

Surgically Induced Focal Scleral Necrosis – A Rare Outcome

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Abstract

Purpose: To present a rare case of surgically induced scleral necrosis (SISN) following vitreoretinal surgery and discuss its clinical presentation, potential etiological factors, and management strategies.

Methods: A 71-year-old male with a history of hypertension and type 2 diabetes mellitus presented with progressive vision loss in the right eye for six months and ocular discomfort with redness for two months. Two months prior, he had undergone pars plana vitrectomy, scleral buckling, and epiretinal membrane peeling for retinal detachment. Clinical examination revealed reduced visual acuity (1/60 in OD), conjunctival congestion, scleral thinning with uveal exposure, and prominent episcleral vessels. Fundus findings included a pale, tilted optic disc with vessel shifting in the right eye, and hypertensive changes in the left eye. Autoimmune markers (ANA, RA factor) were negative. A diagnosis of post-retinal surgery-induced scleral necrosis was made.

Results: Management included topical fortified vitamin C, antibiotics, corticosteroids, and oral doxycycline. Surgical intervention with scleral patch graft and buckle readjustment was advised. The pathogenesis was attributed to possible scleral ischemia induced by excessive buckle tension or trocar-related trauma, compounded by systemic comorbidities impairing healing.

Conclusion: SISN, though rare, is a serious complication of ocular surgery. Risk factors include multiple surgeries, adjunctive therapies, surgical trauma, and systemic diseases. Early recognition and a multidisciplinary approach are critical for preserving ocular integrity. Surgeons must exercise caution during scleral manipulations and conduct thorough systemic evaluations prior to surgery.

Keywords: Scleral necrosis, Vitrectomy, Scleral buckling, Epiretinal membrane, Vitreo-retinal surgery, Non-contact tonometry, Right eye, Left eye.

INTRODUCTION

Scleral necrosis following ocular surgery is a rare but potentially devastating complication.^{1,2} It involves localised scleral tissue death (necrosis) that can lead to severe visual morbidity. This report presents a case of Scleral necrosis induced by vitreous-retinal surgery, discusses its potential causes, clinical findings and management strategies.

Case Report

A 71-year-old male patient presented with diminution of vision in his right eye for 6 months and excessive tearing, discomfort and redness in his right eye for 2 months. He also had a history of hypertension for 20 years and type 2 diabetes mellitus for 15 years. 2 months back, he was diagnosed with retinal detachment for which he had undergone vitrectomy,

scleral buckling and ERM peeling. On examination, his best corrected visual acuity (by Snellen chart) was -2.00 DS -1.00 x 110 DC 1/60 in OD and Plain 6/12 in OS. His NCT was 19 and 22 in OD and OS, respectively. Projection of rays was accurate in all quadrants, ocular movements were full in all gazes and pupillary reaction, both direct and consensual, were present in both eyes.

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UP JOURNAL OF OPHTHALMOLOGY

An Official Journal of Uttar Pradesh State Ophthalmological Society,
UPSOS (Northern Ophthalmological Society, NOS)

p-ISSN: 2250-1916

DOI: 10.56692/upjo.2025130210

How to cite this article: Garg R, Srivastava T, Saquib M, Waris A. Surgically Induced Focal Scleral Necrosis – A Rare Outcome. UP Journal of Ophthalmology. 2025;13(2): 80-82.

Received: 22-07-25, **Accepted:** 10-08-25, **Published:** 26-08-25

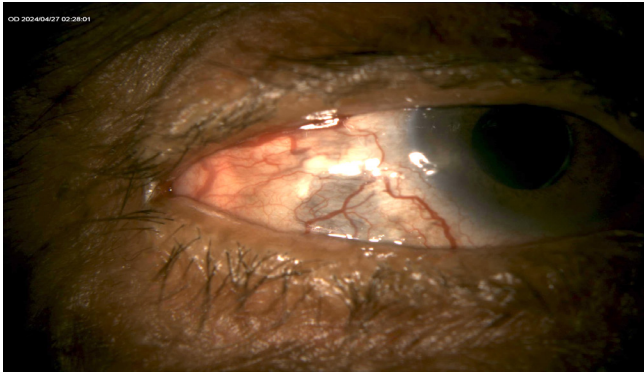


Figure. 1: Slit lamp picture of right eye showing retracted and congested conjunctiva, scleral thinning with exposure of the underlying uvea and prominent episcleral vessels

On slit lamp examination of the right eye, the conjunctiva was retracted and congested, scleral thinning was noted with exposure of the underlying uvea and prominent episcleral vessels (Figure 1).

Slit lamp examination of the left eye was normal. On Fundus examination of the right eye, a red glow was present, the media was clear, disc was vertically oval, tilted and pale; arterio-venous nicking was observed in the infero-temporal quadrant along with nasal shifting of blood vessels (Figures 2 and 3).

Left eye fundus examination shows soft exudates in the background, mainly near the optic disc in the supero-nasal quadrant and copper wiring of the blood vessels in the infero-temporal quadrant.

Antinuclear antibody and rheumatoid arthritis factor were found to be negative.

A diagnosis of post-retinal surgery induced scleral necrosis was made.



Figure. 2: Fundus picture of the right eye



Figure. 3: Fundus picture of left eye

Management

Patient was started on topical fortified vitamin C 4 times a day, topical moxifloxacin thrice daily, topical prednisolone 6 times a day and tablet doxycycline 1 tablet, twice daily. He was also advised on scleral patch grafting with buckling readjustment.

DISCUSSION

Surgically induced scleral necrosis is a rare but serious complication following ocular surgeries, particularly those involving the sclera or conjunctiva.^{1,2} The use of adjunctive agents like mitomycin C, while effective at reducing scarring and recurrence of conditions like pterygopalatine, carries the risk of delayed wound healing and tissue necrosis.^{3,4}

Cryotherapy/Diathermy, often used to treat retinal tears, but overuse or high-intensity application can cause scleral damage.^{5,6}

In this case, excessive tension due to scleral buckling or the use of trocars might have led to scleral ischemia.⁷ Advanced age and comorbidities like diabetes or autoimmune diseases can impair wound healing.⁸

Careful placement of trocars and scleral buckles can reduce the risk of ischemia and necrosis.⁹ Early signs of scleral necrosis (pain, redness, scleral discolouration) should be identified promptly for early intervention.

CONCLUSION

Since surgically induced scleral necrosis is uncommon, it underscores the need for vigilance and meticulous surgical planning to minimize risks and optimize patient outcomes. Early recognition and intervention are essential to preserving vision and ocular structure.

Carry Home Message

- Undergoing multiple vitrectomies is a recognized risk factor for surgically induced scleral necrosis.

- Systemic lupus erythematosus, rheumatoid arthritis, and other collagen vascular disorders should be excluded prior to performing surgeries involving the sclera.
- A thorough systemic evaluation and gentle surgical technique are key to preventing surgically induced scleral necrosis.

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