On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.

vision expo

1

Financial Disclosure – Justin Schweitzer, OD, FAAO

- Aerie – C/L
- Alcon – C/L
- Allergan – C/L
- Bausch + Lomb – C/L
- Ocular Therapeutix - C
- EyePoint – C
- Sight Sciences – C/L
- Dompe – C/L
- Zeiss – C/L
- Visus - C
- Science Based Health – C
- Kala – C
- RVL – C
- Tarsus – C/L
- Sun – C/L
- Equinox - I
- Reichert - C
- J&J – C/L
- Glaukos – C/L
- Horizon – C
- Quidel – C
- MediPrint – C
- LKC – C/L
- Avellino – C
- Novartis – C
- Iveric bio – C
- Occuphire - C

2

Innovations in Glaucoma

Next Generation Technology, Medications, and Delivery

Justin Schweitzer, OD, FAAO
Vance Thompson Vision
Optometric Externship Director
Associate Director Residency Program

3

Today's Optometrists

"To be on the cutting edge of optometry, you need to be on the cutting edge of science and technology."

4

Diagnostics

5

The Correcting Applanation Tonometer Surface (CATS)

British Journal of Ophthalmology

Modified Goldmann prism intraocular pressure measurement accuracy and correlation to corneal biomechanical metrics: multicentre randomised clinical trial

6

The Correcting Applanation Tonometer Surface (CATS)

7

IOP "corneal-compensated" (IOPcc)

213 Eyes of 125 glaucomatous patients followed for 2.4 years

GAT	ORA	RBT
11.1% (.11)	24.5% (.24)	5.8%% (.05)

Susanna BN, Ogata, NG, Daga FB et al. Association between Rates of Visual Field Progression and Intraocular Pressure Measurements Obtained by Different Tonometer's. Ophthalmology. 2019 Jan;126(1): 49-54.

8

Home IOP Monitoring

A device is intended as an adjunct for monitoring IOP of adult patients (self-use). The tonometer is designed for use at home or on the go.

9

Continuous IOP Sensors

Implandata Eyemate

- Sulcus based IOP sensor
- 8 pressure-sensitive capacitors
- Diameter: 11.2 mm
- Thickness: 0.5 mm

11

Smart soft contact lens (BVS Sight)

- 24-hour IOP monitoring
- Lens power
- Wettable
- O2 Transmissibility
- Overnight wearability

12

- AcuMEMS (Menlo Park, CA)
  - iSense System: implantable sensor
- Glaukos (San Clemente, CA)
  - DOSE Medical IOP Sensor
- Implandata Ophthalmic Products GmbH
  - Suprachoroidal IOP sensor
- Injectsense Inc (Emeryville, CA)
  - Configurable on-demand sensor
- LaunchPoint Technologies (Goleta, CA)
  - Sensor attached to IOL or injected into vitreous
- Solx (Waltham, MA)
  - wireless intraocular sensor

13

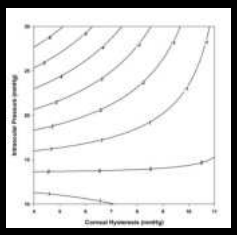
Corneal Hysteresis, IOP, CCT

14

Corneal Hysteresis (CH)

Corneal Hysteresis reflects the ability of the corneal tissue to dissipate energy [1]

Function of viscoelastic damping[2]



Medeiros FA et al. *Ophthalmology.* 2013;120:1533-1540.

15

Corneal Biomechanics and Visual Field Progression in Eyes with Seemingly Well-Controlled Intraocular Pressure

460 eyes of 334 glaucoma patients
Follow-up – 4.3 years
Well controlled if IOP < 18 mm HG

179 eyes well controlled
42 (23.5%) of those eyes had VF progression

CH (8.6 vs 9.4)
CCT (515 vs 531)

68% higher risk of progression

16

The Future of Visual Field Testing?




17

Virtual Reality–Based and Conventional Visual Field Examination Comparison in Healthy and Glaucoma Patients

Jan Stapelfeldt, Şerife Seda Kucur, Nina Huber, René Höhn, and Raphael Sznitman

"VR System slightly underestimated VF defects in glaucoma patients"

Stapelfeldt J, Kucur SS, Huber N, Höhn R, Sznitman R. Virtual Reality-Based and Conventional Visual Field Examination Comparison in Healthy and Glaucoma Patients. Transl Vis Sci Technol. 2021 Oct 4;10(12):10. doi: 10.1167/tvst.10.12.10. PMID: 34614166; PMCID: PMC8496417.

