Clinical masquerade that mimic FFKC and topography clues to recognize them

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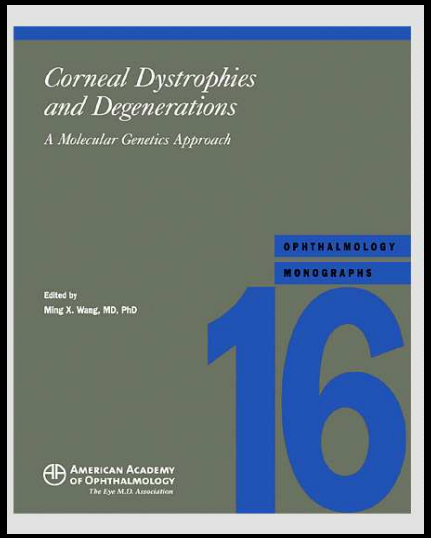
- Dora Sztipanovits, OD., MS
- Financial interest: none.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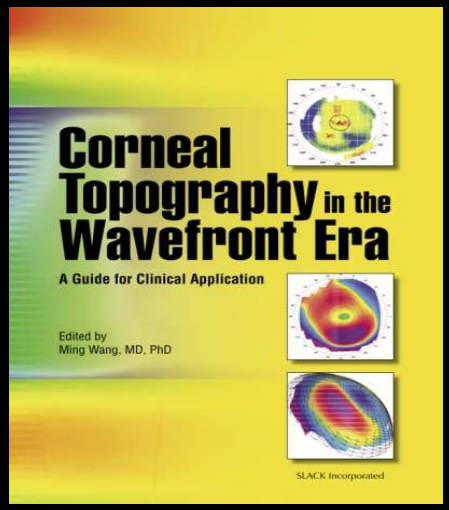
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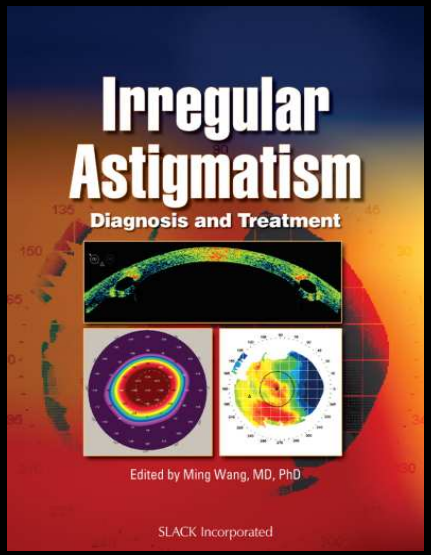
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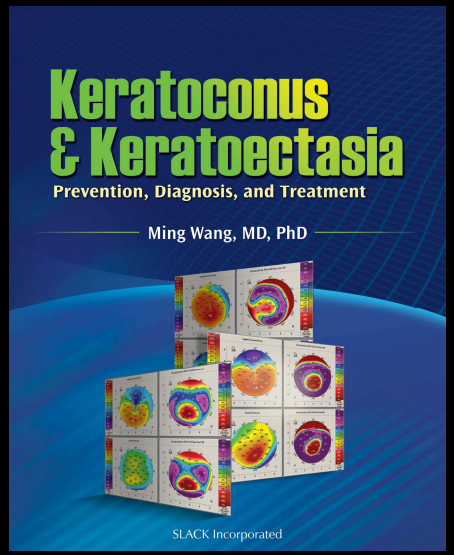
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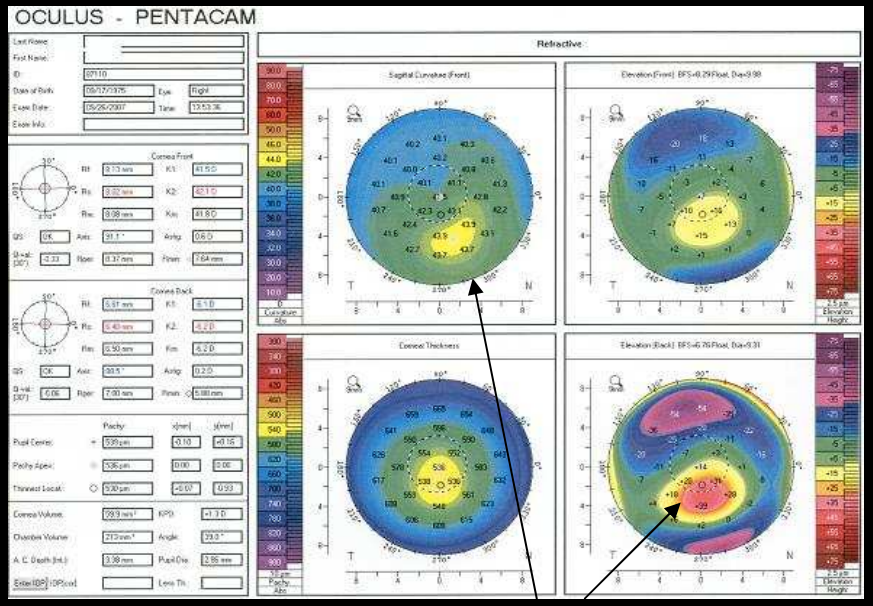
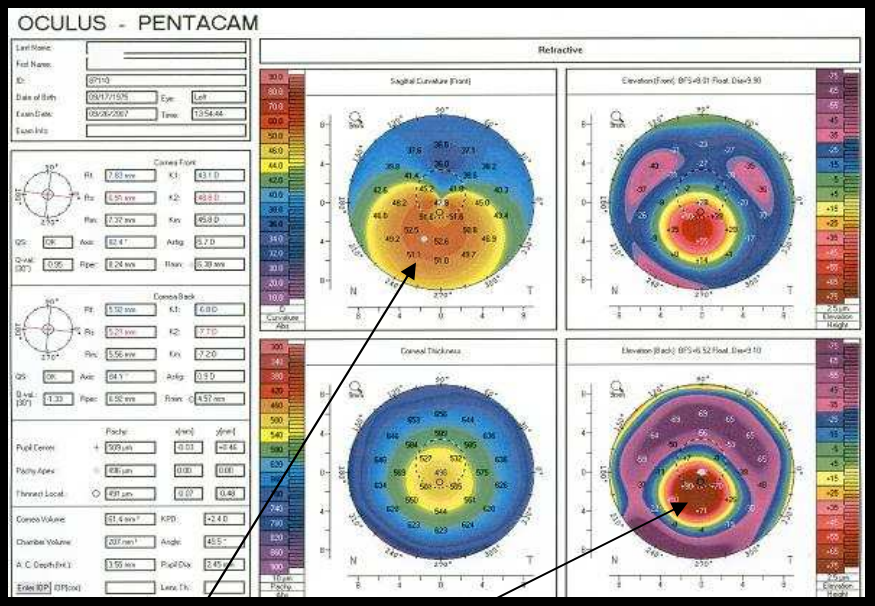
One pt with KC (OS>>OD), OS has much more pronounced <u>posterior</u> dz.



OD (less affected)

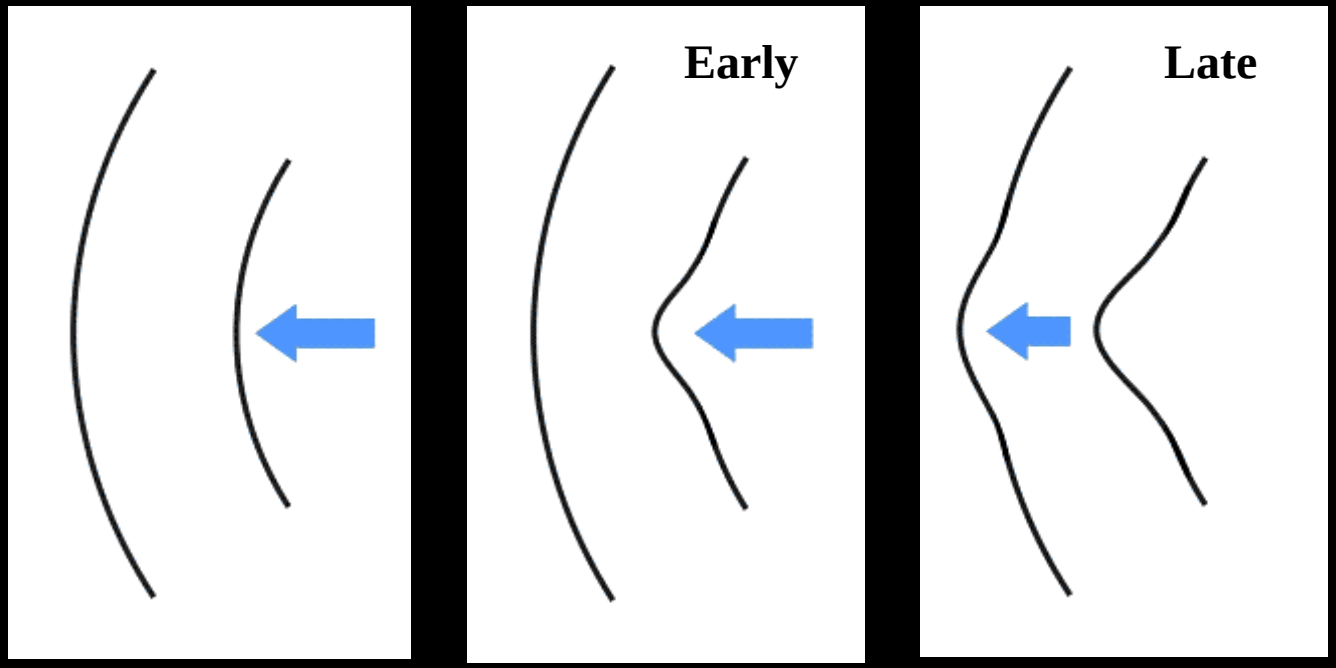


OS (more affected)

The question

Does KC progress *from posterior to anterior* cornea?

