

Achieving a New Level of Safety & Efficacy for Retreatments

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Wavefront for enhancements

Post-LASIK residual refractive error

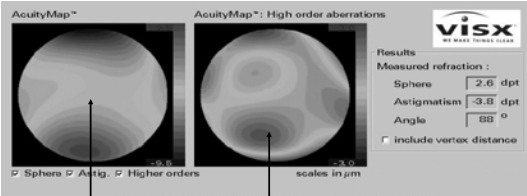
- Post-LASIK patients often have
 - higher % of higher order aberrations
 - higher expectations with low refractive corrections
- How is this different in the Intralase era
 - 0.47% enhancement rate with IntraLase eyes

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Customize Wavefront Very Useful for Enhancements: Post – LASIK Eye Ablations

Wavefront is the patients' individual acuity map



Best Uncorrected Vision

This acuity map shows the eye uncorrected for sphere, cylinder, and higher order aberrations

Uncorrected Higher Order Aberrations

This aberration map shows some slight aberrations, while the periphery shows larger wavefront errors

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Conventional vs. Wavefront

Conventional*

- N = 164
- Preoperative MRSE: -5.82 ± 2.16 D
- Pre-enhancement UCVA: 20/45
- MRSE: -1.00 ± 0.57 D

Wavefront

- N = 83
- Preoperative MRSE: -6.02 ± 1.27 D
- Pre-enhancement UCVA: 20/49
- MRSE: -0.85 ± 1.25 D

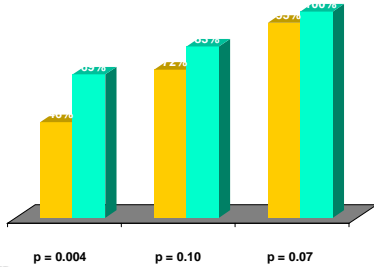
*Davis EA, Hardten DR, Lindstrom M, Samuelson TW, Lindstrom RL. LASIK enhancements: A comparison of lifting to recutting the flap. Ophthalmol 2002;109:2308-14.

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UCVA at 1 Month

Conventional vs. Wavefront Enhancements - LASIK



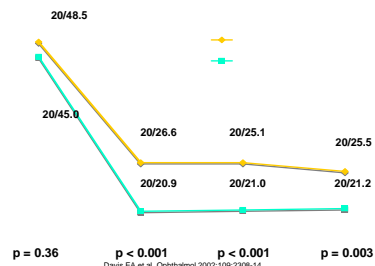
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Mean UCVA

Conventional vs. Wavefront Enhancements - LASIK



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Safety

DLK:

- **p = 0.54**
- W: 5 eyes (6.0%)
- C: 7 eyes (4.3%)
- No flap lifts

Epithelial ingrowth

- **p = 0.25**
- W: 3 eyes (3.6%)
- C: 12 eyes (7.3%)
- One flap lift (Wavefront)
- p = 0.16

Striae:

- **p = 0.06**
- W: 0 eyes (0.0%)
- C: 7 eyes (4.3%)
- One flap lift (Conventional)
- p = 0.48



Davis EA et al. Ophthalmol 2002;109:2308-14.

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Wavefront-guided enhancements

LASIK

- Appear to be safe and effective in the treatment of residual refractive error following primary LASIK
- Achieve significantly better Snellen UCVA than conventional enhancements
- Provide comparable refractive stability and complication rates with conventional enhancements



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Case Example - Severe

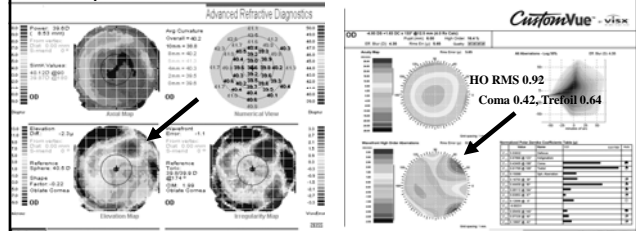
Young Male, sp Lasik
 Assaulted → lost flap
 Severe I/A
 Significant HOAs
 Interested in "enhancement"...



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Case Example - Severe

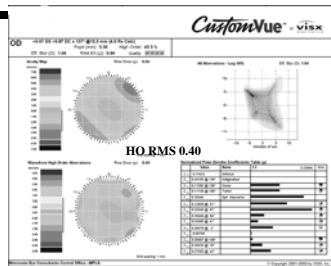
Preop custom enhancement/PTK



Wavescan HOAs match topo

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Case Example - Severe



UCVA = 20/20-2
 MR: +0.5 + 1 x 170 = 20/15

Postop custom enhancement/PTK

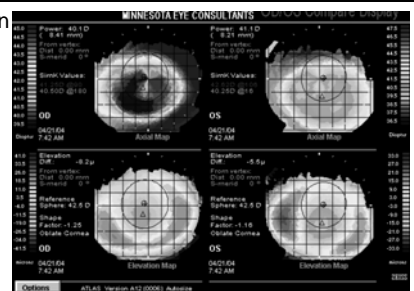


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Be Careful with Enhancements