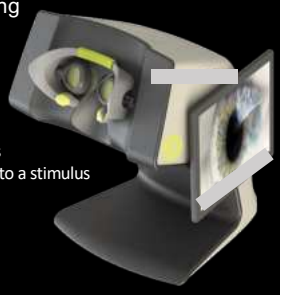
Assessment of Remote Training, At-Home Testing, and Test-Retest Variability of a Novel Test for Clustered Virtual Reality Perimetry

Chia ZK, Kong AW, Turner ML, Salfee M, Damato BE, Backus BT, Blaha JJ, Schuman JS, Deiner MS, Ou Y. Assessment of Remote Training, At-Home Testing, and Test-Retest Variability of a Novel Test for Clustered Virtual Reality Perimetry. Ophthalmol Glaucoma. 2023 Aug 22:S2589-4196(23)00160-6. doi: 10.1016/j.ogla.2023.08.006.

18

Objective Visual Field Testing

FDA 510(K) Cleared
Tests OU simultaneously in 7 minutes
Measures the response of the pupils to a stimulus



19

Subjective/Binocular Visual Field Testing

39% faster than SAP in clinical testing and functions in ambient light.[1]

Equivalent to SAP with repeatability.[1]

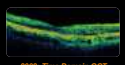
Random binocular testing

1. Comparison between New Perimetry Device (IMOvifa®) and Humphrey Field Analyzer" M Eslani, T Nishida, S Moghimi, JM Arias, C Vasile, V Mohammadzadeh, RN Weinreb; Invest. Ophthalmol. Vis. Sci. 2022;63(7):1272 – A0412.

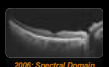
20

OCT Angiography: the Next Chapter

- Images retinal microvasculature without dye injection
- Displays structure and function from a single imaging system



2002: Time Domain OCT



2006: Spectral Domain OCT

2014: OCTA

21

OCT Angiography: the Next Chapter

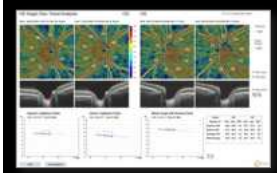


Image courtesy of Eric D. Nudleman, MD and Michael H. Goldbaum, MD of Shiley Eye Institute, University of California at San Diego, La Jolla, CA

Correlates well with OCT Technology

Utilization:
- High Myopia
- Advanced Glaucoma

Rao HL, Pradhan ZS, Suh MH, Moghimi S, Mansouri K, Weinreb RN. Optical Coherence Tomography Angiography in Glaucoma. J Glaucoma. 2020 Apr;29(4):312-321. doi: 10.1097/IJG.0000000000001463. PMID: 32053551; PMCID: PMC7117982.

22

Artificial Intelligence and Glaucoma

1. Level of Suspicion of Disease
   - Non-ophthalmic or non-glaucoma settings
   - Guides referral's
   - Cybersight
2. Diagnosing Disease
   - OD or OMD clinics
   - Using OCT images
   - Challenging

23

Evaluation of an AI system for the automated detection of glaucoma from stereoscopic optic disc photographs: the European Optic Disc Assessment Study

- Objectives - To evaluate the performance of a deep learning based Artificial Intelligence (AI) software for detection of glaucoma from stereoscopic optic disc photographs, and to compare this performance to the performance of a large cohort of ophthalmologists and optometrists.
- Results
  - Pegasus was able to detect glaucomatous optic neuropathy with an accuracy of 83.4% (95% CI: 77.5–89.2)
  - This is comparable to an average ophthalmologist / optometrist accuracy of 80.5% / 80% respectively (95% CI: 67.2–93.8) / (95% CI: 67–88) on the same images.
  - There was no statistically significant difference between the performance of the deep learning system and ophthalmologists or optometrists.

Rogers TW, Jaccard N, Carbonaro F, Lemij HG, Vermeer KA, Reus NJ, Trikha S. Evaluation of an AI system for the automated detection of glaucoma from stereoscopic optic disc photographs: the European Optic Disc Assessment Study. Eye (Lond). 2019 Nov;33(11):1791-1797. doi: 10.1038/s41433-019-0510-3. Epub 2019 Jul 2. PMID: 31267086; PMCID: PMC7002599.

24

Electroretinography

Measures the electrical responses of various cell types in the retina, including the **photoreceptors** (rods and cones), **inner retinal cells** (bipolar and amacrine cells), and the **ganglion cells** in response to a stimulus.

