Case Report

# Long Standing Orbital Varix Successfully Managed with Intralesional Bleomycin Sclerotherapy: A Case Report

PJO – Official Journal of Ophthalmological Society of Pakistan



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## ABSTRACT

Varices are rare, congenital, abnormally dilated venous channels that may be found in conjunctiva or extend into the orbit. They may remain clinically silent for years before becoming symptomatic. Their management is challenging because of the lesion's distensibility, potential for acute thrombosis, and surgical inaccessibility. We present a case of a 40-year-old male with a longstanding, progressively enlarging conjunctival mass and intermittent right-sided proptosis since childhood, exacerbated by Valsalva maneuvers. Visual acuity was 6/6 in both eyes. Slit-lamp examination revealed an irregular lobulated conjunctival lesion extending towards the superior fornix with peripheral corneal encroachment. Orbital CT demonstrated a low-flow venous malformation. Three monthly sessions of intralesional bleomycin resulted in marked reduction of lesion size and complete resolution of proptosis. Intralesional bleomycin sclerotherapy is a safe, minimally invasive, and effective treatment modality for orbital venous malformations, offering excellent cosmetic and functional outcomes while avoiding the morbidity of surgical excision.

**Keywords:** Orbital Diseases; Vascular Malformations; Bleomycin; Sclerotherapy; Exophthalmos; Conjunctival Diseases.

**How to Cite this Article:** Anam, Khan A, Mahar PS. Long-Standing Orbital Varix Successfully Managed with Intralesional Bleomycin Sclerotherapy: A Case Report. 2026;42(3):337-343. **Doi:10.36351/pjo.v42i3.2370**

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*Received: February 05, 2026*
*Revised: May 30, 2026*
*Accepted: June 20, 2026*

## INTRODUCTION

Orbital varices are caused by vascular dysgenesis, a rare entity accounting for 0.13% of histopathological proven masses.[1] These are venous malformations that consist of plexus of thin-walled distensible low flow veins like vessels that are intrinsic to normal circulation representing congenital vascular malformations arising from dysgenesis of venous drainage pathways during embryonic development.[2] Orbital varices are commonly diagnosed between 10 to 30 years, although lesions have been described along the lifespan, including rare neonatal presentations. Most cases occur unilaterally with no gender predilection.[3] The hallmark clinical feature is intermittent proptosis exacerbated by maneuvers that increase venous pressure, such as Valsalva, bending forward, or coughing.[4] Management of these lesions has evolved from primarily surgical excision to include minimally invasive options such as sclerotherapy, which offers reduced morbidity and favorable outcomes.

Bleomycin has emerged as a preferred sclerosing agent due to its effectiveness in treating low-flow venous malformations with a favorable safety profile compared to other agents. Here, we report a case of a 40-year-old male presenting for his first-ever hospital visit, with an intermittently enlarging reddish brown conjunctival mass present since childhood and progressively increasing over the past 10 years.

## Case Presentation

A 40-year-old male presented to the outpatient department with complaint of mass like lesion in his right eye since childhood, which was painless and progressively increasing in size for the past 10 years.

He also reported painless intermittent protrusion of right eye along with mass, increasing on straining, coughing, and bending down. On examination, visual acuity was 6/6 in both eyes. Slit lamp examination of right eye revealed a (6x4mm)nodular lesion on upper lid, a large irregular lobulated brownish purple lesion on bulbar conjunctiva (12×12mm) extending towards the superior fornix, encroaching the corneal periphery and sparing the center of cornea. It demonstrated prominent vascularity with hemorrhagic areas and surface telangiectasia. Axial proptosis was noted (Right 19mm, Left 15mm). On Valsalva maneuver, there was increase in axial proptosis (Right 22mm, Left 15mm) and in the size of conjunctival lesion (12×12mm to 20×15mm) as shown in Figure 1. Retropulsion was negative and there was no audible bruit. Lymph nodes were not palpable, cranial nerves and thyroid examination were normal. Intraocular pressure was 12mmHg bilaterally, left eye was unremarkable. Dilated fundus examination was normal in both eyes (Figure 2).