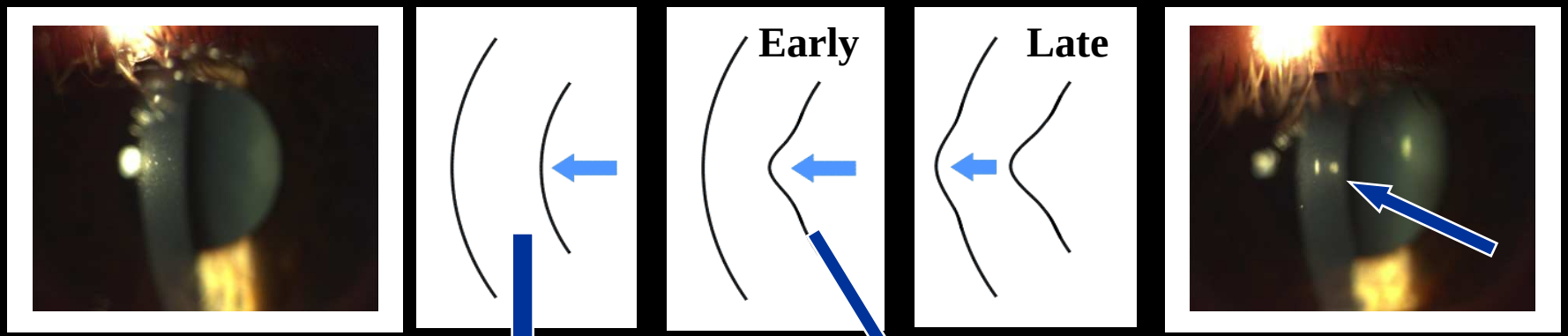
KC dz progresses from posterior to anterior



Early (posterior) → Disease Progression → Late (post & ant)

Disease begins in posterior cornea

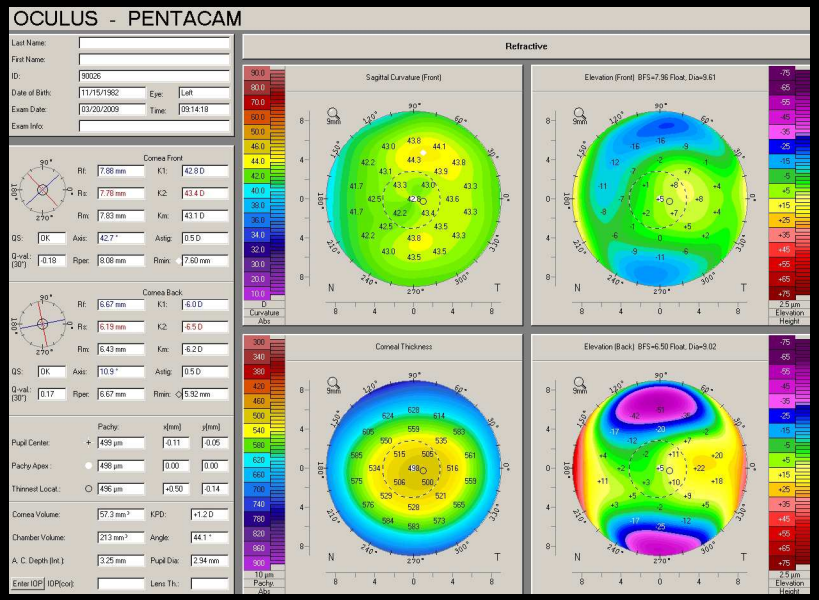
Subsequently anterior cornea is also affected



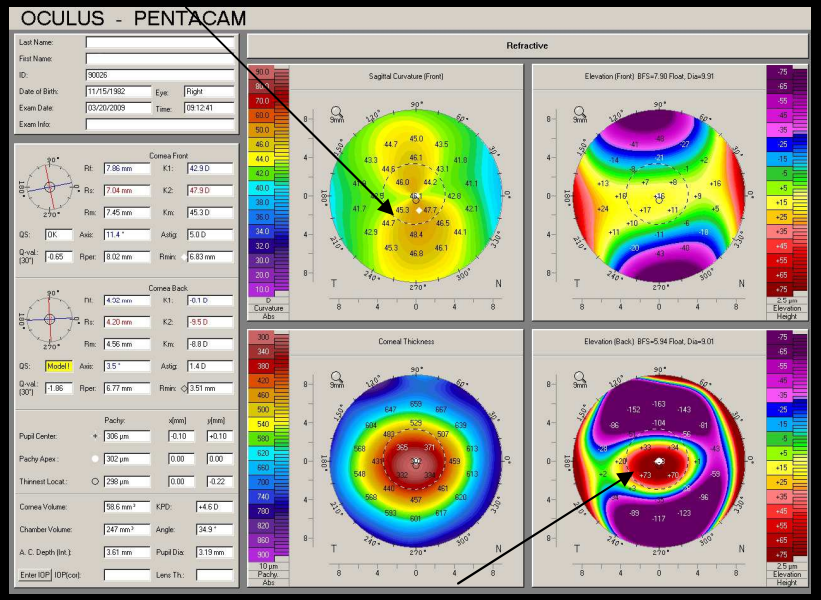
Early (posterior)

Disease Progression

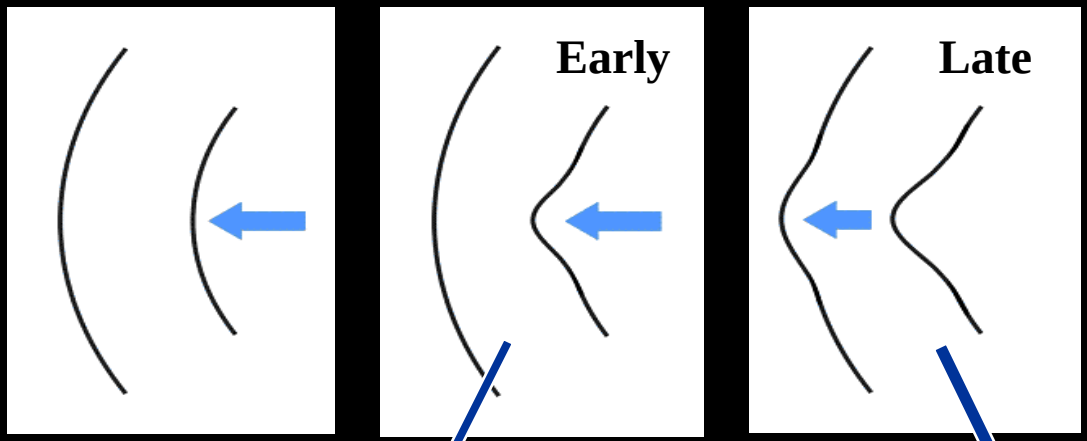
Late (post & ant)



Normal



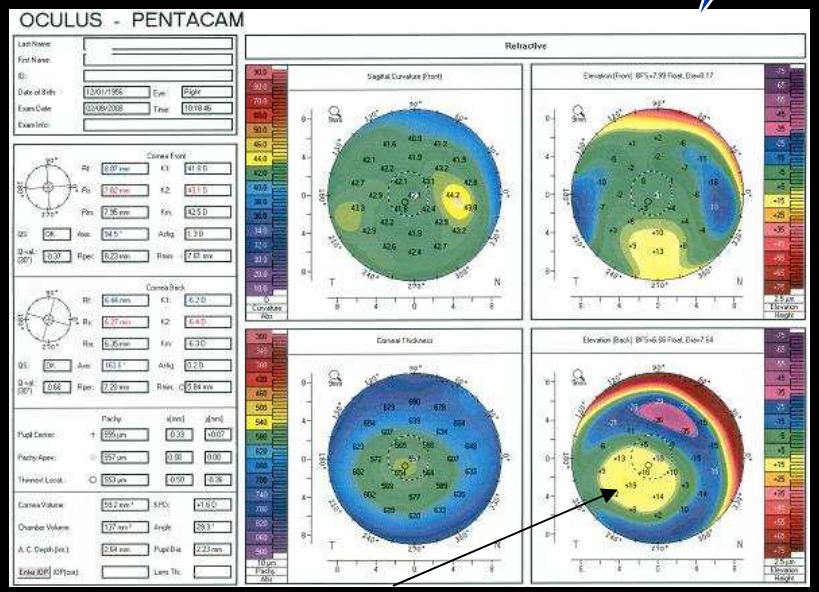
Disease begins in posterior cornea

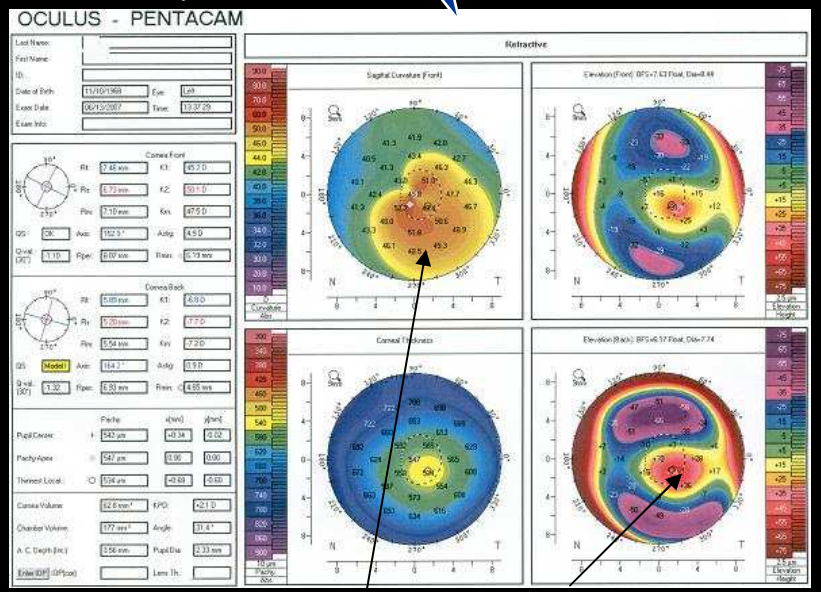


Early (posterior)

