Decisions in the Medical Management of Glaucoma

Robert P. Wooldridge, OD, FAAO

Disclosure

- Speakers Bureau for Aerie, Novartis, Allergan, Bausch & Lomb, Glaukos, Ivantis, Optovue, Reichert, Synemed
- Investor: Nanodropper

When to Begin Treatment

Risk Assessment

- IOP
- Central Corneal Thickness (CCT)
- C/D ratio
- Ocular Perfusion Pressure (OPP)
- Corneal hysteresis
- Age
- Race
- Family history

Relationship Between Ocular Parameters and Progression to POAG

	High Risk	Moderate Risk	Low Risk
IOP (mm Hg)	>25.75	>23.75 to ≤25.75	≤23.75
CCT (μm)	≤555	>555 to ≤588	>588
Vertical C/D	≥0.5	>0.3 to <0.5	≤0.3

Adapted from Gordon MO et al. *Arch Ophthalmol*. 2002;120:714-720.

OHTS/EGPS 5-Year Risk Calculator

FACTORS						
? Age 55	RIGHT EYE MEASUREMENTS			LEFT EYE MEASUREMENTS		
	1st	2nd	3rd	1st	2nd	3rd
? Untreated Intraocular Pressure *(mm Hg)*	25	25	25	25	25	25
? Central Corneal Thickness *(microns)*	555	555	555	555	555	555
? Vertical Cup to Disc Ratio by Contour	0.50			0.50		
? Pattern Standard Deviation (◉ Humphrey *(dB)* ○ Octopus loss variance *(dB)*)	2.0	2.0		2.0	2.0	

Print Reset

15.1%

The patient's estimated 5-year risk (%) of developing glaucoma in at least one eye.

Gordon MO, Torri V et al; *Ophthalmology*. 2007;114(1):10-19.

Baseline Information

- IOP (at least 2, am and pm)
- Visual fields (2 within first 6 months)
- Stereo disc photos
- Central Corneal Thickness (CCT)
- Gonioscopy
- OCT/HRT

Initial Evaluations

- First Visit
  - Comprehensive Examination
  - Visual field
  - Optic nerve photos
- Second Visit
  - Intermediate exam
  - NFL Analysis
  - Gonioscopy
  - Initiate treatment

Damage Assessment

- Structural
  - Disc damage on examination
    - Dilation still necessary!
    - Cupping>pallor
    - Disc hems
  - Disc photos
    - Still important!
  - OCT NFL and ganglion cell complex (GCC)
- Functional
  - Visual fields

Eidon True-Color Confocal Retinal Imager

Technical Specs

- Non-mydriatic (min pupil 2.5 – 3 mm)
- Field of View: 60° (horizontal) x 55° (vertical)
- 14 Mpix CMOS sensor (4608 x 3288)
- Visible light spectrum 440 to 650 nm
- Infrared light spectrum 825 – 870 nm
- Spherical correction -12D and +15D
- Internal fixation movable across the whole field, for automated multi-field examinations

Advantages of Confocal Scanner

- Better resolution and contrast
- Imaging through cataract and media opacities
- No dilation
- No optic disc bleaching
- True color

White Light

Infrared

OD – Same patient, same day

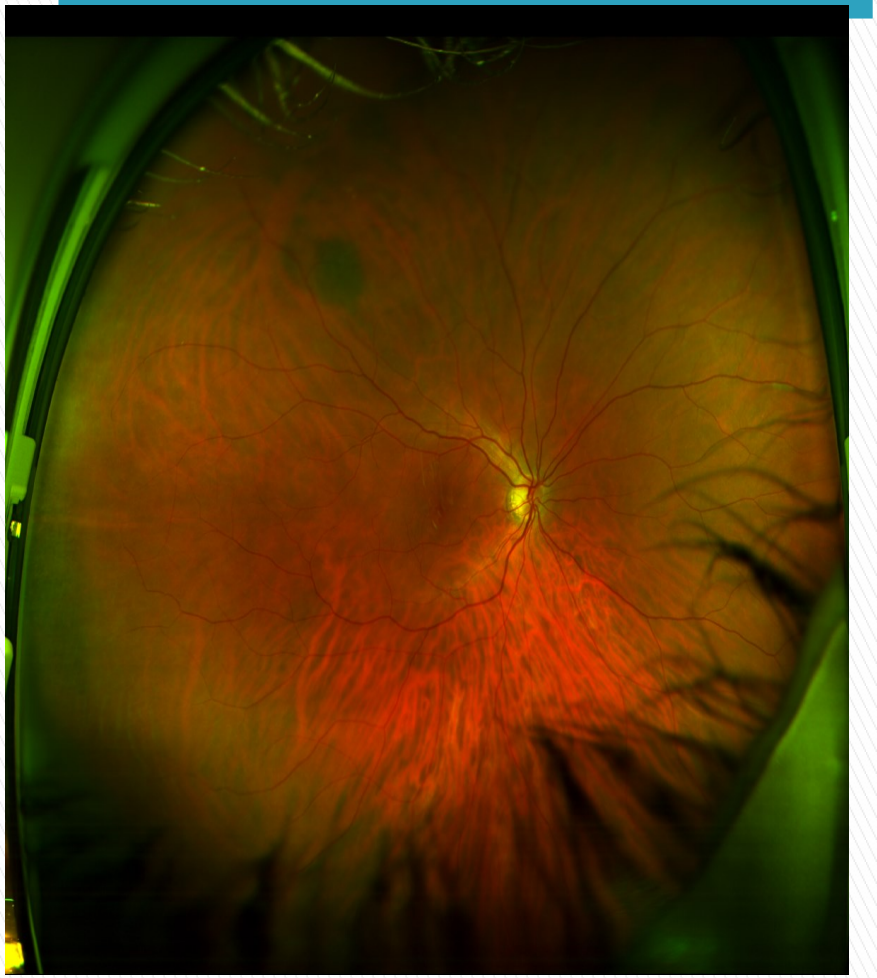
Optos Daytona

CenterVue EIDON

Images courtesy of Jon Scott, OD, Battleground Eye Care, Greensboro, North Carolina

OD – Same patient, same day

Optos Daytona



CenterVue EIDON

Images courtesy of Jon Scott, OD, Battleground Eye Care, Greensboro, North Carolina

Glaucoma Progression Analysis

Agreement Among Glaucoma Specialists in Assessing Progressive Disc Changes From Photographs in OAG Patients

- 3 glaucoma specialists looked at stereophotos of 164 eyes
- Interobserver agreement was slight to fair
- After masked adjudication, in 40% of the cases in which the optic disc appeared to have progressed in glaucoma severity, the photograph of the "worse" optic disc was in fact taken at the start of the study.
- "Caution must be exercised when using disc change on photographs as the "gold standard" for diagnosing open-angle glaucoma or determining its progression."

Jampel HD, Friedman D et al AJO 2009; 147(1): 39-44

Knowledge of chronology of optic disc stereophotographs influences the determination of glaucomatous change

- Two sets of stereo disc photos presented to three glaucoma specialists
  - Photographs of patients enrolled in the Advanced Glaucoma Intervention Study and Collaborative Initial Glaucoma Treatment Study studies from Wills Eye Hospital
  - Five year interval between photos
- Evaluated for glaucomatous progression each time
- First presented in chronologic order with dates shown
- Presented again three months later with order shuffled so observers did not know sequence

Altangerel U, Bayer, A et al Oph 2005 Jan; 112(1): 40-3

Results

- Intraobserver agreement between chronologically masked and unmasked readings was 61%, 64%, and 71% for the 3 observers, respectively
- The number of cases identified as having deteriorated was significantly higher (101 vs. 54) when the observer knew the chronological order with which the photographs were taken (P=0.007)
- **CONCLUSIONS**:
  - When disc photographs are read with knowledge of the chronology with which they were obtained, the observations differ considerably from when the readings are made without this knowledge.

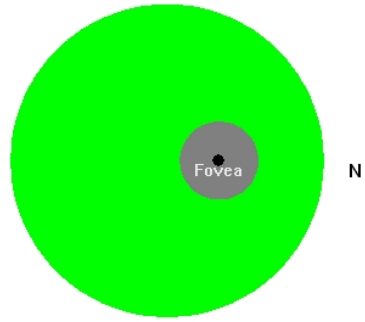
Heather B

- Currently 57yo WF
- Followed for NTG since 2009
- Pre-treatment IOP OD 18 OS 19
- CCT R 595 L 611
- Monitored without treatment 2009-2011
- On constant medical treatment since 2011
- S/P SLT OU 2017

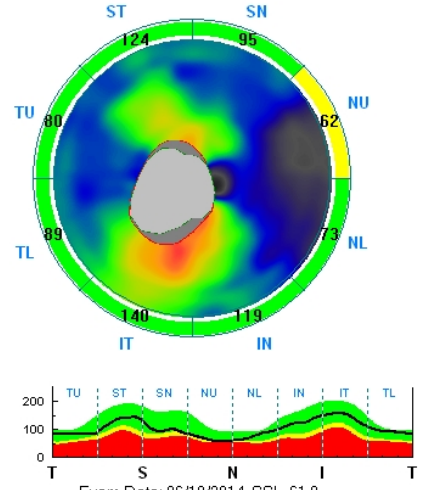
2014

OD

GCC Significance



Optic Nerve Head Map



Exam Date: 06/10/2014, SSI= 71.1

Exam Date: 06/10/2014, SSI= 61.8

RNFL Parameters	OD	OS
Avg. RNFL	97.81	96.15
Sup. Avg	90.26	92.95
Inf. Avg	105.35	99.36

Nerve Head Parameters	OD	OS
Rim Volume (mm³)	0.025	0.108
Nerve Head Vlm (mm³)	0.046	0.182
Cup Volume (mm³)	0.531	0.184

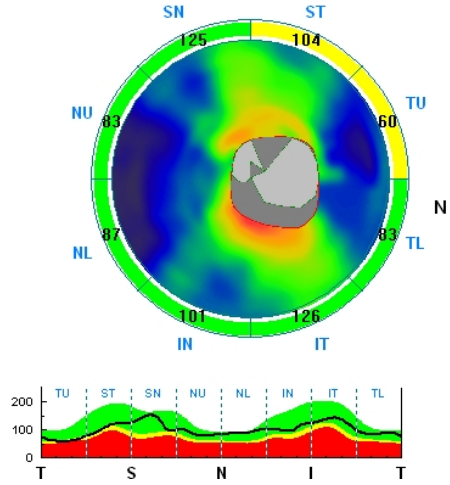
Nerve Head Parameters	OD	OS
Optic Disk Area (mm²)	2.05	2.15
Cup/Disc Area Ratio	0.82	0.56
Horizontal C/D Ratio	1.00	0.98
Vertical C/D Ratio	0.83	0.77
Rim Area (mm²)	0.37	0.96
Cup Area (mm²)	1.68	1.20

p>5% Within Normal
p<5% Borderline
p<1% Outside Normal

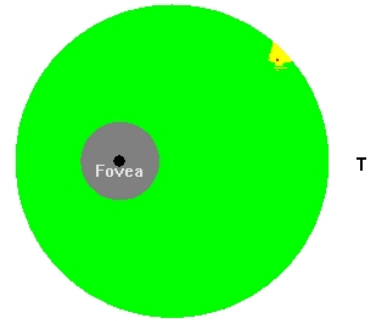
GCC Parameters	OD	OS
Avg. GCC(µm)	96.93	95.32
Sup. GCC(µm)	95.26	94.77
Inf. GCC(µm)	98.61	95.87
FLV (%)	0.054	0.486
GLV (%)	1.680	2.925

OS

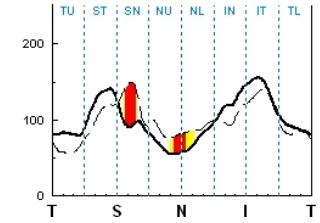
Optic Nerve Head Map



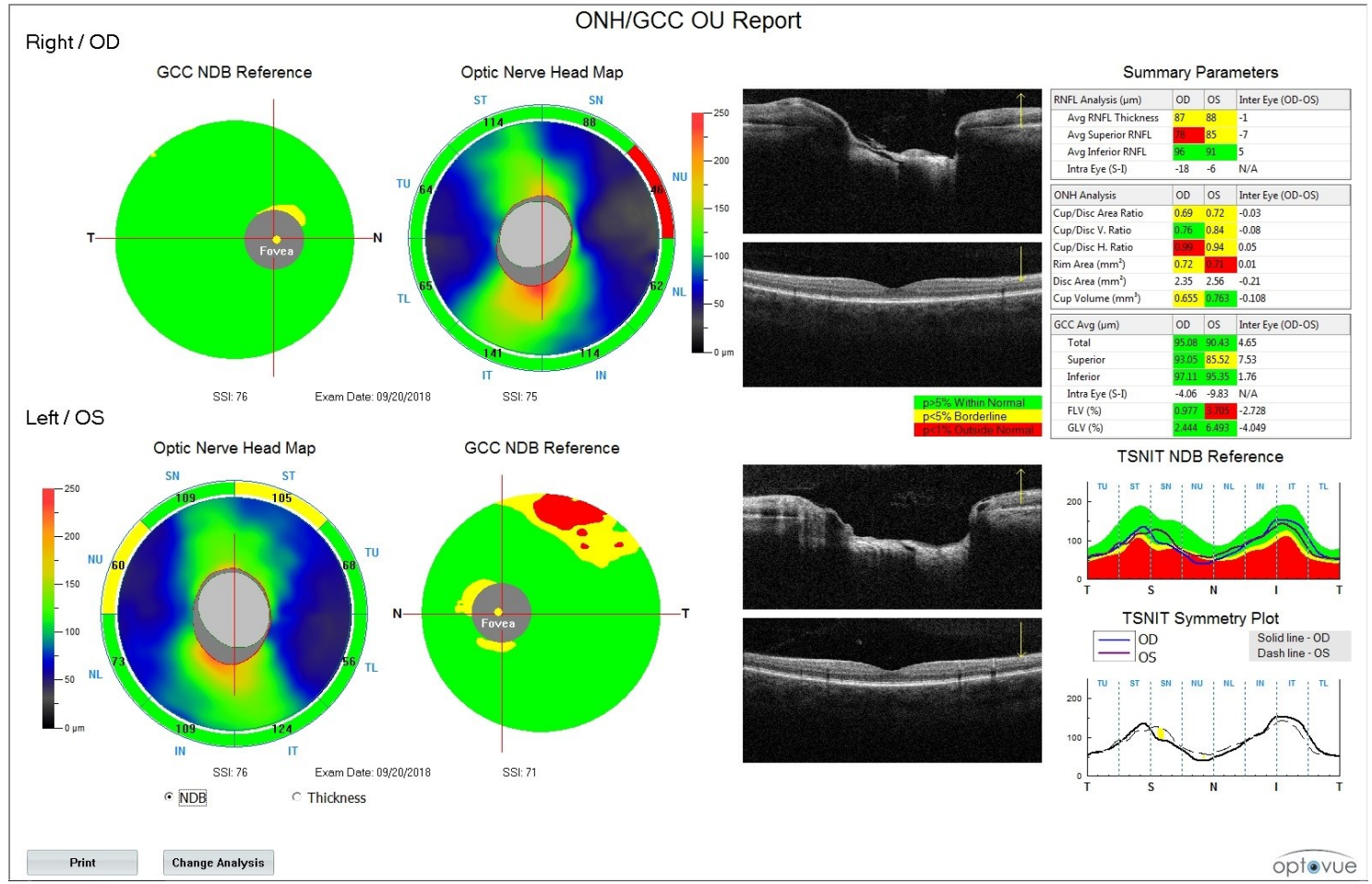
GCC Significance



Solid line - OD
Dash line - OS



Heather 2019

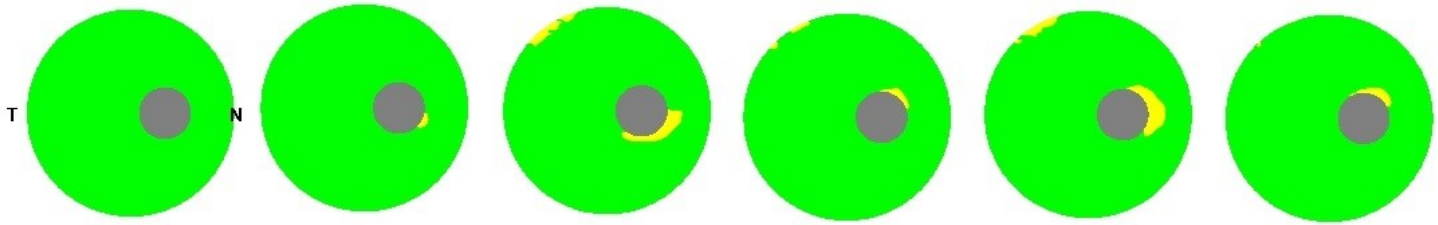


Nerve Fiber ONH/GCC Change Analysis

Right / OD

GCC NDB Reference

NDB Thickness



Visit Date: 12/19/13 (48.1)
SSI = 79 (GCC) / 76 (ONH)

Visit Date: 06/10/14 (48.6)
SSI = 71 (GCC) / 62 (ONH)

Visit Date: 08/31/16 (50.8)
SSI = 83 (GCC) / 73 (ONH)

Visit Date: 12/12/17 (52.1)
SSI = 86 (GCC) / 90 (ONH)

Visit Date: 01/16/18 (52.2)
SSI = 85 (GCC) / 86 (ONH)

Visit Date: 09/20/18 (52.8)
SSI = 76 (GCC) / 75 (ONH)

Within Normal
Borderline
Outside Normal

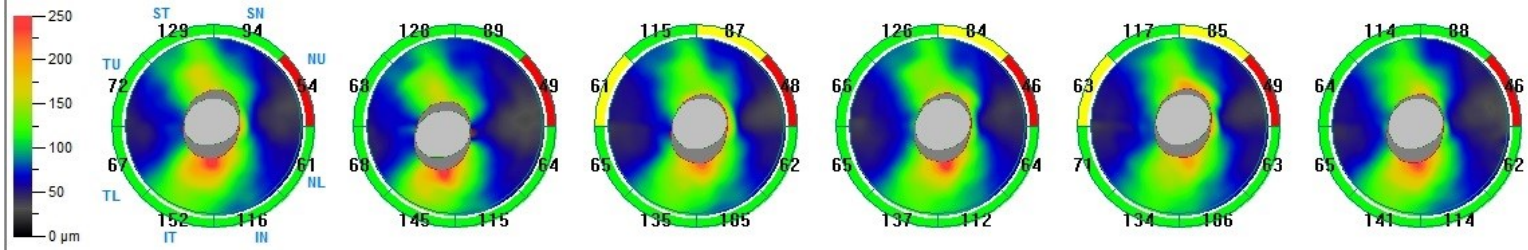
12/19/13
06/10/14
08/31/16
12/12/17
01/16/18
09/20/18

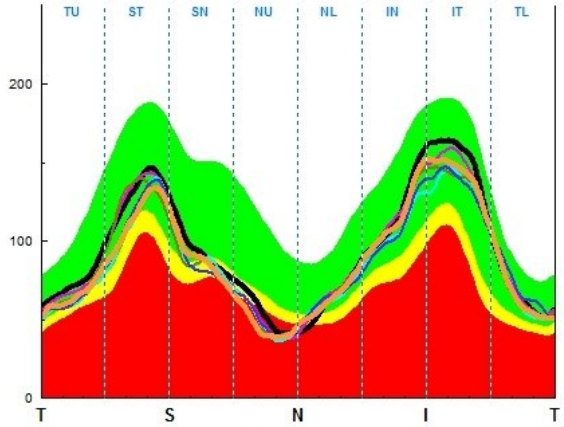
Comparison to NDB

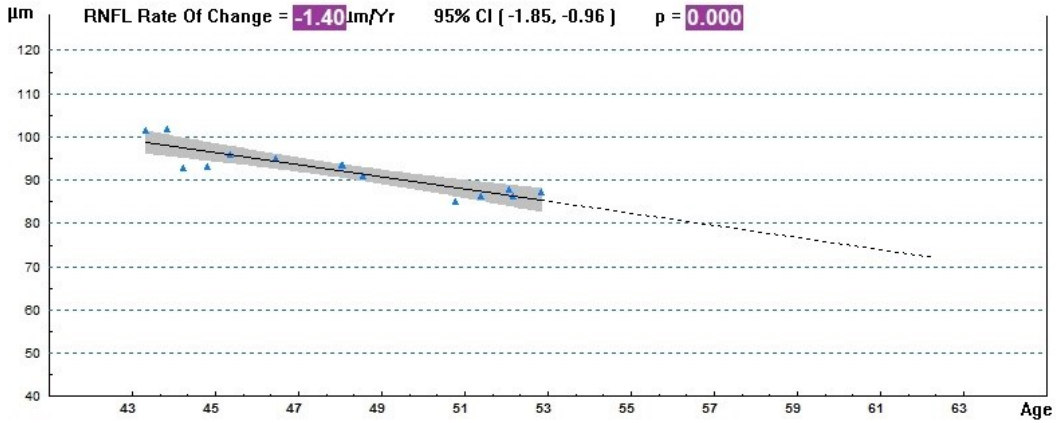
GCC Parameters	12/19/13	09/20/18
Total	102	95
Superior	101	93
Inferior	103	97
FLV (%)	0.562	0.977

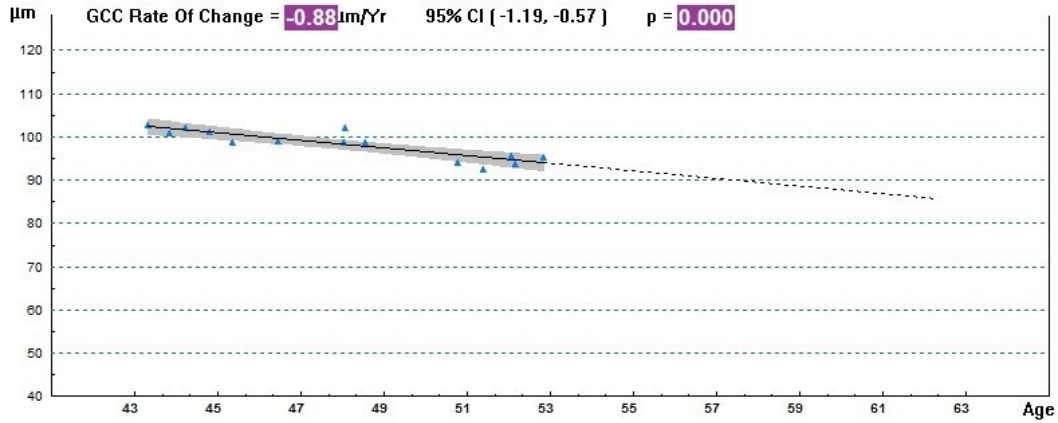
RNFL Parameters	12/19/13	09/20/18
Average_RNFL	93	87
Sup_RNFL	87	78
Inf_RNFL	99	96
H. C/D	0.97	0.99
V. C/D	0.72	0.76
Rim Area	0.84	0.72

RNFL Analysis









Print Change Analysis OU Report

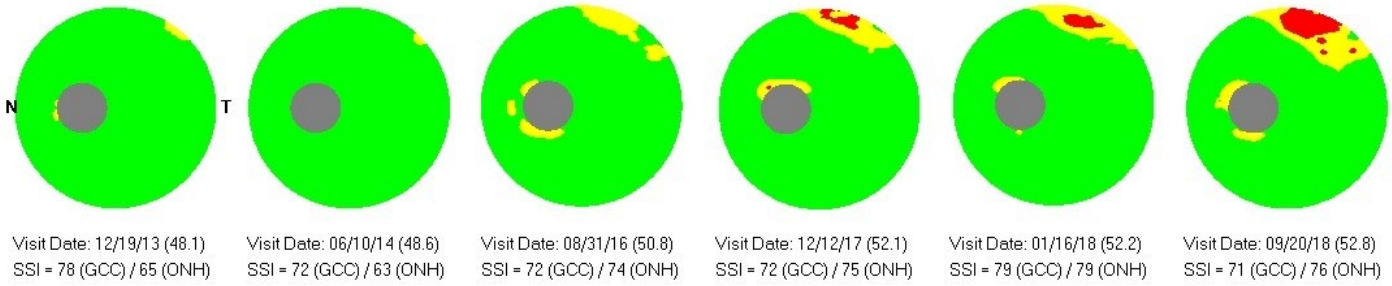
optovue

Nerve Fiber ONH/GCC Change Analysis

Left / OS

GCC NDB Reference

(•) NDB ( ) Thickness



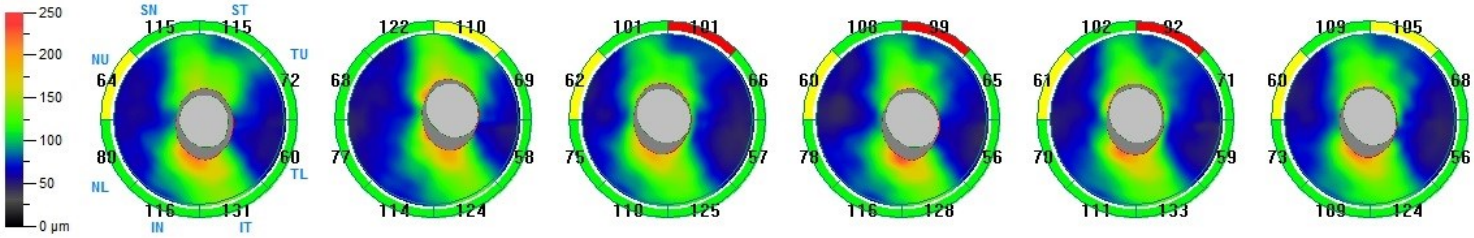
Within Normal
Borderline
Outside Normal

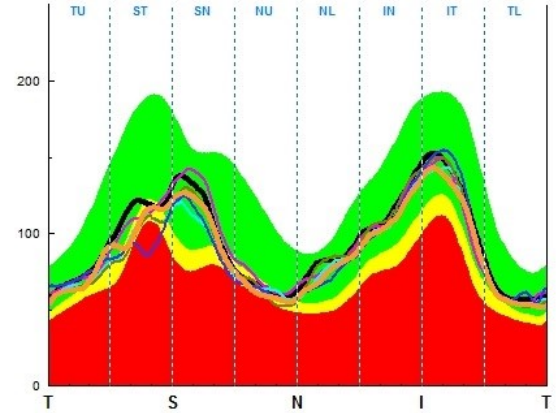
12/19/13
06/10/14
08/31/16
12/12/17
01/16/18
09/20/18

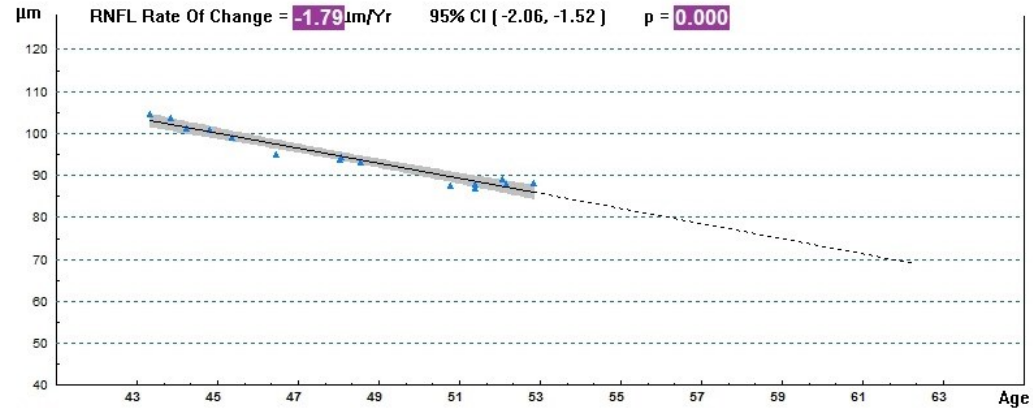
Comparison to NDB

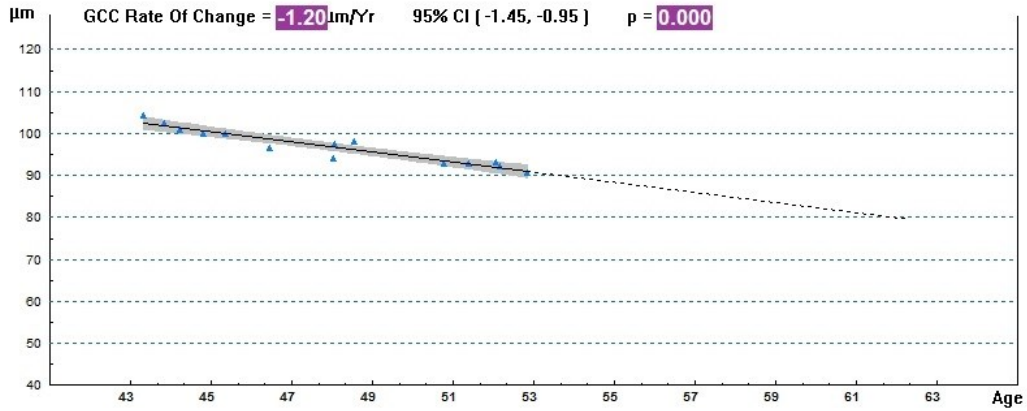
GCC Parameters	12/19/13	09/20/18
Total	97	90
Superior	96	86
Inferior	99	95
FLV (%)	0.947	3.705
RNFL Parameters	**12/19/13**	**09/20/18**
Average_RNFL	94	88
Sup_RNFL	91	85
Inf_RNFL	97	91
H. C/D	0.90	0.94
V. C/D	0.78	0.84
Rim Area	0.96	0.71

RNFL Analysis









Print | Change Analysis | OU Report

optovue

Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 5/14 xx
False POS Errors: 0 %
False NEG Errors: 9 %
Test Duration: 05:07

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 4.1 mm
Visual Acuity:
RX: +2.25 DS DC X

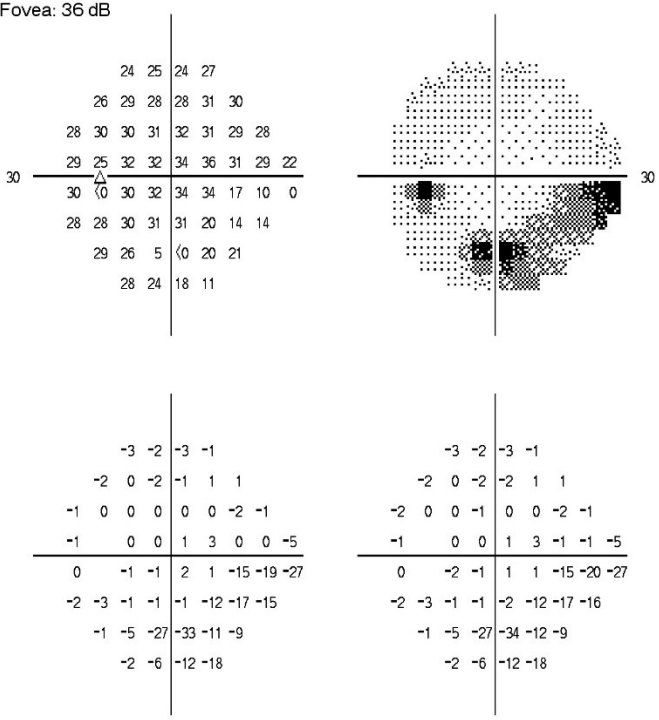
Date: 02-13-2019
Time: 1:16 PM
Age: 53

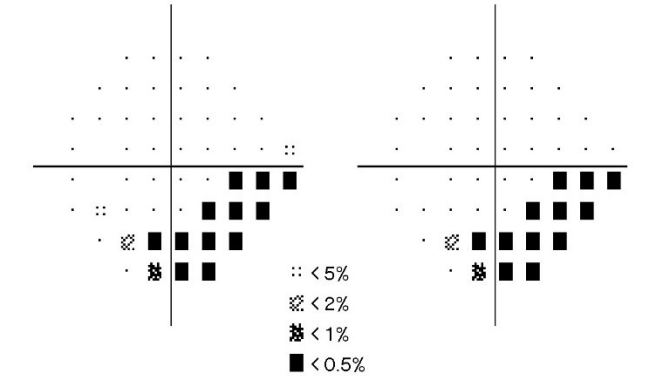
*** Low Test Reliability ***

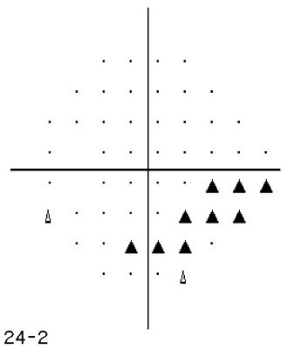
GHT: Outside Normal Limits

VFI 90%
MD -4.86 dB P < 0.5%
PSD 8.93 dB P < 0.5%

Fovea: 36 dB







24-2
Likely Progression

See GPA printout for complete analysis

Baseline Exams:
02-23-2009 03-15-2010
Previous Follow-up Exams:
09-07-2017 05-03-2018

P < 5% Deterioration
P < 5% (2 consecutive)
P < 5% (3+ consecutive)
X Out of Range

EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-2
WWW.EYEFOUNDATION.COM

ation Monitor: Gaze/Blind Spot
ation Target: Central
ation Losses: 4/16 xx
se POS Errors: 2 %
se NEG Errors: 5 %
t Duration: 05:34

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 4.0 mm
Visual Acuity:
RX: +2.25 DS DC X

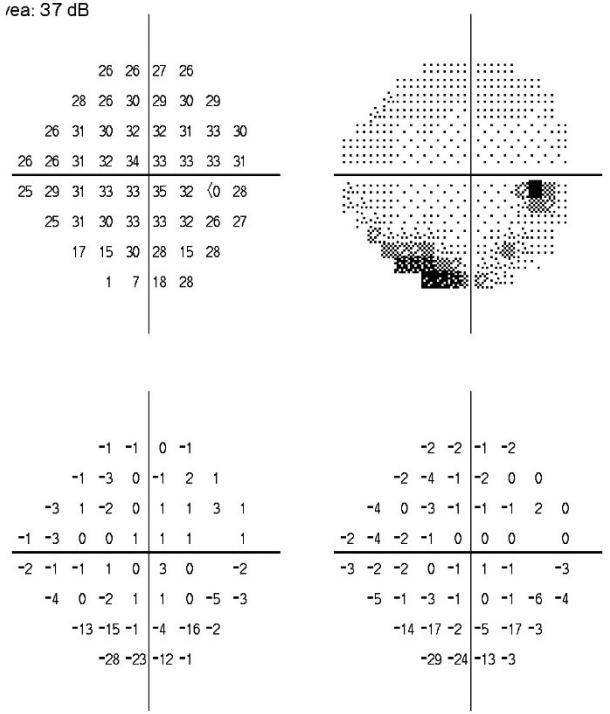
Date: 02-13-2019
Time: 1:07 PM
Age: 53

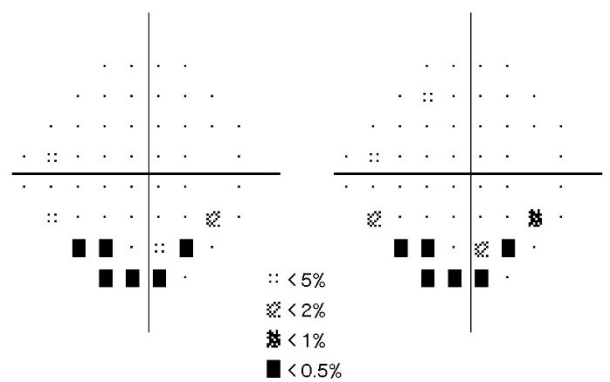
*** Low Test Reliability ***

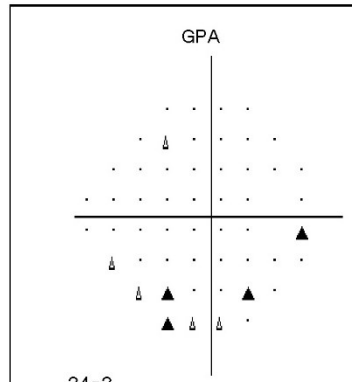
GHT: Outside Normal Limits

VFI 94%
MD -2.30 dB P < 5%
PSD 6.45 dB P < 0.5%

ea: 37 dB







24-2
Likely Progression

See GPA printout for complete analysis

Baseline Exams:
02-23-2009 03-15-2010
Previous Follow-up Exams:
09-07-2017 05-03-2018

P < 5% Deterioration
P < 5% (2 consecutive)
P < 5% (3+ consecutive)
X Out of Range

EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE 1
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-26
WWW.EYEFOUNDATION.COM

Heather

- Slowly progressive glaucoma despite aggressive medical therapy and SLT OU
- With good IOP control!
- Felt to be compliant
- Resistant to having surgery

More tests of your skills!

