

Atypical Presentation of Recurrent Pterygium Leading to Blindness and its Successful Management: A Series of Three Cases

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ABSTRACT

Recurrence of pterygium is one of the main concerns in pterygium management. Recurrent pterygium is defined as the regrowth of fibrovascular tissue over the previously excised primary pterygium area, extending beyond the limbus and advancing towards the cornea. In most cases, it is characterised by increased conjunctival inflammation, fibroblast proliferation, and a faster progression towards corneal involvement compared to primary pterygium. This rapid regrowth can lead to irregular astigmatism, symblepharon, corneal fibrosis, severe vision impairment, and rarely, blindness. Incomplete removal of the primary pterygium, excessive suturing, the bare sclera technique, smaller conjunctival grafts, thicker conjunctival grafts with Tenon's capsule, and poor control of postoperative inflammation are some of the most common surgical factors contributing to recurrence. Among all surgical procedures, the bare sclera technique has the highest recurrence rate. In the present case series, the author presented three cases of atypical recurrent pterygium and their successful management. The first case involved recurrent double-headed pterygium with severe symblepharon, resulting in lower fornix obliteration, shortening, diplopia, and corneal neovascularisation. The second case featured Grade-IV pterygium covering the pupillary area, and the third case involved a kissing type of double-headed pterygium. These cases were complications of the bare sclera technique, leading to blindness. Successful treatment of recurrent pterygium can improve visual and cosmetic outcomes. This case series aimed to highlight the burden and consequences of recurrent pterygium as a cause of avoidable blindness.

Keywords: Bare sclera method, Conjunctival limbal autograft, Symblepharon

INTRODUCTION

Pterygium is a benign intraocular fibrovascular growth of the conjunctiva [1]. The prevalence rate of pterygium worldwide is 12% [2]. Pterygium typically develops nasally and temporally, and double-headed pterygium is rare. Dolezalova V, mentioned that the prevalence of double-headed pterygium was 2.5% [3]. Impaired vision, recurrent irritation, induced astigmatism, and aesthetic concerns are common ocular morbidities associated with pterygium, although blindness caused by pterygium is rare [1,2].

The main treatment for problematic pterygium is surgery. Recurrence is the primary concern in pterygium management. There are several methods for pterygium surgery with varying recurrence rates. The highest recurrence rate is observed in the bare sclera technique (24-89%) [4]. However, the Conjunctival Limbal Autograft (CLAG) with or without adjuvant therapy such as Mitomycin-C (MMC) is the most widely accepted method with a low recurrence rate [5]. Recurrent pterygium is more aggressive in nature and can be associated with complications such as conjunctival fornix shortening, symblepharon, extensive scar tissue, and accelerated pterygium growth. However, pterygium causing blindness is usually very rare [1,5].

India, a developing country in the sub-Himalayan region, has a high prevalence of pterygium, as well as, a high recurrence rate due to its demographics and environment. It is recommended to avoid the bare sclera technique as the first choice of treatment to prevent recurrence and associated complications [4,6]. The author believes that a meticulous and complete surgical excision of pterygium with CLAG, with or without adjuvant therapy, can prevent pterygium recurrence or aggressive regrowth. The present case series describes three atypical cases of recurrent pterygium causing blindness and their successful management.

Case 1

A 55-year-old male patient, a farmer by occupation, presented to the ophthalmology department with chief complaints of recurrent

conjunctival growth and severe impairment of vision in his left eye for the last four months [Table/Fig-1a]. The growth was painless and progressive in nature, starting after the last pterygium surgery performed five months prior to the current visit. The patient reported restricted eye movement in the superior and lateral directions, and to some extent, in the medial gaze. He also complained of severe vision loss in the left eye and occasional diplopia after the last surgery. The patient had a past history of two pterygium excisions over the course of the last 10 years, with the most recent surgery performed five months ago on the left eye. The right eye had a history of pterygium excision six years ago. The patient had a history suggestive of the bare sclera technique and denied any history of trauma, chemical burn, systemic disease, or other medication use.

On examination, the patient had a visual acuity of 6/12 in the right eye and 3/60 in the left eye. A fleshy double-headed pterygium involving the pupillary area with severe symblepharon in the lower lid and fornix obliteration with shortening involving the lower punctum was observed. The lacrimal system was found to be patent upon syringing. The left eye exhibited post-terygium corneal opacity, corneal neovascularisation, and gross restriction of ocular movements.

A treatment plan was made for pterygium excision with CLAG, symblepharon lysis, and fornix reconstruction surgery. Initially, the patient was prescribed steroid, antibiotic, and artificial tear eye drops to be used four times a day, along with a steroid ointment at bedtime to reduce inflammation. Routine blood investigations and relevant tests were conducted, and informed written consent was obtained.

