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## PURPOSE

Scleral lenses are large-diameter rigid gas permeable lenses. They are fabricated from standard rigid gas permeable lens materials, but exhibit considerably different fitting characteristics. Placement of the landing zone of the lens on the conjunctival tissue overlying the sclera and complete avoidance of lens contact with the cornea and limbus may create a different complication profile than that which is observed with corneal rigid gas permeable lenses.

The purpose of this study is to identify practitioner-reported complications associated with scleral lens wear.

## 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.

**Scleral lens prescribers who had fit more than 5 scleral lenses were asked the following questions:**

- In your career, approximately how many total patients have you fit with scleral lenses?*
- Approximately how many of your scleral lens patients have experienced each of the following complications?*
  - Corneal bullae
  - Corneal edema
  - Corneal infiltrates
  - Episcleritis/scleritis
  - Giant papillary conjunctivitis
  - Handling/application error
  - Intracorneal hemorrhage
  - Microbial keratitis
  - Neovascularization
  - Toxic keratopathy
  - Other

## RESULTS

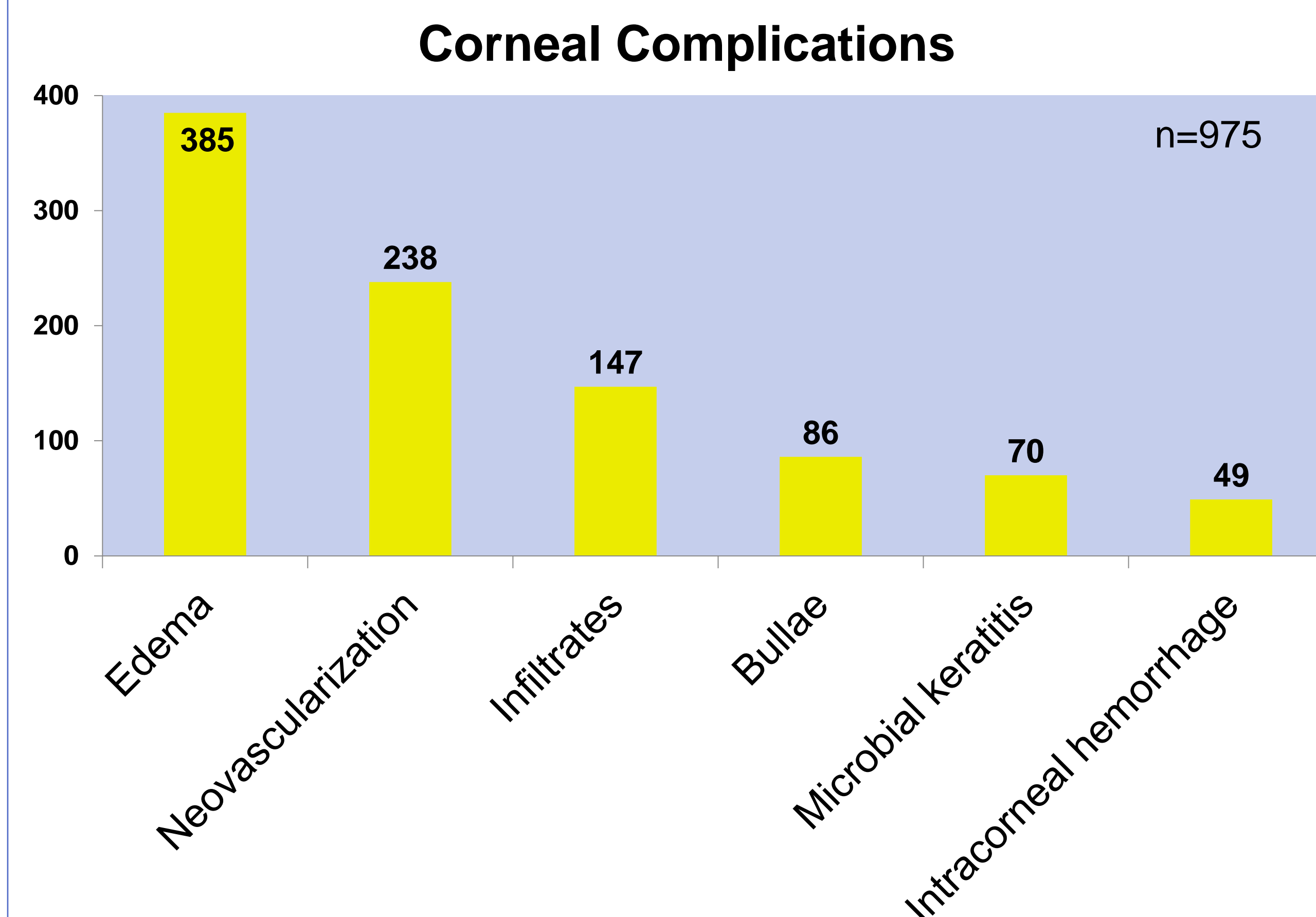
### Survey Participants

- 989 individuals responded to the survey.
- Respondents reporting 5 or more scleral lens fittings (723 individuals, 80%) were asked to complete all survey questions.
- A total of 84,375 scleral lens fits were reported by respondents to the survey.