Systemic investigations were normal. CT scan showed right heterogenous mass extending from orbital apex posterior to the globe in retrobulbar space causing mass effect and proptosis of the eye, with linear enhancement. Calcifications were noted medially suggestive of phleboliths. Findings consistent with venous malformations (Figure 3).

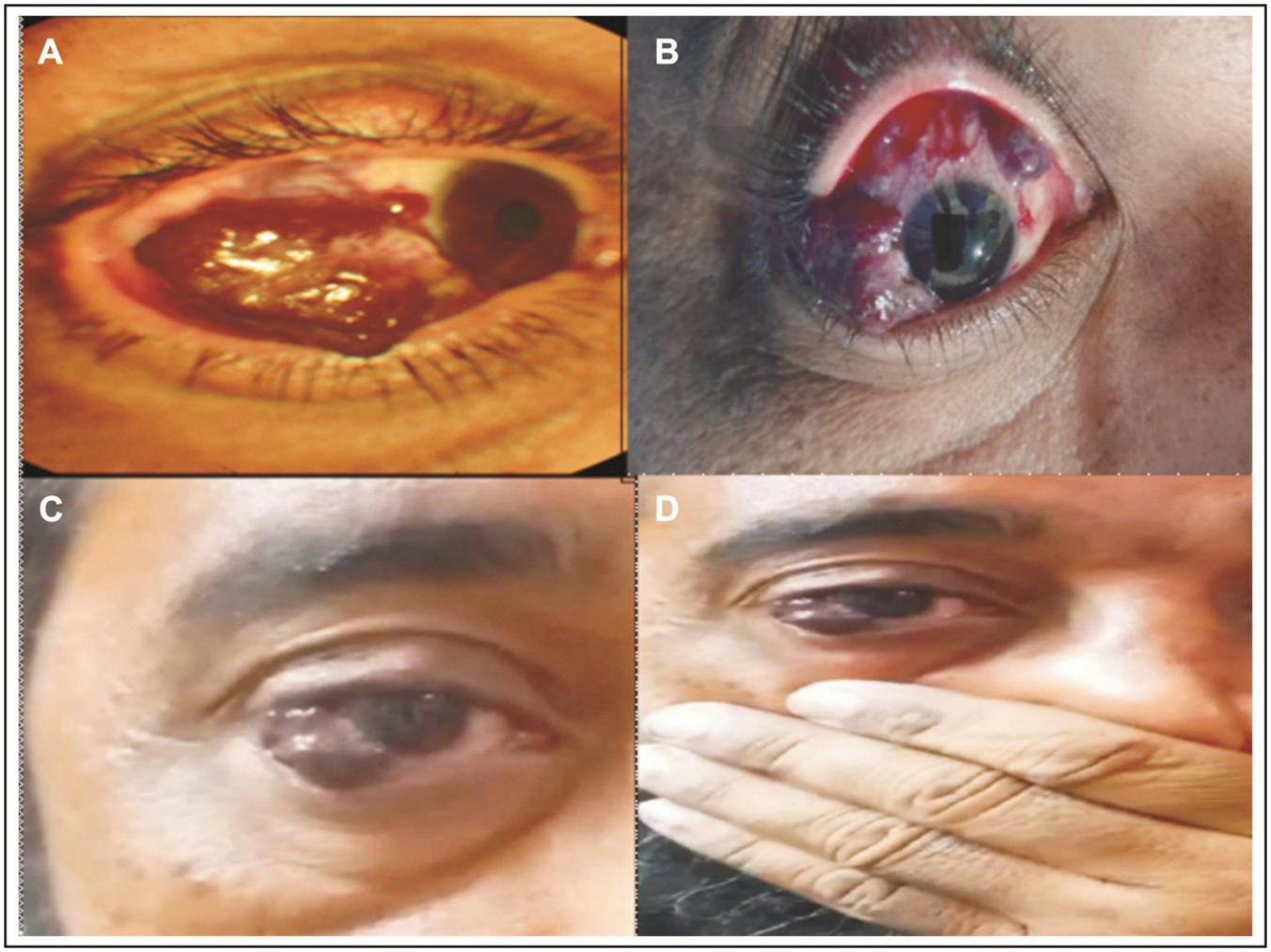


**Figure 1:** Clinical photographs of the right eye.
(A) Slit-lamp view showing a lobulated vascular lesion involving the bulbar conjunctiva extending toward the superior fornix.
(B) Close-up view demonstrating prominent vascularity, hemorrhagic areas, and surface telangiectasia.
(C) External photograph showing axial proptosis at rest.
(D) Increase in proptosis and lesion size during the Valsalva maneuver.

