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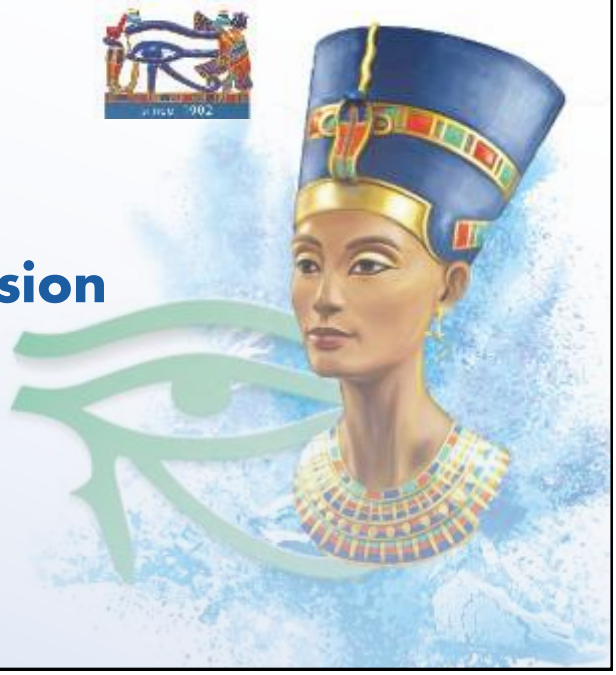
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
EOS 2023

Management of regression after LASIK

Khaled Abdelazeem
Associate professor
Assiut University, Egypt



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No financial interest to disclose

Regression is the tendency of an eye to return to its original refraction.

Chayet AS, Assil KK, Montes M, Espinosa-Lagana M, Castellanos A, Tsioulias G. Regression and its mechanisms after laser in situ keratomileusis in moderate and high myopia. *Ophthalmology* 1998; 105(7):1194-1199.

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Myopic regression for moderate to high myopia was -1.66 ± 2.15 diopters (D) over 15 years.

Alió JL, Soria F, Abbouda A, Peña-García P. Laser in situ keratomileusis for -6.00 to -18.00 diopters of myopia and up to -5.00 diopters of astigmatism: 15-year follow-up. Cataract Refract Surg 2015; 41(1):33-40.

Management of regression after LASIK

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2-2016

Right eye		
Sphere	Cylinder	Axis
- 5.00	- 0.25	33

BCVA = 1.0

Corneal thickness = 509 µm

42-year-old

Left eye		
Sphere	Cylinder	Axis
- 5.25	-	-

BCVA = 1.0

Corneal thickness = 504 µm

2-2016

UCVA = 1.0

UCVA = 1.0

42-year-old

After LASIK

Wavefront optimized

Moria microkeratome

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4-2017

Right eye		
Sphere	Cylinder	Axis
- 2.00	- 0.50	33

Left eye		
Sphere	Cylinder	Axis
- 1.00	-	-

BCVA = 1.0

Corneal thickness = 471 µm

42-year-old

BCVA = 1.0

Corneal thickness = 471 µm

1 year after LASIK

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4-2017

UCVA = 1.0

UCVA = 1.0

42-year-old

After retreatment

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5-2018

Right eye		
Sphere	**Cylinder**	**Axis**
+ 0.25	- 3.00	12

42-year-old

1 year after retreatment

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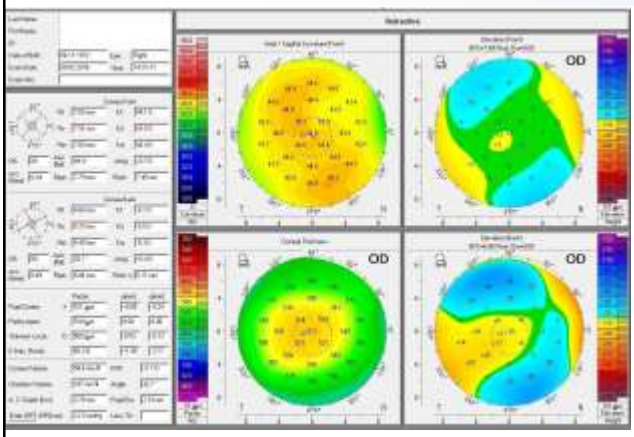

