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A 42-Year-Old Woman with ODS Astigmatism Myopia Compositus and os Vitreus Opacity

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Abstract

Astigmatism myopia composite is type abnormality refraction where both line focus light entering the eye is in front of the retina. Vitreous opacity or turbidity vitreous is condition in which the structure transparent vitreous inside eye lost its clarity, causing emergence symptoms like spots or the lines that block vision. Report This case describes a Woman 42 year old who experienced astigmatism myopia composites in the eye right and left and opacity vitreous of the eye left. The patient came with complaint vision run away and see line as well as point black moment see since 3 days ago. Examination beginning show vision OD 4/60 and OS 2/60, after corrected with lens spherical and cylindrical increase to 6/6 on the eyes right and 6/9 on the eyes left. Correction refraction done with lens spherical -4.50 D and cylindrical -1.00 D in the eye right, and spherical -6.00 D and cylindrical -0.50 D in the eye left. Inspection anterior segment in normal limits that confirm a pure diagnosis abnormality refractive functional and posterior segment of the eye. Patients experience complexity and referred for action more further, including inspection in-depth by retina and vitreous specialists use determine optimal handling. This case emphasizes importance approach multidisciplinary in handle disturbance refraction and abnormalities vitreous to improve quality vision patient.

Introduction

Refractive errors are among the leading causes of impaired visual function globally, affecting individuals across all age groups and significantly influencing functional ability, productivity, and quality of life. Myopia, in particular, has shown a dramatic global rise over the past few decades, emerging as one of the most prevalent refractive disorders worldwide (Holden et al., 2016; Holden et al., 2016; Baird et al., 2020; Fricke et al., 2018). Current epidemiological projections estimate that by 2050 approximately 5 billion people nearly half of the world's population will be affected by myopia, with 1 billion of these categorized as high myopia and at substantial risk of sight-threatening ocular complications such as myopic maculopathy,

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retinal detachment, and glaucoma (Holden et al., 2016). Similarly, astigmatism remains a major contributor to decreased visual acuity, with its prevalence frequently co-occurring with other refractive errors including myopia. According to global estimates, refractive errors account for 43% of vision impairment cases, making them the primary cause of avoidable visual disability, surpassing cataracts and glaucoma (Febriana et al., 2024; Steinmetz et al., 2021; Huang et al., 2025; Pesudovs et al., 2024).

Astigmatic refractive errors arise from irregularities in the curvature of the cornea or lens, resulting in multiple focal points that distort retinal image formation and contribute to blurred vision (Usman et al., 2025; Al-Sharify et al., 2024; Verma & Arba-Mosquera, 2025). When astigmatism occurs alongside myopia, the condition is recognized as composite or compound myopic astigmatism, in which both focal lines fall anterior to the retinal plane (Dinari, 2022). This combined refractive anomaly not only compromises visual clarity but may also lead to additional symptoms including headaches, ocular discomfort, and fluctuating vision conditions often exacerbated during prolonged visual tasks (Gurnani and Kaur, 2025). Environmental influences, anatomical variations of ocular structures, age-related changes, and genetic predisposition have all been identified as contributors to the development of composite myopic astigmatism, although the precise etiopathogenesis remains multifactorial and not yet fully determined (Febriana et al., 2024 Williams & Hammond, 2025).

Despite the availability of corrective approaches, composite myopic astigmatism continues to pose clinical challenges due to the complexity of refractive correction required to restore optimal visual performance. Non-surgical interventions such as prescription spectacles and toric contact lenses are widely used and remain the primary global treatment option due to accessibility and cost-effectiveness (Dinari, 2022; Shuaibu et al., 2025; Suleman et al., 2025). However, surgical alternatives, including photorefractive keratectomy (PRK), are increasingly being utilized especially in patients requiring more permanent correction or those intolerant to conventional devices (Dinari, 2022; Torricelli et al., 2024; Alasbali, 2022). Nonetheless, both conservative and surgical treatments require careful evaluation of individual corneal biomechanics, refractive stability, and ocular comorbidities to ensure favorable visual outcomes.

