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Penetrating ocular injury due to fish hook accident: A case report

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Received: 2021-12-20
Accepted: 2022-02-14
Published: 2022-02-24

ABSTRACT

Introduction: Open globe trauma is caused by sharp objects (lacerations) or blunt objects (ruptures). Lacerations can be divided into three parts: penetrating wound, intraocular foreign body (IOFB), and perforating wounds. One of the ocular laceration trauma that needs to be aware of is the penetration of fishing hooks. There are two important aspects of injuries due to fishing hooks: intraocular foreign bodies and infections.

Case description: The patient of a 4-year-old girl with a chief complaint left eye was exposed to a fishing hook approximately 3 hours before coming to the hospital. Ophthalmological examination was obtained visual acuity on the right eye fixes and follow the object. Examination of the anterior segment of the right eye

was found corneal edema, penetrating injury due to fish hook direction at nine o'clock. The fish hook was stick on the entire thickness of the cornea. Then we also found iris trauma and opacity in the lens. The patient was diagnosed with traumatic cataracts with ocular iridolysis dextra. Initial therapy is tobrosone eye drop 1 drop every 3 hours, cefadroxil syrup three times a day, and methylprednisolone 3x1/2 tablets. The patient was advised to undergo surgery.

Conclusion: Initial management should be quick and careful to aggravate the trauma. Adequate eye protection and supervision are necessary to prevent fishing hook trauma, especially children.

Keywords: fishhook injury, ocular, penetrating injury.

Cite This Article: Dewi, N.T., Widyasari, P.R.A., Sakti, F.K., Kartiningsih, I.A.P. 2022. Penetrating ocular injury due to fish hook accident: A case report. *Intisari Sains Medis* 13(1): 87-90. DOI: [10.15562/ism.v13i1.1257](https://doi.org/10.15562/ism.v13i1.1257)

INTRODUCTION

Ocular trauma is one of the causes of visual impairment and blindness worldwide. This can happen to anyone, including children. In children, ocular trauma is the cause of monocular visual impairment, so it has psychological and social impacts on patients. The number of blindness in the world due to ocular trauma is 1.6 million which 2.3 million experience bilateral low vision due to trauma. According to the American Academy of Paediatrics (AAP), 66% of ocular trauma occurs in children under 16, with the most cases from ages 9 to 11.¹ Most ocular trauma occurs in boys. Cases of ocular trauma in children occur 3.3-5.7 million in the world, with the highest incidence occurring in the suburbs.^{1,2}

The Birmingham Eye Trauma Terminology (BETT) ocular tr can be

divided into an open globe and closed globe trauma. Open globe trauma is caused by sharp objects (lacerations) or blunt objects (ruptures). Trauma lacerations can be divided into three parts: penetrating the internal wound, intraocular foreign body (IOFB), and perforating wounds. Ocular trauma caused by sharp objects can involve all eye structures, including the eyelids, cornea, sclera, anterior chamber, and posterior chamber. One of the ocular laceration trauma that needs to be aware of is the penetration trauma of fish hooks. There are two important aspects of injuries due to fishing hooks: intraocular foreign bodies and infections. This trauma can cause traumatic cataracts, vitreous bleeding, choroid bleeding, retinal detachment, endophthalmitis, and blindness to organ loss.²

The author wants to report this case because the ocular trauma penetration due to fish hooks reported in the literature is still limited. The authors hope this case report can provide information and knowledge related to ocular trauma.^{1,3}

CASE REPORT

A 4-year-old girl came to the emergency room in Wangaya Hospital Denpasar Bali with complaints of the left eye being exposed to a fish hook approximately 3 hours before entering the hospital. A fishing hook hit the patient while his brother played with the fish hook and accidentally hit the patient. The wound is said to be non-bloodied. The hook on the eye had tried to be removed at home, but it did not work. The patient was the last of three children with a normal

birth and growth history. The history of immunization is unknown, and there is no history of drug allergies. Previous treatments were denied. The patient is taken to the Eye Polyclinic for further examination.