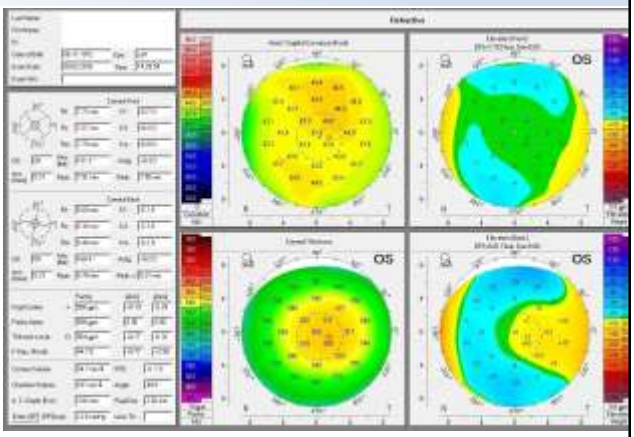

2-2016

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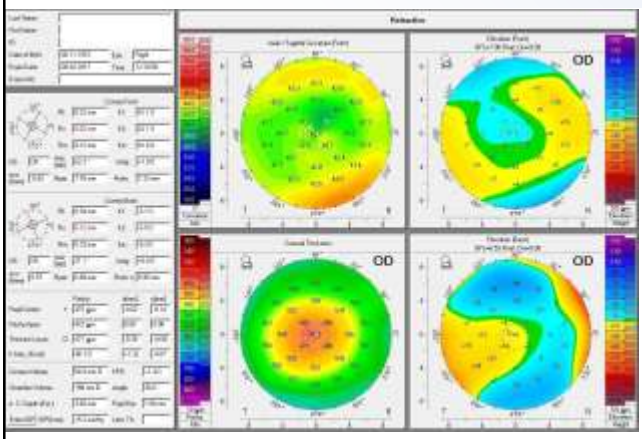
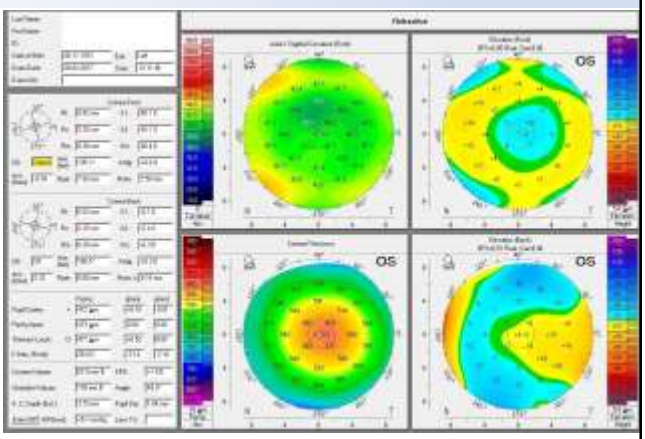
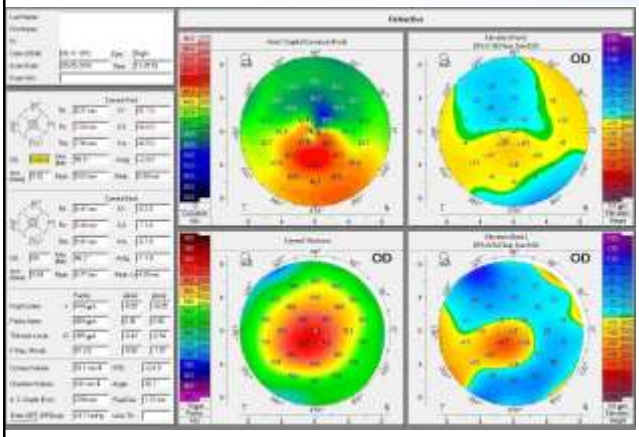
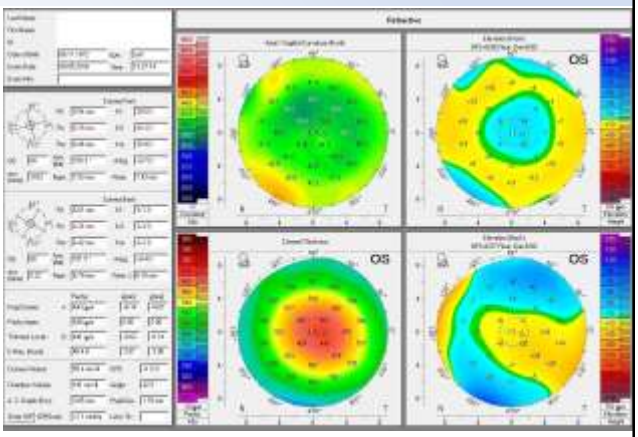