One notable posterior segment condition frequently associated with increasing age and high myopia is vitreous opacity. The vitreous body, which normally maintains a transparent gel-like consistency, undergoes biochemical and structural changes over time, including liquefaction and collagen aggregation. These degenerative processes can lead to the formation of floaters mobile opacities that cast shadows on the retina and manifest as spots, strands, or cobweb-like shapes within the visual field (Senra et al., 2022; Levin & Cohen, 2021). While vitreous opacity is often benign and asymptomatic in the majority of individuals, a subset of patients experience significant visual disturbances that may interfere with reading, driving, and daily activities (Morris, 2022). Myopia is a recognized risk factor due to its association with posterior segment stretching and early vitreous degeneration.

The management of vitreous opacities varies according to severity and patient perception of visual impairment. Conservative observation remains the standard approach for mild cases, given that symptoms may diminish with neural adaptation or shifts in vitreous opacity positioning. However, in cases where psychological distress or functional visual deficits become pronounced, more invasive therapeutic strategies may be considered (Senra et al.,

2022). One emerging intervention is Vitreous Opacity Vitrectomy (VOV), a minimally invasive technique designed to selectively remove symptomatic vitreous opacities using pars plana vitrectomy instrumentation while maintaining optimal ocular safety (Morris, 2022). As evidence accumulates supporting the efficacy and low complication rate of VOV, interest in refining indications and improving patient selection continues to grow.

Although the refractive and posterior segment disorders described above have been extensively examined individually in the literature, the coexistence of composite myopic astigmatism and symptomatic vitreous opacity in the same patient raises important clinical considerations. High myopia has been correlated with vitreous degeneration; however, few studies provide a detailed examination of concurrent refractive anomalies requiring correction and vitreous pathology necessitating posterior segment evaluation (Holden et al., 2016; Morris, 2022). Additionally, existing case-based investigations provide limited guidance on comprehensive, interdisciplinary clinical management strategies needed to effectively address both anterior and posterior ocular components in such presentations. Visual disturbances may be mistakenly attributed to refractive errors alone, thereby delaying the diagnosis and management of coexisting vitreous abnormalities.

Therefore, clarification of clinical characteristics, diagnostic parameters, and treatment plans for patients presenting with these combined disorders is essential for enhancing patient care pathways. Current literature suggests that a multidisciplinary approach involving refractive specialists and vitreoretinal experts is crucial to identify and evaluate overlapping visual impairments, determine the contributing causes of symptoms, and deliver targeted interventions that optimize overall visual function and reduce progression of disease (Morris, 2022; Senra et al., 2022). However, there remains a knowledge gap regarding the diagnostic complexities and referral considerations associated with simultaneous management of refractive and vitreous pathology.

To address this gap, the present case report describes the clinical presentation, diagnostic assessment, and initial management of a 42-year-old female patient experiencing composite myopic astigmatism in both eyes and symptomatic vitreous opacity in the left eye. The novelty of this study lies in its documentation of dual anterior-posterior visual pathology requiring coordinated evaluation and multidisciplinary management. This report seeks to provide a detailed foundation for improved diagnostic awareness and to emphasize the importance of timely referral and collaborative care in optimizing outcomes for patients with concurrent refractive errors and vitreous opacities. By contributing to existing clinical knowledge, this study supports the ongoing development of comprehensive treatment strategies that aim to maintain functional vision and enhance quality of life in affected individuals.

Methods

This study was conducted using a descriptive clinical *case report* design. A case report approach is appropriate for documenting uncommon or complex clinical presentations, enabling detailed characterization of patient conditions and the steps undertaken in clinical decision-making and treatment planning (Morris, 2022; Senra et al., 2022). The methodology used in this case emphasizes a structured clinical assessment and a multidisciplinary diagnostic approach to identify both anterior and posterior ocular abnormalities that contributed to the patient's visual impairment. The methods applied focused on history taking, comprehensive

ophthalmic examinations, refractive evaluation, imaging assessment, interpretation of clinical findings, and ethical considerations.

The patient in this study was a 42-year-old woman who presented to the ophthalmology outpatient clinic with complaints of visual disturbance in both eyes, particularly worsening symptoms in the left eye characterized by the perception of lines and black floating spots that had occurred for three days prior to consultation. Clinical assessments were performed in accordance with standardized ophthalmic examination protocols for suspected refractive errors and vitreous abnormalities to determine diagnostic certainty based on both subjective and objective data (Dinari, 2022; Gurnani and Kaur, 2025). A thorough medical and ocular history was obtained to identify predisposing systemic and ocular risk factors, including history of trauma, systemic diseases such as diabetes or hypertension, medication use, and any previous ocular intervention. A detailed family history was also recorded to evaluate heritable predispositions, as genetic components have been widely associated with the development of refractive errors, especially myopia and astigmatism (Febriana et al., 2024).

