STATE BOARD OF OPTOMETRY
2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
P (916) 575-7170 F (916) 575-7292 www.optometry .ca.gov

Continuing Education Course Approval Checklist

Title: 2017 Spring Education Symposium - Topography Guided LASIK

Provider Name: Marshall B Ketchum University c/o Dr. John Lee

☑Completed Application
Open to all Optometrists? ☑Yes ☐No
Maintain Record Agreement? ☑Yes ☐No

☑Correct Application Fee

☑Detailed Course Summary

☑Detailed Course Outline

☑PowerPoint and/or other Presentation Materials

☑Advertising (optional)

☑CV for EACH Course Instructor

☑License Verification for Each Course Instructor
Disciplinary History? ☐Yes ☑No

AAOS

ASIAN AMERICAN OPTOMETRIC SOCIETY
PRESENTS

2017 Spring Education Symposium

Sheraton Cerritos Hotel - 12725 Center Ct Dr S, Cerritos, CA 90703
Sunday, April 2, 2017

5 HOURS OF CONTINUING EDUCATION

Agenda:

8:00am – 8:10am	**Welcome** Andy Kongsakul, O.D. President, AAOS
8:10am – 9:00am (1 Hour CE)	**10 LASIK Myth Busters** **SMILE – Small Incision Lenticule Extraction** Tom Tooma, MD, NVision Eye Centers
9:00am – 9:20am *(20 min)*	*Break*
9:20am – 11:00am (2 Hours CE)	**Topography Guided LASIK** Franklin Lusby, MD, NVision Eye Centers **Choosing Premium Lenses in Highly Aberrated Corneas** **Understanding New Extended Depth of Focus IOLs** Sheri Rowen, MD, NVision Eye Centers
11:00pm – 11:20pm *(20 min)*	*Break*
11:20am – 12:10pm (1 Hour CE)	**An Introduction to Fundus Auto-Fluorescence (FAF)** Raman Bhakhri, OD, Marshall B Ketchum University
12:10pm – 1:00pm (1 Hour CE)	**Updates on Hydroxychloroquine Retinpathy** Tina Zheng, OD, Marshall B Ketchum University

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CONTINUING EDUCATION COURSE APPROVAL APPLICATION

Cashiering and Board Use Only			
Receipt #	Payor ID	Beneficiary ID	Amount
1-2916	5414455	994582	50

$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title	**Course Presentation Date**
Topography Guided LASIK	920 AM – 10:10 AM 04/02/2017

Course Provider Contact Information

Provider Name

John (First) Lee (Last) Howard (Middle)

Provider Mailing Address

Street 2575 Yorba Linda Blv **City** Fullerton **State** CA **Zip** 92831

Provider Email Address jlee@ketchum.edu

Will the proposed course be open to all California licensed optometrists?	☑ YES ☐ NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?	☑ YES ☐ NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name

Franklin (First) Lusby (Last) (Middle)

License Number 41830	**License Type** Physician and Surgeon (
Phone Number (949) 274-4652	**Email Address** franklin.lusby@nvisioncenters

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

[signature] 2/14/2017

Signature of Course Provider ***Date***

Program Name and Description:

Introduction to Topography Guided LASIK
This course will review the history, development and pros/cons of the most prevalent strategies for excimer refractive ablation including conventional, wavefront-guided, wavefront-optimized and the recently available topography-guided.

Course Objective:

To help practicing optometrists to understand the differences between conventional, wavefront-guided, wavefront-optimized (prolate), and topography-guided excimer ablations.

Presbyopic IOL Options –
This course covers the newest technology in multifocal IOLs. Course will give an overview of the following:

- Monovision
- Multifocal Lenses
- Extended Depth of Focus Lenses
- Accommodating Lenses

Course Objective:
The objective of this course is to introduce attendees to the newest multifocal IOLs, the impact of the new technology. The attendees will learn about the effects of different IOLs to achieve better results.

75 Enterprise, Suite 200, Aliso Viejo, CA 92656
p: 949.274.4652 • *f:* 949.509.4858 • *e:* info@nvisioncenters.com • *w:* www.nvisioncenters.com

NVISION EYE CENTERS

Presenter – Franklin Lusby, MD

Course Title – Topography Guided LASIK

Course Objective –

To help practicing optometrists, especially those involved in refractive surgery co-management to understand the differences between conventional, wavefront-guided, wavefront-optimized (prolate), and topography-guided excimer ablations. The materials presented should help practitioners be able to more accurately counsel prospective refractive surgery patients on the pros and cons of these different treatment modalities.

Course Outline –

Traditional Nomogram:

Refraction entered and adjusted by nomogram

Wavefront Guided:

A wavefront-sensing aberrometer is used to program the ablation to treat both lower-order (myopia, hyperopia, astigmatism) and higher-order Zernike aberrations.

Wavefront Optimized:

A nomogram adjusted refraction is used to program the ablation, adding peripheral pulses to maintain the prolate cornea and minimize the induction of higher-order aberrations.

Wavefront-guided

Definition of wave-front: A wavefront-sensing aberrometer is used to program the ablation to treat both lower-order (myopia, hyperopia, astigmatism) and higher-order Zernike aberrations.

Measurement of wave-front

Hartman-Shack aberrometer

- Lenslet array and CCD camera

- Measures wavefront slope at many points
- Reconstructs wavefront from slope data

Ray diagrams

Calculation of Wernicke polynomials

Clinical examples

Conventional ablation

Wavefront-guided ablation

Wavefront-optimized:

A nomogram adjusted refraction is used to program the ablation, adding peripheral pulses to maintain the prolate cornea and minimize the induction of higher-order aberrations.

