

# The Role of Scleral Lenses in the Treatment of Corneal Irregularity and Ocular Surface Disease

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## INTRODUCTION

Scleral lenses are prescribed for refractive error, corneal irregularity and ocular surface disease. Although scleral lenses are being prescribed for a variety of indications, there is no established protocol for their placement in the overall management of ocular disease.

## PURPOSE

The purpose of this study is to describe consensus for placement of scleral lens therapy in the management of corneal irregularity and ocular surface disease among eye care providers who fit scleral lenses.

## METHODS

### STUDY DESIGN

- A 21-question online survey was sent via e-mail to eye care providers with self-identified interest in contact lens prescription and management.
- 4,633 eye care providers received invitations to participate.
- The survey was available from 1/15/2015 through 3/31/2015.
- The survey was administered by the Mayo Clinic Survey Research Center.
- The Mayo Clinic Survey Research Center collated and deidentified the data prior to analysis.

## METHODS

Participants were asked the following questions regarding their placement of scleral lenses within the management of corneal irregularity and ocular surface disease.

### CORNEAL IRREGULARITY

*Please number the following forms of optical correction in the order in which you would typically consider them for a patient with corneal irregularity:*

- Corneal gas permeable lenses
- Custom hydrogels or silicone hydrogel lenses
- Hybrid lenses
- Piggyback lens systems
- Scleral lenses
- Standard hydrogel or silicone hydrogel lenses

### OCULAR SURFACE DISEASE

*Please number the following therapeutic intervention in the order in which you would typically use them in the management of a patient with ocular surface disease:*

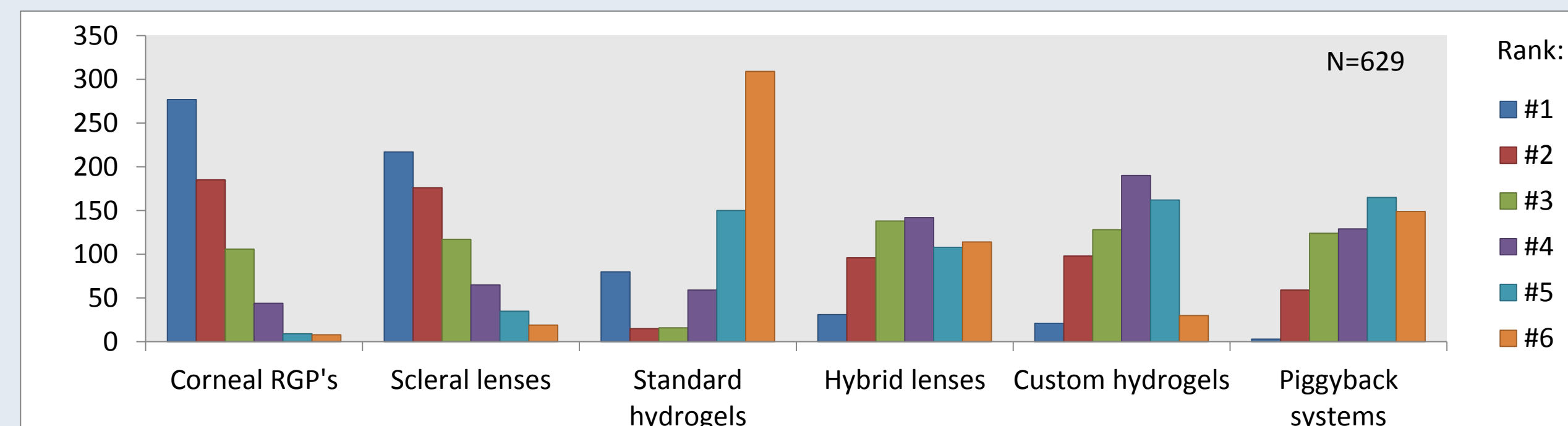
- Amniotic membrane graft
- Autologous serum tears
- Lubricant drops
- Moisture chamber glasses or goggles
- Punctal occlusion
- Scleral lenses
- Systemic antibiotics
- Tarsorrhaphy
- Topical antibiotics
- Topical cyclosporine
- Topical steroids

## RESULTS

### Responses

- 989 total responses received (21.3% response rate)
- Respondents who had completed 5 or more scleral lens fits (723 individuals, 80%) were asked to complete all survey questions.