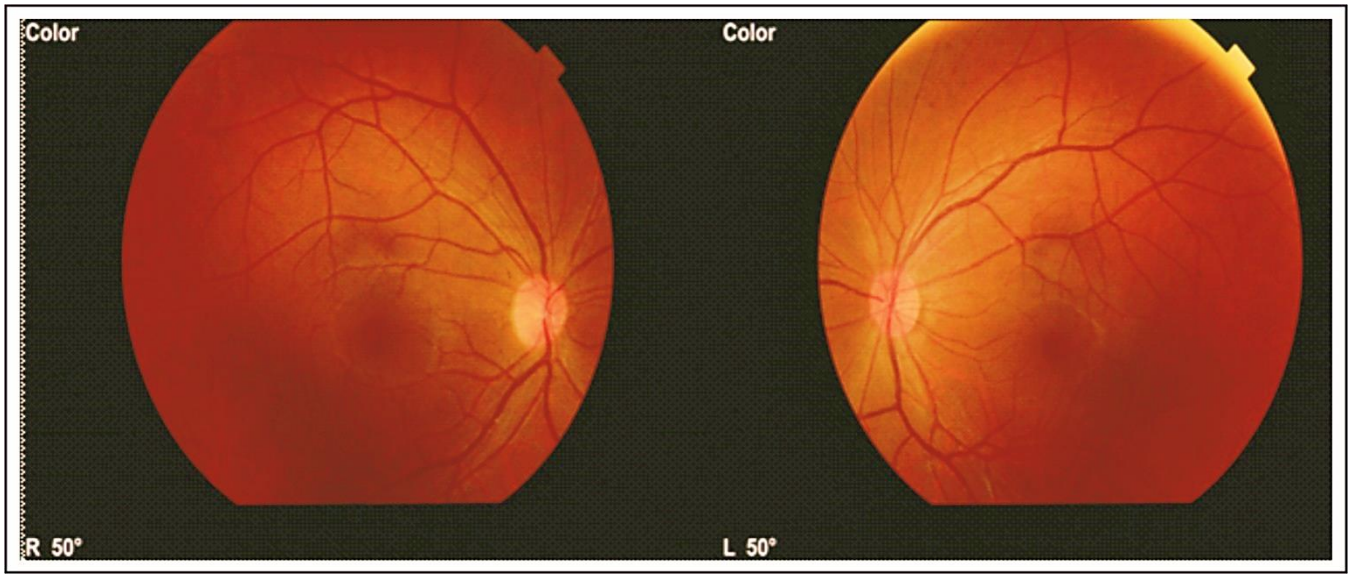


**Figure 2:** Color fundus photographs of both eyes showing a normal posterior segment.

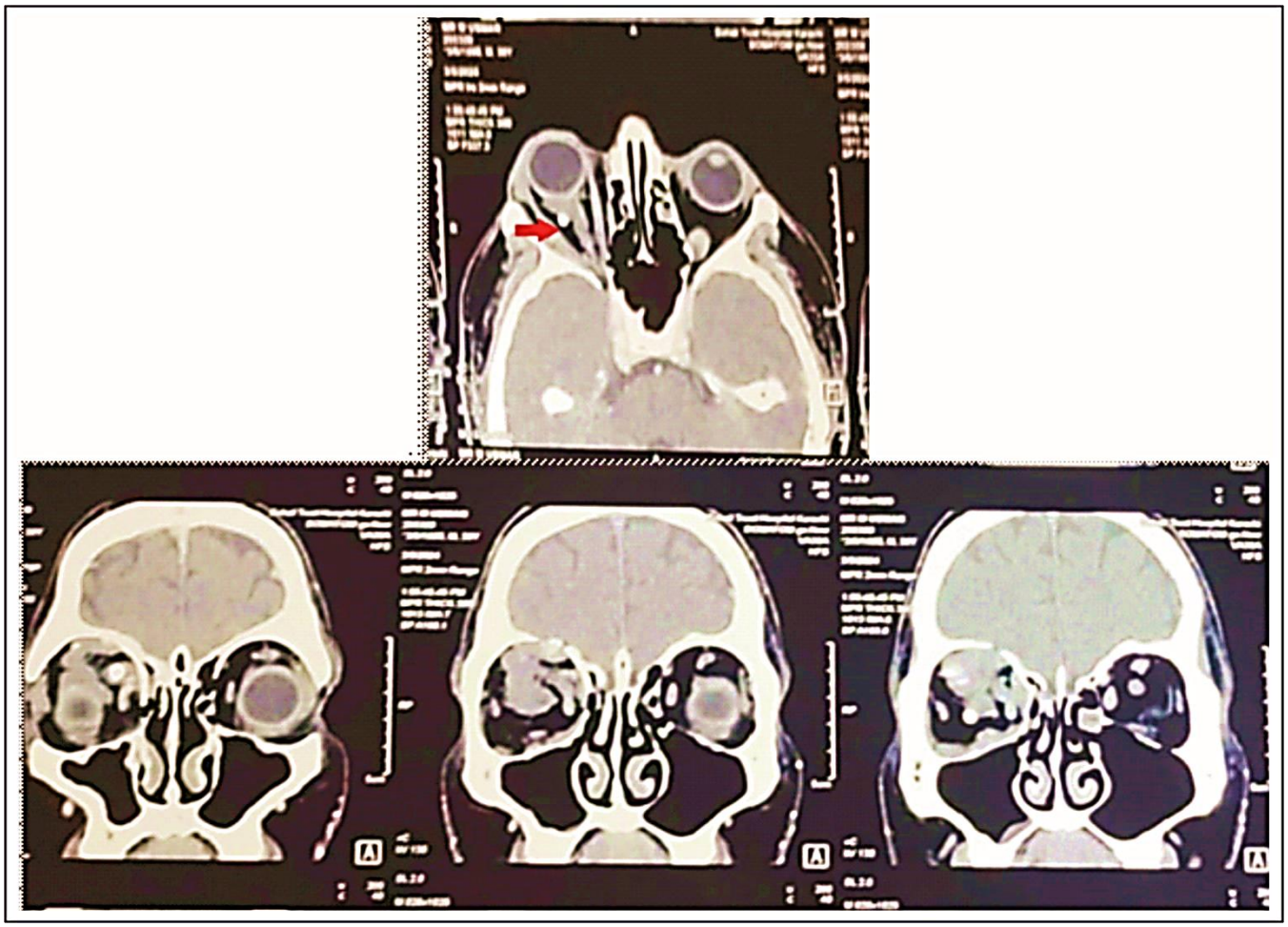

**Figure 3:** Contrast-enhanced computed tomography (CT) scan of the orbits showing a heterogeneous retrobulbar mass in the right orbit extending from the orbital apex posterior to the globe, causing mass effect with resultant proptosis. Linear enhancement is noted within the lesion, with intralesional calcifications suggestive of phleboliths. The top panel shows an axial section demonstrating the lesion (red arrow), while the bottom panel shows coronal sections illustrating the extent of the lesion.