Disease Progression

Late (post & ant)

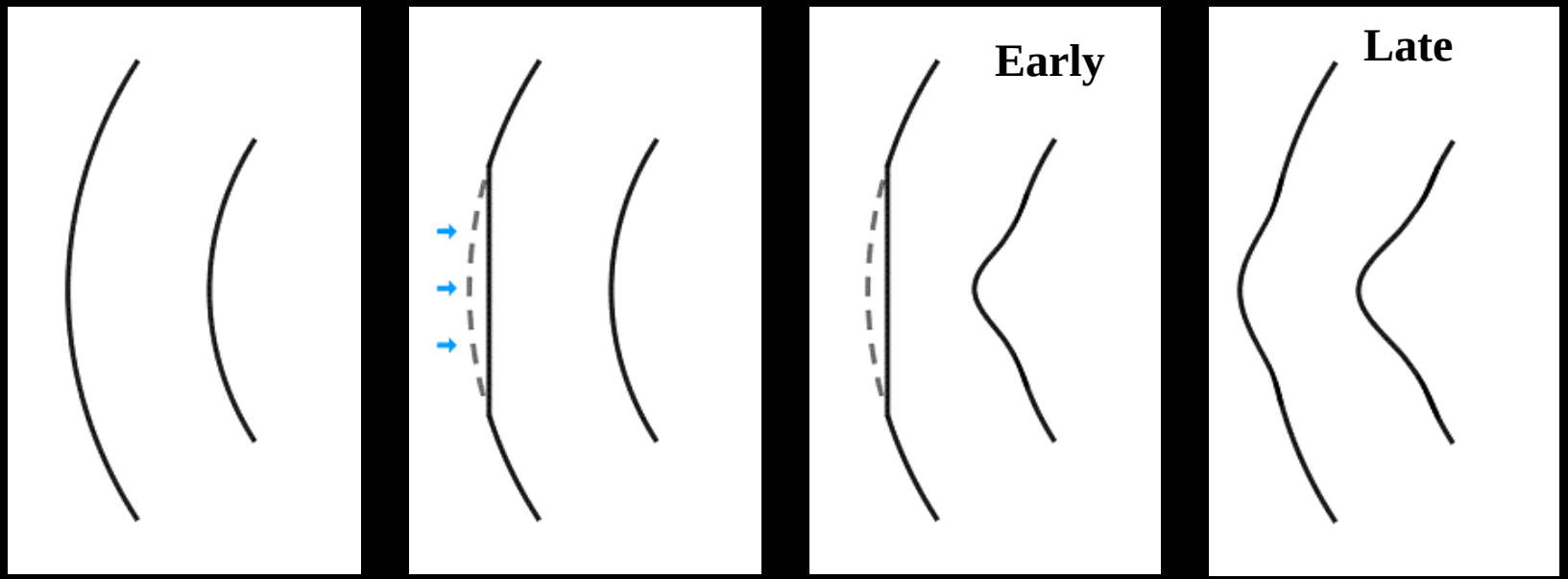


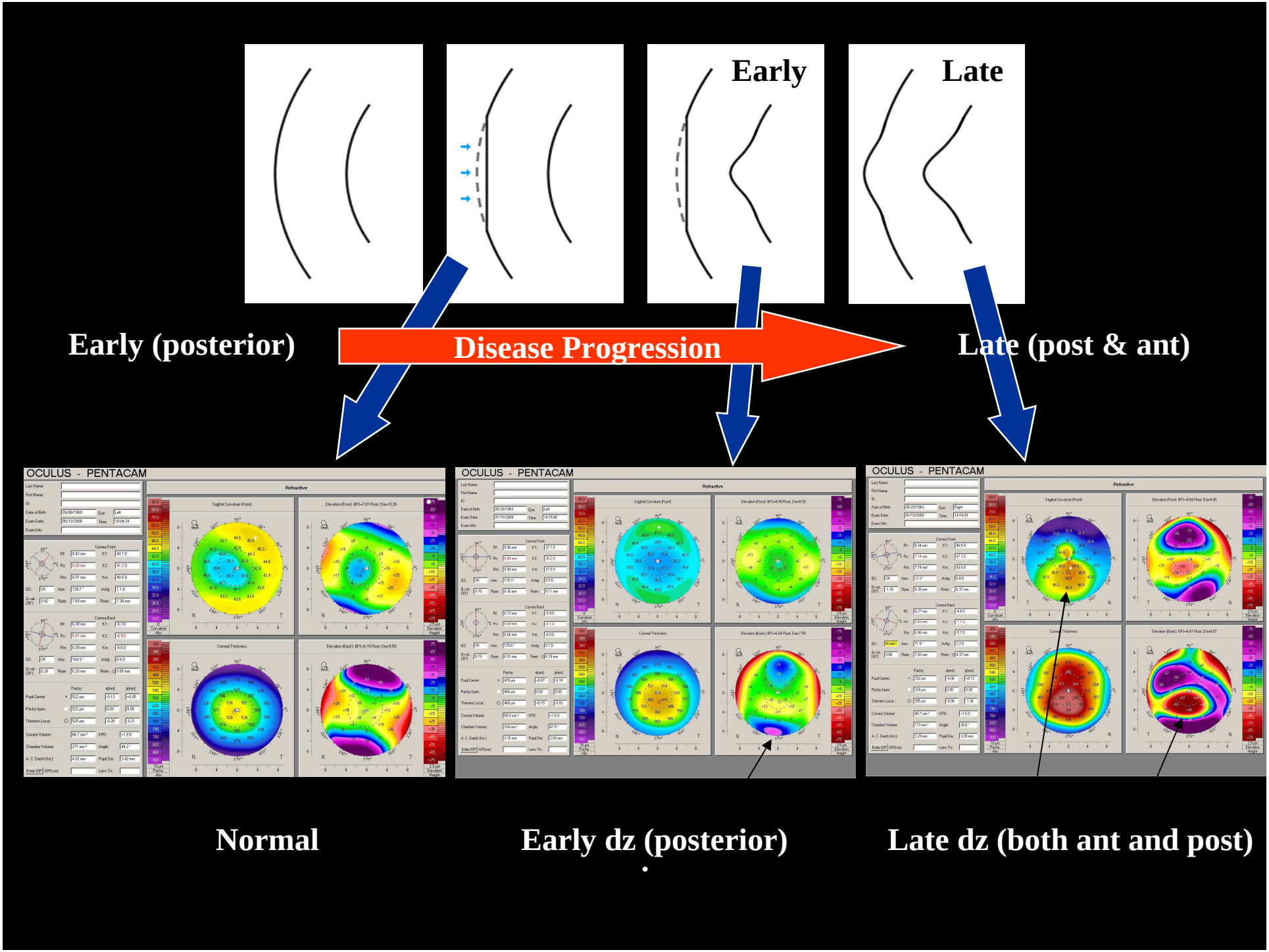


Disease begins in posterior cornea

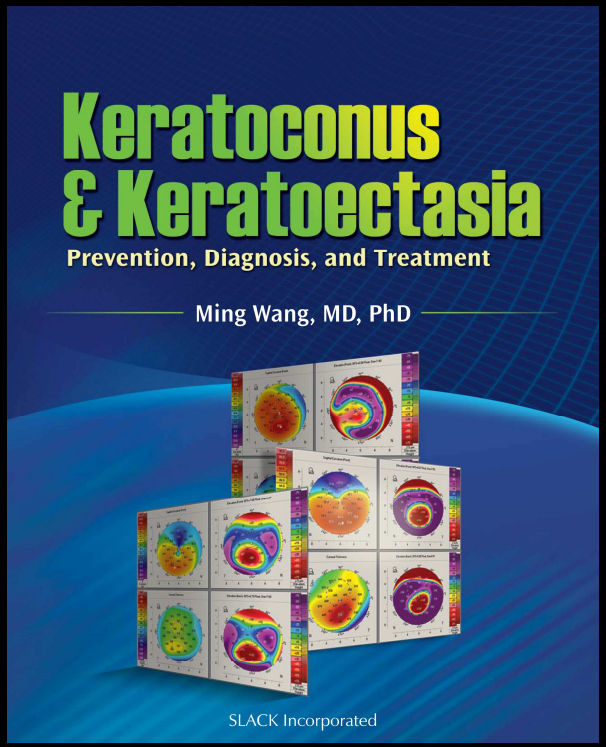
Subsequently anterior cornea is also affected

Does keratoectasia also progress from posterior to anterior cornea?



