

Refractive Surgery Update

LCDR Tyler Miles, O.D., F.A.A.O.

4 June 2021

1500-1600 (ET)



Presenter



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- U.C. Berkeley Optometry School
- NH Sigonella
- Aerospace Optometrist #19
- NAMI, Continuing Promise 2010
- Research director NRSC San Diego
- NH Rota
- Division Officer NRSC San Diego

Disclosures



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Learning Objectives



At the conclusion of this activity, participants will be able to:

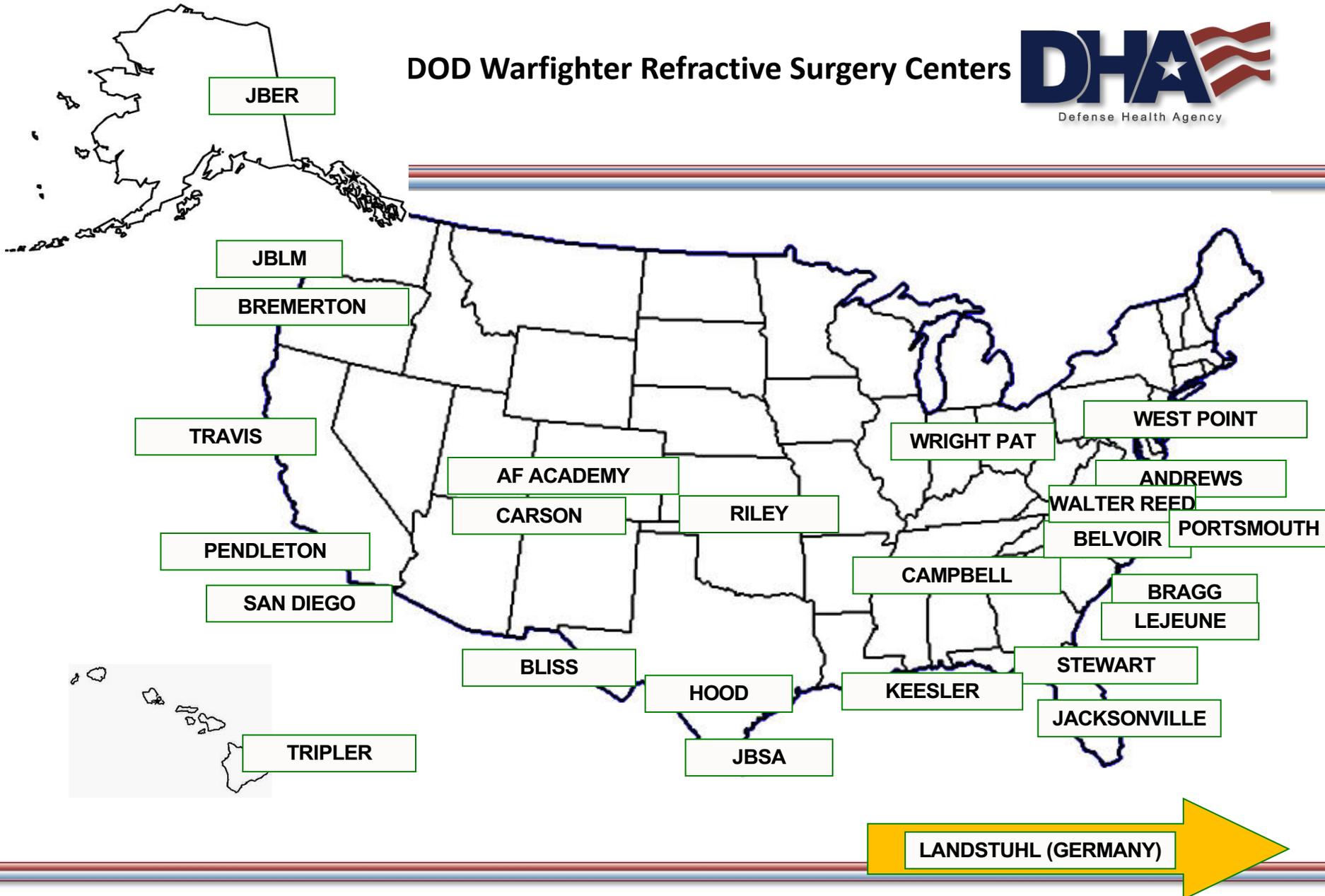
1. Outline different laser platforms in use at DoD centers and approved treatment ranges for PRK, LASIK, and SMILE.
2. Describe range of outcomes possible from corneal refractive surgery treatments as well as possible complications.
3. Discuss factors important in preoperative screening of refractive surgery candidates and care of post-refractive surgery patients in the Optometry clinic.

