

## Introduction

The purpose of this report is to demonstrate the outcome of phototherapeutic keratectomy (PTK) in a patient with symptomatic epithelial basement membrane dystrophy (EBMD). Being the most common anterior corneal dystrophy<sup>1</sup>, it is important to be comfortable in assessing and treating patient's symptoms.

## Case history

A 56-year-old female patient presented for clinical evaluation with symptoms of monocular diplopia with reduced, distorted and fluctuating vision. She had been symptomatic for months and no change in glasses could improve her complaints. Symptoms were variable, being worse upon awakening and after exposure to wind, dust, or ventilation. She reported a left eye amblyopia secondary to strabismus for which she underwent surgery in the past. General health was good and she was not taking any medication.

## Examination

Best corrected visual acuity (BCVA) was 20/50 OD (+6.50/-1.50x30) and 20/200 OS (+7.50/-1.25x150), NIPH. Manifest refraction could not improve these findings as well and the patient reported shadowing and disturbance of the letters. Scheimpflug maps (Pentacam, Oculus Optikgeräte) displayed corneal irregular astigmatism mostly in the inferior quadrant, in addition to randomly disposed variations in corneal thickness in both eyes. Slit lamp revealed centrally located bilateral epithelial basement membrane dystrophy (EBMD) in a fingerprint pattern (photo 1). Fluorescein showed a significant negative staining pattern in both eyes, illustrating the surface disturbance. Fundus and visual fields were found within normal limits.

## References

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2. Marcovich A. Asymmetrical Corneal Topography in Map-Dot-Fingerprint Dystrophy Resembling Keratoconus. *International Journal of Keratoconus and Ectatic Corneal Diseases*. 2012; 1(2):131-133.
3. Sayegh R & al. Cocaine-Assisted Epithelial Debridement for the Treatment of Anterior Basement Membrane Dystrophy. *Cornea*. 2013; 32(6):889-892.
4. Tzelikis P & al. Diamond Burr Treatment of Poor Vision From Anterior Basement Membrane Dystrophy. *Am J Ophthalmol*. 2005;140:308-310.
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## Plan & follow-ups

At first, we decided to prescribe lubricating drops and a hyperosmotic agent for three weeks. Three weeks later, the improvement was not significant. Patient was still complaining about distortions and fluctuations in her vision. At this point, a referral was sent to an ophthalmologist to consider phototherapeutic keratectomy (PTK) because of the extent of the corneal irregularity and the fact that this procedure was evaluated as safer vs contact lens wear in a monocular high hyperopic patient.

The first specialist identified the condition as a keratoconus – pellucid type – and recommended to see us back for a contact lens fitting. Although not in line with our original diagnosis, patient wanted to try so the lens fitting was carried out in the right eye only. Because of a narrow aperture and handling issues, a scleral lens was not considered and we tried a hybrid lens (Duette). Visual acuity improved to 20/20 but comfort was limited.

A month later, patient was complaining of improved but still fluctuant vision with contact lenses. She also experienced huge handling issues. Still not satisfied with the results, we decided to refer to a cornea specialist for a second opinion about PTK. This time, he agreed with our EBMD diagnosis and PTK was performed on the right eye only, as the amblyopic left eye presented a limited prognosis.

A month following the surgery, visual acuity was corrected to 20/20 with manifest refraction and all visual symptoms were gone. Right eye topography now displayed a more spherical pattern. Slit lamp revealed a clear cornea with no trace of central EBMD (photo 2). Three months follow-up confirmed vision stability without any recurrent symptoms.

## Discussion

That case report demonstrates that recurrent corneal erosions in epithelial basement membrane dystrophy may trigger significant visual symptoms. A good clinical evaluation with fluorescein to detect the nature of the disorder, and its extent, are essential to confirm the cause of visual disturbance. Corneal topographies can be easily confused with a keratoconus pattern<sup>2</sup>. Hyperosmotic agent combined with lubricating drops should be the first step in the treatment of the condition. In persistent cases, literature has shown good outcomes with epithelial debridement as a simple and inexpensive treatment<sup>3</sup>, as well as with diamond burr superficial keratectomy (DBSK)<sup>4</sup>. Both demonstrated long-term resolution of the symptoms<sup>5</sup>. Stromal puncture was proven effective in some cases but is less used nowadays because of the risk of scarring. Rigid gas permeable or hybrid contact lenses may be considered, but fitting must alleviate further epithelial disruption. In that perspective, scleral lenses may represent a better alternative. In this case, the high hyperopic correction and the potential to generate chronic hypoxic stress on a fragile epithelium refrained us to consider this option. Phototherapeutic keratectomy is of course another effective option to increase visual acuity and decrease visual disturbances and painful erosions associated with the condition<sup>6</sup>.

## Conclusion

Phototherapeutic keratectomy (PTK) in patients with significant and symptomatic epithelial basement membrane dystrophy (EBMD) could result in favorable refractive and clinical outcomes. This case report also illustrates the need to get a second opinion when needed, in the best interest of the patient.

Photo 1 – Fingerprint EBMD at baseline

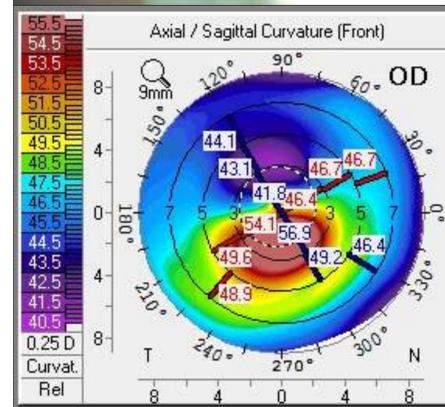
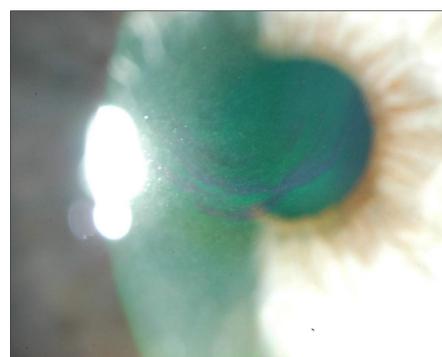


Photo 2- Same cornea post PTK