The surgery was performed under local peribulbar block. A 4.0 silk traction suture was placed at the medial 1/3 and lateral 1/3 of both eyelids for better exposure. Pterygium excision was conducted from the cornea and sclera, with excision of the subconjunctival fibrous

growth to the maximum extent possible. There was extensive fibrous growth with cicatrix causing shortening of the inferior fornix and involvement of the punctum. An 8-0 nylon traction suture was also placed at the superior limbal area for improved exposure. After inserting a lacrimal probe in the punctum, meticulous dissection was performed to remove all fibrous growth and restore the punctum to its anatomical position. The subconjunctival fibrous tissue was dissected and excised as much as possible from the lower lid while preserving the conjunctiva. A sponge soaked in 0.02% MMC was placed in the fornix and bare sclera for two minutes and then washed with copious saline irrigation. Fornix-forming sutures were placed in the lower medial 1/3 and lateral 1/3, with a rubber bend on the skin surface to prevent skin erosion. Partial keratectomy with fine needle cauterisation was performed for post-ptyerygium opacity and corneal neovascularisation. A wire speculum was then placed to facilitate the collection of conjunctival grafts. A conjunctival-limbal autograft was conducted in the nasal part, and a conjunctival rotation graft was performed in the temporal part [Table/Fig-1b]. Both grafts were sutured using interrupted 10.0 nylon sutures. At the end of the surgery, a bandage contact lens was placed [Table/Fig-1c].

Postoperative management included the administration of steroid antibiotic eyedrops four times a day, antibiotic eye ointment three times a day, and artificial tear drops four times a day for one month. Systemic antibiotics and anti-inflammatory drugs were prescribed for seven days. The conjunctival suture, bandage contact lens, and fornix-forming suture were removed after two weeks [Table/Fig-1d]. The frequency of steroid antibiotic eyedrops and artificial tear drops was later tapered to three times a day and continued for two months. The patient's postoperative vision improved to 6/18 in the left eye after two months [Table/Fig-1e]. Intraocular pressure monitoring was performed throughout this period. Monthly follow-up visits were conducted for the first three months, followed by six-monthly visits for one year. No recurrence was noted during this period. Subsequently, the patient was advised to have yearly follow-up visits.



[Table/Fig-1]: a) Preoperative: Image showing recurrent double head pterygium with severe symblepharon and corneal neovascularisation; b) Intraoperative: A CLAG is applied in nasal side after dissection of symblepharon and removing the pterygium tissue; c) Intraoperative: A bandage contact lens is being applied at the end of surgery; d) Postoperative: On 7th postoperative day. Healthy graft with fornix forming suture in situ; e) Postoperative: After three months, image showing healthy conjunctive with well formed fornix.

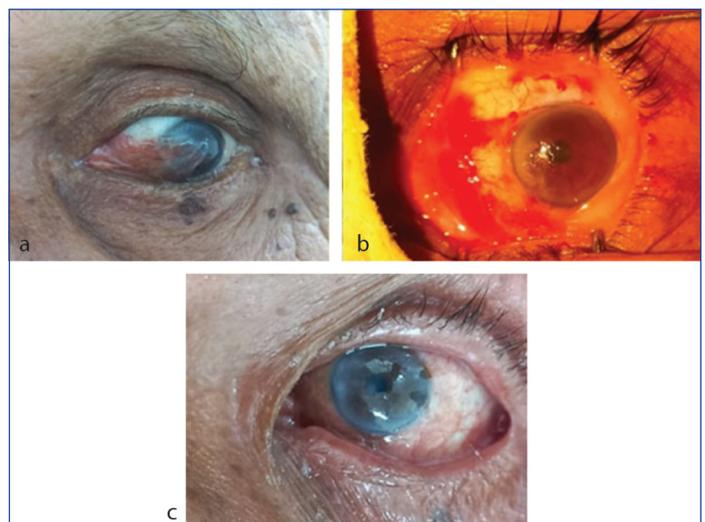
Case 2

A 60-year-old male patient, a farmer by occupation, presented to the outpatient department with complaints of recurrent conjunctival growth and severe visual impairment in the left eye over the past four years [Table/Fig-2a]. The conjunctival growth was slowly progressive, painless, but associated with itching and watering. The patient had a similar type of growth in the past, for which he had undergone surgery 10 years ago in both eyes, with a history suggestive of the bare sclera method.

