



Title: Beyond HVID Guidelines: Individualizing Scleral Lens Diameter Selection

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Abstract:

The diameter of a scleral lens is frequently selected using corneal metrics such as keratometry and horizontal visible iris diameter. While these parameters provide a practical and familiar starting point, they often fail to capture the full complexity of the ocular surface, particularly in eyes with underlying ocular surface disease, advanced corneal pathology, or challenging anatomical features. As clinical experience continues to evolve, it has become increasingly evident that optimal scleral lens performance requires a broader and more physiologically driven approach.

This presentation will examine scleral lens diameter selection beyond traditional corneal measurements, emphasizing the role of ocular anatomy, surface physiology, and tissue response in defining functional lens performance. By shifting the decision-making process beyond strictly HVID-based guidelines, greater attention is placed on conjunctival anatomy, scleral shape, and the overall physiologic response of the eye to lens wear. The evolution of scleral lens design will be reviewed, from early first generation lenses with limited parameter availability to the wide range of contemporary commercially available designs that now offer greater flexibility in diameter selection and customization.

Through a structured review of corneo-scleral, mini-scleral, and full scleral lens designs, this presentation explores how diameter selection should be informed not only by measurable ocular parameters, but also by real-time tissue response, patient tolerance, and functional lens behavior.

Selected case examples illustrate how modifying lens diameter alone can significantly influence landing behavior, suction dynamics, tear reservoir stability, and overall ocular surface interaction across a range of complex ocular conditions. These cases highlight situations in which deviating from traditional HVID diameter norms improves physiologic compatibility and functional endpoints.

These clinical examples underscore that scleral lens fitting cannot be approached as a one-size-fits-all process. Subtle differences in anatomy, tissue response, and lens behavior often determine whether a given diameter remains appropriate or needs to be modified. Recognizing this throughout the fitting process is essential to maintaining physiologic compatibility and achieving consistent, long-term success with scleral lens wear.