Why are so many patients still quitting contact lenses?

Written by The Life Science Feed Editorial Team · Published 28 September 2026 · Edited by Mara Voss

> Contact lens discomfort remains a primary reason for patient dropout, often leading individuals to abandon lens wear entirely. This persistent issue affects millions globally, limiting the utility of an otherwise convenient vision correction method.
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> But advancements in lens materials, particularly the introduction of silicone hydrogel, offer a potential solution to this long-standing clinical challenge, resulting in better ocular surface health and sustained comfort for wearers.

KEY TAKEAWAYS

- The Pivot: Silicone hydrogel lenses offer a material-based solution to chronic contact lens discomfort, improving patient retention.
- The Data: Patients report better comfort and reduced dryness with silicone hydrogel compared to conventional hydrogel lenses.
- The Action: Clinicians should consider silicone hydrogel lenses as a first-line option for new wearers and for those experiencing discomfort with older hydrogel materials.

Contact lens discomfort is a pervasive problem, affecting a substantial portion of the estimated 150 million contact lens wearers worldwide. This discomfort often manifests as dryness, irritation, and a general feeling of foreign body sensation, leading many patients to reduce their wearing time or discontinue lens use altogether. The underlying causes are multifactorial, encompassing lens material properties, environmental factors, patient tear film quality, and wearing habits.

For decades, conventional hydrogel lenses were the standard, offering a soft, water-rich material that conformed to the eye. But these lenses, while revolutionary in their time, had inherent limitations, particularly concerning oxygen permeability and surface wettability, which directly impact comfort over prolonged wear. The unmet need for a more comfortable, healthier lens option has driven material science forward, leading to the development of silicone hydrogel lenses.

The Material Science Behind Better Comfort

Silicone hydrogel lenses represent a significant evolution in contact lens technology, primarily due to their enhanced oxygen permeability. Unlike conventional hydrogels, which rely solely on water content to transport oxygen to the cornea, silicone hydrogels incorporate silicone into their polymer matrix. This silicone component is highly permeable to oxygen, allowing a far greater amount of oxygen to reach the ocular surface, even at lower water contents. This increased oxygen transmissibility is critical for corneal health, reducing the risk of hypoxia-related complications such as corneal oedema and neovascularisation.

The improved oxygen flow directly contributes to better comfort, as a well-oxygenated cornea is less prone to irritation and inflammation. But the benefits extend beyond oxygen. The surface chemistry of silicone hydrogel materials can be engineered to resist deposit formation and maintain wettability, both essential for long-term comfort. Some designs incorporate wetting agents or plasma treatments to create a more hydrophilic surface, mimicking the natural tear film and reducing friction between the lens and the eyelid during blinking.

Different silicone hydrogel formulations exist, each with varying silicone content, water content, and modulus (stiffness). These variations influence not only oxygen permeability but also handling characteristics and overall comfort. A higher modulus, for example, can sometimes lead to initial awareness of the lens, but it also makes the lens easier to handle for some patients. The balance between these properties is a constant area of development for manufacturers, aiming to optimise comfort without compromising other essential lens characteristics.

The shift to silicone hydrogel materials has been a gradual but decisive one in clinical practice. Many practitioners now routinely prescribe these lenses, recognising their superior physiological benefits. For patients struggling with dryness or discomfort with older hydrogel designs, a switch to a modern silicone hydrogel lens often provides a noticeable improvement, allowing them to continue or resume contact lens wear. This is particularly relevant for patients who wear lenses for extended periods or in challenging environments, where oxygen deprivation and dehydration are more pronounced.

Addressing the Dryness Dilemma

Dryness is arguably the most common complaint among contact lens wearers, often leading to reduced wearing time and eventual discontinuation. Conventional hydrogel lenses, especially those with high water content, can dehydrate over the course of the day, drawing moisture from the tear film to maintain their hydration. This process exacerbates ocular dryness, creating a vicious cycle of discomfort. Silicone hydrogel lenses, with their lower water content and higher oxygen permeability, are less prone to this evaporative dehydration.

The material's inherent ability to transmit oxygen independently of water content means that a silicone hydrogel lens can maintain its structural integrity and oxygen flow even if its water content decreases slightly. This stability helps preserve the natural tear film, reducing the sensation of dryness. Some silicone hydrogel lenses also feature advanced surface technologies, such as embedded wetting agents or biomimetic designs, which further enhance surface wettability and reduce friction. These features are designed to keep the lens surface hydrated and smooth throughout the wearing period, even in challenging conditions like air-conditioned environments or during prolonged screen use.

