



(MUDIMA)



Stage 2 Pterygium in a 48 Year Old Woman

Syarifah Rohaya¹, Nabil Ibnu Sina^{2*}

Universitas Malikussaleh

Corresponding Author: Nabil Ibnu Sina nabilibnusina@gmail.com

ARTICLE INFO

Keywords: Management, Pterigyum, Case Report

Received : 3 July

Revised : 22 August

Accepted : 24 September

©2025 Rohaya, Sina: This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0](https://creativecommons.org/licenses/by/4.0/)

[Internasional.](https://creativecommons.org/licenses/by/4.0/)



ABSTRACT

Pterygium is a pathological fibrovascular growth resulting from thickening and folding of the bulbar conjunctiva, characterized as both degenerative and invasive. In Indonesia, the recurrence rate of pterygium after surgery is reported to be around 35–52%. The exact etiology remains unclear, but several risk factors have been identified, including ultraviolet exposure, chronic microtrauma to the eye, and microbial or viral infections. This case report presents a 48-year-old woman who complained of a foreign body sensation in her left eye. Management consisted of topical betamethasone eye drops administered every 2 hours. Since the symptoms did not impair vision, surgical intervention was not performed. The prognosis in this case is ad bonam. The purpose of this case report is to describe the clinical problem, identify potential risk factors, and provide the most appropriate management for the patient with pterygium

INTRODUCTION

Pterygium is a condition that can potentially lead to blindness and cause cosmetic disturbances. In advanced stages, surgical intervention is often required to improve visual acuity. It is characterized by an abnormal fibrovascular growth arising from thickening and folding of the bulbar conjunctiva, with degenerative and invasive properties. Clinically, pterygium appears as a triangular-shaped tissue rich in blood vessels, with its apex extending onto the cornea and its base attached to the peripheral region. The exact etiology of pterygium has not yet been clearly established. Nevertheless, several risk factors have been identified, including environmental exposure such as ultraviolet radiation, chronic irritation from airborne particles or pollutants, and hereditary predisposition. Ultraviolet radiation, both UVA and UVB, plays a significant role in the pathogenesis of this condition. From a geographical perspective, the incidence of pterygium is higher in tropical regions. Consequently, populations residing in Indonesia, a tropical country, are at greater risk of developing pterygium.

In tropical regions such as Indonesia, high exposure to sunlight increases the risk of developing pterygium by up to 44 times compared to non-tropical areas. The prevalence among adults over 40 years of age is 16.8%, with rates of 16.1% in men and 17.6% in women. The postoperative recurrence rate of pterygium in Indonesia is reported to range between 35–52%. A study conducted at Cipto Mangunkusumo Hospital revealed that the recurrence rate in patients younger than 40 years was 65%, whereas in those older than 40 years it was 12.5%.

Ultraviolet radiation acts as a mutagen on the P53 tumor suppressor gene in basal limbal stem cells. In the absence of apoptosis, excessive

production of Transforming Growth Factor Beta (TGF- β) leads to increased collagenase activity, cell migration, and angiogenesis. These processes result in collagen degeneration and the formation of subepithelial fibrovascular tissue. In the subconjunctival region, elastotic degeneration occurs along with proliferation of vascular granulation tissue beneath the epithelium, which eventually penetrates the cornea through Bowman's membrane due to fibrovascular tissue growth, often accompanied by mild inflammation. Histopathologically, the epithelium may appear normal, thickened, thinned, or occasionally exhibit dysplasia.

Isolation of fibroblasts from pterygium tissue demonstrates phenotypic alterations, with these cells exhibiting greater proliferative capacity in low-serum media compared to normal conjunctival fibroblasts. The fibroblast layer within pterygium tissue shows excessive cellular proliferation. Moreover, pterygium fibroblasts express matrix metalloproteinases (MMPs), enzymes involved in extracellular matrix degradation, tissue repair, wound healing, and tissue remodeling. Pterygium fibroblasts also display a distinct response to Transforming Growth Factor- β (TGF- β) compared to normal conjunctival tissue, along with elevated levels of Basic Fibroblast Growth Factor (bFGF), Tumor Necrosis Factor- α (TNF- α), and Insulin-like Growth Factor-II (IGF-II). These mechanisms account for the progressive growth of pterygium, its invasion into the corneal stroma, and the development of fibrovascular tissue accompanied by inflammation.

This case report discusses a stage II pterygium in a 48-year-old woman along with its management approach. The objective of this report is to describe the patient's clinical presentation, identify the

contributing risk factors, and determine the most appropriate management strategy for her condition.

CASE

A 48-year-old woman (Mrs. S), a housewife, presented to the outpatient clinic of Cut Meutia Hospital on January 21, 2025, with a chief complaint of a foreign body sensation in the left eye for the past two weeks. The symptom was accompanied by bilateral tearing, itching, and conjunctival redness triggered by dust exposure. The patient had not received any prior treatment. Her past medical history included hypertension (+), with no history of diabetes mellitus (-), allergy (-), ocular trauma (-), or ocular surgery (-).