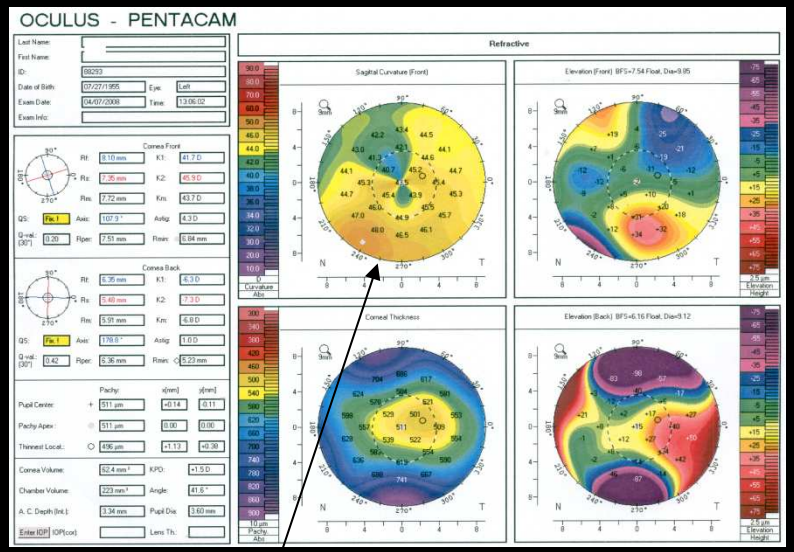

Early
Late
Early (posterior)
Disease Progression
Late (post & ant)
OCULUS - PENTACAM
OCULUS - PENTACAM
OCULUS - PENTACAM
Normal
Early dz (posterior)
Late dz (both ant and post)

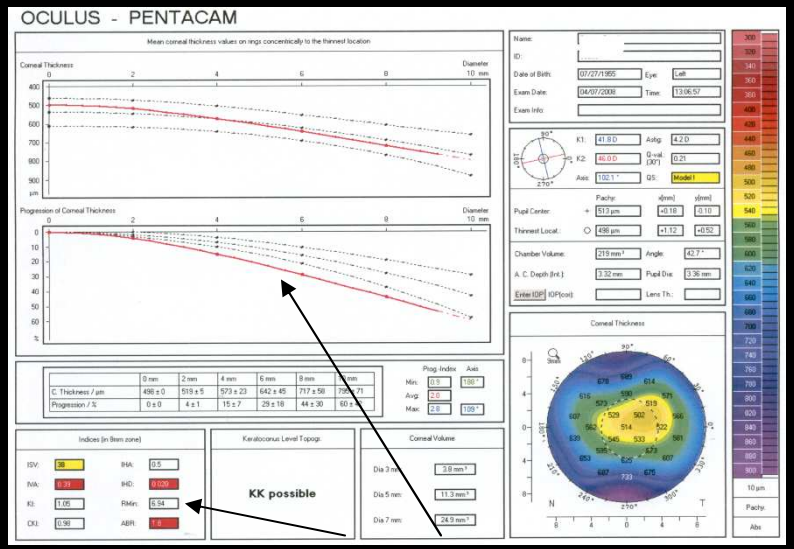
The importance of recognizing FFKC prior to LASIK



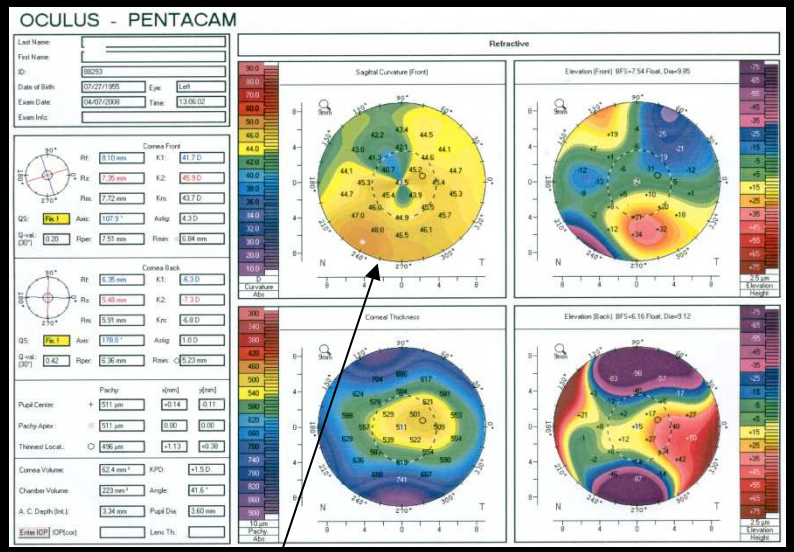
Can knowledge of posterior corneal changes and progression (from post to ant) help us improve sensitivity and specificity of recognizing FFKC prior to LASIK

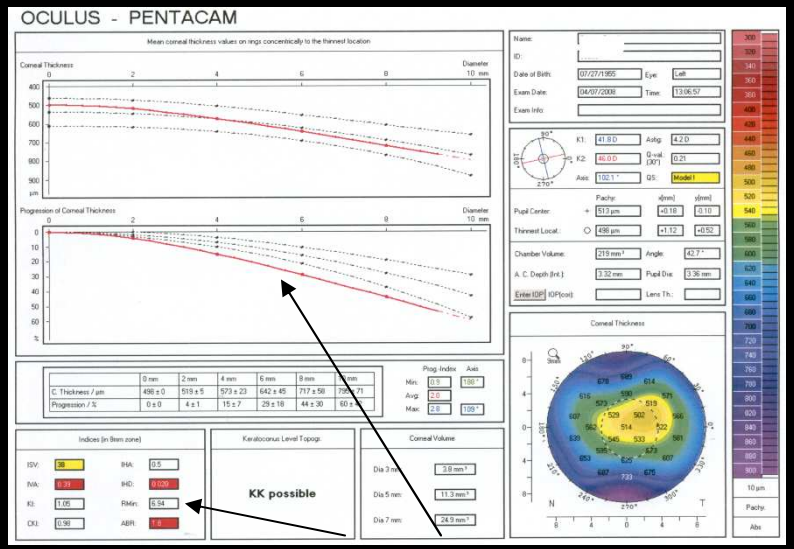
FFKC?


OCULUS - PENTACAM
Refractive
Sagittal Curvature (Front)
Elevation (Front) BFS=7.54 Float. Dia=9.05
Corneal Thickness
Elevation (Back) BFS=6.16 Float. Dia=9.12


OCULUS - PENTACAM
Mean corneal thickness values on rings concentrically to the thinnest location
Corneal Thickness
Progression of Corneal Thickness
KK possible
Corneal Thickness

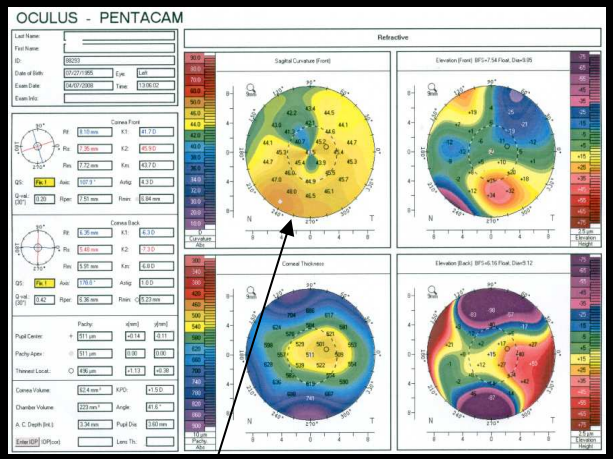
FFKC?

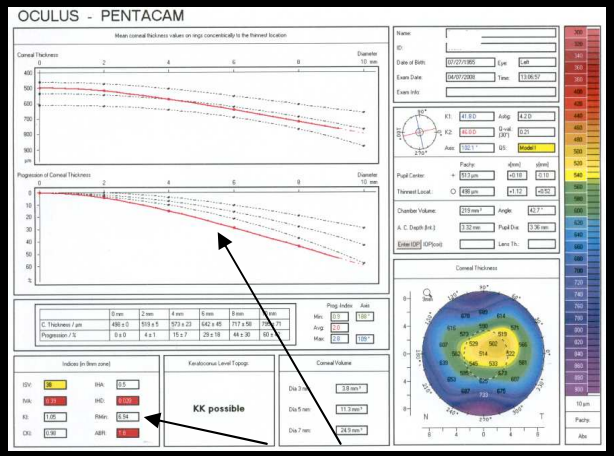




No, this is in fact NOT FFKC!

Are there masquerades that mimic FFKC?



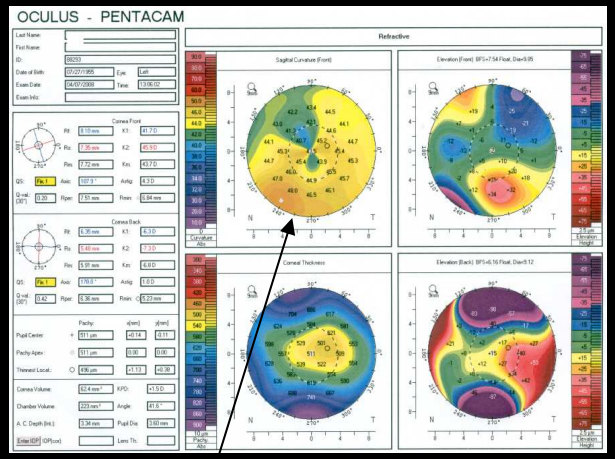


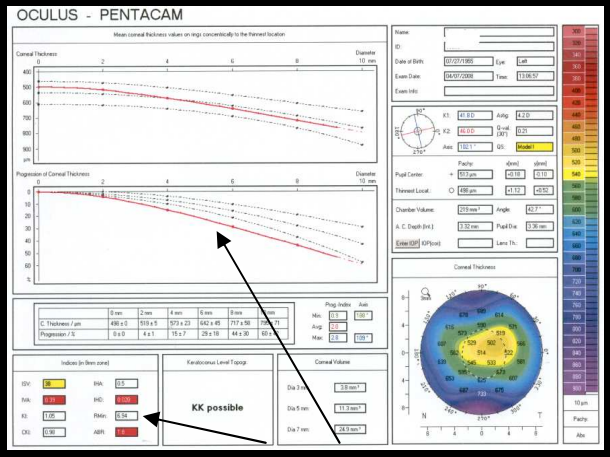
This is in fact NOT FFKC!