Prolate versus oblate:

Prolate: steeper in the center, flattens toward the periphery – "end" of an ellipse

•Oblate: flatter in the center, steepens toward the periphery – "side" of an ellipse

Mathematics of corneal shape:

- e : eccentricity
- p : shape factor
- Q : asphericit
- p = 1 – e2
- p = Q + 1
- e2 = -Q
- e : best to describe prolate surface
- Shape factor "p" developed because "e" becomes meaningless for oblate surface

- e = ?(1-b2/a2)

Comparison to wavefreont-guided ablation

Review of first wavefront-optimized platform

Spot size/shape

Mechanics of ablation delivery

Increased peripheral ablation

Clinical examples

•**Best Visual Results** to date of any LASIK technology

•Continued to improved most common symptoms associated with LASIK

•**Labelled** Usage

•Normal eyes with normal topographies

•Highest percent > 20/20 outcomes

•Improve subtle visual irregularities

•Improved iris registration and cyclotorsion adjustment

•**Off Label**

•Irregular topographies

•Inferior steepening

•High, oblique and ATR cyl

•Hyperopia

Introduction to Topography Guided Lasik

Franklin W. Lusby, MD
Medical Director
NVISION Fullerton
NVISION Torrance

Current Excimer Formats

Traditional Nomogram:
Refraction entered and adjusted by nomogram

Wavefront Guided:
A wavefront-sensing aberrometer is used to program the ablation to treat both lower-order (myopia, hyperopia, astigmatism) and higher-order Zernike aberrations.

Wavefront Optimized:
A nomogram adjusted refraction is used to program the ablation, adding peripheral pulses to maintain the prolate cornea and minimize the induction of higher-order aberrations.

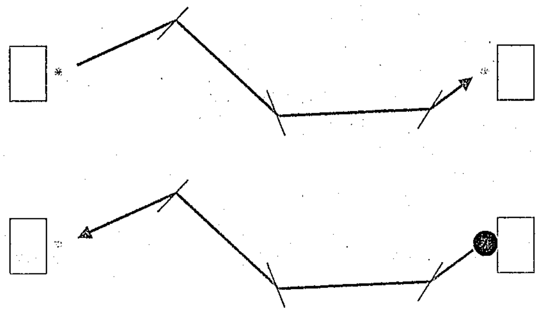
Wavefront Guided Ablation

- Evolved from topography guided ablation
- Developed to address quality of vision issues
- -ghosting, monocular diplopia, glare/halo
- Result of (induced) conditions not quantifiable or correctable with conventional optics
- Hence, the need for a new means of assessing the ocular optical pathway
- "Side effect" of >20/20 VA

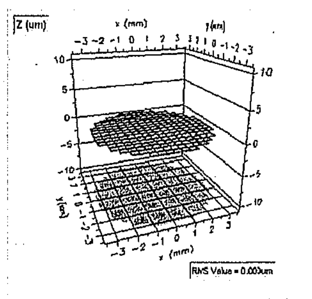
What is a Wavefront?

- Cross section of the light rays exiting an optical system
- Constructed by lines perpendicular to rays
- Photons ahead of or behind reference plane

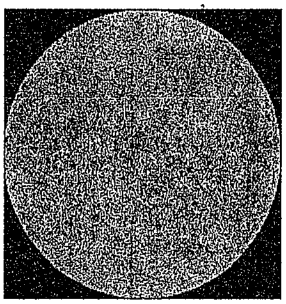
The Reversible Nature of Light Propagation



Wavefront Displays for Ideal Vision

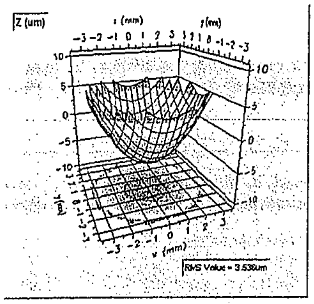


3-D Representation

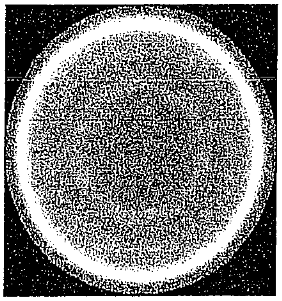


2-D Color Map

Wavefront Displays for Near-Sightedness

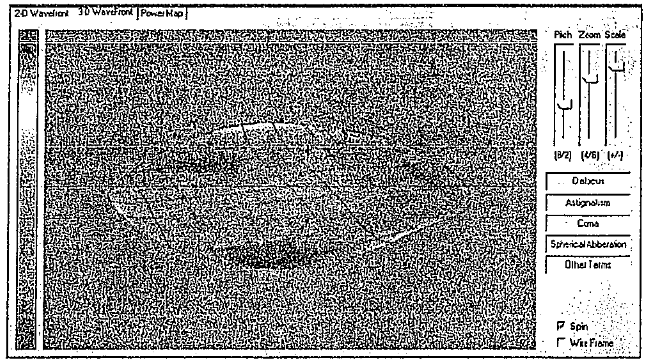


3-D Representation



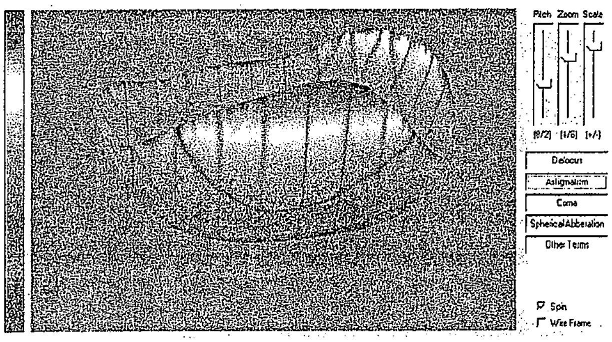
2-D Color Map

Unoperated Eye



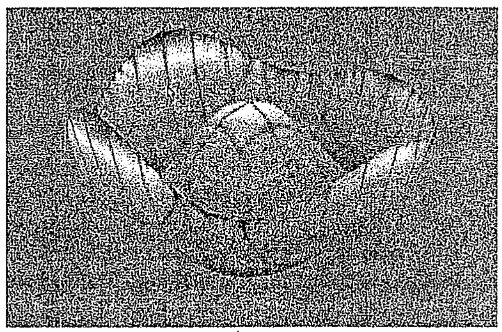
Rx: -1.25/-0.25x96, VA: 20/100, 20/16 , HOA RMS: 0.24um, D: 6.5mm

