Pellucid Marginal Degeneration: When The Lens Fit

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Abstract:
Pellucid marginal degeneration (PMD) is a non–inflammatory corneal ectasia that occurs at the inferior peripheral cornea. Fitting a PMD patient with contact lenses is challenging. This case will review traditional corneal hard lenses in comparison to semi scleral lenses to achieve optimal vision and fit.

I. Case History
   a. 30 year old white male
   b. Chief Complaint
      i. Gradual decrease in vision in OS for last 5 years
      ii. Presents for RGP lens fit OS for Pellucid Marginal Dystrophy
   c. Ocular History
      i. PMD diagnosed in 2004
      ii. Previous history unsuccessful “hard lens” and hybrid lens fit
      iii. CHRRRPE OS
   d. Medical History
      i. PTSD
      ii. MDD
   e. Medications
      i. Bupropion HCL 100 mg 2 tabs BID
   f. Pertinent Findings
      i. Clinical Findings
         1. BCVA 20/20 OD, 20/40-2 OS with spectacle Rx
         2. Anterior Segment:
            a. Cornea:
               i. Clear OD
               ii. Mild inferior stromal thinning OS without descemet scarring or hydrops
ii. Imaging
   1. Anterior Segment OCT
      a. Marked inferior stromal thinning in OS, normal OD
   2. Corneal Topography
      a. Inferior steepening with “kissing dove” pattern in OS
         i. Steepest K: 48.57 at 37 degrees
         ii. flattest K: 42.12 at 127 degrees

II. Differential Diagnosis
   a. Primary
      i. Pellucid Marginal Degeneration
   b. Differentials
      i. Keratoconus
      ii. Keratoglobus
      iii. Terrien marginal degeneration
      iv. Furrow degeneration

III. Diagnosis and Discussion
   a. PMD was the primary diagnosis based upon the classic appearance of the inferior corneal thinning from 4:00 to 8:00 on slit lamp in conjunction with the classic “kissing dove” pattern on topography
   b. Keratoconus can be ruled out since the pattern of corneal topography does not follow the keratoconus steepness pattern of an inferior central localized steepening of the corneal tissue
   c. Keratoglobus can be ruled out since the corneal ectasia occurs only at the inferior corneal tissue rather than the entire diameter of the cornea
   d. Terrien Marginal degeneration is a possible differential, however in terrien marginal degeneration produces a asymptomatic superior nasal peripheral corneal thinning
   e. Furrow degeneration is unlikely since this condition occurs in a more elderly population and produce peripheral thinning, typically between the limbus and the arcus senilis
IV. Treatment and Management
   a. The patient has in the past unsuccessfully been treated with rigid gas permeable lenses and hybrid lenses
   b. The patient in the case presentation was best corrected to 20/40 in the affected eye with spectacles
   c. Aspheric rigid gas permeable lenses were trialed, however failed due to patient discomfort and instability of lens on the pellucid cone
   d. Rose K2 semi scleral lens to achieve higher comfort for the patient along with the ability to vault over the pellucid cone. Few trials based on fit were done
   e. Since the 6.5 mm base curve seemed to have the best fit, a lens was ordered with toric peripheral curves in order to decrease the peripheral edge lift
   f. Over refraction with the semi scleral fit showed a visual acuity potential of 20/20 in OS with scleral lens vs. 20/40 BCVA with glasses
   g. Patient has been notified that there are other modes of treatment such as collagen crosslinking, stromal intacts, and corneal transplant if condition progresses or if contact lenses fail to provide best acuity

V. Conclusion
   a. PMD is challenging to fit with traditional rigid gas permeable lens. However, this case shows that semi scleral lenses do provide a more stable fit that can potentially provide a large improvement in visual acuity and comfort
   b. PMD should be monitored closely with topographies and contact lens fit with follow ups
   c. This case illustrates that visual acuity can be improved tremendously in certain cases where semi scleral lens fit is successful