4-2017
1 year after LASIK





5-2018

1 year after LASIK retreatment

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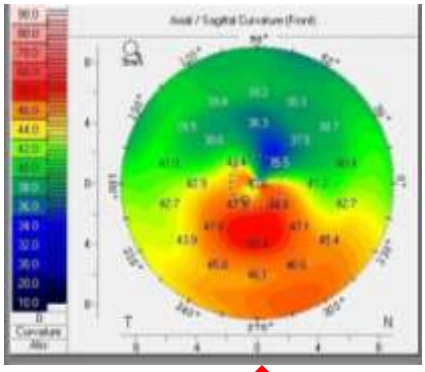
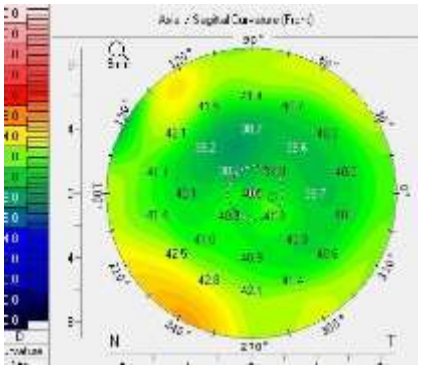


5-2019



42-year-old

ECTASIA

Was it regression or ectasia?

Ectasia after retreatment?

Flap thickness?

Residual stroma?

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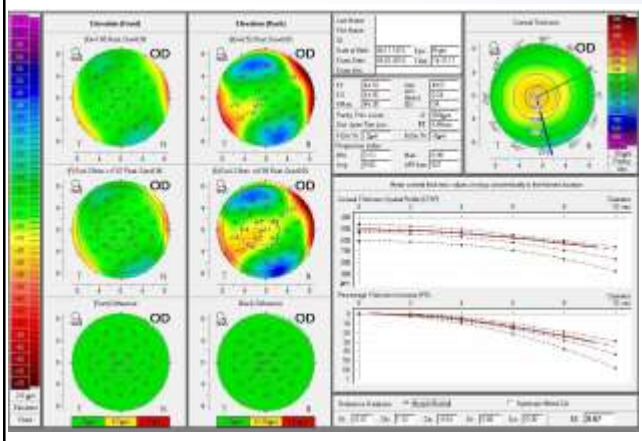

2-2016

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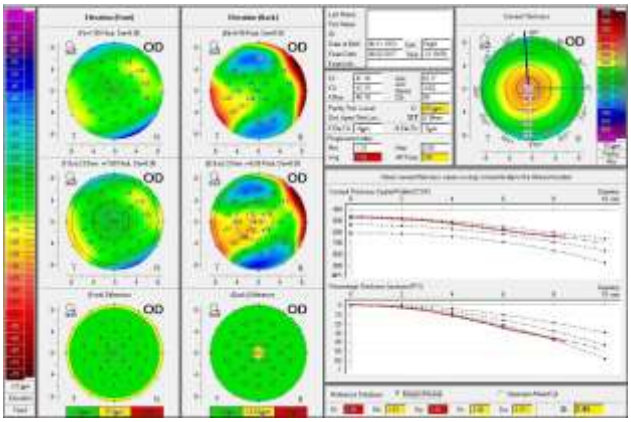

4-2017

1 year after LASIK

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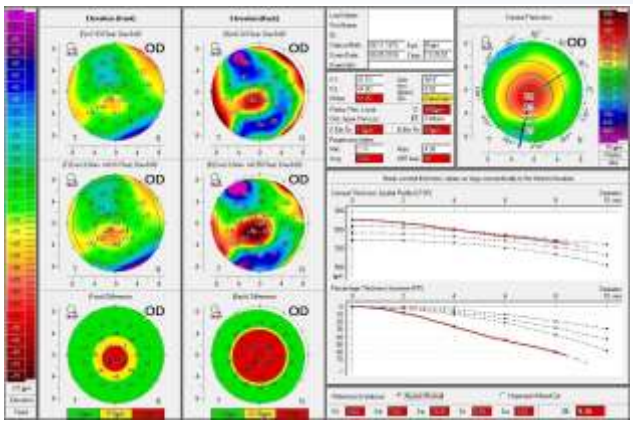

5-2018

1 year after LASIK retreatment

Management of regression after LASIK

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- Is it regression?
- When to correct?
- What is the method?
- How to correct?