25

Interpretation

How should I think about yellow/red results?

Yellow and red results require closer attention and other tests to confirm disease.

SLOW IMPLICIT TIMES

- Too Slow: Possibly indicative of cellular stress

AMPLITUDES

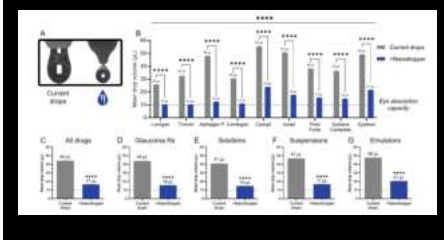
- Too Small: Possibly indicative of cell damage

26

Treatment

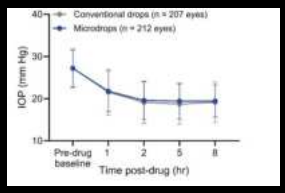
30

Delivering Treatment



31

Efficacy?



An Evaluation of the Efficacy and Safety of Timolol Maleate 0.5% Microdrops Administered with the Nanodropper. Seger, JS., Durai, I., Odayappan, A, Venkatesh, R, Colantuoni, E., Robin, AL. Ophthalmology, March 2024.

32


Acta Ophthalmologica

The effects of antioxidants on ocular blood flow in patients with glaucoma


The MIND Diet

WHAT TO EAT

WHAT TO LIMIT

In a case control study of participants from the large Rotterdam population Health study (matching those with OAG with age/sex matched controls), each 10% increase in adherence to the MIND diet was associated with a 20% reduced risk of OAG.

Vergroesen, Joëlle E., et al. "MIND diet lowers risk of open-angle glaucoma: the Rotterdam Study." European Journal of Nutrition 62.1 (2023): 477-487.

33

Preservative-Free Formulations

N=349, Significant improvement in both signs and symptoms of OSD with switch to PF meds

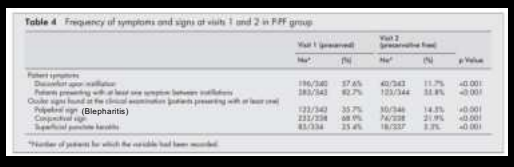


Table 4 Frequency of symptoms and signs at visits 1 and 2 in PFF group

	Visit 1 (preserved)		Visit 2 (preservative free)		
	No*	(%)	No*	(%)	p Value
Patient symptoms					
Discomfort upon instillation	196/340	57.6%	40/343	11.7%	<0.001
Patients presenting with at least one symptom between instillations	283/343	82.7%	123/344	35.8%	<0.001
Ocular signs found at the clinical examination (patients presenting with at least one)					
Palpebral sign (Blepharitis)	122/342	35.7%	50/346	14.5%	<0.001
Conjunctival sign	232/334	69.5%	74/338	21.9%	<0.001
Superficial punctate keratitis	83/334	25.4%	18/337	5.3%	<0.001

*Number of patients for which the variable had been recorded.

Pisella, P. J., P. Pouliquen, and C. Baudouin. Prevalence of ocular symptoms and signs with preserved and preservative free glaucoma medication

34

Preservative-Free Solutions

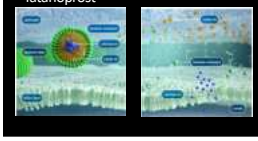
PF-Latanoprost

	Phase 3 (US) Trial (n=325)		Phase 3 (Europe) Trial (n=353)	
	PF-Latanoprost	Xalatan	PF-Latanoprost	Xalatan
Mean baseline IOP ± SD(mmHg)	18.8 ± 2.9	19.2 ± 3.1	24.1 ± 1.8	24.0 ± 1.7
Mean IOP reduction from baseline (mmHg) (range)	2.7 (2.2 - 3.0)	3.4 (2.9 - 3.8)	8.6 (8.3 - 8.8)	8.9 (8.8 - 9.0)

35

BAK-Free Latanoprost

- Following instillation, micelles mix with the tear film
- As the micelles migrate toward the ocular surface, they break apart, releasing latanoprost



Preservative-Free

36

…Other Drop Options

PDP-716 (0.35% brimonidine tartrate)
- qd dosing, preservative free, seeking FDA approval

NCX 470 (NO-donating bimatoprost)
- Phase 3 trial = superior to latanoprost 0.005%

CKLP1 (ATP-sensitive potassium channel opener)
- lowers EVP 1:1 with IOP reduction
- only tested in animal studies

QLS-111 (ATP-sensitive potassium channel opener)
- lowers EVP

37

Innovations in Glaucoma Drug Delivery
What the Future Holds

38

Interventional Glaucoma
Mindset

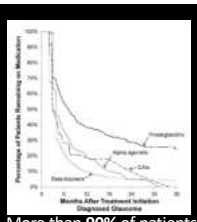
39

The Long Time
Glaucoma Patient

"My eyes are red on a daily basis and my vision fluctuates."