On examination, his visual acuity was PL+ in the left eye and 6/18 in the right eye. An advanced Grade-IV pterygium was observed in the left eye, crossing the visual axis and extending from the nasal side to the superior temporal cornea, covering the pupillary margin. The patient also had mild involuntional ectropion in both eyes. The rest of the anterior segment could not be evaluated in the left eye due to the Grade-IV pterygium. The right eye exhibited Grade-II pterygium and Grade-I Nuclear Cataract according to the Lens Opacities Classification System (LOCS) [7].

Surgical management involved planned pterygium excision with CLAG in the left eye. Written informed consent was obtained prior to the operation. All routine investigations were performed, and successful excision was carried out under local anaesthesia. Complete dissection of the pterygium, subconjunctival Tenon's tissue, and surrounding fibrovascular tissues was performed. The conjunctival edge was trimmed, and the corneal surface was gently scraped and cleaned as much as possible. CLAG was harvested from the superior conjunctiva and attached to the bare sclera area using 10.0 nylon sutures [Table/Fig-2b].

Postoperatively, the patient received antibiotic steroid eye drops and artificial tear eye drops for three weeks. The conjunctival sutures were removed after 10 days. A follow-up visit was conducted after six weeks, and the patient's Best Corrected Visual Acuity (BCVA) was found to be 6/12 [Table/Fig-2c]. Subsequent follow-ups were scheduled after three months and after one year. No recurrence was observed during this period. After one year, the patient was advised to undergo regular yearly eye check-ups.



[Table/Fig-2]: a) Preoperative: Image of recurrent Grade-IV pterygium; b) Intraoperative: Image showing CLAG in nasal side; c) Preoperative: Image showing healthy conjunctive with no recurrence.

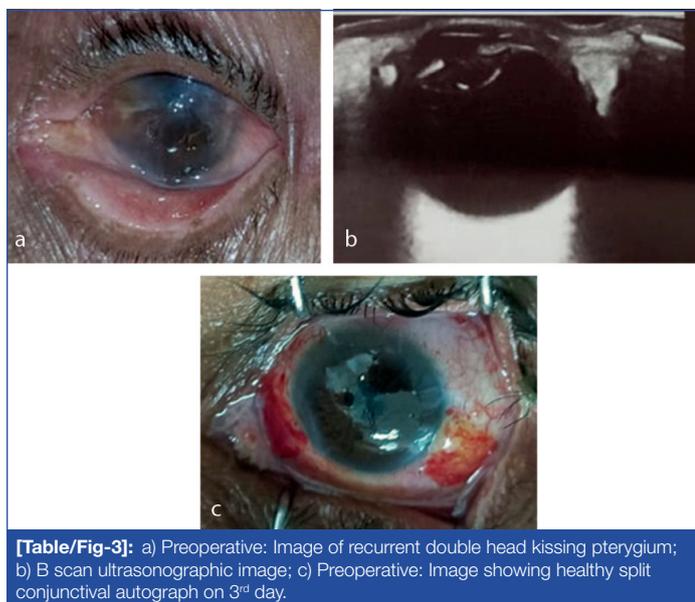
Case 3

The patient is a 48-year-old female housewife, belonging to a farming family, who presented to the Outpatients Department (OPD) with a history of recurrent growth and severe vision loss in her left eye for five years [Table/Fig-3a]. The growth was painless, progressive, and slowly led to impaired vision. The patient had a past history of nasal pterygium excision eight years ago, which was performed using the bare sclera method, as documented.

On examination, her visual acuity was hand movement in the left eye and 6/12 in the right eye. The patient had a double-headed kissing pterygium in her left eye, causing a complete loss of vision. Grade-I nasal pterygium was noted in the other eye. Slit lamp examination revealed a double-headed pterygium that almost covered the entire cornea. The rest of the anterior segment could not be evaluated in the left eye due to the pterygium. The posterior segment appeared normal on B-scan Ultrasonography Sonography (USG) in both eyes [Table/Fig-3b]. In the right eye, ophthalmic findings were unremarkable except for Grade-I pterygium. Routine laboratory findings were within normal limits.

Surgical management involved the successful excision of the double-headed pterygium under local anaesthesia. Vertical split conjunctival autograft with MMC was performed for both the temporal and nasal parts of the left eye, after obtaining signed informed consent. Both grafts were sutured to the surrounding conjunctiva using interrupted 10.0 nylon sutures.

Postoperative management included the administration of antibiotic steroid eye drops and artificial tear eye drops for three weeks [Table/Fig-3c]. Conjunctival suture removal was performed after 10 days. After six weeks, her best corrected visual acuity was 6/12. No recurrence was observed after one year, and the patient was advised to undergo regular yearly eye check-ups.



