

Incidence of Glaucomatous Visual Field Loss Subsequent to Glaucomatous Optic Disc Deterioration

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I have no conflicts of interest to report.

The OHTS Entry Criteria

- Age 40 - 80
- Normal visual fields
 - Humphrey 30-2
- Normal optic discs
- Untreated IOP:
 - 24 to 32 mmHg in qualifying eye
 - 21 to 32 mmHg in fellow eye

Patient found eligible for OHTS

- Eligible untreated IOPs on 2 visits
- 2 sets of normal & reliable HVFs per VFRC
- Optic discs judged normal by ODRC

Randomization

Medication

Topical treatment to lower IOP 20%
and IOP ≤ 24 mm Hg
n=817

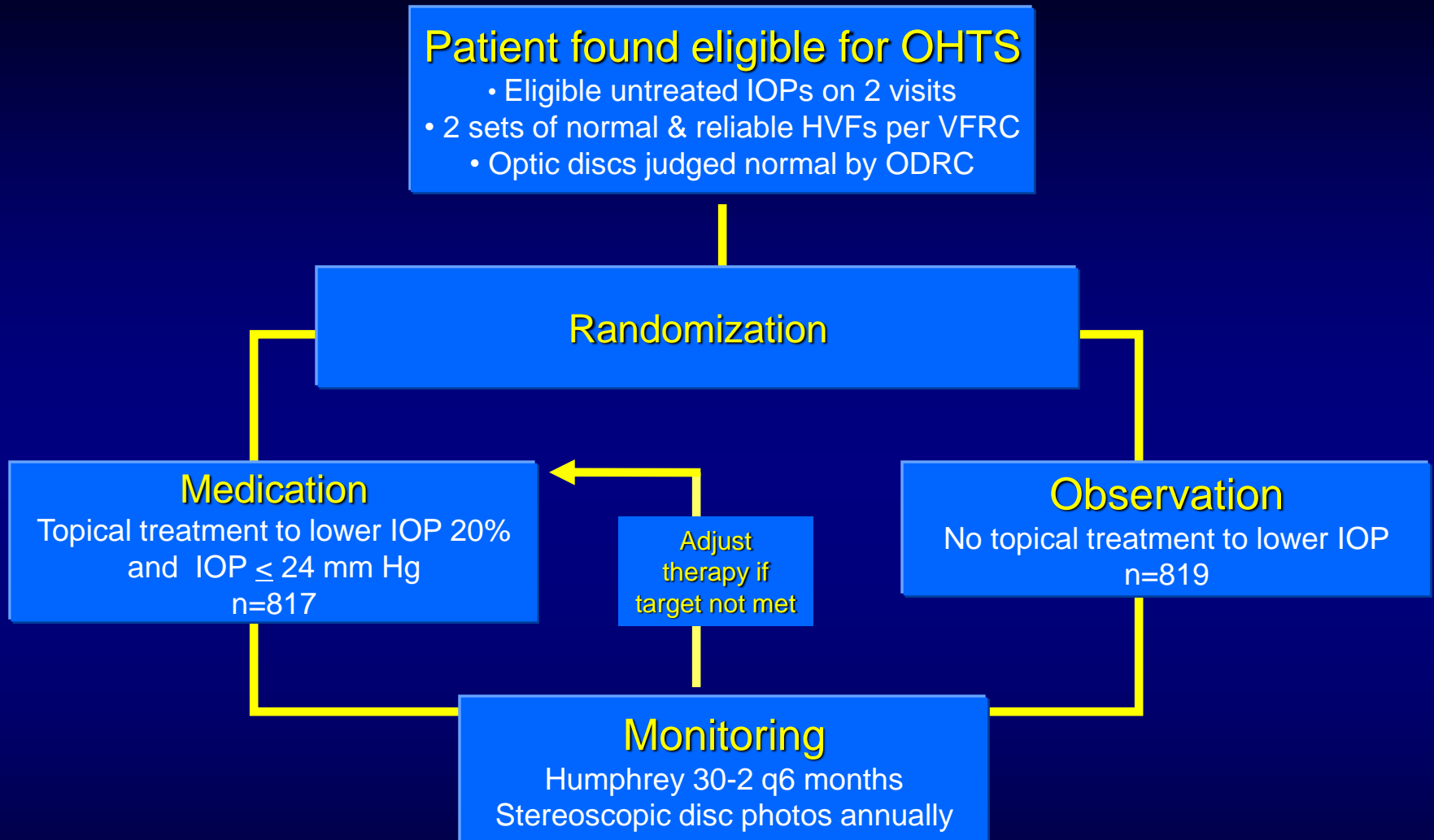
Observation

No topical treatment to lower IOP
n=819

Adjust
therapy if
target not met

Monitoring

Humphrey 30-2 q6 months
Stereoscopic disc photos annually



OHTS set a high bar for POAG endpoints.