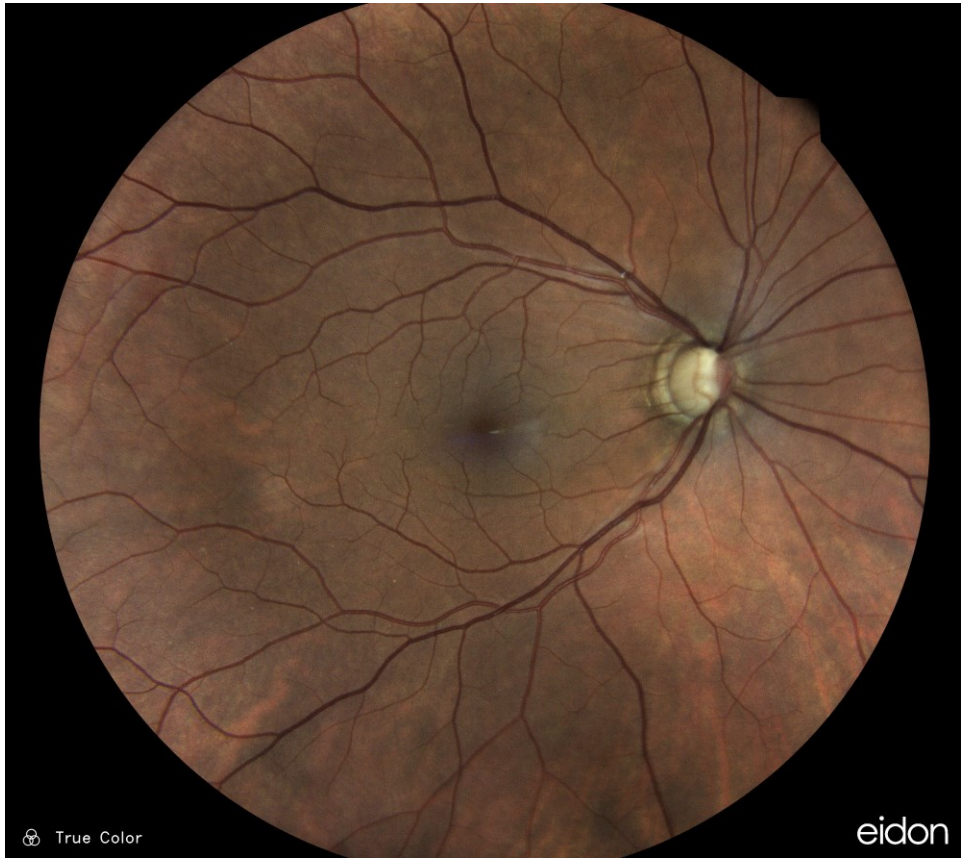
Heather 2.20.23

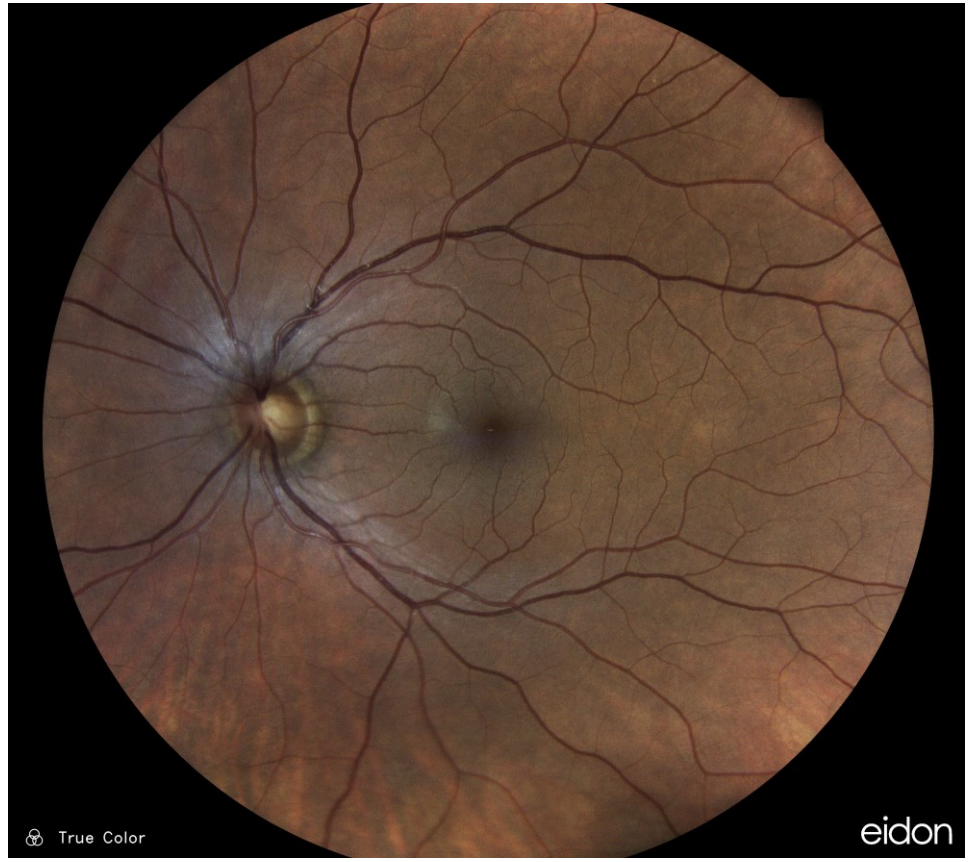
- 34yo WF referred for glaucoma evaluation
- Referring doctor said recent photos showed drastic change in Rt. Nerve compared to 1 year ago
- C/O foggy vision OD with patchy spots above and below central fixation
- Notes good VA OS
- + FH of glaucoma in great grandmother

Heather 2.20.23

- VA CL R 20/25 L 20/15
- IOP R 50 L 43
- ORA R 56.7 CH 2.4
- L 47.6 CH 4.4
- CCT R 562 L 565
- SLE NL, quiet OU
- DFE as seen

2.20.23



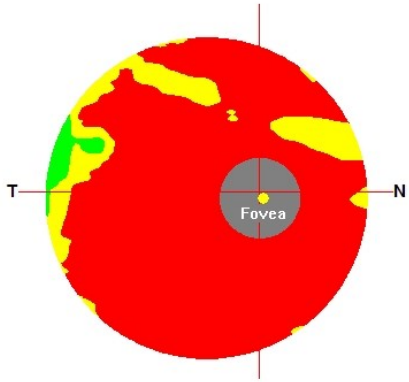


2.20.23

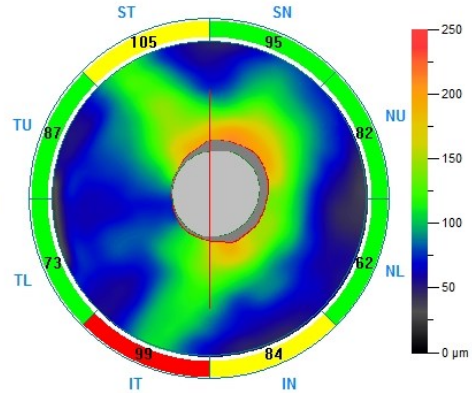
ONH/GCC OU Report

Right / OD

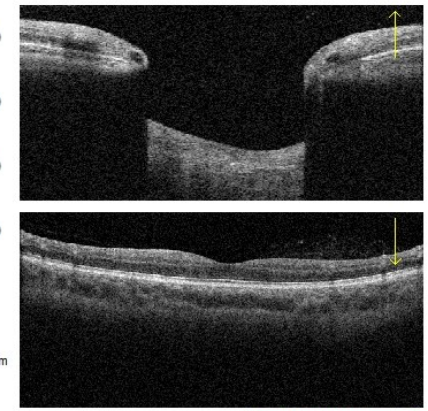
GCC NDB Reference



Optic Nerve Head Map



SSI: 58 Exam Date: 02/20/2023 SSI: 59



p>5% Within Normal
p<5% Borderline
p<1% Outside Normal

Summary Parameters

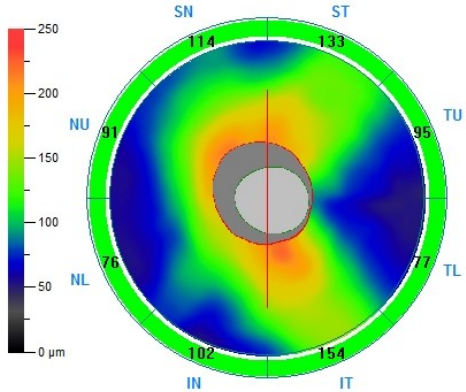
RNFL Analysis	OD	OS	Inter Eye (OD-OS)
Average RNFL (µm)	86	105	-19
Superior RNFL (µm)	92	108	-16
Inferior RNFL (µm)	79	102	-23
Intra Eye (S-I) (µm)	13	6	N/A

ONH Analysis	OD	OS	Inter Eye (OD-OS)
Cup/Disc Area Ratio	0.76	0.49	0.27
Cup/Disc V. Ratio	0.86	0.67	0.19
Cup/Disc H. Ratio	0.93	0.76	0.17
Rim Area (mm^2)	0.45	1.00	-0.55
Disc Area (mm^2)	1.88	1.95	-0.07
Cup Volume (mm^3)	1.103	0.521	0.582

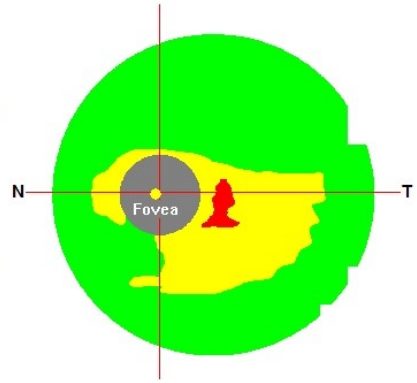
GCC Analysis	OD	OS	Inter Eye (OD-OS)
Average GCC (µm)	63	88	-25
Superior GCC (µm)	68	87	-19
Inferior GCC (µm)	58	88	-30
Intra Eye (S-I) (µm)	10	-1	N/A
FLV (%)	7.91	2.60	5.31
GLV (%)	32.63	9.21	23.42

Left / OS

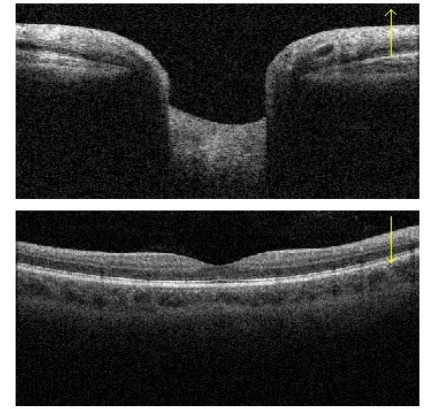
Optic Nerve Head Map



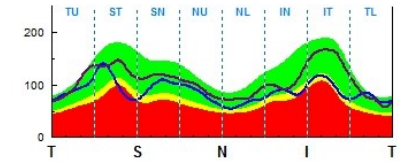
GCC NDB Reference



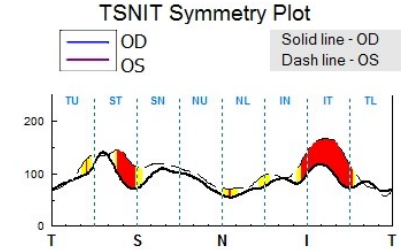
SSI: 59 Exam Date: 02/20/2023 SSI: 66



TSNIT NDB Reference



TSNIT Symmetry Plot



NDB Thickness

Print

OPTOVUE

Heather 2.20.23 Plan

- Diamox 500mg, Lumigan given in office
- Rx Rocklatan QHS, Simbrinza BID, Combigan BID samples given
- See referring OD in a few days
- RTC 1 week

2.27.23

- VA R 20/25 L 20/15
- IOP R 17 L 11
- ORA R 18. 4 L 12.7
- CH R 8.9 L 12.6

- March-April 2023
- OD SLT 360 performed
- OS SLT 180 performed (so far)

2.27.23

ID: 1988.0523.05DC.ADE6.A7D6.A346

Central 24-2 Threshold Test

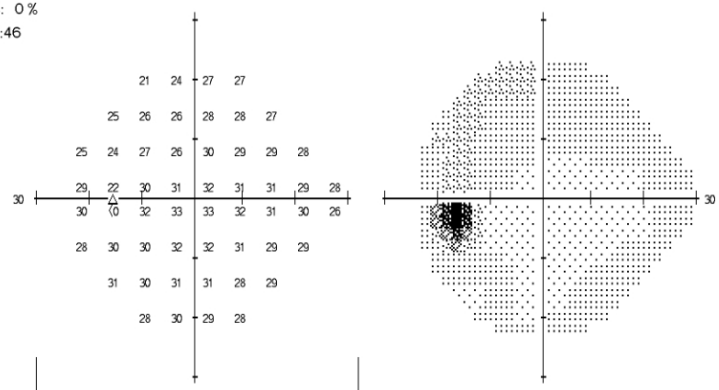
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 0/10
False POS Errors: 7 %
False NEG Errors: 0 %
Test Duration: 02:46

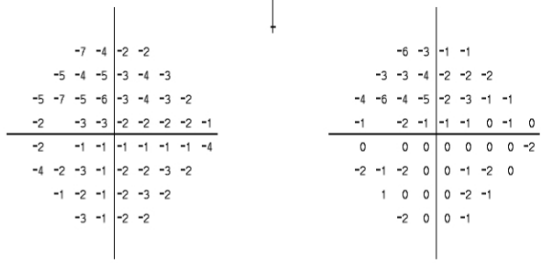
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Fast

Pupil Diameter:
Visual Acuity:
RX: +3.00 DS DC X

Date: 02-27-2023
Time: 7:08 AM
Age: 34

Fovea: 38 dB





Total Deviation

Pattern Deviation

GHT
Within Normal Limits

VFI 98%

MD -2.67 dB P < 2%
PSD 1.52 dB

:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%

EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE 101
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-262-9216
WWW.EYEFOUNDATION.COM

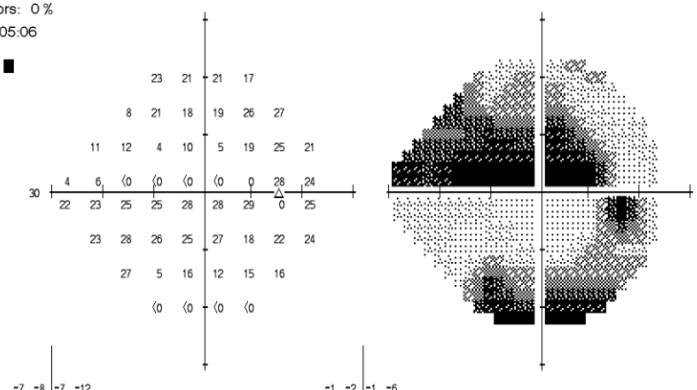
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 1/14
False POS Errors: 0 %
False NEG Errors: 0 %
Test Duration: 05:06

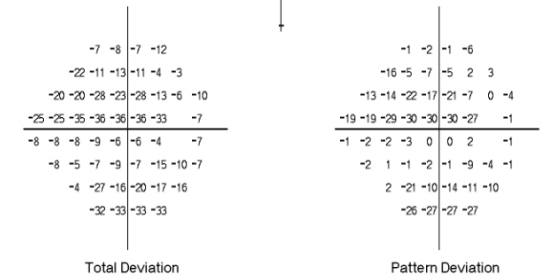
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Fast

Pupil Diameter:
Visual Acuity:
RX: +3.00 DS DC X

Date: 02-27-2023
Time: 7:00 AM
Age: 34

Fovea: 30 dB ■





Total Deviation

Pattern Deviation

GHT
Outside Normal Limits

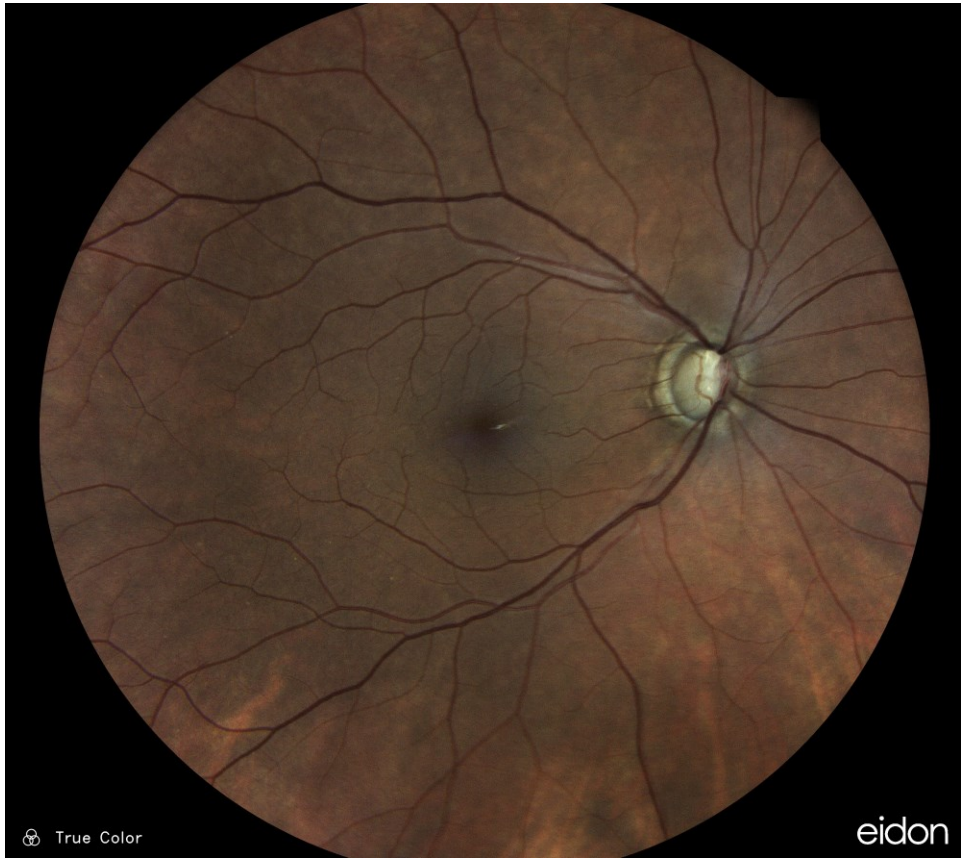
VFI 56%

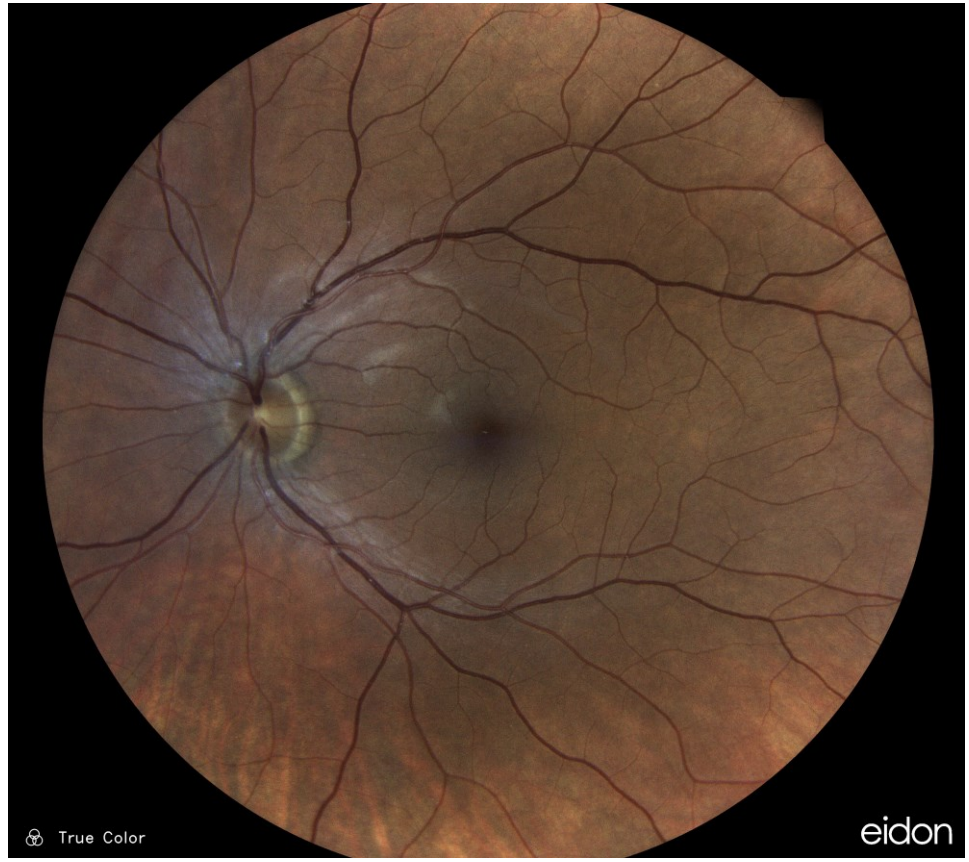
MD -16.77 dB P < 0.5%
PSD 11.49 dB P < 0.5%

:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%

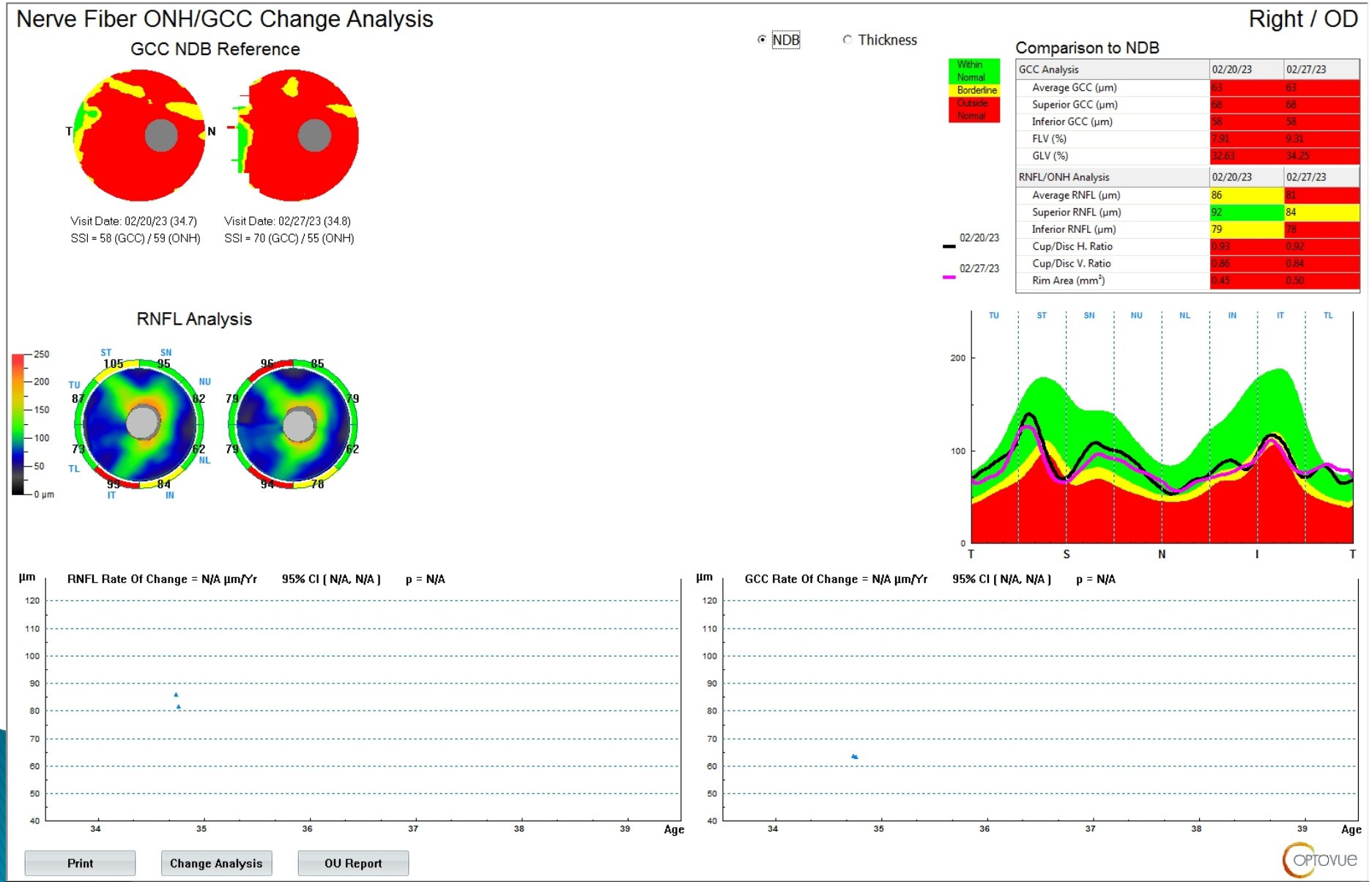
EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE 101
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-262-9216
WWW.EYEFOUNDATION.COM

2.27.23





2.27.23 Progression Analysis OD



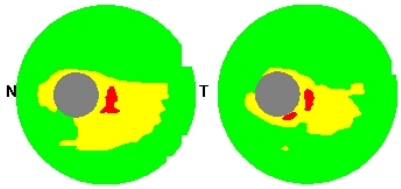
2.27.23 Progression Analysis OS

Nerve Fiber ONH/GCC Change Analysis

Left / OS

NDB Thickness

GCC NDB Reference



Visit Date: 02/20/23 (34.7)
SSI = 66 (GCC) / 59 (ONH)

Visit Date: 02/27/23 (34.8)
SSI = 60 (GCC) / 59 (ONH)

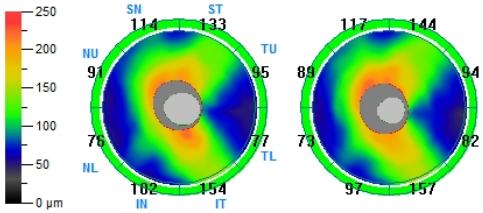
Within Normal
Borderline
Outside Normal

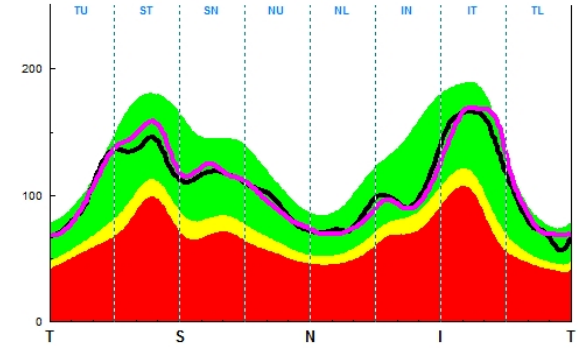
02/20/23
02/27/23

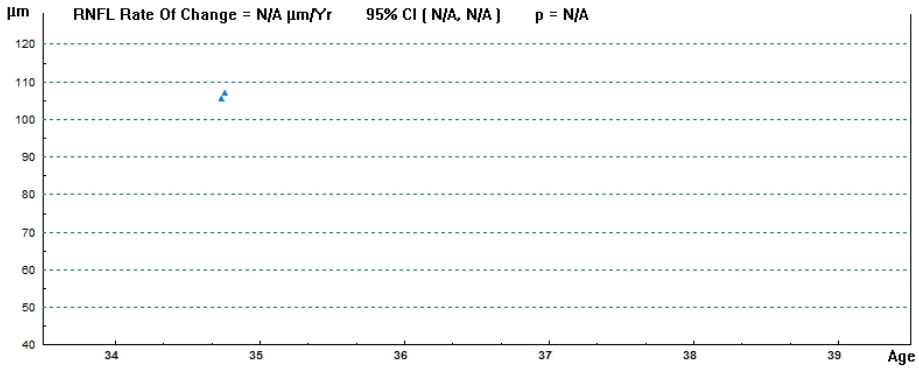
Comparison to NDB

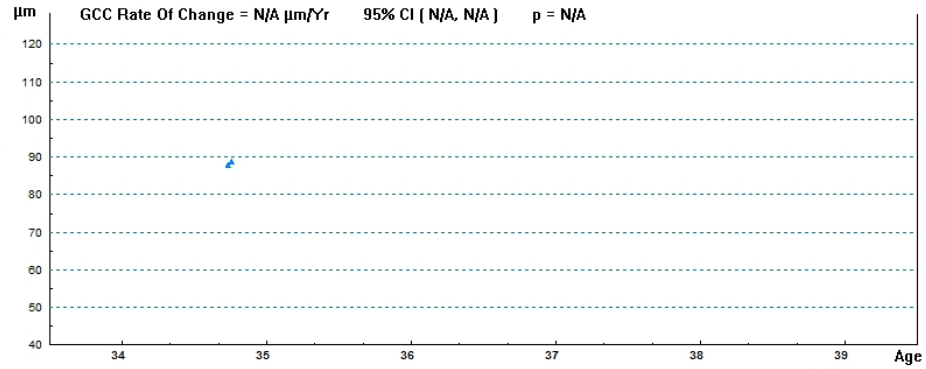
GCC Analysis	02/20/23	02/27/23
Average GCC (µm)	88	88
Superior GCC (µm)	87	88
Inferior GCC (µm)	88	89
FLV (%)	2.60	1.69
GLV (%)	9.21	8.00
RNFL/ONH Analysis	**02/20/23**	**02/27/23**
Average RNFL (µm)	105	107
Superior RNFL (µm)	108	111
Inferior RNFL (µm)	102	102
Cup/Disc H. Ratio	0.76	0.60
Cup/Disc V. Ratio	0.67	0.55
Rim Area (mm²)	1.00	1.36