2 Years Post-LASIK: Night Vision Problems



Rx: -1.5/-0.5x71, VA: 20/25, 20/20, HOA RMS: 1.12um, D: 6.5mm

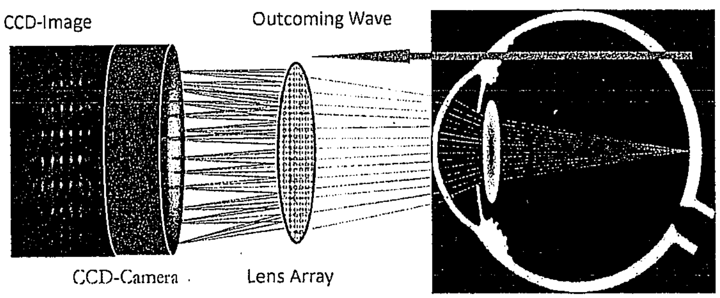
Post-8 Incision RK



Rx: 0.75/-0.25x134, VA: 20/60, 20/20 , HOA RMS: 3.47um, D: 8.8mm

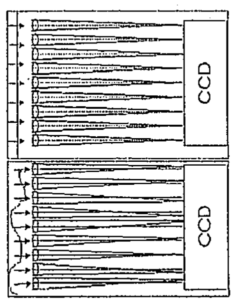
Hartmann Shack Aberrometer

Measures the ray pattern as it emerges from the eye to see what changes in the cornea will make those rays absolutely straight.



The Hartmann-Shack Sensor

- Lenslet array and CCD camera
- Measures wavefront slope at many points
- Reconstructs wavefront from slope data

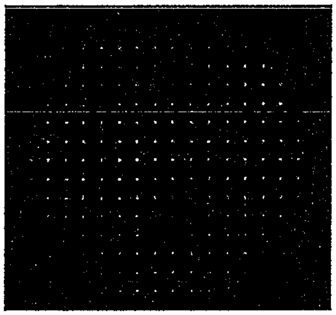


- A perfect wavefront gives a perfect spot pattern
- An aberrated wavefront gives an irregular spot pattern
- This measured spot pattern is compared to the perfect pattern, and the aberrations are calculated

Hartmann-Shack (HS) spot pattern

When viewed on the monitor, the HS pattern shows how light exits the pupil

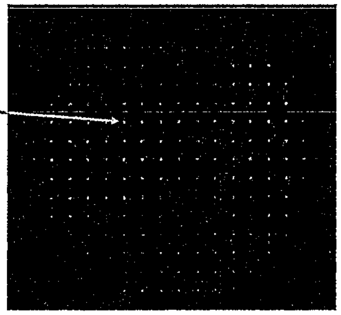
This is compared to a perfect spot pattern, and the resultant wavefront error is calculated



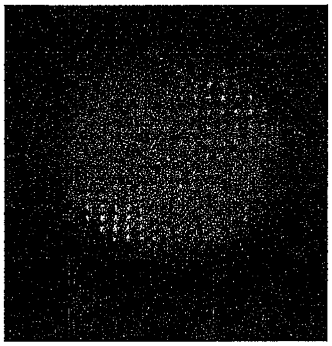
Hartmann-Shack

Image quality

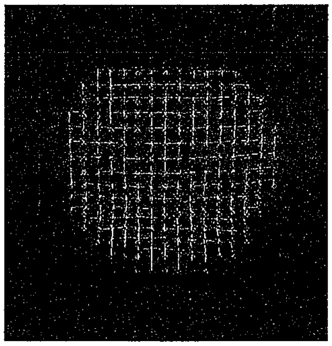
In an optimal image, the Hartmann-Shack spots will appear round and sharply focused



Hartmann-Shack Image



Must be able to correlate spots with lenslets



Must be able to measure small spot displacements

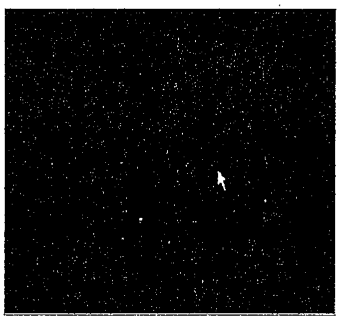
Hartmann-Shack

Limitations of acquisition

Dry eye and an irregular cornea can make acquisition difficult

Cataracts can make acquisition difficult or virtually impossible (shown here)

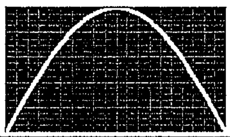
This provides a qualitative assessment of the optical path, much like a placido ring view on a topographer



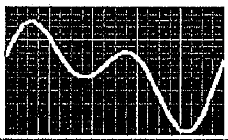
The Root-Mean-Square (RMS) Wavefront Error

Wavefront Analysis

Wavefront measurements look at the deviation from a perfect optical system and uses Zernike Polynomials to mathematically assess the aberration.