High specificity is important in a clinical trial
of treatment efficacy.

Visual Field Defect

- Determined by masked readers
Visual Field Reading Center, U-California Davis
- Defects defined as:
 - CPSD $p < .05$ and/or
 - GHT outside normal limits by Stat Pac 2
 - Defect in the same location and on the same index on 3 consecutive reliable visual fields

Optic Disc Deterioration

- Determined by masked readers
 - Optic Disc Reading Center, Bascom Palmer Eye Institute, Miami
- Defined as:
 - Generalized or localized thinning of neuroretinal rim compared with baseline photos
 - Detected on 2 consecutive sets of f/up photos
 - Readers masked as to which set is baseline or f/up

POAG Endpoints

- All cases of a confirmed visual field defect and/or optic disc deterioration referred to the endpoint committee.
- 3 masked clinicians reviewed clinical data and determined whether changes due to POAG (endpoint) or some other condition.
- Optic disc deterioration had to be “clinically significant.”

What is the prognosis of patients with
glaucomatous optic disc deterioration?

Is disc deterioration a predictor of
glaucomatous visual field loss?

Sample For Analysis In This Report

- Includes the first eye that developed a 1° POAG endpoint in OHTS Phase 1 (1994-2002)
- Includes 2° POAG endpoints to the end of the study in the same eye (2009)
- Includes one eye selected randomly if the participant developed 1° POAG in both eyes at the same visit.
- Excludes participants who developed both VF POAG and optic disc POAG in the same eye at the same visit.

Primary 1° POAG Endpoints in OHTS Phase 1

Participants who developed a 1° POAG endpoint in one eye In two eyes (one eye selected randomly for analysis)	134 10
Participants who developed VF POAG <u>and</u> optic disc POAG in the same eye are excluded	(12)
1° POAG N of eyes/participants	144 eyes/144 pts.

1° POAG Endpoints in Phase 1

1° optic disc endpoints	58%	84 of 144 eyes
1° visual field endpoints	42%	60 of 144 eyes

Duration of f/up from 1° POAG to last f/up visit was
7.8 ± 2.9 yrs. (mean ± SD)

All participants treated after 1° POAG endpoint
(both treatment and observation groups)

- 44% (63 of 144) 1° POAG eyes developed a 2° POAG endpoint in the same eye by study end