[Table/Fig-3]: a) Preoperative: Image of recurrent double head kissing pterygium; b) B scan ultrasonographic image; c) Postoperative: Image showing healthy split conjunctival autograft on 3rd day.

DISCUSSION

Pterygium is a common benign intraocular condition. One of the main concerns in pterygium management is its recurrence, which typically occurs within the first six months after surgery [8]. When fibrovascular tissue regrows over the area of a previously excised primary pterygium, it is referred to as recurrent pterygium [8]. Treatment of recurrent pterygium can be challenging, as it is difficult to completely remove and often associated with significant fibrosis and adherence. CLAG is recommended for the treatment of recurrent pterygium, with a recurrence rate ranging from 0 to 18% [5,8-11]. On the other hand, the bare sclera method has a high recurrence rate (24-89%) [4].

Although, the bare sclera technique is not recommended worldwide, it is still used in India due to its simplicity and cost-effectiveness [4,6]. Impaired vision, induced astigmatism, and recurrent inflammation are common complications associated with pterygium, but blindness caused by pterygium is rare [1,4]. In this report, we present three atypical cases of recurrent pterygium with severe vision loss, leading to temporary blindness in the affected eye. These cases appeared to be complications of the bare sclera method. Poverty, ignorance, and negligence also contribute to the advancement of pterygium leading to blindness.

In the first case, recurrent pterygium was associated with advanced symblepharon, causing lower fornix obliteration, lower punctal distortion, diplopia, and corneal neovascularisation, which is highly unusual. Proper pterygium excision with CLAG can help prevent such extensive postoperative complications [5]. There have been a few reports on recurrent pterygium with severe symblepharon [4,9,12]. The development of recurrent pterygium with severe symblepharon is mainly due to the destruction of the barrier function in the limbal area, tissue injury, and severe fibrosis [4]. In the first case, after performing a large CLAG for the nasal side and a rotational graft for the temporal side, along with the application of MMC, there was no regrowth. The author believe that long-term follow-up is necessary in such cases. CLAG with MMC, conjunctival rotation graft with MMC, and free conjunctival graft techniques are all effective methods for the treatment of recurrent pterygium [13,14]. MMC is used as an adjuvant treatment for pterygium. However, some studies have shown that the combination of conjunctival-limbal autograft excision and intraoperative MMC is more effective in reducing the recurrence rate compared to when the two techniques are applied separately [15,16]. The recurrence rate of conjunctival autograft excision with intraoperative MMC has been reported to be 0-2% [17].

Another option for double-headed pterygium is conjunctival split graft, which was performed in the third case. Studies have shown a recurrence rate of 2.10 to 3.45% in vertical split conjunctival grafts, and they are equally effective in treating double-headed pterygium as CLAG [18,19]. Double-headed pterygium creates a large conjunctival defect, making it challenging to cover the entire area with split CLAG. In the third case, there was a sufficiently large nasal graft, but the temporal side graft was slightly smaller. However, since it provided limbal tissue and restored the barrier effect in both the nasal and temporal sides, it serves as a good alternative to prevent recurrence [19]. Surgical excision combined with conjunctival autograft transplantation and either rotational or vertical split graft as a one-time intervention has proven to be effective and cost-effective for the treatment of double-headed pterygium.

In the second case, the recurrent pterygium was large enough to cover the pupillary margin, leading to total blindness. This type of advanced pterygium-induced blindness is rare [6]. A large CLAG was performed in this case, and the result was satisfactory.

It is known that the demographic and environmental factors of patients also contribute to the recurrence of pterygium [6]. Along with surgical causes, other factors may have also contributed to the recurrence, such as working in dry, hot climates, being of Asian race, and prolonged exposure to Ultraviolet (UV) radiation [6]. As India falls within the pterygium belt and the environment is favourable for recurrence, CLAG with or without adjuvant therapy, such as intraoperative application of MMC, is more effective in surgically treating pterygium and prevention recurrence and its complications compared to the bare sclera method [6]. In rural areas of India, healthcare resources are inadequate, and many patients are lost to follow-up. Therefore, a one-time intervention proves to be both more effective and cost-efficient in terms of treatment. Importantly, no recurrences were observed in any of the three cases during the follow-up period.

CONCLUSION(S)

Meticulous excision of the complete pterygium tissue with CLAG, with or without MMC, or rotational conjunctival graft with MMC, or vertical split conjunctival graft with MMC, are some of the effective methods for advanced recurrent nasal and double-headed pterygium. In the present report, the authors have presented three atypical cases of recurrent pterygium with satisfactory visual and cosmetic outcomes.

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