The ophthalmologic physical examination consisted of several sequential steps to ensure accurate assessment of the refractive status and ocular media clarity. Initial measurement of uncorrected visual acuity (VA) was performed using a standardized Snellen chart at a distance of six meters. The patient's uncorrected visual acuity was recorded as OD 4/60 and OS 2/60. These results indicated severe refractive impairment requiring further evaluation. Objective refraction testing was performed using a retinoscope and automated refractometer to establish baseline optical measurements. These findings were then refined through subjective refraction to determine optimal corrective values and assess visual improvement with appropriate spherical and cylindrical lenses (Dinari, 2022).

The refraction procedure followed clinical standards for astigmatism correction, ensuring precise determination of cylindrical power and axis alignment to improve retinal image clarity (Gurnani & Kaur, 2025). The right eye was corrected using a spherical lens of −4.50 diopters combined with a cylindrical lens of −1.00 diopters at a 90° axis, resulting in corrected visual acuity of 6/6. The left eye required a spherical lens of −6.00 diopters and a cylindrical lens of −0.50 diopters at a 60° axis, improving corrected visual acuity to 6/9. The differences in refractive strength between eyes were interpreted as being consistent with high myopia and composite myopic astigmatism, corroborating previous evidence that multiple refractive focal lines may contribute to significant visual decline when untreated (Holden et al., 2016).

Anterior segment evaluation was performed using a slit-lamp biomicroscope to inspect eyelid structures, conjunctiva, cornea, anterior chamber, iris, and lens. Examination findings revealed normal conditions in both eyes without signs of conjunctival hyperemia, chemosis, edema, corneal opacity, anterior chamber inflammation, or lens abnormality. This supported the diagnosis of functional refractive error without anterior segment pathology contribution. Such findings are consistent with composite myopic astigmatism in which optical refractive surfaces play the primary role in defocusing light entering the eye (Usman et al., 2025).

To examine the posterior segment and vitreous condition, fundoscopy was initially attempted; however, visualization was limited due to media opacity, particularly in the left eye. Therefore, ocular ultrasonography (USG) was performed as an adjunctive imaging modality to assess the vitreous body and retina. Ultrasonography is recognized as an essential diagnostic tool for evaluating vitreous abnormalities and retinal attachment status when direct visualization of the

fundus is compromised (Morris, 2022). In this case, USG imaging confirmed opacities within the vitreous of the left eye, consistent with degenerative vitreous floaters that commonly occur in aging and myopic eyes due to vitreous liquefaction and collagen aggregation (Senra et al., 2022). The ability to confirm the presence of vitreous opacity through imaging was crucial for determining the source of the patient's new-onset visual disturbances.

Intraocular pressure (IOP) was measured using a standard non-contact tonometer to rule out concurrent ocular hypertension or glaucomatous changes that may complicate management. Both eyes showed normal IOP values of 12 mmHg. Ocular motility, pupillary response, and external eye structures were also examined and found to be normal. Collectively, these findings indicated that structural causes of reduced VA were limited primarily to refractive dysfunction and posterior vitreous abnormality.

Because this case involved concurrent anterior refractive impairment and posterior media pathology, a multidisciplinary assessment pathway was applied. The patient was referred to a vitreoretinal specialist for further examination and evaluation of the necessity for surgical or interventional management such as Vitreous Opacity Vitrectomy (VOV), particularly considering the symptomatic impact on her visual function. As supported in current literature, VOV may be indicated in cases of persistent or psychologically distressing floaters that interfere with daily visual performance (Morris, 2022; Senra et al., 2022). The clinical decision process in this case adhered to guidelines emphasizing the importance of specialist referral for symptomatic vitreous opacity in high-myopia patients due to elevated risk for posterior segment complications (Holden et al., 2016).

