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# UNDETECTED ANGLE CLOSURE IN PATIENTS WITH DIAGNOSIS OF OPEN-ANGLE GLAUCOMA

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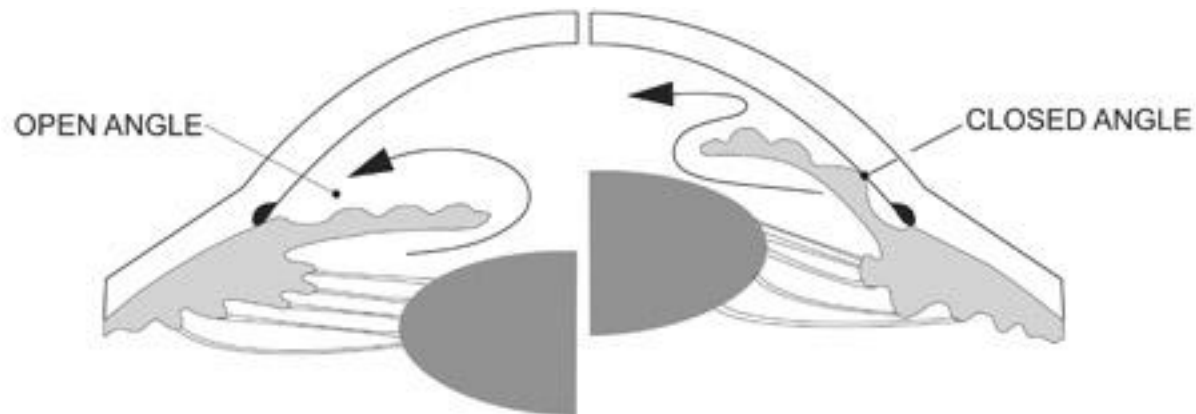
# Financial Disclosure

- The authors have no financial interests to disclose

# Introduction

- Angle closure glaucoma is a leading cause of blindness worldwide<sup>1</sup>
- Angle closure is diagnosed by gonioscopy
- Gonioscopy is underperformed:
  - 50% of patients had no gonioscopic exam prior to SLT<sup>2</sup>
  - 50% of patient with angle closure had seen an ophthalmologist in past year<sup>3</sup>

- The mechanism of angle-closure glaucoma differs from that of open-angle glaucoma



Wong, T T. Glaucoma: The complete guide. Singapore: Medjay Group, 2011.

- The recognition and appropriate treatment of angle closure glaucoma is critical for prevention of disease progression that causes irreversible damage

