## Case Files: The Glaucoma Chronicles

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Financial Disclosure – Justin Schweitzer, OD, FAAO Allergan – C/L
Bausch + Lomb – C/L
Ocular Therapeutix - C • EyePoint – C Sight Sciences – C/L
 Domne – C

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### FINANCIAL DISCLOSURES-JESSICA STEEN OD, FAAO

- Speaker-Carl Zeiss Meditec, Bausch and Lomb, Oyster Point Pharma, Thea Pharma, Alcon, Allergan, Astellas, Dompe
- Advisory Board-Bausch and Lomb, Carl Zeiss Meditec, Santen, Peripherex, Ocuphire, Ocuterra, Oyster Point Pharma, Allergan, Astellas, Radius XR
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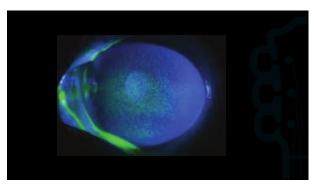
### Case 1

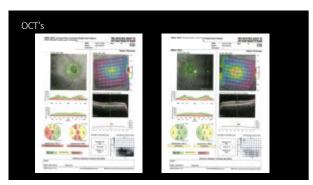
- 71-year-old African-American male irritated eyes.
- Medical History: HTN
- Family History: HTN, DM
- BCVA: 20/20 +1 OU
- TMAX: 29 mm Hg OD; 28 mm Hg OS Ocular Meds:
- Latanoprost qd OU, fixed combo agent bid OU

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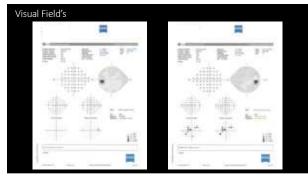
- IOP: 20 mm Hg OD; 19 mm Hg OS • **C/D**: 0.75/0.75 OD 0.65/0.65 OS
- Pachymetry: 510 OD; 514 OS
- Corneal hysteresis: 8 OD 8.9 OS
- Gonioscopy: Open to CB OU w/ trace pigment in TM
- SLE: PCIOL OU and See image
- **VF's** See next slide

• OCT's – See next slide





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Case Conclusion

• Performed bimatoprost SR + SLT OU – gave patient "drop holiday"

• IOP 17 OD; 16 OS @ 6 weeks – eyes feel so much better

• Monitoring the patient every 4 months initially

• Recent visit – stable VFT, OCT, and IOP (schedule q 6 mos)

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Effects on Meibomian Glands

Effect on lids/meibomian glands
Study on glaucoma patients 18mo stable treatment with differ Oppositions.
Reduced number of meibomian glands
Reduced numbers of acinae and increased dysfunction in patients
Patients on multiple medications with preservatives = increased dysfunction and reduced number of acinae

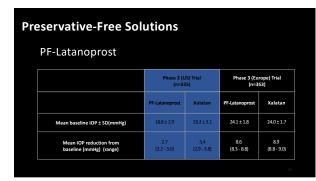
| Commission |

Treatment Challenges

Time to populis and/or visual field modifications

All the description of the control of

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LIGHT hish 6-year results of primary selective laser Nabeculoplesty versus-syst drops for the treatment of glaucoma and ocular hypertension.

Ges Gazzant, Evgenia Koretantikopodicu, Devid Garway-Heath, Mariam Adrolete, Victoria Vicianiari, Caser Ancher, Rachael Hunter, Calery Bunce, Net National of the LIGHT Trial Study Group

Primary Outcome - Quality of Life at 6 years
Secondary Outcome - 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

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

Medication Free Rates

1. ALT - 22.6%

1. ALT - 2.8 years

2. Standard SLT -25.0%

3. Low-energy SLT - 58.3%

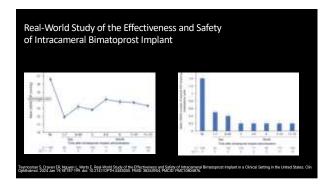
3. Low-energy SLT - 6.2 years

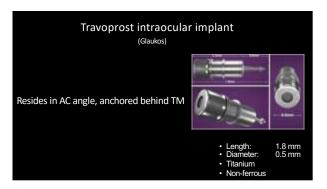
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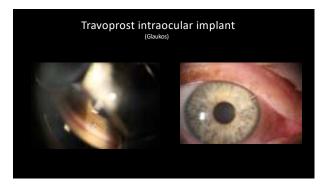