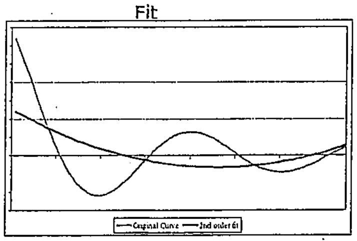
Simple slice of a sphero-cylindrical shape (parabola) Modeled by ($y = x^2$)

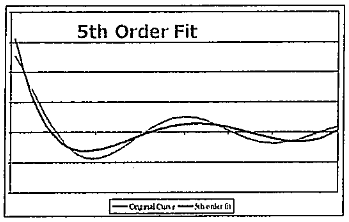


Slice of a more complex, higher order shape. Modeled with higher order terms, *i.e.,*: ($y=a^4+b^3+c^2+d$)

More Terms = Better Fit

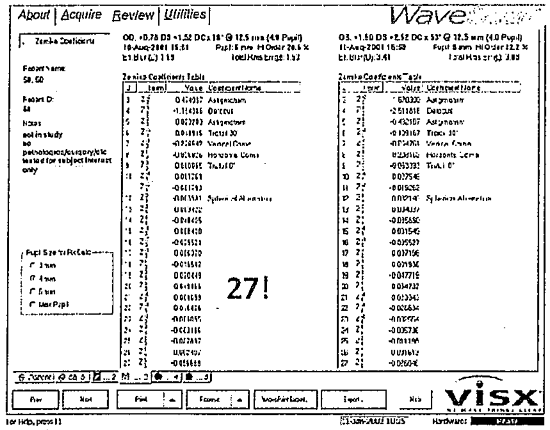
2nd Order Fit





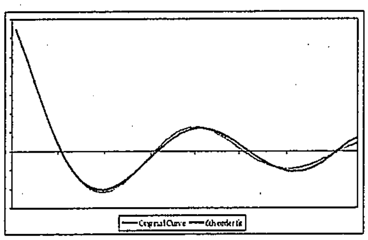
Start with a shape which we want to model using polynomials. For this example, a profile is used instead of a 3D surface.

Zernike Coefficients



How far should we go?

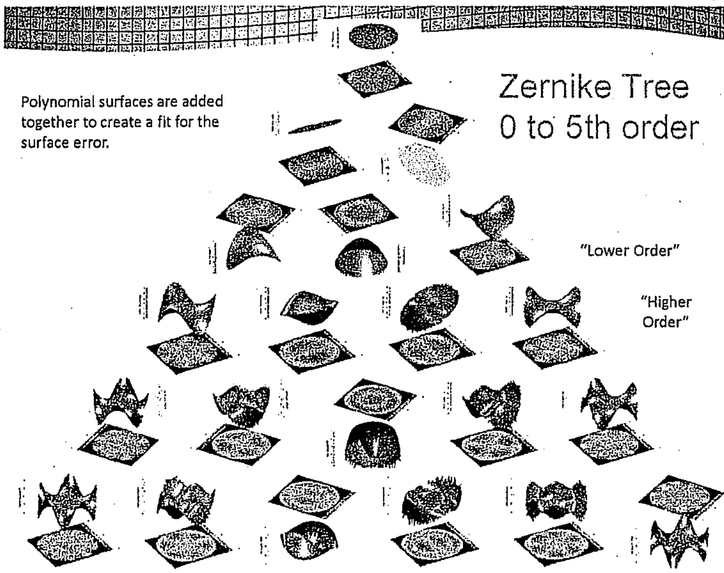
6th Order Fit



Debate exists to the order of terms the eye can appreciate … 4th to 6th order is expected

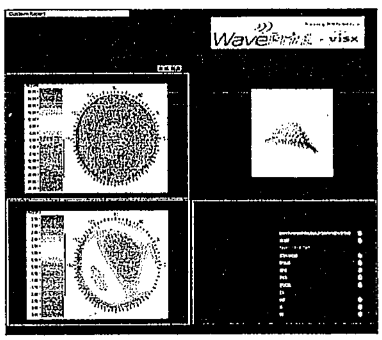
Zernike Tree 0 to 5th order

Polynomial surfaces are added together to create a fit for the surface error.

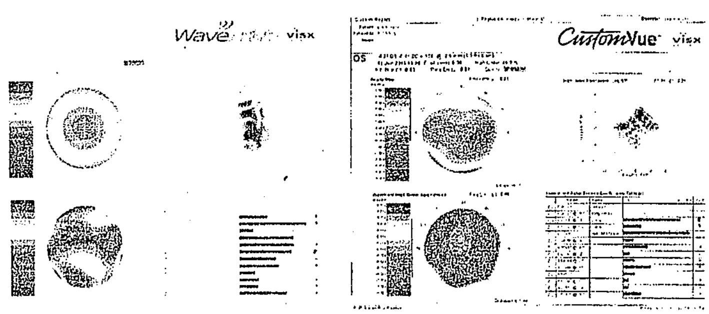


Wavefront High Order RMS

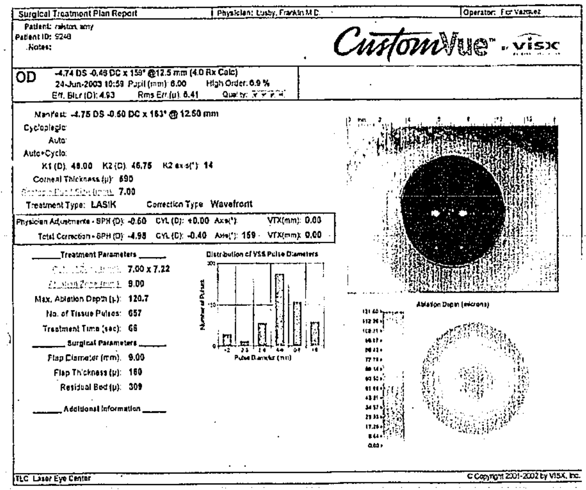
- May be the best predictor for need of Wavefront ablation
- Not dependent on low order aberrations
- HO RMS > 0.50 is always visually significant
- HO RMS > 0.30 often visually significant
- HO RMS < 0.30 may not be visually significant*