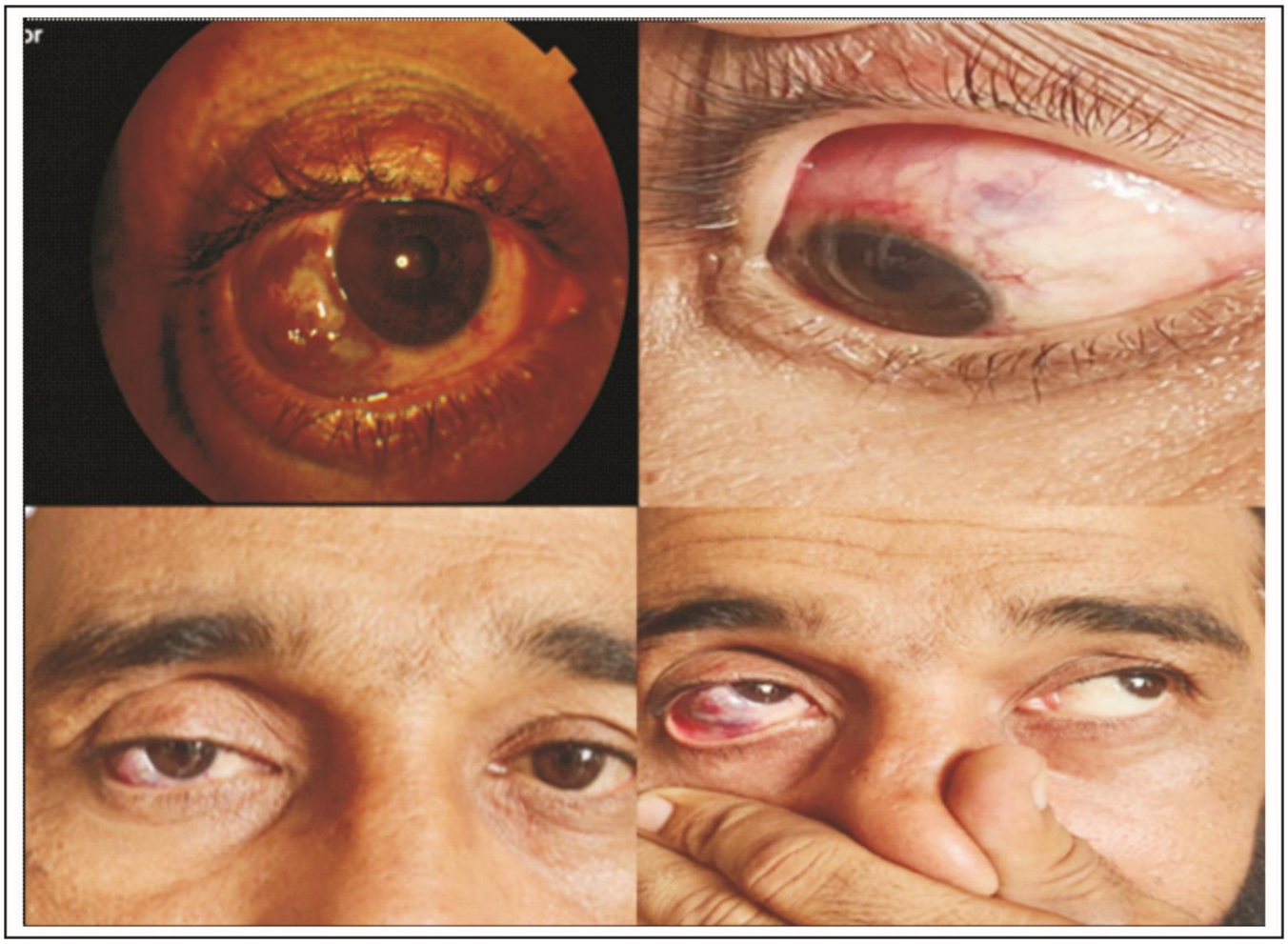

**Figure 4:** Follow-up images one month after intralesional bleomycin injection demonstrate regression of the conjunctival lesion and reduction in axial proptosis (top panels). The bottom panels show the patient's eyes in primary gaze and during the Valsalva maneuver, with noticeable improvement in lesion size and proptosis.

Sclerotherapy was performed, a total of three doses of Intralesional Bleomycin 1 month apart were given. Total dose of bleomycin required is 0.25-0.5mg/kg. Our patient was a 60 kg male requiring 15mg of bleomycin.