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Is it regression?

1. Exclude ectasia
2. Exclude other causes

Incidence

0.02% to 0.4%

1 week to several years

Giri P, Azar DT. Risk profiles of ectasia after keratorefractive surgery. Curr Opin Ophthalmol 2017; 28(4):337-342.

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Is it regression?

1. Exclude ectasia
2. Exclude other causes

Cataract
Diabetes
Drug induced myopia

Transient Drug-Induced Myopia

Kaimbo DKW

Department of Ophthalmology and Biophysics, University of Kinshasa, Congo

Prescrire Int. 2003 Feb;12(63):22-3.

Drug-induced myopia

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When to correct?

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When to correct?

1.After stability

2. Evaluate the cornea

To exclude ectasia

To avoid more regression

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When to correct?

1.After stability

2. Evaluate the cornea

Pentacam ± Topography

Corneal thickness
Curvature
Asphericity
Elevations
Decentered ablation

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When to correct?

1.After stability

2. Evaluate the cornea

Do you have the preoperative and operative data ???

Yes

Compare Pentacam

No

AS-OCT

Flap thickness
Residual stroma
Flap related complications

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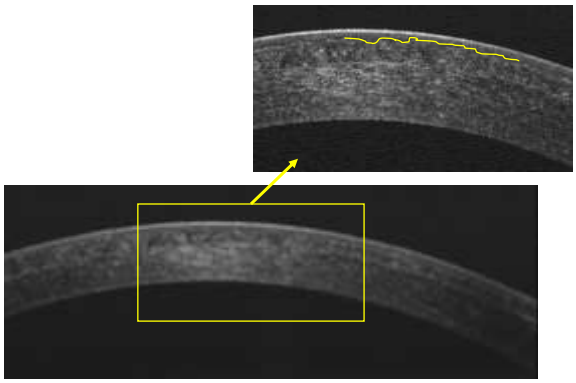
When to correct?

1.After stability

2. Evaluate the cornea

AS-OCT

Microstriae



Relevance of Swept-Source Anterior Segment Optical Coherence Tomography for Corneal Imaging in Patients With Flap-Related Complications After LASIK

Khaled Abdelazeem, MD,† Mohamed Sharaf, MD,*† Mohamed G. A. Saleh, MD,*† Ahmed M. Fathalla, MD, FRCOphth,*† and Wael Soliman, MD, PhD*†*

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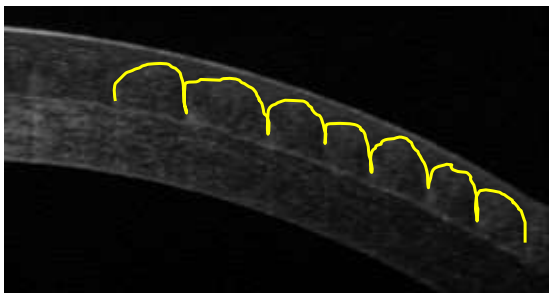
When to correct?

1.After stability

2. Evaluate the cornea

AS-OCT

Macrostriae



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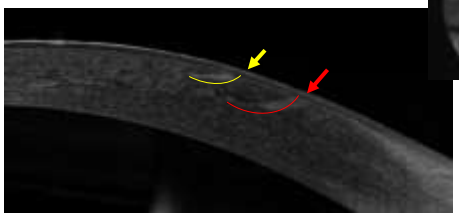
When to correct?

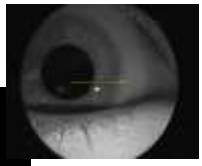
1.After stability

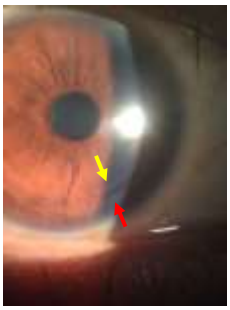
2. Evaluate the cornea

AS-OCT

Incomplete cut with 2 flaps







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When to correct?