RNFL Analysis









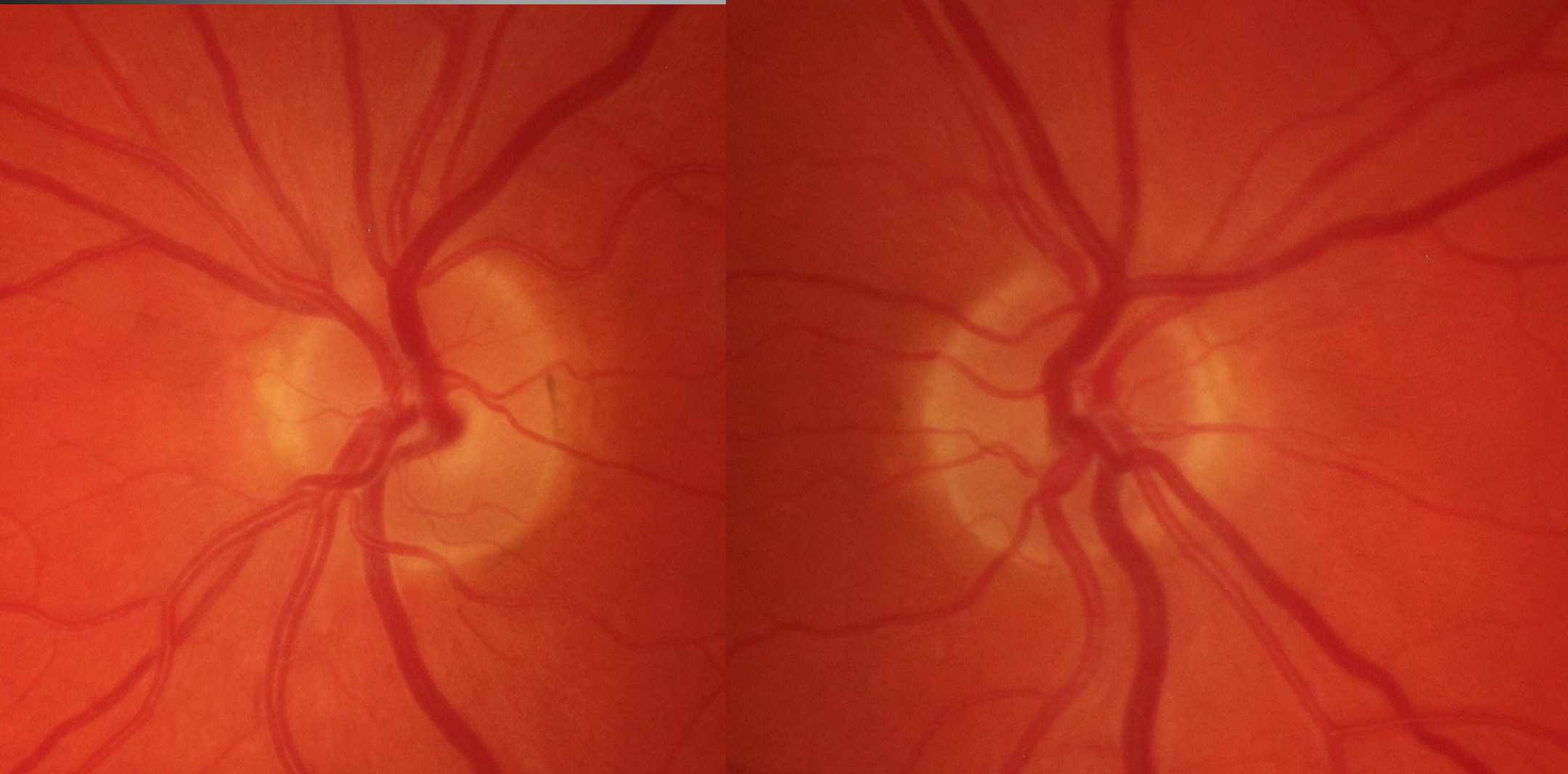
Print Change Analysis OU Report

OPTOVUE

5.2.23

- Patient now taking latanoprost, dorzolamide-timolol, brimonidine OU
- Rocklatan denied by insurance
- IOP R 26 L 22
- Plan:
  - Continue present meds
  - Complete SLT OU

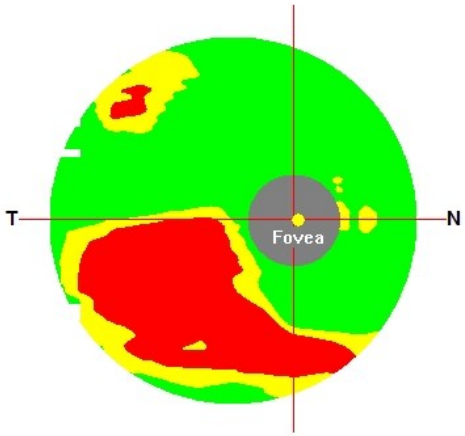
Chris B Glaucoma Suspect



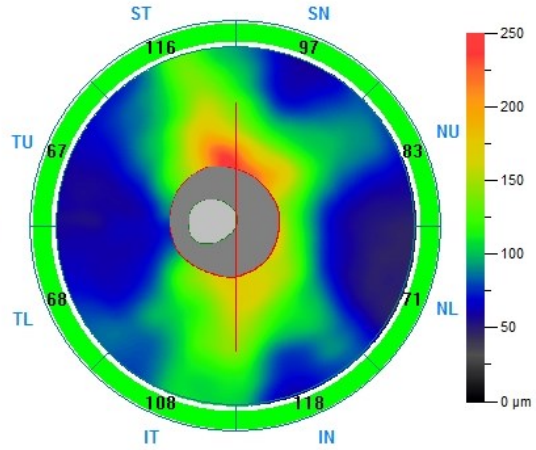
ONH/GCC OU Report

Right / OD

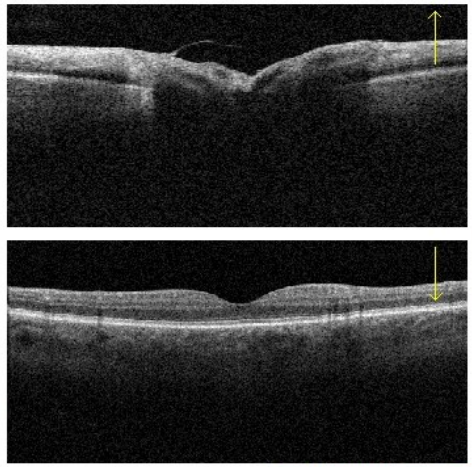
GCC NDB Reference



Optic Nerve Head Map



SSI: 56 Exam Date: 02/21/2018 SSI: 71



p>5% Within Normal
p<5% Borderline
p<1% Outside Normal

Summary Parameters

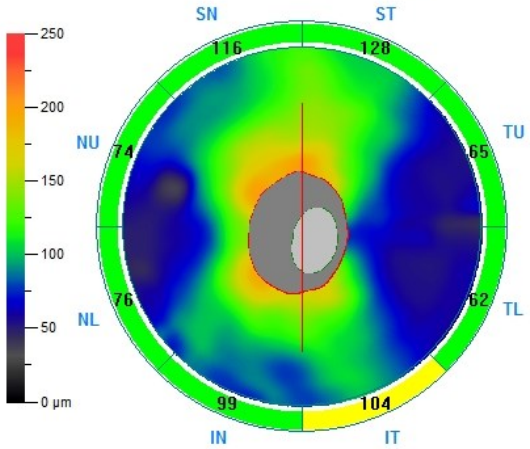
RNFL Analysis (µm)	OD	OS	Inter Eye (OD-OS)
Avg RNFL Thickness	91	91	0
Avg Superior RNFL	91	96	-5
Avg Inferior RNFL	91	85	6
Intra Eye (S-I)	0	11	N/A

ONH Analysis	OD	OS	Inter Eye (OD-OS)
Cup/Disc Area Ratio	0.17	0.23	-0.06
Cup/Disc V. Ratio	0.37	0.50	-0.13
Cup/Disc H. Ratio	0.43	0.42	0.01
Rim Area (mm^2)	1.47	1.36	0.11
Disc Area (mm^2)	1.77	1.76	0.01
Cup Volume (mm^3)	0.011	0.023	-0.012

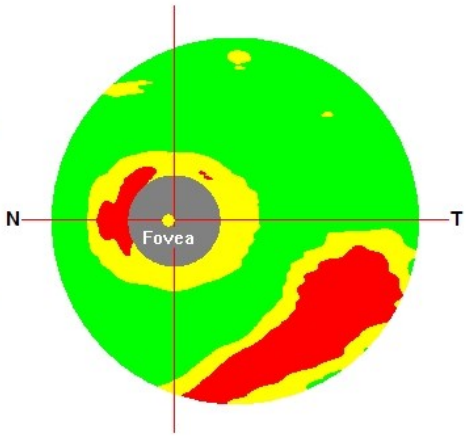
GCC Avg (µm)	OD	OS	Inter Eye (OD-OS)
Total	78.73	80.90	-2.17
Superior	82.39	82.77	-0.38
Inferior	75.08	79.02	-3.94
Intra Eye (S-I)	7.31	3.75	N/A
FLV (%)	5.707	3.108	2.599
GLV (%)	17.587	14.922	2.665

Left / OS

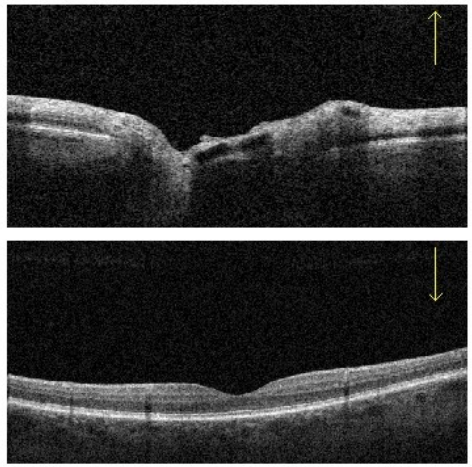
Optic Nerve Head Map



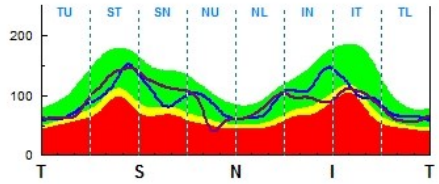
GCC NDB Reference



SSI: 72 Exam Date: 02/21/2018 SSI: 63



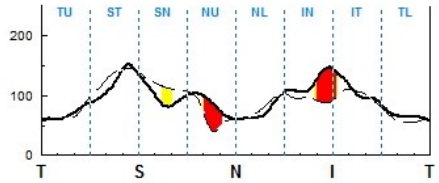
TSNIT NDB Reference



TSNIT Symmetry Plot

OD
OS

Solid line - OD
Dash line - OS



◉ NDB ○ Thickness

Print Change Analysis

optovue

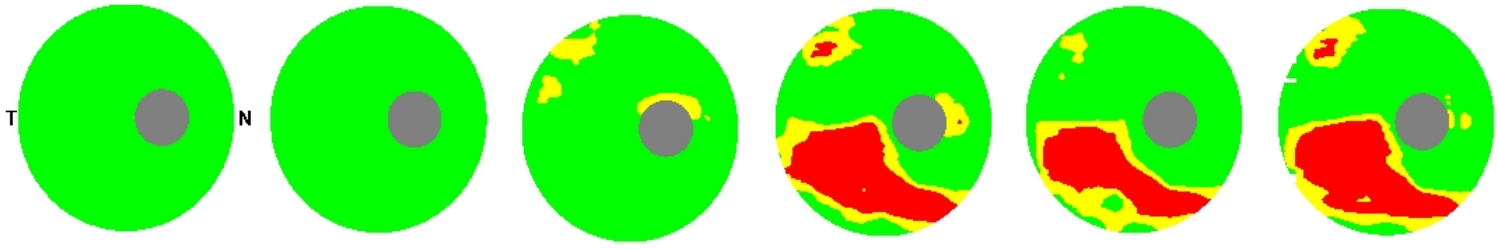
2013–2018

ve Fiber ONH/GCC Change Analysis

Right / O

GCC NDB Reference

NDB Thickness



Visit Date: 11/05/13 (62.4)
SSI = 49 (GCC) / 62 (ONH)

Visit Date: 11/05/13 (62.4)
SSI = 55 (GCC) / 47 (ONH)

Visit Date: 06/20/16 (65.0)
SSI = 45 (GCC) / 58 (ONH)

Visit Date: 04/05/17 (65.8)
SSI = 65 (GCC) / 56 (ONH)

Visit Date: 07/06/17 (66.1)
SSI = 46 (GCC) / 70 (ONH)

Visit Date: 02/21/18 (66.7)
SSI = 62 (GCC) / 70 (ONH)

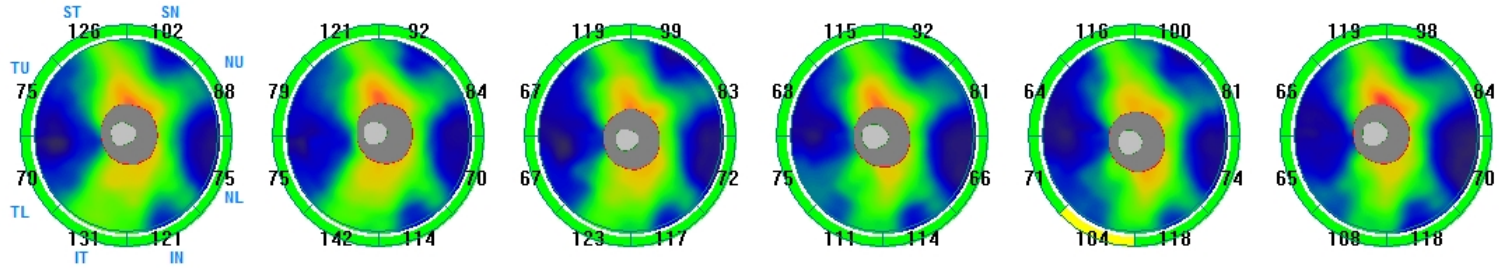
Within Normal
Borderline
Outside Normal

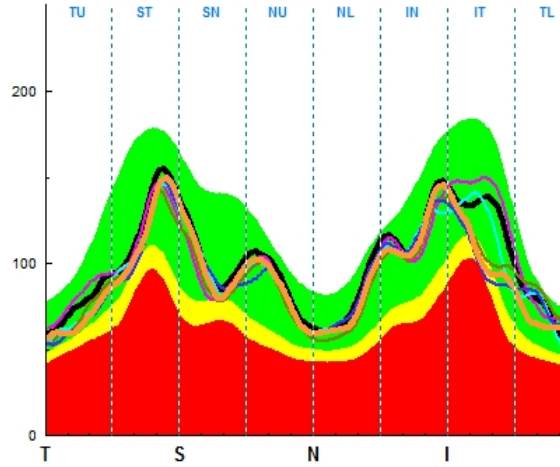
11/05/13
11/05/13
06/20/16
04/05/17
07/06/17
02/21/18

Comparison to NDB

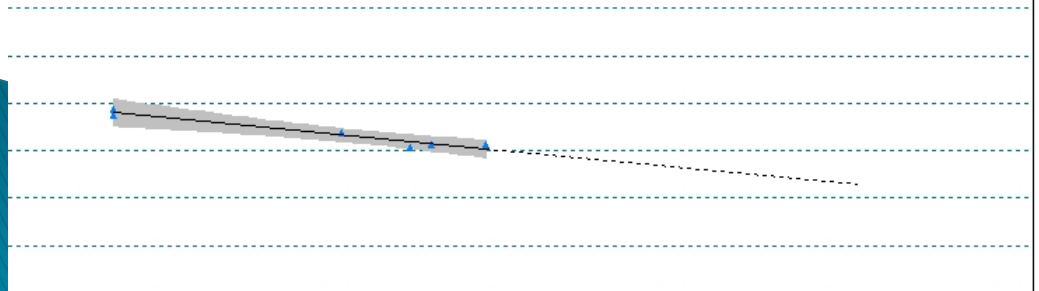
GCC Parameters	11/05/13	02/21/18
Total	89	79
Superior	86	82
Inferior	91	76
FLV (%)	0.036	5.460
RNFL Parameters	**11/05/13**	**02/21/18**
Average_RNFL	98	91
Sup_RNFL	97	92
Inf_RNFL	99	90
H. C/D	0.45	0.45
V. C/D	0.37	0.38
Rim Area	1.50	1.44

RNFL Analysis



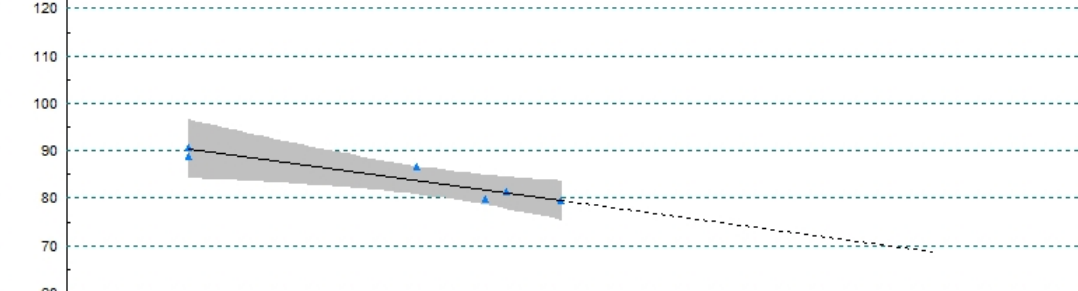


RNFL Rate Of Change = -1.77 µm/Yr 95% CI (-2.65, -0.89) p = 0.008



µm

GCC Rate Of Change = -2.53 µm/Yr 95% CI (-4.42, -0.64) p = 0.025



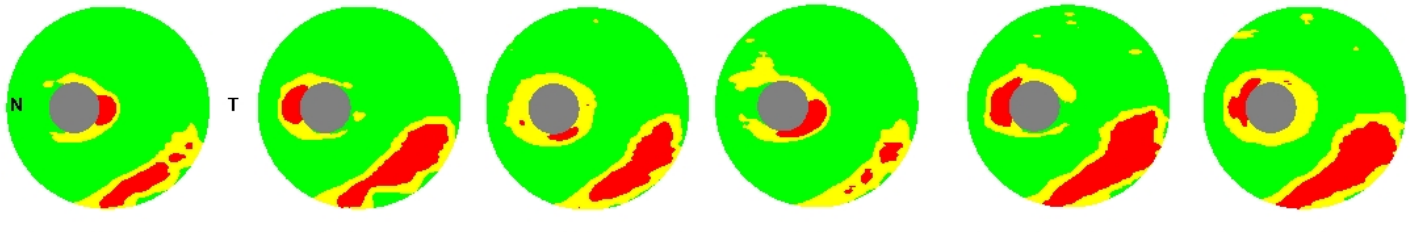
OS 2013-2018

Nerve Fiber/ONH/GCC Change Analysis

Left / OS

GCC NDB Reference

NDB Thickness



Visit Date: 11/05/13 (62.4)
SSI = 67 (GCC) / 50 (ONH)

Visit Date: 11/05/13 (62.4)
SSI = 69 (GCC) / 41 (ONH)

Visit Date: 06/20/16 (65.0)
SSI = 70 (GCC) / 72 (ONH)

Visit Date: 04/05/17 (65.8)
SSI = 66 (GCC) / 72 (ONH)

Visit Date: 07/06/17 (66.1)
SSI = 48 (GCC) / 45 (ONH)

Visit Date: 02/21/18 (66.7)
SSI = 56 (GCC) / 62 (ONH)

Within Normal
Borderline
Outside Normal

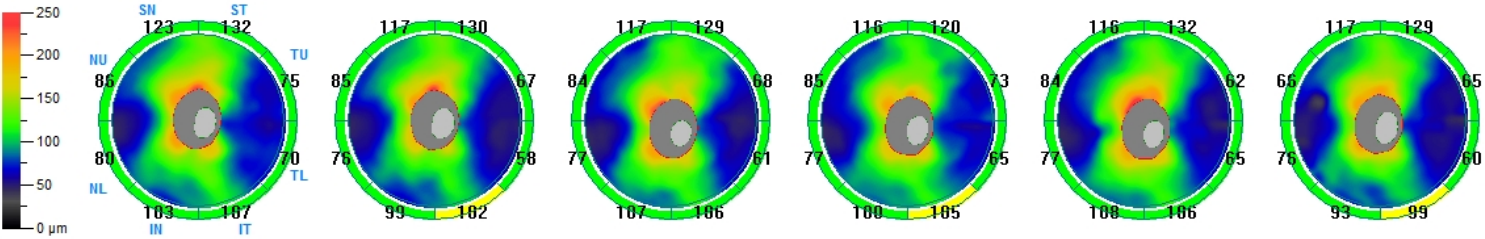
11/05/13
11/05/13
06/20/16
04/05/17
07/06/17
02/21/18

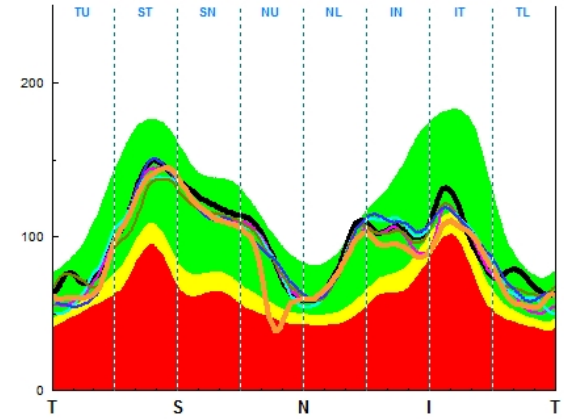
Comparison to NDB

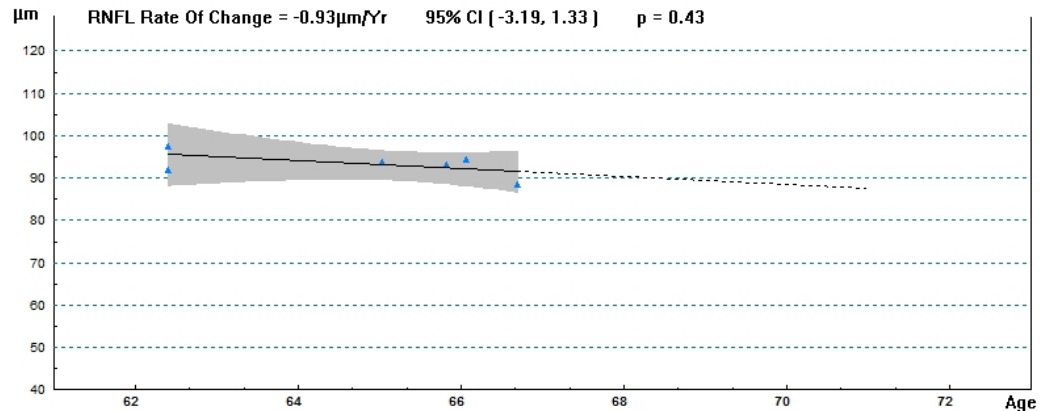
GCC Parameters	11/05/13	02/21/18
Total	88	81
Superior	90	83
Inferior	86	79
FLV (%)	2.647	2.778

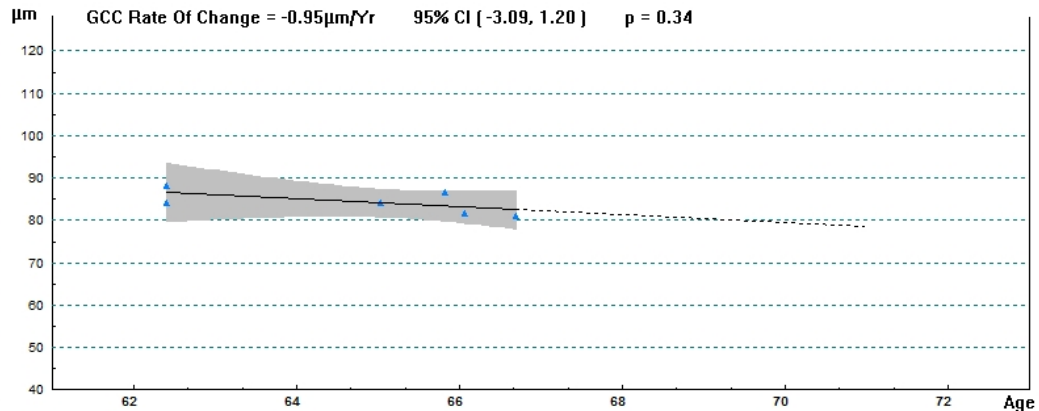
RNFL Parameters	11/05/13	02/21/18
Average_RNFL	97	88
Sup_RNFL	104	94
Inf_RNFL	90	82
H. C/D	0.46	0.44
V. C/D	0.53	0.58
Rim Area	1.33	1.30