Careful Inspection
 Of Flap Shows
 Decentration of
 Flap Inferiorly

Don't Lift These
 Flaps for
 Enhancement



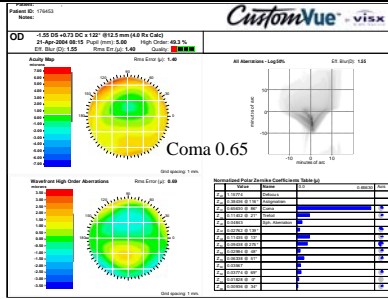
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Be Careful with Enhancements

Careful Inspection
Of Flap Shows
Decentration of
Flap Inferiorly

Don't Lift These
Flaps for
Enhancement

Probably Custom
PRK
With MMC
Better Option



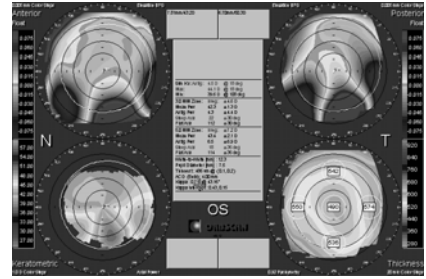
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Be Careful with Enhancements

Review of topography
shows ectasia

Look back at
original
topography and
ask yourself
whether you would
do that case
today

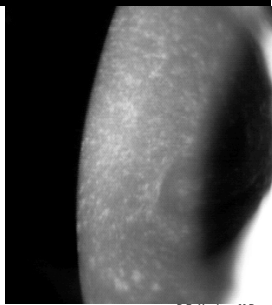
Probably RGP
or Intacs with
Intralase
and CK
are better options



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Ocular Surface Disease and Enhancement Surgery

- Aggressively
Identify Preoperatively
- Lid Hygiene
 - Artificial Tears (Optive)
 - Restasis (1 mo before
and at least 6 mos after)
 - Doxycycline
 - Nizoral Shampoo
 - Plugs only after Restasis
 - Anti-allergics



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Residual Myopia or Hyperopia or Astigmatism

Excimer Enhancement options

- LASIK
 - Lift Cap Preferred over recut
- PRK
 - Higher risk of Haze
 - Consider use of MMC 0.2mg/cc 2 min on merocel dot
 - If flap too small or flap complication or late enhancement

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Epithelial In-growth with Lift

- Had been thought to be higher with IntraLase
- Study by Price, et. al (ASCRS 2006) showed less ingrowth with IntraLase created original flaps
 - Likely due to more vertical entry cut

	Blade	IntraLase	P-Value
# Enhancements	132	140	
# Epi In-growth	11	2	0.004
# Flap Lifts	8	0	0.017

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Lift vs Recut

Lift preferred * - Davis EA, Hardten DR, Lindstrom RL, et al. Ophth 2002

- Recut → higher risk of complications
 - Lamellar cuts
 - Slivers
 - May lift even years postop
- If in doubt: PRK w/ MMC over flap

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Recut problems

Partial lamellar "slivers" may be encountered

→ I/A

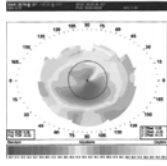


Figure 5. (Substituted) Axial topographic map of Case 1 showing severe regular astigmatism after recutting for enhancement.

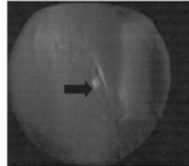


Figure 6. (Substituted) Photograph showing photograph of total internal sliver placed under the lamellar flap in Case 1.

Rubinfield, Hardten, et al, JCRS 2003;29:2306



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LVC after Presbyopic-IOL

Last Follow-up Results

- 20 eyes with at least 1 mo f/u (mean 8.5 mos)
- 20% of eyes had custom, 80% standard
- Mean SE last f/u = -0.23 ± 0.44 D
- Mean Astig = 0.43 ± 0.35 D
- UCVA 20/30 or better = 90%
- 20/40 & J5 = 80%
- 20/25 & J1 = 30%
- No eyes with loss of BCVA

Crystalens 7 eyes; ReZoom 2 eyes; ReStor 11 eyes
Percentage with Enhancements: Crystalens 3.2%, ReZoom 1.5%, ReStor 22.4%



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Summary

Enhancements - LASIK

- Conservative approach will minimize hyperopia
- Wait for Refraction to Stabilize
- Typically further LASIK
- Typically Lift vs PRK over flap
- Consider monovision/part-time spectacles



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Summary

Enhancements after LASIK

- Wavefront probably = better outcomes
 - Esp helpful for:
 - Irregular astigmatism
 - Decentered primary ablations
- Realistic patient goals
- Don't be in a hurry



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