All patient data were collected through direct clinical observation and recorded in secure hospital medical documentation. No invasive experimental interventions were performed. Ethical considerations were strictly observed according to institutional clinical governance standards. Patient confidentiality was maintained at all times through anonymization of personal identifiers. The patient was informed regarding the objectives of data publication, and written informed consent was obtained according to CARE guidelines recommendations for case report publication. Ethical compliance is essential in case report research to ensure respect for patient rights and to prevent breaches of privacy while contributing meaningful insights to clinical practice (Morris, 2022).

To ensure accuracy, all diagnostic interpretations, treatment recommendations, and clinical documentation were reviewed and validated by ophthalmologists specializing in refractive and posterior segment subspecialties. Data interpretation integrated clinical findings with relevant supporting literature on the epidemiology, pathophysiology, and management options related to composite myopic astigmatism and vitreous opacity. This methodological approach enables a comprehensive assessment of clinically significant visual impairment requiring both optical correction and posterior segment evaluation.

Results and Discussion

Patient Information

The patient was a 42-year-old woman who presented to the ophthalmology outpatient clinic of Karanganyar Regional Hospital on March 12, 2025, with the primary complaint of blurred vision in both eyes and the perception of dark floating spots and linear shadows in the left visual field that had begun three days prior to her visit. These symptoms were not accompanied

by ocular pain, redness, excessive tearing, itching, or any history of trauma, indicating that the onset of symptoms was not associated with acute inflammatory or infectious causes. The patient denied a history of previous ocular disease or use of corrective lenses, although a positive family history of refractive disorders was reported through a sibling who used glasses, suggesting a possible hereditary component to the refractive abnormality. Overall systemic health assessment revealed no comorbidities such as hypertension, diabetes mellitus, asthma, or cardiac disease, and there was no history of allergic reactions. The patient was alert, cooperative, and in good general condition during the clinical encounter.

The absence of systemic risk factors and lack of trauma reinforced suspicion that the patient's symptoms originated from ocular refractive dysfunction and degenerative vitreous changes, which are consistent with age-related or myopia-associated vitreous alterations as described in the literature. Myopic refractive disorders are commonly observed in adults entering mid-age due to axial elongation and optical defocusing, while vitreous opacities are often linked to collagen remodeling and vitreous liquefaction in aging or highly myopic eyes (Senra et al., 2022; Morris, 2022).

Clinical Findings

Initial ophthalmic examination revealed a significant reduction in bilateral uncorrected visual acuity, recorded as OD 4/60 and OS 2/60. The patient reported a sudden decrease in left-eye clarity accompanied by disturbing dark lines and dots, consistent with symptomatic floaters frequently associated with vitreous opacity. Upon external and slit-lamp examination, the eyelids, bulbar and palpebral conjunctiva, cilia, and supracilia were free from abnormalities, demonstrating no evidence of hyperemia, chemosis, edema, or trauma. Corneal clarity was confirmed bilaterally, with smooth corneal surfaces, normal iris configuration, and deep pupils, and anterior chamber assessment showed no signs of pathology. The crystalline lenses of both eyes were clear, excluding cataract as a contributing factor to the reduced visual acuity. Extraocular movements were full and symmetrical.

These findings confirmed that the visual impairment was not caused by anterior segment disease such as keratitis, cataracts, glaucoma, or uveitis. The localization of observed structural abnormality to the posterior ocular media strongly suggested media opacity, most likely vitreous in origin, aligning with the patient's symptoms and prior literature reporting floaters as the predominant manifestation of vitreous opacification in symptomatic individuals (Senra et al., 2022).

Diagnostic Assessment

Refraction testing demonstrated a substantial improvement in vision when using both spherical and cylindrical lenses, indicating the presence of composite myopic astigmatism bilaterally. The right eye achieved optimal corrected visual acuity of 6/6 using −4.50 D spherical and −1.00 D cylindrical lenses at 90°, while the left eye achieved 6/9 using −6.00 D spherical and −0.50 D cylindrical lenses at 60°. These results confirmed the diagnosis of composite myopic astigmatism affecting both eyes.