The clinical impact of these material improvements is substantial. Patients who previously experienced significant dryness with conventional hydrogels often report a dramatic improvement in comfort after switching to silicone hydrogel lenses. This allows them to wear their lenses for longer durations and with greater satisfaction. The reduced dryness also contributes to better overall ocular health, as a stable tear film is essential for protecting the corneal surface from environmental stressors and microbial invasion. For a deeper understanding of ocular surface issues, clinicians might consult resources on dry eye disease treatments, which often overlap with contact lens discomfort management.

While silicone hydrogel lenses generally offer superior comfort for many, individual patient responses can vary. Factors such as tear film composition, blink rate, and environmental conditions still play a role. Therefore, a thorough assessment of the patient's ocular surface and a careful selection of the most appropriate silicone hydrogel lens design are essential. Clinicians must consider not only oxygen permeability and water content but also modulus, surface treatment, and lens

replacement schedule to optimise patient outcomes. The Oxford Handbook of Ophthalmology can be a useful quick reference for these considerations.

Beyond Comfort: Health and Compliance

Beyond the immediate sensation of comfort, the physiological benefits of silicone hydrogel lenses translate into improved ocular health and better patient compliance. The high oxygen transmissibility significantly reduces the incidence of hypoxia-related complications, which were more common with older hydrogel materials. These complications include corneal oedema, limbal hyperaemia, and even microbial keratitis, a serious infection that can lead to vision loss. By providing a healthier environment for the cornea, silicone hydrogel lenses mitigate these risks, making contact lens wear safer for a broader range of patients.

Improved comfort and reduced complications directly impact patient compliance. When lenses are comfortable and do not cause adverse effects, patients are more likely to adhere to their prescribed wearing schedule and replacement regimen. This adherence is essential for maintaining both ocular health and optimal vision. Patients who experience discomfort or complications are more likely to misuse their lenses, extend their wearing time beyond recommendations, or neglect proper hygiene, all of which increase the risk of adverse events. The long-term success of contact lens wear hinges on this cycle of comfort, health, and compliance.

The economic implications are also noteworthy. While silicone hydrogel lenses may sometimes have a higher initial cost than conventional hydrogels, the reduced need for follow-up visits due to discomfort or complications, and the increased likelihood of long-term lens wear, can lead to overall cost-effectiveness for both patients and healthcare systems. Preventing complications like microbial keratitis, which can require intensive treatment and potentially surgery, represents a significant saving. Understanding the nuances of ocular surface pain, including conditions like neuropathic corneal pain, further highlights the importance of preventative measures in contact lens care.

Still, the responsibility for successful contact lens wear extends beyond the lens material itself. Patient education on proper lens care, hygiene, and wearing schedules remains paramount. Even the most advanced silicone hydrogel lens cannot compensate for poor patient habits. Clinicians must continue to reinforce these messages, ensuring that patients understand the importance of following instructions to maximise the benefits of their lenses and maintain optimal ocular health. The ongoing evolution of lens care solutions, designed to be compatible with silicone hydrogel materials, also plays a role in enhancing comfort and reducing adverse events.

> **CLINICAL IMPLICATIONS**
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> The shift to silicone hydrogel contact lenses is not merely an incremental improvement; it represents a fundamental change in how we manage contact lens wear. For clinicians, this means a higher likelihood of patient satisfaction and retention, reducing the frustrating cycle of discomfort-driven dropouts. Prescribing these materials as a first choice for new wearers, and actively recommending a switch for existing patients experiencing issues, should be standard practice.
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> The industry has largely embraced silicone hydrogel, but variations in material properties still exist. Clinicians must remain informed about the specific characteristics of different brands, including oxygen transmissibility, water content, and modulus, to match the lens to the individual patient's ocular physiology and lifestyle. It is not enough to simply prescribe 'silicone hydrogel'; the specific formulation matters.

> Patients, in turn, benefit from a more comfortable and healthier contact lens experience, allowing them to enjoy the convenience of lens wear without the constant irritation that plagued earlier generations of lenses. This improved experience can lead to greater adherence to prescribed wearing schedules and care regimens, ultimately reducing the risk of complications. The long-term health of the ocular surface is paramount, and silicone hydrogels contribute significantly to that goal.

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