Physical examination revealed that the patient was in good general condition with a compos mentis level of consciousness. Vital signs were as follows: blood pressure 170/100 mmHg, heart rate 85 beats/minute, respiratory rate 20 breaths/minute, and body temperature 36.4 °C. General examination of the head, thorax, abdomen, and extremities was within normal limits. Ophthalmological evaluation showed a triangular fibrovascular tissue on the bulbar conjunctiva of the left eye, with the apex extending toward the cornea on the nasal side, crossing the limbus by less than 2 mm.

Pharmacological management included betamethasone eye drops administered every two hours and oral amlodipine 10 mg once daily. Non-pharmacological management consisted of patient education to protect the eyes when outdoors to minimize direct exposure to ultraviolet radiation, dust, and wind. The patient was advised to return for follow-up if visual disturbances developed or if the lesion increased in size. The prognosis in this case was assessed as *ad bonam*.

METHODOLOGY

The type of research employed in this article is a case report. This method belongs to the category of descriptive research, focusing on the detailed reporting and in-depth analysis of a single clinical case. Its purpose is to describe the patient's condition, identify the contributing risk factors, explain the diagnostic process, evaluate the management provided, and assess the patient's prognosis.

DISCUSSION

Pterygium is a disorder of the bulbar conjunctiva characterized by fibrovascular tissue growth with degenerative and invasive properties. The lesion typically appears in a triangular shape with its apex directed toward the central region or the cornea. Common clinical manifestations include eye redness, itching, burning or stinging sensations, blurred vision in one or both eyes, and the presence of a fleshy mass extending onto the cornea. Visual impairment in affected patients may arise from abnormalities involving the anterior or posterior segments of the eye, as well as the neurological visual pathway. Therefore, possible contributing factors such as opacification or disturbance of the ocular media, intra-vitreous hemorrhage, retinal dysfunction, optic nerve pathology, intracranial visual pathway abnormalities, or fibrovascular proliferation should be considered.

History taking revealed that the patient experienced a gradual onset of foreign body sensation and membranous growth in the left eye over the past two weeks. Additional complaints included excessive tearing, itching, and redness, particularly when exposed to dust. Subjective symptoms of pterygium vary, ranging from asymptomatic cases to the presence of visual disturbances such as dark shadows in front of the

eye, foreign body sensation, burning, itching, and frequent tearing. Itching and burning are commonly associated with irritation of the pterygium tissue.

The foreign body sensation in the eye may be attributed to inflammatory processes involving the eyelids, adnexa, or anterior segment. In this patient, no eyelid or adnexal edema was observed, and no signs of conjunctival inflammation were present. Excessive ocular discharge was also absent. Examination revealed thickening of the bulbar conjunctiva extending onto the cornea, which could account for the foreign body sensation experienced by the patient, particularly during blinking.

Penlight examination revealed the following findings: in the right eye (OD), the cornea appeared clear with a smooth surface, the anterior chamber had adequate depth, and the lens was clear. In the left eye (OS), the cornea was clear but with an irregular surface, covered by a whitish triangular membrane with its apex extending less than 2 mm beyond the limbus; the anterior chamber depth was sufficient, and the lens remained clear. These clinical features are thought to be associated with several risk factors, including hereditary predisposition, ultraviolet radiation exposure, and chronic inflammation. Such factors may disrupt the oxidant–antioxidant balance of the body, ultimately leading to structural alterations of the conjunctival tissue.

In this patient, the diagnosis of stage II pterygium in the left eye (oculus sinister) on the nasal side was established, as the lesion was located nasally with its apex extending less than 2 mm beyond the limbus. Fibrovascular growth on the bulbar conjunctiva may arise from conditions such as pinguecula, pseudopterygium, or pterygium. Pinguecula was excluded, as it can typically be displaced and presents with a triangular apex oriented nasally, which differs from the typical

morphology of pterygium. Pseudopterygium was also ruled out because the patient had no prior history of ocular trauma, and the probe test was negative. Therefore, the most appropriate diagnosis in this case is pterygium, characterized by triangular fibrovascular thickening of the bulbar conjunctiva extending from the temporal side, with the apex nearly reaching the pupillary margin. This clinical presentation is consistent with the classic features of pterygium, in which the growth most commonly originates from the nasal region, though it may also develop temporally with the apex directed centrally toward the cornea.

Complications that may arise prior to surgical incision include ocular redness, irritation, and the potential development of diplopia. Post-incision complications may involve infection, diplopia, corneal scarring, globe perforation, with the most frequent complication being postoperative recurrence of pterygium.

