

# The Successful Use of Scleral Lenses in a Case of Argyrosis

Stephanie Pisano, OD, FSLS, FAAO

Department of Ophthalmology and Visual Science, Havener Eye Institute



THE OHIO STATE  
UNIVERSITY

WEXNER MEDICAL CENTER

## Introduction

Scleral contact lenses have widely been reported to be successful therapeutic devices in patients with severe ocular surface disease. They also provide visual rehabilitation to those with corneal scarring inhibiting vision. A patient was referred for a scleral lens evaluation with an extensive ocular history and argyrosis or argyria. Argyrosis is a rare condition that causes the cutaneous and external mucous membranes of the body to change in color to a blue-silver hue. In addition, this change in pigmentation can also be observed in the conjunctival, stroma and caruncle. Argyrosis can be caused by medications, supplements or occupational exposure to silver, containing compounds as in the case of this patient.

Figure 1. Representative photos of pigmentation changes



## Case Presentation

A 58 year old African American male presented for a scleral lens evaluation with a long history of construction and mining with silver compounds. He had recently undergone an emergent lensectomy for acute angle closure with resulting phacomorphic glaucoma in the right eye. The patient then developed bilateral MRSA corneal ulcers. Upon resolution of the ulcers, the patient underwent a vitrectomy and AKREOS lens implant in the right eye. The patient underwent a similar procedure with AKREOS implant in the left eye after a complex cataract surgery that initially left him aphakic. In addition this patient's extensive ocular history, he complained of debilitating ocular dryness, conjunctival hyperemia

eye pain and blurred vision. His ocular surface was managed with a variety of treatments and therapies with minimal success. The patient only reported positive history of hypertension and hyperlipidemia. He denied any systemic conditions or ocular symptoms relating to ocular surface disease prior to his skin pigmentation changes. As a result of his bilateral corneal scarring, poor ocular surface and ocular symptoms, he was referred to the specialty contact lens clinic for a scleral lens evaluation.

## Initial Contact Lens Evaluation

Best corrected visual acuity with refraction:

**OD:** 20/100

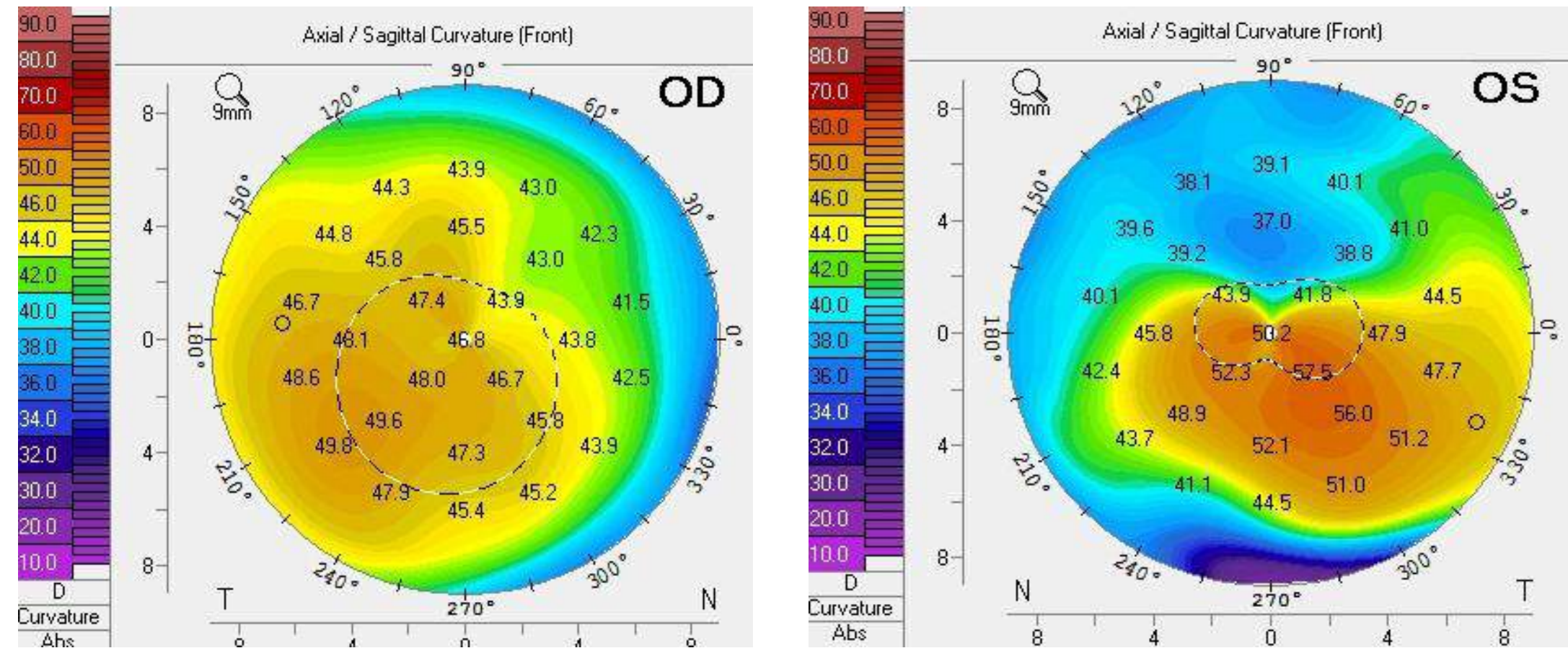
**OS:** 20/60

### Slit lamp examination:

**OD:** periorbital skin discoloration with lid tightening and mild ectropion of lower lids, 2+ conjunctival injection, central corneal scarring with 2+ punctate epithelial erosions, stromal haze, iris atrophy

**OS:** periorbital skin discoloration with lid tightening and mild ectropion of lower lids, 2+ conjunctival injection, central corneal scarring with 2+ punctate epithelial erosions, stromal haze, irregular pupil with iris atrophy.

Figure 2. Pentacam topography axial maps OD, OS



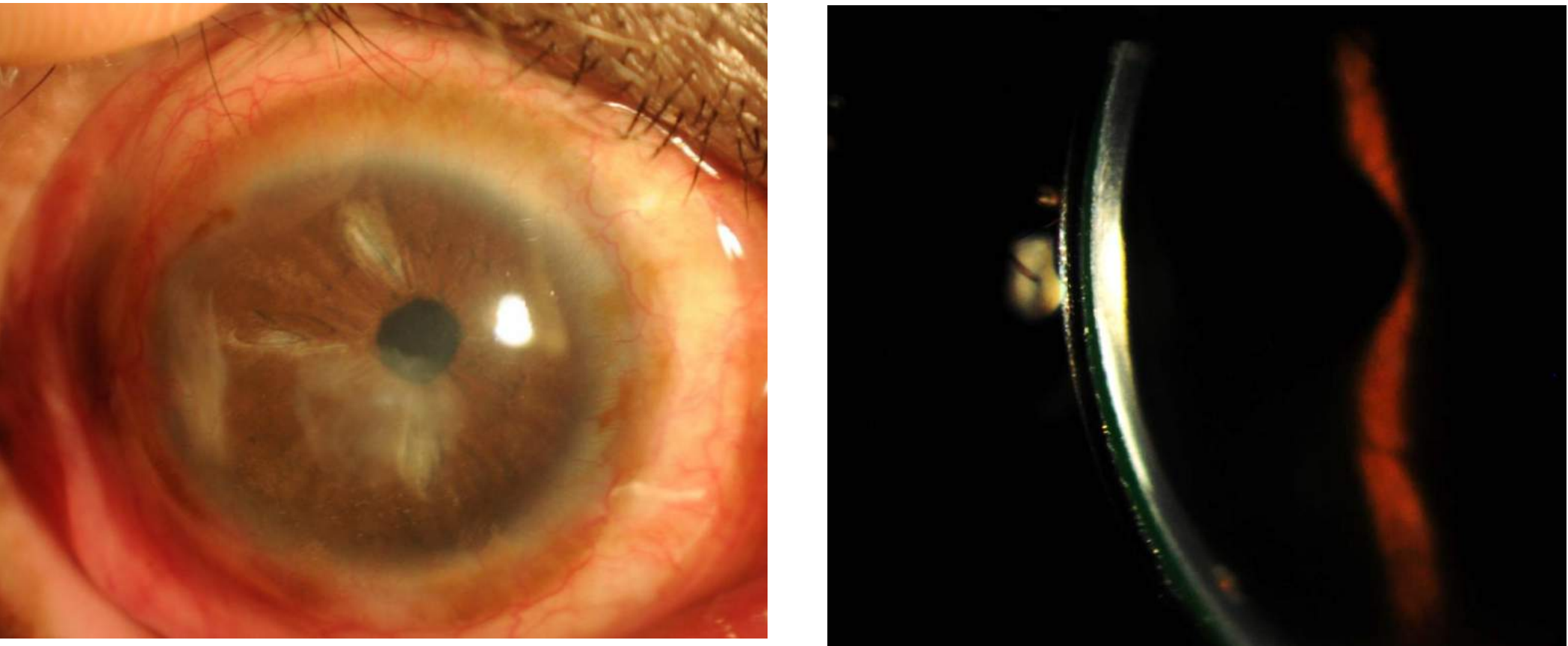
### Initial trial lens selection:

**OD:** Alden Zenlens 17.0 mm, sagittal depth 4.900, prolate design

- After 30 minutes: 150 microns of central corneal clearance, no limbal bearing in any quadrant, fine vessel blanching in all quadrants

- Over-refraction: +2.50 +0.25 x 180 → 20/30 +3

Figure 3. Slit lamp photographs of trial lens OD after 30 minutes

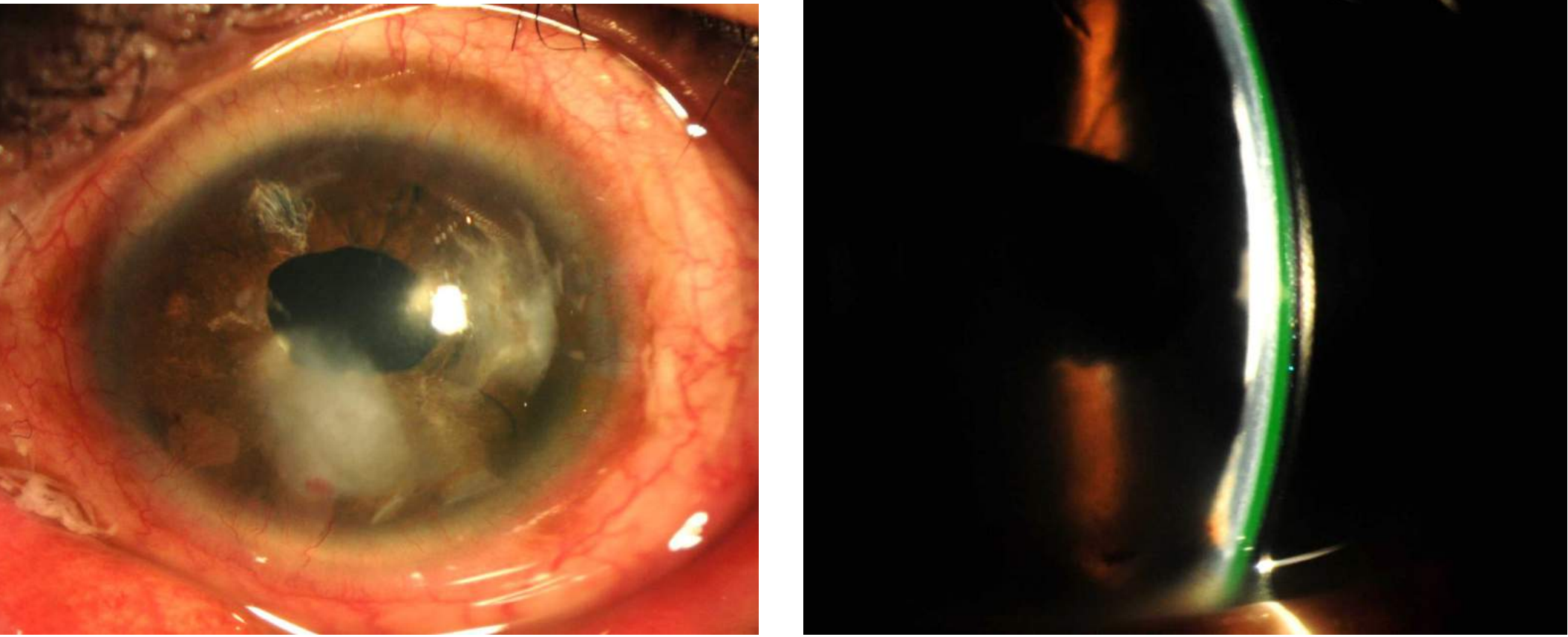


**OS:** Alden Zenlens 17.0 mm, sagittal depth 5.200, prolate design

- After 30 minutes: 350 microns of central vault, no limbal bearing in any quadrant, fine vessel blanching in all quadrants