First dose of intralesional bleomycin was given by aspirating 7cc of venous blood from the lesion to decompress the varix and determine the intralesional volume. Bleomycin injection volume was standardized to 1/3 of aspirated venous blood volume, giving us a target volume of 2.3ml. To prepare the sclerosant solution, 1 vial of bleomycin (15mg) was diluted in 1ml of sterile water (1ml=15mg) to reach the target volume(2.3ml).Further 1.3ml sterile water was added. Solution was injected into the varix in the retrobulbar space and the bulbar conjunctiva. On one month follow-up conjunctival lesion regressed in size from (12×12mm to 9×9mm) and axial proptosis (19mm to 17mm). On Valsalva maneuver, conjunctival lesion regressed in size from (20×15mm to 15×13mm) and axial proptosis (22mm to 19mm) (Figure 4).

Second dose of intralesional bleomycin (1.6ml) was injected after aspirating 5cc of blood from the lesion, On follow-up, conjunctival lesion regressed in size from (9×9mm to 6×6mm) and axial proptosis (17mm to 15mm). On Valsalva maneuver, conjunctival lesion regressed in size from 15×13mm to 10×8mm and axial proptosis from 19mm to 17mm (Figure 5).

Third dose of intralesional bleomycin (0.8ml) was injected after aspirating 2.5cc of blood from the lesion. On follow-up, the conjunctival lesion regressed in size from 6×6mm to 3x×mm. On Valsalva maneuver, conjunctival lesion regressed in size from 10×8mm to 5×3mm while axial proptosis resolved in the right eye (Figure 6).

