from the punctum. Bicanalicular stents are often left in place for up to three months. Scissors and forceps are required to remove the bicanalicular stent. If sutures are placed in the nose, they must be cut. Then, the bicanalicular stent can be cut near the edge of the eyelid and removed from the nose. If none of the boxes are inserted into the silicone tube, they can also be removed through the eyelid (Feng et al., 2021; Ifantides et al., 2020; Ilhan et al., 2022; Rho et al., 2021).

Several surgeons recommend the use of prophylactic antibiotics following canalicular trauma, especially from animal or human bites. It is known that highly vascularized facial tissue tends to be less susceptible to infection than other areas of injury, and the use of antibiotics is determined on a case-by-case basis. Patients who have experienced a bite injury may benefit from treatment with (amoxicillin/clavulanate) for 3-5 days after the injury. This is the first line of treatment because it covers a wide range of organisms that may be involved (Phelps, 2022).

Medication used to treat lacerations canaliculi is an antibiotic that helps prevent infection. During surgery, the wound is decontaminated by copious irrigation of antibiotic solution. Postoperatively, topical antibiotic ointment is applied to the skin wound, topical antibiotic solution is administered to treat the lacrimal system, and antibiotics are used if there is wound contamination. Ocular antibiotic steroids are often used for topical use as they also reduce inflammation that was used in the prevention of postoperative infection, inflammation, and scarring of the lacrimal drainage system.

Isolated canalicular trauma can be treated on an outpatient basis. For patients requiring inpatient treatment, it may include intravenous cefazolin (1 g every 8 hours in adults for the first 24 hours). If the patient is able to take oral antibiotics, then broad spectrum antibiotics, such as

(cephalexin 500 mg qid), can be used for 10 days. A broad-spectrum antibiotic eye ointment, such as Dexamethasone/tobramycin, is applied four times a day on the wound for the first two weeks.

The action taken is to carry out an immediate evaluation of the eyeball and adnexal structures when trauma to the eye region is suspected. Eyelid rupture is an ophthalmological emergency and is best treated immediately and before eyelid surgery. It is important to repair the eyelid margins and canaliculi so that eyelid anatomy can be restored as well as eyelid pump and drainage physiology can be normal again (Milanez et al., 2017; Usmani et al., 2021). Canalicular repair reduces the patient's risk of experiencing epiphora (a tear that runs down the cheek) and also helps achieve good eyelid position post-surgery (Phelps, 2022). Identification and removal of foreign bodies and excessive wound irrigation will reduce the risk of infection (Erickson et al., 2016).

The first approach often used a probe lacrimal Bowman. By following the natural course of the eyelid and canalicular system, the probe often leads to the nasal passage of the canaliculi. Careful examination (with a magnifying glass or surgical microscope, if necessary) often allows the surgeon to identify whitish circular openings in the canaliculi and/or lacrimal sac. It may be useful to inject saline or air containing fluorescein into the opposite punctum and simultaneously observe the appearance of dye or bubbles (when the nasal canaliculus of interest is submerged) to identify the nasal canaliculus site. For most patients with common canalicular and single canalicular injuries, pigtail examination may also be helpful. The use of viscoelastic injection has also been described as a useful technique. Phenylephrine topical application to the area of injury will cause vasoconstriction and muscle tissue around the canaliculus, and it is a useful technique to help identify a lacerated lacrimal drainage system.

Laceration of a monocanicular canaliculus can lead to stenosis and epiphora if not repaired. Monocanicular obstruction indicates that only about 10% of patients show severe interference with the drainage flow when one canaliculi is blocked. If there is a laceration in both superior and inferior canaliculi, surgical repair of both canaliculi is always indicated, and even monocanicular injuries are recommended to be repaired as soon as possible. However, even with appropriate and prompt surgical management, some patients will still experience canalicular obstruction, stenosis, and impaired lacrimal outflow, necessitating additional revision surgery.

## CONCLUSION

Complications can be prevented by implementing appropriate management and controlling the relevant risk factors. The implication of this research is that this research is expected to add to the literature review. The contribution of this research is that it becomes material for scientific studies on rupture of the lacrimal sac of left oculi with rupture of the left eyelid oculi.

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