



# Challenges in Custom Soft Lens Fitting and Spectacle Selection in a Case of Degenerative Myopia

Xue Mei, OD; Chad Rosen, OD, MBA, FAAO; Josh Lotoczky, OD, FAAO

FERRIS STATE  
UNIVERSITY

MICHIGAN COLLEGE  
OF OPTOMETRY

## Introduction

Degenerative myopia arises due to the excessive axial elongation and posterior staphyloma, resulting in progressive and irreversible vision loss when myopic maculopathy is present. Although the definitive cut-off for refractive error and axial length is inconclusive, the definition of degenerative myopia recently has revolved around the presence of myopic maculopathy. Spectacle correction alone often does not provide optimal visual correction, nor comfortable working vision. Attempts to correct highly myopic eyes in soft lenses comes with the added challenge of the prescription falling outside of many standard lens parameters, as well as the increased thickness and weight of lens affecting the overall fit, all while considering oxygen permeability. The objective of this case report is two-fold. Firstly, to highlight the usage of custom soft lenses when correcting large amounts of refractive error in highly myopic patients. Secondly, to educate clinicians on considering all aspects of optical correction, including protective spectacles, to improve the patient's quality of life.

## Methods

A 54-year-old male patient with a previous diagnosis of degenerative myopia was referred for a specialty contact lens fitting. He reported a long-standing history of reduced vision in both eyes, worse in the right eye. He has only worn distance spectacles previously. His BCVA in spectacles is 20/150 OD, and 20/50- OS measured with Snellen chart. He does not have any prior family history or otherwise significant medical history. The patient's goal was to be able to drive and feel safe doing so. Social history revealed the patient works full time in construction. An initial set of Art Optical Intelliwave Pro Toric lens in the standard 15.0mm diameter and 8.6mm BC was ordered based on the patient's average keratometry values and spectacle refraction.

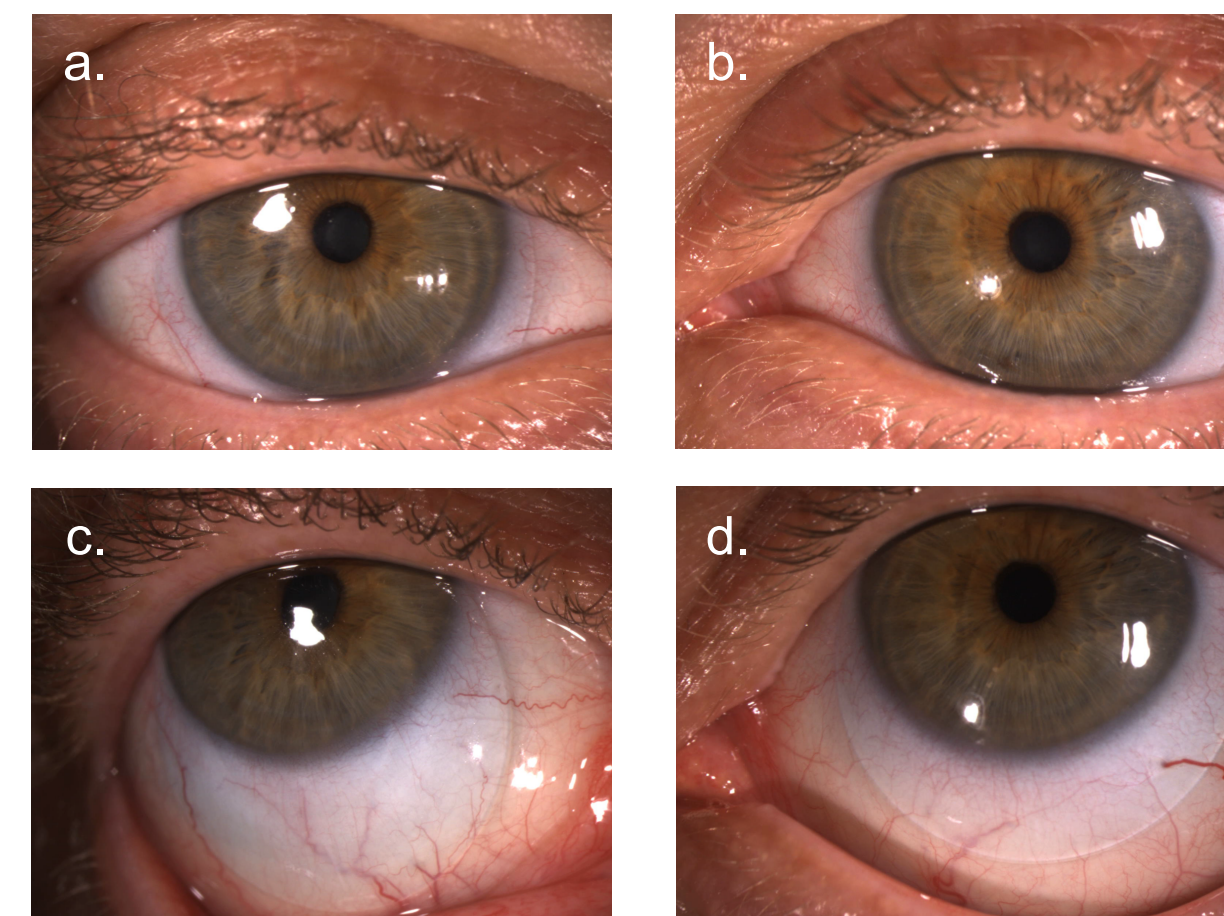
	Average Keratometry	Spectacle Rx
OD	41.72D	-21.75 -8.25 x090
OS	42.19D	-13.75 -5.75 x083