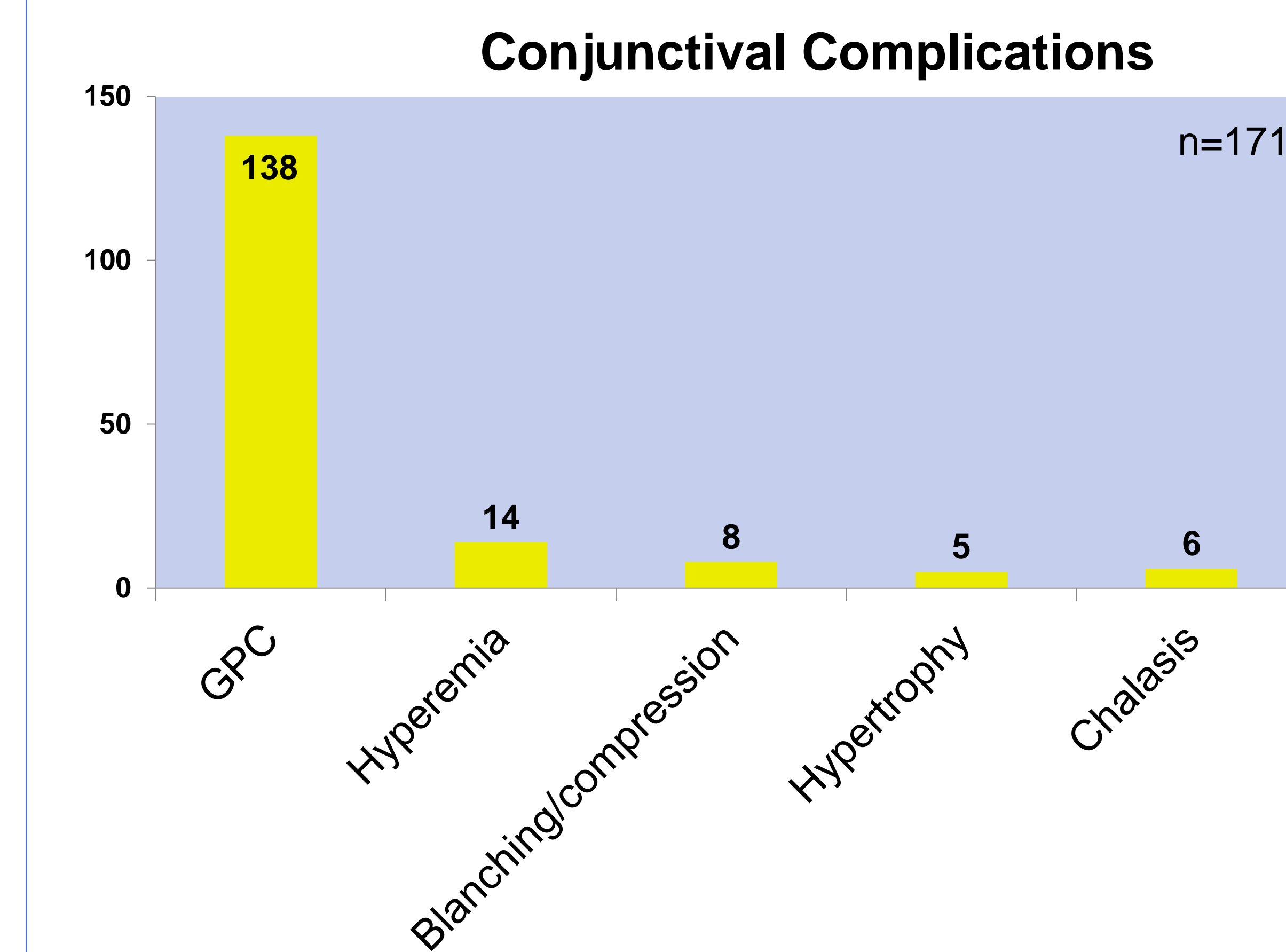
### Additional Complications

Respondents were given the opportunity to identify complications not listed in the survey as free text entries. The following were reported:

- Conjunctival changes (hyperemia, hypertrophy, chalasis)
- Corneal scarring
- Limbal stem cell changes
- Retinal detachment



**Figure 1:** Corneal complications were reported in a total of 1.2% of lens fits. The most commonly reported complication was corneal edema (0.45%), while the least common was intracorneal hemorrhage (0.06%). 70 cases of microbial keratitis were reported (0.08%).



**Figure 2:** Conjunctival complications were reported in 0.2% of lens fits. The most commonly reported conjunctival complication was giant papillary conjunctivitis (GPC) (0.16%).

### Lens Care and Handling Issues

- Handling error was the single most commonly reported complication.
- 462 patients (0.55%) experienced handling or application error.
- 148 patients (0.17%) experienced a solution-related complication (e.g., toxic keratopathy).

### Adverse Scleral Lens Experiences

These factors impacted satisfaction with scleral lens wear, but did not negatively impact ocular health.

- Post-lens fluid reservoir debris (n=7)
- Foggy or hazy vision (n=7)
- Lens surface deposits (n=5)

### Isolated Complications

- Episcleritis/scleritis was reported in 95 patients (0.11%).
- Limbal stem cell compromise was reported in 13 patients.
- Two patients experienced graft rejection while wearing scleral lenses.
- Elevated intraocular pressure was noted in one patient.
- A single retinal detachment was reported in one patient.

## CONCLUSIONS

- Base on practitioner-reported outcomes, scleral lenses are associated with a low risk of complications.
- Conjunctival complications (hypertrophy, chalasis), not commonly associated with other contact lens designs, are observed in scleral lens wearers.
- Incidence of complications has yet to be defined.

## REFERENCES

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## SUPPORT



## DISCLOSURE

None (C. Nau, E. Shorter, A. Nau, and M. Schornack)

**J. Harthan:** Consulting contracts: Allergan, Bausch + Lomb/Valeant, Metro Optics

**J. Barr:** Stock holder: Envision, Access Media, Consulting contracts: Bausch + Lomb/Valeant Pharmaceuticals and NovaBay. Contract research : Innovega and Valeant Pharmaceuticals