Overview



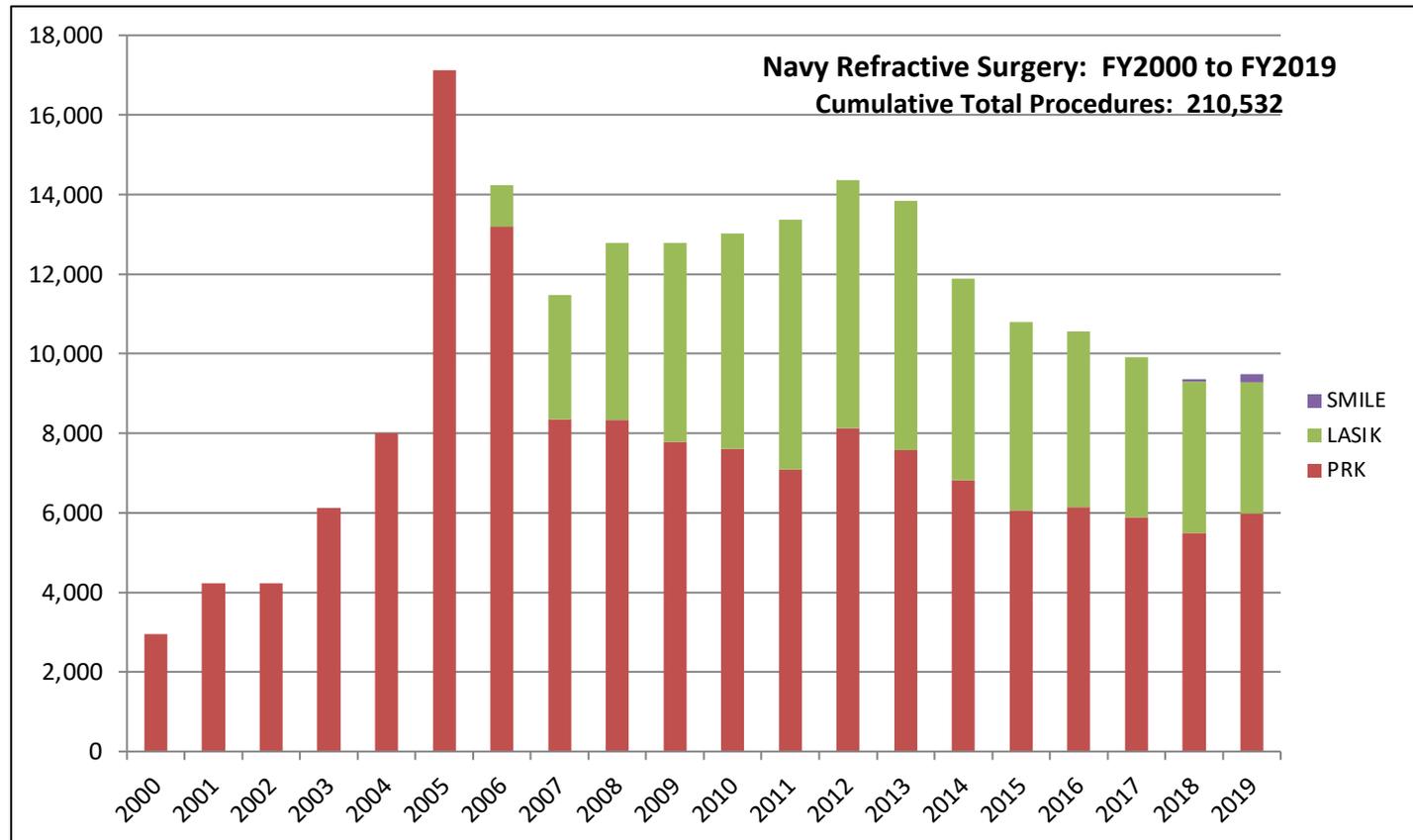
- General information
- Military refractive surgery options: Review
- What's new?
- Refractive surgery knowledge for ODs
 - Complications
 - Refractive Surgery care in the Optometry clinic

DOD Warfighter Refractive Surgery Centers



“Medically Ready Force...Ready Medical Force”

Navy Refractive Surgery



“Medically Ready Force...Ready Medical Force”

DHA Refractive Surgery Board



- January 2019: VADM Bono keynote speaker at MRSSS conference
- August 2019: Created Refractive Surgery Board Charter
- December 2020: Charter Signed
- Membership (9): Ophthalmology and Optometry Consultants, Refractive Surgery leader for each service

DHA Refractive Surgery Board



- Current Chair: Maj Gary Legault, M.D. (Army)
- Program Manager: Bradley Martinez (GS civilian)
- Ophthalmology Consultants
 - ❑ Col Travis Frazier (Army)
 - ❑ Col Matt Caldwell (Air Force)
 - ❑ CAPT John Cason (Navy)
- Optometry Consultants
 - ❑ Col Gary Hughes (Army)
 - ❑ Col Darren Rhoton (Air Force)
 - ❑ CAPT Todd Lauby (Navy)
- Refractive Advisors
 - ❑ Maj Gary Legault (Army)
 - ❑ LtCol James Townley (Air Force)
 - ❑ CAPT Corby Ropp (Navy)

DHA Refractive Surgery Board



- Coordination
 - Quarterly teleconferences
 - Website (HRN network- CAC enabled)
 - <https://info.health.mil/sites/hro/sscc/rsb/sitepages/home.aspx>
- Standardization
 - Customer satisfaction (QR code survey)
 - Outcomes
 - Metrics (Dashboard?)
- Funding / Logistics
 - Supply agreements, ECAT, Equipment standardization
- Marketing

DHA Refractive Surgery Board



- Engaging with potential BIG improvements
 - Standardized tri-service refractive surgery consult system
 - Standardized OD Co-management training

DoD Refractive Surgery Laser Platforms



Now for Some review ...

Laser Platforms used by DoD

- Johnson & Johnson
 - iFS femtosecond laser
 - VISX Star 4 Excimer laser
- iDesign aberrometry:
Wavefront-Guided procedures
- WaveScan aberrometer service
/ customVue treatments
discontinued: January 2021



Laser Platforms used by DoD



- Johnson & Johnson (AMO) VISX Star 4 **LASIK**
- iDesign Aberrometer must be within 0.625 D of MR
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	Up to -11.00 D SE	Up to -5.00 D
Hyperopia	Up to +4.00 D SE	Up to +2.00 D
Mixed Astigmatism		From 1.00 D to 5.00 D

Laser Platforms used by DoD

- Johnson & Johnson (AMO) VISX Star 4 **PRK**
- iDesign Aberrometer must be within 0.625 D of MR
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	Up to -8.00 D SE	Up to -3.00 D



Laser Platforms used by DoD

- Alcon
 - FS200 Femtosecond laser (wins for most conj hemes!)
 - EX500 Excimer laser
- Wavefront-Optimized treatments
- Wavefront-Guided treatments
- Topography-Guided treatments (Vario topolyzer)



Laser Platforms used by DoD



- What is Wavefront “Optimized” vs “Guided”
- Guided = custom ablation based on aberrometer measurement
- Optimized = ablation based on results from large group of treatments on average



Laser Platforms used by DoD



MILITARY MEDICINE, 182, 11/12:e2061, 2017

Retrospective Analysis of the Post-Operative Changes in Higher-Order Aberrations: A Comparison of the WaveLight EX500 to the VISX S4 Laser in Refractive Surgery

Capt Donovan S. Reed, USAF MC; Col Douglas Apsey, USAF MC (Ret.)†;
CDR Walter Steigleman, MC USN‡; Lt Col James Townley, USAF MC‡;
Lt Col Matthew Caldwell, USAF MC‡*

- 240 Eyes of Active Duty patients treated at Wilford Hall (San Antonio)
- Retrospective analysis comparing RMS values (aberrometry) of wavefront-guided to wavefront-optimized treated eyes (PRK and LASIK treatments)
- Wavefront-guided treatments on average induced less aberration, but not statistically significant