"I do miss my drops off and on – and my eyes feel better when I do"

40



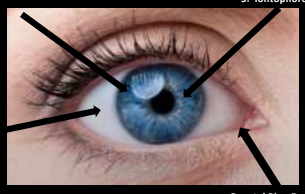
More than **90%** of patients are nonadherent to their ocular medication dosing regimens, and nearly **50%** discontinue taking their medications before 6 months[1]

Nordstrom BL. Persistence and adherence with topical glaucoma therapy. *Am J Ophthalmol.* 2005;140:598-596

41

Iridocorneal Angle
1. Travoprost Intraocular Implant

Ocular Surface Devices
1. Contact Lenses
2. Microdose latanoprost
3. Iontophoresis



Injectable Systems
1. Bimatoprost SR
2. Travoprost Intracameral Implant
3. Travoprost Extended Release Implant

Punctal Plug Devices
1. Latanoprost and Travoprost punctal plug delivery system

42

Patients Attitudes Towards Drug Delivery

Triple Combination Eye Drop – 85%

Microdose Eye Spray – 54%

Drug-eluting Contact Lens – 31%

Drug-eluting Periocular Ring Insert – 43%

Injectable Subconjunctival Drug Insert- 32%

Injectable Anterior Chamber Implant – 30%

attitude
is everything

Wang BB., Lin MM., Nguyen, T., et al. Patient attitudes towards novel glaucoma drug delivery approaches. Digit J Ophthalmol. 2018; 24(3): 16-23

43

Bimatoprost SR
(10-microgram bimatoprost sustained-release implant)

- Biodegradable bimatoprost sustained-release implant
- FDA-approved and indicated to reduce IOP in patients with open angle glaucoma or OHT
- Single intracameral administration
- Phase I/II/III Studies

44

Bimatoprost SR
(10-microgram bimatoprost sustained-release implant)

45

46

24 Month Phase I/II Clinical Trial

75 subjects

- bimatoprost pellet (6, 10, 15, or 20 micrograms)
- topical bimatoprost 0.03%

Craven ER, Walters T, Christie WC, Day DG, et al. 24-Month Phase I/II Clinical Trial of Bimatoprost Sustained-Release Implant (Bimatoprost SR) in Glaucoma Patients. Drugs. 2020 Feb;80(2): 167-179.

47

24 Month Phase I/II Clinical Trial

bimatoprost pellet (6, 10, 15, or 20 micrograms)

24 months – IOP reduction 7.5, 7.3, 7.3, 8.9 mm Hg

topical bimatoprost 0.03%

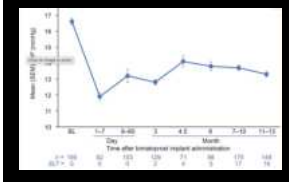
24 months – IOP reduction of 8.2 mm Hg

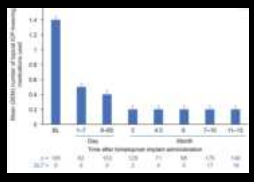
No Rescue or Retreatment
68% - 6 mos.
40% - 12 mos.
28% - 24 mos.

Craven ER, Walters T, Christie WC, Day DG, et al. 24-Month Phase I/II Clinical Trial of Bimatoprost Sustained-Release Implant (Bimatoprost SR) in Glaucoma Patients. Drugs. 2020 Feb;80(2): 167-179.

48

Real-World Study of the Effectiveness and Safety of Intracameral Bimatoprost Implant





Teymoorian S, Craven ER, Nguyen L, Werts E. Real-World Study of the Effectiveness and Safety of Intracameral Bimatoprost Implant in a Clinical Setting in the United States. Clin Ophthalmol. 2024 Jan 19;18:187-199. doi: 10.2147/OPTH.S445005. PMID: 38263954; PMCID: PMC10804876.