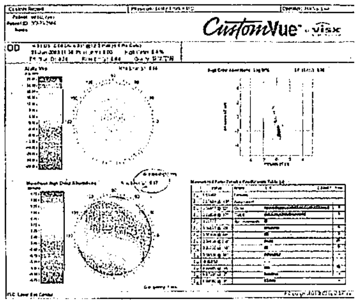
Post-op: pl sph 20/20

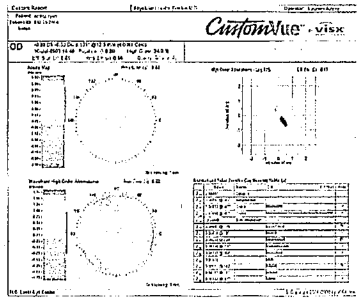


Pre HOA	0.19
Post HOA	0.40


Surgical Treatment Plan Report | Physician: Lusby, Franklin M.D. | Operator:
Patient ID: 5248
Notes:
CustomVue - VISX
OD -4.74 DS -0.49 DC x 159° @12.5 mm (4.0 Rx Calc)
24-Jun-2003 10:58 Pupil (mm) 6.00 High Order: 0.9 %
Eff. Blur (D): 4.93 Rms Err (u) 6.41 Quality
Manifest: -4.75 DS -0.50 DC x 163° @ 12.50 mm
Cycloplegic:
Auto:
Auto+Cyclo:
K1 (D): 48.00 K2 (D): 46.75 K2 axis(°): 14
Corneal Thickness (µ): 590
7.00
Treatment Type: LASIK Correction Type: Wavefront
Physician Adjustments - SPH (D): -0.50 CYL (D): +0.00 Axis(°): VTX(mm): 0.00
Total Correction - SPH (D): -4.98 CYL (D): -0.40 Axis(°): 159 VTX(mm): 0.00
Treatment Parameters
7.00 x 7.22
9.00
Max. Ablation Depth (µ): 120.7
No. of Tissue Pulses: 657
Treatment Time (sec): 66
Surgical Parameters
Flap Diameter (mm): 9.00
Flap Thickness (µ): 180
Residual Bed (µ): 309
Additional Information
Distribution of VSS Pulse Diameters
Ablation Depth (microns)
TLC Laser Eye Center
© Copyright 2001-2002 by VISX, Inc.

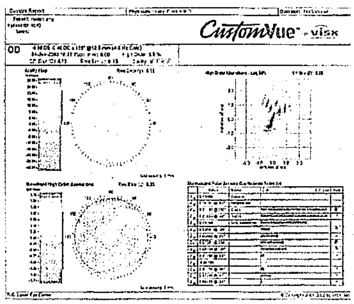
Post-op: (RS) 20/10 sc

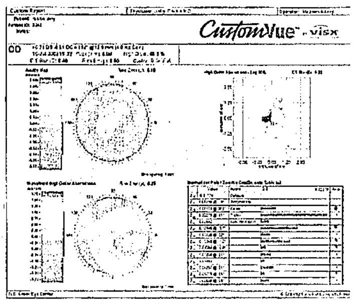




Pre HOA	0.47
Post HOA	0.22

Post-op: (AR) 20/15 sc





Pre HOA	0.36
Post HOA	0.29

Platform Comparison

Platform	#	MSE	Mesopic (worse)	Mesopic (better)	%20/20
VISX	258	-3.21	7	28	93
Alcon	147	-3.00	7	18	90
B&L	340	-3.65	4	25	92

The Significance of Prolate Ablation

Franklin W. Lusby, M.D.
Medical Director, TLC-Fullerton at SCCO
February 13, 2006

Definitions

- Prolate: steeper in the center, flattens toward the periphery – "end" of an ellipse
- Oblate: flatter in the center, steepens toward the periphery – "side" of an ellipse

Mathematics of corneal shape

e : eccentricity
p : shape factor
Q : asphericity

Mathematics of corneal shape

$p = 1 - e^2$
$p = Q + 1$
$e^2 = -Q$

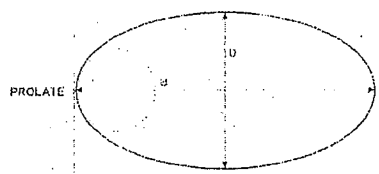
Mathematics of corneal shape

e : best to describe prolate surface

Shape factor "p" developed because "e" becomes meaningless for oblate surface

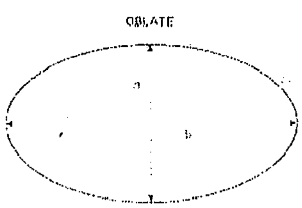
$e = \sqrt{(1 - b^2/a^2)}$

Mathematics of corneal shape



$e^2 = 1 - b^2/a^2 = +ve$ $\therefore e = \sqrt{(1 - b^2/a^2)}$

Mathematics of corneal shape



$e^2 = 1 - b^2/a^2 = -ve$ $\therefore e = \sqrt{(1 - b^2/a^2)}$
$\therefore e = \sqrt{(-ve\ number)}$!!

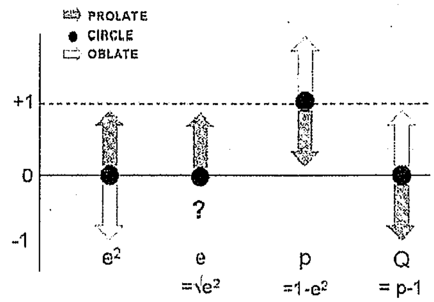
Circle: shape values

$e = 0$
$p = 1$
$Q = 0$

Normal cornea: shape values

e = 0.5
p = 0.75
Q = -0.25
Prolate ellipse

Mathematics of corneal shape



Topography

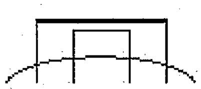
May calculate e, p or Q
Will vary with meridian and chord length
Proprietary
Most reliable for normal corneas

Mathematics: shortcomings

Will vary with meridian
Hemi-meridional differences
Topographic calculations based on averages

Refractive Surgery

Tends to create an oblate surface
Pupil diameter (chord length) is significant
Short chord length may calculate prolate; with long, may calculate oblate



Refractive Surgery

Prolate ablation (less oblate) a component of custom ablations

Wavefront data not necessarily necessary

Allegretto Wave by Wavelight

The development objective was to fulfill the demands of the modern refractive surgeon and design a laser that would be optimal for custom treatments, while eliminating problems in conventional lasik