Laser Platforms used by DoD



MILITARY MEDICINE, 00, 00:1 2020

Wavefront-guided and Wavefront-optimized LASIK: Visual and Military Task Performance Outcomes

Rose K. Sia, MD^{}; Denise S. Ryan, MS^{*}; COL Richard D. Stutzman, MC, USA (Ret.)[†];
CAPT Joseph F. Pasternak, MC, USN (Ret.)[†]; Jennifer B. Eaddy, OD^{*}; Lorie A. Logan, OD^{*};
COL Bruce A. Rivers, MC, USA (Ret.)^{*}; COL Kraig S. Bower, MC, USA (Ret.)[†]*

- 214 Eyes treated with wavefront-guided or wavefront-optimized LASIK
- Compared induced aberrations, marksmanship performance and subjective

Laser Platforms used by DoD



- Alcon EX500 **Wavefront-Guided LASIK**
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	Up to -7.00 D SE	Up to -3.00 D

Laser Platforms used by DoD



- Alcon EX500 **Wavefront-Optimized LASIK**
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	Up to -12.00 D	Up to -6.00 D
Hyperopia	Up to +6.00 D SE	Up to 5.00 D
Mixed Astigmatism		Up to 6.00 D

Laser Platforms used by DoD



- Alcon EX500 **Wavefront-Optimized PRK**
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	Up to -6.00 D	Up to -3.00 D

Laser Platforms used by DoD

- Zeiss
- LASIK flaps
 - "gentler"
 - Curved patient interface
- SMILE



Laser Platforms used by DoD



- Zeiss Visumax **SMILE**
- FDA-approved Ranges:

	Spherical Refractive Error	Astigmatism
Myopia	-1.00 D to -10.00 D SE	-0.75 D to -3.00 D

Non-Corneal Procedures



- Refractive Lens Exchange
 - Have seen more of these recently
 - $>+4.00$ hyperopes at recommendation of glaucoma specialists
 - Multifocal / EDOF IOLs
 - No data yet for military population
- Phakic IOL
 - STAAR surgical Visian posterior chamber IOL
 - Toric approved in 2019

What's New? SMILE!



- Early NRSC San Diego evaluation
 - Waved off in 2012, reengaged in 2016 with Visumax FDA approval
- Why SMILE? ... PRK does have complications
 - Pain/Recovery
 - RCE
 - Haze
- LASIK flap
 - Perceived vs actual risk?
- Preserve corneal biomechanics, nerve sensitivity

What's New? SMILE!



- Fast uptake in San Diego – word of mouth
- Easy sell to patients nervous about LASIK flap
- Can go to lower 250 micron ERB (preserved anterior fibers)
- Better to not go for a -1.00 sph treatment- thicker lenticules easier to work with.
- “Trickier” surgery depends on good setting of laser energy, dissection technique

What's New? SMILE!



- SMILE in DoD Study
 - 3 sites: San Diego, San Antonio, Fort Belvoir
 - About 50% enrolled
 - Specifically evaluating low astigmatism treatments (treatment group vs SPH only group)
- Our experience with SMILE to date
 - Surgeon learning curve
 - Few Epi ingrowth cases
 - Longer steroid taper? Haze in pocket

What's New? Phorclides

- Alcon topography-guided treatments with EX500 laser (contoura)
- Initial FDA results difficult to replicate
 - ❑ Cylinder correction not accurate when corneal cyl doesn't match manifest cyl
- Attempts to improve refractive outcomes
 - ❑ Dr. John Kanellopoulou- lot's of manual calculations: 50% difference between MR cyl and measured cyl.
 - ❑ Mark Lobanoff- use of geographic imaging software and then predict optical effect