84 eyes had a 1° optic disc POAG

39% 33/84 eyes developed 2° VF
POAG

Mean time 3.8 ± 2.9 years

6% 5/84 eyes developed confirmed
VF abnormalities not due to
POAG

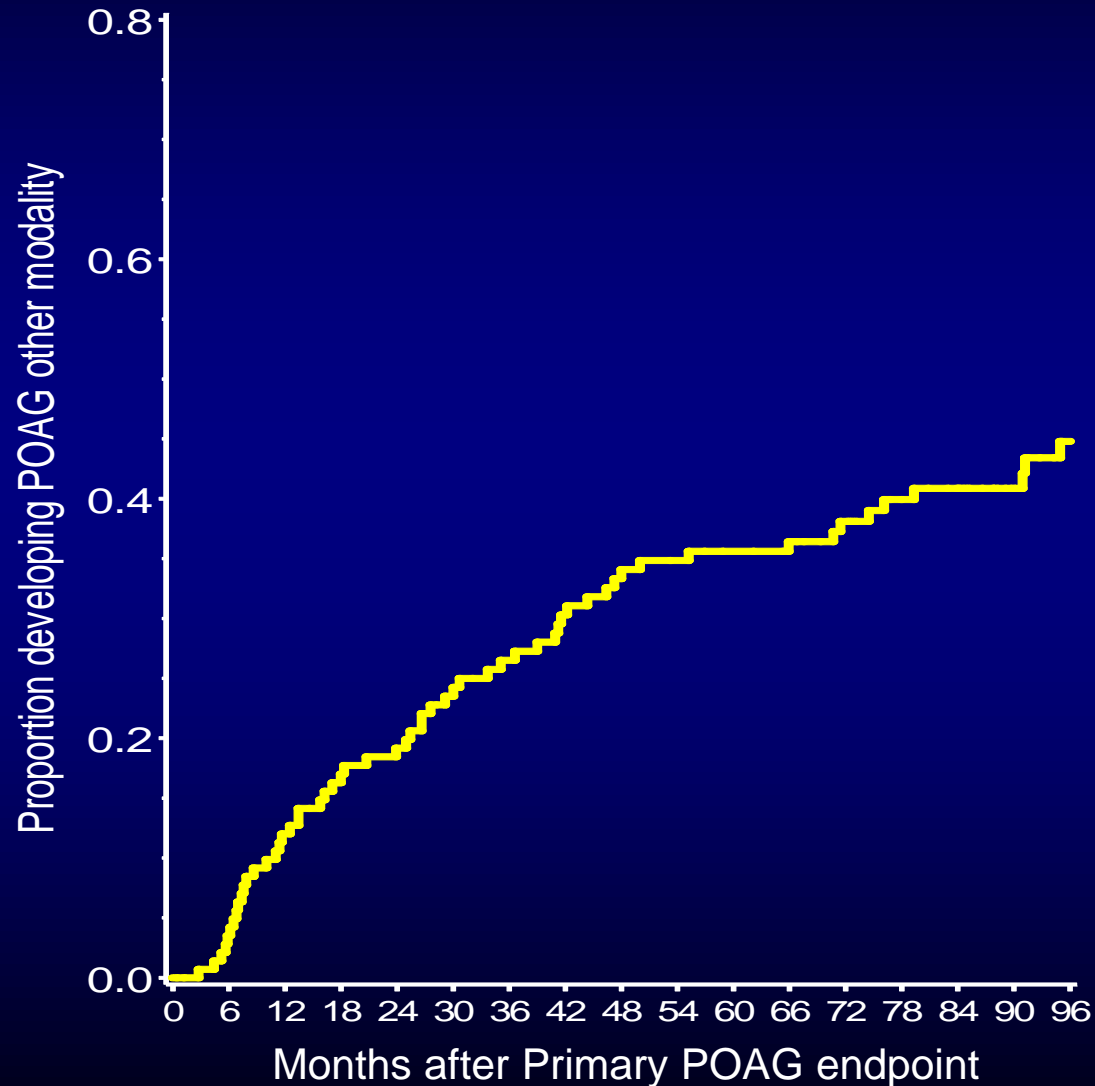
60 eyes had 1° visual field POAG

50% 30 of 60 developed
2° optic disc POAG
Mean time 2.6 ± 2.5 years

1.7% 1 of 60 developed confirmed
disc deterioration that was
“not clinically significant”

Cumulative Proportion of 1° POAG Eyes Developing a 2° POAG endpoint

At 96 mos. 45% (95% CI of 36% to 54%)