RNFL Analysis

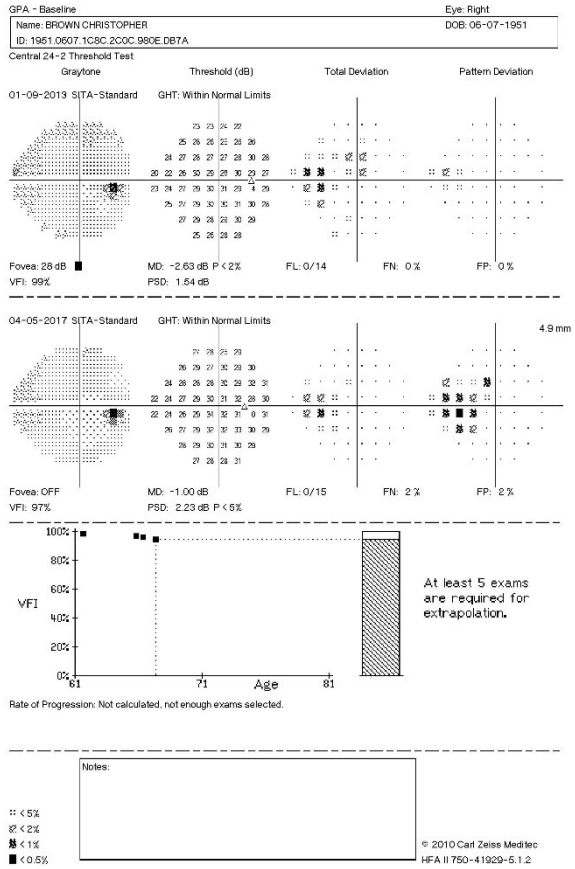


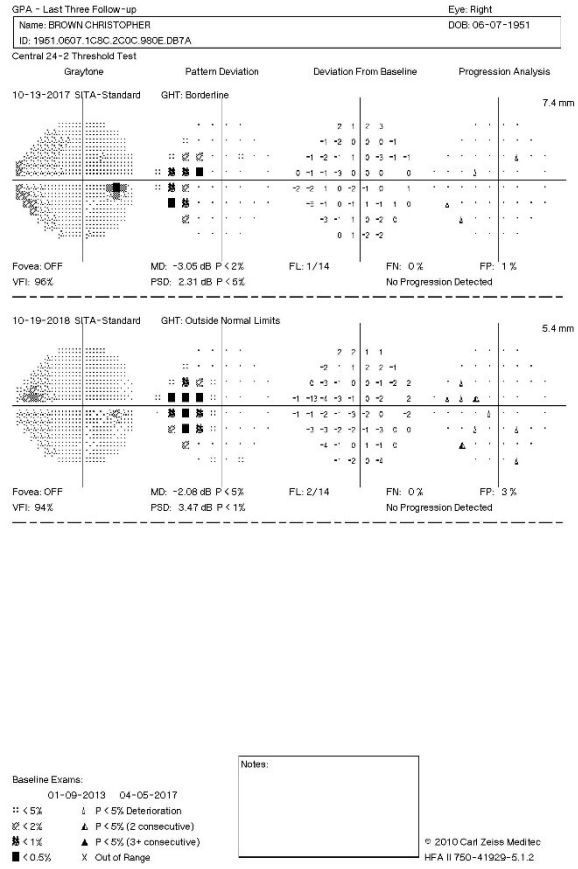




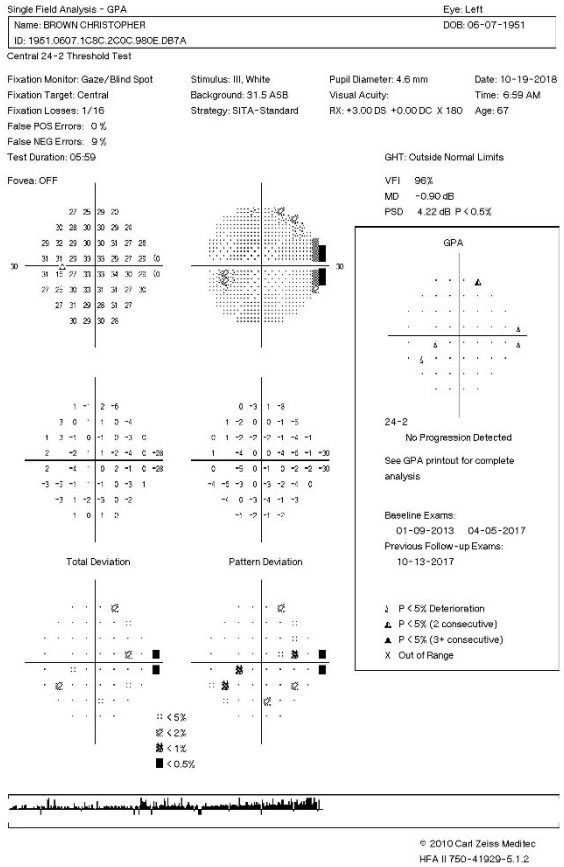


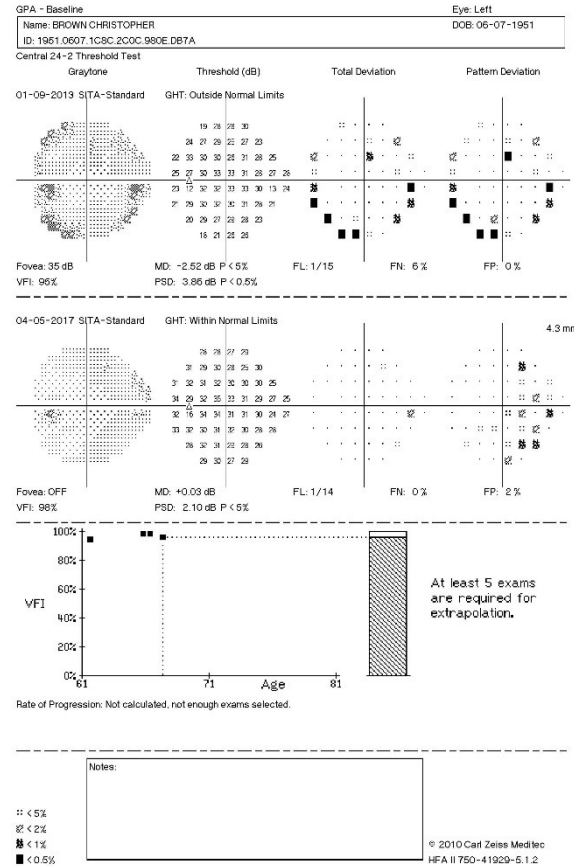
Chris VF OD 10 19 2018



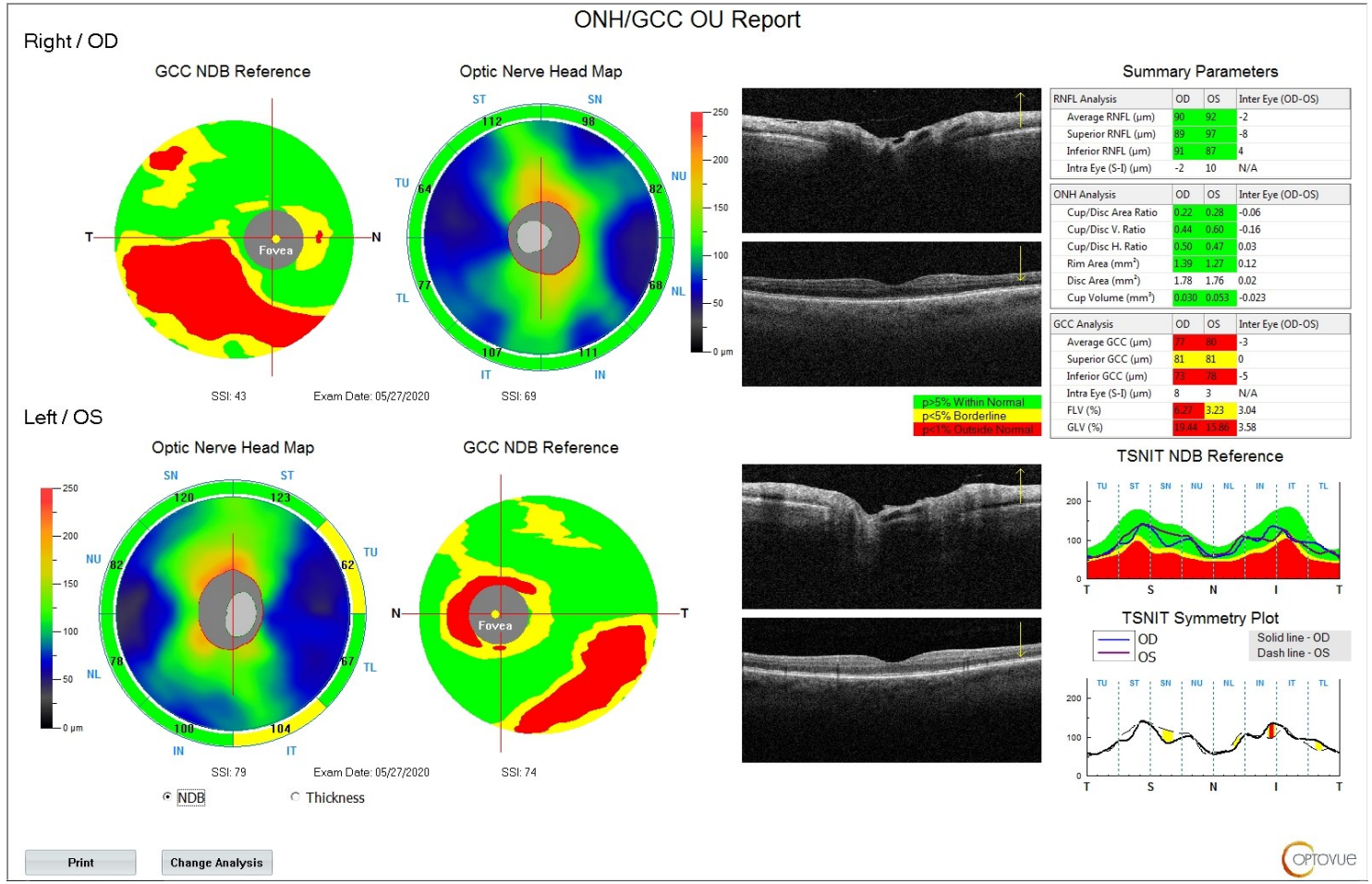


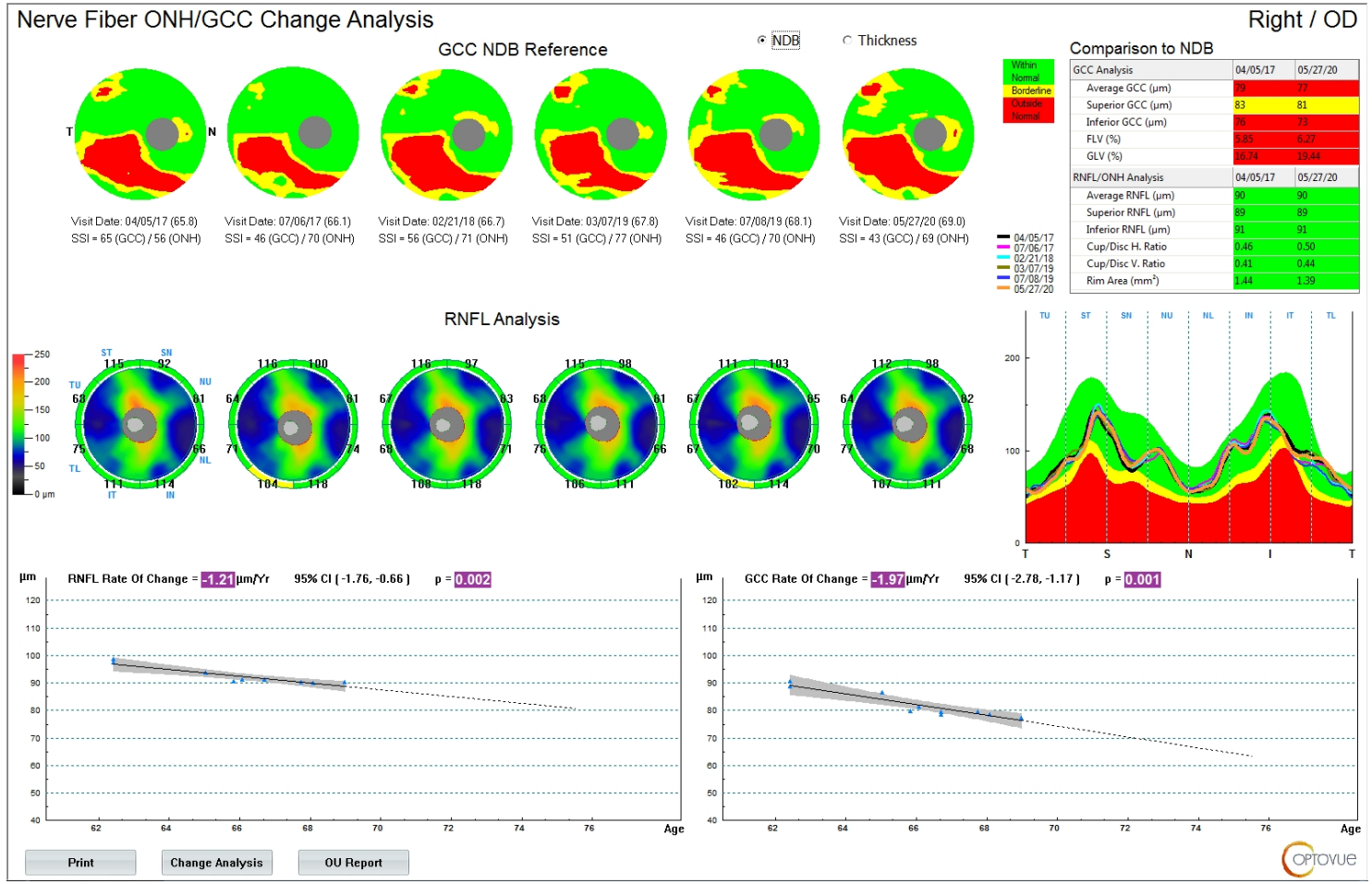
Chris 10 19 2018



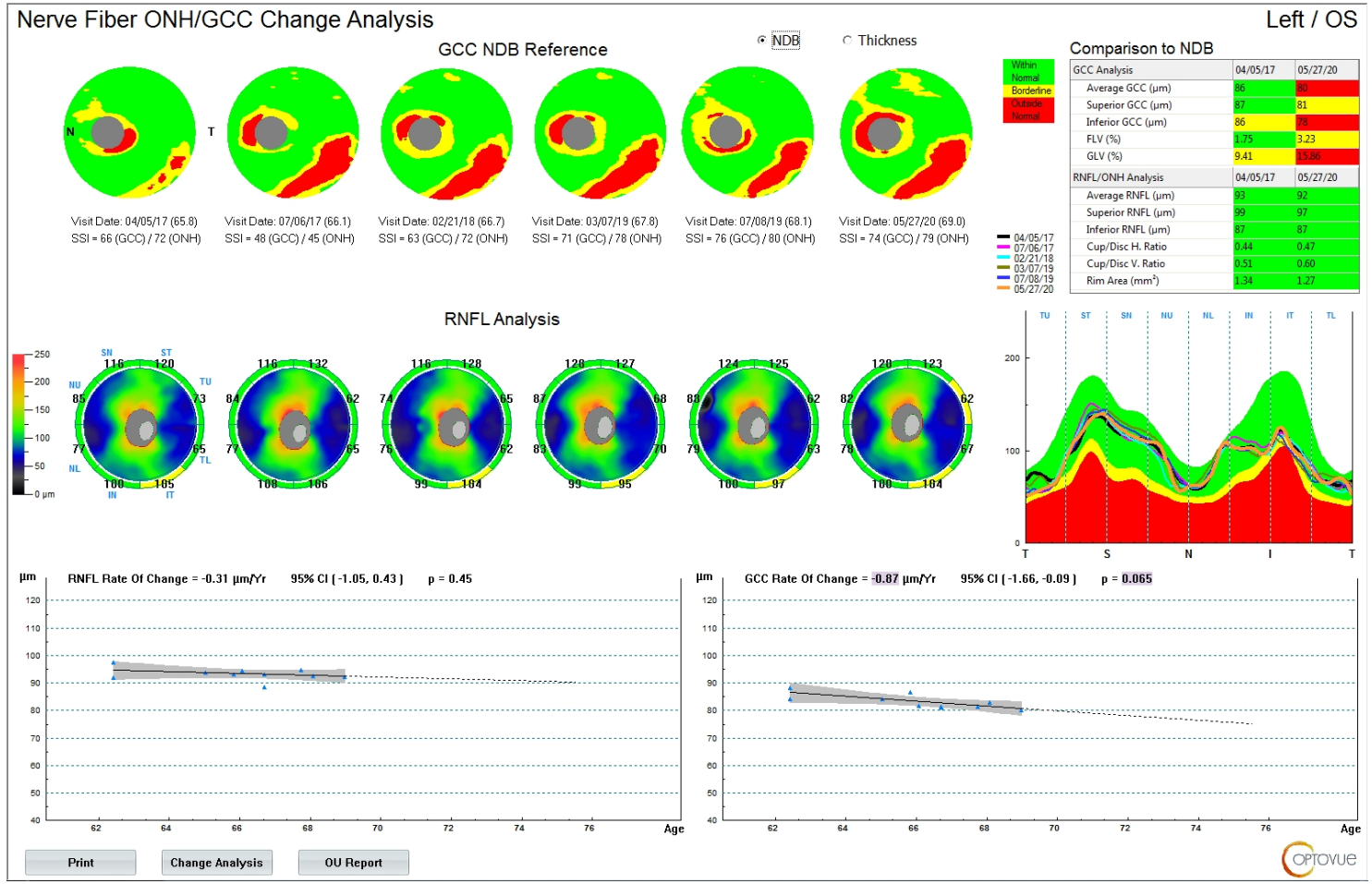


Chris 5 27 2020

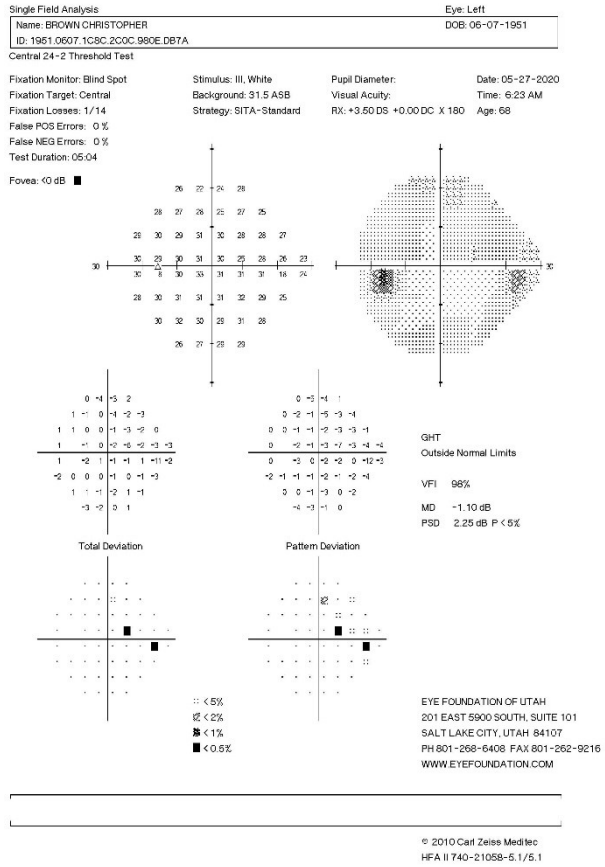


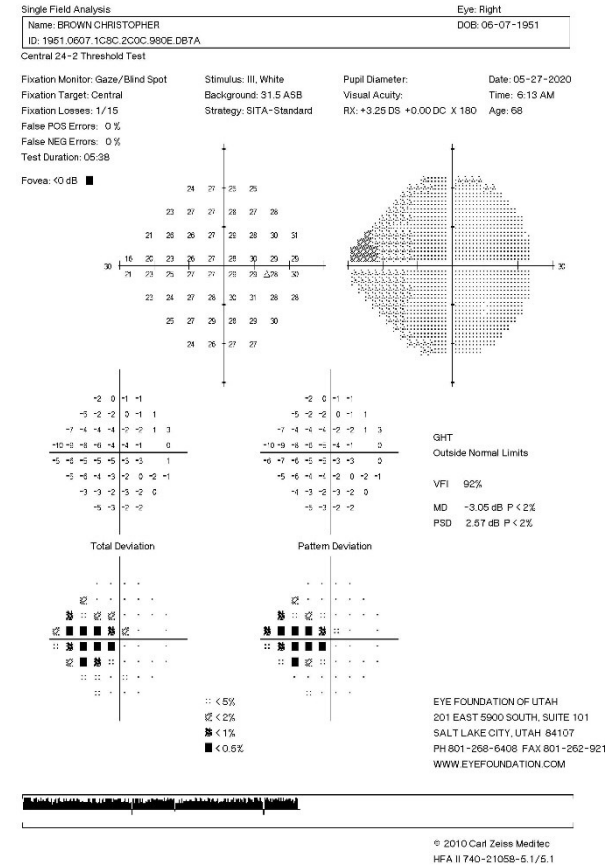

Nerve Fiber ONH/GCC Change Analysis
Right / OD
GCC NDB Reference
NDB
Thickness
Within Normal
Borderline
Outside Normal
Comparison to NDB
GCC Analysis 04/05/17 05/27/20
Average GCC (µm) 79 77
Superior GCC (µm) 83 81
Inferior GCC (µm) 76 73
FLV (%) 5.85 6.27
GLV (%) 16.74 19.44
RNFL/ONH Analysis 04/05/17 05/27/20
Average RNFL (µm) 90 90
Superior RNFL (µm) 89 89
Inferior RNFL (µm) 91 91
Cup/Disc H. Ratio 0.46 0.50
Cup/Disc V. Ratio 0.41 0.44
Rim Area (mm²) 1.44 1.39
Visit Date: 04/05/17 (65.8) SSI = 65 (GCC) / 56 (ONH)
Visit Date: 07/06/17 (66.1) SSI = 46 (GCC) / 70 (ONH)
Visit Date: 02/21/18 (66.7) SSI = 56 (GCC) / 71 (ONH)
Visit Date: 03/07/19 (67.8) SSI = 51 (GCC) / 77 (ONH)
Visit Date: 07/08/19 (68.1) SSI = 46 (GCC) / 70 (ONH)
Visit Date: 05/27/20 (69.0) SSI = 43 (GCC) / 69 (ONH)
04/05/17
07/06/17
02/21/18
03/07/19
07/08/19
05/27/20
RNFL Analysis
RNFL Rate Of Change = -1.21 µm/Yr 95% CI (-1.76, -0.66) p = 0.002
GCC Rate Of Change = -1.97 µm/Yr 95% CI (-2.78, -1.17) p = 0.001
Age
Print
Change Analysis
OU Report
OPTOVUE

Chris 5 27 2020

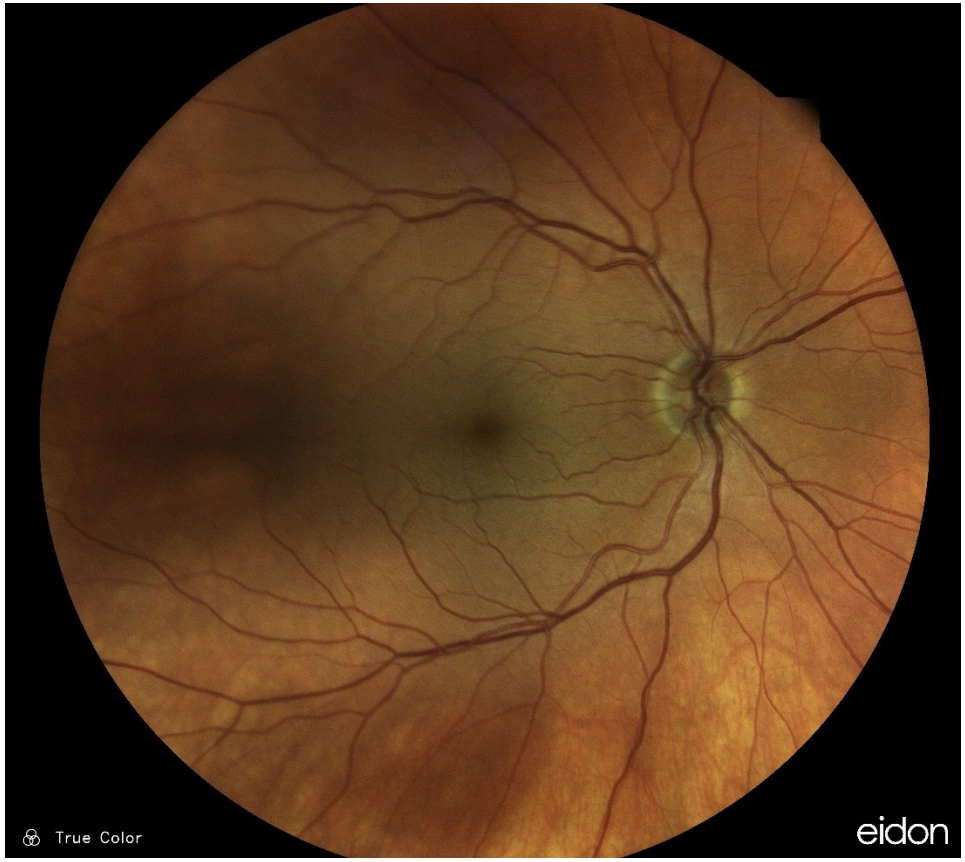


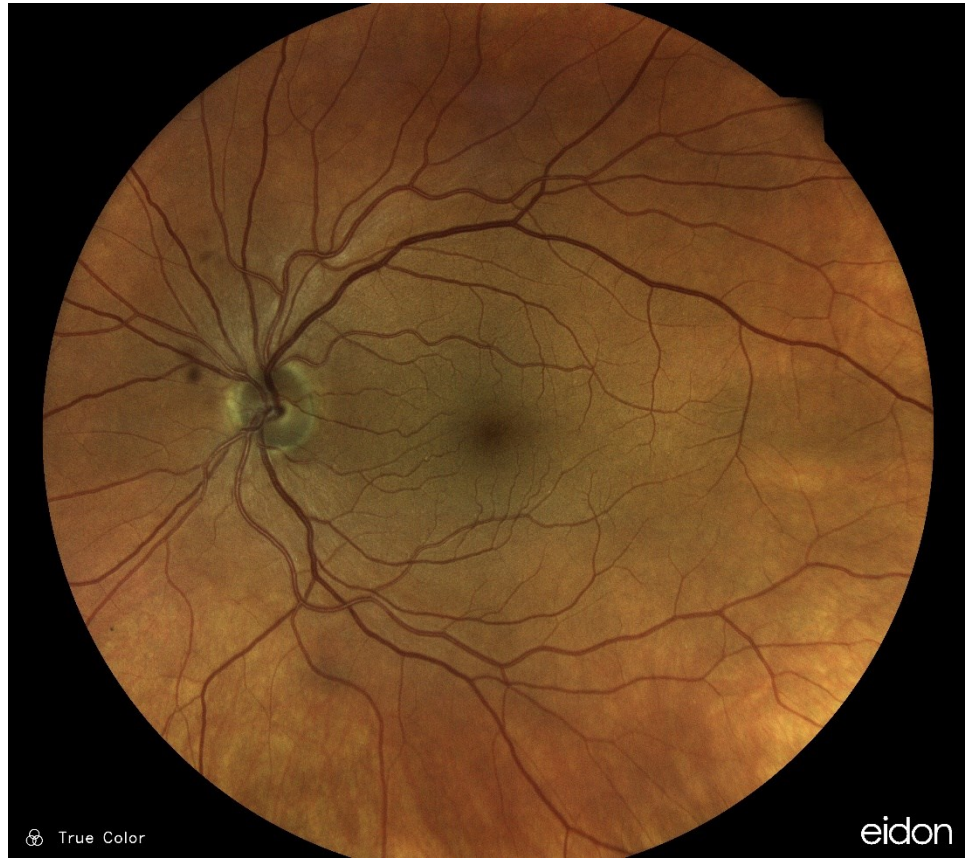
Chris 5 27 2020



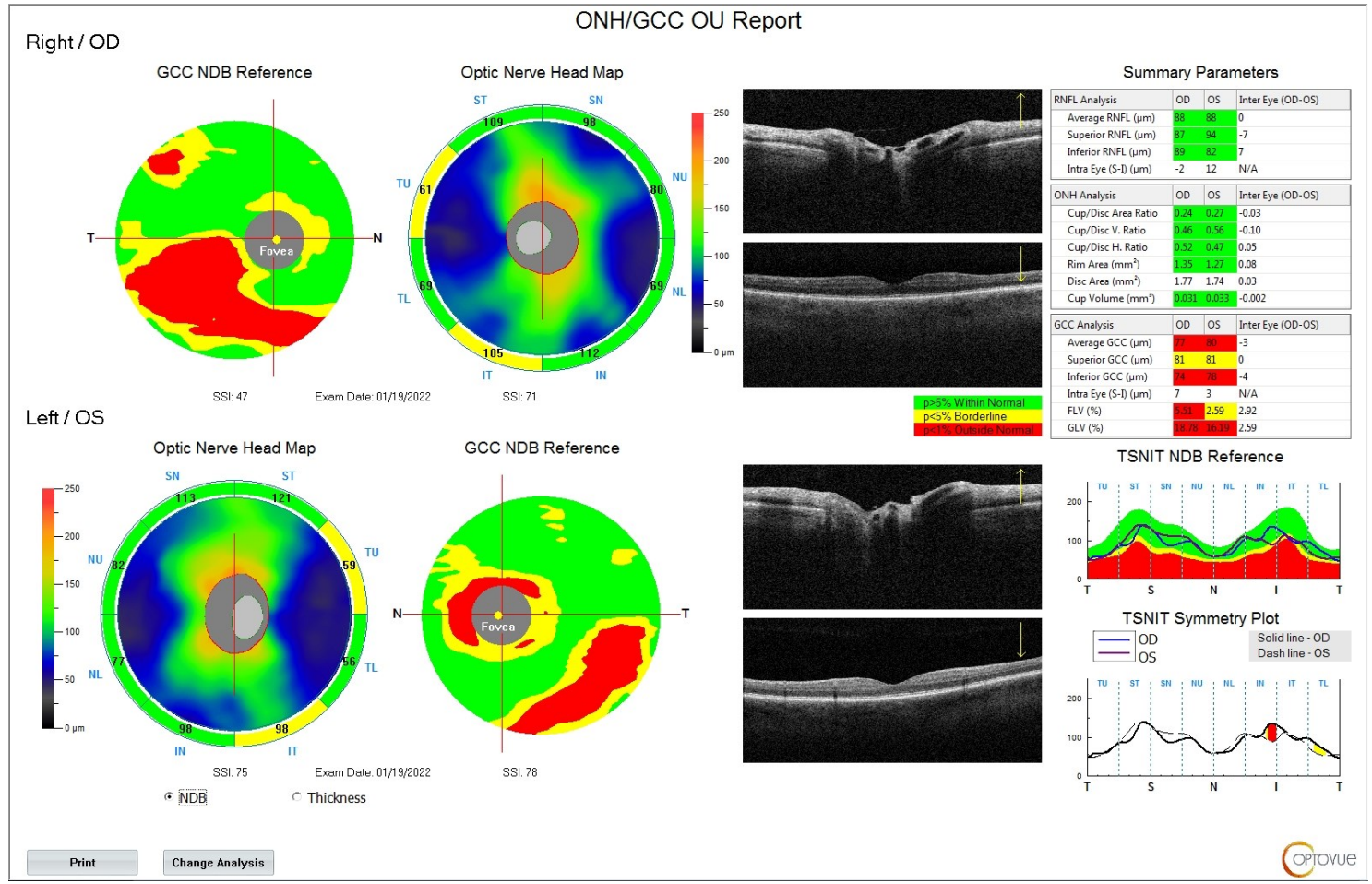


Chris 3 3 2021

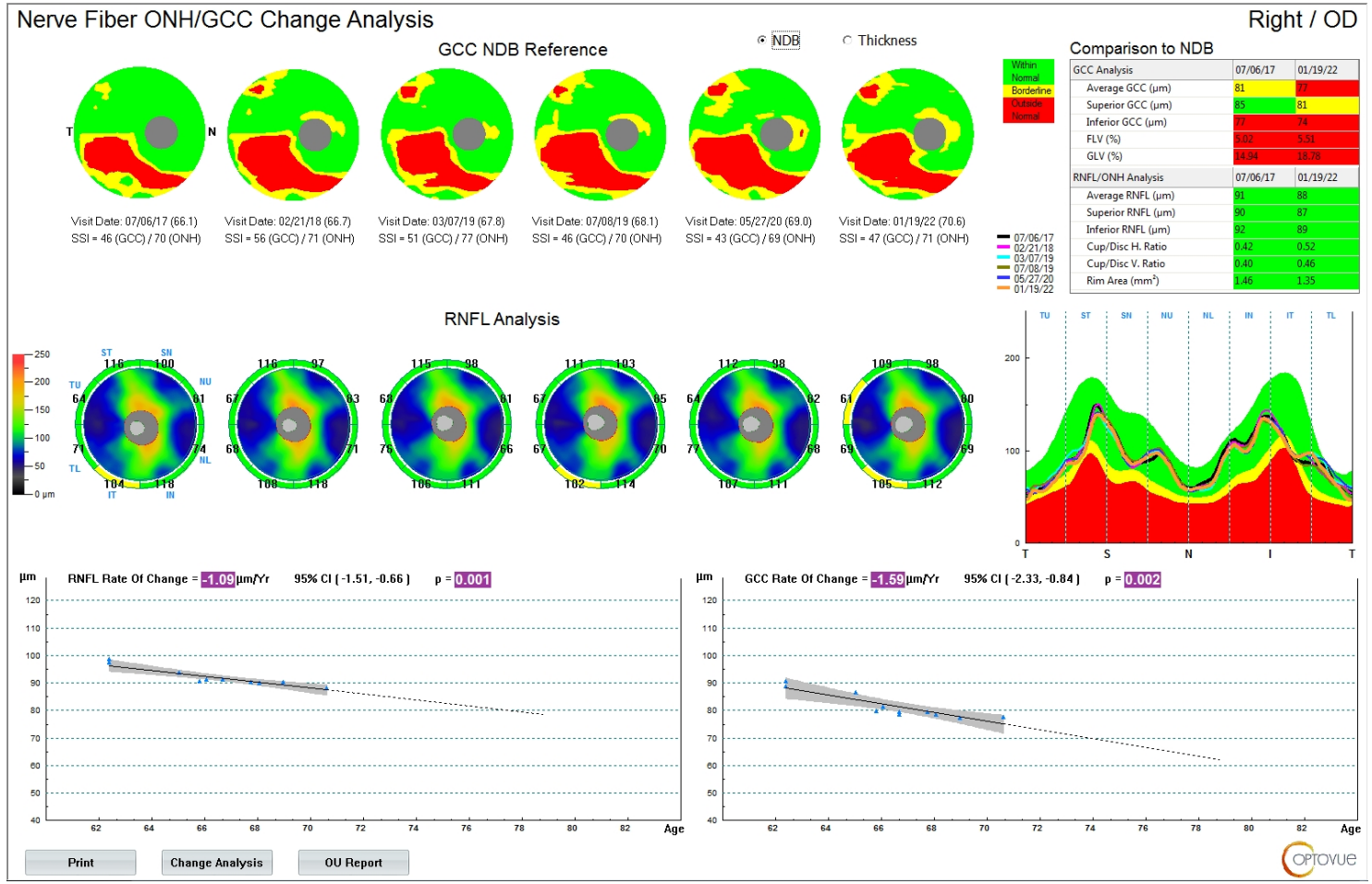




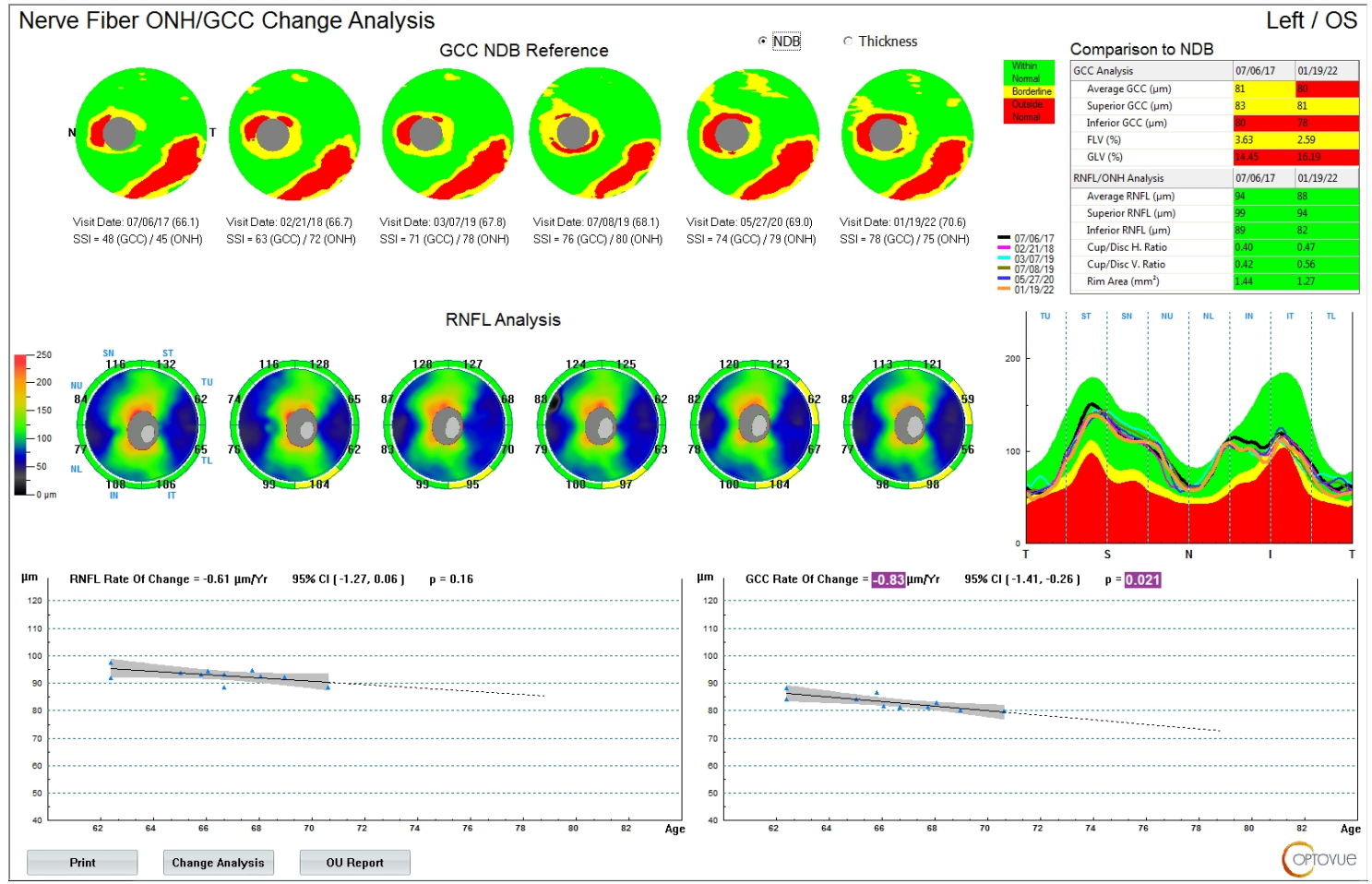
Chris 1 19 2022



1 19 2022


Nerve Fiber ONH/GCC Change Analysis
Right / OD
GCC NDB Reference
NDB
Thickness
Visit Date: 07/06/17 (66.1)
SSI = 46 (GCC) / 70 (ONH)
Visit Date: 02/21/18 (66.7)
SSI = 56 (GCC) / 71 (ONH)
Visit Date: 03/07/19 (67.8)
SSI = 51 (GCC) / 77 (ONH)
Visit Date: 07/08/19 (68.1)
SSI = 46 (GCC) / 70 (ONH)
Visit Date: 05/27/20 (69.0)
SSI = 43 (GCC) / 69 (ONH)
Visit Date: 01/19/22 (70.6)
SSI = 47 (GCC) / 71 (ONH)
Within Normal
Borderline
Outside Normal
07/06/17
02/21/18
03/07/19
07/08/19
05/27/20
01/19/22
Comparison to NDB
GCC Analysis 07/06/17 01/19/22
Average GCC (µm) 81 77
Superior GCC (µm) 85 81
Inferior GCC (µm) 77 74
FLV (%) 5.02 5.51
GLV (%) 14.94 18.78
RNFL/ONH Analysis 07/06/17 01/19/22
Average RNFL (µm) 91 88
Superior RNFL (µm) 90 87
Inferior RNFL (µm) 92 89
Cup/Disc H. Ratio 0.42 0.52
Cup/Disc V. Ratio 0.40 0.46
Rim Area (mm²) 1.46 1.35
RNFL Analysis
TU ST SN NU NL IN IT TL
T S N I T
µm
RNFL Rate Of Change = -1.09 µm/Yr 95% CI (-1.51, -0.66) p = 0.001
GCC Rate Of Change = -1.59 µm/Yr 95% CI (-2.33, -0.84) p = 0.002
Age
Print
Change Analysis
OU Report
OPTOVUE