What's New? Phorcides

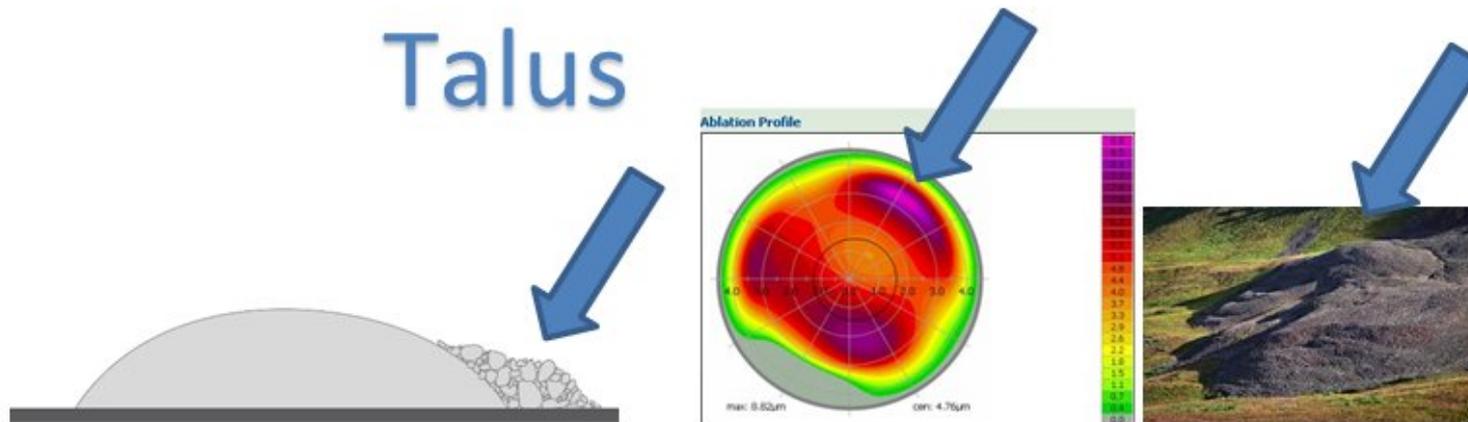
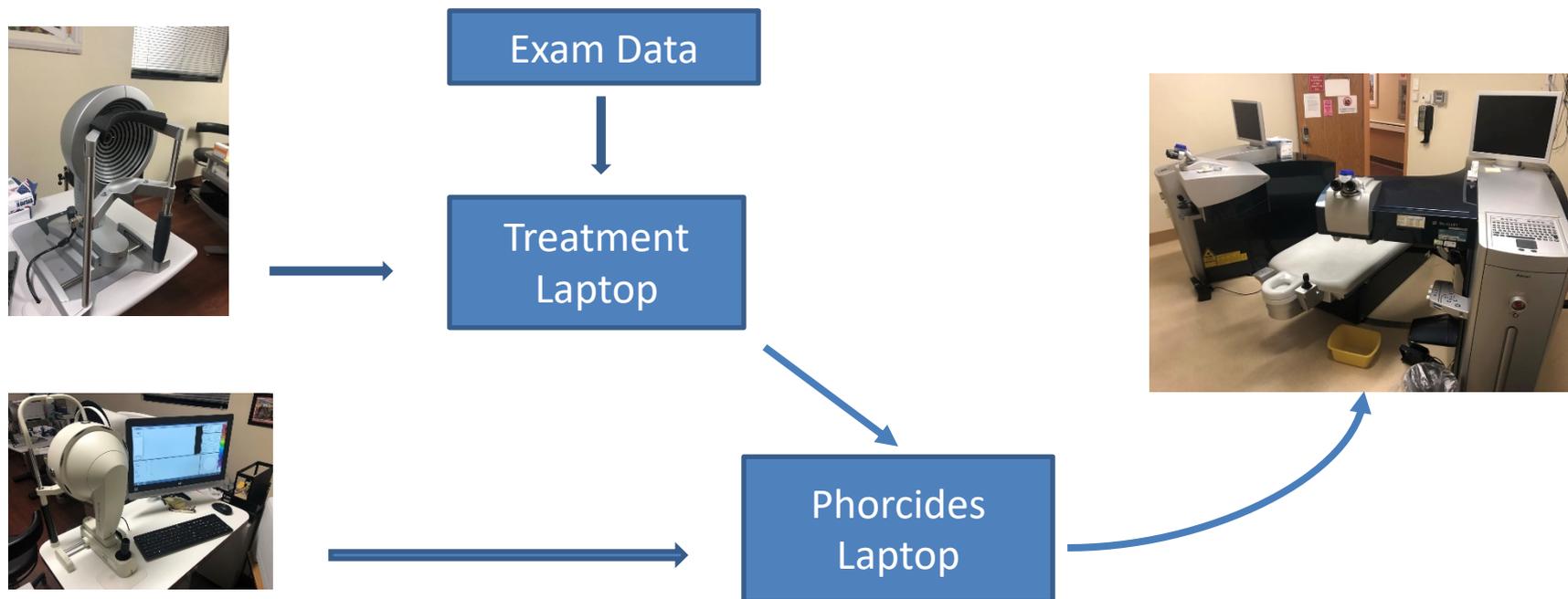
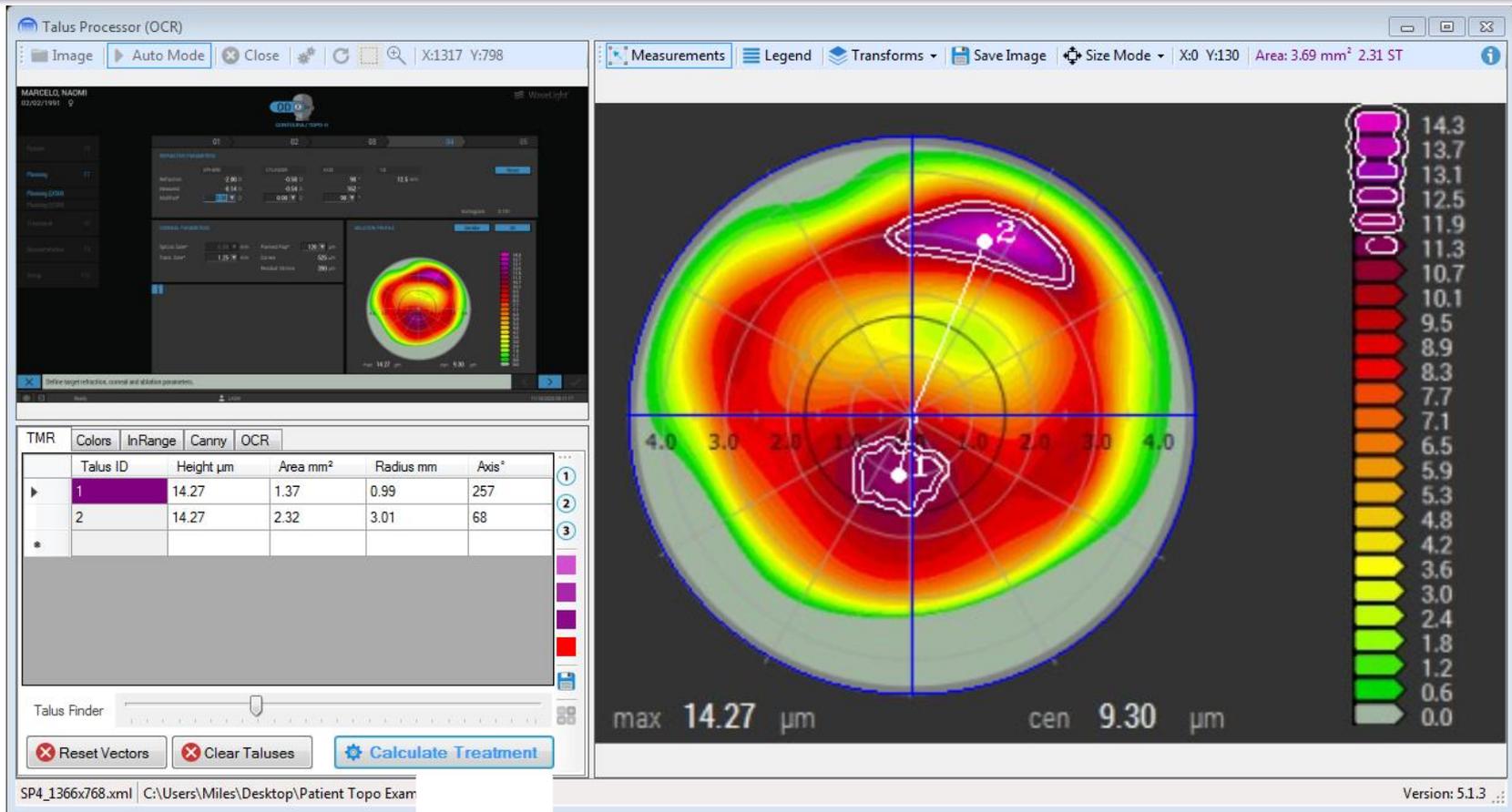