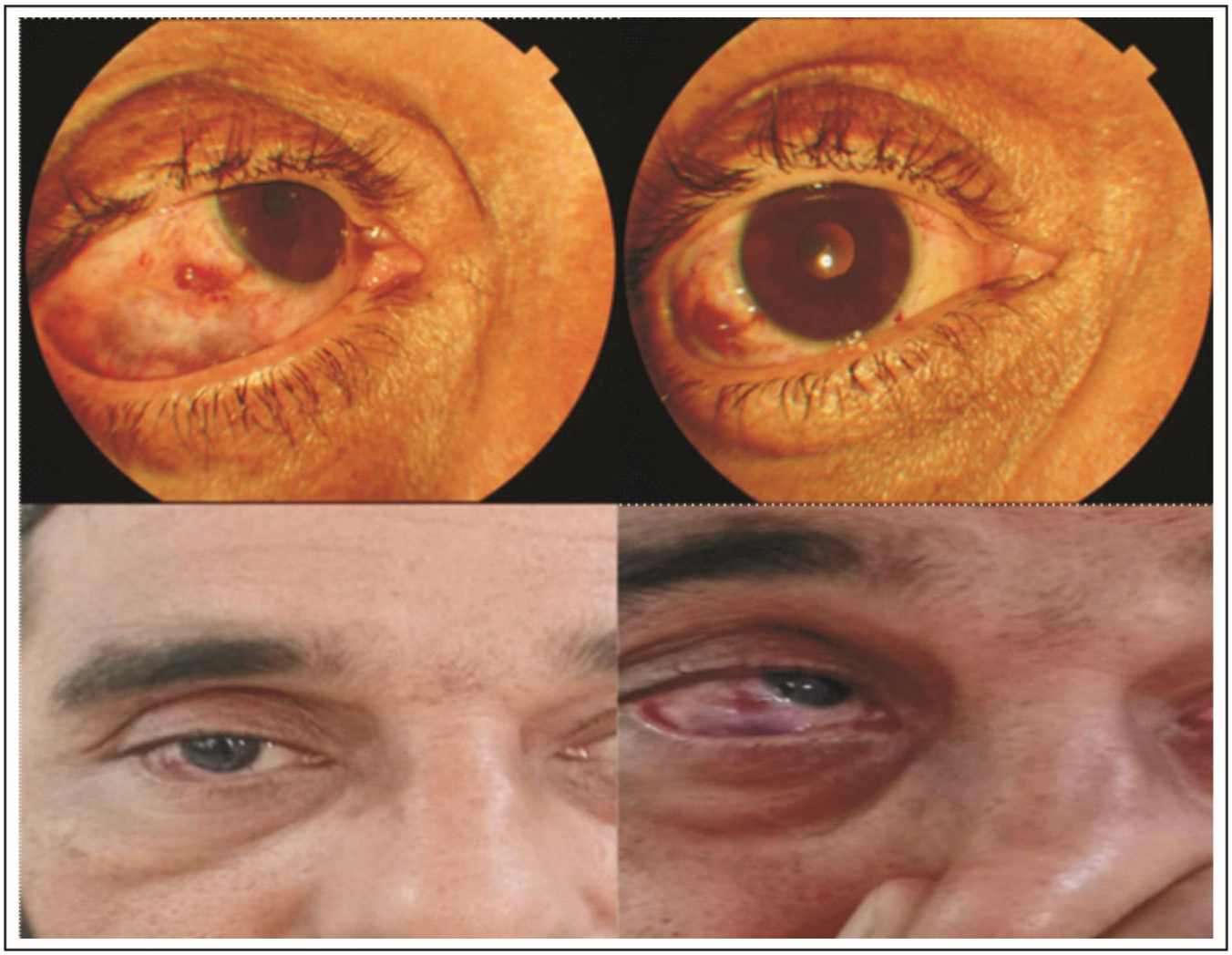

**Figure 5:** Follow-up images one month after the second intralesional bleomycin injection show further regression of the conjunctival lesion and additional reduction in axial proptosis (top panels). The bottom panels show the patient's eyes in primary gaze and during the Valsalva maneuver, with continued improvement in lesion appearance and proptosis.

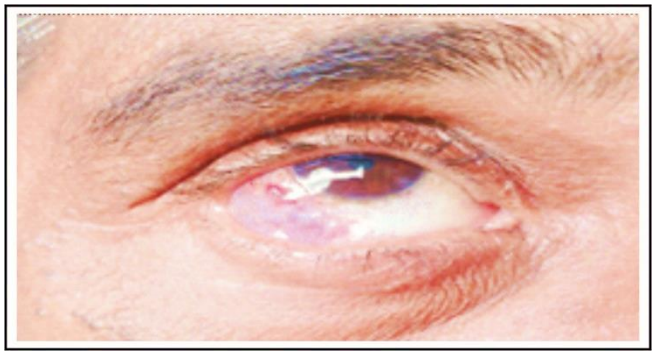

**Figure 6:** Follow-up images one month after the third intralesional bleomycin injection show complete resolution of axial proptosis, with only a small residual conjunctival lesion (3×2 mm) remaining.

**Table 1:** *Clinical outcomes are summarized.*

| Session | Blood Aspirated | Bleomycin Volume | Lesion Size | Proptosis |
|---|---|---|---|---|
| Baseline | — | — | 12×12 mm | 19 mm |
| Valsalva | — | — | 20×15 mm | 22 mm |
| 1 month | 7 cc | 2.3 ml | 9×9 mm | 17 mm |
| 2 months | 5 cc | 1.6 ml | 6×6 mm | 15 mm |
| 3 months | 2.5 cc | 0.8 ml | 3×3 mm | resolved |

## DISCUSSION

Orbital varix is a rare condition that can potentially lead to vision loss. Thrombosis/hemorrhage within these vascular malformations result in acute presentations.[5] In this case, despite late presentation, the vision was preserved. Our patient showed marked

response to only 3 sessions of bleomycin therapy with no systematic or ocular complications.

Management of orbital varices remains challenging due to their collapsible nature; deep lesions are often surgically inaccessible and prone to intraoperative hemorrhage. For these reasons, minimally invasive approaches such as sclerotherapy have gained interest. Bleomycin is an antitumor agent, a glycopeptide antibiotic, isolated in 1966 by Umezawa from soil fungus Streptomyces verticillus.[6] It causes direct damage to the endothelial cells lining the abnormal vessels which triggers a cascade of events involving thrombosis, inflammatory cells infiltration, fibroblast activation leading to fibrosis and obliteration of the malformed vessels.[7] It is used in various conditions including lymphatic and venous malformations, hemangiomas, and cystic lesions, particularly in the head and neck region.[8]

Compared with ethanol, which is associated with high pain levels, necrosis, and neurotoxicity, bleomycin offers advantages including predictable diffusion, lower tissue toxicity, and superior cosmetic outcomes. These differences make bleomycin particularly favorable for periocular and orbital use where neurovascular structures are densely packed.[9]Compared with ethanol; bleomycin offers distinct advantages (Table 2).