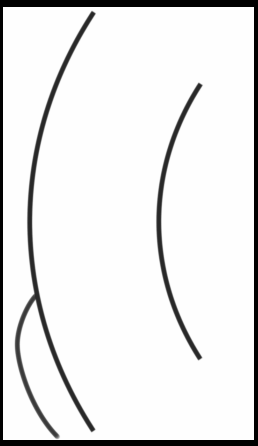
FFKC Masquerade #1:

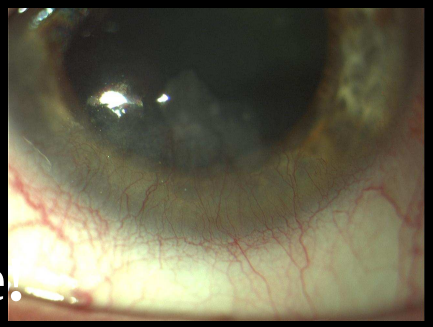
Inferior tissue addition

e.g., Salzmann's





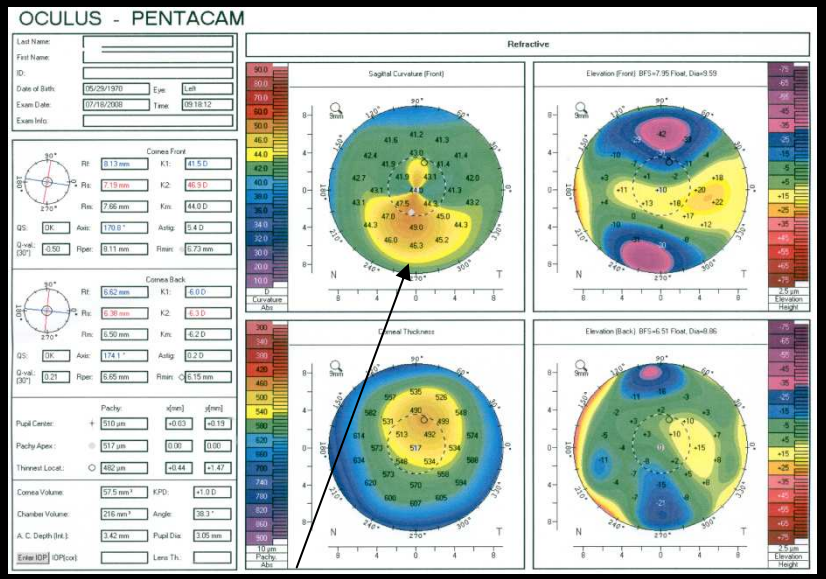


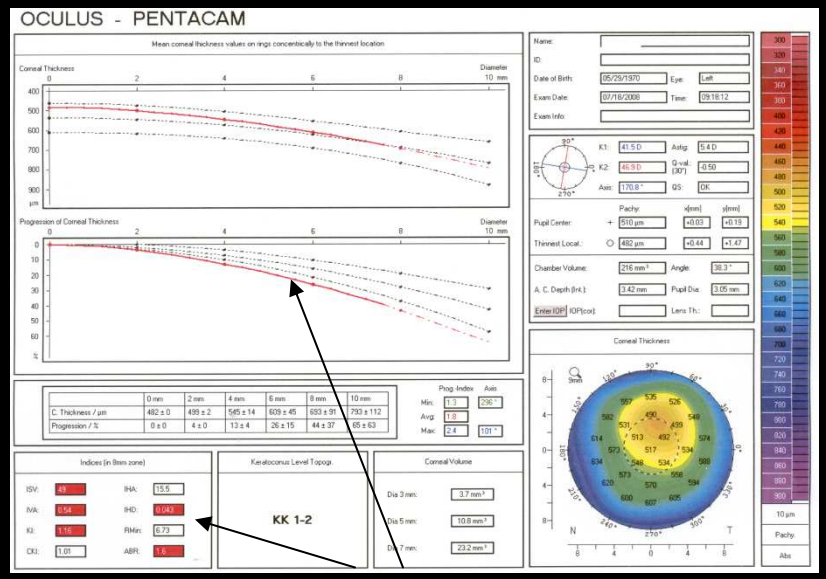


This is not FFKC topographically because there is NO *corresponding* posterior change.

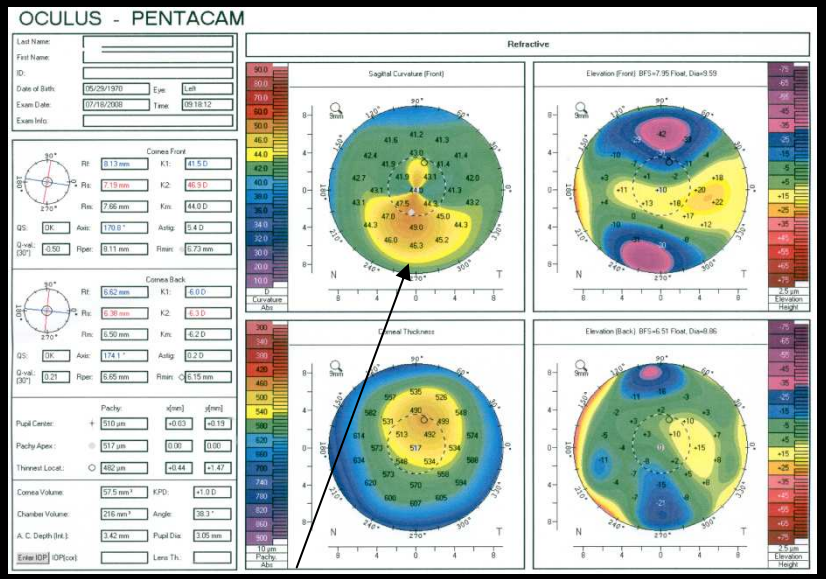
Early (posterior) → **Disease Progression** → **Late (post & ant)**

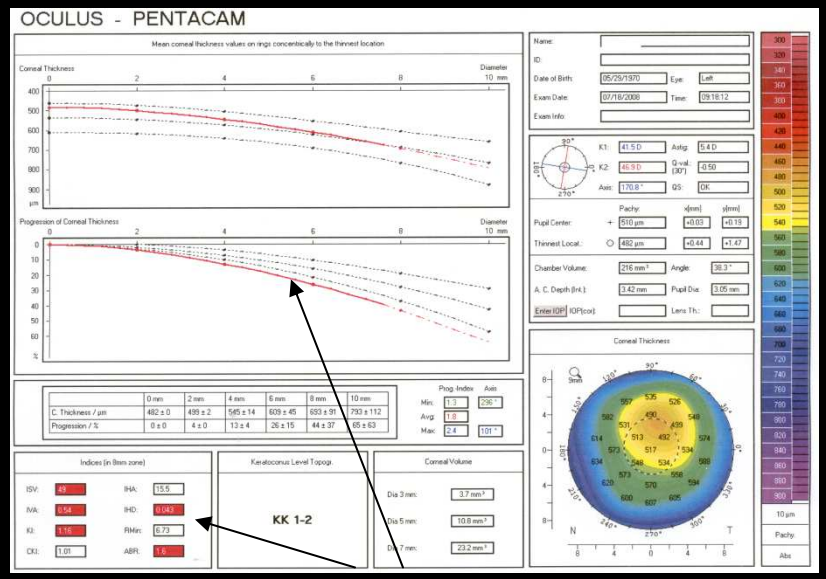
FFKC?


OCULUS - PENTACAM
Refractive
Sagittal Curvature (Front)
Elevation (Front) BFS=7.95 Float, Dia=9.59
Corneal Thickness
Elevation (Back) BFS=6.51 Float, Dia=8.86


OCULUS - PENTACAM
Mean corneal thickness values on rings concentrically to the thinnest location
Progression of Corneal Thickness
KK 1-2
Corneal Thickness

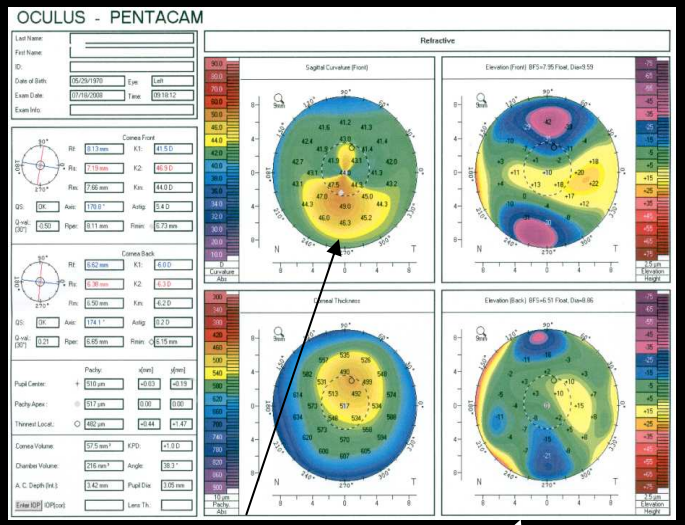
FFKC?

