

# Vitrectomy (25G) in a 77-year old patient with asteroid hyalosis – case report



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## HIGHLIGHTS

While the morphological changes of asteroid hyalosis can be similar, their impact on patients' visual quality is varied. Various methods of treatment depends on the patient's individual experiences and clinical condition.

## ABSTRACT

**Introduction:** Asteroid hyalosis, marked by calcified phospholipids in the vitreous body, is usually unilateral and becomes more common with age. It is often asymptomatic but may affect visual comfort.

**Materials and methods:** A 77-year-old woman with asteroid hyalosis, macular degeneration, and pseudophakia underwent 25G vitrectomy due to significant visual deterioration. Preoperative visual acuity in the right eye was 4/50.

**Results:** Postoperative visual acuity improved to 5/25 with no complications.

**Conclusions:** This case highlights the importance of personalized vitrectomy decisions based on symptom severity and comorbidities, even when visual acuity in asteroid hyalosis typically does not worsen.

**Key words:** Benson's disease, asteroid hyalosis, vitrectomy, pars plana vitrectomy, hemorrhage into the vitreous body

## INTRODUCTION

Asteroid hyalosis, also known as Benson's disease, is characterized by the presence of small white particles composed of calcified phospholipids suspended in the vitreous humour of the eye. In 75–90% of cases, it is unilateral [1]. No racial predispositions or gender differences have been observed, and familial cases are very rare [2]. Incidence increases with age, from 0.2% in individuals aged 43–54 years to 2.9% in those aged 75–86 years [3].

While it typically does not significantly reduce visual acuity, high densities of the crystals can greatly affect visual comfort. Visual deterioration can be especially noticeable when the disease coexists with cataracts or degenerative retinal changes. Previous studies have suggested possible associations with diabetes, hypertension, atherosclerosis, hypercholesterolemia, and elevated serum calcium levels, although these have not been conclusively proven. The surgical method of treatment is pars plana vitrectomy. In cases of concurrent cataracts, a combined procedure of vitrectomy and cataract removal by phacoemulsification, known as phacovitrectomy, can be effective [4].

## MATERIAL AND METHODS

A 77-year-old female patient was admitted to the Prof. K. Gibinski University Clinical Center of the Medical University of Silesia in Katowice in January 2024 for treatment of asteroid hyalosis in the right eye. Her medical history included the dry form of age-related macular degeneration and pseudophakia in both eyes. The best-corrected visual acuity (BCVA) was 4/50 in the right eye and 5/50 in the left eye. Intraocular pressure was 20 mmHg in both eyes. Additional tests, including a B-scan ultrasonography of the eye, revealed numerous dense echoes in the vitreous chamber suggestive of asteroid hyalosis (fig. 1). Optical coherence tomography (OCT) showed numerous drusen. Based on

local findings and additional tests, the patient was qualified for 25G pars plana vitrectomy due to significant vision impairment affecting her visual comfort.

## RESULTS

During hospitalization, a 25G vitrectomy was performed. The patient was anesthetized with a peribulbar injection (a mixture of 2% lidocaine and 0.5% bupivacaine in a 1:1 ratio). Trocars were placed in the typical location, and infusion was initiated. A vitrectomy was performed with posterior vitreous detachment and injection of 25% SF<sub>6</sub>, completed without complications (fig. 2). Postoperatively, the

FIGURE 1

Ultrasonographic examination of the right eye in B-scan projection.