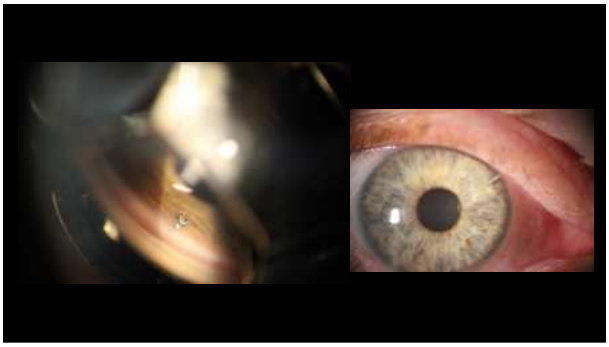
49

Travoprost intraocular implant

36 Month Update

1. 70% and 68% of subjects in fast and slow-release were well-controlled on fewer or same medications as baseline.
2. Average IOP reductions were 8.3 mmHg and 8.5mmHg in the fast and slow-release arms.

50



51

Microdose latanoprost

Delivers microdoses of latanoprost with Optejet delivery

Advantages: 75% less drug and preservative
88% of the time got to target

Achieved 29% IOP lowering from baseline in Phase 2 study

Pasquale, LR, Shan L, Weinreb RN, et al. Latanoprost with high precision, Piezo-print microdose delivery for IOP lowering: clinical results of the PG21 study of 0.4 micrograms daily microdose.

52

Drug-Eluting Contact Lens

Attractive option secondary to large residence time in the eye and upward of 50% bioavailability in comparison with eye drop formulations.

Li, CC, Chauhan, A. Modeling ophthalmic drug delivery by soaked contact lenses. Ind Eng Chem Res 2006; 45: 3718–3734.

Peng, C-C, Kim, J, Chauhan, A. Extended delivery of hydrophilic drugs from silicone-hydrogel contact lenses containing Vitamin E diffusion barriers. Biomaterials 2010; 31: 4032–4047.

53

Drug-Eluting Contact Lens

- MediPrint Ophthalmics
  - LLT-BMT1 – drug eluting contact lens - bimatoprost
- Phase I – SIGHT-1
  - 5 Subjects wore the lens for 7 days continuously
  - Demonstrated 100% tolerability and no adverse events
  - IOP efficacy was noted
- SIGHT-2 – Pase 2b dose-ranging clinical study is underway

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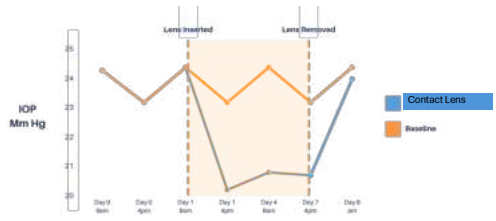
Glaucoma: SIGHT-1 Human Clinical Results

Intraocular Pressure (IOP) reduction at each timepoint over 7 days of continuous wear



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Punctal Plug Delivery System

Latanoprost and Travoprost designs

U.S. Phase II Multi-center Trials (Lower Puncta)
Glau 12 (n=92) – 96% retention rate
Glau 13 (n=87) – 92% retention rate

Phase II Clinical Study
L-Evolute - 5.5 mmHg IOP lowering over 12 weeks study

56

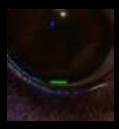
Travoprost Intracameral Implant

Bioresorbable sustained-release implant injected into the AC

Goal: Steady release of travoprost with target duration from 4 to 6 months

Preclinical Models (beagle dogs)
Steady state release through 4 months

IOP lowering of 25-30% through 4 months



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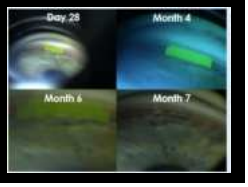
Travoprost Intracameral Implant

Phase 1, prospective, multi-center, open label

Cohort 1 n=5 (15 micrograms) → Day 28 -9.1 mm Hg (n=5); Mo. 4 -7.6 mm Hg (n=4); Mo. 6 –7.5 mm Hg (n=3); *Mo. 21 - -9.3 (n=1)

Cohort 2 n=4 (26 micrograms) → Day 28 -6.0 mm Hg (n=4); Mo. 4 -6.8 mm Hg (n=4); Mo. 6 –6.1 mm Hg (n=3); *Mo. 9 - -5.9 (n=2)

Cohort 3 n=4 (15 micrograms Fast Degrading) → Day 28 -11.5 mm Hg (n=3); Mo. 4 -13.8 mm Hg (n=2); *Mo. 6 -12.5 (n=1)



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IOL-Haptic-Based Drug Delivery

