10th Evolving Practice Of Ophthalmology Middle East Conference
EPOMEC
EXPANDING VISION

Two- year follow up of Posterior Corneal Elevation after Small Incision Lenticule Extraction for Moderate Myopia

Shaimaa M. Azzam (MD), Hazem A. Elbedewy (MD)

By

Shaimaa Azzam, MD

Lecturer of Ophthalmology

Helwan University , Egypt

Introduction

- Small incision lenticule extraction (SMILE) is considered to be the most minimally invasive corneal refractive surgery.
- Because the **posterior corneal surface** is not affected directly by the corneal refractive procedure, assessing its stability is important in identifying iatrogenic ectasia.
- **Posterior corneal elevation**, has been shown to be the most effective indicator for evaluating corneal stability and diagnosis of ectasia at early stage.

The aim of this study is a **long term follow up** for the changes in the posterior corneal elevation after small incision lenticule extraction (SMILE) for moderate myopia.

Methods

- This is a prospective study which was conducted on 35 patients (70 eyes) (16 males, 19 females) of corneal refractive surgery candidates who underwent SMILE operation.
- **Inclusion criteria were:**

1. age more than 18 years,
2. myopia (-3.00 DS to -6.00 DS) with or without astigmatism (0.00 to -4.00 DC),
3. central corneal thickness > 500 µ
4. underwent SMILE operation within the last 6 months with no either intraoperative complications nor other intraocular or corneal surgeries before or after the refractive procedure.

- **Age < 18 years, any previous intraocular or corneal surgeries before or after the refractive procedure and any ocular diseases (especially corneal diseases, uveitis and dry eye) or systemic diseases are excluded.**

Methods

Assessment of the patients was done within 6 months and 2 years postoperative including :

- UCDVA measured by Snellen's quotation (decimal scale),
- BCDVA
- MRSE (TOPCON autorefractometer),
- Complete ocular examination including anterior and posterior segment (volk 90D with slit lamp and volk 22D with indirect ophthalmoscope),
- Corneal tomography using the Pentacam machine (Pentacam.Oculus Optikgeräte GmbH.Wetzlar.Germany).

Methods

- **The posterior central elevation (PCE)** was set as the posterior elevation at the corneal apex above BFS.
- **Average posterior central elevation change (ΔPCE)** was obtained by subtracting preoperative data from post-operative data (difference map).

Therefore, a positive number means forward change of the posterior corneal surface, and a negative number means the posterior surface moved posteriorly.