- Over-refraction: -1.00 DS → 20/25 +1

Figure 4. Slit lamp photographs of trial lens OS after 30 minutes



The patients lenses were both ordered with a flatter peripheral curve system to aide in blanching noted after the lenses were settled and an increase in sagittal depth in the right eye. In addition, the material ordered was Boston X02. The patient was instructed to return to clinic in two weeks for lens dispense with insertion and removal training.

## Finalized Lens Evaluation

The patient successfully was able to wear his scleral lenses for up to 10 hours after his initial lens adaptation period. He reported an significant improvement in his symptoms of dryness, light sensitivity, blurred vision, and ocular hyperemia. The patient was able to reduce almost all topical medications for his ocular surface disease. His final visual acuity with scleral lenses was 20/25 in each eye. At the time of evaluation both lenses were in the eye for 5 hours. The final lens parameters and settled appearance of the lenses in Figure 5 and 6.

Table 1. Final Lens Parameters

Manufacturer	Diameter	Sagittal Depth	Peripheral Curves	Center Thickness	Power
OD- Alden Zenlens	17.00 mm	5.000	Flat 1 Step	0.33	+0.50 DS
OS- Alden Zenlens	17.00 mm	5.200	Flat 1 Step	0.35	-3.75 DS

Figure 5. Slit lamp photographs of final scleral lens OD after 5 hours

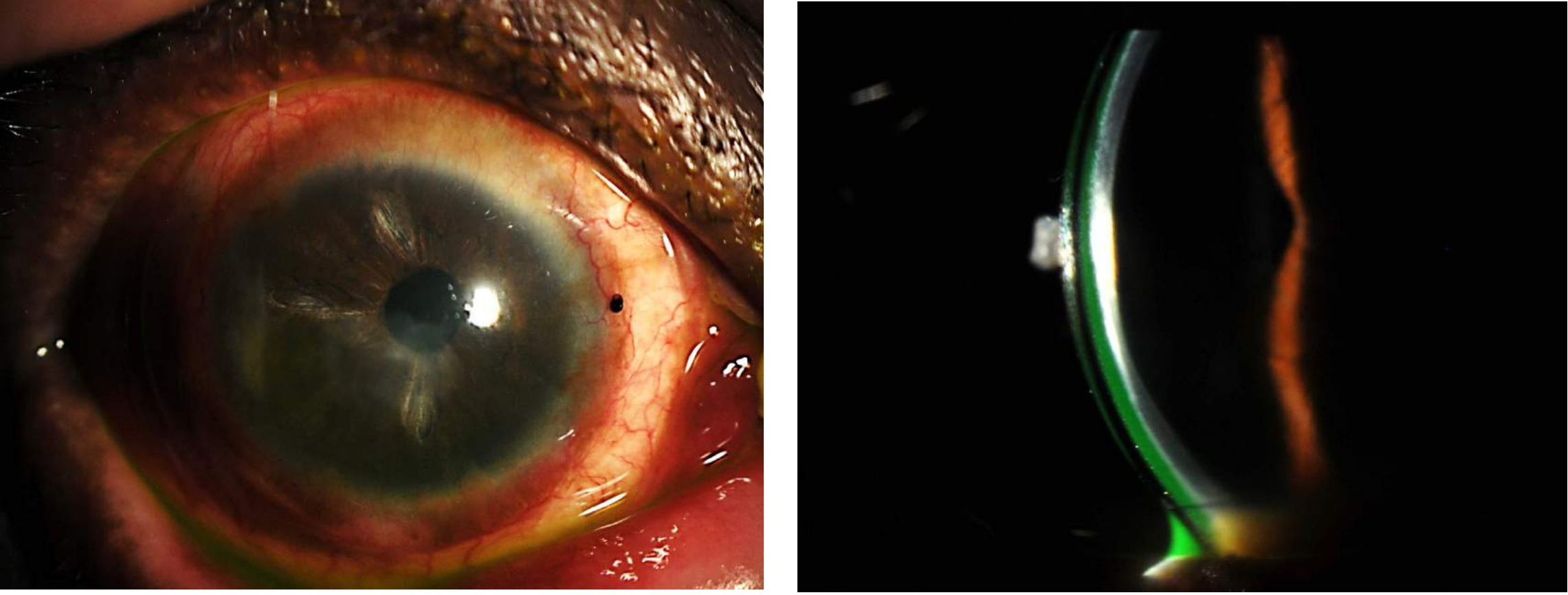
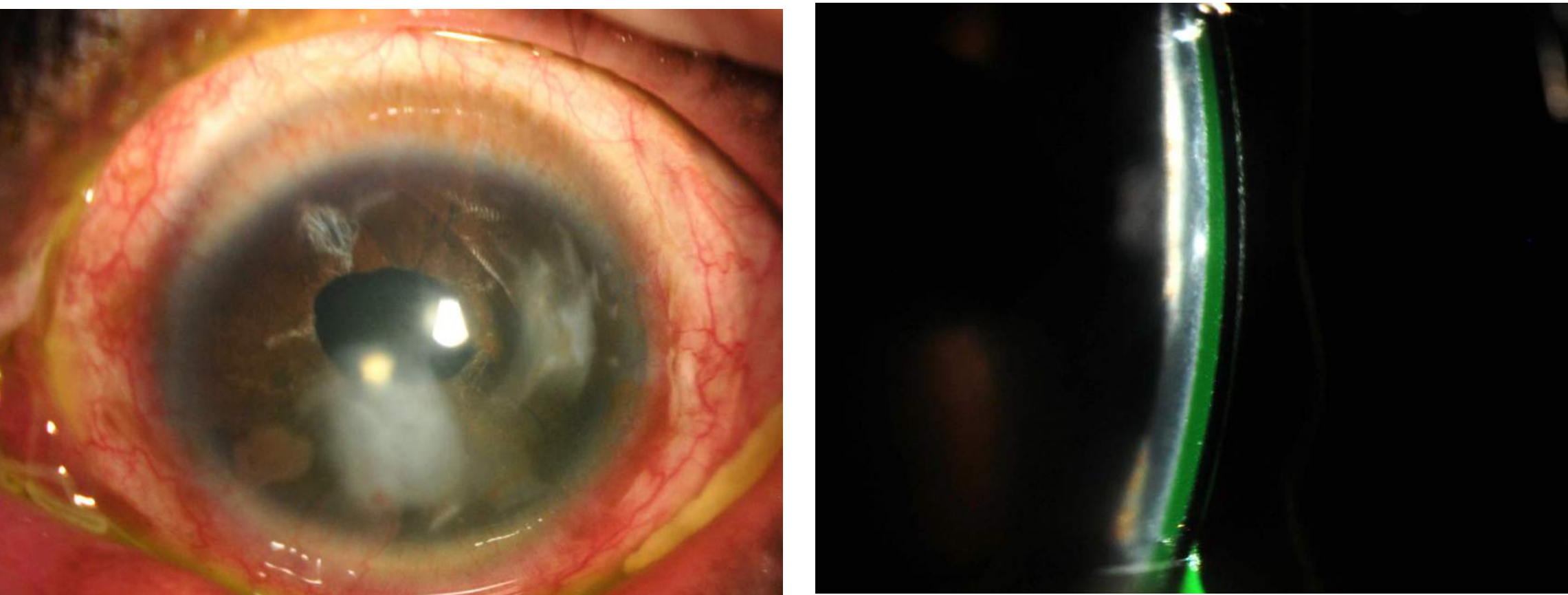


Figure 6. Slit lamp photographs of scleral lens OS after 5 hours



## Discussion

Argyrosis is a rare condition that can cause pigmentation changes in multiple ocular structures. The exact cause of this presentation must be determined to rule out other pigmentation conditions. This condition has not been previously reported to have an ocular surface disease (OSD) component. Scleral lenses were used in this case as a successful therapeutic option when traditional therapies for OSD failed. In addition, the patient's vision improved significantly in each eye with lens wear. In this case, the patient has multiple other ocular conditions and a history of MRSA corneal ulcers, requiring frequent monitoring by multiple ocular subspecialties.

## References

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