Corneal Hydrops: An Unexpected Friend in the Scleral Lens Fitting Process of a Keratoconic Patient

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INTRODUCTION

The occurrence of acute corneal hydrops in eyes with keratoconus is approximately 2.5-3%.1 While unilateral cases are more common, bilateral hydrops can occur in rare instances.1,2 This case demonstrates the scleral lens fitting process of a patient with keratoconus, who developed bilateral corneal hydrops but maintained good quality vision in each eye. The extremely low odds of developing bilateral corneal hydrops, coupled with the similarly small likelihood of maintaining good quality vision thereafter, warrants further investigation.

CASE PRESENTATION

A forty year old black female with keratoconus presented to the University Eye Center with complaints of blurry vision, increased photophobia, and moderate pain in her left eye. Slit lamp examination and corneal topography confirmed the diagnosis of acute corneal hydrops. She was placed on treatment with sodium chloride hypertonicity ophthamalic ointment, 5% at bedtime. One month later, sodium chloride ophthalmalic solution, 5% QID was added in the left eye for increased comfort.

Prior to the episode of hydrops, multiple attempts at fitting scleral contact lenses in the left eye proved unsuccessful. Reasons for unsuccessful fits included patient complaints of photophobia, glare, halos, discomfort, and headaches due to a slight imbalance of vision between the two eyes. Additionally, the various trial lenses were inadequate due to clinical findings of conjunctival compression with concurrent regions of edge lift off, minimal central clearance, and/or regions of pooling. The option for a corneal transplant was discussed with the patient multiple times throughout this period; however, due to the risks involved and the ability to obtain a best-corrected visual acuity of 20/25 in either eye, the patient was hesitant to undergo surgery.

Three months after onset, the corneal hydrops resolved and scleral lens fitting was reinitiated. Topographical mapping demonstrated a relative flattening of the cone from a KMax of 65.5 D to 58.7 D. This change allowed for a more successful fit utilizing scleral contact lenses. It should be noted that the patient had a history of hydrops in the right eye as well, which also resulted in a more successful scleral lens fit.

<table>
<thead>
<tr>
<th>Trial #</th>
<th>Time Reference</th>
<th>Type</th>
<th>Power</th>
<th>Base Curve</th>
<th>Diameter</th>
<th>Additional Parameters</th>
<th>BCVA</th>
<th>Reason for failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 year prior to hydrops</td>
<td>Valley Contax Custom Stable Elite</td>
<td>-1.00 sph</td>
<td>7.26</td>
<td>16.80</td>
<td>LC 2: 7.83 LC3: 6.37 SL 7.00 (0/180) 0.00 (90/270)</td>
<td>20/20-2</td>
<td>Extremely uncomfortable c/o irritation; conjunctival blanching</td>
</tr>
<tr>
<td>3</td>
<td>8 months prior to hydrops</td>
<td>ZenLens</td>
<td>-2.50-1.75 x 170</td>
<td>6.60</td>
<td>17.00</td>
<td>APS STD Sag 5.8 PROLATE</td>
<td>20/20</td>
<td>Subadequate vision: halos, vertical diplopia/shadow effect, HA; conjunctival compression, as well as lift off</td>
</tr>
<tr>
<td>7</td>
<td>1 month prior to hydrops</td>
<td>AVT</td>
<td>-5.00 sph</td>
<td>7.18</td>
<td>18.20</td>
<td>LC 5 XH OZ 11.7</td>
<td>20/25-2</td>
<td>Variable VA, poor wetting, redness, pain; impingement/seal off</td>
</tr>
<tr>
<td>10</td>
<td>After hydrops</td>
<td>Valley Contax Custom Stable</td>
<td>-7.75 sph</td>
<td>6.89</td>
<td>15.80</td>
<td>LC2: 6.17 SL 3: 6.32 Toric PC +4/-2</td>
<td>20/25</td>
<td>N/A</td>
</tr>
</tbody>
</table>

CONCLUSIONS

Although instances of acute corneal hydrops often warrant a subsequent keratoplasty, there are cases where hydrops eliminate this need by creating a more stable and uniform corneal surface.3,4 In patients where scarring does not occur centrally, the flattening of the cornea following an episode of hydrops may facilitate contact lens fits and even result in improved quality of vision. The desired outcome is to avoid surgical intervention, as there is a known increased chance of graft rejection in those with a history of corneal hydrops.4

REFERENCES


Note: Not a paid consultant of Oculus Pentacam. No financial interests to disclose.