Image from <http://support.phorcides.com/documentation/>

What's New? Phorcides



What's New? Phorcides



What's New? Phorcides

Contoura Classic (OCR)

Transfer to WFO Help Cloud

1. Contoura Image

JPEG screenshot of Contoura Topographic Only Treatment

	SPHERE	CYLINDER	AXIS
ction	-2.00 D	-0.50 D	90
ured	-0.14 D	-0.54 D	162
ed*	0.00 D	0.00 D	90

↑ ↑
Zero out Modified Sphere and Cylinder

SP4 CSV Image

2. Surgical Data

yyyy/MM/dd Open on Cloud

Eye: Right (OD) Left (OS)

Target Refraction: Sphere 0.00 D

Manifest Refraction "Clinical": Sphere -2.00 D, Minus Cylinder -0.50 D, Axis 90°

Contoura Recommended Treatment "Measured": Minus Cylinder -0.54 D, Axis 162°

Topographer Anterior Corneal Negative Cylinder (Flat Axis): -0.70 D, 149°

Topographer Posterior Corneal Negative Cylinder (Steep Axis): -0.40 D, 83°

Tissue Ablation: max 14.27 μm, cen 9.30 μm, 14.27 μm, 9.30 μm

3. Calculate Treatment

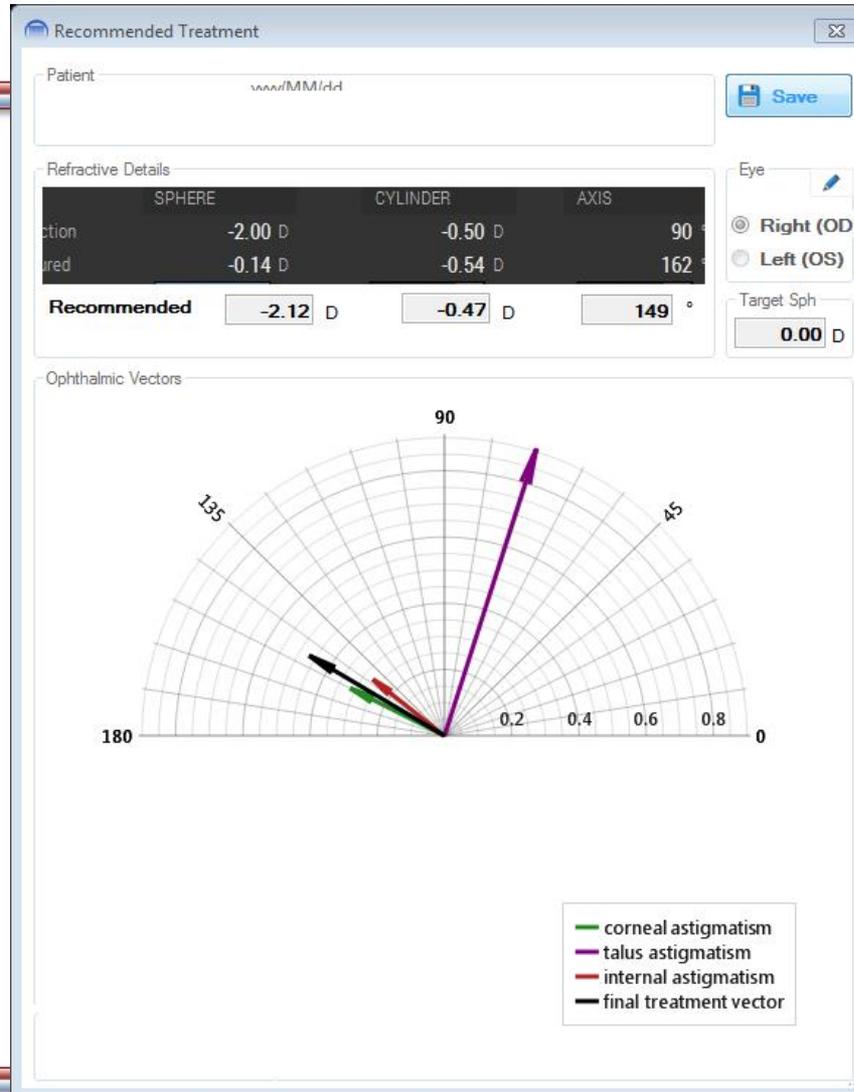
PHORCIDES ANALYTIC ENGINE Recommended Treatment

-2.12 -0.47 149 Analyze

SP4_1366x768.xml | en-US | Version: 5.1.3

“Medically Ready Force...Ready Medical Force”

What's New? Phorcodes



“Medically Ready Force...Ready Medical Force”

What's New? CRS Outcomes



- Many great, high quality studies specific to military refractive surgery
- Lt Col Richard Townley (USAF Refractive Surgeon) developed clinical data and surgical planning form.
- At NRSC San Diego we have been testing for about 9 months.

What's New? CRS Outcomes



2013

Operative Plan

Patient: Rank: Military Job: Study Enrollment: Patient ID: Allergies: DOB: Age

OD - Right Eye

Keratometry: X @
 Consensus: X BCVA:
 Cycloplegic: X
 Surgery Type: Excimer Laser
 Ablation: OZ/TZ
 Keratome: IntraLase IFS Flap Thickness: 120 um
 Flap Diameter: Sidecut Angle
 Epithelial Removal: Brush
 Alcohol: Alcohol duration
 Mitomycin: Mitomycin dur: 15 sec
 Laser Entry: X
 Physician Adjust: PostOp/Target Rx
 PreOp Pachy: Ablation depth
 Residual Bed
 Measured Pachymetry Measured Bed
 Comments/Notes