Drug-eluting pads attached to haptics
Goal is 3 years of drug delivery

Feasibility Study – 23 patients
- 45% mean IOP reduction
- 100% of patients were 18 mmHG or below
- All were off topical medications
- No significant adverse events
- Visual outcomes similar to other IOLs

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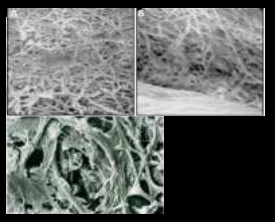
Selective Laser Trabeculoplasty

Selectively targets and laser burns pigmented TM cells



60

LiGHT trial: 6-year results of primary selective laser trabeculoplasty versus eye drops for the treatment of glaucoma and ocular hypertension

Gus Gazzard, Evgenia Konstantakopoulou, David Garway-Heath, Mariam Adeleke, Victoria Vickerstaff, Gareth Ambler, Rachael Hunter, Catey Bunce, Neil Nathwani, Keith Barton, on behalf of the LiGHT Trial Study Group

Primary Outcome - Quality of Life at 6 years
Secondary Outome – clinical effectiveness and safety

Conclusions:
- No significant difference in QOL
- 26.8% VS 19.6% progressed drops vs SLT
- Trab required in 32 eyes in drops arm compared to 13 eyes in the SLT arm
- 69.8% of SLT Drop Free @ 6 Years

61

Low-Energy SLT Repeated Annually: Rationale for the COAST Trial

Tony Realini, MD, MPH, Gus Gazzard, MD, Mark Latina, MD, Michael Kass, MD

Newly diagnosed POAG treated with:

1. ALT 360 x 1
2. Standard SLT 360 as needed
3. Low-energy SLT 360 repeated annually

10-year Results
Medication Free Rates

1. ALT – 22.6%
2. Standard SLT -25.0%
3. Low-energy SLT – 58.3%

10-year Results
Median Times to Treatment

1. ALT – 2.8 years
2. Standard SLT -3.2 years
3. Low-energy SLT – 6.2 years

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Automated Direct SLT

Automated Direct Selective Laser Trabeculoplasty: First Prospective Clinical Trial

Mordechai Goldenfeld[1], Michael Belkin[2], Masha Dobkin-Bekman[3], Zachary Sacks[3], Sharon Blum Meirovitch[3], Noa Geffen[4,5], Ari Leshno[1,4], and Alon Skaat[1,4]

Purpose: Direct selective laser trabeculoplasty (DSLT) is a rapid, noncontact automated procedure performed directly through the limbus without gonioscopy. In this first nonrandomized clinical trial we assessed its safety and ability to reduce intraocular pressure (IOP).

Methods: Fifteen patients (15 eyes: 10 with open-angle glaucoma [OAG], 4 with ocular hypertension, and 1 with pseudoexfoliation glaucoma), naive or after medication washout, with an IOP ≥22 mm Hg, underwent DSLT by irradiation with 100 or 120 sequential noncontact 532-nm, Q-switched laser shots (0.8–1.4 mJ) automatically applied during 1.5 or 2.3 seconds on the limbus, guided by image analysis and eye tracking. Results were assessed at 1 and 3 hours, 1 day, 1 week, and 1, 3, and 6 months.

Results: The mean ± standard deviation baseline IOP (mm Hg) in all eyes was 26.7 ± 2.3. At 1, 3, and 6 months, this value was significantly reduced to 21.7 ± 4.2 (by 18.1%), to 20.8 ± 2.5 (by 21.4%), and to 21.5 ± 4.1 (by 18.8%), respectively. In six patients treated with 1.4 mJ/shot, the mean IOP at 6 months decreased from 26.7 ± 3.2 to 19.3 ± 2.0 (27.1%, $P = 0.03$). There was a significant reduction in hypotensive medications (from 1.6 ± 1.0 to 0.4 ± 0.7, $P = 0.03$). No serious adverse events occurred.

Conclusions: Automated DSLT appears to be an effective and safe noncontact, rapid modality for reducing IOP in patients with OAG. Higher energy usage led to better results.