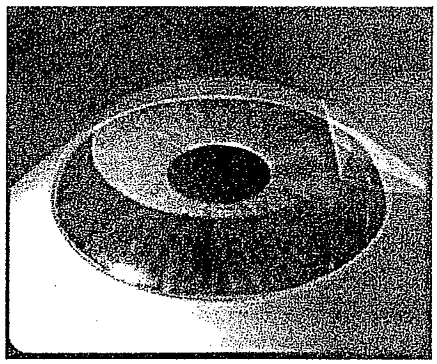
Allegretto Wave: Design goals

- Work at high speed
- Ablate with maximum precision
- Rely on superior safety and accuracy
- Prevent problems with night vision, contrast sensitivity
- Provide each patient with a higher level of customization in the standard treatment
- Achieve predictable, superior results

Allegretto Wave: Design goals

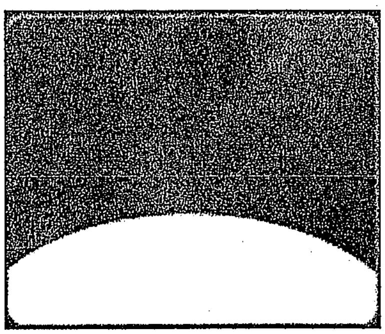
- Developed during initial wavefront research
- Aims to prevent the induction of higher order spherical aberrations (C12) following standard refractive surgery
- In order to compensate for energy losses in the periphery, additional pulses are placed
- Results in large, true optical zones
- Reduces the possibility of night vision problems

Prolate ablation



Peripheral pulses have lower energy density

Prolate ablation

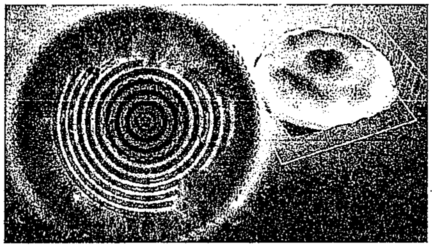


Additional pulses placed in periphery

Current Excimer Technologies

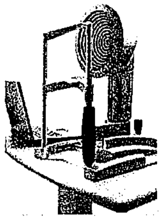
B & L Technolas:	Wavefront Guided Scanning Spot
Carl Zeiss Meditec MEL 80:	Wavefront Optimized Scanning Spot
Nidek EC 500:	Traditional Scanning Slit
AMO Visx Star S4:	Wavefront Guided Variable Spot
Alcon Allegretto Wavelight:	Wavefront Optimized Scanning Spot

Allegretto Topo Guided Treatment



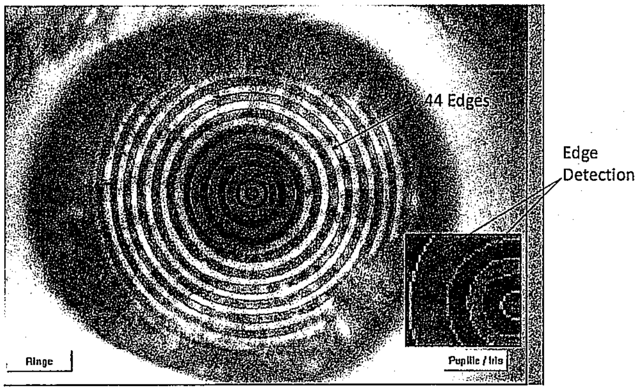
Laser pulses adjusted to topographic changes in corneal power

Allegretto Vario Topolyzer



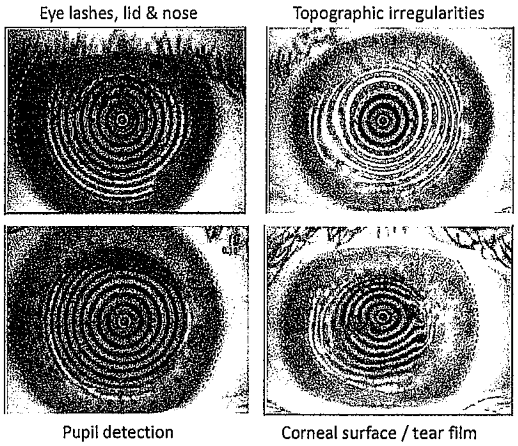
- **Placido disc** corneal topographer
- Measures **22,000 data points** (Wavescan = 240)
- **Images** tear film, cornea, pupil and iris
- **Detects** pupil margins, **corneal apex** and limbus
- **Calculates the location of the pupil area centroid and centroid shift**
- **Built in keratometer adds true keratometric data**
- Data maps include sagittal, tangential, dioptric, Zernike and Fourier polynomials
- **Measures asphericity (Q-value) which can be adjusted to improve depth of field and contrast sensitivity.**

Topolyzer Image

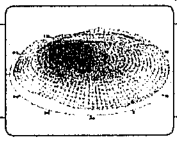


500 Samples on 44 Edges = 22,000 Data Points

Accuracy of the Topolyzer Vario

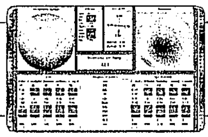


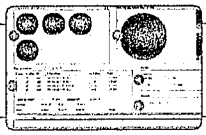
Topo Guided Treatment



The patient's eye is imaged and analyzed using **22,000 unique elevation points** on the cornea.