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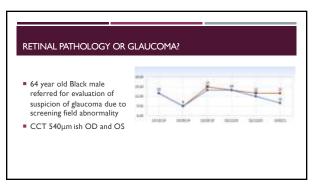


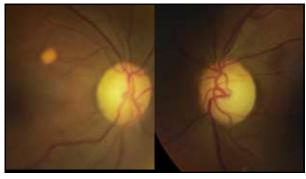




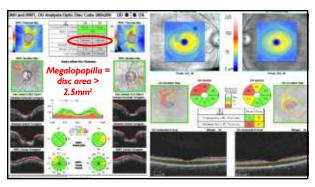


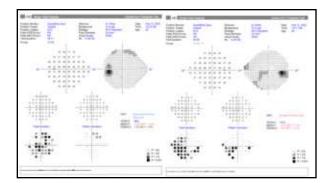
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Is this glaucoma?

Megalopapillae (disc diameter >2.50mm²) Average CCT IOP statistically within a normative range

Retinal nerve fiber layer defect—in the absence of notching of the neuroretinal rim

What else can cause RNFL defect?...and therefore visual field defect?

Retinal ischemia

Diabetes mellitus,
hypertension, systemic
lupus erythematosus

Nonarteritic ischemic optic
neuropathy

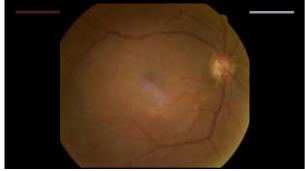
Optic disc drusen
...

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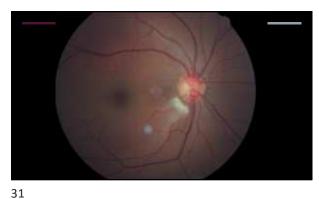
Glaucoma is a progressive, chronic optic neuropathy

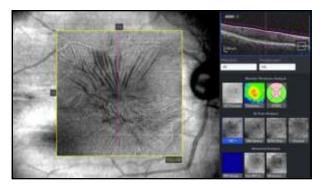
Is there change over time?

Take the time that you need to establish a diagnosis



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### Case #2

65-year-old, Caucasian female referred for a second opinion for possible glaucoma. She states she has never had high eye pressures and doesn't understand how she could have glaucoma.

- Ocular History Medical History
  POHX: Cataract extraction OU 2014, YAG capsulotomy OU 2014
  PMHX: Hyperlipidemia
- FHX: Mother glaucoma, age-related macular degeneration
   Previous Treatment Regimen: None
   All Medications: Fluoxetine, Atorvastatii
   Allergies: Penicillin
- Current Treatment Regimen: None
   IOP max
   OD: 17 mm Hg
   OS: 17 mm Hg

- Allergies: Penicillin
- Blood Pressure: 118/75

### Ocular Exam

- Uncorrected visual acuity (UCVA): 20/20 OD, 20/20 OS
   External exam: Normal appearance, symmetrical
   Pupil exam: Equal, round, reactive to light and (-) APD
- Pupil exam: Equal, round, reactive to light and (-) APD

  Siti-lamp exam: Can, no debris, no signs of MGD 0U

  Conjunctiva: Clear, no injection 0U

  Cornea: Clear, no corneal staining 0U, no pigment present 0U

  Anterior Chamber: Clear, no cells, no flare 0U

  I ris: Clear, no excloiative material present, no transillumination defects 0U

  Lens: Well centered posterior chamber intracular lens, apen posterior capsule 0U

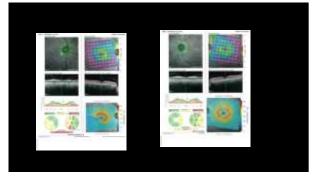
  Goldmann Applanation Tonometry: 16 mm Hg OD, 17 mm Hg OS

  Central corneal thickness (CCT): 499 0D, 504 05

- Gonioscopy: Open to CB in all quadrants, no pigment in the TM, and normal iris approach
   Corneal Hysteresis: 9.4 mm Hg OD, 9.3 mm Hg OS

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## Diagnosis Moderate Normal Tension Glaucoma OD Pre-perimetric Normal Tension Glaucoma OS Other diagnoses: SPO Cataract Extraction OU, SPO YAG Capsulotomy OU

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What Would You Do?