Patients with Undiagnosed  
Angle Closure Glaucoma

Gonioscopy

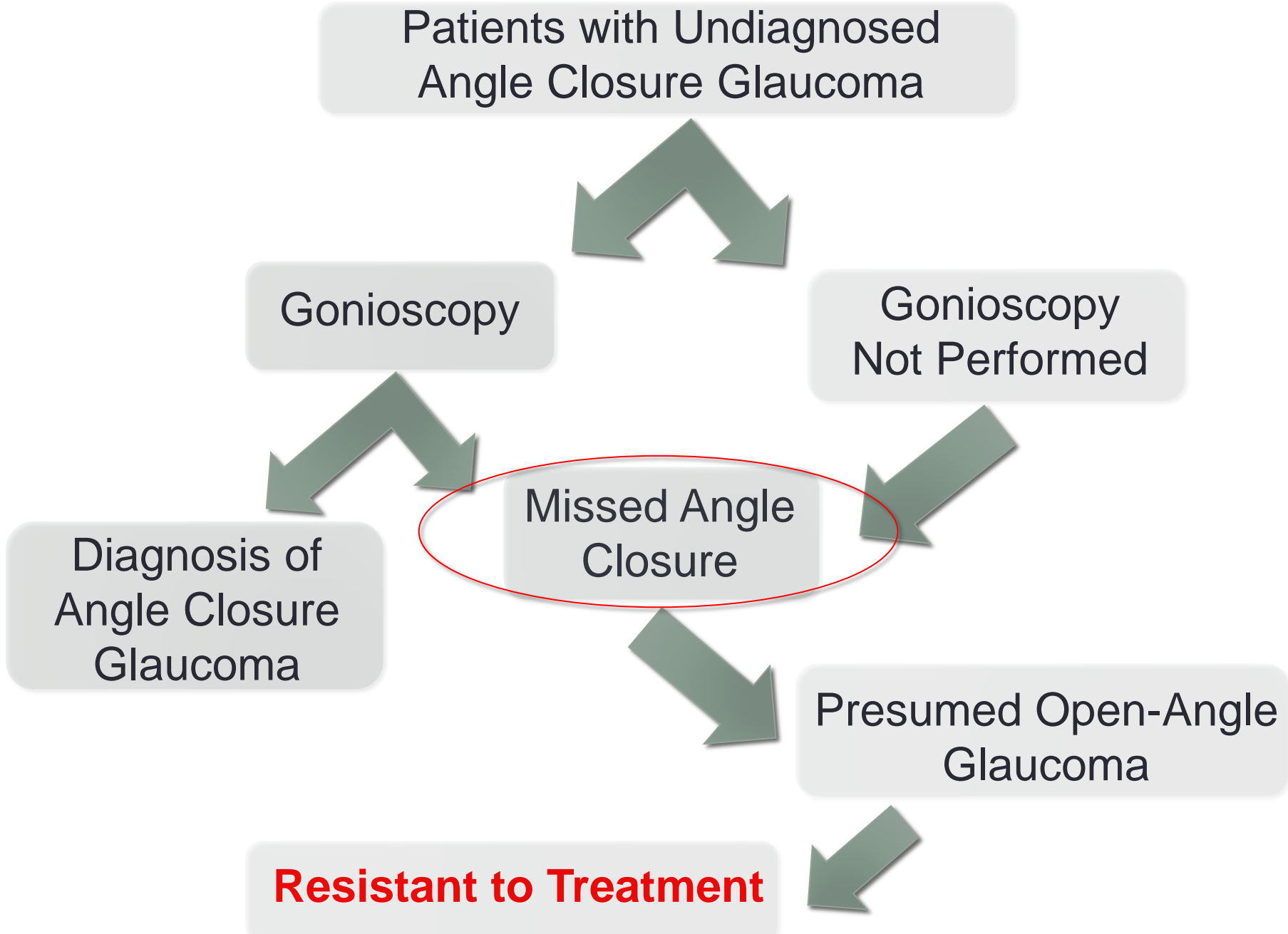
Gonioscopy  
Not Performed

Diagnosis of  
Angle Closure  
Glaucoma

Missed Angle  
Closure

Presumed Open-Angle  
Glaucoma

**Resistant to Treatment**



# Treatments for Open-Angle and Angle Closure Glaucoma

	Open-Angle	Angle Closure
Drops	✓	?*
SLT	✓	✗
Laser Peripheral Iridotomy	✗	✓ First line
Filtering Surgery	✓	?**
Phacoemulsification	✗	✓

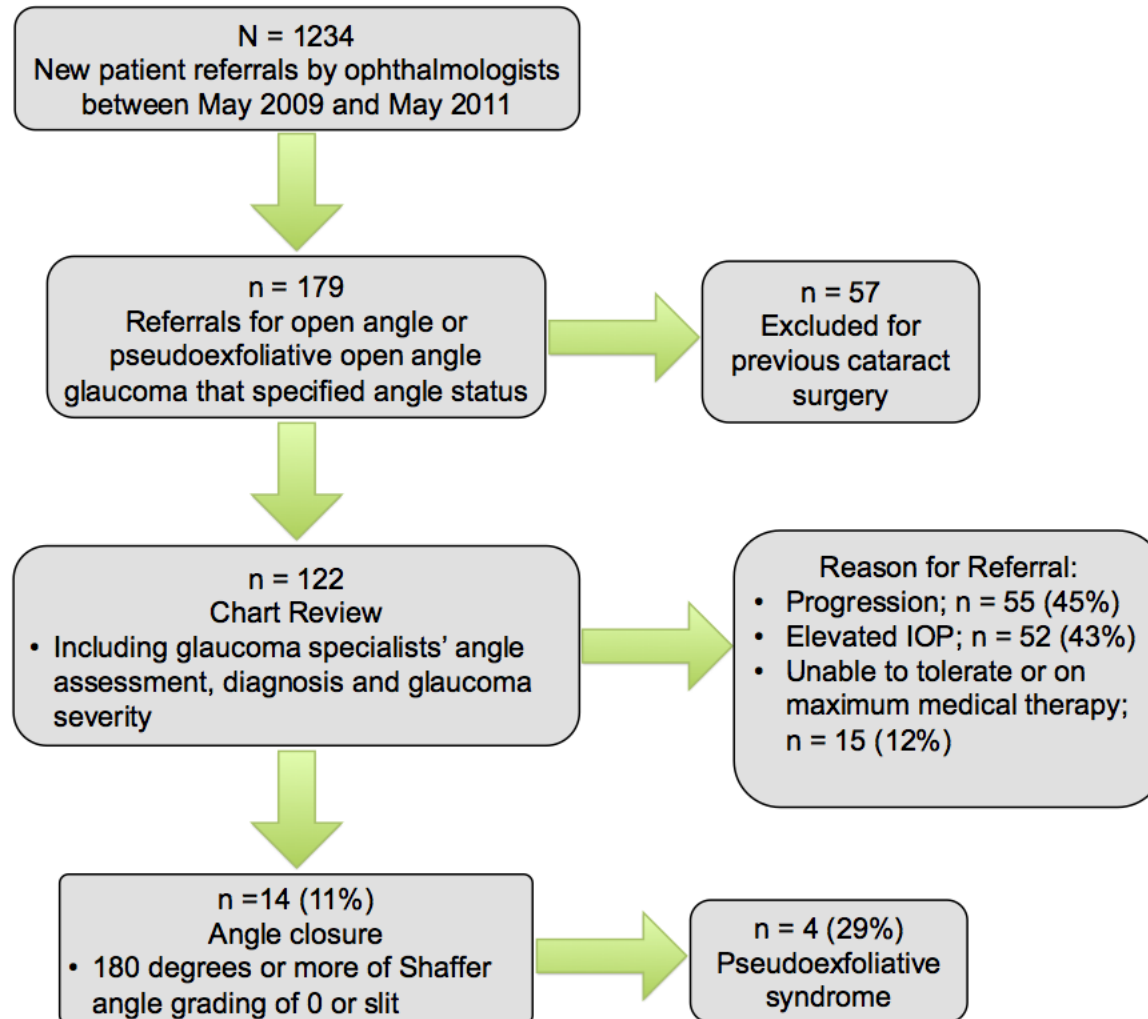
\* Drops can be used to reduce intraocular pressure but do not prevent intermittent closure and subsequent progression; \*\* Phacoemulsification is as successful in treating both medically controlled and uncontrolled PACG, with fewer complications

