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Poster Abstracts
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Scleral lens fitting strategies in challenging corneal and scleral profiles

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Purpose: Fitting scleral lenses (SLs) in patients with complex ocular surface geometries presents significant clinical challenges. This case series presents five complex cases, illustrating the clinical application of advanced fitting strategies.
Method: Five patients with diverse ocular conditions were fitted with customized SLs using various design strategies, including bi-tangential, quadrant-specific, and freeform lenses based on impression techniques. Clinical data, lens parameters, visual acuity outcomes, and symptom changes were demonstrated for each case.
Results: Each case highlighted the benefits of customized fitting approaches:
Case 1: A 62-year-old male post-keratoplasty with a glaucoma drainage implant achieved optimized pressure distribution and reduced risk of complications using a quadrant-specific 19.5 mm SL.
Case 2: In a 74-year-old male with cornea plana, a freeform impression-based SL reduced fogging and improved wearing time and vision compared to a bi-tangential design.
Case 3: A 56-year-old woman with Salzmann nodular degeneration experienced reduced symptoms and improved BCVA from 20/100 to 20/40 OD and from 20/40 to 20/22 OS with bi-tangential SL wear.
Case 4: A 17-year-old male with nanophthalmos, aphakia, and glaucoma achieved 20/20 BCVA OD and 20/50 OS with high-plus (+28.75 D and +32.0 D) bi-tangential SLs.
Case 5: A 34-year-old male with keratoglobus achieved sufficient central vault and 20/20 BCVA OD using a freeform SL, though fitting OS was not possible due to extreme sagittal height.
Conclusions: Advanced scleral lens designs, including quadrant-specific and impression-based freeform geometries, provide effective solutions for patients with irregular or highly elevated ocular surfaces. These individualized approaches optimize fit, comfort, and visual performance, contributing to improved visual function and quality of life.

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