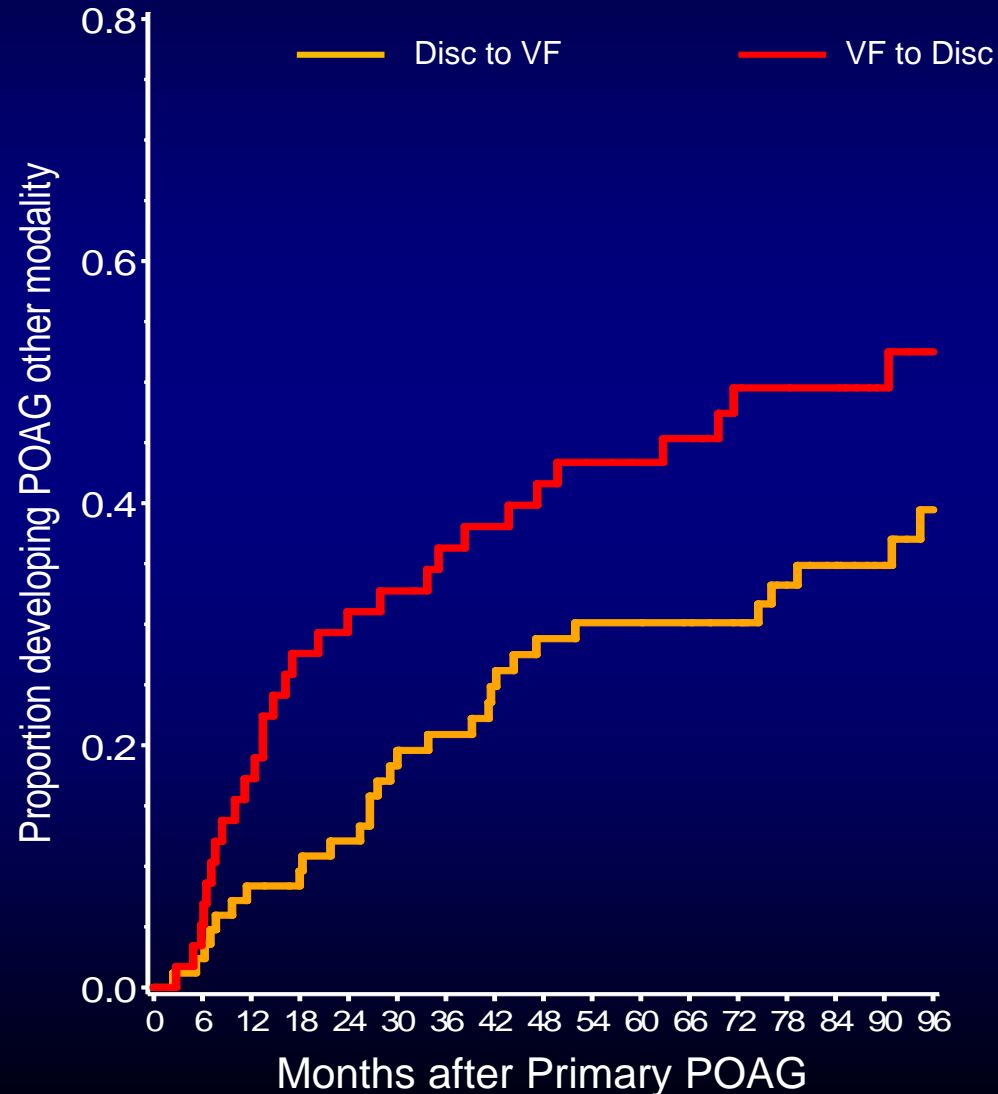


Cumulative Proportion of 1° POAG Eyes Developing a 2° POAG Endpoint by Modality

At 96 mos. 39% (95% CI of 28% to 51%) of 1° Disc POAG eyes develop VF POAG

At 96 mos. 52% (95% CI of 39% to 66%) of 1° VF POAG eyes develop Disc POAG

Complementary log log at 96 months $p=0.09$

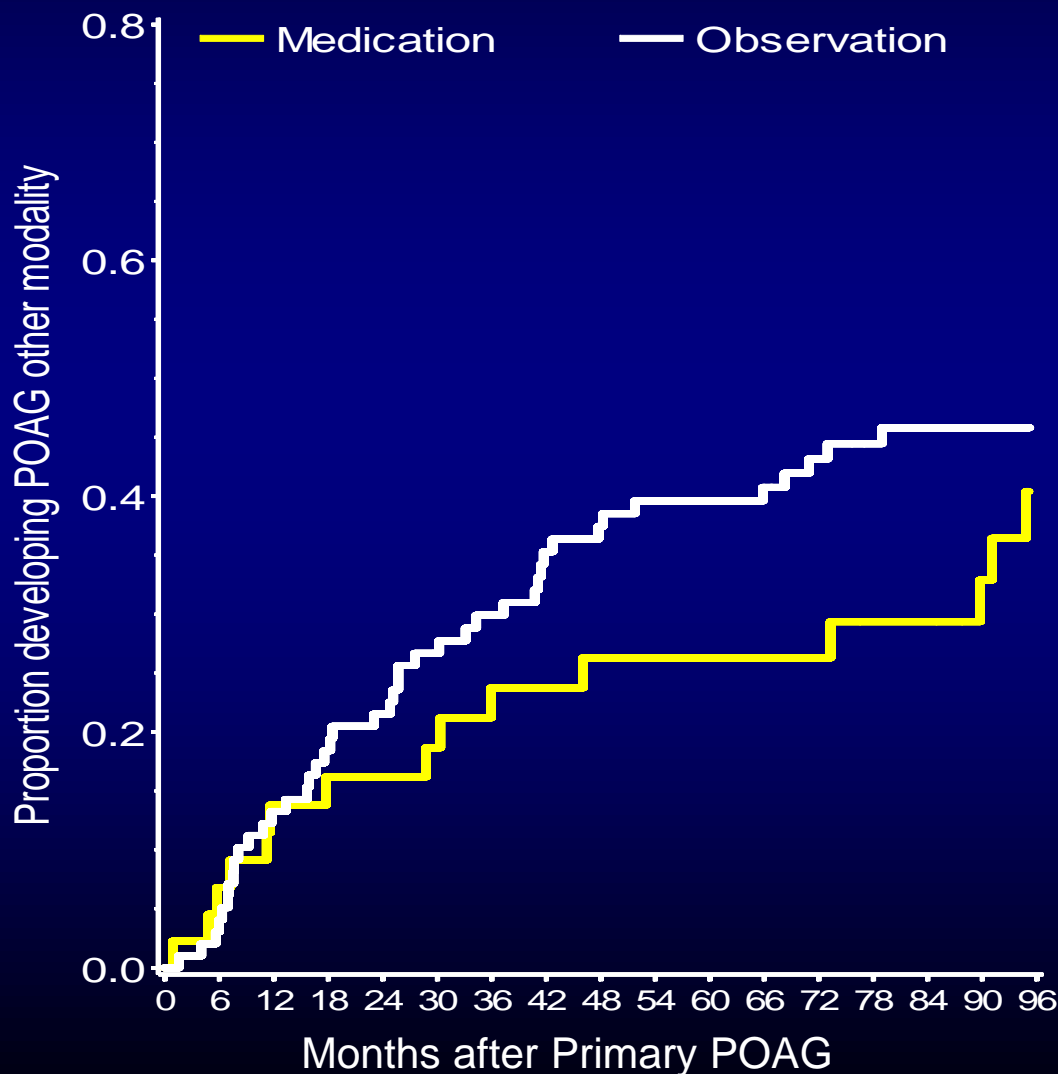


Cumulative Proportion of 1° POAG Eyes Developing a 2° POAG Endpoint by Randomization Group

At 96 mos. 46% (95% CI of 36% to 56%) for OBS

At 96 mos. 40% (95% CI of 24% to 57%) for MED

Complementary log log at 96 months $p=0.72$



Factors Associated with Eyes that Developed 2° POAG Endpoint

	Did 1° POAG Eye Develop 2° POAG		
	No N=81 Mean ± SD	Yes N=63 Mean ± SD	Univariate Logistic Regression P-value
Age	59.6±9.5	59.8±8.2	0.70
CCT (microns)	557±41	546±33	0.10
Baseline Vertical C/D	0.47±0.19	0.52±0.16	0.09
Baseline PSD dB	1.9±0.2	2.1±0.2	0.0001

Factors Associated with Eyes that Developed 2° POAG Endpoint

	Did 1° POAG Eye Develop 2° POAG		
	No N=81 Mean ± SD	Yes N=63 Mean ± SD	Univariate Logistic Regression P-value
Baseline IOP mmHg	26±3	26±3	0.52
F/up IOP before 1° POAG mmHg	24±4	26 ±5	0.04
F/up IOP after 1° POAG mmHg	17±3	20±4	0.0001

Summary

- 39% of eyes with a 1° optic disc POAG endpoint developed reproducible glaucomatous visual field loss within a mean of 3.8 years despite treatment.