Objective tonometry measurement revealed an intraocular pressure of 12 mmHg in both eyes, within normal physiological limits and eliminating ocular hypertension-related pathology. The slit-lamp findings of a healthy anterior segment further supported a primarily refractive etiology for the visual acuity reduction, corroborating literature that describes composite

myopic astigmatism as a refractive condition where multiple focal points fall anterior to the retinal plane, requiring cylindrical lens correction for image clarity (Usman et al., 2025; Dinari, 2022; Elshahat et al., 2022; Singh & De Gracia, 2025).

Fundus examination through standard ophthalmoscopy was limited due to media haziness in the left eye (Yusuf et al., 2022). Therefore, ocular ultrasonography was utilized to evaluate the posterior segment when visualization was obstructed, as recommended in clinical settings where vitreous transparency is compromised. Ultrasonography results confirmed the existence of vitreous opacity in the left eye, consistent with floaters formed due to collagen aggregation, vitreous syneresis, and posterior vitreous detachment common mechanisms frequently observed in myopic and aging eyes (Senra et al., 2022; Morris, 2022).

Taken together, the convergence of both refractive and posterior segment diagnostic findings led to the final clinical diagnosis of:

ODS (both eyes): Composite Myopic Astigmatism OS (left eye): Vitreous Opacity

This concurrent presentation highlights the importance of differentiating refractive visual impairment from posterior vitreous causes to avoid misdiagnosis and ensure appropriate management.

Therapeutic Interventions / Management Plan

Based on the diagnostic evaluation, the patient's refractive correction was initially deferred due to the need for further investigation of the posterior segment condition. Although refractive correction successfully restored visual acuity significantly, the presence of persistent symptomatic floaters warranted subspecialty referral to a vitreoretinal expert for further monitoring and potential intervention.

The patient was referred to Dr. Moewardi General Hospital for advanced evaluation to determine whether conservative monitoring or a procedural approach such as Vitreous Opacity Vitrectomy (VOV) would be required. VOV is a minimally invasive pars plana vitrectomy technique specifically designed to remove vitreous opacities while preserving retinal integrity, and has been demonstrated to effectively resolve symptomatic floaters and improve visual function without major complications (Morris, 2022; Kakulavarapu te al., 2022).

The patient also received comprehensive education on her condition, including potential symptom progression, the importance of regular visual monitoring, and early reporting of signs that may indicate retinal traction or detachment events that have a higher incidence in myopic patients. The patient expressed good understanding and demonstrated strong motivation to undergo recommended follow-up care.

Follow-Up and Outcomes

At the time of this report, the patient was at the stage of referral for vitreoretinal specialist evaluation, and therefore long-term outcomes remain pending. However, prognosis was assessed as favorable due to preserved retinal function, absence of intraocular pressure abnormalities, and excellent improvement in visual acuity when refractive error was optically corrected.

The decision-making process reflects findings from prior studies noting that while most vitreous opacities remain benign, a subset of patients experience substantial psychosocial impact when floaters obstruct central vision, necessitating targeted intervention for quality-of-life improvement (Senra et al., 2022). High myopia further increases the need for careful surveillance due to elevated risks of posterior segment complications (Holden et al., 2016).

This case report presents a patient with bilateral composite myopic astigmatism accompanied by symptomatic vitreous opacity in the left eye. The coexistence of these two distinct ocular disorders highlights the importance of comprehensive clinical assessment when visual disturbances occur, especially in patients with moderate to high myopia. The patient's symptoms of blurred vision and dark floating shapes are consistent with the visual consequences of both refractive error and vitreous structural degeneration (Senra et al., 2022). Corrected visual acuity showed substantial improvement with spherical and cylindrical lenses, confirming refractive error as a primary contributor to reduced central visual clarity. However, persistent floaters in the left eye indicated additional posterior segment involvement requiring targeted diagnostic assessment.

Composite myopic astigmatism occurs when both focal lines of astigmatic refraction fall anterior to the retina, leading to dual-axis refractive blur that impairs image resolution and contributes to visual fatigue and disturbances. This aligns with widely accepted refractive error models stating that myopia and astigmatism commonly coexist due to corneal curvature irregularities or lenticular aberrations that disrupt normal light refraction (Dinari, 2022; Usman et al., 2025). The patient's refractive pattern demonstrated asymmetrical myopic severity between the right and left eyes, which may reflect variable corneal toricity or axial elongation, both of which are frequently progressive with age.