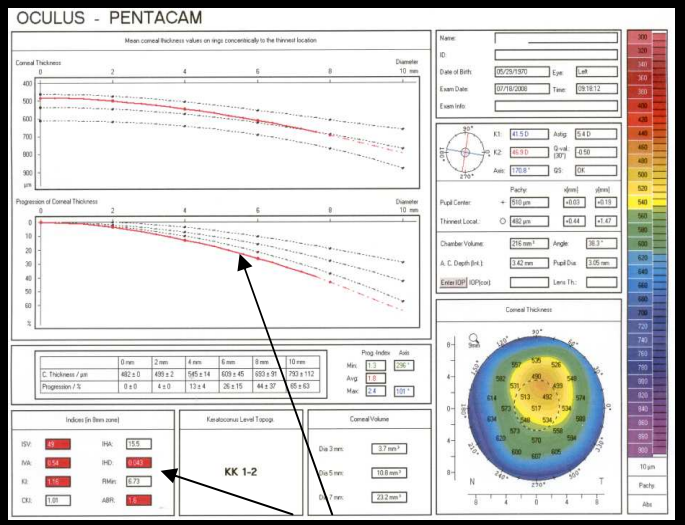


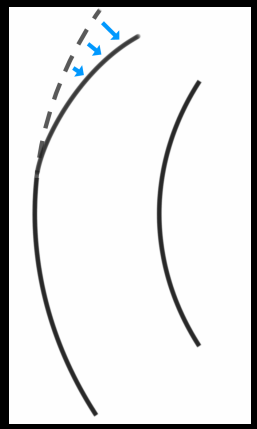


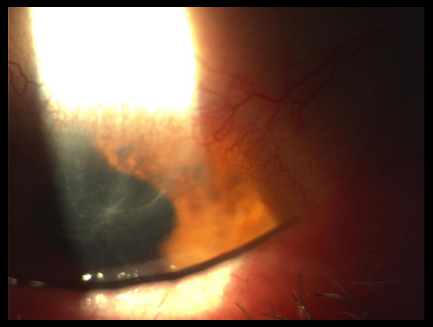
No, this is in fact NOT FFKC!

FFKC Masquerade #2:
Superior corneal thinning
e.g., Terrien's





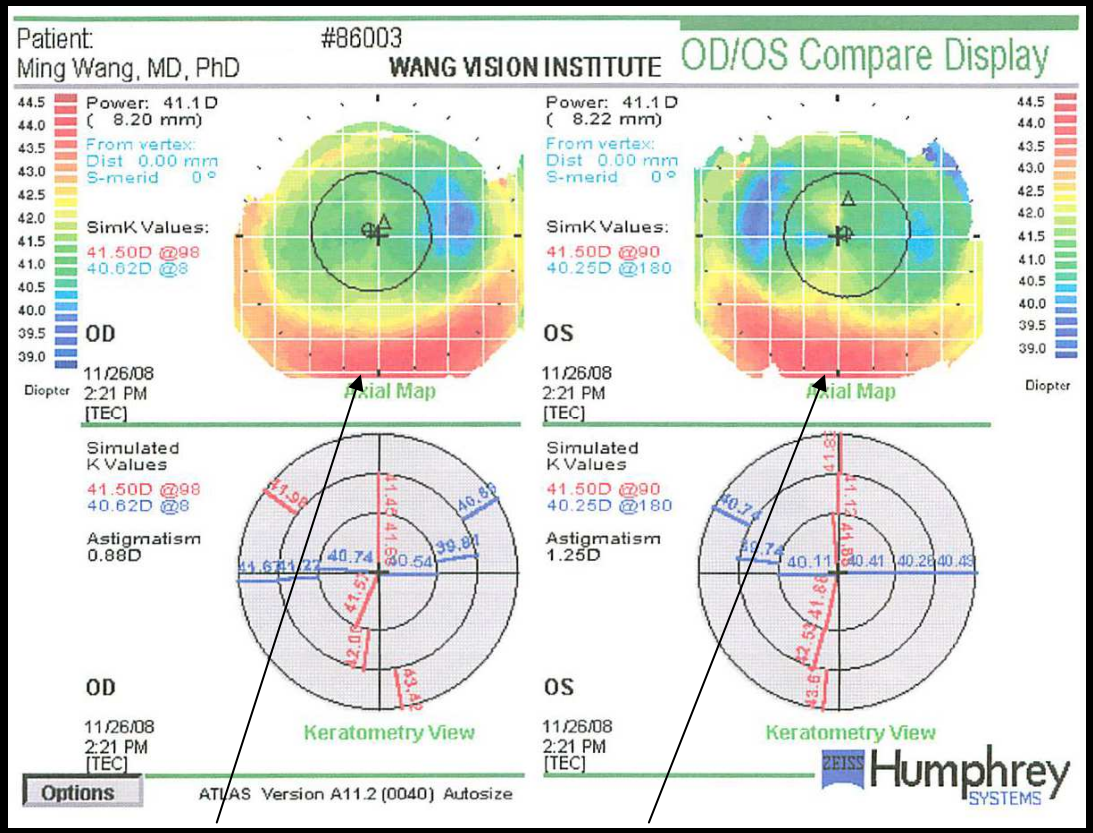




This is not FFKC topographically because there is NO *corresponding* posterior change!

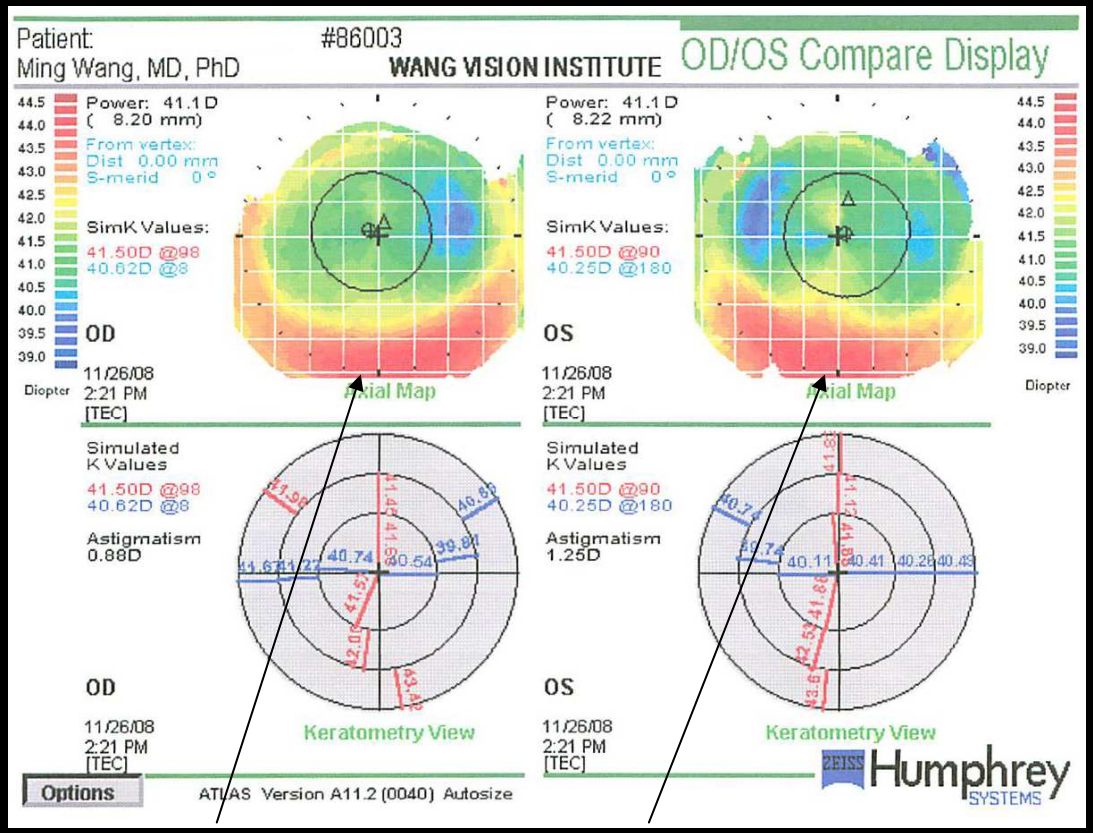
Early (posterior) → **Disease Progression** → **Late (post & ant)**

FFKC?



s/p LASIK, inferior steepening?

FFKC?



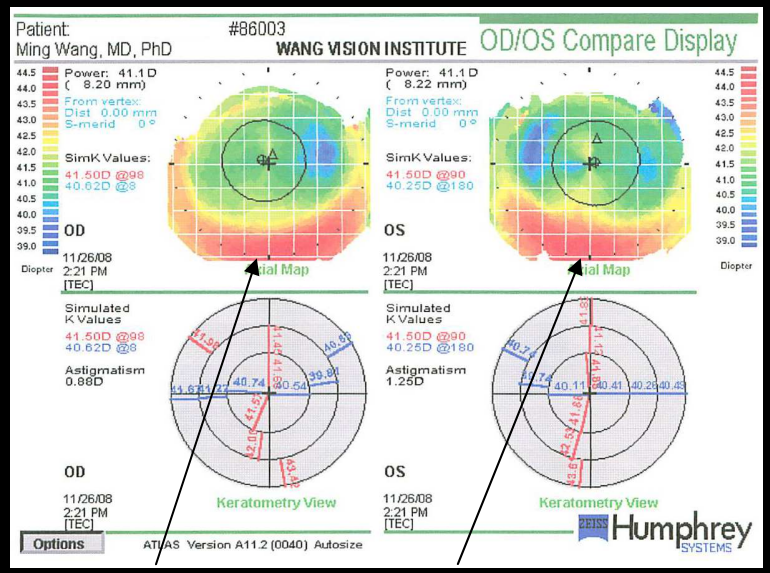
s/p LASIK, inferior steepening?