This data is sent to the surgical planning computer to create an **individualized ablation profile.**



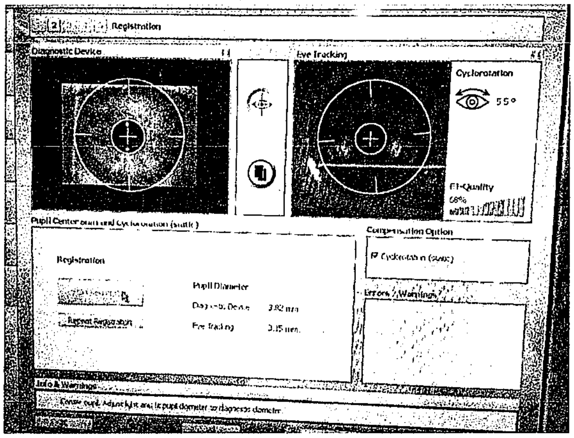


The Laser **automatically adjusts laser pulse placement** to match the topography-guided treatment.

Advantages of Topo Guided Treatments

- Higher level of **personalized** treatment planning
- Treatments are centered on the **corneal apex**, not the center of the pupil
- Measurements are not restricted to the pupillary area
- Simultaneous flattening and steepening of corneal irregularities **maintains prolate nature** of cornea
- Will not treat lenticular wave related abnormalities
- Potential to re-treat patients not happy with original Lasik
- Advanced iris registration/centration/cyclotorsion improves outcomes on all treatments

IR



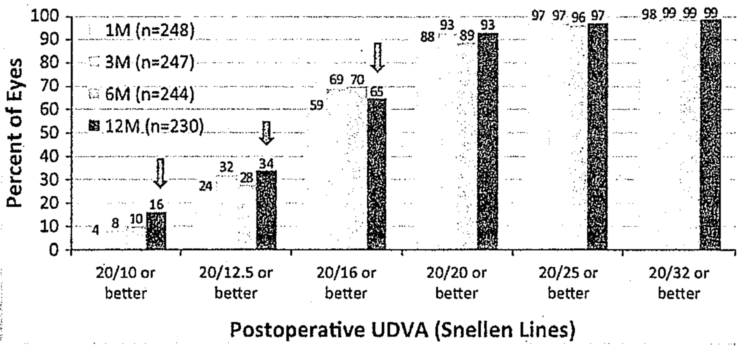
Potential Applications

- Suspicions of ectasia
- Keratoconus (with CXL)
- Irregular or asymmetric astigmatism
- Post-refractive surgery
- Hyperopia
- 20/20 unhappy patient
- Normal eyes

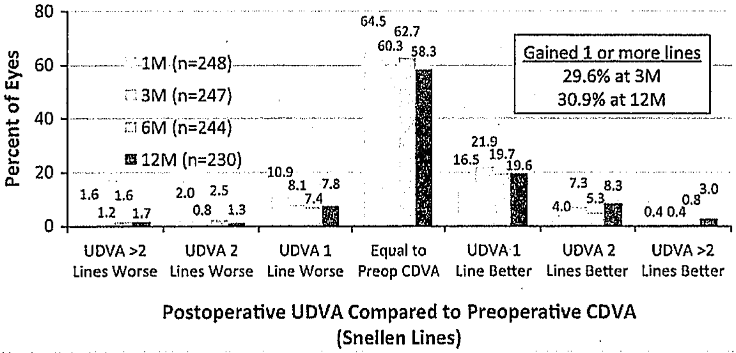
FDA Study Parameters

- 9 clinical sites
- 249 eyes of 212 patients
- 18-65 years old
- Up to -9.00 SEQ
- Up to 6D astigmatism
- BCVA 20/25 or better
- Normal topographies and corneal thickness
- Patients with prior refractive surgery excluded
- Follow up at 1d, 1w, 3mo, 6mo, 9mo, 12mo

Visual Acuities



Lines Lost or Gained



>30% Saw Better Uncorrected Post-Op Than Best Corrected Vision Pre-Op

Contoura Clinical Trials—Post Op Visual Symptoms

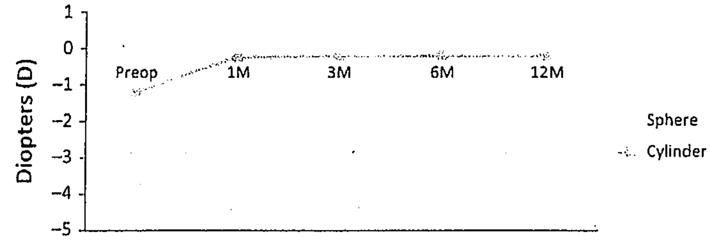
Light sensitivity	3.6% decrease
Difficulty driving at night	4.4% decrease
Reading difficulty	6.4% decrease
Complaints of glare	2.4% reduction

*Confirms findings of the PROWL Study

Patient Reported Outcomes With Lasik (PROWL)

- FDA designed **Quality of Life** study
- Evolved from a 2008 public hearing on Lasik safety
- Developed without input from physicians or industry
- 2 cohorts, 574 patients, military and civilian centers
- Post op detailed questionnaires and Oxford Dry Eye scoring
- Patients reported on visual symptoms arising post op uncorrected compared to pre op BCVA
- Conclusions
  - Satisfaction with Lasik results > 98%
  - In most patients, glare, halos, night driving problems as well as dry eye problems **decreased at 6 months over preoperative levels**

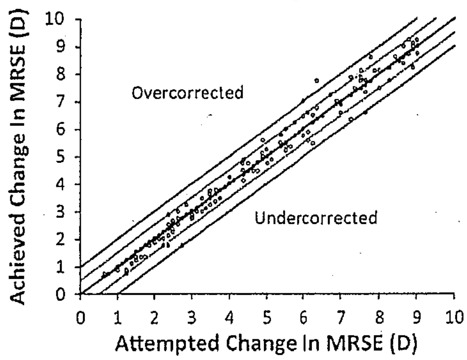
Stability



	Preop, n=249	1M, n=248	3M, n=247	6M, n=244	12M, n=230
MRSE (D)	−4.61	0.06	0.06	0.01	0.00
Std Dev (D)	2.43	0.36	0.33	0.35	0.27