# Purpose

- To identify the proportion of patients referred by ophthalmologists to a tertiary glaucoma center with a diagnosis of open-angle glaucoma that were found to have angle closure



# Methods/Results





# Results Continued

Table 1.

	Closed	Non-closed	p-value
<b>Age</b>	61.21 ± 4.75	61.83 ± 1.66	0.90
<b>SE</b>	1.73 ± 0.96	-0.15 ± 0.93	0.47
<b>IOP (referral)</b>	19.61 ± 2.10	20.59 ± 0.78	0.45
<b>IOP (specialist)</b>	18.07 ± 1.25	18.37 ± 0.65	0.87
<b>VF MD</b>	- 14.73 ± 3.36	-10.24 ± 0.83	0.10
<b>C:D</b>	0.65 ± 0.06	0.71 ± 0.02	0.36
<b>Glaucoma drops (number of classes)</b>	1.71 ± 0.37	1.97 ± 0.14	0.46

Mean ± SE for age (years), spherical equivalent (SE; Diopters), intraocular pressure (IOP; mmHg) as measured by the referring ophthalmologist and glaucoma specialist, visual field mean deviation (VF MD), cup to disc ratio (C:D) and classes of glaucoma drops for patients with closed and non-closed angles.

Table 2.

	Closed	Non-closed	p-value
<b>Gender</b>			
<b>Male</b>	5	64	0.09
<b>Female</b>	9	44	
<b>Ethnicity</b>			
<b>Caucasian</b>	7	40	0.77
<b>Asian/Indian</b>	4	32	
<b>African</b>	1	13	
<b>Other</b>	0	3	
<b>Glaucoma Severity</b>			
<b>Mild</b>	3	39	0.72
<b>Moderate</b>	3	27	
<b>Severe</b>	5	35	

Number of male and female, Caucasian, Asian/Indian, African and other ethnicity patients and patients with mild, moderate and severe glaucoma with closed and non-closed angles.

# Discussion

- 11% of patients referred for open-angle glaucoma had angle closure
- Substantial number of missed angle closure cases. Why?
  - Inattention to accurate angle status determination
  - Inadvertent technical limitations
  - Lack of access to anterior segment imaging for diagnosis of subtle cases
- Given differing treatment options for open-angle and angle closure glaucoma, accurate angle assessment is critical

# Discussion continued

- Almost 1/3 of patients with angle closure had pseudoexfoliation
  - May have presented as open-angle glaucoma but through progressive zonulopathy developed angle closure later in their course
- Pseudoexfoliation patients may convert from open angles to closed angles due to progressive zonulopathy, thus their angles should be re-examined periodically

# References

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