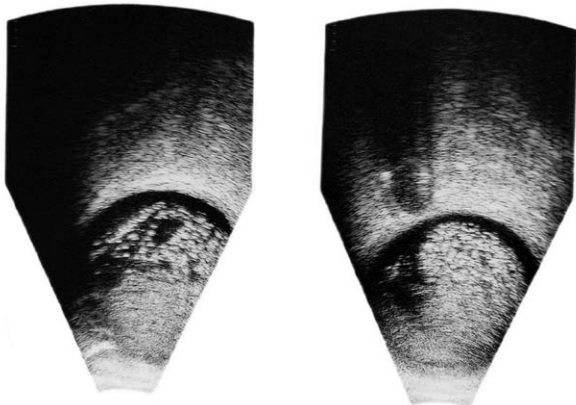
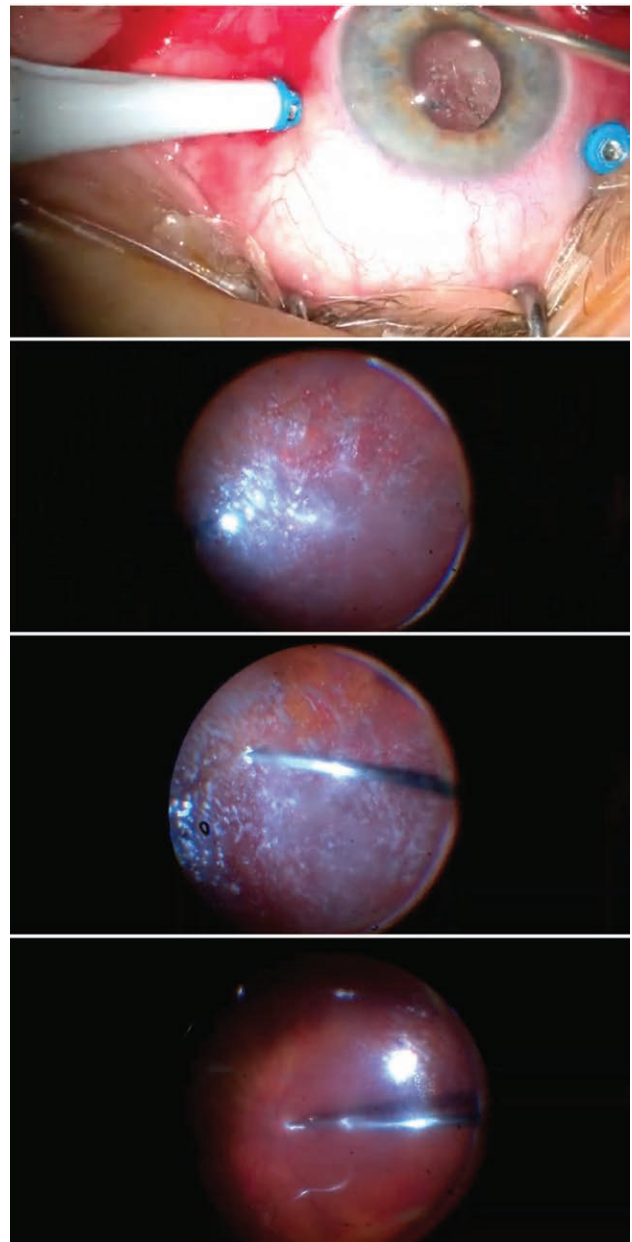


FIGURE 2

Pars plana vitrectomy (25G) of the right eye.



BCVA improved to 5/25 in the right eye and remained 5/50 in the left eye. Intraocular pressure was 15 mmHg in the right eye and 20 mmHg in the left eye.

## DISCUSSION

Indications for vitrectomy in patients with asteroid hyalosis include reduced visual acuity [1, 5, 6], dystrophic calcification of the intraocular lens [7], and proliferative diabetic retinopathy [8]. Although vitreous changes associated with Benson's disease usually do not impair visual acuity, they can significantly affect subjective visual comfort. Pars plana vitrectomy is the surgical method used in patients with this condition. Numerous cases in the medical literature have demonstrated the effectiveness of this procedure in improving visual acuity and comfort in patients with asteroid hyalosis.

Boissonnot et al. performed vitrectomy in 3 patients with asteroid hyalosis and visual acuity below 0.1. The surgeries were complication-free, and an epiretinal membrane was additionally removed in one patient. Improvement was achieved in 2 patients, with postoperative visual acuity of 0.6 or better. Unfortunately, no improvement in visual acuity was noted in the third patient due to atrophic maculopathy [5].

Spychała et al. from the Department of Ophthalmology at the Medical University of Lodz reported an improvement in visual acuity from a preoperative mean of 0.44 ( $\pm 0.31$ ) to 0.78 ( $\pm 0.23$ ) postoperatively. The group included 7 patients, 5 of whom underwent simultaneous cataract surgery by phacoemulsification. The indication for surgery was de-

creased visual acuity and subjective visual deterioration [1]. Parnes et al. performed pars plana vitrectomy in 10 patients, with indications including reduced visual acuity (6 patients), presence of floaters (3 patients), and both symptoms (1 patient). The mean visual acuity before surgery was 0.3 ( $\pm 0.23$ ) and improved to 0.61 ( $\pm 0.31$ ) postoperatively [6].

Ullman et al. performed a series of pars plana vitrectomies to avoid replacing intraocular lenses that were showing progressive calcification secondary to asteroid hyalosis. The first surgery involved the right eye and did not change the visual acuity, which remained at 0.8, but the patient reported subjective visual improvement. The second surgery involved the left eye, where visual acuity improved from 0.67 to 0.8 [7].

## CONCLUSIONS

Based on the results of this study and available literature on asteroid hyalosis, the choice of treatment method largely depends on the cause of the disease, the presence of concomitant conditions, and the time since the onset of symptoms. Although vitreous changes associated with Benson's disease usually do not impair visual acuity, they can significantly affect subjective visual comfort. The same morphological characteristics of asteroid hyalosis in different patients can produce varying degrees of subjective visual quality impairment, from no impairment to significant impairment. Due to the varied indications for treatment, the decision to perform a vitrectomy should be made on an individual basis.

*Figures: from authors' own materials.*

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### Authors' contributions:

Antoni Sienko: data collection and analysis; interpretation of results; preparation of part of the article; critical revision of intellectual content.

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Sebastian Sirek: conception and design of the study; supervision of the project; critical revision of intellectual content; final approval of the article for publication.

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The content presented in the article complies with the principles of the Helsinki Declaration, EU directives and harmonized requirements for biomedical journals.