# Initial Follow-up and Plan Follow-up at 1 month latanoprostene bunod 0.024% was well tolerated, easy to instill, and patient states compliance with medication. Follow-up ocular exam: Vision and SLE stable from last examination 1 month ago. Tonometry: OD: 12 mmHg OS: 12 mmHg

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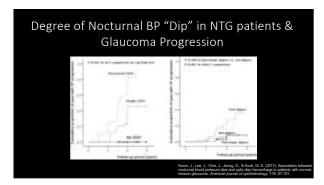
Normal Tension Glaucoma —Landmark Studies

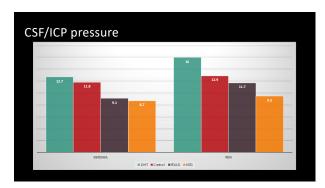
Only 50% of treated eyes achieve a 30% IOP lowering 34% of treated NTG patients show progression 9.9% of NTG patients go blind in 1 eye 1.5% of NTG patients go blind in both eyes

Lowering IOP 20-30% slows progression significantly A 20-30% reduction of IOP confers a 93-96% chance of stability Achieving an IOP of 10-11mmHG confers a 90% chance of stability Achieving a 20% reduction results in 1.4-fold reduction in Progression Achieving a 40% reduction results in a 5.7-fold reduction in Progression

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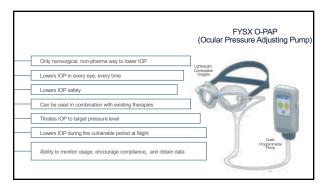


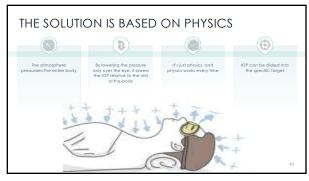




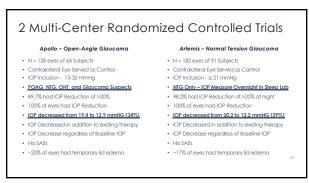


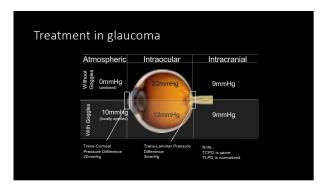
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### 63 YEAR OLD WHITE MALE

- History of "narrow angles" and bilateral LPI
- 25 years ago (1999)-at the age of 38
- Latanoprost QHS OU (teal cap)
- Reported peak untreated IOP high 20s
- Systemic hypertension and anxiety
- Lisinopril
- Clonazepam
  - No events of significant blurred vision, haloes around lights, significant nausea, or headache

### 63 YEAR OLD WHITE MALE

- BCVA 20/20 OD and OS
   +2.00D OD and OS
- Patent LPI 1:00 OD and OS
- What does LPI do?!
- Reverse or prevent pupil blockModerately deep central anterior chamber
- Anterior trabecular meshwork 360 degrees OD; 270 degrees OS with no structures temporal
  - Convex iris approach; no PAS,AR, NVA
- I+ pigment with compression

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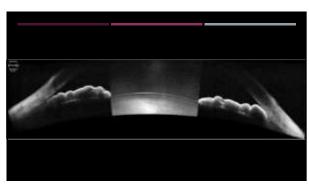
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## ${\bf OCT}\ Evaluation\ of\ the\ Anterior\ Chamber$

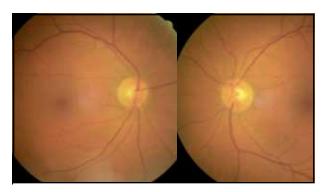
No inadvertent compression

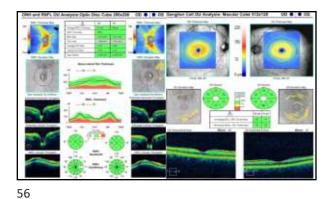
May be performed in complete darkness

Most valuable to determine if the angle is open or closed



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Does this patient need to be on treatment?

TERMINOLOGY

- I) Primary angle closure suspect
- 2) Primary angle closure
- 3) Primary angle closure glaucoma
- 4) Acute angle closure crisis

Either open or closed
There is no such thing as "narrow angle glaucoma"

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### PRIMARY ANGLE CLOSURE SUSPECT

- Discontinue latanoprost: I8mmHg OD/I7mmHg OS at follow up
- Advocate for early cataract surgery
- Does this patient meet EAGLE inclusion criteria?