OS - Left Eye

Keratometry: X @
 Consensus: X BCVA:
 Cycloplegic: X
 Surgery Type: Excimer Laser
 Ablation: OZ/TZ
 Keratome: IntraLase IFS Flap Thickness: 120 um
 Flap Diameter: Sidecut Angle
 Epithelial Removal: Brush
 Alcohol: Alcohol duration
 Mitomycin: Mitomycin dur: 15 sec
 Laser Entry: X
 Physician Adjust: PostOp/Target Rx
 PreOp Pachy: Ablation depth
 Residual Bed
 Measured Pachymetry Measured Bed
 Comments/Notes

Signature:

2015

Operative Plan: CustomVue LASIK

OD: Right Eye			OS: Left Eye		
Keratometry	0.00 x 0.00 @ 000		Keratometry	0.00 x 0.00 @ 000	
Consensus:	0.00 0.00 000		Consensus:	0.00 0.00 000	
Cycloplegic:	0.00 0.00 000		Cycloplegic:	0.00 0.00 000	
Pachymetry:	0		Pachymetry:	0	
Procedure:	LASIK	Excimer: VISX	Procedure:	LASIK	Excimer: VISX
Ablation:	CustomVue OZ/TZ: 6.0/9.0		Ablation:	CustomVue OZ/TZ: 6.0/9.0	
Keratome:	Thickness:		Keratome:	Thickness:	
Diameter:			Diameter:		
Side cut:			Side cut:		
CustomVue Laser Entry:			CustomVue Laser Entry:		
Physician Adjustment:	0.00		Physician Adjustment:	0.00	
Post op target Rx:	0.00		Post op target Rx:	0.00	
Estimated residual bed:	-130		Estimated residual bed:	-130	
% tissue altered:	#DIV/0!		% tissue altered:	#DIV/0!	
Comments/Notes:			Comments/Notes:		

Inform Consent SMILE-AtStigmatism iDesign LASIK iDesign PRK CustomVue LASIK Custom

2018

Open Consult DB Last name: Date:

Import schedule data Patient ID: Last 4: Sec: Rank/Rate: Job: DOB: Age: Military Job: Allergies: CL Rx: Staff Surgeon: Staff Surgeon: Notes:

	Right eye	Left eye	OU
Previous Rx			
Present Rx			
Auto Refraction			
Preop Keratometry			
Uncorrected VA	20/	20/	20/
Manifest Refraction			
Best Corrected VA	20/	20/	20/
Near Uncorrected VA	20/	20/	20/
D in Q #/Low Contrast Corrected	20/	20/	20/
Lessamine Green Oxford Score	TBUT	TBUT	
OP			
Phoria	Phoria	Phoria	
Preop pachy			
White to white time			
Dilation Drops			
OP			
Cycloplegic Refraction			
Cycle VA	20/	20/	
Iptometrist Consensus Refraction			
geon's Adjustment to MRS Sphere			
Surgeon's Consensus Refraction	0.00 0.00 000	0.00 0.00 000	Estimate of vision post op subsequent events
Calculated post op Keratometry			
Est. ablation depth (8 micron/ID)	0	0	
ESS LASIK (Monument)	PTA	PTA	
ESS PRK (Monument)	PTA	PTA	

OPPLAN: Selected Treatment: Surgery Date: Add Skillity Check Add Post Op

Export Option to DB Copy for AHLTA Print Preop Data Save File

"Medically Ready Force...Ready Medical Force"

Whats New? CRS Outcomes



Warfighter Refractive Surgery Evaluation Form (Page 1 of 2) Print Pg1											
<input checked="" type="checkbox"/> Simple Form		<input type="checkbox"/> Save File		Age of Patient <input type="text"/> Date <input type="text"/>		Enter DOB on Preop Data Sheet					
Most Recent Refraction # 1			Date			BCVA			Most Recent Refraction # 1		
OD: <input type="text"/> X <input type="text"/>			20/			OS: <input type="text"/> X <input type="text"/>			20/		
Prior Refraction # 2			Date			BCVA			Prior Refraction # 2		
OD: <input type="text"/> X <input type="text"/>			20/			OS: <input type="text"/> X <input type="text"/>			20/		
Prior Refraction # 3			Date			BCVA			Prior Refraction # 3		
OD: <input type="text"/> X <input type="text"/>			20/			OS: <input type="text"/> X <input type="text"/>			20/		
RIGHT EYE						LEFT EYE					
Near: 20/			Distance: 20/			Near: 20/			Distance: 20/		
W/Rx Date <input type="text"/>			BCVA			W/Rx Date <input type="text"/>			BCVA		
OD: <input type="text"/> X <input type="text"/>			20/			OS: <input type="text"/> X <input type="text"/>			20/		
Auto Refraction: <input type="text"/> X <input type="text"/>						Auto Refraction: <input type="text"/> X <input type="text"/>			Marco Connect		
Keratometry: Flat <input type="text"/> Steep <input type="text"/>			EDM <input type="text"/>			Keratometry: Flat <input type="text"/> Steep <input type="text"/>			EDM <input type="text"/>		
Dominant Eye <input type="checkbox"/> Right Eye <input type="checkbox"/> Full, Ortho <input type="checkbox"/> Other <input type="checkbox"/>						Dominant Eye <input type="checkbox"/> Left Eye <input type="checkbox"/> Full, Ortho <input type="checkbox"/> Other <input type="checkbox"/>					
Pupil Ruler <input type="checkbox"/> Bright <input type="checkbox"/> Constrict <input type="checkbox"/> A-LU Yes <input type="checkbox"/> No <input type="checkbox"/>						Pupil Ruler <input type="checkbox"/> Bright <input type="checkbox"/> Constrict <input type="checkbox"/> A-LU Yes <input type="checkbox"/> No <input type="checkbox"/>					
IOP mmHg NCT Time <input type="text"/>			Schirmer's <input type="text"/>			IOP mmHg NCT Time <input type="text"/>			Schirmer's <input type="text"/>		
MRx: <input type="text"/> X <input type="text"/>			BCVA			MRx: <input type="text"/> X <input type="text"/>			BCVA		
Near + <input type="text"/>			20/			Near + <input type="text"/>			20/		
WS <input type="text"/>						WS <input type="text"/>					
OD: <input type="text"/> X <input type="text"/>			BCVA			OS: <input type="text"/> X <input type="text"/>			BCVA		
Lissamine: <input type="text"/>			Contrast Sensitiv. 6% <input type="text"/>			Lissamine: <input type="text"/>			Contrast Sensitiv. 6% <input type="text"/>		
WTV: # <input type="text"/>			= 20/			WTV: # <input type="text"/>			= 20/		
Cycloplegic ex: Cyclopentolate <input type="checkbox"/> Other: <input type="text"/>			Time: <input type="text"/>			Cycloplegic ex: Cyclopentolate <input type="checkbox"/> Other: <input type="text"/>			Time: <input type="text"/>		
Cyclo Autorefraction <input type="checkbox"/>						Cyclo Autorefraction <input type="checkbox"/>			Marco Connect		
OD: <input type="text"/> X <input type="text"/>			BCVA			OS: <input type="text"/> X <input type="text"/>			BCVA		
Cycloplegic Manifest <input type="checkbox"/>						Cycloplegic Manifest <input type="checkbox"/>					
OD: <input type="text"/> X <input type="text"/>			20/			OS: <input type="text"/> X <input type="text"/>			20/		
Pentacam Warning <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>			Topo <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>			Pentacam Warning <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>			Topo <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>		
CCT: <input type="text"/>						CCT: <input type="text"/>					
Note						Note					
PATIENT IDENTIFICATION						CALCULATIONS					
Last Name, First Name, MI			Approximate Ablation Depth based on MF OD OS:			Last Name, First Name, MI			Screened by Technician: <input type="text"/> Date <input type="text"/>		
Rank, DoDID#, Date of Birth			Residual Stomal Be Eye PRK LASIK Flap: 120 um <input type="text"/> Show ERB Calc			Rank, DoDID#, Date of Birth			0		
OCCUPATION, Branch of Service			Percent Issue Ablate OD: <input type="text"/> OS: <input type="text"/>			OCCUPATION, Branch of Service			0		
BASE/INSTALLATION			Anticipated Mean K's after Refractive Surge OD OS:			BASE/INSTALLATION			0		