1 19 2022

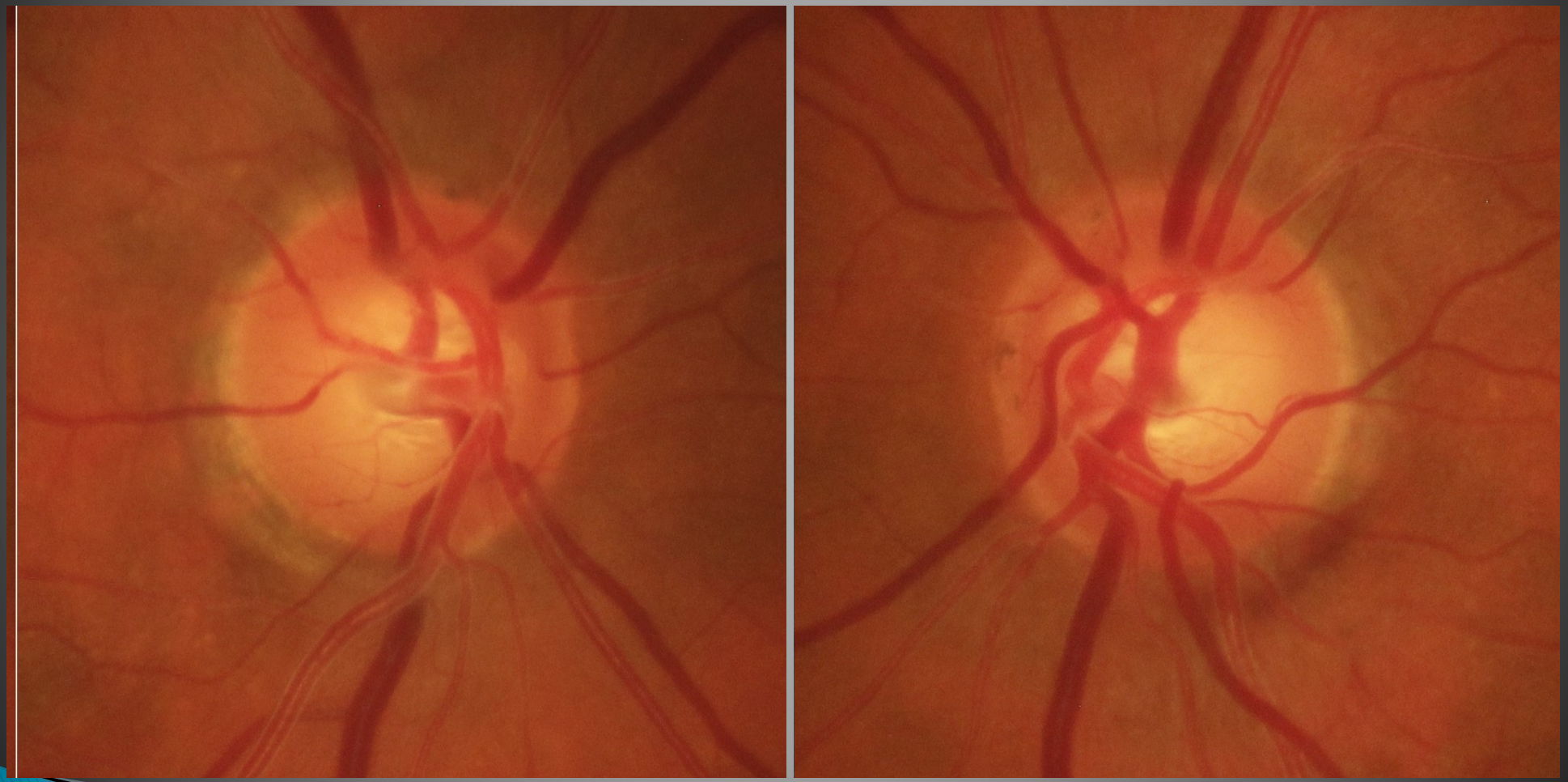

Nerve Fiber ONH/GCC Change Analysis
Left / OS
GCC NDB Reference
NDB
Thickness
Visit Date: 07/06/17 (66.1)
SSI = 48 (GCC) / 45 (ONH)
Visit Date: 02/21/18 (66.7)
SSI = 63 (GCC) / 72 (ONH)
Visit Date: 03/07/19 (67.8)
SSI = 71 (GCC) / 78 (ONH)
Visit Date: 07/08/19 (68.1)
SSI = 76 (GCC) / 80 (ONH)
Visit Date: 05/27/20 (69.0)
SSI = 74 (GCC) / 79 (ONH)
Visit Date: 01/19/22 (70.6)
SSI = 78 (GCC) / 75 (ONH)
Within Normal
Borderline
Outside Normal
07/06/17
02/21/18
03/07/19
07/08/19
05/27/20
01/19/22
Comparison to NDB
GCC Analysis 07/06/17 01/19/22
Average GCC (µm) 81 80
Superior GCC (µm) 83 81
Inferior GCC (µm) 80 78
FLV (%) 3.63 2.59
GLV (%) 14.45 16.19
RNFL/ONH Analysis 07/06/17 01/19/22
Average RNFL (µm) 94 88
Superior RNFL (µm) 99 94
Inferior RNFL (µm) 89 82
Cup/Disc H. Ratio 0.40 0.47
Cup/Disc V. Ratio 0.42 0.56
Rim Area (mm²) 1.44 1.27
RNFL Analysis
SN ST TU NU NL TL IN IT
250 200 150 100 50 0 µm
TU ST SN NU NL IN IT TL
200 100 0
T S N I T
µm
RNFL Rate Of Change = -0.61 µm/Yr 95% CI (-1.27, 0.06) p = 0.16
GCC Rate Of Change = -0.83 µm/Yr 95% CI (-1.41, -0.26) p = 0.021
120 110 100 90 80 70 60 50 40
62 64 66 68 70 72 74 76 78 80 82 Age
Print
Change Analysis
OU Report
OPTOVUE

1 19 2022

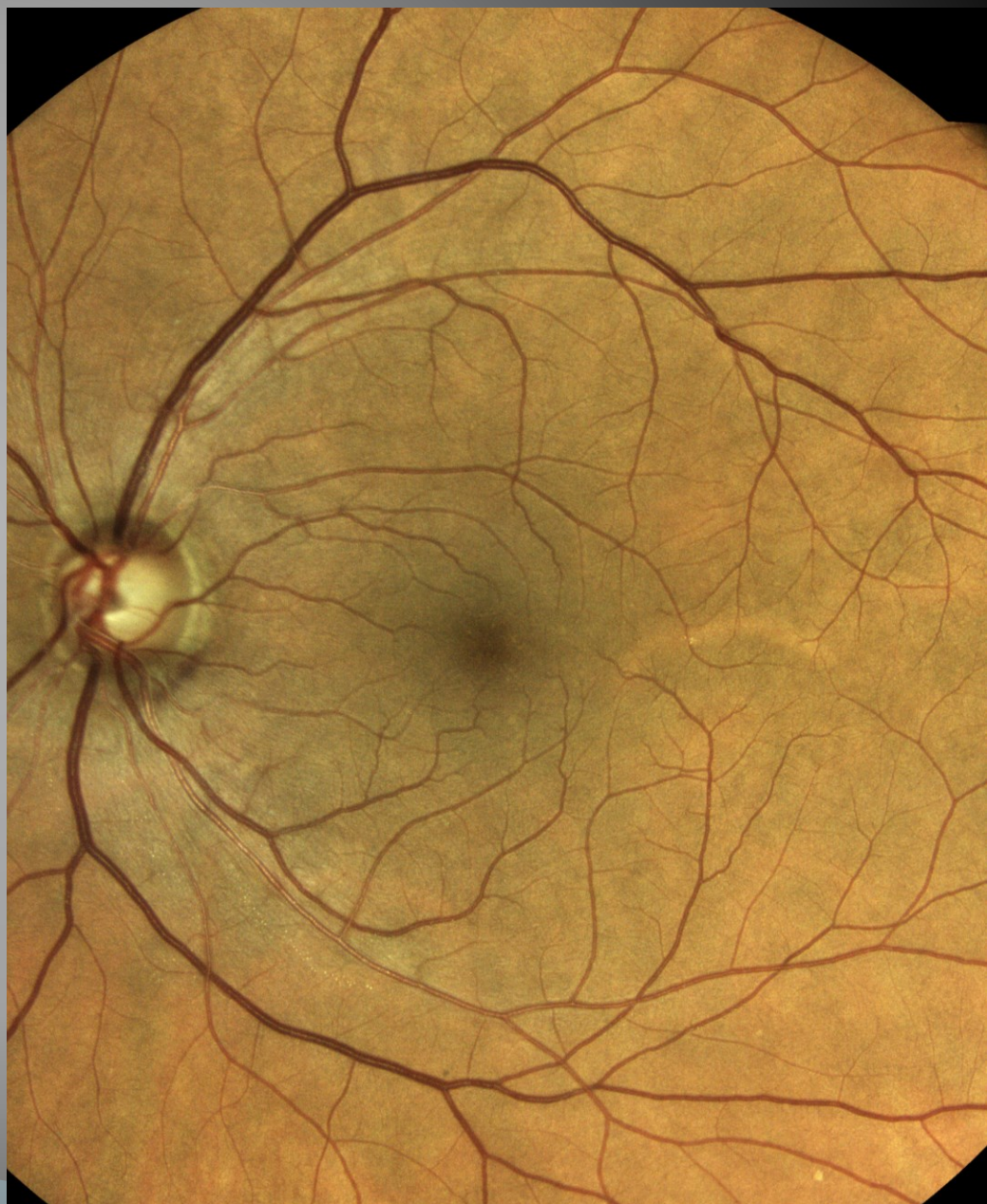
Annette

- 69yoWF referred with large cups
- IOP
  - R 16, 11, 14 mmHg
  - L 18, 13 , 16 mmHg
  - (three separate exams)
- ORA IOP R 15.3 L 17.5
- CH R 9.8 L 9.9
- CCT R 599 L 603

Annette 1 11 17

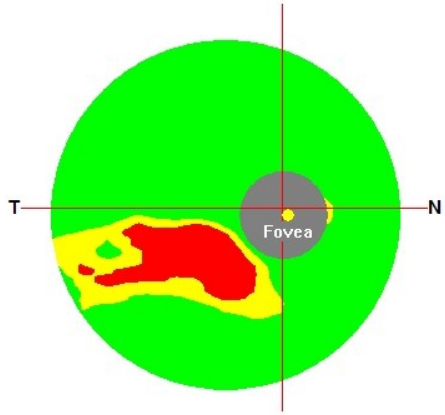


Annette 1-11-17

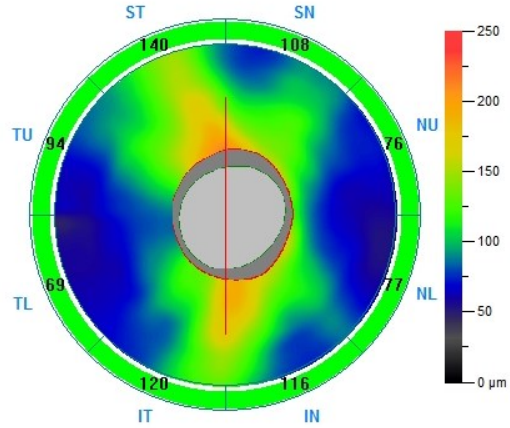


-

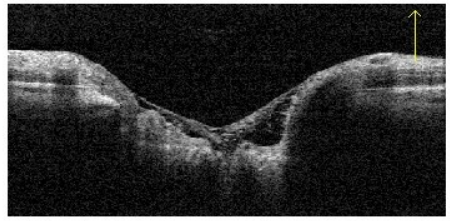
GCC NDB Reference

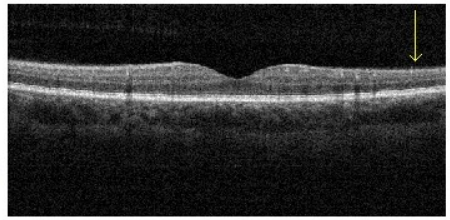


Optic Nerve Head Map



SSI: 77 Exam Date: 02/04/2016 SSI: 68





p>5% Within Normal
p<5% Borderline
p<1% Outside Normal

Summary Parameters

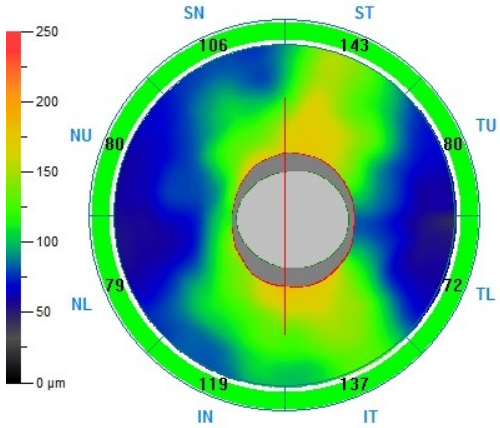
RNFL Analysis (µm)	OD	OS	Inter Eye (OD-OS)
Avg RNFL Thickness	100	102	-2
Avg Superior RNFL	105	102	3
Avg Inferior RNFL	96	102	-6
Intra Eye (S-I)	9	0	N/A

ONH Analysis	OD	OS	Inter Eye (OD-OS)
Cup/Disc Area Ratio	0.70	0.65	0.05
Cup/Disc V. Ratio	0.82	0.74	0.08
Cup/Disc H. Ratio	0.92	0.94	-0.02
Rim Area (mm^2)	0.77	0.93	-0.16
Disc Area (mm^2)	2.52	2.68	-0.16
Cup Volume (mm^3)	0.651	0.861	-0.210

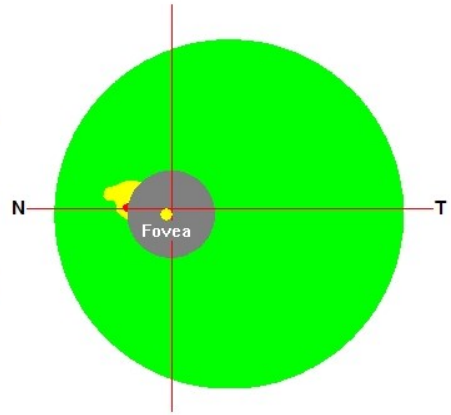
Avg Thickness	OD	OS	Inter Eye (OD-OS)
Total	88.87	93.94	-5.07
Superior	95.29	96.64	-1.35
Inferior	82.47	91.25	-8.78
Intra Eye (S-I)	12.82	5.39	N/A
FLV (%)	3.642	0.700	2.942
GLV (%)	7.878	2.788	5.090

eft / OS

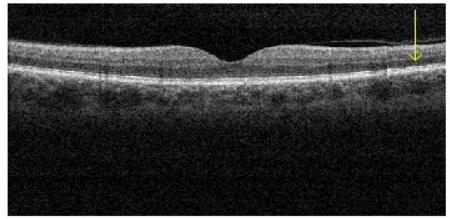
Optic Nerve Head Map



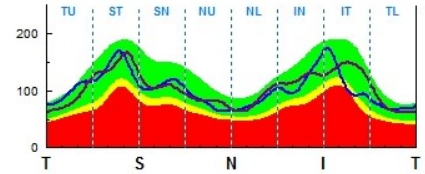
GCC NDB Reference



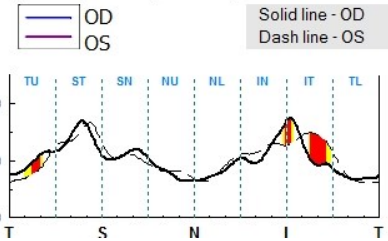
SSI: 68 Exam Date: 02/04/2016 SSI: 73



TSNIT NDB Reference



TSNIT Symmetry Plot



24-2 5/5/16

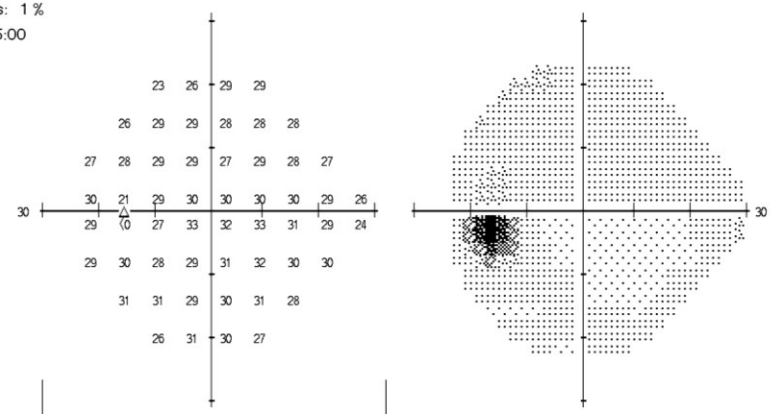
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 1/15
False POS Errors: 1 %
False NEG Errors: 1 %
Test Duration: 05:00

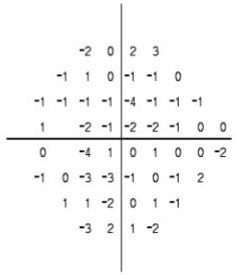
Fovea: OFF

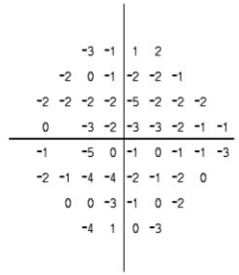
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 4.4 mm
Visual Acuity:
RX: +3.50 DS DC X

Date: 05-05-2016
Time: 9:14 AM
Age: 68





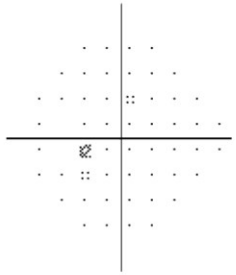


GHT
Within Normal Limits

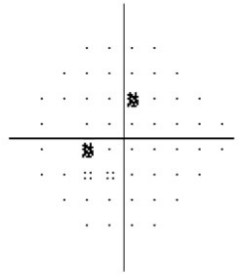
VFI 99%

MD -0.56 dB
PSD 1.51 dB

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%
■ < 0.5%

Central 24-2 Threshold Test

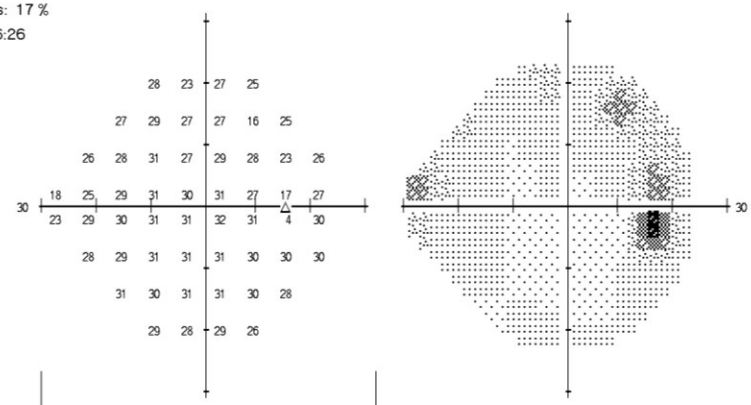
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 4/14 xx
False POS Errors: 12 %
False NEG Errors: 17 %
Test Duration: 06:26

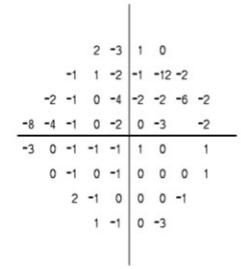
Fovea: OFF

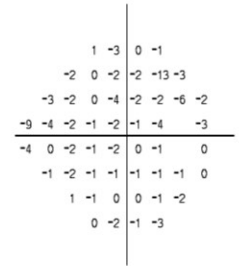
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 5.5 mm
Visual Acuity:
RX: +3.50 DS DC X

Date: 05-05-2016
Time: 9:06 AM
Age: 68







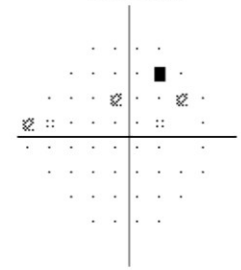
*** Low Test Reliability ***

GHT
Borderline

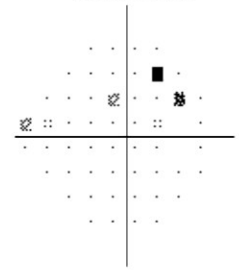
VFI 98%

MD -1.13 dB
PSD 2.16 dB P < 5%

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%
■ < 0.5%

10-2 5/10/17

Central 10-2 Threshold Test

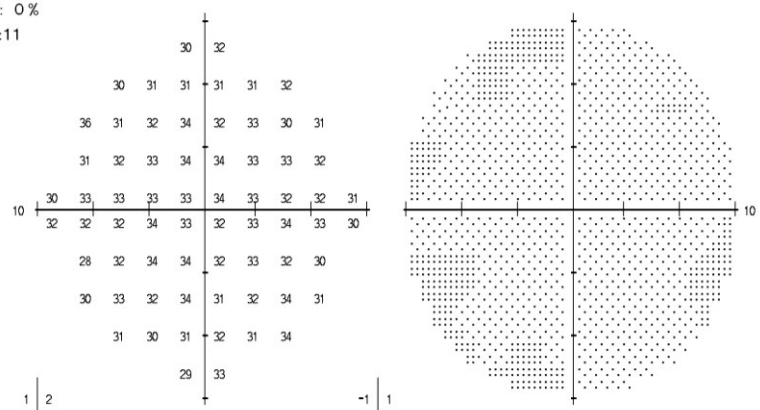
Fixation Monitor: Blind Spot
Fixation Target: Central
Fixation Losses: 2/15
False POS Errors: 4 %
False NEG Errors: 0 %
Test Duration: 05:11

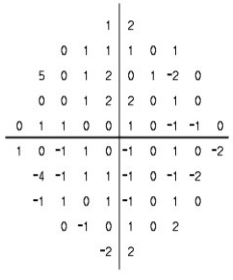
Fovea: OFF

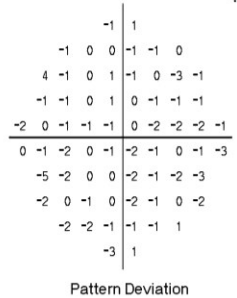
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 4.4 mm
Visual Acuity:
RX: +3.50 DS DC X

Date: 05-10-2017
Time: 8:54 AM
Age: 69

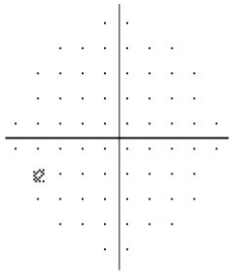




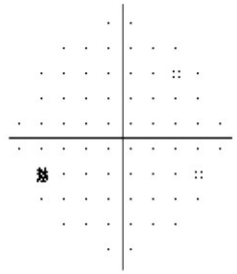


MD +0.14 dB
PSD 1.23 dB

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%

Central 10-2 Threshold Test

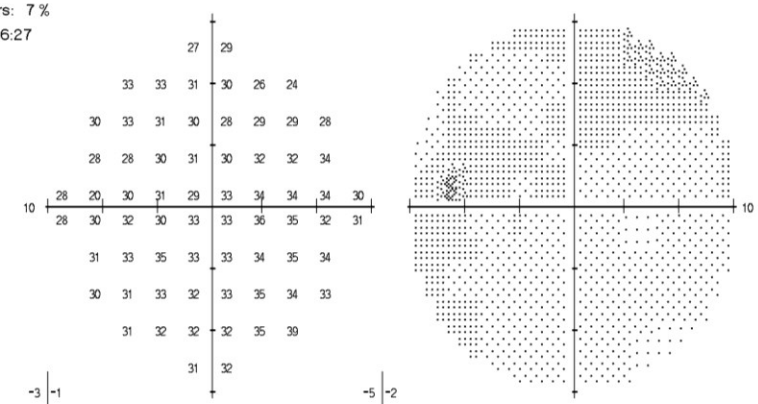
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 3/19
False POS Errors: 13 %
False NEG Errors: 7 %
Test Duration: 06:27

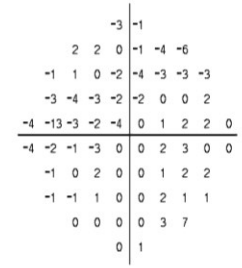
Fovea: OFF

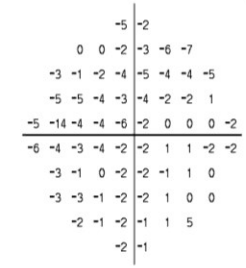
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 5.9 mm
Visual Acuity:
RX: +3.50 DS DC X

Date: 05-10-2017
Time: 8:46 AM
Age: 69

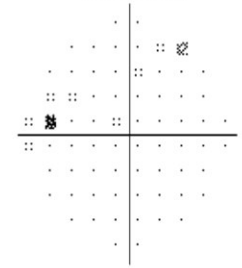




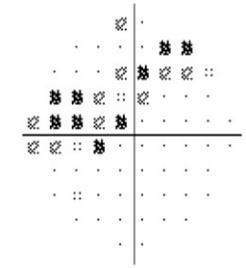


MD -0.55 dB
PSD 2.70 dB P < 1%

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%

10-2 6/7/17

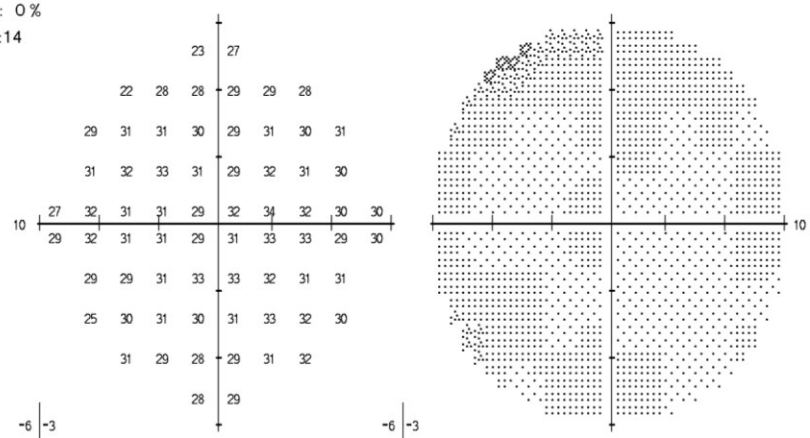
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 0/15
False POS Errors: 0 %
False NEG Errors: 0 %
Test Duration: 05:14

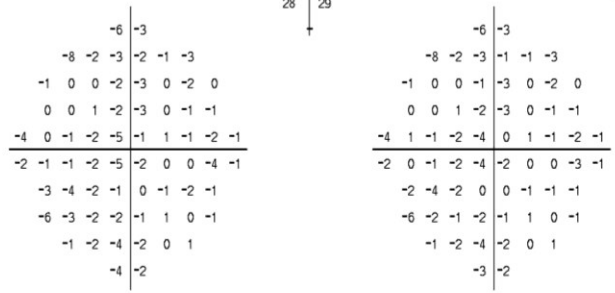
Fovea: OFF

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 5.2 mm
Visual Acuity:
RX: +3.50 DS DC X

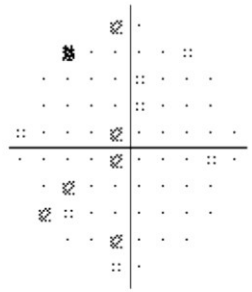
Date: 06-07-2017
Time: 8:44 AM
Age: 69



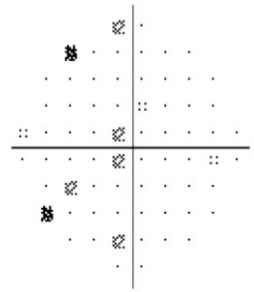


MD -1.67 dB P < 10%
PSD 1.62 dB P < 5%

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%

ID: 7437
Central 10-2 Threshold Test

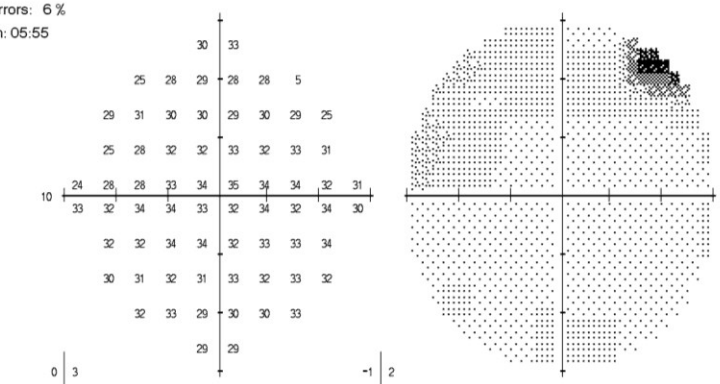
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 1/15
False POS Errors: 8 %
False NEG Errors: 6 %
Test Duration: 05:55

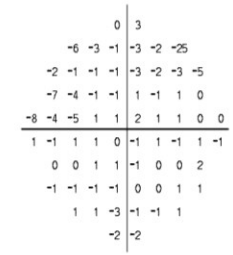
Fovea: OFF

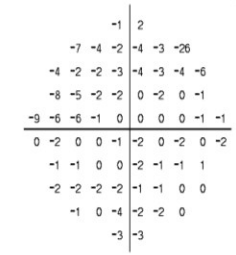
Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 5.2 mm
Visual Acuity:
RX: +3.50 DS DC X

Date: 06-07-2017
Time: 8:36 AM
Age: 69

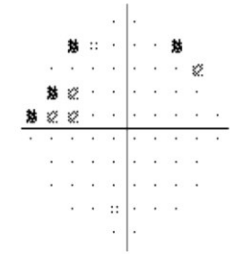




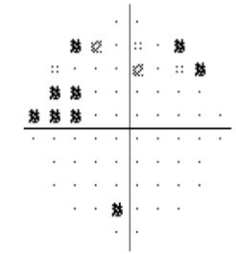


MD -1.08 dB
PSD 3.18 dB P < 1%

Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%

When to do 10-2 VF

- Standard of care is 1-2 VF's per year
- Still use 24-2 as standard test
- Periodically use 10-2 to "spot check" glaucoma suspects with normal 24-2
- Use 10-2 as primary test in severe, late-stage glaucoma

Long-Term Follow Up

- Exam every 3-4 months
  - 3-4x/year
- VF, ON photos or OCT each visit
- Each assessment for possible progression is done every 6-12 months
- More frequent exams and damage assessments with indication of possible change

More Frequent Visits if:

- Early in course
- Poor control
- Severe disease
- Questionable compliance

Which medication do I start with?

- Beta Blocker
  - Timolol
- Alpha Agonist
  - Alphagan
- Carbonic Anhydrase Inhibitor
  - Azopt/Trusopt
- Prostaglandin
  - Lumigan, Travatan, Xalatan, Zioptan
- Combination Agent?
  - Combigan, Cosopt, Simbrinza
- Rocklatan?

Initial Response to Treatment

- Is the patient using the drops?
- Tolerating the drops?
- Is the medication affordable??
- Ascertain IOP Reduction
- Any questions, problems or concerns?

Early Manifest Glaucoma Trial

- To compare the effect of immediately lowering the IOP, vs. no treatment or later treatment, on the progression of newly detected OAG.
- 255 patients with mild glaucoma
  - ½ treated
  - ½ followed without treatment
- Treatment group
  - ALT plus Betoptic 0.5% bid
  - Xalatan if necessary (IOP>25)
- Control group
  - No treatment

Heijl A, Leske MC et al *Arch Ophthalmol*. 2002; 120(10):1268-1279.

Progression (median FU 6 yrs.)

- Control group: 62%
  - Median time: 48 months
- Treatment group: 45%
  - Median time: 66 months
    - Significantly later (18 month delay)
- Median FU: 6 years (at least 4 yrs.)
- Average IOP reduction: 25% (5.1mm)
- Control group: No change in IOP

Risk Factors at Baseline

- At Baseline
  - Higher baseline IOP
  - Exfoliation
  - Both eyes eligible (bilateral disease)
  - Worse mean deviation on VF
  - Older age
- Later
  - Higher IOP on follow-up
  - 11-13% increased risk per 1 mm rise
  - Disc hemorrhages

Baseline Factors–No Added Risk

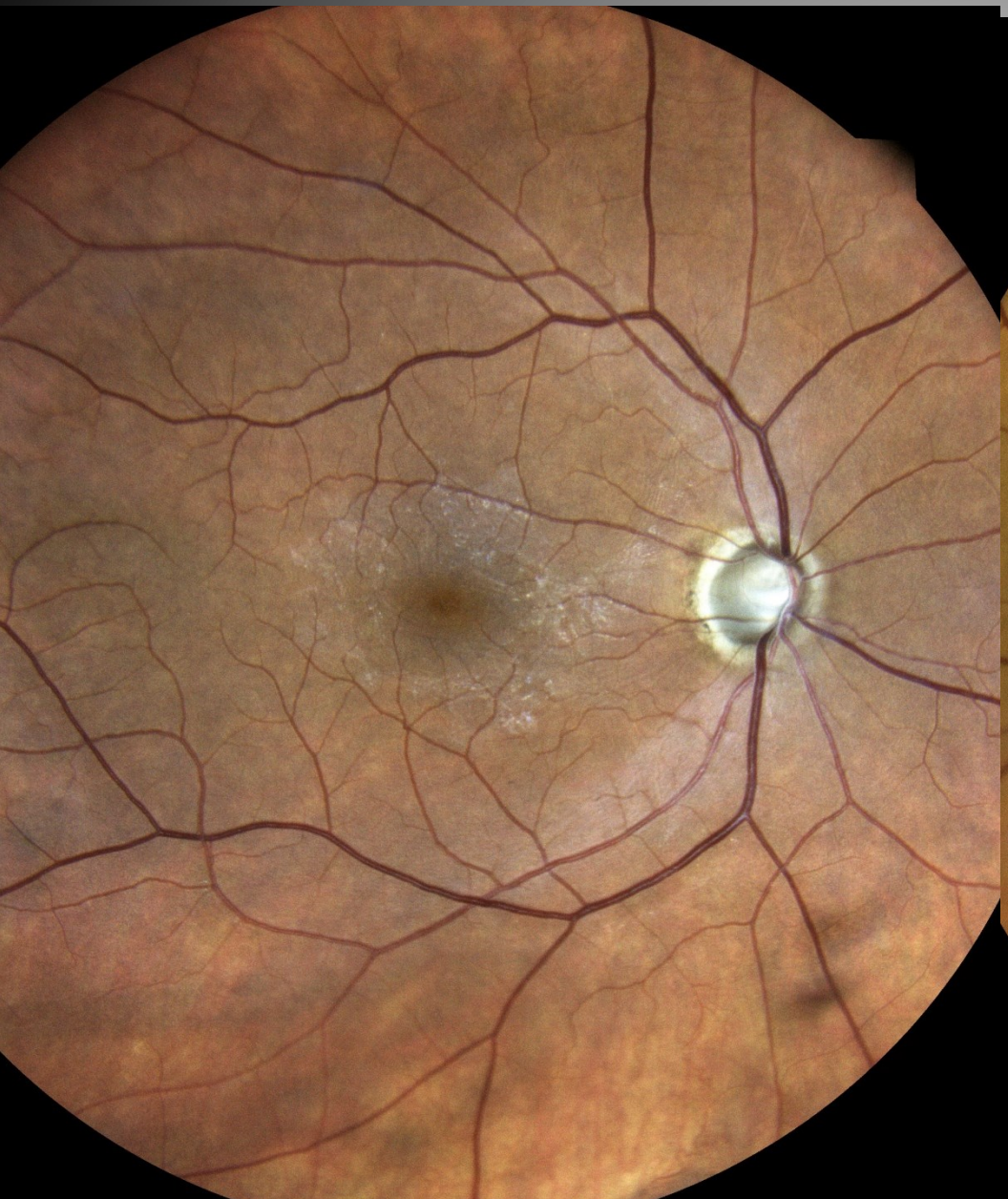
- Sex
- Refractive error
- High or low BP
- Cardiovascular disease
- Migraine or Raynaud's Disease
- Smoker (current or prior)
- Glaucoma family history

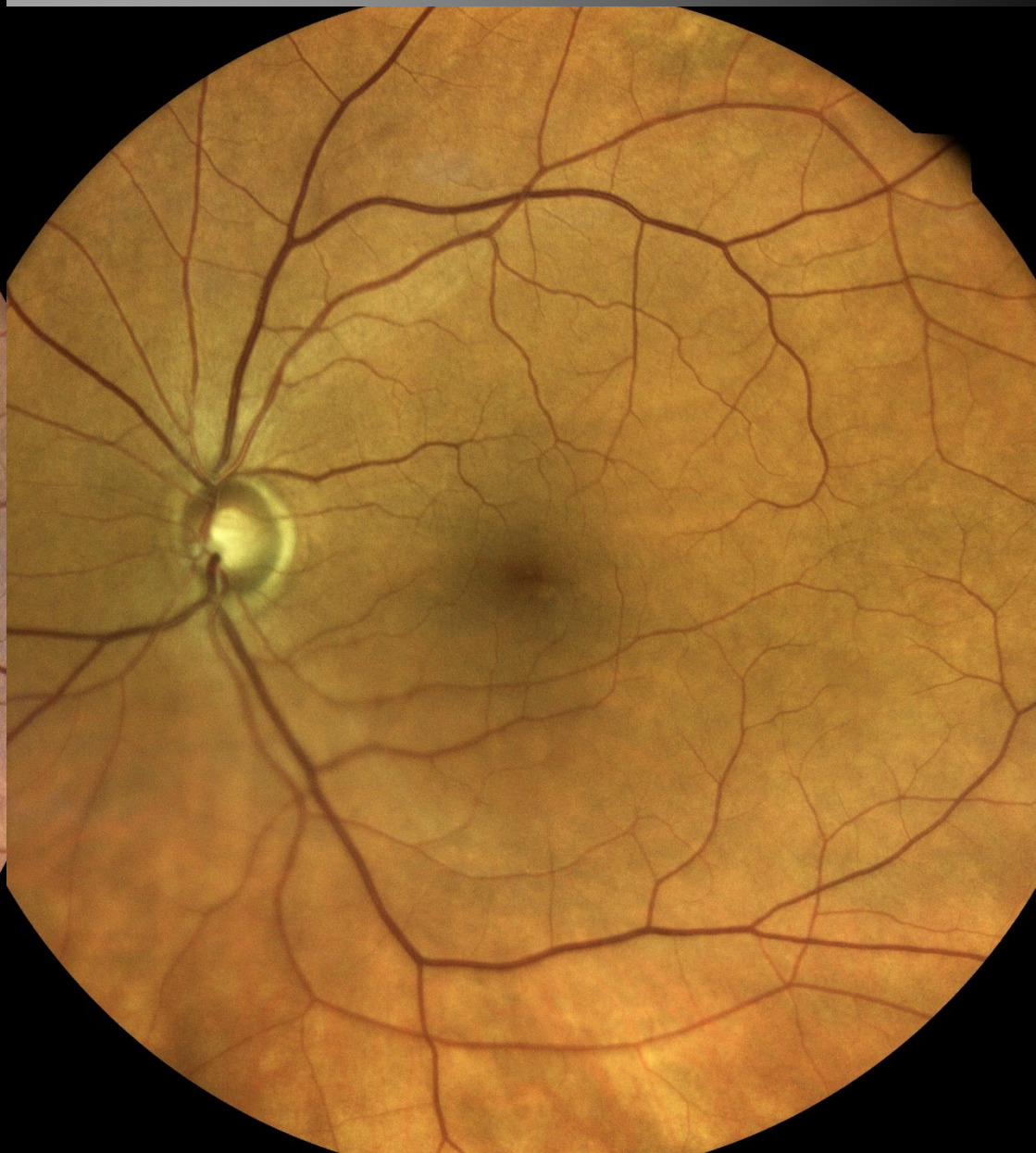
So What?

