



Purpose

Given the increase in need for accurate scleral mapping technology in the fitting of specialty lenses, multiple instruments have been developed. This study aims to determine if there is significant difference between sagittal height values given by the sMap, Pentacam, and Eaglet.

Methods

Forty-three eyes were scanned on the sMap, Pentacam, and Eaglet instruments at a 15 mm diameter. Thirty-four eyes were scanned on all three instruments at the 16 mm diameter. The minimum and maximum sagittal height of the sMap and Eaglet were averaged in order to be able to compare with the Pentacam, which only displays the average sagittal height. Each instrument was compared to one other instrument; the sMap to the Pentacam, the Pentacam to the Eaglet, the Eaglet to the sMap, all at 15 mm and 16 mm, p values were calculated for each comparison.

Conclusion

The statistical comparison of sagittal height between the sMap, Pentacam, and Eaglet are similar to the point that a practitioner could confidently use any of the three to measure sagittal height to aid them in the scleral lens fitting process.

The sMap, Pentacam, and Eaglet sagittal heights show no statistical or clinically significant difference at the 15mm diameter. In the right eye at a 16 mm diameter, the Eaglet and sMap comparison showed a statistical difference that is not clinically significant. In the left eye at the 16 mm diameter, the Pentacam and Eaglet comparison showed a statistical difference that is not clinically significant

Results

Sagittal height for the three instruments were compared head to head and p values were found at 15 mm and 16 mm diameters. Average sagittal heights at 15 mm (n=22 OD, 21 OS) for the right eye are sMap 3.743 μm , Pentacam 3.810 μm , and Eaglet 3.780 μm and the left eye sMap 3.741 μm , Pentacam 3.797 μm , and Eaglet 3.781 μm . Sagittal height averages for 16 mm (n=16 OD, 18 OS) diameter are sMap 4.138 μm , Pentacam 4.212 μm , and Eaglet 4.149 μm for the right eye and sMap 4.163 μm , Pentacam 4.184 μm , and Eaglet 4.179 μm for the left eye. The 15 mm showed a p value < 0.01 in both the left and right eyes. The p value for the 16 mm in the right eye sMap/Pentacam and Pentacam/Eaglet and for the left eye the sMap/Pentacam and Eaglet/sMap comparison was less than 0.05, but the Eaglet/sMap for the right eye and Pentacam/Eaglet for the left eye was greater than 0.05.

References

Sample Scans

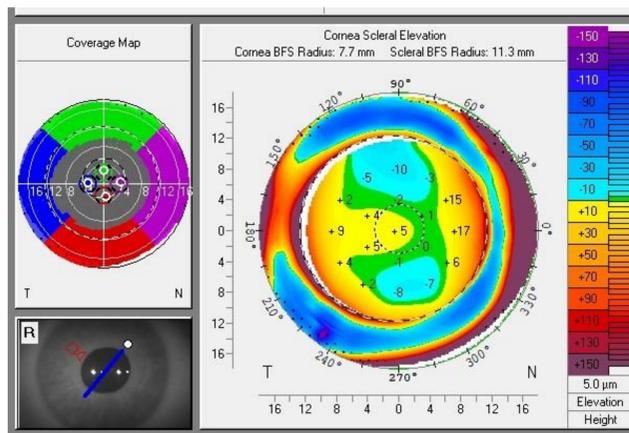


Image 1. Oculus Pentacam CSP

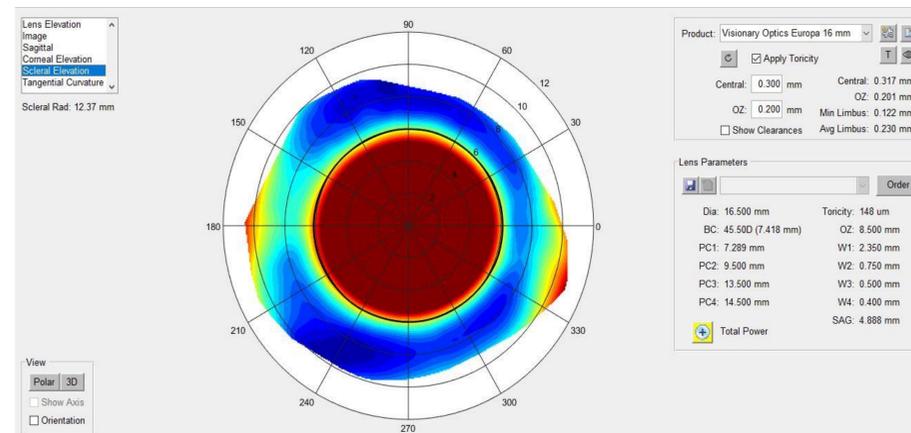


Image 2. sMap

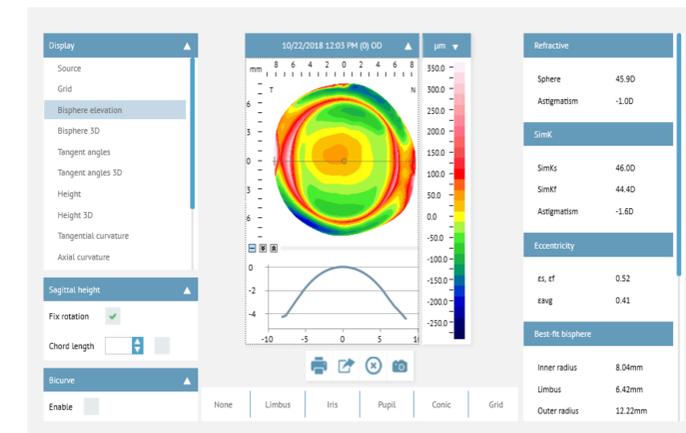


Image 3. Eaglet Scleral Profiler