Warfighter Refractive Surgery Evaluation Form (Page 2 of 2) Print Pg2											
Medical Problems: <input type="text"/>				Current Medications: <input type="text"/>							
Past Eye Surgeries: <input type="text"/>				Allergies: <input type="text"/>							
Desire Enhancement OD: <input type="checkbox"/> OS: <input type="checkbox"/>											
<input checked="" type="checkbox"/> Subjective Questionnaire Revi		Comments		<input checked="" type="checkbox"/> Stable Manifest Refraction		Comments		<input checked="" type="checkbox"/> Placido Topography		Comments	
<input checked="" type="checkbox"/> Pentacam/Belin-Ambrosio		Comments		<input checked="" type="checkbox"/> Endothelial Cell Count		Comments: N/A		<input checked="" type="checkbox"/> Visual Field/RNFL		Comments: N/A	
RIGHT EYE						LEFT EYE					
Slit lamp exam (Includes lids, lashes, conjunctiva, cornea, anterior chamber, i											
<input type="text"/>						<input type="text"/>					
Notes: <input type="text"/>						Notes: <input type="text"/>					
Dilated Fundus Exam: (Includes Macula, Vessels, Optic Nerve, Periph											
<input type="text"/>						<input type="text"/>					
Notes: <input type="text"/>						Notes: <input type="text"/>					
Assessment and Plan:											
year old with											
<input type="checkbox"/> Request Surgeon Review											

Click Here To Copy Bottom Half of the Page For EMR

Click Here To Copy Top Half of the Page 2 For EMR

"Medically Ready Force...Ready Medical Force"

Refractive Surgery Complications



Chronic dry eye in PRK and LASIK: manifestations, incidence and predictive factors

Kraig S. Bower, MD¹, Rose K. Sia, MD², Denise S. Ryan, MS², Michael J. Mines, MD³, and Darlene A. Dartt, PhD⁴

- 143 Active duty Army personnel undergoing LASIK or PRK
- Dry eye evaluation performed and questionnaire administered pre and post-operatively
- 12 months postoperatively 5% of PRK and 0.8% of LASIK patients had developed chronic dry eye

PRK Complications



- Haze (sunglasses!)
- Recurrent Corneal Erosion
- Infection

PRK Complications: RCE



Symptoms of dry eye and recurrent erosion syndrome after refractive surgery

John A. Hovanesian, MD, Sujal S. Shah, MD, Robert K. Maloney, MD

- 2001 Study surveying 1731 patients that had LASIK or PRK at least 6 months previously
- 231 PRK and 550 LASIK patients replied
- 20.4% of PRK and 8% of LASIK patients reported sharp pain episodes
- 14.7% of PRK and 5.6% of LASIK patients reported “eyelid sticking to eyeball”
- Most do not come into clinic, but doesn’t mean it isn’t happening!

LASIK Complications



- Complications
- LASIK
 - Intraoperative (suction loss)
 - DLK
 - Flap dislocation
 - Epi ingrowth
 - Macro/Microstriae
 - Infection
 - Post-operative ectasia

LASIK Complications: DLK



- **Diffuse Lamellar Keratitis** aka “Sands of Sahara”
- Inflammation present in flap interface, sometimes caused by trapped particles in interface, laser energy
- Usually asymptomatic patient, white eye
- Typically seen early: post-op day 1
- Treatment: frequent topical steroids, sometimes oral steroids, flap irrigation

Early Flap Displacement after LASIK

Gerry Clare, FRCOphth, Tara C. B. Moore, PhD, Claire Grills, PhD, Antonio Leccisotti, MD, PhD, Johnny E. Moore, FRCOphth, PhD, Steve Schallhorn, MD

- 2011 study of 81,238 eye who underwent LASIK at Optical Express in UK, followed for 12 months
 - 23,997 with mechanical microkeratome, rest with femto
 - 10 flap dislocations, all within 48 hours and with associated trauma (0.012%)
 - Femto flaps less likely to dislocate than microkeratome flaps

LASIK Complications: Ectasia



- Postoperative Corneal Ectasia
- Estimated incidence of 0.04%-0.60% after LASIK
- Less common after PRK
- Treatments
 - RGP (scleral/miniscleral)
 - Intrastromal rings
 - Corneal cross linking (with PRK?)
 - Corneal Transplant

