



Utilizing Dual Controlled Peripheral Recesses to Improve Haptic Alignment

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INTRODUCTION/HISTORY

42 year old caucasian male with keratoconus OD>OS. He had originally been fit with scleral lenses three years prior, but stopped wearing them about one year ago due to redness and discomfort, which had reduced his comfortable wear time to less than eight hours. He presented wearing spectacles which provide 20/100 acuity OD and 20/25 acuity OS at distance. The goal was to resume wearing scleral lenses because they did improve his quality of vision and were more convenient for working outdoors.

OBJECTIVE EVALUATION:

The patient does have moderate keratoconus, OD>OS. Topography confirms an oval cone with steep K measurements of 58 Diopters OD and 52 Diopters OS. Fortunately, there is no apical scarring in either eye. However, he does have bilateral pingueculae both nasally and temporally that would potentially affect the haptic alignment of a scleral lens. After evaluating his habitual scleral lenses, it was confirmed that the landing zone interfered with the pingueculae causing blanching on the horizontal meridian.

PLAN/GOAL:

It was decided to re-fit the patient in a smaller diameter scleral lens and incorporate dual controlled peripheral recesses (CPR) to reduce the compression on the pingueculae. The patient was fit diagnostically with 14.9 mm diameter Onefit 2.0 scleral lenses. Over-refraction of the diagnostic lenses also revealed residual astigmatism, but we decided to initially order lenses with a spherical front surface and toric haptics.

The front surface toricity and CPR would be incorporated after confirming a stable fit. Since CPR uses clock hours instead of degrees, the 20 degrees of counter-clockwise rotation on the right eye was converted to rotation on the 8:15 and 2:15 meridian. The recesses were placed at 3 and 9 o'clock, each with a depth of 0.5 mm and a cord of 3.5mm. For the left eye, the 30 degrees counter-clockwise rotation was converted to rotation on the 8:00 and 2:00 meridian. The recesses were placed at 3:30 and 9 o'clock, each with a depth of 0.5mm and a cord of 4.0mm.

FIRST LENSES ORDERED:

OD: Onefit™ 7.90/14.9/-0.50/ Standard-Steep 2 toric PC

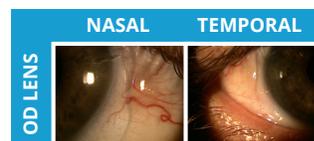
OS: Onefit™ 8.00/14.9/-2.50/ Standard-Steep 3 toric PC

At the initial dispense, the patient noted good comfort OD, but slight pressure temporally OS. He noted some monocular ghosting, but understood that the residual astigmatic correction was still needed.

For the right eye, the lens rotated 20 degrees counter-clockwise and took an over-refraction of +0.50-1.25x170.

For the left eye, the lens rotated 30 degrees counter-clockwise and took an over-refraction of +0.50-1.50x010.

Based upon the fit evaluation of the initial lenses, a second pair of lenses were ordered incorporating the front surface toricity with an axis compensation using LARS and dual CPR OU using the CPR online tool.



FINAL LENSES:

OD: Onefit™ 7.9/14.9/0.00-1.25x150/ Standard-Steep 2/ CPR @3 o'clock and @9 o'clock (0.5/3.5 mm). Hashes at 8:15 and 2:15

OS: Onefit™ 8.0/14.9/-2.00-1.50x160/ Standard-Steep 2/CPR @3:30 and @9 o'clock (0.5/4.0 mm). Hashes at 8:00 and 2:00

Controlled Peripheral Recess

1) Select lens type and diameter
Lens type: Onefit, Diameter: 14.9, Eye: OD

2) Select lens design and marks position
Lens design: Front to..., Position the marks: 08:15 - 02:15

3) Position recess
Recess 1: 03:00, Recess 2: 09:00

4) Select depth and chord specifications
Recess depth: 0.5, Recess chord: 3.5

5) Do you need a second recess?
 Yes. See above step #3 to position recess #2 using the slide boxes. Select recess depth and chord below.
Depth: 0.5, Recess chord: 3.5

Parameters to order: Onefit, 14.9, Front toric and Toric Haptic, 08:15 - 02:15, 09:00, 0.5 Depth, 3.5 Chord, 03:00, 0.5 Depth, 3.5 Chord

Controlled Peripheral Recess

1) Select lens type and diameter
Lens type: Onefit, Diameter: 14.9, Eye: OS

2) Select lens design and marks position
Lens design: Front to..., Position the marks: 08:00 - 02:00

3) Position recess
Recess 1: 03:30, Recess 2: 09:00

4) Select depth and chord specifications
Recess depth: 0.5, Recess chord: 4.0
Recess chord value has been reset, don't forget to update the value

5) Do you need a second recess?
 Yes. See above step #3 to position recess #2 using the slide boxes. Select recess depth and chord below.
Depth: 0.5, Recess chord: 4.0

Parameters to order: Onefit, 14.9, Front toric and Toric Haptic, 08:00 - 02:00, 09:00, 0.5 Depth, 4.0 Chord, 03:30, 0.5 Depth, 4.0 Chord

CONCLUSION:

The final lenses align properly with the CPR's in place for both eyes. Comfort is improved and redness has decreased. VA is 20/20 OD, 20/20 OS at distance, and 20/30 binocular acuity at near. Patient is very happy.