The presence of vitreous opacity in the left eye introduces a secondary mechanism of visual impairment. Vitreous degeneration is strongly associated with aging and myopia, as the gelatinous vitreous gel gradually liquefies, leading to collagen aggregation and posterior vitreous detachment (Morris, 2022). These changes produce shadows cast on the retina, perceived as floaters. Although floaters are common and often tolerated without intervention, a subset of patients—such as in this case—reports functionally significant obstruction, particularly when opacities overlap with fixation targets or move unpredictably across the visual axis. This aligns with evidence from Senra et al. (2022), who emphasized that vitreous opacities may cause psychological distress and negatively impact daily functioning in affected individuals.

This patient's sudden symptom onset over a short period raises consideration for acute vitreous traction or early detachment, which may elevate the risk of retinal complications in myopic individuals. Holden et al. (2016) projected a rising global burden of high myopia and associated pathologies, stressing the need for vigilant posterior segment surveillance in these patients. For this reason, interdisciplinary management involving vitreoretinal expertise is essential to exclude or monitor for progressive complications such as retinal tears or rhegmatogenous retinal detachment.

The detection of vitreous opacity via ultrasonography was critical for diagnosis, as the view of the fundus was obscured during ophthalmoscopy. Ultrasound remains a vital tool in cases where posterior media clarity is compromised, enabling evaluation of vitreoretinal structure and early intervention planning (Morris, 2022). The management strategy for this patient

appropriately prioritized referral to a vitreoretinal specialist for further evaluation and consideration of therapeutic options ranging from conservative monitoring to surgical intervention.

Refractive correction was deferred pending evaluation of the vitreous condition. This aligns with best-practice recommendations to avoid unnecessary prescription or surgical correction when posterior pathology may continue to alter visual function or stability. If symptoms persist and significantly impair vision-related quality of life, Vitreous Opacity Vitrectomy (VOV) may be considered. VOV has emerged as a safe and effective procedure for symptomatic vitreous opacities, utilizing minimally invasive pars plana techniques that target opacity removal while maintaining low complication rates (Morris, 2022). Patient education and follow-up are particularly important due to the progressive nature of myopia-related posterior segment changes.

The prognosis in this case was considered good, supported by strong improvement in corrected visual acuity and absence of structural damage to the anterior segment and retina. However, the patient's moderate myopia increases her long-term risk for additional retinal pathology, necessitating consistent follow-up and preventive care. Effective patient communication strengthened understanding of the condition and treatment expectations, which is emphasized in clinical care models for ophthalmic diseases to improve adherence and psychological coping (Senra et al., 2022).

This report offers several clinically relevant insights. First, it reinforces the need for comprehensive evaluation when floaters accompany sudden-onset visual disturbances, particularly in myopic patients. Second, it shows that refractive abnormalities must be carefully differentiated from posterior segment disease to avoid misattribution of symptoms. Finally, this case emphasizes the importance of a multidisciplinary management model for visual complaints that may involve different anatomical origins. These perspectives align with recent recommendations to integrate refractive and vitreoretinal care to optimize diagnostic accuracy and treatment planning for complex ocular presentations (Morris, 2022; Holden et al., 2016).

Future development of the case will further support clinical decision-making once the patient undergoes specialist evaluation and follow-up. The incorporation of outcomes such as visual recovery, symptom resolution, or need for surgical intervention may provide valuable guidance for clinicians managing similar presentations.

Conclusion

This case highlights the clinical significance of recognizing coexisting refractive abnormalities and posterior segment pathology in patients presenting with sudden visual disturbances. The patient demonstrated bilateral composite myopic astigmatism, which markedly affected visual acuity but could be effectively corrected with appropriate refractive lenses. However, the presence of symptomatic vitreous opacity in the left eye contributed to persistent visual disruption, emphasizing the need for additional diagnostic evaluation beyond refraction alone. The combination of thorough clinical examination, objective refraction, and ultrasonography enabled accurate diagnosis and informed decision-making. Early referral to a vitreoretinal specialist ensured timely assessment for potential intervention and ongoing monitoring of posterior segment health. This case underscores the importance of a multidisciplinary approach in managing complex ophthalmic presentations to optimize visual outcomes and safeguard

long-term ocular health. Documentation of such cases contributes to improving clinical awareness and reinforces best practices for evaluation and management in similar scenarios.

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