SMILE Complications

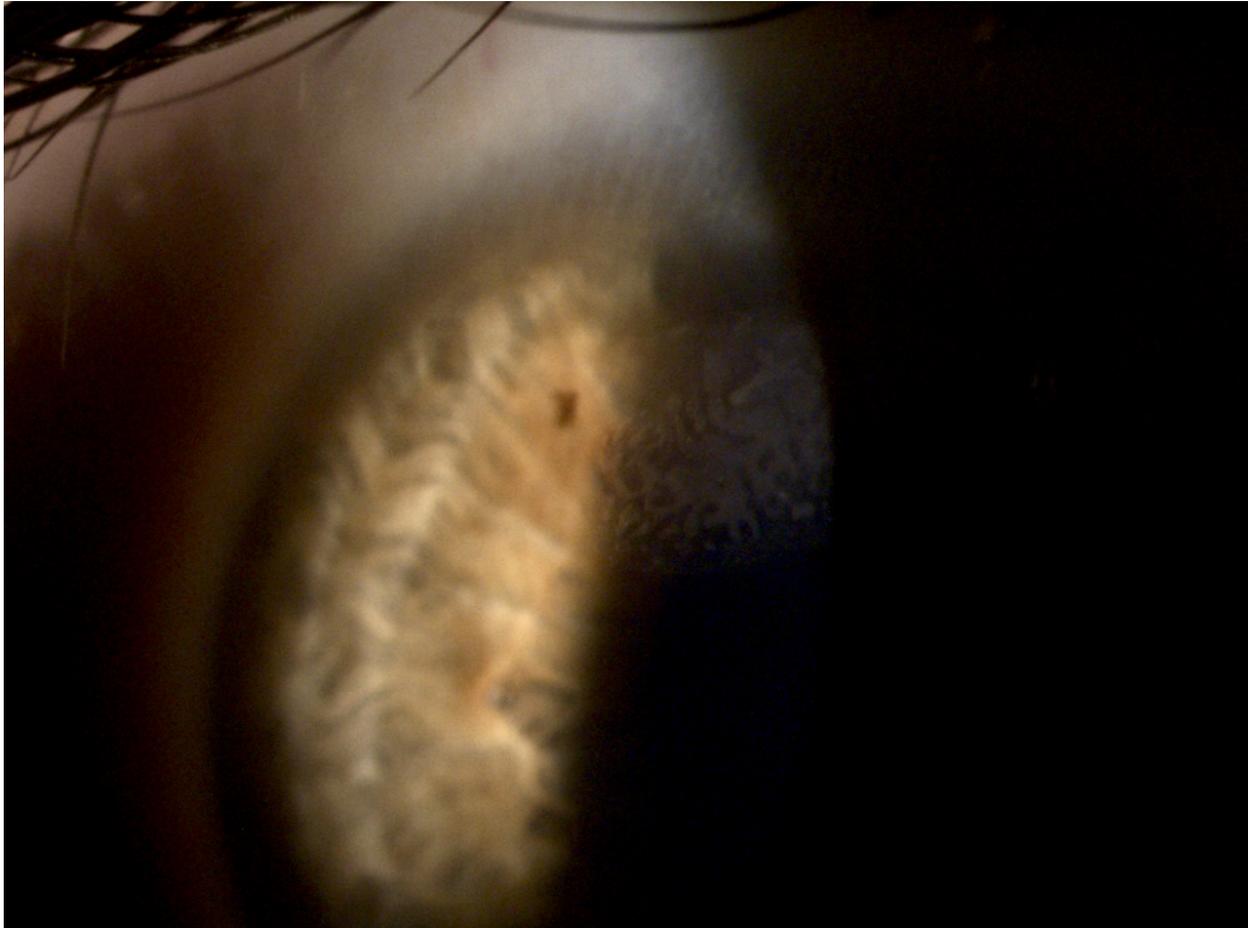
Safety and Complications of More Than 1500 Small-Incision Lenticule Extraction Procedures

Anders Ivarsen, MD, PhD, Sven Asp, MD, DMSci, Jesper Hjortdal, MD, DMSci

- Epithelial abrasions 6%
- Cap tears 1.8%
- Difficult lenticule extraction 1.9%
- Suction loss 0.8%

- Trace Haze 8%
- Interface inflammation (abrasion) 0.3%
- Interface infiltrate 0.3%
- Irregular corneal topography 1%

SMILE Complications



“Medically Ready Force...Ready Medical Force”

Refractive Surgery Knowledge for ODs



- Preop Care
- Get to know your local refractive surgery center
 - ▷ What constitutes abnormal topography?
 - ▷ Corneal scars?
 - ▷ Pachymetry measurement required?
 - ▷ Medications/medical screening
 - ▷ Other

Refractive Surgery Knowledge for ODs



- Preop Care
- At minimum: Refractive stability
 - Understanding of overminused Rx, hyperopic variability in measurement
- San Diego perspective
 - Respect ODs in busy clinic
 - No judgement!

Refractive Surgery Knowledge for ODs



- Preop Care

- OD has important role as knowledgeable advisor for patient
- Help patient in Risk/Potential benefit decision
- Education upfront helps all along the way
- Can you send someone who falls outside the laser refractive limits? Yes*

- Preop Care
 - Setting Expectations
 - ▷ PRK recovery timeline
 - ▷ Hyperopes
 - ▷ High Astigmatism
 - ▷ High Myopes
 - ▷ Low Treatments
 - ▷ Dry Eyes (manage MGD/lid disease aggressively)
 - ▷ Halos/Glare/Starbursts
 - ▷ Local Process, administrative “tips”

- Post-op Care
 - Likely complications to be encountered in Optometry clinic
 - ▷ DRY EYE
 - ▷ RCE (20% post-PRK reported sharp pains in eye 6 months + after surgery)
 - ▷ Epi Ingrowth
 - ▷ Primary undercorrection
 - ▷ Regression
 - ▷ Loss of BCVA/quality of vision

Key Takeaways



- DHA Refractive Surgery Board is active and will be an important part in supporting refractive surgery in the military going forward
- DoD utilizes multiple refractive surgery laser platforms to treat all types of refractive error
- SMILE is gaining popularity and will increasingly fill a role in refractive treatment in the military
- Topography-guided corneal refractive surgery with Phoricides may have a role in treating normal and abnormal corneas
- Complications of refractive surgery are typically manageable, but reinforce the need for good informed consent

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