Management in this patient included the administration of betamethasone eye drops and oral amlodipine 10 mg once daily. The chosen therapy was considered appropriate, as pharmacological treatment was aimed at alleviating symptoms. In mild cases of pterygium, medical intervention is not always required. For grade I–II pterygium with associated inflammation, the recommended treatment is a combination of antibiotic and corticosteroid eye drops administered six times daily for 5–7 days. Nevertheless, corticosteroid use is contraindicated in patients with elevated intraocular pressure or corneal abnormalities. Since this patient did not present with visual impairment, surgical intervention was not indicated.

When pterygium progresses to grade III–IV, it typically results in visual impairment, thereby necessitating surgical intervention. Several surgical techniques are available, including: bare sclera,

which involves no suturing, with absorbable sutures used to attach the conjunctiva to the superficial sclera in front of the rectus tendon insertion; simple closure, where the free conjunctival edges are directly sutured together, effective only for very small conjunctival defects; sliding flap, in which an L-shaped incision is made around the lesion and the conjunctival flap is slid to cover the defect; rotational flap, performed by creating a U-shaped incision to form a conjunctival flap that is rotated into place; conjunctival graft, which involves harvesting a free graft, usually from the superior conjunctiva, tailored to the defect size and then sutured in place; amniotic membrane transplantation, which reduces recurrence rates and minimizes fibrosis; and lamellar keratoplasty, a newer approach utilizing a combination of angiostatic agents and steroids. Among these, the bare sclera technique may be applied, as it eliminates the need for suturing, although the recurrence rate with this method remains approximately 40–50%.

The prognosis in this patient is considered *ad bonam*. Pterygium may progress or remain static, and there are no definitive data or reliable predictions regarding its rate of development. In most cases, pterygium tends to grow slowly or may not progress at all, and it rarely causes significant structural damage. Therefore, the prognosis in this case is regarded as favorable.

In this patient, it was recommended to consistently use protective eyewear or a hat when outdoors. The patient was also advised to avoid triggering factors for pterygium, such as direct sunlight and dust, as much as possible. This recommendation is consistent with the literature, which suggests that prevention of pterygium, particularly in individuals who frequently engage in outdoor activities, can be achieved by wearing

protective glasses or hats to minimize exposure to sunlight, dust, hot air, and wind.

CONCLUSION

Pterygium is a fibrovascular growth of the conjunctiva that is both degenerative and invasive in nature. The prognosis in this case is considered *ad bonam*, as pterygium generally progresses slowly and rarely causes significant damage. In this patient, the symptoms have not yet affected visual function; therefore, conservative management was chosen. Surgical intervention would only be considered once visual impairment becomes evident.

REFERENCES

- Tano T, Ono K, Hiratsuka Y, Otani K, Sekiguchi M, Konno S, et al. Prevalence of pterygium in a population in Northern Japan: the locomotive syndrome and health outcome in aizu cohort study. *Acta Ophthalmol.* 2013; 91(3):e232-6.
- Ilyas S, Yulianti SR. Ilmu penyakit mata Edisi ke-5. Jakarta: Balai Penerbit FKUI. 2014.
- Riordan-Eva P, Whitcher JP. *Oftalmologi umum*. Edisi ke-17. Jakarta: Penerbit Buku Kedokteran EGC. 2010.
- Pinem TAN. 2015. Laki-laki 38 Tahun dengan Pterigium Temporalis Grade 3 OS. *J Medula Unila.* 2015; 4(2):165-70.
- Shintya D, Syawal R, Sirajuddin J, Syamsu N. The profile of tear mucin layer and impression cytology in pterygium patients. *JOI.* 2010; 7(4):139-43.
- Artini W, Hutaaruk JA, Yudisianil. *Pemeriksaan dasar mata*. Jakarta: Balai Penerbit FKUI. 2011.
- Basic and clinical science course section 8 external disease and cornea. America: American Academy of Ophthalmology; 2007.
- Khurana AK. *Community ophtalmology in comprehensive ophtalmology*. Edisi ke-4. New Delhi: New Age International Limited Publisher; 2007.

- Erry, Mulyani UA, Susilowati D. Distribusi dan karakteristik pterigium di Indonesia. Buletin Penelitian Sistem Kesehatan. 2011; 14(1):84-9.
- Fisher JP. Pterygium. 2015 [diakses pada 20 Februari 2017]. Tersedia dari: <http://emedicine.medscape.com/article/1192527-overview>
- Anguria P, Kitinya J, Ntuli S, Carmichael T. The role of heredity in pterygium development. Int J Ophthalmol. 2014; 7(3):563-73.
- Kormanovski A, Parra F, Jarillo-Luna A, Lara-Padilla E, Pacheco-Yépez J, Campos Rodriguez R. Oxidant/antioxidant state in tissue of primary and recurrent pterygium. BMC Ophthalmol. 2014; 14(149):1-6.