

# Front Toric Sclerals, Do We Need Them?

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## Introduction

For the diseased, post surgical and asymmetric eye, scleral lenses are often employed to correct irregular corneal astigmatism. The spherical anterior surface of the scleral lens provides an improved medium to bend light to the retina with fluid filling the space between the lens and ocular surface. As with corneal GP fitting, scleral lenses should correct most, if not all corneal cylinder. However, both anecdotal and published results indicate between 10 – 53% of patients require front toric scleral lenses.<sup>1-4</sup> Should practitioners expect as few as one in ten patients requiring front toric scleral lenses or as many as every second patient?

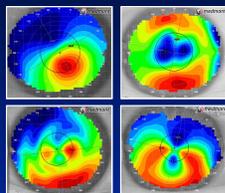
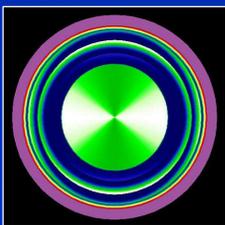


Figure 1: Various examples of irregular corneal astigmatism

Figure 2: Scleral lens power map showing the astigmatic central optics on a front toric scleral lens



## Methods

Retrospective data was collected over a one year period, between April 1, 2018 and March 30, 2019. This included every Ampleye 15.5 and 16.5mm diameter scleral lens manufactured and delivered by Art Optical (Grand Rapids, MI) during the sample period. The volume of lenses supplied is proprietary however, considering the size of Art Optical and its domestic and international reach in distribution, the number of patients and eyes can be considered substantial and measured in the tens of thousands. The 15.5 and 16.5mm diameter Ampleye diagnostic lenses are 0.3mm (300 microns) thick and have back surface toricity in the alignment zone of lens to attempt to mimic the toric or asymmetric shape of the sclera.

## Results

The results can be seen on Table 1 with the two diameters defined on the X-axis and the percentage of front toric lenses ordered along the Y-axis. In the smaller 15.5mm diameter lens, 15.4% of orders were manufactured as front torics. In the larger 16.5mm diameter, 12.5% of orders required front torics.

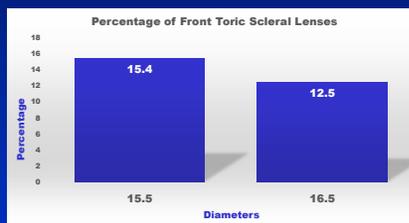


Table 1: This graph shows the percentage of front toric lenses ordered over a one year period in the two principle diameter sizes of the Ampleye scleral lens.

## Discussion

These findings are based on a robust cohort of scleral lens orders and would suggest that front toric lenses are required in a modest percentage of cases. Why then have previous studies shown such a high variability (from 10-53%)?

## Discussion (Continued)

There are many confounding factors which might include material, thickness, symmetric versus toric landing, lens thickness, fitting method and regional demographics that may play a role in how often residual astigmatism is present. Even within this data set using the same brand, there was a difference between the percentage of 15.5mm versus 16.5mm diameters. Although this study represents thousands of patient orders, a limitation is data collection was done on a particular design and not a broad cross section of industry brands.

## Conclusion

When fitting scleral lenses, practitioners should expect a modest percentage of patients will manifest residual astigmatism requiring a front toric design. The volume of front torics required may be reduced by using standard thickness lenses of 0.3mm and a toric alignment zone. The combination of the two may reduce lens flexing and induced astigmatism and limit the percentage of cases requiring front toric sclerals.

## References

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