

Scleral MicroVault

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Introduction

Through profilometry we are able to gather sagittal height data of the complete ocular surface.

The corneo-scleral Profilometry measurement in this case indicates an eye with a central cone (see central red elevation, Figure 2) and a nasal pinguecula with a local elevation of 410microns at the highest point. The measurement of 410 microns has been taken 8.44mm away from the Apex.

Since we are using 17mm prolate Zenlens we can predict that the edge of the lens is touching the pinguecula.

Case description

A 35 years old male used to wear RGP contact lenses. Working in a dusty environment caused irritation. He is diagnosed with mild keratoconus resulting in sensitive dry eyes which makes him incapable of wearing his RGP's anymore.

Scleral lenses are advised although a pinguecula is often a contra-indication choosing a scleral lens. This is due to a risk of irritation.

Final lens order

- Prolate Zenlens
- 17 diameter
 - Sagittal height 4900
 - Toric back surface APS flat 4 / standard
 - BCR 7.80, S-1.25

MicroVault design:

- MicroVault nasal axis 356°
- Decentration 8.5mm
- Width 3.5 mm
- Depth 350 microns



Figure 1

Final decision

A scleral lens with a MicroVault was used to bypass irritation which can be induced by the pinguecula (see Figure 3). Patient is happy with the lenses and able to wear them during worktime which he was not able to do with the RGP's. He takes the lenses out after he get's home. When necessary he re-installs the lenses after a short break.

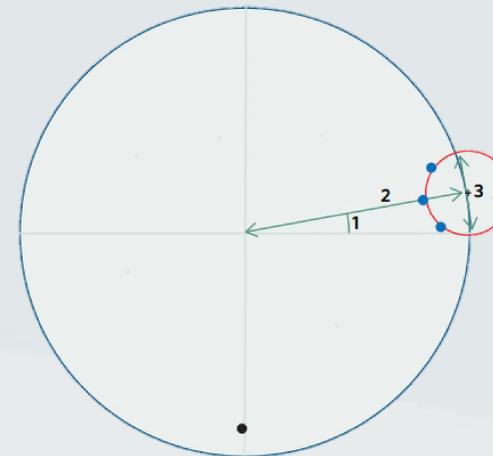


Figure 3

Conclusions

Profilometry helps fitting MicroVaults more accurately and precisely. With the use of profilometry we can gather cornea-scleral sagittal height data that allows us to quantify the exact location and size of the protrusion. Due to the accurate data it reduces chair time, and speeds up the lens designing process, it reduces the number of re-orders and revisits.

4-Step method to design a MicroVault using Profilometry



Select the highest point of the pinguecula

Step 1: Pick the angle from the measurement (see text box on the measurement). Check the trial lens for vertical centration.

Step 2: Pick the decentration from the measurement (see text box on the measurement). Check the trial lens for horizontal centration

Select the superior and inferior positions of the microvault

Step 3: Calculate the width between the two edges using the y value.

Select highest point of the pinguecula

Step 4: Select the Depth from the measurement.

General advise: try to keep gentle touch (reduce with 50 microns)

1-Axis	The optical axis location of the center of the MicroVault relative to the center of the Zenlens, presumably close to 0° or 180° depending on which eye is being fit and whether MV is to be nasal or temporal. May depend on the axis and orientation of the Toric PCs
2-Decentration	Distance from the center of the Zenlens to the center of the MicroVault. If you want the maximum clearance point of MicroVault to be right at the lens edge, this will be half the lens diameter, i.e. decentration of 8 mm on a 16 mm Zenlens or 8.5 mm on a 17 mm lens.
3-Width	Equal to the width of the MicroVault.
4-Depth	The Sagittal Depth of the MicroVault—how high the apex of the vault is above the ocular surface (up to 500 microns).

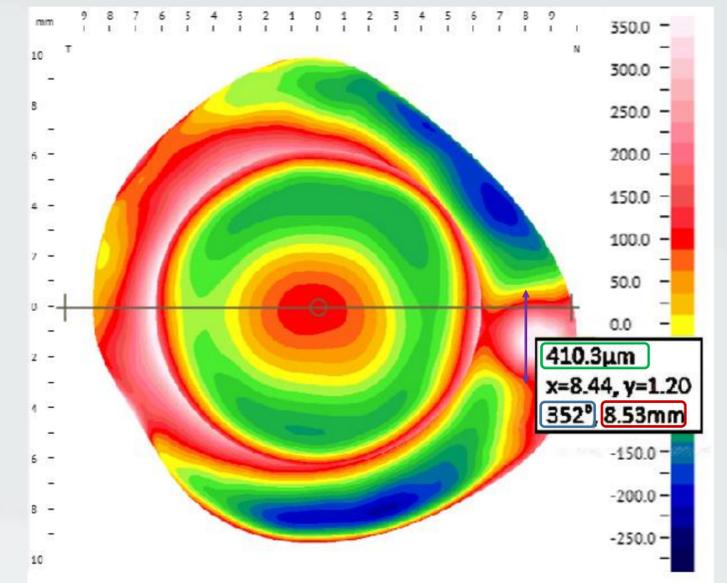


Figure 2

This case report shows how pingueculae can be quantified and how to adjust the lens design correctly. Further studies can be beneficial in order to understand what values best apply to ordering MicroVault lenses when dealing with irregular scleral surfaces.



Contact and disclosure

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