- For every 1 mm IOP lowered, risk of progression decreases by 10%
- Relative risk of progression decreased by 50% with treatment
- No significant adverse effects

Patient LB: switch from latanoprost to Rocklatan

- 74yo M
- Medical history
  - HTN, asthma, prostate cancer
- S/P phaco/IOL OD
- Phakic OS with PXE, mild cataract
- Exfoliation glaucoma treated since 2017
- Pre-treatment IOP
  - OD 23mm Hg
  - OS 18mm Hg





VF 11 05 19

Central 24-2 Threshold Test

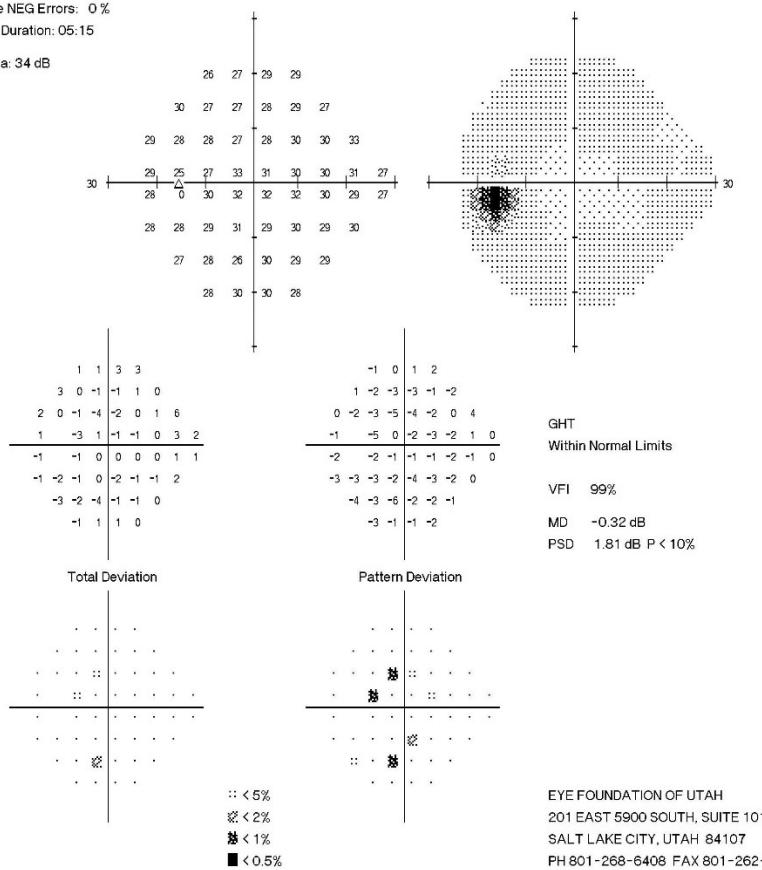
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 2/14
False POS Errors: 1 %
False NEG Errors: 0 %
Test Duration: 05:15

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter:
Visual Acuity:
RX: +1.50 DS +0.50 DC X 135

Date: 11-05-2019
Time: 8:57 AM
Age: 74

Fovea: 34 dB



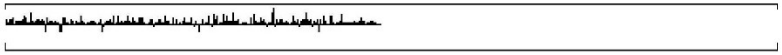
GHT
Within Normal Limits

VFI 99%

MD -0.32 dB
PSD 1.81 dB P < 10%

:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%

EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE 101
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-262-9216
WWW.EYEFOUNDATION.COM



HFA II 740-21058-5.1/5.1

Central 24-2 Threshold Test

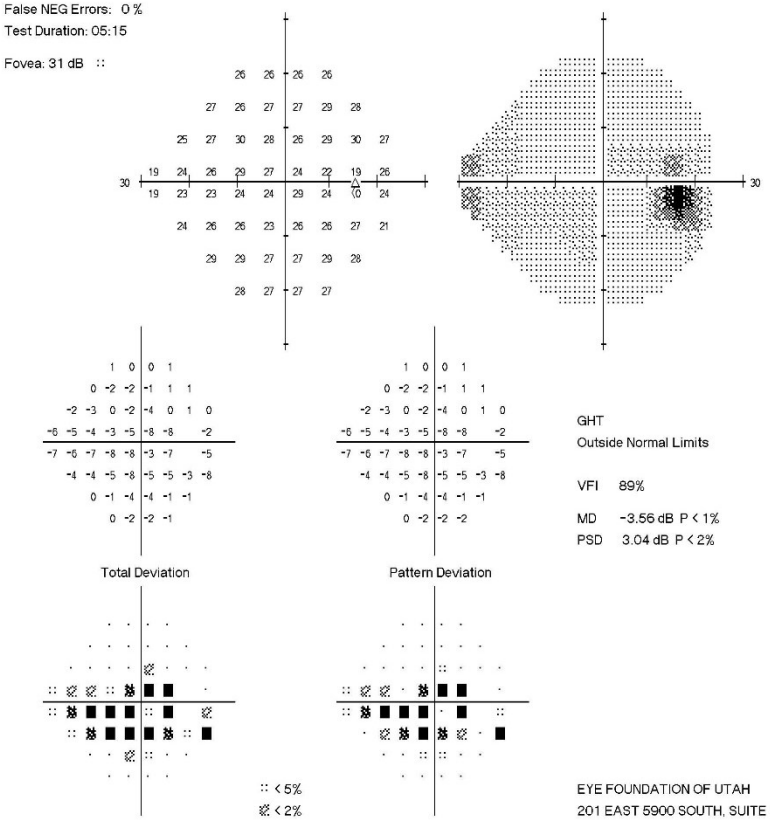
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 2/15
False POS Errors: 1 %
False NEG Errors: 0 %
Test Duration: 05:15

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter:
Visual Acuity:
RX: DS +1.50 DC X 96

Date: 11-05-2019
Time: 8:49 AM
Age: 74

Fovea: 31 dB ::



GHT
Outside Normal Limits

VFI 89%

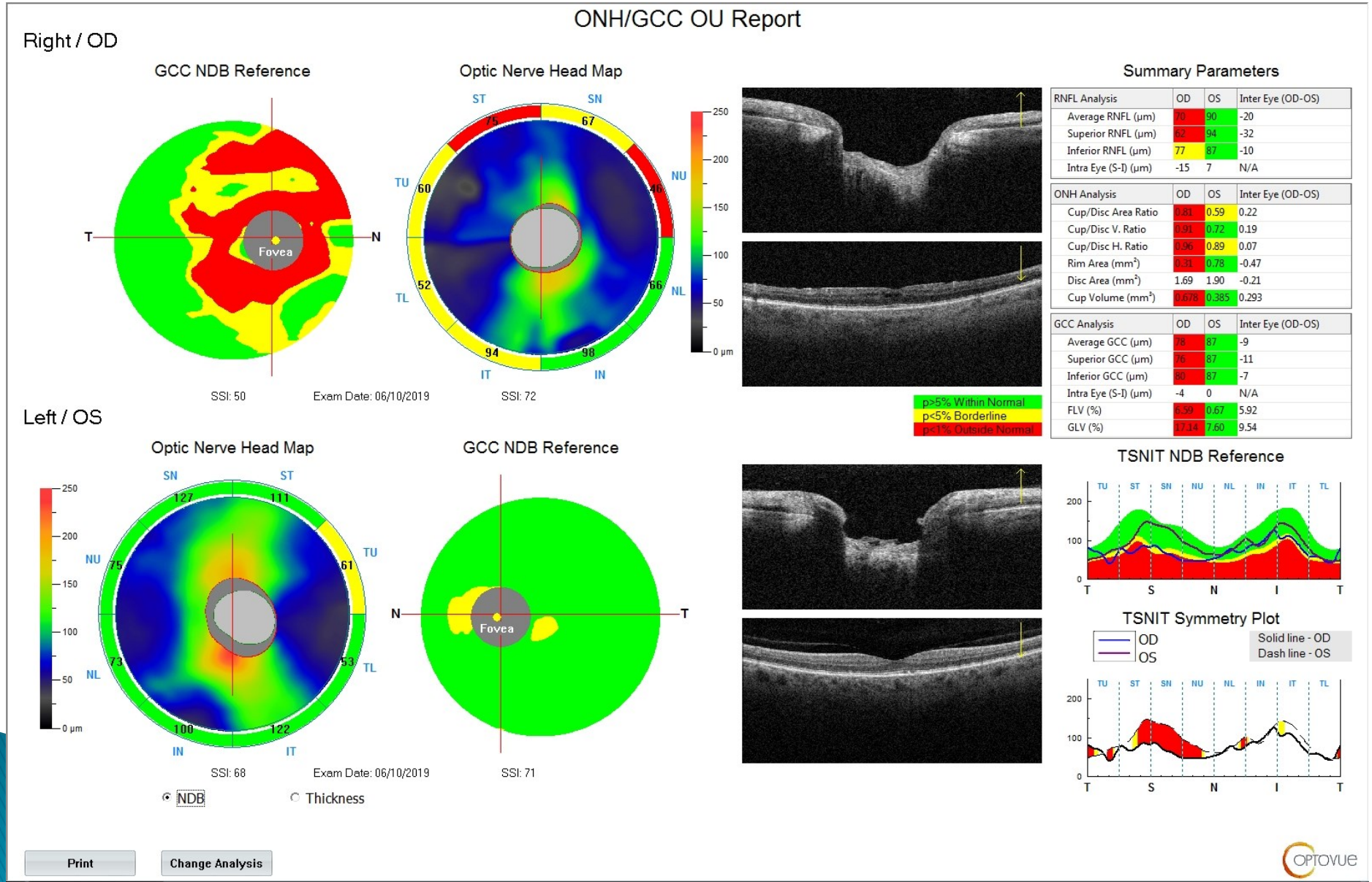
MD -3.56 dB P < 1%
PSD 3.04 dB P < 2%

:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%

EYE FOUNDATION OF UTAH
201 EAST 5900 SOUTH, SUITE 101
SALT LAKE CITY, UTAH 84107
PH 801-268-6408 FAX 801-262-9216
WWW.EYEFOUNDATION.COM

HFA II 740-21058-5.1/5.1

OCT 6 10 2019 shows damage OD



6.10.2019

- Exfoliation glaucoma treated with PGA since 2017
  - SLT OD performed 2018
- Pre-treatment IOP
  - OD 23mm Hg
  - OS 18mm Hg
- IOP while on latanoprost QHS OU
  - OD 17mm Hg OS 20mm Hg
- Lower IOP desired
- Plan: D/C latanoprost, begin Rocklatan QHS OU

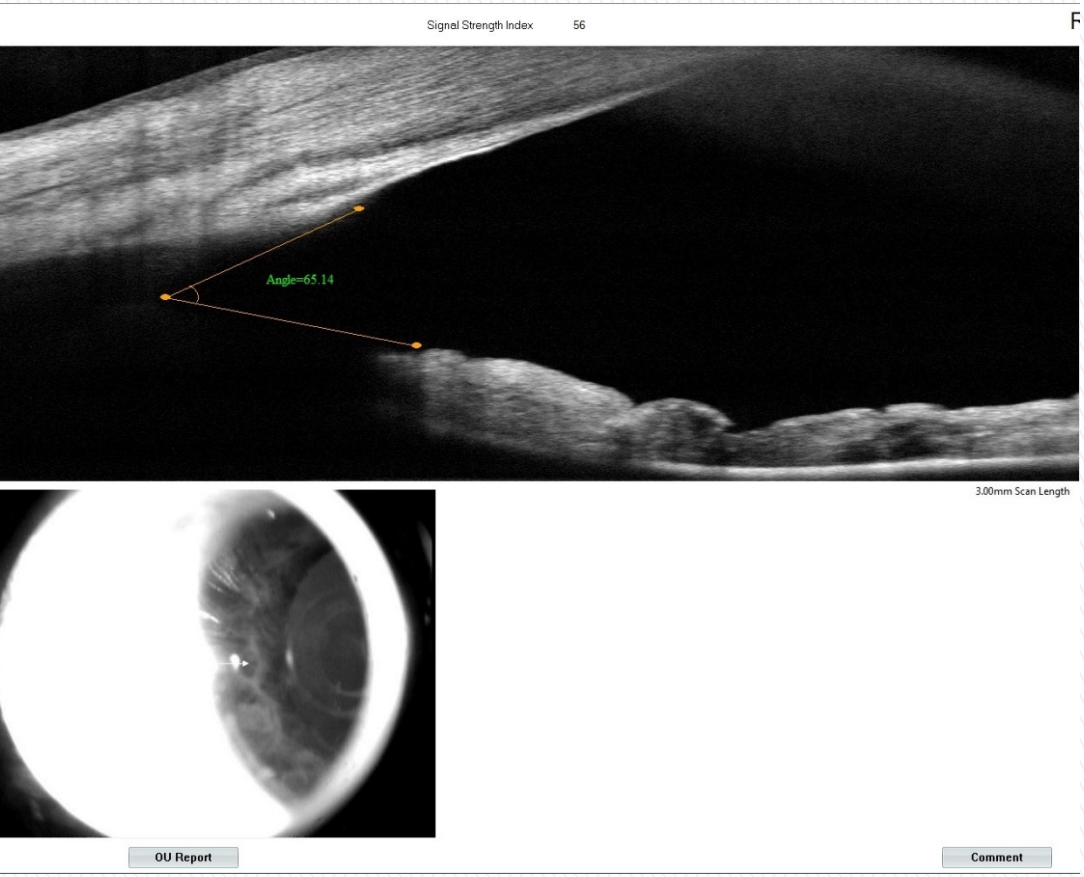
7.02.2019

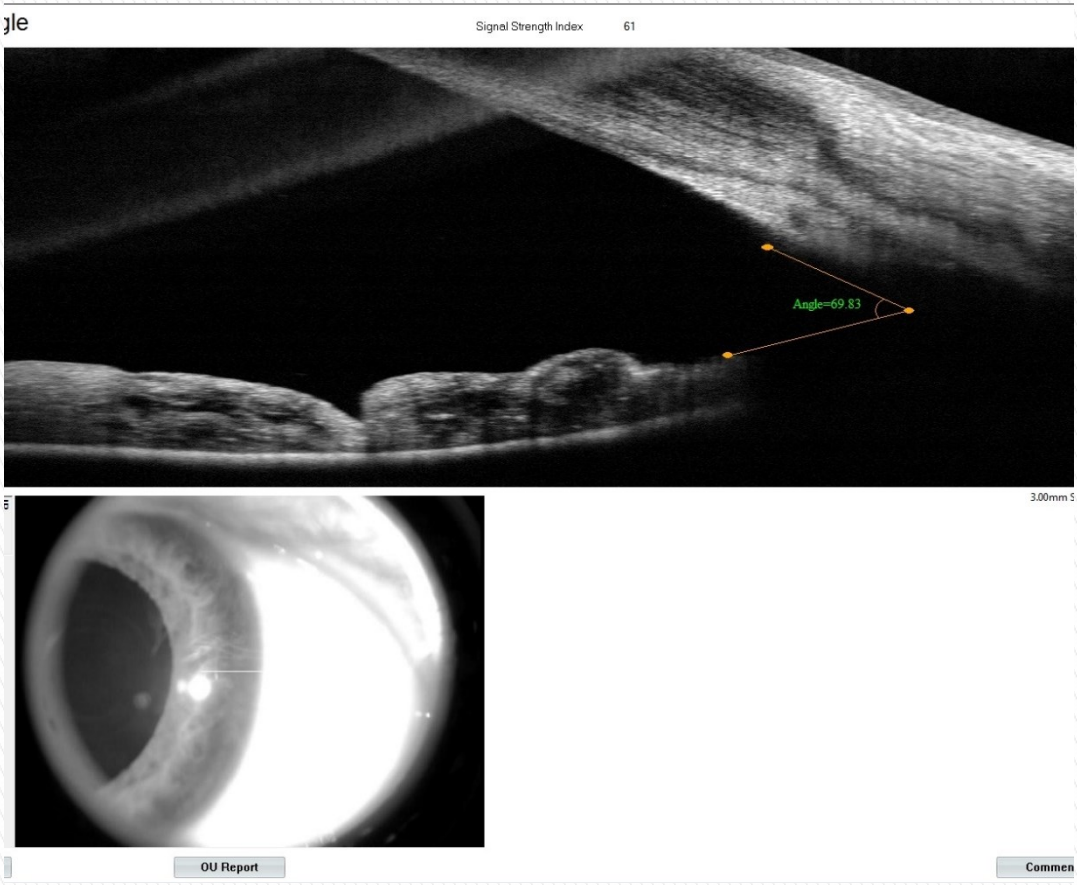
- Patient reports compliant use of Rocklatan OU QHS
- Noted mild conjunctival hyperemia initially but since has cleared
- Tolerating Rocklatan well
- IOP
  - OD 12mm Hg
  - OS 11mm Hg
- Plan: Continue Rocklatan OU QHS

Jeff

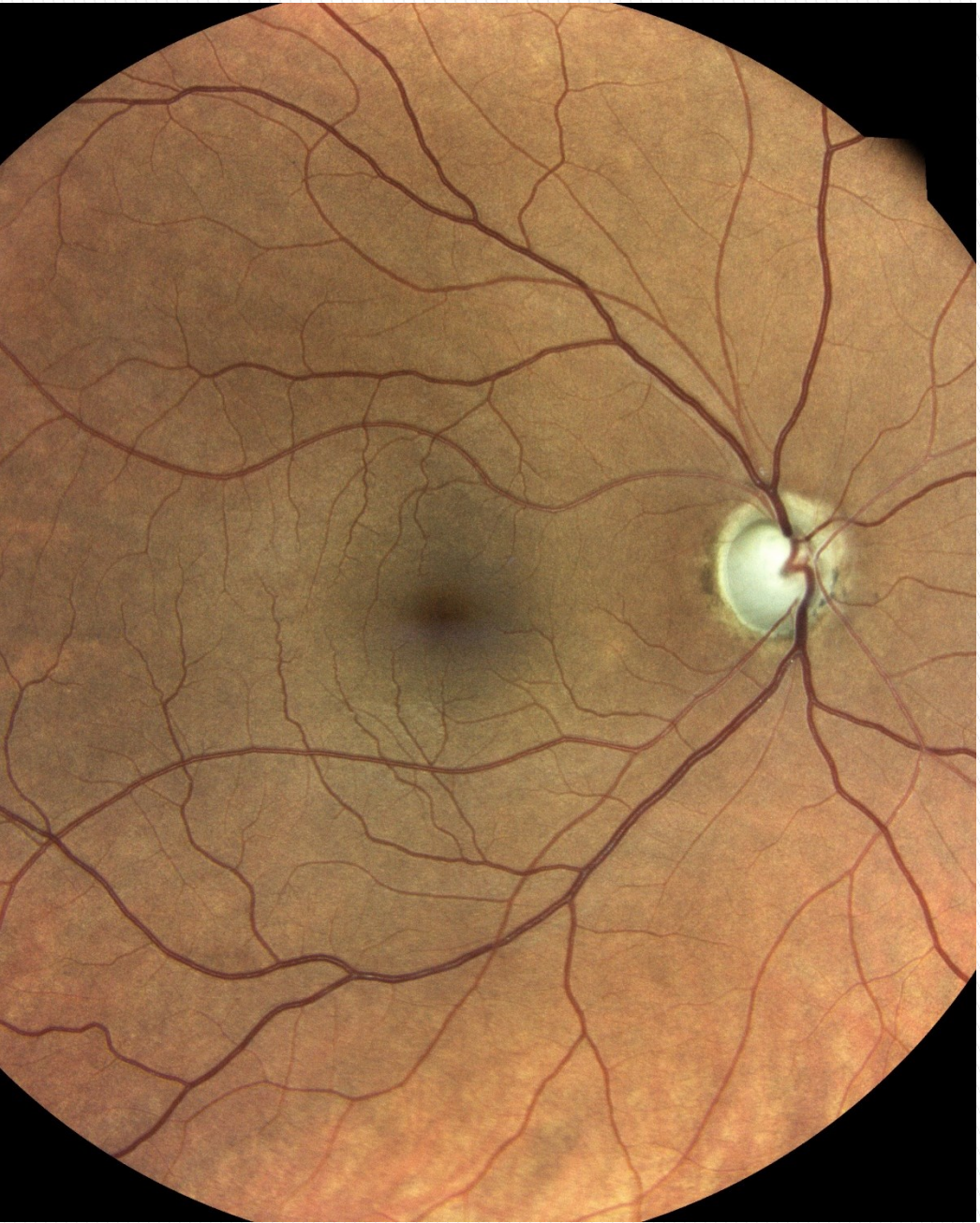
- 54yo M referred as glaucoma suspect
- VA 20/40 OU
- IOP
  - OD 44mmHg
  - OS 36mm Hg
- CCT
  - OD 542
  - OS 546
- Slit lamp exam reveals corneal endothelial pigment dusting OU
- Gonioscopy confirms Pigmentary Dispersion Syndrome OU

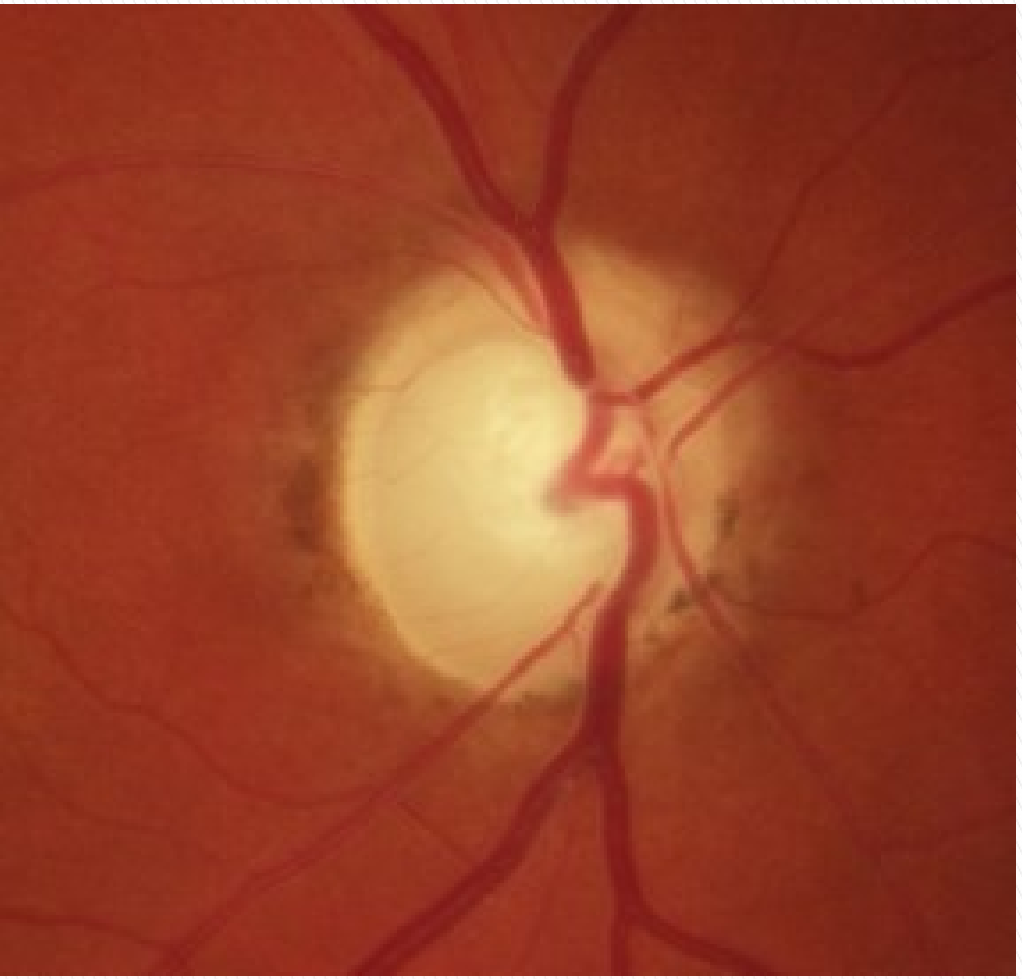
OCT shows iris concavity OU

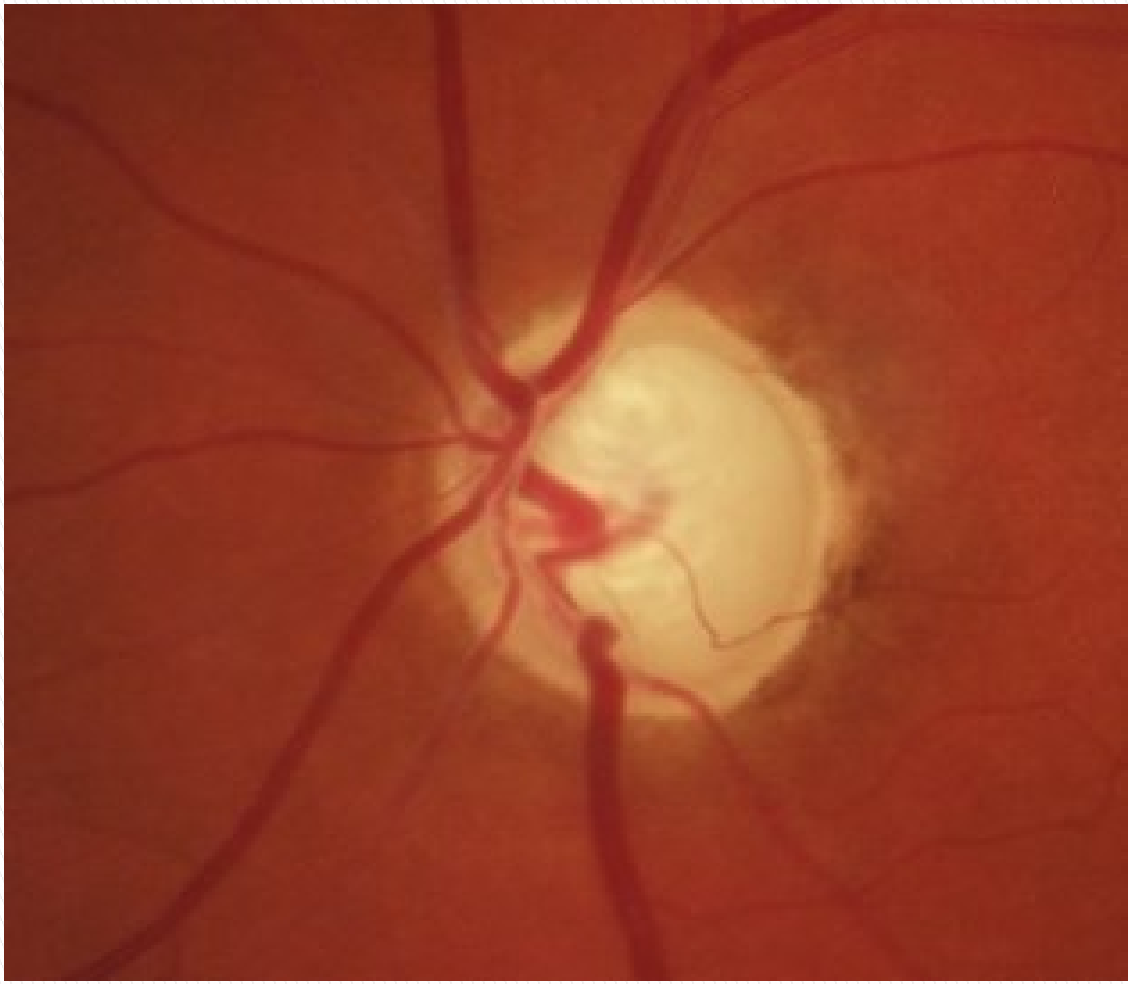




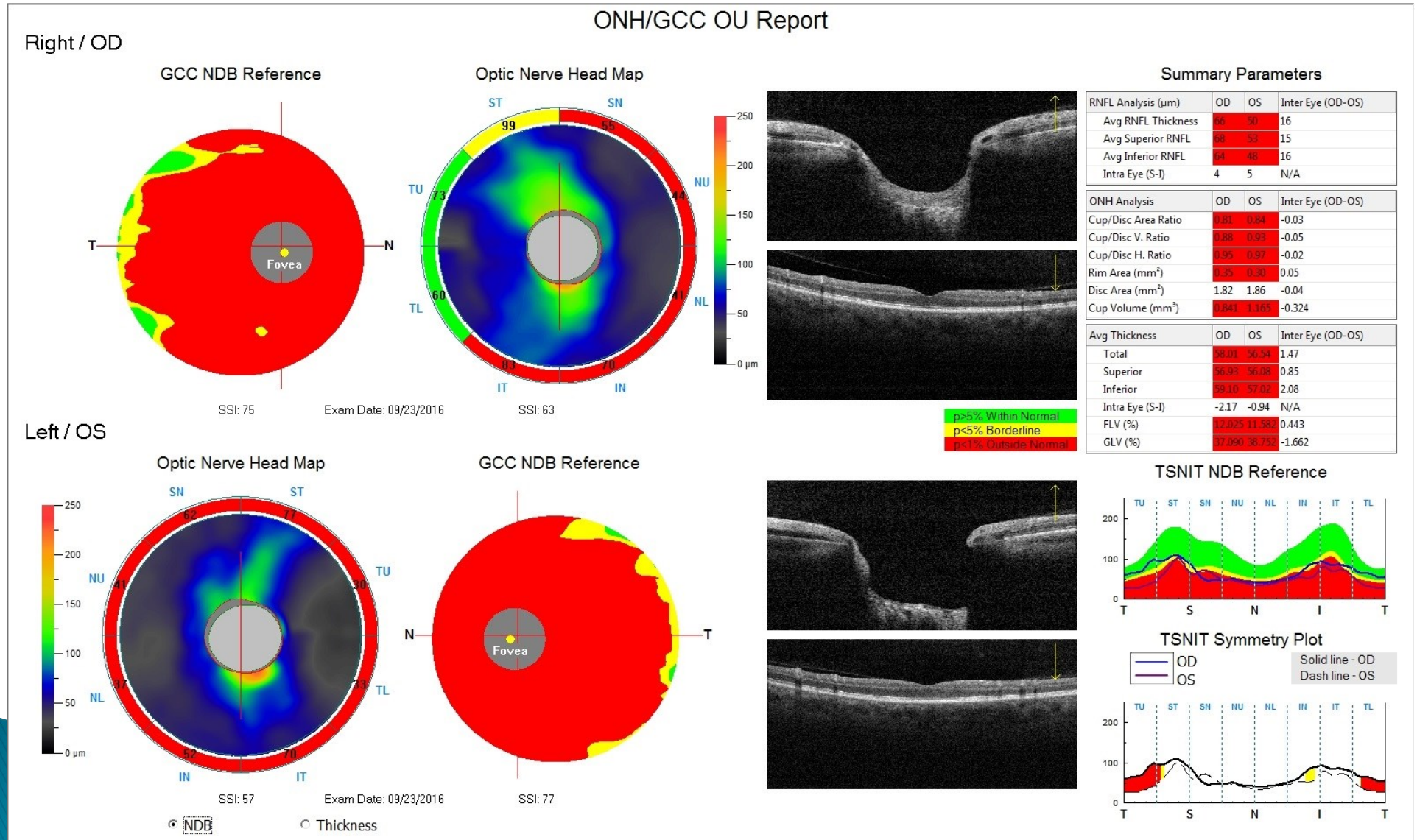
Gonioscopy







Initial OCT


ONH/GCC OU Report
Right / OD
GCC NDB Reference
Optic Nerve Head Map
Fovea
T
N
ST
SN
TU
NU
TL
NL
IT
IN
99
55
73
44
60
41
83
70
250
200
150
100
50
0 µm
SSI: 75
Exam Date: 09/23/2016
SSI: 63
Summary Parameters
RNFL Analysis (µm) | OD | OS | Inter Eye (OD-OS)
Avg RNFL Thickness | 66 | 50 | 16
Avg Superior RNFL | 68 | 53 | 15
Avg Inferior RNFL | 64 | 48 | 16
Intra Eye (S-I) | 4 | 5 | N/A
ONH Analysis | OD | OS | Inter Eye (OD-OS)
Cup/Disc Area Ratio | 0.81 | 0.84 | -0.03
Cup/Disc V. Ratio | 0.88 | 0.93 | -0.05
Cup/Disc H. Ratio | 0.95 | 0.97 | -0.02
Rim Area (mm²) | 0.35 | 0.30 | 0.05
Disc Area (mm²) | 1.82 | 1.86 | -0.04
Cup Volume (mm³) | 0.841 | 1.165 | -0.324
Avg Thickness | OD | OS | Inter Eye (OD-OS)
Total | 58.01 | 56.54 | 1.47
Superior | 56.93 | 56.08 | 0.85
Inferior | 59.10 | 57.02 | 2.08
Intra Eye (S-I) | -2.17 | -0.94 | N/A
FLV (%) | 12.025 | 11.582 | 0.443
GLV (%) | 37.090 | 38.752 | -1.662
p>5% Within Normal
p<5% Borderline
p<1% Outside Normal
Left / OS
Optic Nerve Head Map
GCC NDB Reference
SN
ST
NU
TU
NL
TL
IN
IT
62
77
41
30
27
33
52
70
Fovea
N
T
SSI: 57
Exam Date: 09/23/2016
SSI: 77
NDB
Thickness
TSNIT NDB Reference
TU ST SN NU NL IN IT TL
200
100
0
T S N I T
TSNIT Symmetry Plot
OD
OS
Solid line - OD
Dash line - OS