The patient is fully aware of the physical examination, the pain scale is 6, and vital signs are within normal limits. Ophthalmological examination obtained visual acuity right and left eye fixes and follow the object. Examination of eye pressure in both eyes is not done. Anterior segment of the right eye obtained the presence of corneal edema (+), penetrating corneal wound due to fish hook direction at 9 o'clock (+), the fish hook was stick in the thickness of the cornea, trauma iris (+), opacity lens (+). On the examination of the left eye within normal limits. Patients diagnosed with traumatic cataracts with iridolysis dextra. Patients get tobrosone eye drop 1 drop every 3 hours, cefadroxil syrup 3 three times a day and methylprednisolone 3x1/2 tablets. Patients are advised to undergo surgery.

DISCUSSION

Detailed anamnesis of pediatric patients with ocular trauma is sometimes quite difficult because some traumatic events occur without supervision. Children are



Figure 1. Fish Hook on right eye

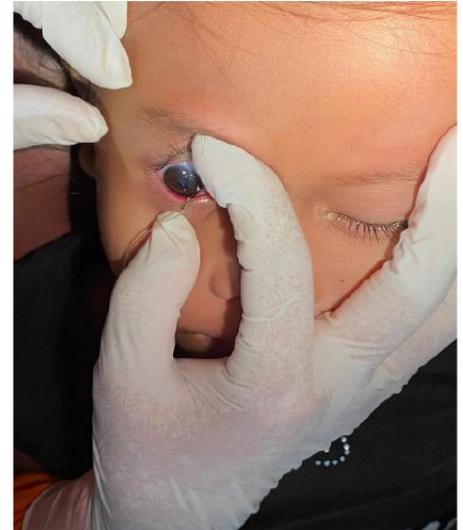


Figure 2. Penetration of fish hook



Figure 3. After fish hook extraction



Figure 4. Fish Hook (Central Draught)

Table 1. The classification system of trauma oculi

	Open Globe Injury	Close Globe Injury
Type	Rupture Penetration Intraocular corpus alienum Perforation Mixed	Contusion Lamellar laceration Superficial corpus alienum Mixed
Visual Acuity	≥ 20/40 20/5 – 20/100 19/100 – 5/200 4/200 – LP NLP	≥ 20/40 20/50 – 20/10 19/100 – 5/200 4/200 – LP NLP
Pupil	RAPD (+) RAPD (-)	RAPD (+) RAPD (-)
Zone	I: Injury on cornea and limbus II: Injury 5 mm posterior from the limbus III: Injury > 5 mm from the limbus	I: Injury on external structure (conjunctiva bulbar, sclera, and cornea) II: Injury on the internal structure on the anterior segment (cornea, posterior lens and pars plicata) III: Injury on the posterior segment from the lens (retina, macula)

Note: LP (light perception), NLP (no light perception), RAPD (relative afferent pupillary defect)

Table 2. Paediatric Ocular Trauma Score (POTS)

Variable	Point
Visual Acuity	
NLP	10
LP/HM	20
<i>Counting Finger</i>	30
0.1 - 0.5	40
0.6 - 1.0	50
Age	
0 - 5	10
6 - 10	15
11 - 15	25
Injury location	
Zone 1	25
Zone 2	15
Zone 3	10
Pathology examination	
Prolapsed iris	-5
Hyphema	-5
Organic trauma	-5
Delayed surgery	-5

Note: LP (light perception), NLP (no light perception), HM (hand movement)

also unaware of a sharp decline in vision and are often uncooperative. Anamnesis should be known as the time and location of the incident, mechanisms, and objects that cause trauma, vision changes, initial procedures, treatment history, ocular trauma, history of allergies, and immunization history. In ocular trauma, it is important not to remove foreign objects themselves at home because this can damage the structure of the eye. The patient's case is a 4-year-old child with a complaint of the left eye exposed to fishing hooks.^{1,3,4}

The physical examination must be done quickly and appropriately to determine the next procedure. If the patient is uncooperative, the examination should be done in the operating room with an anesthetist. The visual acuity right and left eye fixes and follow the object with the examination of eye pressure in both eyes are not done. From the examination of the anterior segment of the right eye within normal limits, examination of the anterior segment of the left eye obtained the presence of corneal edema (+), penetrating corneal wound due to fishing hook direction at 9 (+), fishing hook sticking in the entire thickness of the cornea, iris trauma (+), iridolysis (+), cloudy lens (+). It is necessary to note

the type of hook that sticks in the eye on a physical examination. According to Cakrabotheni et al. 2016 determination of the type of hook, such as a single, multiple, thorny hook, and the number and location of the hook can be done to determine the extraction technique of the hook. In this case, the number of hooks attached is one piece, and the type of hook is a single hook.^{5,6} Cakrabotheni et al. 2016 mentioned supporting examinations that can be done, among others, B-scan, providing information on the condition of the posterior segment of the eyeball and the condition of the posterior lens capsule, CT scan, if there is suspicion of fracture, foreign body, or other abnormalities. No further examination has been carried out in patients due to cost issues.^{6,7}