1.After stability

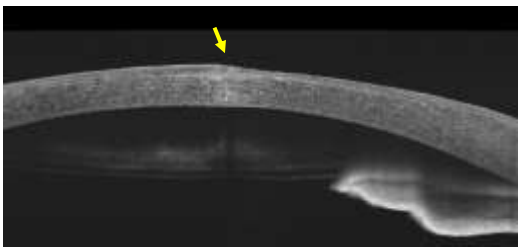
2. Evaluate the cornea

AS-OCT

Button hole

Irregular flap

Irregular stroma



What is the method?

Experience

Patient counseling

Current patient parameters

Refraction

Pentacam

Operative details of previous LASIK

Known

Not

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What is the method?

Cornea

1. LASIK
2. PRK

Lens

1. ICL
2. RLE

LASIK

- Lifting the old flap
- Topography guided / wavefront guided in some cases

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What is the method?

Cornea
1. LASIK
2. PRK

Lens
1. ICL
2. RLE

When to prefer PRK

- Inadequate residual stromal bed after proposed retreatment
- Decentered, incomplete, irregular or severely striated flap
- Superficial scarring or scarring of the flap edge
- Failure of flap lifting

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What is the method?

Cornea
1. LASIK
2. PRK

Lens
1. ICL
2. RLE

IOL power calculation

Shammas formula

ASCRS IOL power calculator

https://iolcalc.ascrs.org/

How to correct?

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How to correct?

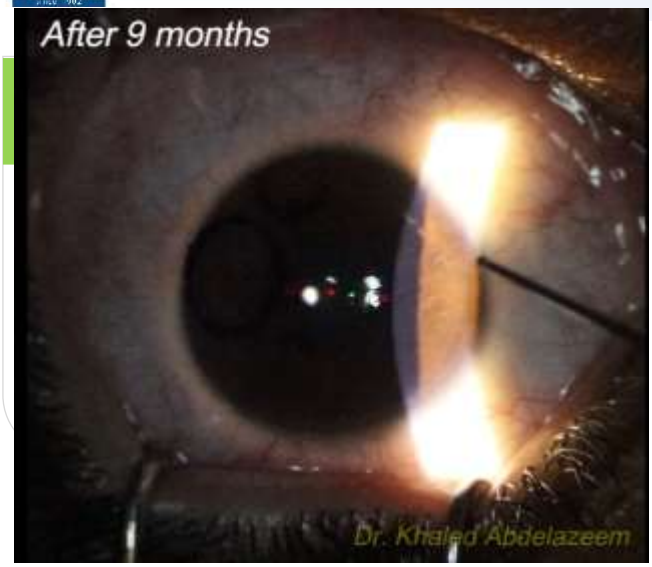
1. LASIK (Flap)
2. PRK (epithelial removal)

Old flap lift

Identify flap edge

After 9 months

After 15 years



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How to correct?

1. LASIK (Flap)
2. PRK (epithelial removal)

Old flap lift

Identify flap edge

Creating new flap

Wider ring and deeper cut

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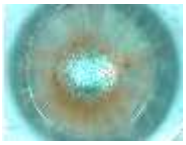
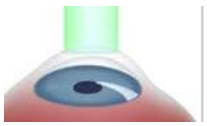
Methods of epithelial removal

How to correct?

1. LASIK (Flap)
2. PRK (epithelial removal)





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Methods of epithelial removal

How to correct?

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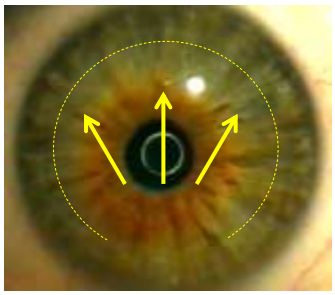
2. PRK (epithelial removal)



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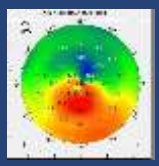
For regression after LASIK

Exclude ectasia



Wait for stability

Evaluate refraction

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For regression after LASIK

Wait for stability

Evaluate refraction

Evaluate the cornea

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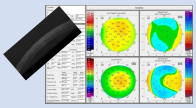
For regression after LASIK

Evaluate refraction

Evaluate the cornea



Choose a suitable method

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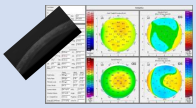
For regression after LASIK

Evaluate the cornea



Choose a suitable method

For regression after LASIK

Choose a suitable method

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Hope you a nice trip

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Wish you a nice trip

Take care

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Thank You

Khaled Abdelazeem