24-2 VF

Central 24-2 Threshold Test

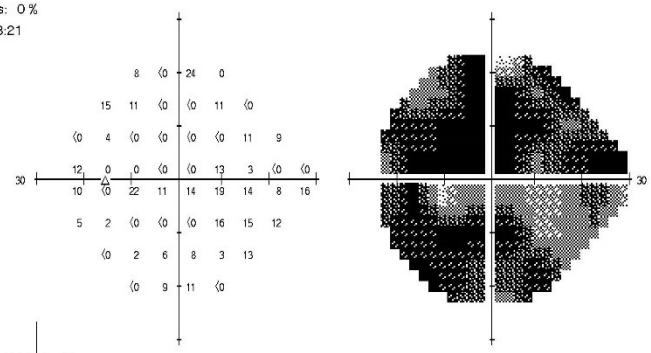
Fixation Monitor: Blind Spot
Fixation Target: Central
Fixation Losses: 0/17
False POS Errors: 4 %
False NEG Errors: 0 %
Test Duration: 08:21

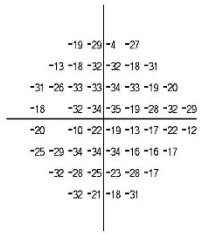
Fovea: OFF

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter:
Visual Acuity:
RX: DS DC X

Date: 08-19-2016
Time: 12:43 PM
Age: 51





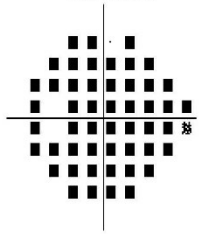
Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

GHT
Outside Normal Limits

VFI 21%

MD -24.84 dB P < 0.5%
PSD 8.21 dB P < 0.5%

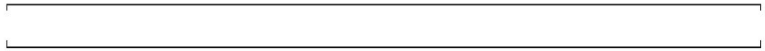
Total Deviation



Pattern Deviation

Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%



Central 24-2 Threshold Test

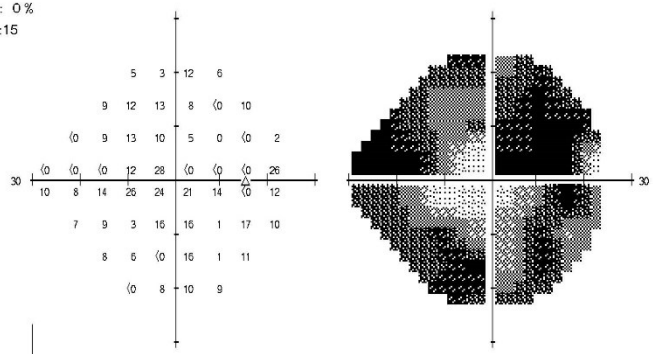
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 0/20
False POS Errors: 0 %
False NEG Errors: 0 %
Test Duration: 08:15

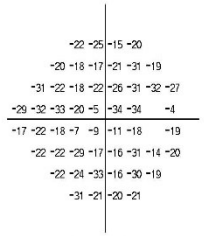
Fovea: OFF

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 7.0 mm
Visual Acuity:
RX: DS DC X

Date: 08-19-2016
Time: 12:32 PM
Age: 51





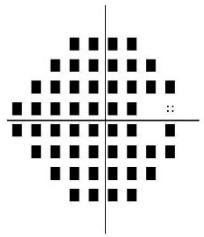
Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

GHT
Outside Normal Limits

VFI 35%

MD -21.72 dB P < 0.5%
PSD 8.54 dB P < 0.5%

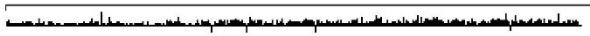
Total Deviation



Pattern Deviation

Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

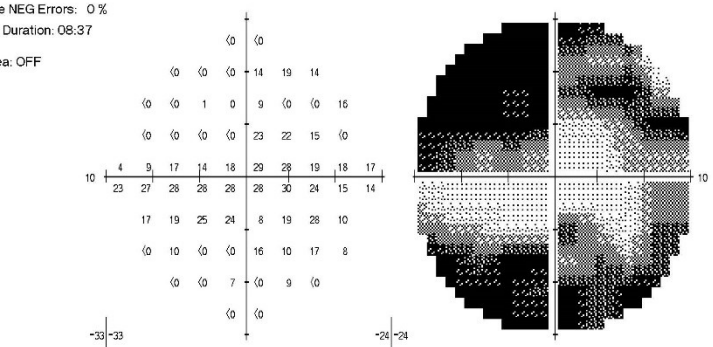
:: < 5%
▒ < 2%
▓ < 1%
■ < 0.5%



10-2 VF

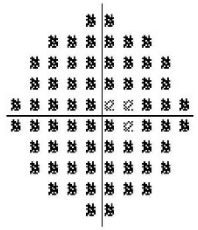
Central 10-2 Threshold Test

Fixation Monitor: Gaze/Blind Spot	Stimulus: III, White	Pupil Diameter: 4.9 mm	Date: 09-23-2016
Fixation Target: Central	Background: 31.5 ASB	Visual Acuity:	Time: 12:55 PM
Fixation Losses: 0/20	Strategy: SITA-Standard	RX: DS DC X	Age: 51
False POS Errors: 0 %			
False NEG Errors: 0 %			
Test Duration: 08:37			
Fovea: OFF			

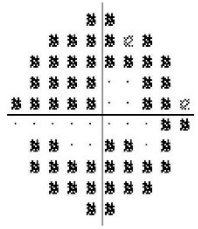


MD -21.84 dB P < 1%
PSD 10.77 dB P < 1%

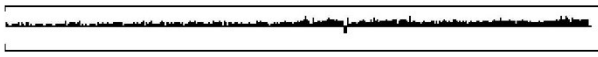
Total Deviation



Pattern Deviation

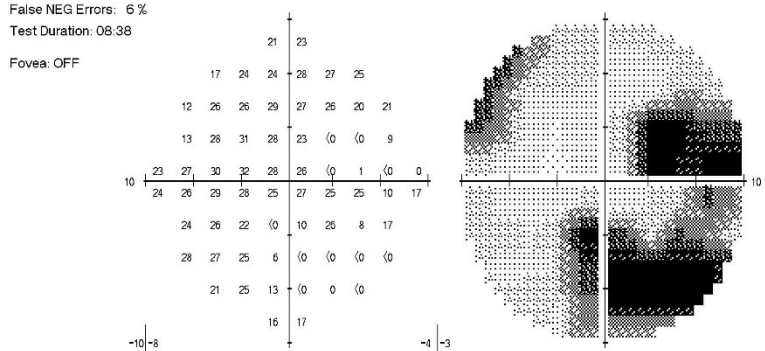


:: < 5%
▨ < 2%
▩ < 1%



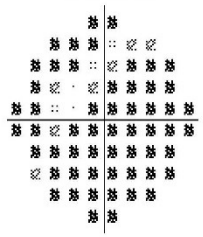
Central 10-2 Threshold Test

Fixation Monitor: Gaze/Blind Spot	Stimulus: III, White	Pupil Diameter: 5.6 mm	Date: 09-23-2016
Fixation Target: Central	Background: 31.5 ASB	Visual Acuity:	Time: 12:44 PM
Fixation Losses: 1/21	Strategy: SITA-Standard	RX: DS DC X	Age: 51
False POS Errors: 1 %			
False NEG Errors: 6 %			
Test Duration: 08:38			
Fovea: OFF			

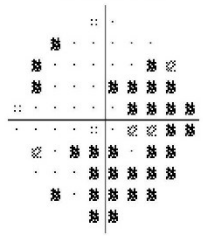


MD -15.53 dB P < 1%
PSD 11.71 dB P < 1%

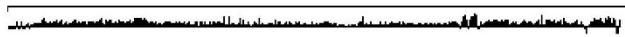
Total Deviation



Pattern Deviation



:: < 5%
▨ < 2%
▩ < 1%



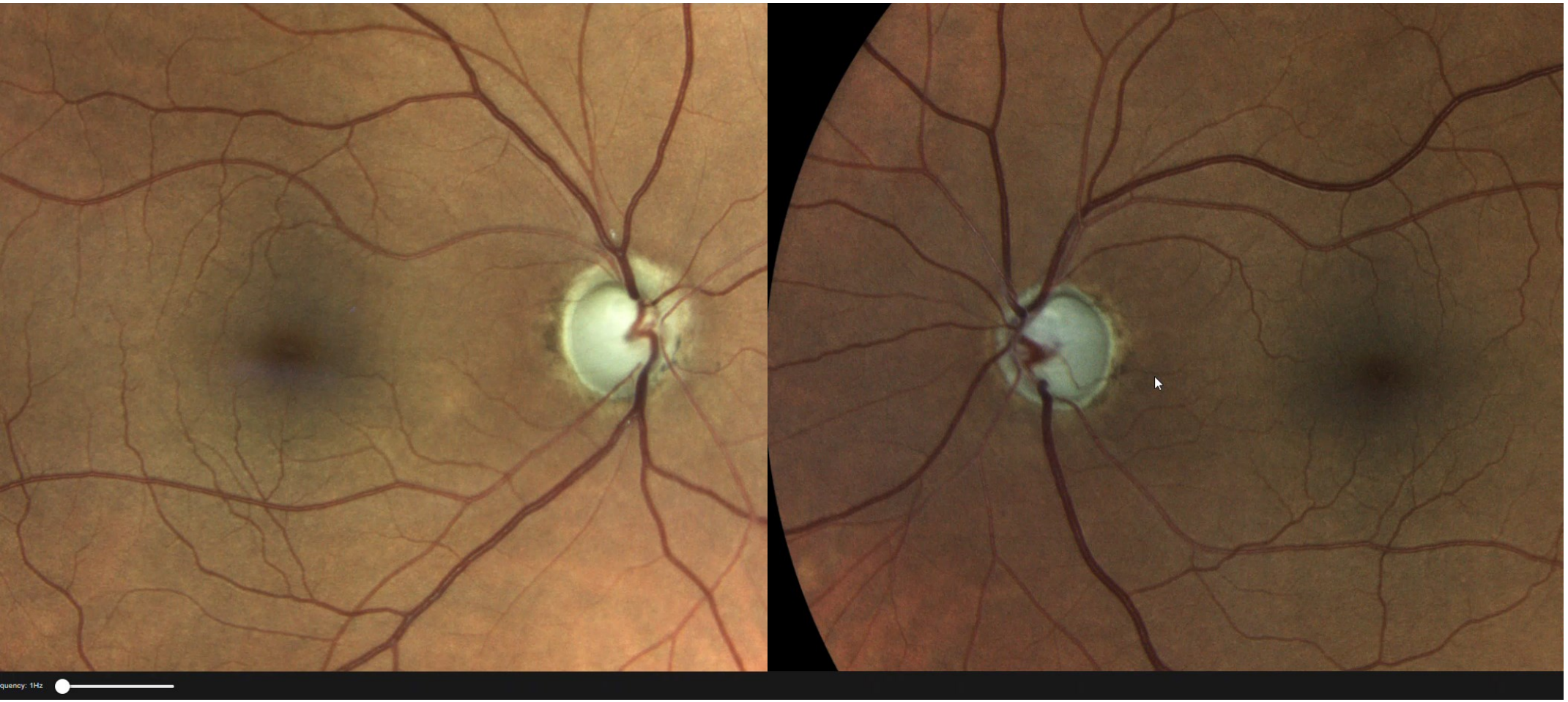
What is your plan?

- 1. Refer him to someone I don't like
- 2. Treat him myself
- 3. Call Rob

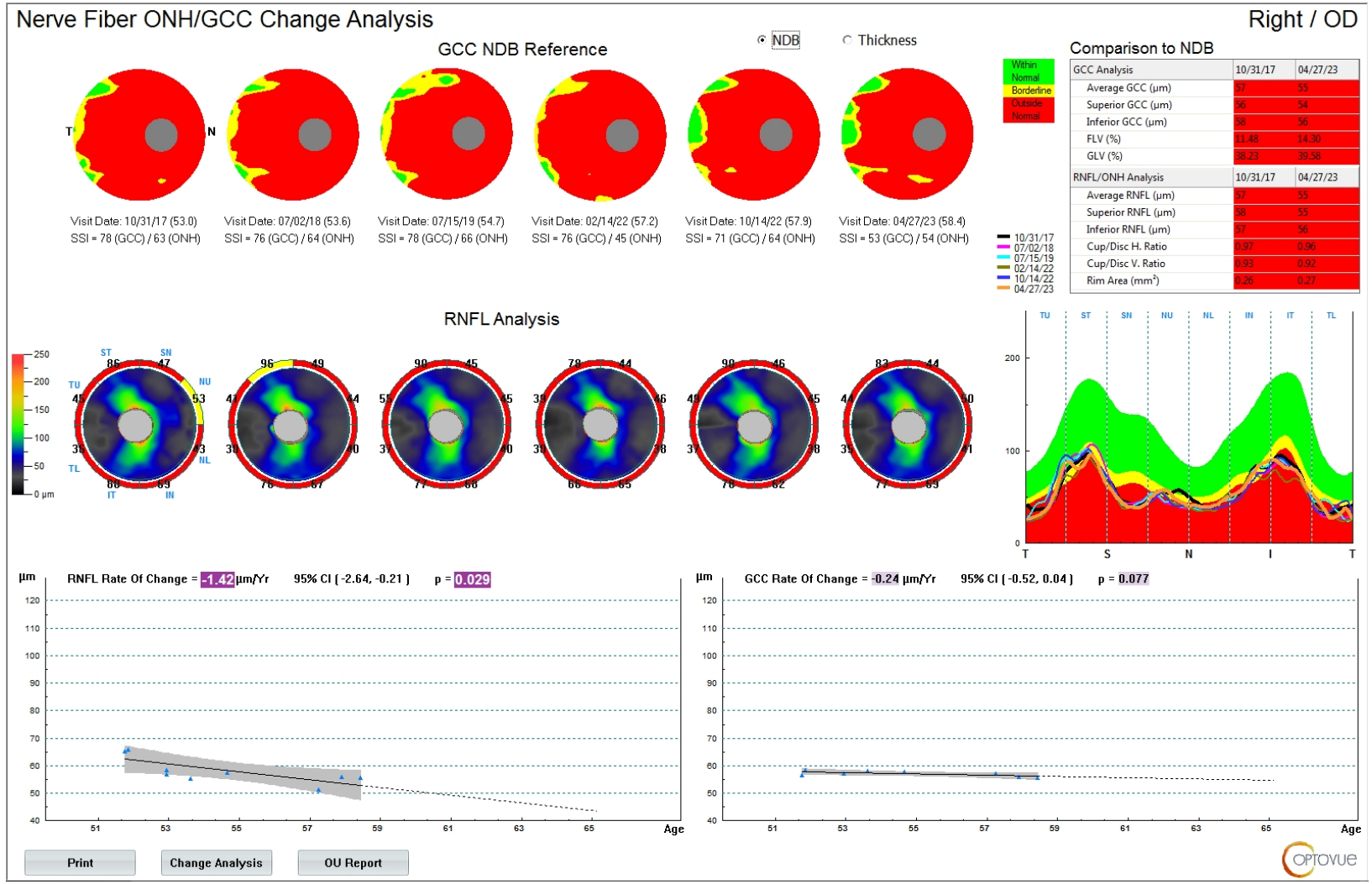
Treatment history

- Recently managed with latanoprost QHS OU, dorzolamide-timolol FDC BID OU
- Developed allergy to brimonidine earlier
- Also had SLT OU
- IOP running 14-16mm Hg OU on multiple visits
- Target IOP 10-12mm Hg
- Discussed option, risks and benefits of surgery
- Later changed to Rocklatan QHS OU and dorzolamide-timolol FDC BID OU
- IOP now 8-10mm Hg OU without surgery

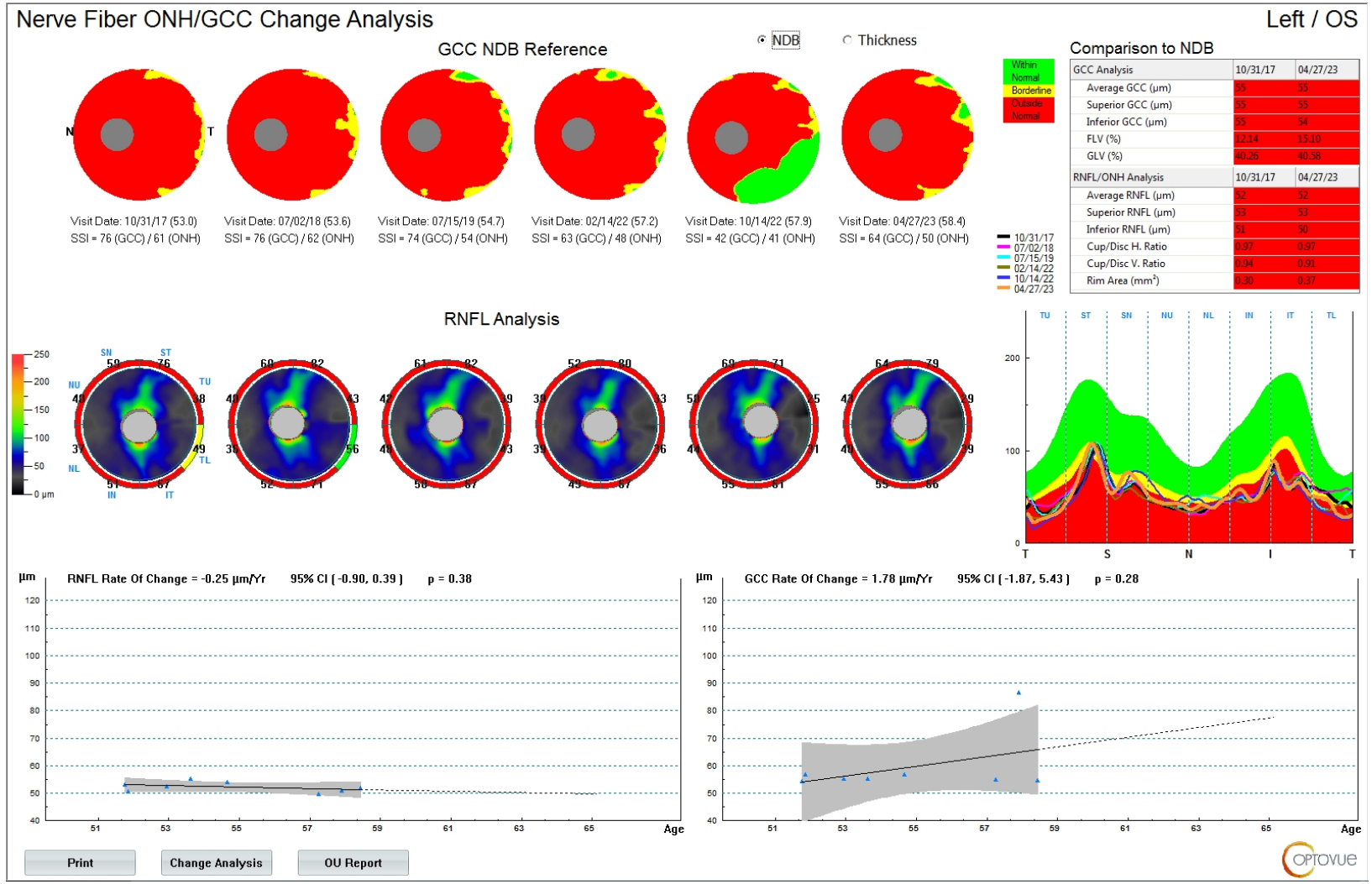
Jeff 2018-2023



OD 2017-2023


Nerve Fiber ONH/GCC Change Analysis
Right / OD
GCC NDB Reference
NDB
Thickness
Within Normal
Borderline
Outside Normal
Visit Date: 10/31/17 (53.0)
SSI = 78 (GCC) / 63 (ONH)
Visit Date: 07/02/18 (53.6)
SSI = 76 (GCC) / 64 (ONH)
Visit Date: 07/15/19 (54.7)
SSI = 78 (GCC) / 66 (ONH)
Visit Date: 02/14/22 (57.2)
SSI = 76 (GCC) / 45 (ONH)
Visit Date: 10/14/22 (57.9)
SSI = 71 (GCC) / 64 (ONH)
Visit Date: 04/27/23 (58.4)
SSI = 53 (GCC) / 54 (ONH)
10/31/17
07/02/18
07/15/19
02/14/22
10/14/22
04/27/23
Comparison to NDB
GCC Analysis 10/31/17 04/27/23
Average GCC (µm) 57 55
Superior GCC (µm) 56 54
Inferior GCC (µm) 58 56
FLV (%) 11.48 14.30
GLV (%) 38.23 39.58
RNFL/ONH Analysis 10/31/17 04/27/23
Average RNFL (µm) 57 55
Superior RNFL (µm) 58 55
Inferior RNFL (µm) 57 56
Cup/Disc H. Ratio 0.97 0.96
Cup/Disc V. Ratio 0.93 0.92
Rim Area (mm²) 0.26 0.27
RNFL Analysis
TU ST SN NU NL IN IT TL
T S N I T
µm
RNFL Rate Of Change = -1.42 µm/Yr 95% CI (-2.64, -0.21) p = 0.029
GCC Rate Of Change = -0.24 µm/Yr 95% CI (-0.52, 0.04) p = 0.077
Age
Print
Change Analysis
OU Report
OPTOVUE

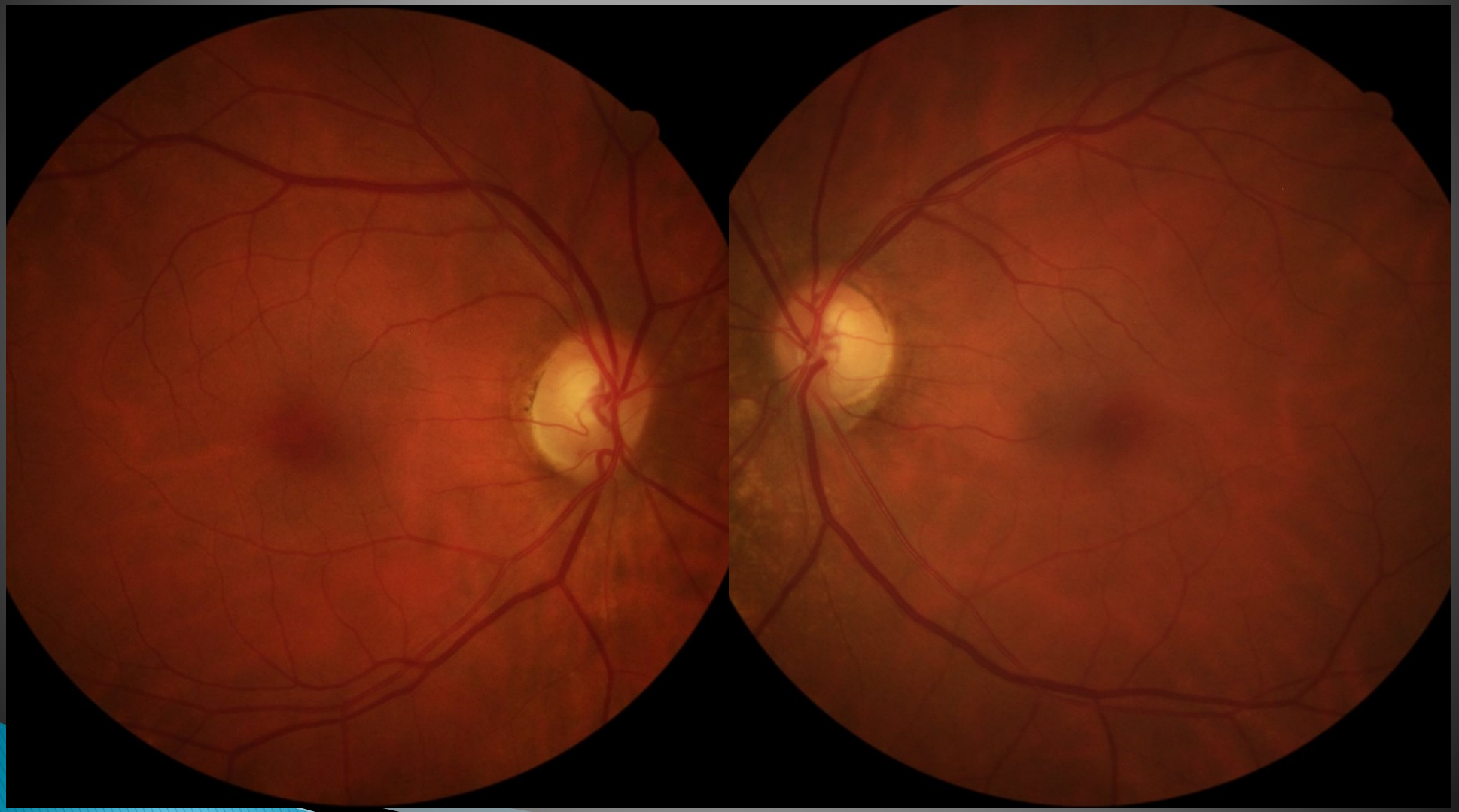
OS 2017-2023


Nerve Fiber ONH/GCC Change Analysis
Left / OS
GCC NDB Reference
NDB
Thickness
Within Normal
Borderline
Outside Normal
Visit Date: 10/31/17 (53.0)
SSI = 76 (GCC) / 61 (ONH)
Visit Date: 07/02/18 (53.6)
SSI = 76 (GCC) / 62 (ONH)
Visit Date: 07/15/19 (54.7)
SSI = 74 (GCC) / 54 (ONH)
Visit Date: 02/14/22 (57.2)
SSI = 63 (GCC) / 48 (ONH)
Visit Date: 10/14/22 (57.9)
SSI = 42 (GCC) / 41 (ONH)
Visit Date: 04/27/23 (58.4)
SSI = 64 (GCC) / 50 (ONH)
10/31/17
07/02/18
07/15/19
02/14/22
10/14/22
04/27/23
Comparison to NDB
GCC Analysis 10/31/17 04/27/23
Average GCC (µm) 55 55
Superior GCC (µm) 55 55
Inferior GCC (µm) 55 54
FLV (%) 12.14 15.10
GLV (%) 40.26 40.58
RNFL/ONH Analysis 10/31/17 04/27/23
Average RNFL (µm) 52 52
Superior RNFL (µm) 53 53
Inferior RNFL (µm) 51 50
Cup/Disc H. Ratio 0.97 0.97
Cup/Disc V. Ratio 0.94 0.91
Rim Area (mm²) 0.30 0.37
RNFL Analysis
TU ST SN NU NL IN IT TL
T S N I T
µm
RNFL Rate Of Change = -0.25 µm/Yr 95% CI [-0.90, 0.39] p = 0.38
GCC Rate Of Change = 1.78 µm/Yr 95% CI [-1.87, 5.43] p = 0.28
Age
Print
Change Analysis
OU Report
OPTOVUE

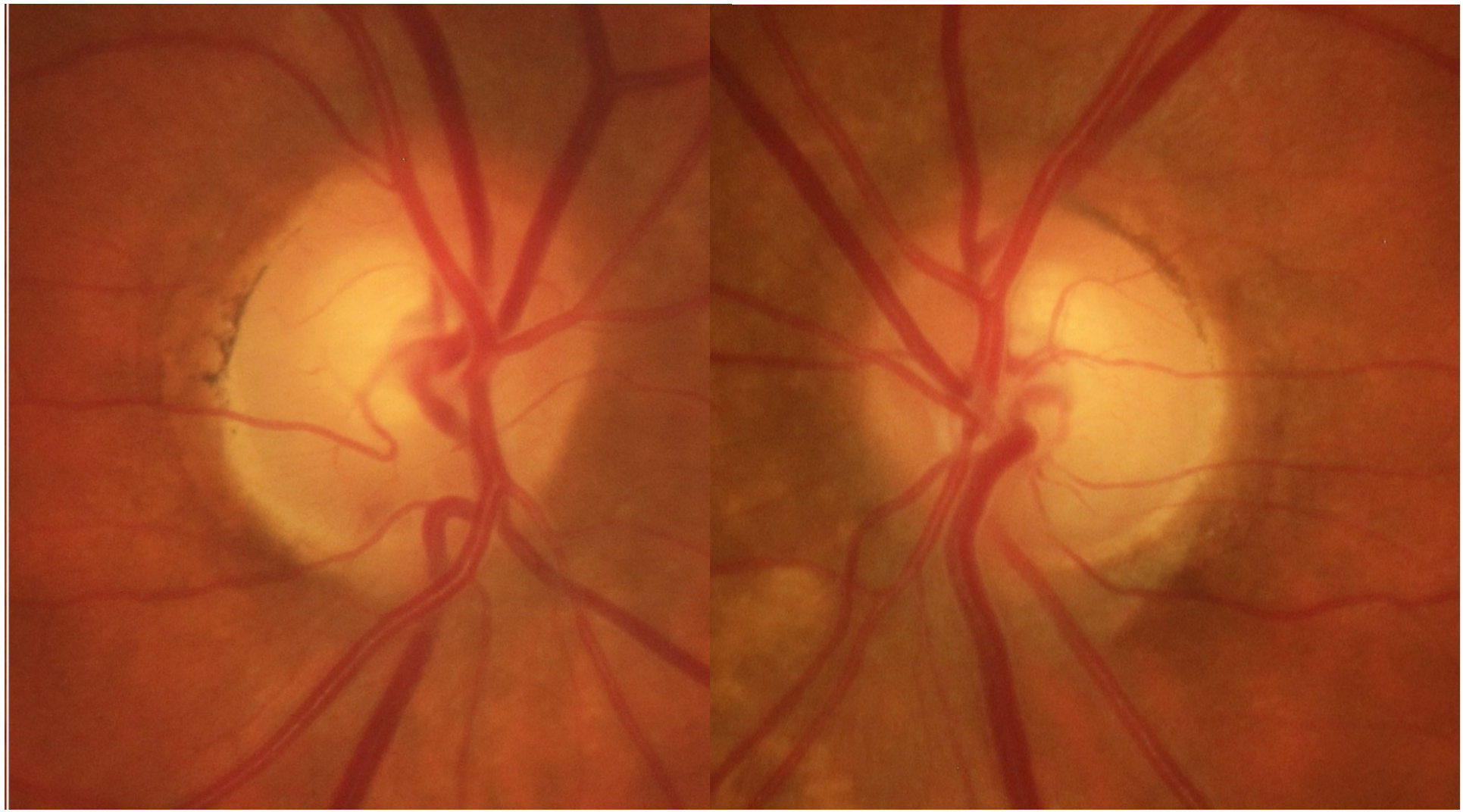
Lessons from Jeff's Case

- Young patient with severe glaucomatous damage
- Needs LOW target IOP
- Until advent of Netarsudil, he would likely have needed a trabeculectomy or tube shunt with high risk of complications
- Addition of Rocklatan allowed patient to get to a very low target IOP without surgery
- Shows the benefit of Rocklatan's unique MOA, including ability to decrease episcleral outflow pressure, thereby getting IOP to 10 or below.