Results

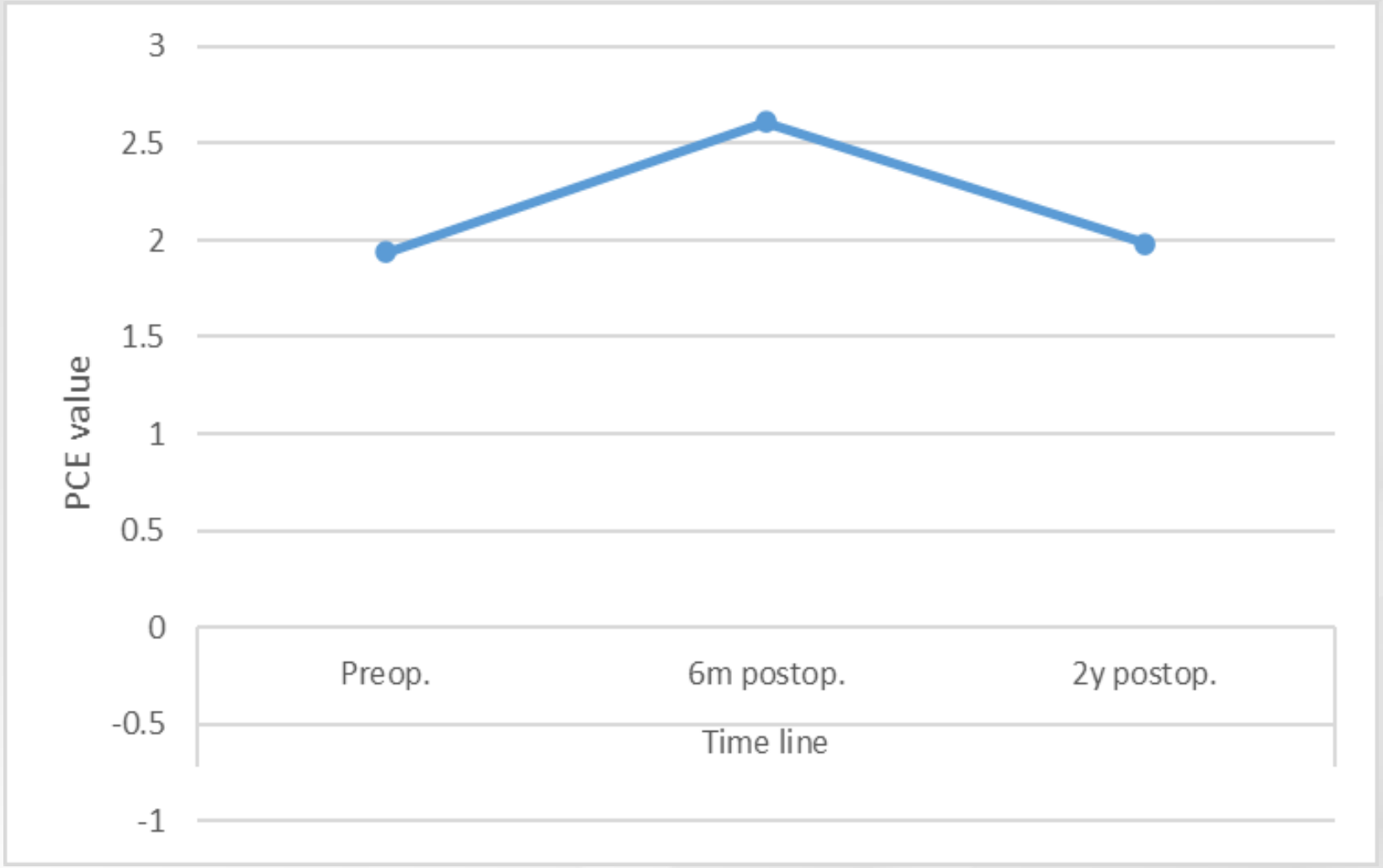
- **The mean postoperative (UCDVA, BCDVA, MRSE) at 6 months and 2 years were comparable.**
- **At 2 years , the safety index was 1.00 ± 0.03 and efficacy index was 0.95 ± 0.08,**
- **75.7% of eyes were within ± 0.5 D and 100% of eyes were within ± 1:00 D .**
- **The mean preoperative posterior central elevation (PCE) was 1.94 ± 3.41.**
- **At 6 months postoperative, the mean PCE was 2.61 ± 2.88, and the mean average posterior central elevation change (ΔPCE) was 0.68 ± 3.45.**
- **At 2 years postoperative, the mean PCE was 1.98 ± 2.72 and the ΔPCE was 0.02 ± 1.17.**

Results

After 6 months of surgery, there were 35 eyes (50.0%) with positive ΔPCE (means forward protrusion),

Out of them, 30 eyes (85.7%) had decreased positivity and 5 eyes (14.3%) had been stable after 2 years of surgery.

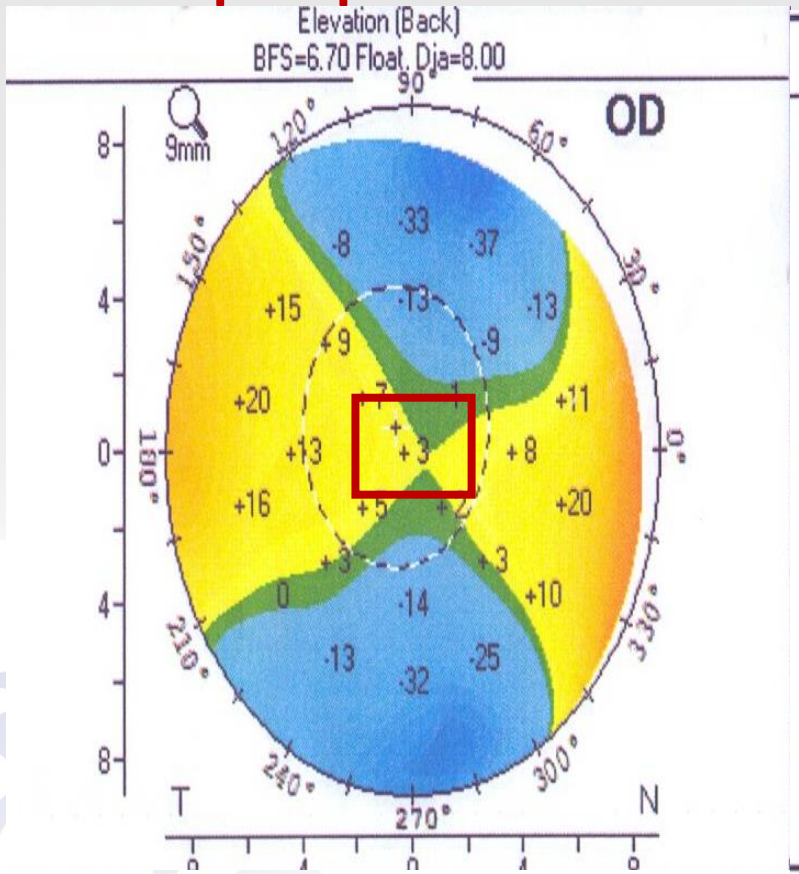
This figure shows the change of PCE over time