Effectiveness of early lens extraction for the treatment of primary angle-closure glaucoma (EAGLE): a randomised controlled trial

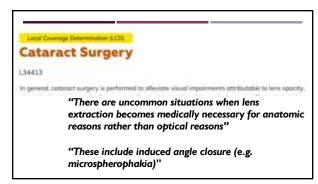


Angusta Ayram Elema, Joseph Burs, J. July Barran, David Corpe. Part France Sould Streamer. Colour Section Metal processing.

- $^{\rm s}$  Removal of clear lenses in eyes with PACG with IOP > 21 mmHg or eyes with PAC (without glaucoma) and IOP > 30mmHg vs. LPI (and medications); greater than 50 years of age
- Clear lens extraction patients had greater IOP control and improved quality of life
- Patients who underwent lens extraction had fewer IOP lowering medications
- Only I needed trabeculectomy after phaco whereas 24 patients in the LPI group needed trabeculectomy
- Cost-effective at 3 years; savings by 10 years
- Fewer procedures, fewer office visits

  Clear lens extraction can be considered

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IOP determined to be 30mmHg OD ad 32mmHg OS at a comprehensive eye examination

What is the mechanism for elevated intraocular pressure?

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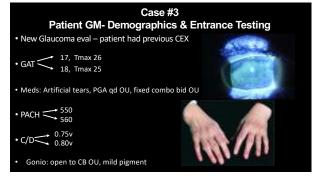
# What about the clonazepam? CONTRAINDICATIONS Klancoin should not be used in patients with a history of sensitivity to beuzedsarepures, nor in patients with clinical or biochemical evidence of significant liver diseise. It may be used in patients with open angle glascorns who are receiving appropriate therapy but is contraindicated in scate narrow angle glascorns.

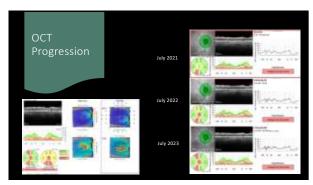
Now what?

I.Lower the pressure
Is this an acute emergency?
Medical therapy is NOT disease-modifying

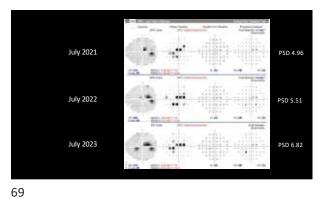
2. Arrange for cataract surgery?
How soon?

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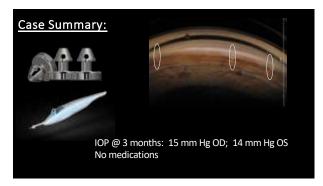


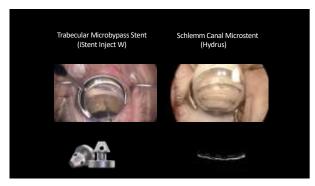


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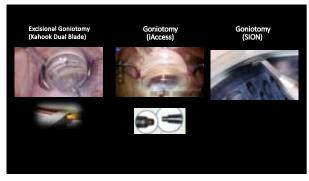






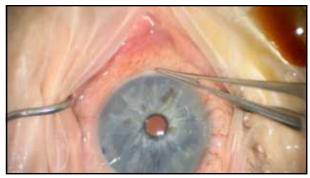




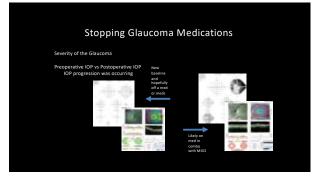


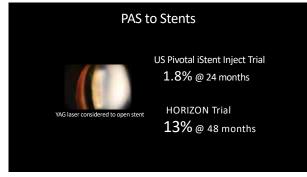




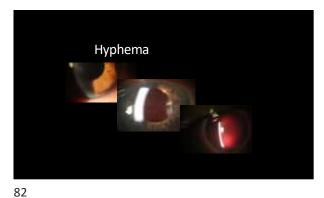


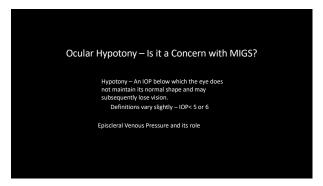














### STREAMLINING MEDICAL THERAPY

- 51 year old white male
- Diagnosis of pigmentary glaucoma left eye and pigment dispersion syndrome right
- Presents for second opinion; he is cautious about SLT—but wishes to "reduce medication load"
- Significant dryness-failed on an immunomodulator and serum tears
- Non-Hodgkin's lymphoma (2017), CMML (2023)
- History of bilateral LASIK
- Latanoprost QHS OU, dorzolamide-timolol BID OU, brimonidine BID OS
- IOP I7mmHg OD, 21mmHg OS