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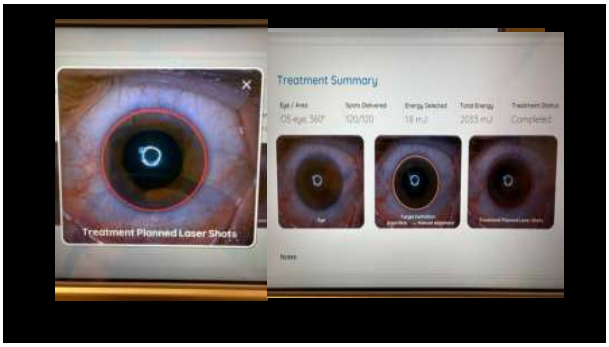

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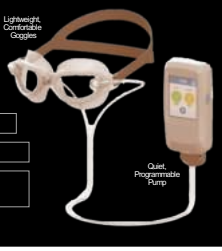
Innovations for NTG

FYSX O-PAP
(Ocular Pressure Adjusting Pump)

- Only nonsurgical, non-pharma way to lower IOP
- Lowers IOP in every eye, every time
- Lowers IOP safely
- Can be used in combination with existing therapies
- Titrates IOP to target pressure level
- Lowers IOP during the vulnerable period at Night
- Ability to monitor usage, encourage compliance, and obtain data



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THE SOLUTION IS BASED ON PHYSICS

The atmosphere pressurizes the entire body	By lowering the pressure only over the eye, it lowers the IOP relative to the rest of the body	It's just physics, and physics works every time	IOP can be dialed into the specific target

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2 Multi-Center Randomized Controlled Trials

Apollo – Open-Angle Glaucoma

- N = 128 eyes of 64 Subjects
- Contralateral Eye Served as Control
- IOP Inclusion - 13-32 mmHg
- **POAG, NTG, OHT, and Glaucoma Suspects**
- 89.7% had IOP Reduction of >20%
- 100% of eyes had IOP Reduction
- **IOP decreased from 19.4 to 12.9 mmHG (34%)**
- IOP Decreased in addition to existing therapy
- IOP Decrease regardless of Baseline IOP
- No SAEs
- ~20% of eyes had temporary lid edema

Artemis – Normal Tension Glaucoma

- N = 182 eyes of 91 Subjects
- Contralateral Eye Served as Control
- IOP Inclusion - ≤ 21 mmHg
- **NTG Only – IOP Measure Overnight in Sleep Lab**
- 98.2% had IOP Reduction of >20% at night
- 100% of eyes had IOP Reduction
- **IOP decreased from 20.2 to 12.2 mmHG (39%)**
- IOP Decreased in addition to existing therapy
- IOP Decrease regardless of Baseline IOP
- No SAEs
- ~17% of eyes had temporary lid edema

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Schlemm's Canal/TM Procedures

	Stents	SC Dilation	TM Cutting
Fibrosis Risk	(-)	(+)/(-)	(+)(+)
Hyphema	(-)	(+)/(-)	(+)(+)
PAS Risk	(-)	(-)	(+)
IOP Lowering	(+)	(+)	(+)(+)
Data	(+)(+)(+)	(+)/(-)	(+)(+)

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Saheb H, Ahmed, IIK. Micro-invasive glaucoma surgery: current perspectives and future directions. Curr Opin Ophthalmol. 2012;23(2): 96-104.

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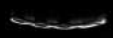
Trabecular Microbypass Stent (iStent Inject W)

Schlemm Canal Microstent (Hydrus)



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HORIZON Trial

		CS-HMS	CS	Difference
Main selection	Baseline (dB)	26.73 [26.43, 27.03]	26.74 [26.30, 27.18]	0.01 [-0.52, 0.54]
	RoP (dB/year)	-0.26 [-0.36, -0.16]	-0.49 [-0.63, -0.34]	-0.23 [-0.40, -0.05]

Microstent lowers the rate of visual field loss per year:

47%

vs cataract surgery alone

Gazzard G, Montesano G, Ometto G. Five-year Visual Field Outcomes from the Multi-center, Randomized, HORIZON trial. AmJournalofOph, Feb 20, 2023.

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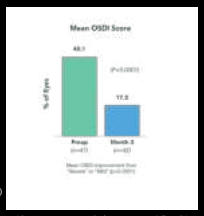
OSD IMPROVEMENT IN IMPLANTED EYES[1]

- Prospective, multicenter trial evaluating four ocular surface metrics 3 months post-stent implantation.
- n=47 eyes
- Other ocular health metrics improved as well:
  - 49% longer time to tear break-up (FTBUT) (p<0.0001)
  - Significantly reduced corneal/conjunctival staining (Oxford Schema) (p<0.0001)
  - Trend toward less hyperemia (Efron Score)



Schweitzer JA, Hauser WH, Ibach M, Baartman B, Gollamudi SR, Crothers AW, Linn JE, Berdahl JP. Prospective Interventional Cohort Study of Ocular Surface Disease Changes in Eyes After Trabecular Micro-Bypass Stent(s) Implantation (iStent or iStent inject) with Phacoemulsification. Ophthalmol Ther. 2020 Aug 13.