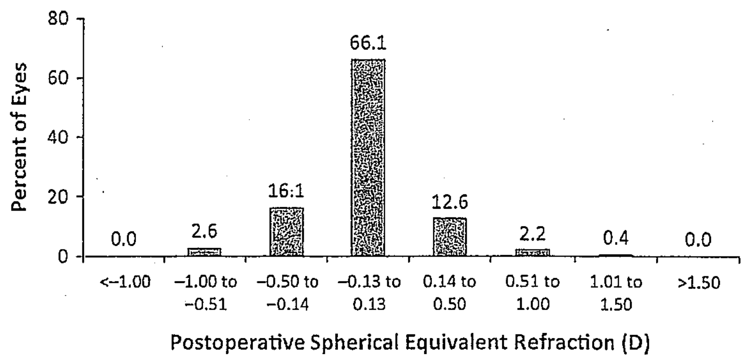
No Regression Up To 1 Year

Accuracy



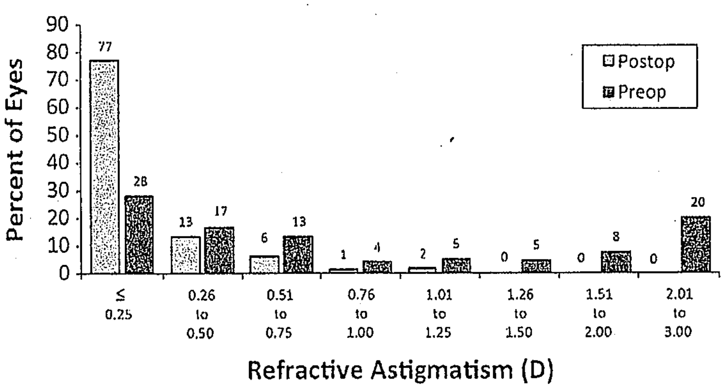
Accuracy +/- 0.5D

Post Op SEQ



66% Plano, 95% within 0.5D

Resolution of Astigmatism



Up to 6D, 77% plano cyl, 96% within 0.5D

Summary

- **Best Visual Results** to date of any LASIK technology
- Continued to improved most common symptoms associated with LASIK
- **Labelled** Usage
  - Normal eyes with normal topographies
    - Highest percent > 20/20 outcomes
    - Improve subtle visual irregularities
    - Improved iris registration and cyclotorsion adjustment
- **Off Label**
  - Irregular topographies
  - Inferior steepening
  - High, oblique and ATR cyl
  - Hyperopia

Franklin W. Lusby,M.D.

Medical Director, NVISION Laser Eye Centers

Dr. Franklin Lusby is a board certified ophthalmologist and began specializing in ophthalmology in 1980. By 1989, the focus of his practice had become refractive surgery. For years now, Dr. Lusby has been considered an expert in LASIK, performing more than 250 procedures a month. Although Custom LASIK with Intralase comprises the bulk of his practice, he also performs other vision correction procedures such as PRK. Dr. Lusby achieved board certification in 1985. As of 2010 he has performed over 45,000 refractive procedures.

In 1995, he was certified by Chiron to perform ALK, a complex precursor of LASIK. This led to a LASIK fellowship with Stephen Slade, M.D., in January, 1996. The fellowship took place in Shanghai, China, since many of the latest techniques in LASIK were not available in the United States at that time.

Born and raised in Maryland, Dr. Lusby graduated Magna Cum Laude from Columbia Union College in Takoma Park, Maryland. He then attended the prestigious Loma Linda University School of Medicine in Loma Linda, California. He served his internship at Malden Hospital, which is affiliated with Boston University School of Medicine in Massachusetts.

Dr. Lusby completed the Basic Science Course for Ophthalmology at the Massachusetts Eye and Ear Infirmary at Harvard Medical School in Boston before returning to the west coast for his residency at White Memorial Medical Center in Los Angeles. Following this, he completed a sixteen month fellowship in Anterior Segment Surgery with James McCaffery, M.D., at Glendale Eye Medical Group.

Dr. Lusby served as Chief of the Ophthalmology Section at Glendale Adventist Medical Center from 1992 until 1996. Distinguished among his peers, he has written numerous articles which have appeared in medical publications such as the Journal of Cataract and Refractive Surgery, as well as Current Opinion in Ophthalmology. Dr. Lusby is frequently invited as a guest lecturer. He often supervises new surgeons as they develop their refractive surgery techniques. "Being in charge of a portion of the education of young doctors is personally rewarding and really keeps you on your toes."

"Almost every time I see a new patient, I discover that I have cared for their spouse, sibling or friend. As a physician, this confidence of referral is the greatest compliment I can receive; I feel fortunate to be in such a gratifying profession. It never gets old hearing a patient remark on the clarity of their vision and how it has improved their quality of life." Franklin W. Lusby, M.D.

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Biography

Education

1974 B.A. in Chemistry, Magna Cum Laude, Columbia Union College

1978 M.D., Loma Linda University School of Medicine, Loma Linda, CA

Professional Training

1979 Internship, Malden Hospital, Boston University School of Medicine

1979 Fellowship, Massachusetts Eye and Ear, Harvard Medical School

1983 Residency in Ophthalmology, White Memorial Medical Center, Los Angeles, CA

Fellowships

1984 Extracapsular Cataract Extraction and Intraocular Lens Implantation
James M. McCaffery, M.D. Glendale Eye Medical Group

Board Certification

1985 American Board of Ophthalmology

Professional Affiliations

Fellow - American Academy of Ophthalmology
Member - American Society of Cataract and Refractive Society
Charter Member – American College of Eye Surgery
Member – David Paton Society
Member – Research to Prevent Blindness Ophthalmological Society
Member – Orange County Medical Society

Special Interests & Recognition

- America's Top Ophthalmologist Award
- Adjunct Clinical Professor at SCCO (Southern California College of Optometry)
- Mentor: UCSD Health Professions Preparation Program
- Missions: Refractive surgeon/instructor with Bishop-Ballesteros Mission Project.
  Flying doctor with Liga International.

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