Peak IOP 27mmHg OD 33mmHg OS

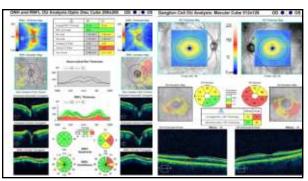
Gonioscopy: open to CBB 360 degrees OD and OS

• 3+ dense Sampaolesi line right eye; 4+ dense Sampaolesi line left eye

51YEAR OLD MALE

Flat iris approach

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RHO KINASE

- Rho kinase family includes proteins which regulate cell shape, motility, proliferation,
- Regulate smooth muscle contraction in the trabecular meshwork and
- May also affect ocular blood blow and retinal ganglion cell survival
- Role in cardiovascular procedures, corneal procedures
- Role in development of fibrosis

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### RHO KINASE INHIBITOR/NOREPINEPHRINE TRANSPORT INHIBITOR

- Increase trabecular outflow
- Lower episcleral venous pressure
- Netarsudil 0.02% (Rhopressa)
- Netarsudil/latanoprost 0.02%/0.005% (Rocklatan)
- QHS
- Hyperemia-most common effect
- Typically improves over time
  When do you see your patients back after altering medical therapy?
- Subconjunctival hemorrhage
   Less common (in clinical trials)-corneal verticillata
- Level of the epithelium

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### WHERE DO RHOPRESSA & ROCKLATAN FIT IN?

- Efficacy is similar to timolol 0.5% (BID)
- \*\*In clinical trials
- · Ideally a second line treatment
  - Seems to work better with low/moderate IOP (<25mmHg)
- · Advantage of once daily dosing vs. other typical second line medication

MORE phase 4 trial

Multicenter, prospective, open-label study No comparator; treated IOP =>20mmHg

Latanoprost, latanoprost + 1, latanoprost +2 Switch to netarsudil/latanoprost

Latanoprost → -4.9mmHg Latanoprost + I → -3.6mmHg Latanoprost +2 → -3.7mmHg

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51 year old male

IOP check on netarsudil/latanoprost QHS OU for 16 days OU

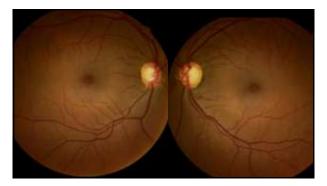
IOP 15mmHg OD 21mmHg OS

48 YEAR OLD FEMALE

- Recently relocated and presented to establish ongoing glaucoma care
- POAG OU (diagnosed about 15 years ago)
- Latanoprost QHS OU
- Dorzolamide-timolol BID OUBrimonidine BID OU
- IOP I0mmHg OD and OS
- CCT 477um/487um

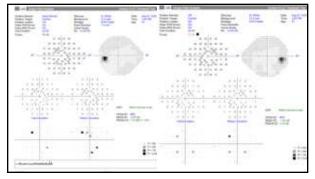
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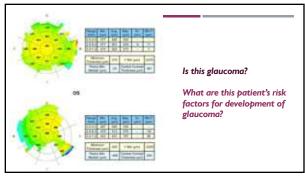
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### 48 YEAR OLD FEMALE

■ Now what?

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- Discontinue medication?
- What is the risk of continuing therapy?

### Discontinuation of therapy

Step-wise, logical approach

1.Stop dorzolamide-timolol IOP 15/15mmHg

2. Stop brimonidine IOP 17/18mmHg

3. Stop latanoprost IOP 29/28mmHg

## Discontinuation of therapy

4. Diagnose ocular hypertension

5. Restart latanoprost → switch to latanoprostene bunod 0.024% 14mmHg OD 13mmHg OS

### **Bottom line**

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Set reasonable expectations for yourself

Of what someone can manage

Of effectiveness of therapy Of the disease process

Individualize management.

Take the time that you need to establish a diagnosis, determine effectiveness of treatment, and determine progression