- 50% of eyes with a 1° visual field POAG endpoint developed glaucomatous optic disc deterioration within a mean of 2.6 years despite medical treatment.
- Glaucomatous optic disc deterioration has prognostic significance for glaucomatous visual field loss.

OHTS Clinical Centers

- ❖ Bascom Palmer Eye Institute
- ❖ Baylor Eye Clinic
- ❖ Charles R. Drew University
- ❖ Devers Eye Institute
- ❖ Emory University Eye Center
- ❖ Eye Associates of Washington, DC
- ❖ Eye Consultants of Atlanta
- ❖ Eye Doctors of Washington
- ❖ Eye Physicians and Surgeons of Atlanta
- ❖ Glaucoma Care Center
- ❖ Great Lakes Ophthalmology
- ❖ Henry Ford Hospitals
- ❖ Johns Hopkins University
- ❖ Jules Stein Eye Institute, UCLA
- ❖ Kellogg Eye Center
- ❖ Kresge Eye Institute
- ❖ Krieger Eye Institute
- ❖ Maryland Center for Eye Care
- ❖ Mayo Clinic/Foundation
- ❖ New York Eye & Ear Infirmary
- ❖ Ohio State University
- ❖ Salus University
- ❖ Scheie Eye Institute
- ❖ University of California, Davis
- ❖ University of California, San Diego
- ❖ University of California, San Francisco
- ❖ University of Louisville
- ❖ University Suburban Health Center
- ❖ Washington Eye Physicians & Surgeons
- ❖ Washington University, St. Louis

OHTS Resource Centers

Study Chairman's Office
&

Coordinating Center

Washington University
St. Louis, MO

Optic Disc Reading Center

Bascom Palmer Eye Institute
University of Miami
Miami, FL

Visual Field Reading Center

University of California, Davis
Sacramento, CA