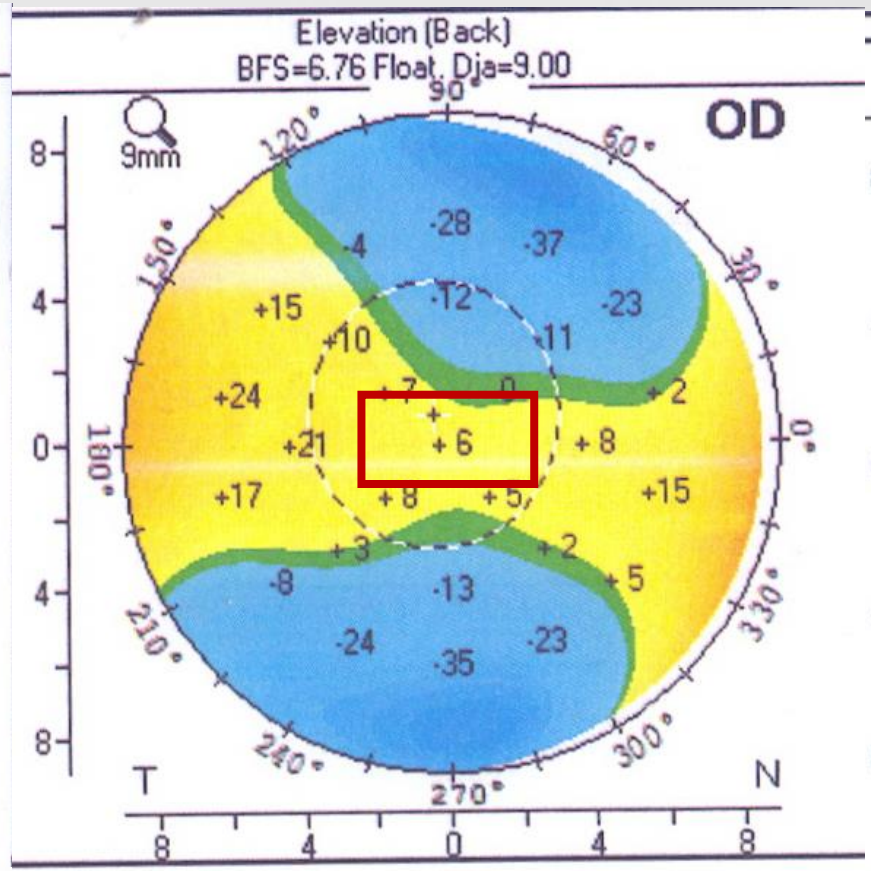
Case presentation

- Male patient aged 23 years old , underwent SMILE operation on June 2021 … (posterior elevation map)