Ocular trauma is divided into two, namely the open and close globe, classified according to type, sharp vision, pupil condition, and trauma location. The patient can be categorized into cases with open globe injury in these cases. As well as being diagnosed with traumatic cataracts with ocular iridolysis dextra.⁶

Early management in ocular trauma can use rigid eye shields for protection. Management is divided into two, pharmacologic and surgery. Medications such as pain relief and anti-emesis may be

given according to the patient's general state. Intravenous antibiotics, topical antibiotics, and oral steroid therapy may be given to patients with deep penetrating trauma for prophylaxis against endophthalmitis. Patients with Intraocular foreign bodies may be given vancomycin or intravenous ceftazidime. In case patients get tobrosone eye drop therapy, 1 drop every 3 hours, cefadroxil syrup three times a day, and methylprednisolone 3x1/2 tablets.

Surgery is performed to extract foreign bodies or to deal with complications that occur. Patients in cases have had extraction with topical anesthesia in polyclinics as an initial procedure, but the patient denied surgery because of the cost and absence of insurance. The management of traumatic cataracts depends on the condition of the eye during the trauma. If it occurs in children, should be considered the possibility of amblyopia. Primary or secondary intra-ocular lenses may be installed to prevent amblyopia in children. Cataract surgery can be done primary or secondary. Cataract surgery is immediately associated with the presence of eyeball lacerations. Traumatic cataract extraction is usually used in techniques similar to those used to remove senile cataracts, especially in patients younger than 30 years. The preoperative capsular integrity and stability of the zonular should be predicted. Cataract extraction can be done by ECCE (extracapsular cataract extraction) or phacoemulsification procedure.⁶ On the patient diagnosis of cataract traumatic and advised to control again and undergo surgery if the patient's eye condition is well. Patients did not come to polyclinic because of cost-related issues. Observation, examination, and periodic procedures on ocular trauma are needed to prevent complications, especially in healthy eyes. One of the complications that can cause blindness in the future in both eyes is sympathetic ophthalmia (SO). Sympathetic ophthalmia is bilateral granulomatous uveitis that can occur after one eye has experienced ocular trauma. The affected eye is called the exciting eye, and the contralateral eye is the sympathizing eye. The mechanism of the disease is still unclear but is often associated with the presence of systemic autoimmune mechanisms.^{7,8}

Determining the prognosis in pediatric patients who have difficulty doing a sharp examination of early vision can be used pediatric ocular trauma score (PTOS), i.e., with the formula $2x(\text{age} + \text{zone})$ - accompanying pathology. Zone I: injury involving the cornea, zone II: injury involving limbus up to 5 mm anterior sclera, zone III: injury involving sclera more than 5 mm from the limbus. The points assessment is divided into five groups: group I < 45, group II 46-64, group III 65-79, group IV 80-89, and group V 90-100. The higher the points gained, the better his vision prognosis. In cases of getting, the prognosis tends to be bad.^{9,10}

CONCLUSION

The treatment of ocular trauma by fishing hook must be very thorough and careful, especially when doing fish hook extraction, to not aggravate the trauma. Good communication and education are also very necessary for patients to be cooperative. Adequate eye protection and supervision are required to prevent the occurrence due to fishing hook trauma, especially in children.

ACKNOWLEDGMENTS

We are thankful for the help with the data retrieval.

ETHICAL CLEARANCE

Patient approval has been obtained in this study and fulfilled ethics approval from the International Committee of Medical Journal Editors (ICMJE).

CONFLICT OF INTEREST

We declare that there were no conflicts of interest in this study.

FUNDING

The authors are responsible for the study funding without the grant, scholarship, or any other funding resources.

AUTHOR CONTRIBUTION

All of the authors are equally contributed to the study.

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