Cindy



Cindy



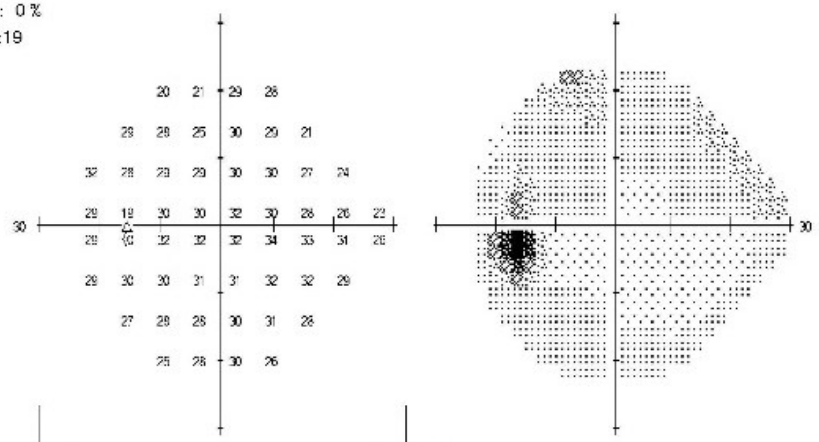
Central 24-2 Threshold Test

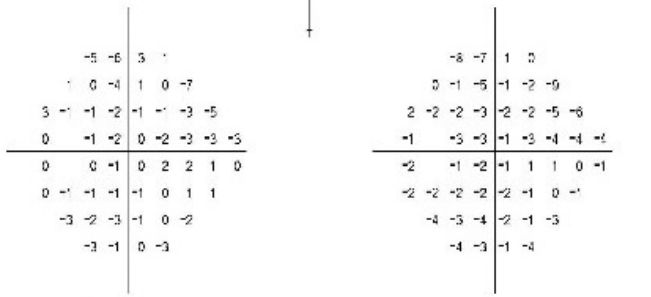
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 1/14
False POS Errors: 3 %
False NEG Errors: 0 %
Test Duration: 05:19
Fovea: OFF

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

Pupil Diameter: 3.7 mm
Visual Acuity:
RX: +1.75 DS DC X

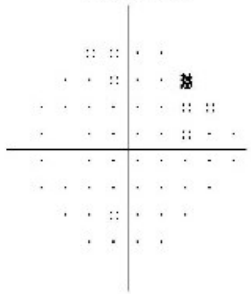
Date: 02-07-2017
Time: 2:01 PM
Age: 62

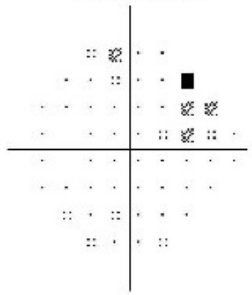




Total Deviation

Pattern Deviation





:: < 5%
⁘ < 2%
⁙ < 1%
■ < 0.5%

GHT
Within Normal Limits

VFI 98%

MD -0.87 dB
PSD 2.07 dB P < 5%

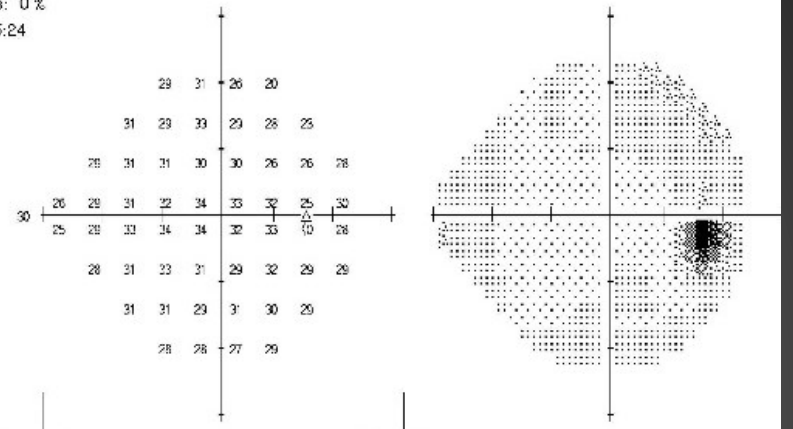
Central 24-2 Threshold Test

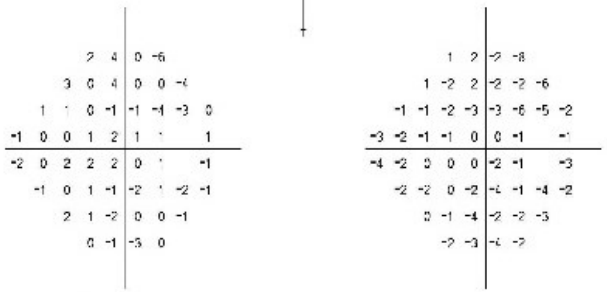
Fixation Monitor: Gaze/Blind Spot
Fixation Target: Central
Fixation Losses: 0/14
False POS Errors: 1 %
False NEG Errors: 0 %
Test Duration: 05:24
Fovea: OFF

Stimulus: III, White
Background: 31.5 ASB
Strategy: SITA-Standard

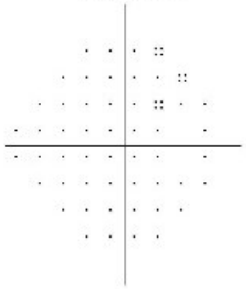
Pupil Diameter: 3.8 mm
Visual Acuity:
RX: +4.00 DS DC X

Date: 02-07-2
Time: 1:54 PM
Age: 62

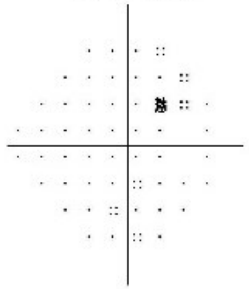




Total Deviation



Pattern Deviation



:: < 5%
⁘ < 2%
⁙ < 1%
■ < 0.5%

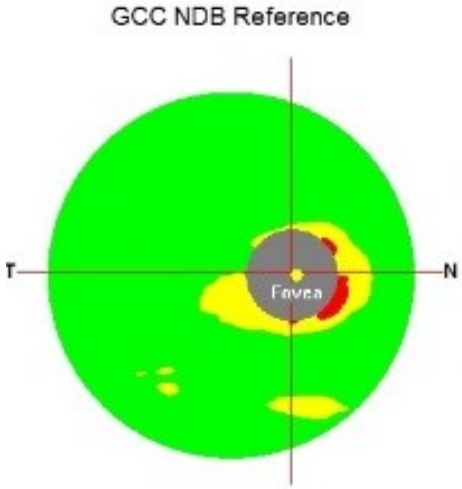
GHT
Within Normal Limits

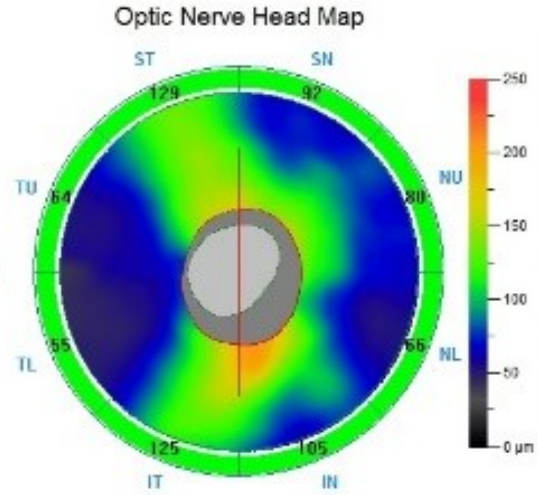
VFI 99%

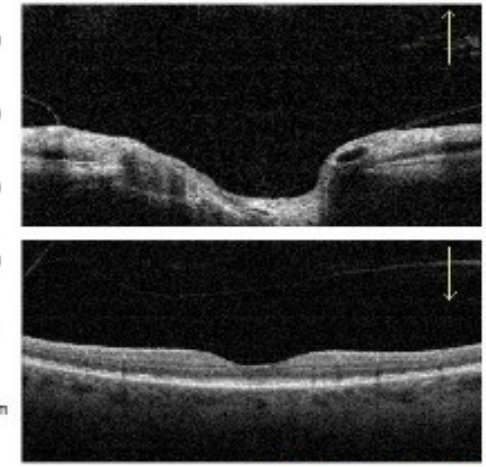
MD +0.09 dB
PSD 1.79 dB P < 10%

ONH/GCC OU Report

OD







Summary Parameters

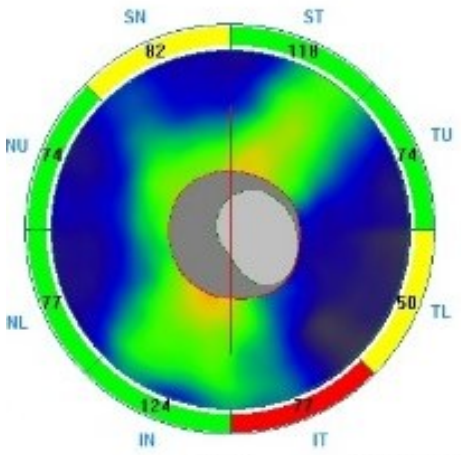
RNFL Analysis (µm)	OD	OS	Inter Eye (OD-OS)
Avg RNFL Thickness	90	84	6
Avg Superior RNFL	91	87	4
Avg Inferior RNFL	88	82	6
Intra Eye (S-I)	3	5	N/A

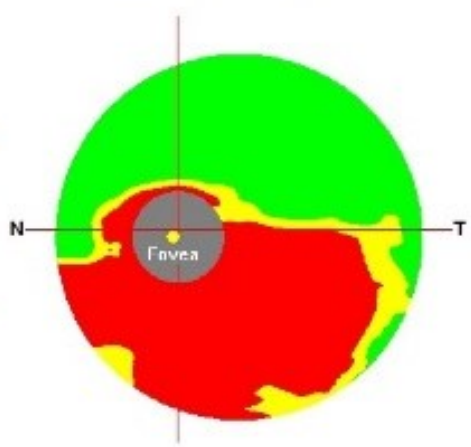
ONH Analysis	OD	OS	Inter Eye (OD-OS)
Cup/Disc Area Ratio	0.49	0.43	0.06
Cup/Disc V. Ratio	0.70	0.73	-0.03
Cup/Disc H. Ratio	0.81	0.66	0.15
Rim Area (mm²)	1.23	1.42	-0.19
Disc Area (mm²)	2.41	2.51	-0.10
Cup Volume (mm³)	0.365	0.206	0.159

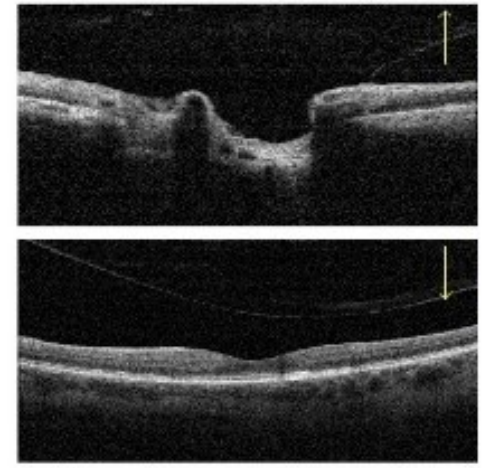
Avg Thickness	OD	OS	Inter Eye (OD-OS)
Total	85.92	75.42	10.50
Superior	88.99	85.65	3.34
Inferior	82.87	65.20	17.67
Intra Eye (S-I)	6.12	20.45	N/A
FLV (%)	0.385	10.035	-9.650
GLV (%)	9.201	19.948	-10.747

p>5% Within Normal
p<5% Borderline
p<1% Outside Normal

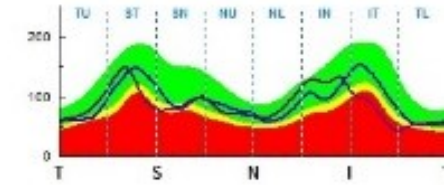
OS



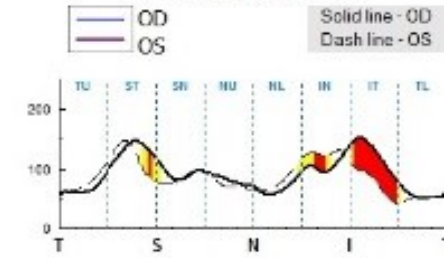




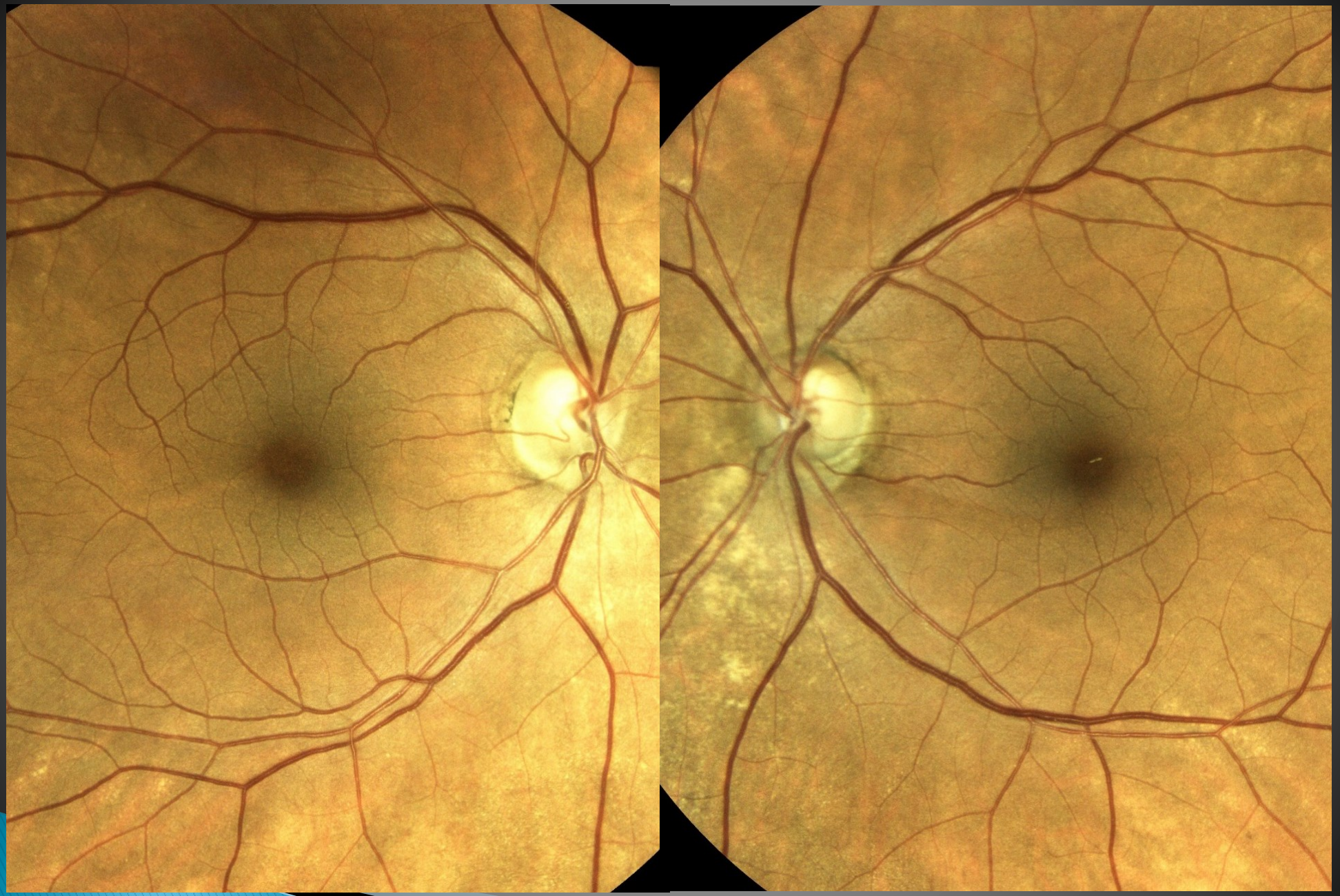
TSNIT NDB Reference



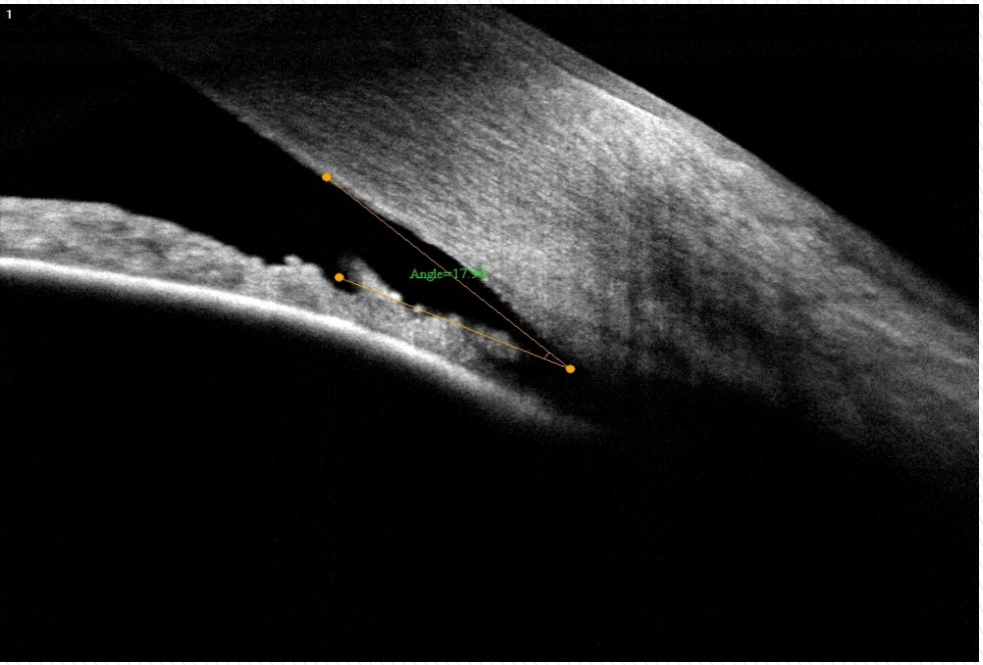
TSNIT Symmetry Plot

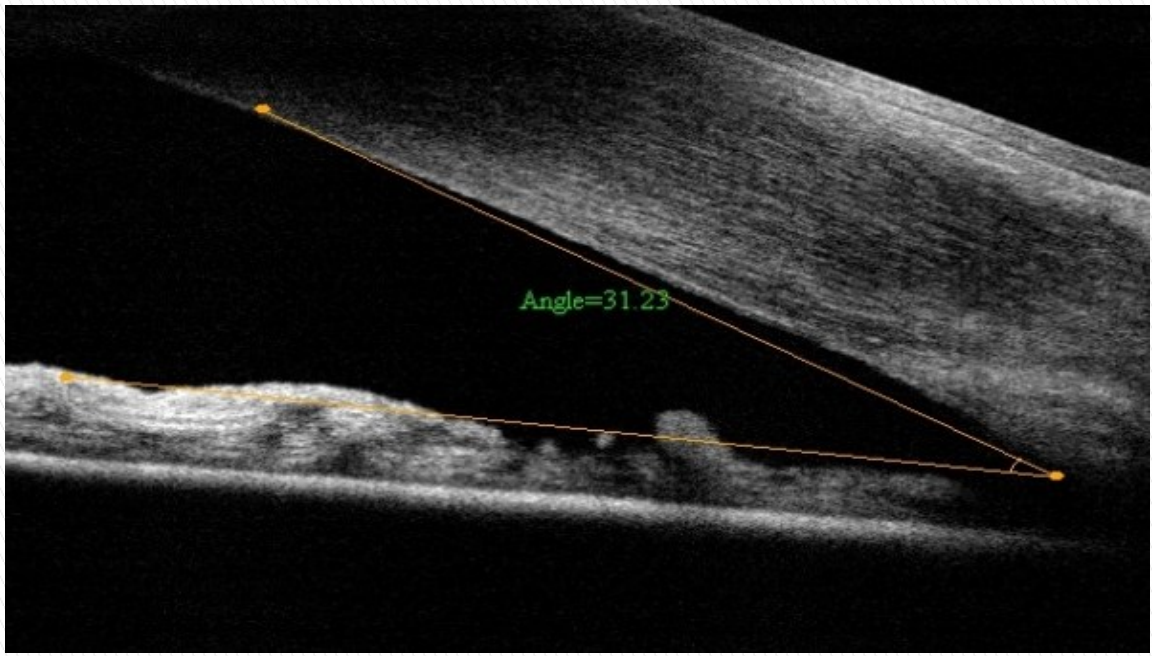


◉ NDB ○ Thickness



OCT Angle





Pre-LPI

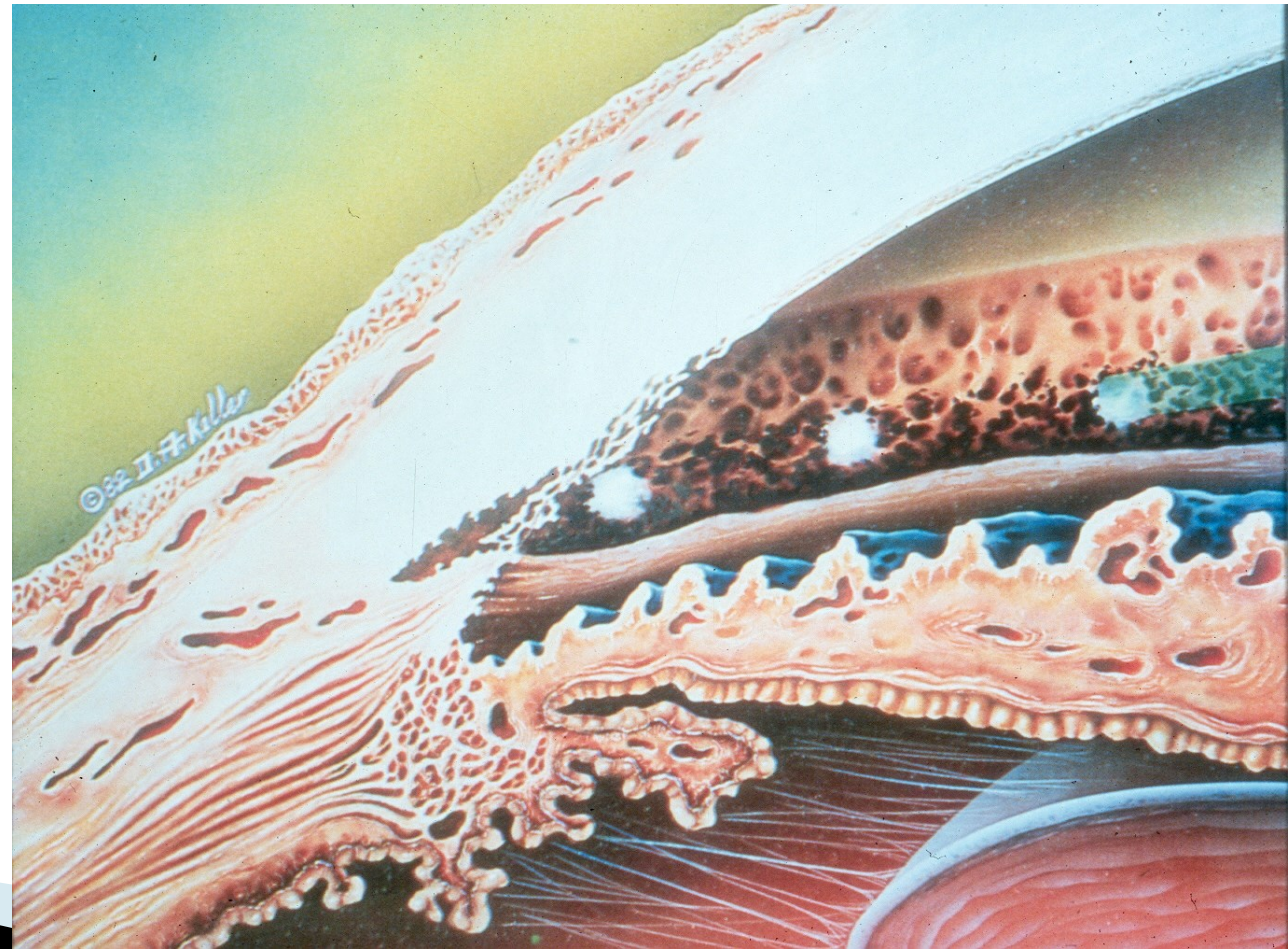
Post-LPI

Who is a good candidate for Durysta? (Wooldridge)

- Noncompliant patients
  - Forgetful
  - Unmotivated
- Patients who cannot instill their drops
  - Arthritis, dementia, etc.
- Patients who hate drops!
  - New patient?
- Patients with OSD

Medication v. SLT?

- Glaucoma Laser Trial
- Medical history
- Age
- Cost
  - Insurance?
- 24 hour effect?

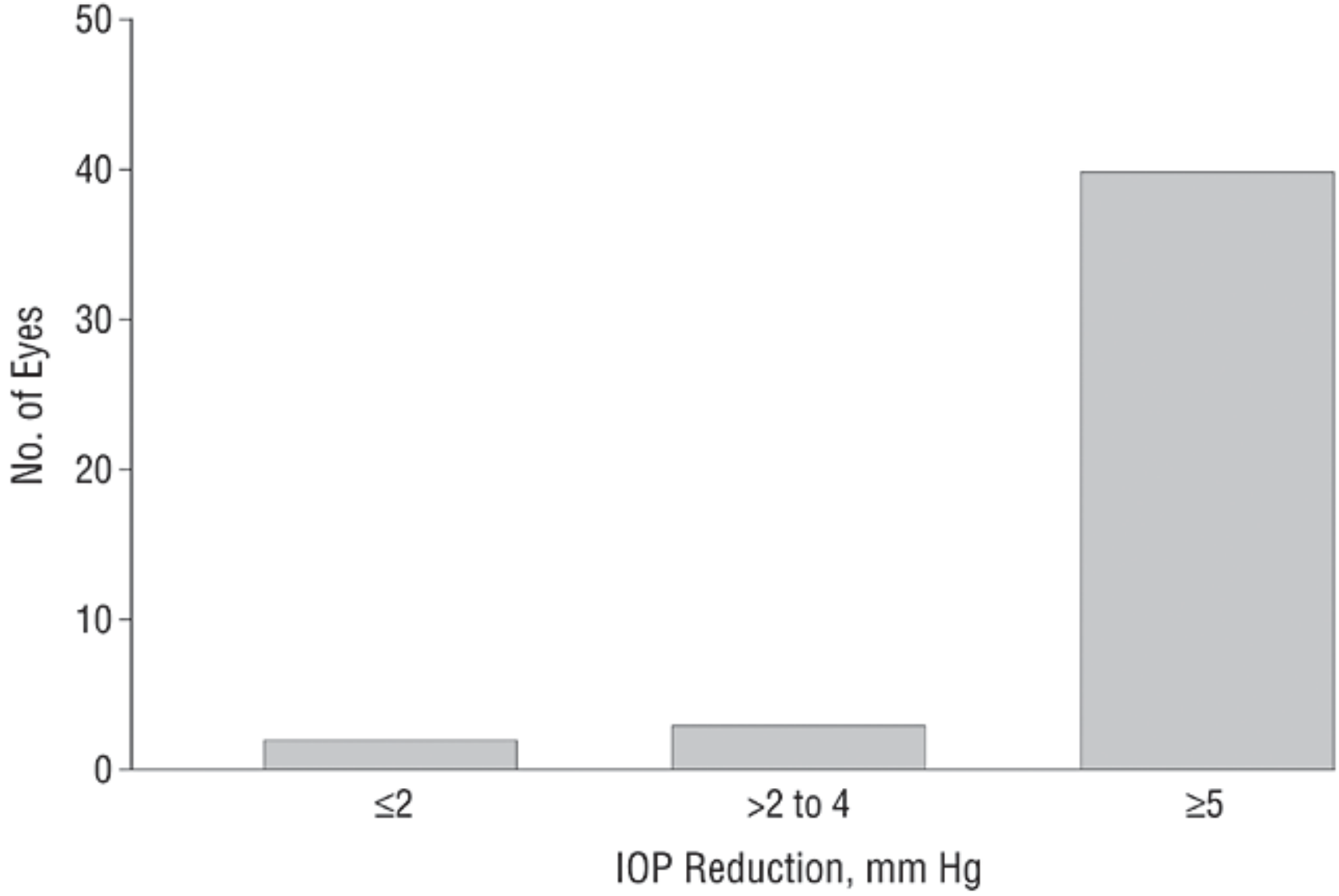


Selective Laser Trabeculoplasty as Primary Treatment for Open-angle Glaucoma A Prospective, Nonrandomized Pilot Study

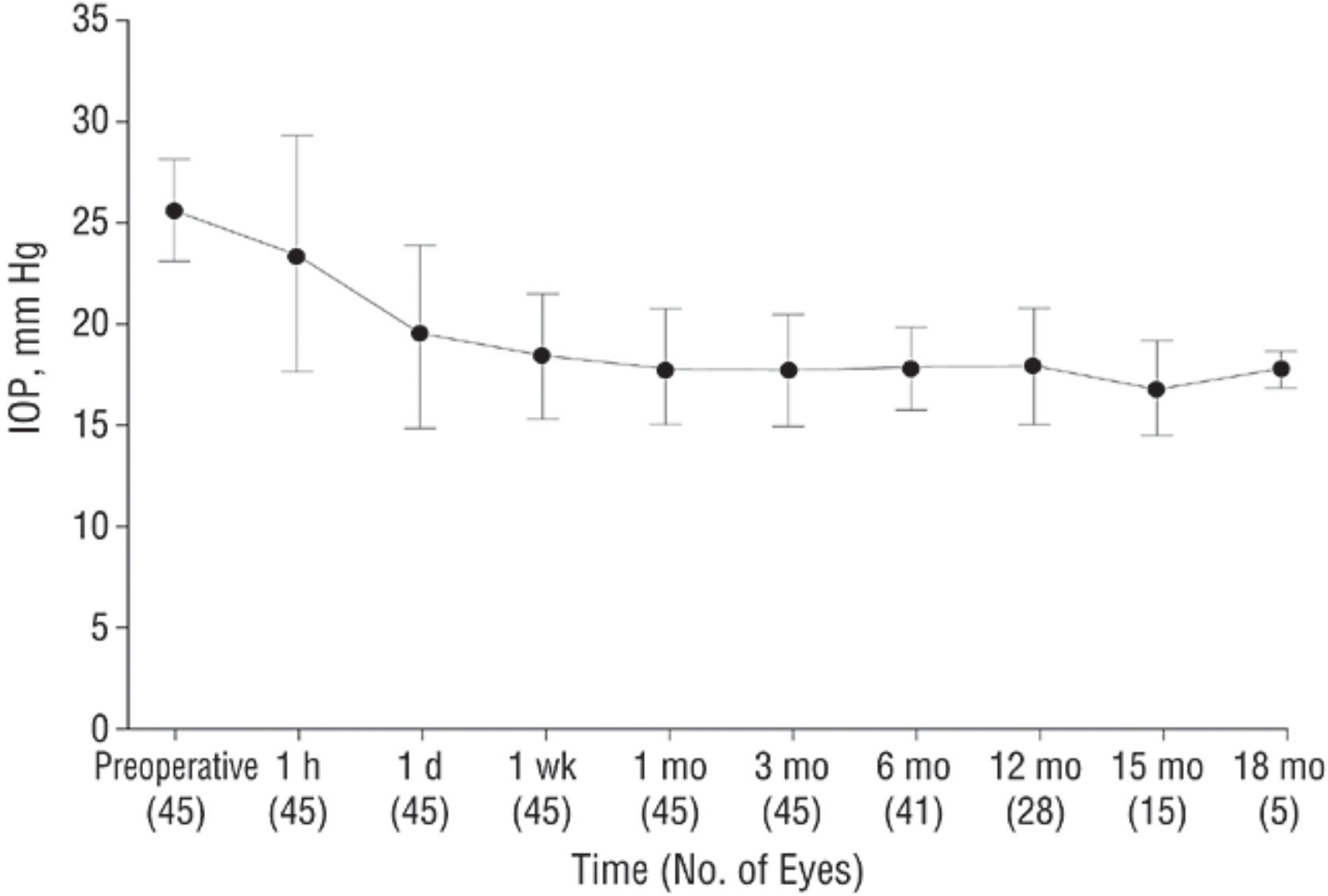
- Objective: To examine the safety and efficacy of SLT as primary treatment for OAG
- Methods: 45 eyes of 31 patients with OAG or OHT
  - (IOP 23 on 2 consecutive measurements) underwent SLT as primary treatment.
- IOP measured 1 hour, 1 day, 1 week, and 1, 3, 6, 12, 15, and 18 months postoperatively. During FU, patients were treated with glaucoma medications as required

Melamed S et al Arch Ophthalmol. **2003;121:957-960.**

IOP Reduction (mm Hg)



POST SLT IOP Sustained



Results

- An IOP reduction of at least 20% after SLT was defined as a successful treatment.
- Mean decrease in IOP: 7.7 ± 3.5 mm Hg (30%).
- Forty-three (95%) of 45 eyes treated had IOP reduction on 2 consecutive visits (±2 mm Hg).
- When successful, the IOP reduction was sustained after SLT

Melamed S et al Arch Ophthalmol. **2003;121:957-960.**

SLT Considerations

- Medical side effects
- Laser side effects
- Compliance
- COST
- Convenience
- Duration of effect
- Diurnal effect

Surgical Considerations

- Disease severity
- Age of patient
- Medical history
- Compliance
- Costs
- RISKS vs. BENEFITS

What Have We Learned?

- Make careful observations
- Utilize new technologies
- Monitor carefully for change
- Be aggressive with damage/progression
  - Consider damage vs. patient age
  - Consider risks vs. benefits
  - 1mm decrease= 10% decrease risk of progression
- Prostaglandins first in most cases
- Many options for second line medication