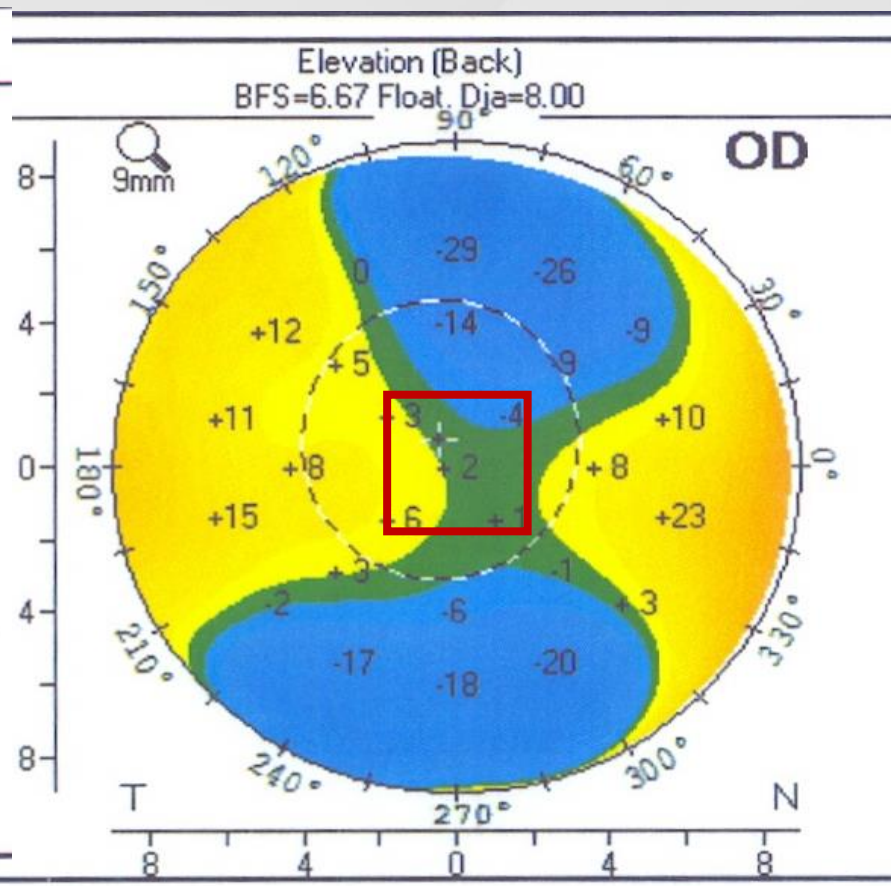
preoperative



6 months postoperative

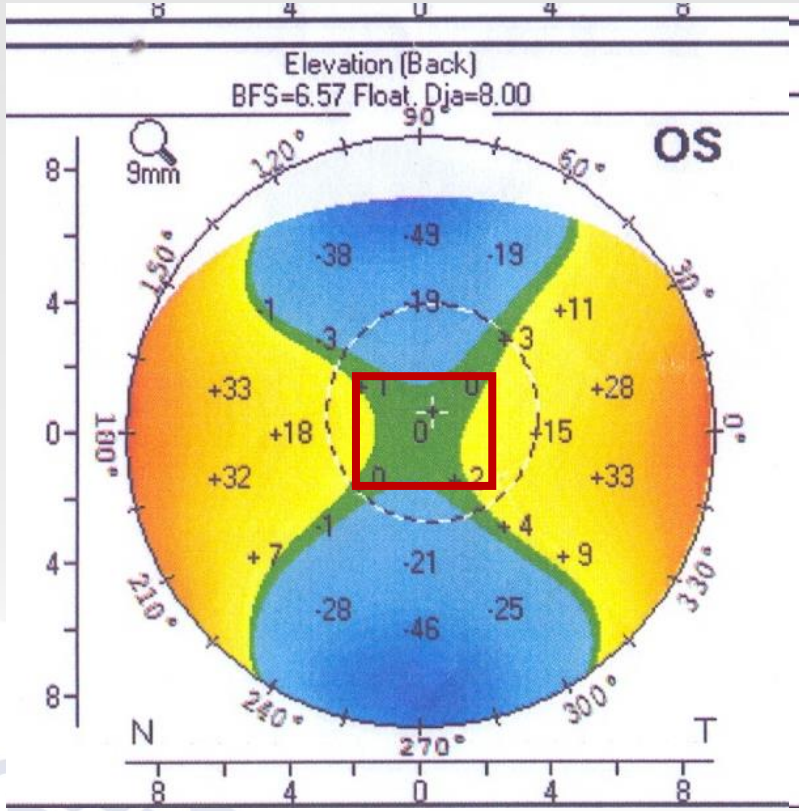


2 years postoperative

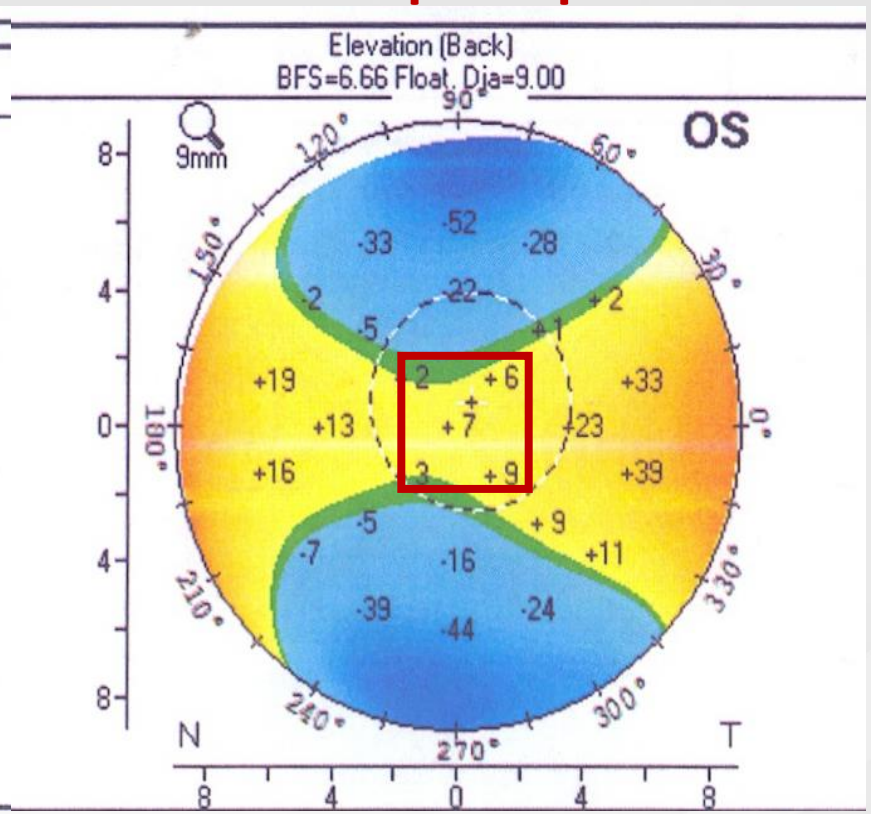


His left eye :

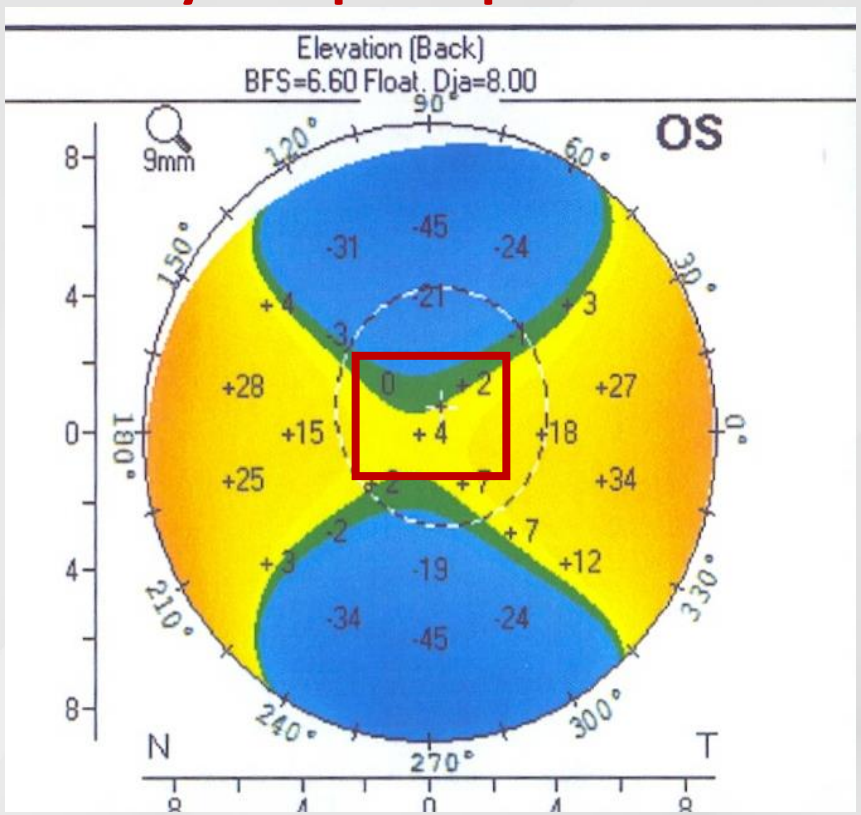
Preoperative



6 months postoperative



2 years postoperative



Conclusion

There was change detected in the posterior corneal surface after SMILE.

With 2- year follow up , these changes remain **stable** and **within normal range** ,

So, SMILE is safe for moderate myopia with two-year observation.

Thank you