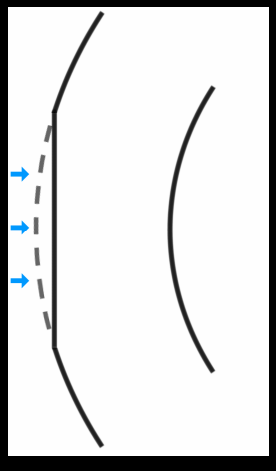
No, this is in fact NOT FFKC!

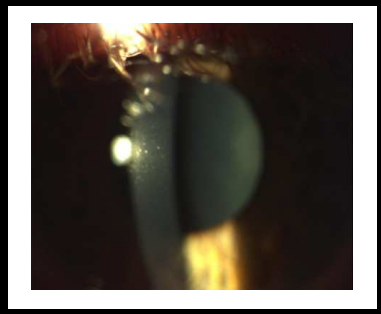
FFKC Masquerade #3:

S/P myopic LASIK

Anterior surface flatting resulting in the ever-present inferior rim - topo artifact.



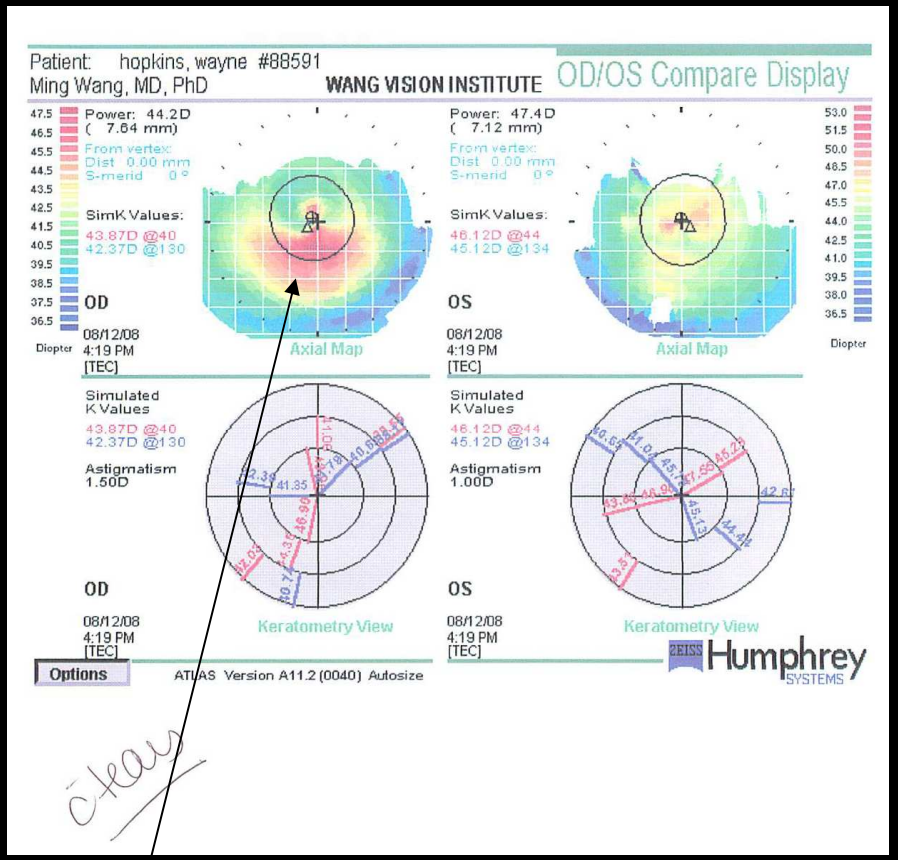




This is not FFKC topographically because there is NO *corresponding* <u>posterior</u> change!

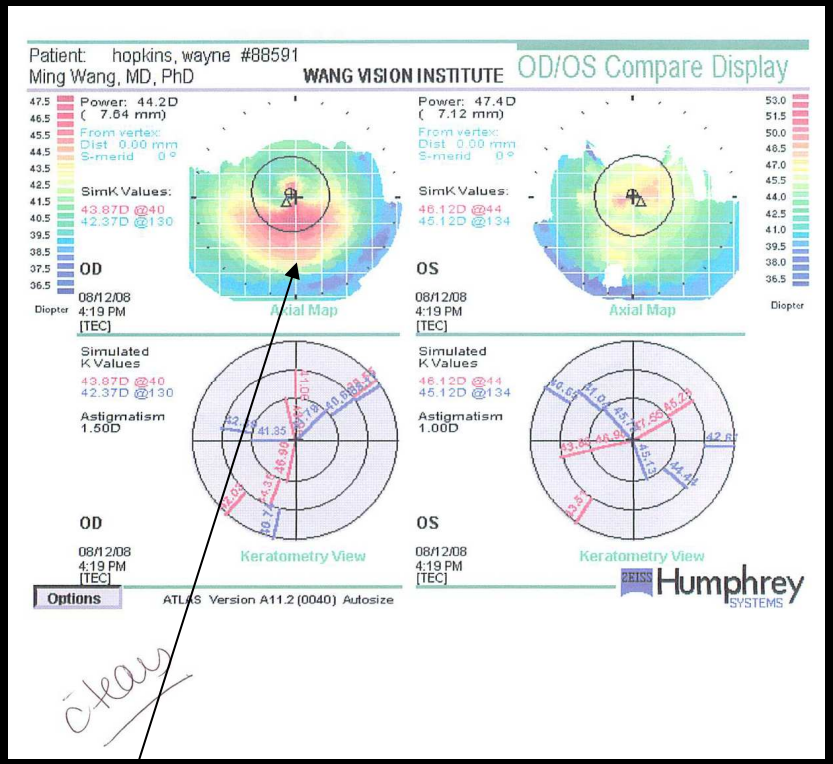
Early (posterior) → **Disease Progression** → **Late (post & ant)**

FFKC?



s/p myopic LASIK, inferior steepening

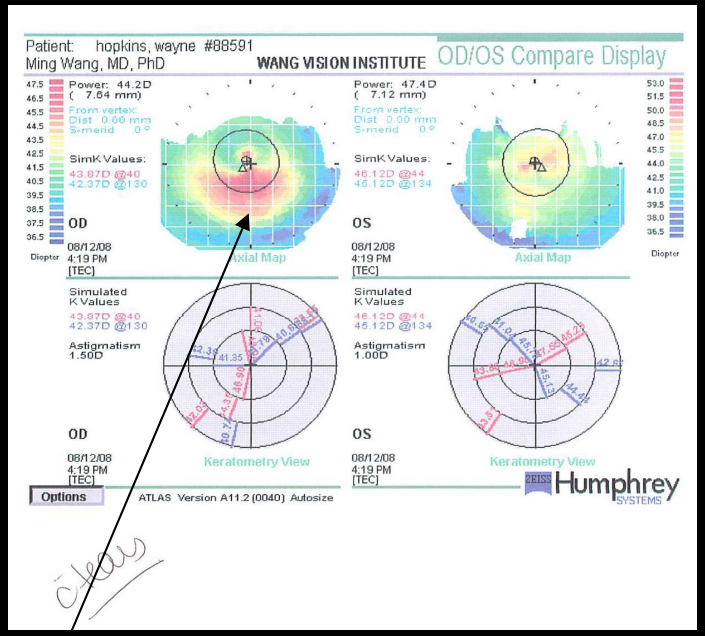
FFKC?

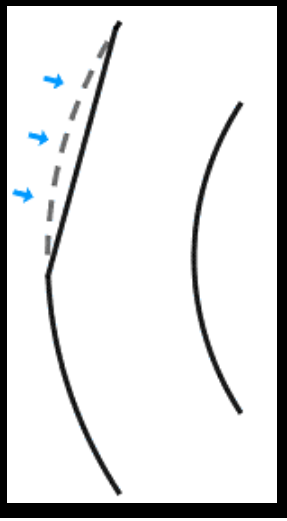


s/p myopic LASIK, inferior steepening

No, this is in fact NOT FFKC!

FFKC Masquerade #4:
S/P decentered LASIK





This is not FFKC topographically because there is NO *corresponding* <u>posterior</u> change!