## Results

With subsequent adjustments, the lenses were re-designed to be steeper and have a smaller diameter. The goal was to fit the lens more appropriately to the patient's eye and decrease the bulk and weight of the lens given the high amount of correction. After allowing time for adaptation to the lenses in the exam room, the patient was able to achieve 20/80 OD, 20/50 OS, and 20/50+ OU.

**Table 1.** Parameter of last pair of lenses fit on eye

	Diameter	Power	Base Curve	Material
OD	14.0mm	-15.50 -5.50 x090	8.3mm	Efrofilcon A (74% SiHy), Dk 60
OS	14.5mm	-10.75 -2.75 x094	8.3mm	Efrofilcon A (74% SiHy), Dk 60



**Figure 1.** Slit lamp images of the last pair of lenses fit on eye. **a.** Lens on OD in primary gaze. **b.** Lens on OS in primary gaze. **c.** Lens on OD on up gaze, note lens dropping to inferior lid. **d.** Lens on OS on up gaze. The lens is adequately centered in up gaze.



**Figure 2.** Images of protective eyewear certified under ANSI Z87.1 demonstrated to patient. **a. b.** Face form and cushioning around the forehead and nose prevents particles from entering. **c.** Many models of eyewear come with removable side shields

## Discussion

Degenerative myopia is best managed with contacts versus spectacles alone due to spectacle minification and heavy glasses. Custom soft lenses are made to order. Many allow specification of both base curve and diameter in steps as small 0.10mm and cylinder axis in 1 steps. As the lens is made with increasing amounts of power, the lens thickness and weight increases. Consequently, issues around centration, lens/edge awareness, and oxygen transmissibility arise with higher power lenses. In our case, the right lens exhibited excessive inferior decentration despite the patient having similar corneal curvatures. Lastly, as the patient works outside in construction, it is imperative for the patient to wear protective eye wear full time to minimize eye injury. Protective eyewear as in Figure 2 are certified under ANSI code Z87.1 and are rigorously tested to resist impact. New contact lenses were ordered with BC 8.1mm in order to tighten the fit and prevent excessive inferior dropping of the left lens. However, at this time the patient has been unable to return for follow up due to covid-19.

## Conclusion

Custom soft lenses remain a good option for patients with high refractive errors. Base curve, diameter, power, and axis of the cylinder can all be modified to achieve an ideal fit. Additional considerations are for utilizing appropriate lens materials with patients that have high corrections in order to maintain adequate oxygen transmission to the cornea. While correcting for the patient's distance prescription on contacts, clinicians should remain mindful of the patient's visual needs. Oftentimes, that will entail exploring various optical devices that will provide a comfortable range of vision to allow the patient to perform their daily activities.

### References

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