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Trabecular Microbypass Stent x 3 (iStent infinite)

Three-stent, standalone procedure

Three wide-flange stents preloaded in injector system, to facilitate placement across ~6 clock hrs. of Schlemm's canal

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Aqueous Angiography Before and After Stenting

Alex Huang, MD, PhD

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Excisional Goniotomy (Kahook Dual Blade)

Goniotomy (iAccess)

Goniotomy (SION)

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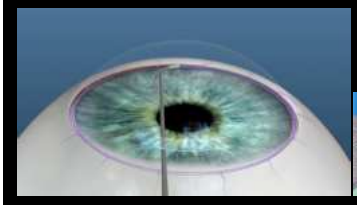
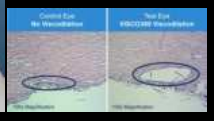
Ab-interno Trabeculotomy + Canaloplasty (OMNI)





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Xen 45 Gel Stent
US Pivotal Clinical Trial

Subconjunctival Stent
(Xen)

	Baseline	12 month
Medicated IOP	25.1 (3.7)	15.9 (5.2)
Glaucoma Meds	3.5 (1.0)	1.7 (1.5)

Hypotony 16 (24.6%)
Bleb Needling 21 (32.3%)

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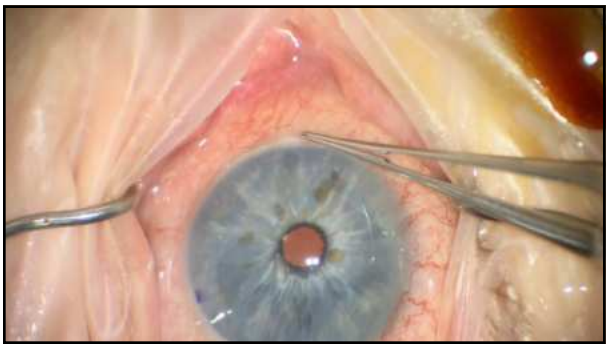

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A Peek into The Future…

Elios
- Excimer Laser Technology
- 10 Microchannels in the TM
- Combo with CEX

Vialase
- Femtosecond laser
- Micron-accurate gonio imaging
- Non-invasive
- Customized drainage channels

Camera

Femtosecond Laser

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A Peek into The Future…

MINIject
- 5-mm-long uveoscleral device
- 2-year outcomes of 25 patients have shown a 40% reduction of IOP.

Minimally invasive micro-sclerostomy (MIMS)
- Stent-less
- 90-micron diameter cylinder of scleral tissue
- Ab interno approach

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Post-operative Considerations with MIGS

1. Stopping GLC Meds
2. IOP Spikes
3. Hyphema
4. Hypotony
5. Establish New Baselines

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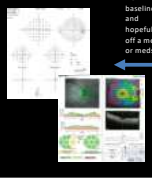
Stopping Glaucoma Medications

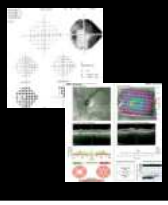
Severity of the Glaucoma

Preoperative IOP vs Postoperative IOP
IOP progression was occurring

New baseline and hopefully off a med or meds



Likely on med in combo with MIGS



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PAS to Stents

YAG laser considered to open stent

US Pivotal iStent Inject Trial
1.8% @ 24 months

HORIZON Trial
13% @ 48 months

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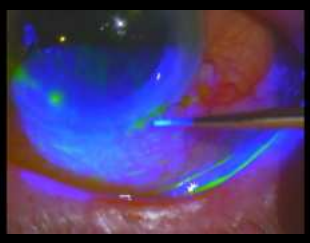
IOP Spikes



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Hyphema

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Ocular Hypotony – Is it a Concern with MIGS?

Hypotony – An IOP below which the eye does not maintain its normal shape and may subsequently lose vision.

Definitions vary slightly – IOP< 5 or 6

Episcleral Venous Pressure and its role

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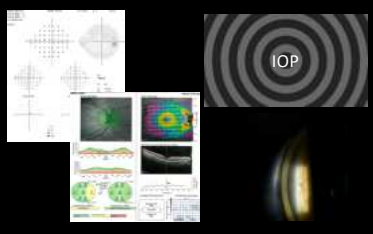
Establish New Baselines



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Technology is nothing.

What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.

justin.schweitzer@vancethompsonvision.com

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