



Managing Myopia Progression through Axial Elongation and Modern Solutions

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DESCRIPTION

Nonpathologic high myopia, characterized by significant elongation of the eyeball without associated diseases like degenerative myopia, has become a growing concern among young adults globally. Axial elongation, a key feature of this condition, contributes to various visual challenges and potential long-term risks. This article delves into the causes, implications and management strategies for axial elongation in individuals with nonpathologic high myopia.

Axial elongation refers to the increase in the length of the eyeball, measured from the front (cornea) to the back (retina). In individuals with high myopia, this elongation results in light focusing in front of the retina, causing blurred distance vision. While nonpathologic high myopia does not immediately lead to retinal or structural complications, the continuous elongation can predispose the eye to conditions such as retinal detachment and macular changes later in life.

The prevalence of high myopia has surged in recent years, driven by lifestyle changes, including increased screen use and reduced outdoor exposure. These factors, coupled with genetic predispositions, contribute to the progressive elongation of the eye in young adults, particularly during critical developmental years.

Several factors influence the development and progression of axial elongation in high myopia. Genetic predisposition plays a significant role, with individuals having a family history of myopia being at higher risk. Environmental factors, such as prolonged near work and insufficient exposure to natural light, further exacerbate this condition. Recent studies have also indicated that urbanization and academic pressures contribute to the increasing prevalence of high myopia among young adults.

Axial elongation typically progresses during adolescence and early adulthood when the eye is still developing. However, the rate of elongation varies among individuals, influenced by genetic, lifestyle and environmental factors. Monitoring axial length in young adults with high myopia is essential for assessing progression and determining appropriate interventions.

Although nonpathologic high myopia does not present immediate risks of degenerative changes, axial elongation can have significant implications for visual health. The elongation of the eyeball alters the biomechanics of the eye, increasing the risk of complications such as choroidal thinning, retinal tears and peripheral lattice degeneration. Furthermore, elongated eyes are more prone to changes in the vitreous body, leading to symptoms such as floaters.

The psychosocial impact of high myopia in young adults should not be overlooked. Dependence on corrective lenses or contact lenses can affect self-esteem and quality of life. Additionally, the need for frequent prescription changes due to progressive myopia can pose financial and logistical challenges for individuals and families.

Accurate measurement of axial length is fundamental in diagnosing and monitoring high myopia. Advanced imaging technologies, such as optical biometry and ultrasound, enable precise assessment of axial elongation. These tools provide valuable data for tracking progression and evaluating the effectiveness of interventions aimed at slowing elongation.

Regular eye examinations are critical for young adults with high myopia. Comprehensive evaluations, including refraction tests and retinal imaging, help identify any early signs of complications and ensure timely management. Collaboration between optometrists, ophthalmologists and patients is vital to achieving optimal outcomes.

Managing axial elongation in young adults with high myopia focuses on slowing progression and preventing long-term complications. Evidence-based approaches, including optical, pharmacological and lifestyle interventions, have shown efficacy in reducing the rate of elongation.

Specialized lenses and contact lenses designed for myopia control, such as orthokeratology and multifocal contact lenses, help reduce axial elongation. Orthokeratology involves wearing rigid gas-permeable lenses overnight to temporarily reshape the cornea, improving vision during the day. Multifocal lenses

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provide simultaneous focus at multiple distances, reducing the strain on the eye and slowing myopia progression.

Low-dose atropine eye drops have emerged as a potentially effective option for controlling myopia progression. Studies have demonstrated that regular use of atropine significantly reduces axial elongation in young individuals without causing major side effects. The mechanism involves relaxing the focusing muscle of the eye, thereby reducing strain during near work.

Encouraging outdoor activities and limiting screen time are effective strategies for managing axial elongation. Natural light exposure has been shown to reduce myopia progression, likely due to its impact on dopamine release in the retina, which helps

regulate eye growth. Establishing a balanced routine that includes breaks from near work is essential for reducing visual stress.

Axial elongation in young adults with nonpathologic high myopia is a significant concern that requires attention from both healthcare professionals and society. By addressing the underlying factors contributing to elongation and implementing evidence-based management strategies, it is possible to reduce the impact of this condition on visual health. Early intervention, regular monitoring and a commitment to promoting healthy visual habits are fundamental to preserving vision and ensuring a better quality of life for individuals with high myopia.