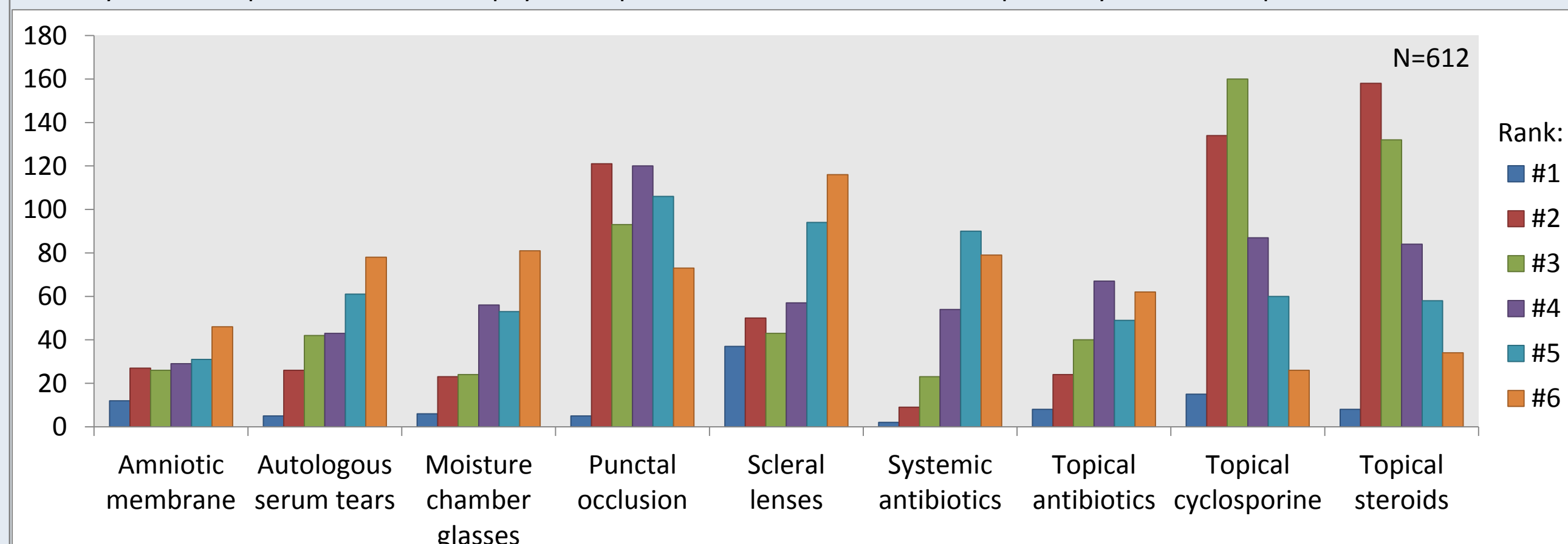
### MANAGEMENT OF CORNEAL IRREGULARITY



**Figure 1:** 44% of respondents reported that they consider corneal RGP's their first choice for optical correction of corneal irregularity, and 90% ranked corneal RGP's as their first, second, or third choice. Scleral lenses were reported as the first option considered by 34.5% of respondents and 81.1% ranked scleral lenses as their first, second or third choice. Hybrid lenses were identified as first, second or third choice by 42.1%, followed by custom hydrogels (39.3%).

### MANAGEMENT OF OCULAR SURFACE DISEASE

Lubricant drops were identified as the first therapeutic intervention by 84% of respondents and as first, second, or third choice by 95% of respondents. Tarsorrhaphy was reported as one of the last three options by 82.3% of respondents.



**Figure 2:** Following lubricant drops, topical cyclosporine was considered as one of the first three options by 50.5%, topical steroids by 48.7%, and punctal occlusion by 35.8%. Scleral lenses were considered as a first, second or third option by 21.2% of respondents, and as a fourth, fifth or sixth option by 52% of respondents.

## DISCUSSION

Corneal irregularity has traditionally been managed with spectacles, contact lenses or surgery depending on the severity of the disease with a corneal gas permeable being the lens of choice for visual improvement <sup>1</sup>. Although our survey found most practitioners prescribe a corneal gas permeable lens first, more than a third report using a scleral lens as their initial correction for corneal irregularity. A review of 32 patients with keratoconus fit with scleral lenses found median best-corrected visual acuity improved from 20/40 to 20/20 after scleral lens fitting <sup>2</sup>. As scleral lens prescribing increases in popularity, more studies are needed on the impact of corrective types on quality of living and economics.

The benefits of scleral lenses have been well established for moderate to severe ocular surface disease <sup>3-4</sup>. Scleral lenses are an important tool when traditional therapies have failed. Schornack et al. reported that in a large series of patients with ocular surface disease, all but 7 had attempted previous traditional therapies<sup>4</sup>. Practitioners in our survey reported prescribing lubrication, topical steroids, topical cyclosporine and punctal occlusion prior to considering scleral lenses. Scleral lenses play an important role in improving patient comfort, supporting the ocular surface as well as improving visual acuity.

## CONCLUSIONS

- Corneal gas permeable lenses are the most commonly prescribed optical correction for corneal irregularity; however, scleral lenses are being prescribed as the initial correction by more than a third of prescribers in this cohort.
- Scleral lenses are also being prescribed for ocular surface disease after topical lubricants, topical steroids, topical cyclosporine and punctal occlusion.

## REFERENCES

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## SUPPORT



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## DISCLOSURES

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