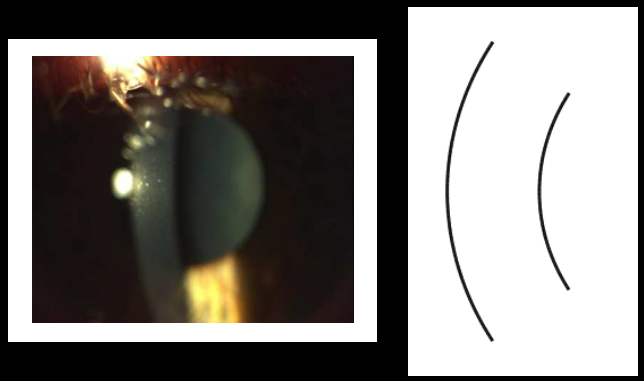
Early (posterior) → **Disease Progression** → **Late (post & ant)**

The importance of posterior corneal analysis:

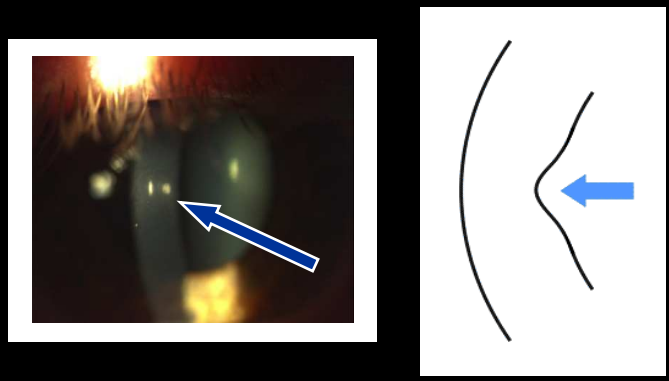
1. Improve specificity of FFKC recognition;

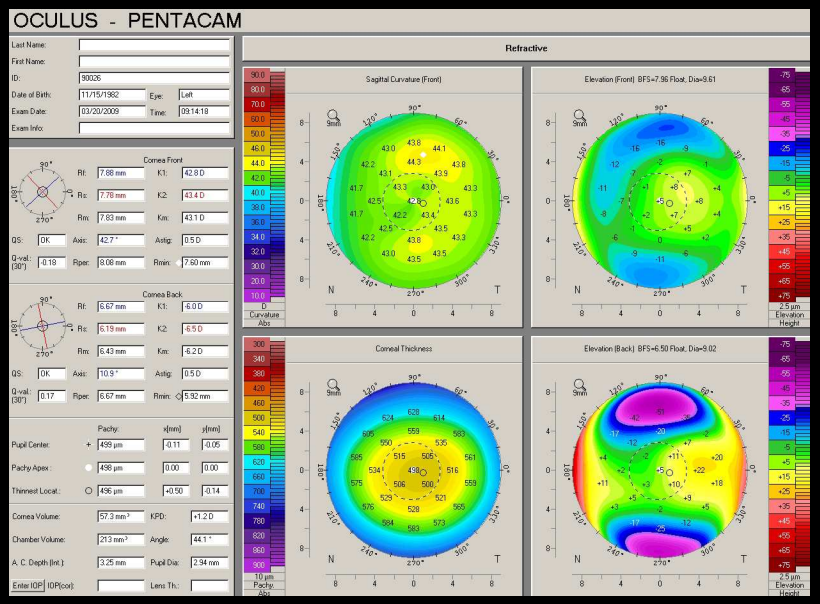
2. Identify causes of loss of SCBVA.

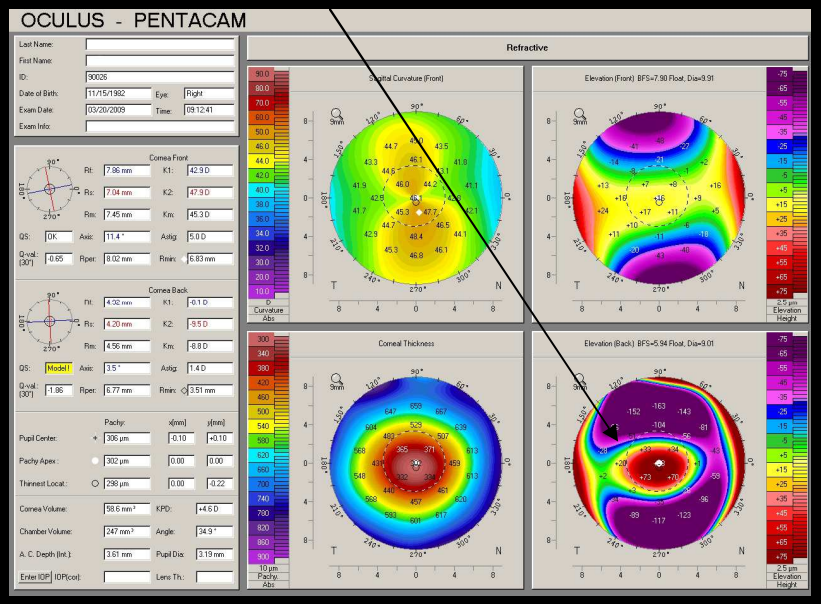
Normal



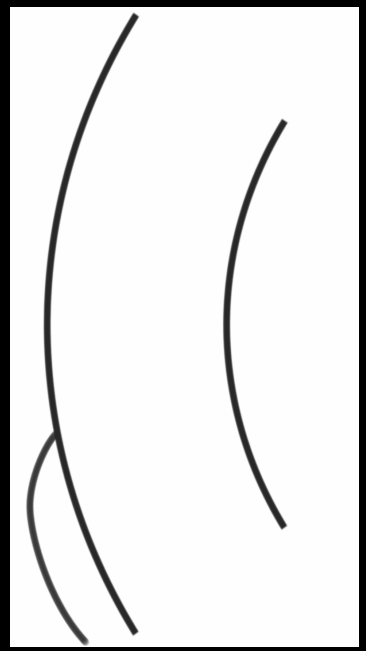
Posterior KC



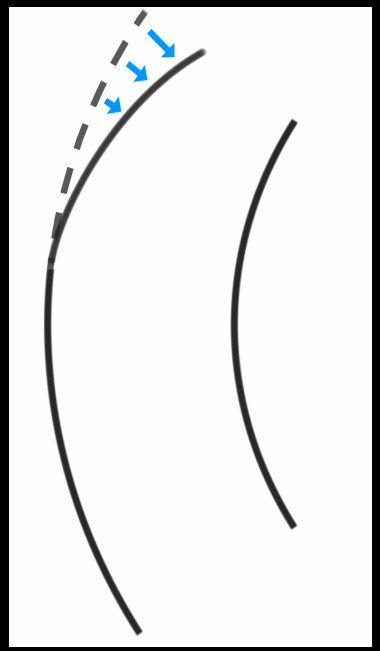




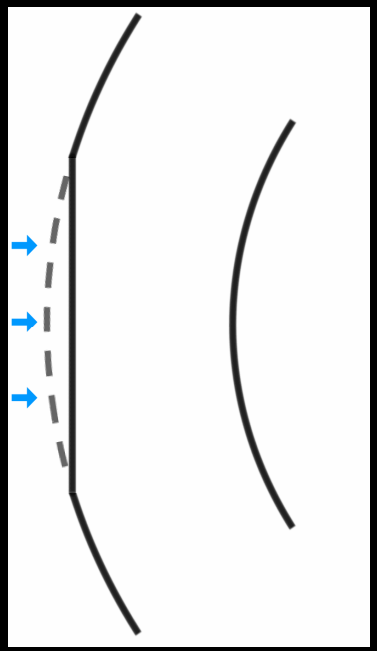
Summary: masquerade that mimic keratoconus or keratoectasia



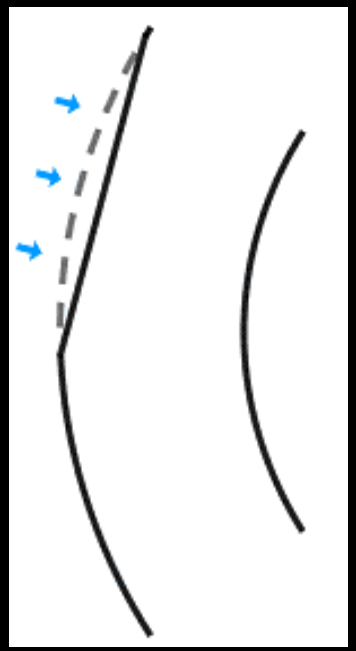
Inferior tissue addition such as in Salzmann's degeneration



Superior corneal thinning such as in Tierren's marginal degeneration

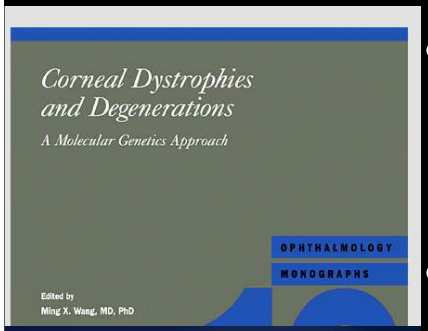


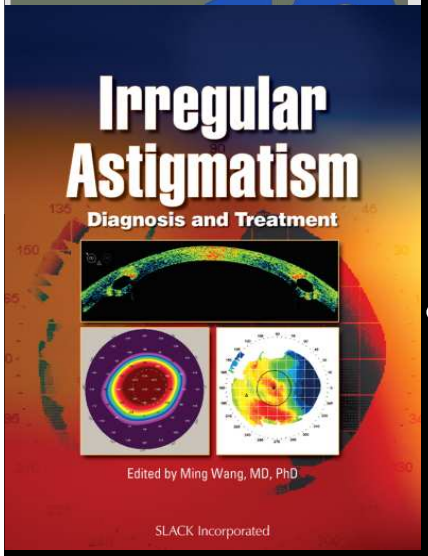
Central anterior surface flattening from surface subtraction in myopic refractive surgery



Decentered anterior keratorefractive treatment

Conclusions of masquerade that mimic FFKC and topography clues to recognize them





- The natural history of KC disease progresses from posterior to anterior cornea;
- Posterior cornea analysis can help *rule out* pseudo FFKC cases, since when anterior changes are present, the corresponding posterior changes are already there;
- False positivity for FFKC can arise with newer and more sensitive imaging technologies;

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