

## Spontaneous Globe Rupture in End-Stage Glaucoma: A RARE Case of Neglected Chronic Ocular Hypertension

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### ABSTRACT

**Background:** Spontaneous globe rupture (SGR) is a very rare but devastating complication, most often observed in eyes with advanced disease where the scleral wall has become progressively weakened. In long-standing glaucoma, persistently elevated and poorly controlled intraocular pressure (IOP) can gradually thin the sclera and make the eye prone to rupture.

**Objective:** To report the clinical presentation, emergency management, and short-term outcome of a spontaneous globe rupture in a patient with long-standing, poorly controlled glaucoma.

**Methods:** We report the case of a 65-year-old man with a 10-year history of glaucoma treated with triple therapy, who presented to the emergency department with sudden, severe pain and rupture of the right eye. He had stopped using his prescribed medications for approximately two months prior to presentation.

**Results:** The patient underwent emergency evisceration of the affected eye with placement of an ocular prosthesis. Broad-spectrum intravenous antibiotics were started. In the fellow eye, where IOP was markedly elevated, treatment with intravenous acetazolamide (500 mg loading dose, then 250 mg three times daily) and topical antiglaucoma agents led to satisfactory stabilization.

**Conclusion:** Spontaneous globe rupture in chronic glaucoma is rare but represents one of the most severe consequences of poor disease control. This case emphasizes the importance of ongoing patient education and strict adherence to therapy to prevent irreversible, vision-ending complications in advanced glaucoma.

**Keywords :** *Spontaneous Globe Rupture; End-Stage Glaucoma; Ocular Hypertension; Treatment Non-adherence; Evisceration.*

## 1. INTRODUCTION

Glaucoma is a chronic and progressive optic neuropathy that leads to permanent vision loss. Its management relies largely on lowering intraocular pressure (IOP), regardless of the therapeutic approach used [1]. In practice, however, treatment success is just as dependent on patient behavior as on medical intervention; many patients struggle to maintain regular use of their medications, and poor adherence remains one of the main obstacles to effective disease control [2].

In advanced or end-stage glaucoma, persistently elevated IOP can induce significant structural damage inside the eye. These changes may include ciliary body atrophy and progressive thinning of the posterior sclera, particularly near the equator. When the scleral wall becomes weakened to this extent, focal outpouching may occur, forming areas of ectasia or staphyloma [3].

## 2. CASE REPORT

A 65-year-old man with a 10-year history of glaucoma treated with triple topical therapy presented to the emergency department with an acute, catastrophic event involving the right eye. He described a sudden onset of intense ocular pain lasting about 15 minutes, followed by the sensation that the right eye had “burst” spontaneously.

On arrival, clinical examination revealed complete prolapse of the intraocular contents of the right eye, associated with extensive choroidal hemorrhage. The globe was deemed non-salvageable.

Importantly, the patient reported that he had stopped using all prescribed antiglaucoma medications for the preceding two months.

Ocular findings were as follows:

- Right eye (OD): Spontaneous, non-repairable globe rupture with total extrusion of intraocular contents.
- Left eye (OS): Critically elevated IOP, measured at >50 mmHg.

Based on the history and clinical findings, a diagnosis of spontaneous globe rupture secondary to neglected end-stage glaucoma was established.

## 3. MANAGEMENT AND OUTCOME

Emergency management was swift and two-fold: addressing the acute rupture and controlling the contralateral eye's severe hypertension.

### Acute Surgical Management (Right Eye)

The patient was taken for immediate surgical intervention. A right evisceration was performed (removal of the ocular contents while preserving the scleral shell), followed by the placement of an ocular prosthesis and final closure of the globe. This procedure was chosen as the globe was non-salvageable and offered the best cosmetic and symptomatic outcome (Figure 1 & 2).

Intravenous antibiotics were immediately administered to prevent endophthalmitis, a common complication post-rupture. The patient's status was stabilized, and close follow-up was scheduled.



*Figure 1: Patient's left eye*



*Figure 2: Removal of the ocular contents while preserving the scleral shell*

#### Contralateral Eye Management (Left Eye)

Due to the critically high intraocular pressure in the left eye (OS), aggressive medical therapy was immediately instituted to prevent a similar rupture or acute vision loss:

1. Intravenous Acetazolamide (500 mg) was administered as a loading dose to rapidly reduce IOP [5].
2. This was followed by Acetazolamide (250 mg three times a day) orally, combined with the resumption of his maximal topical anti-glaucoma medication [6].

This aggressive approach successfully brought the IOP in the left eye under control, stabilizing the patient's ocular status and preserving the remaining vision.

#### 4. DISCUSSION

This case illustrates how severely poor treatment adherence can impact patients with advanced glaucoma. Spontaneous globe rupture is extremely rare, as the sclera is normally a very robust structure. However, when intraocular pressure remains chronically elevated and poorly controlled, it can cause pressure-related damage and remodeling of scleral collagen, particularly in areas of pre-existing thinning such as equatorial staphyloma. Over time, this leads to a fragile ocular wall that is prone to rupture [7, 8]. In our patient, the sudden onset of intense pain immediately followed by rupture strongly suggests an acute, extreme rise in IOP occurring in an already structurally compromised globe.

In this context, management was guided by two main priorities:

Right eye – removal of non-viable tissue

Because the globe was completely ruptured with choroidal prolapse, evisceration was the most appropriate option. In such circumstances, globe preservation is no longer realistic, and removing non-viable tissue helps reduce the risk of infection and prepares the eye for later functional and cosmetic rehabilitation with a prosthesis [9].

Left eye – preservation of remaining vision

The fellow eye, with critically elevated IOP, required urgent treatment. Intravenous acetazolamide was administered to promptly reduce aqueous humor production, alongside topical antiglaucoma medications, in order to limit further optic nerve damage and reduce the risk of additional visual loss. Rapid IOP control in the only seeing eye is essential to maintaining visual function and preventing further complications [10].

Overall, this case highlights the need for continuous, clear patient education about the chronic, lifelong nature of glaucoma. Even when the disease appears stable under treatment, interrupting therapy can lead to severe and irreversible outcomes, including the complete loss of an eye

#### 5. CONCLUSION

Spontaneous rupture of the globe is an exceptionally uncommon consequence of uncontrolled, end-stage glaucoma, yet its impact is profound. In this 65-year-old patient, the rupture occurred after roughly two months without antiglaucoma treatment, making the event a clear reminder of how quickly disease control can deteriorate when therapy is interrupted. Management required immediate evisceration of the right eye, followed by prosthetic fitting, while the contralateral eye received urgent treatment to lower intraocular pressure. Together, these interventions were essential for stabilizing the patient acutely and preserving his long-term visual function and quality of life.

This case highlights the ongoing responsibility clinicians have to reinforce treatment adherence and patient education, particularly in advanced glaucoma, where lapses in therapy can lead to irreversible, sight-threatening outcomes.

## **ETHICAL CONSIDERATION**

This study was conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and the Helsinki Declaration of 1975, as revised in 2000. The authors declare that they have obtained the necessary authorizations for publication.

## **CONFLICTS OF INTEREST**

All authors declare that they have no conflicts of interest.

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