**Table 2:**

| Feature | Bleomycin | Ethanol |
|---|---|---|
| Tissue necrosis | Low | High |
| Pain | Minimal | Severe |
| Nerve injury | Rare | Possible |
| Diffusion | Predictable | Irregular |
| Complications | Low | Higher |

Our case demonstrates similarities with previously reported orbital varix cases treated with sclerotherapy yet show unique features worthy of discussion. The case series by Murugesan et al, reported favorable outcomes with intralesional bleomycin for orbital and adnexal venous lymphatic malformations; however, their patients required an average of 4-6 sessions, compared to only 3 in our case, suggesting particularly good response in our patient.[10] Finitsis et al, systematically reviewed bleomycin use for head and neck venous lymphatic malformations and reported success rates of 60-80% with minimal complications.[8]Our case aligns with these findings, achieving complete proptosis resolution and >75% lesion reduction.

Spence et al, compared bleomycin versus alcohol sclerotherapy for facial venous malformations and found bleomycin superior in terms of pain, cosmetic outcomes, and complication rates.[9] Our patient experienced no significant pain or complications, supporting bleomycin as the preferred agent for periocular lesions.

While orbital varices are globally rare, published data from Pakistan remain limited. Recent literature from Pakistani tertiary centers has documented the feasibility of percutaneous sclerotherapy for orbital venous malformations, with case series reporting successful outcomes. The delayed presentation in our case may reflect broader healthcare access patterns in the region, where patients with slow progressive conditions often seek care only when cosmetically or functionally significant.

Bleomycin therapy is not without risks. There are various ocular and systemic complications. Ocular complications including pain at injection site, ecchymosis, lid/orbital edema, proptosis, diplopia, orbital fibrosis (long term) and vision threatening complications (optic nerve injury, orbital ischemia, increased orbital pressure). Systemic complications being pulmonary fibrosis (if dose exceeds 250mg), fever, malaise, skin hyperpigmentation/ulceration and renal toxicity.[10] To minimize these complications, measures taken include using ultrasound/CT guided injection technique, monitor renal and pulmonary functions preoperatively, keep total dose less than 15mg, inject intralesional instead of retrobulbar. Contraindications to bleomycin include allergy, high flow vascular malformations, pregnancy, pulmonary fibrosis, renal impairment, immunocompromised state and active infection at injection site.

Other treatment options for orbital varices apart from sclerotherapy include surgical excision, endovascular embolization, percutaneous cyanoacrylate glue embolization, per cutaneous alcohol sclerotherapy and carbon dioxide laser surgery. However, surgical approaches often carry higher morbidity and are limited by poor lesion visibility. Sclerotherapy offers a less invasive strategy with favorable safety profiles.

## CONCLUSION

This case illustrates a rare presentation of long-standing orbital varix with conjunctival extension successfully treated with only three sessions of bleomycin, achieving complete resolution of proptosis and excellent cosmetic outcomes without ocular and systemic complications. These findings support bleomycin as a viable primary treatment modality for low-flow orbital venous malformations, particularly when surgery is impractical or potentially morbid. It emphasizes the importance of prompt recognition and correct diagnosis of orbital varix followed by timely intervention. Counselling in such cases is essential regarding the need for regular follow-ups to monitor for recurrence and awareness of red flags such as sudden vision changes and swelling.

**Funding:** This study was not funded by any organization.

**Patient's Consent:** Researchers followed the guidelines set forth in the Declaration of Helsinki.

**Conflict of Interest:** Authors declared no conflict of interest.

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## Authors Designation and Contribution

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