

## Plateau Iris

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**Chief Complaint:** Referral for evaluation of glaucoma

**History of Present Illness:** A healthy 47-year-old woman with no family history of glaucoma was referred for possible glaucoma. She denied any visual complaints.

**Past Ocular History:** Hyperopia and presbyopia

**Past Medical History:** Iron deficiency anemia secondary to uterine fibroid

### Ocular Examination:

#### Visual acuity with correction

OD: 20/20-1

OS: 20/20

#### MRx:

OD: +2.50 +0.25 x086

OS: +2.75 +0.25 x004

**Pupils:** symmetric, briskly reactive and there is no relative afferent pupillary defect OU

**Visual Fields:** full by confrontation OU

**Intraocular Pressure** by Applanation Tonometry

OD: 11 mm Hg; pachymetry 541 micrometers

OS: 13 mm Hg; pachymetry 543 micrometers

#### Anterior Segment Examination:

**Conjunctiva:** normal

**Cornea:** clear without Kruckenberg spindle or endothelial changes

**Iris:** normal architecture without heterochromia or transillumination defects

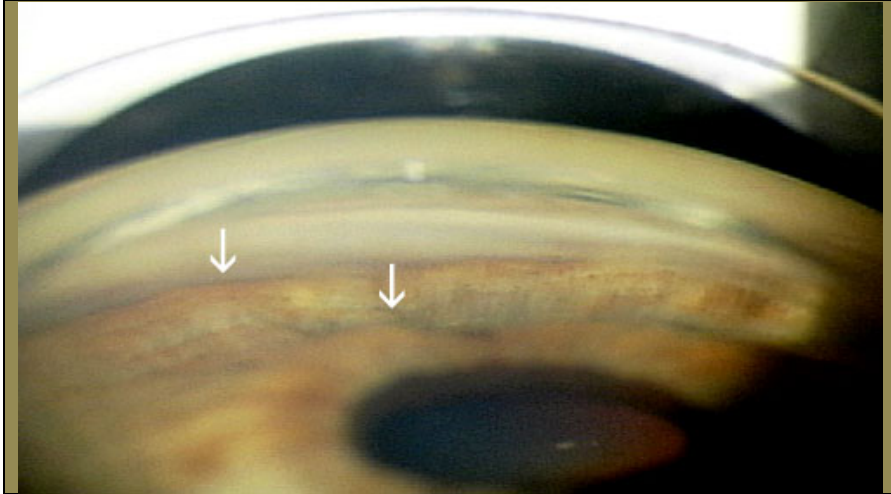
**Anterior chamber:** narrow angles by Van Herrick

**Lens:** Clear OU

#### Gonioscopy (Spaeth classification):

OD: Temporal (B) C 30P+1 Nasal (B) C 30P+1 Superior (B) C 30P+1 Inferior (B) C 30P+1

OS: Temporal (B) C 20P+1 Nasal (B) C20P+1 Superior (B) C 20P+1 Inferior (B) C 30P+1



**Figure 1: View through Goldmann 3 mirror**

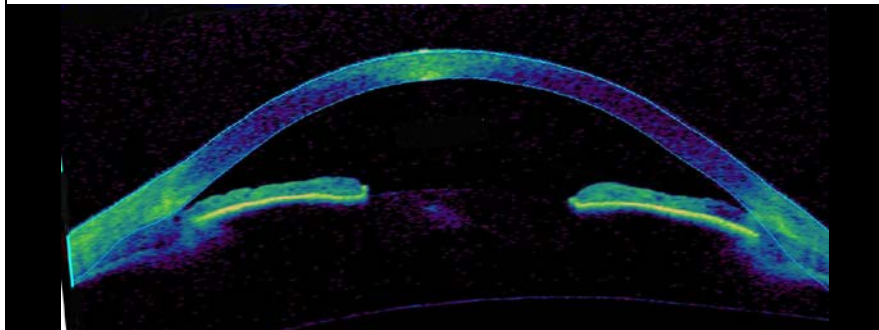
The iris drapes over the ciliary body producing the characteristic "sine wave" or double-hump.

**Video may be accessed from**

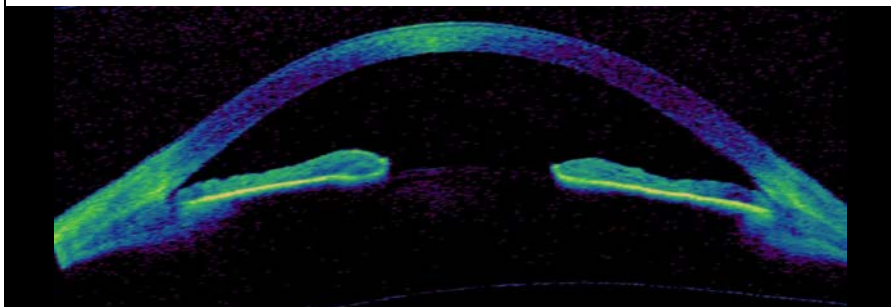
- [eyerounds.org/cases-i/case143/Plateau-Iris-01.wmv](http://eyerounds.org/cases-i/case143/Plateau-Iris-01.wmv)
- [youtu.be/Qx9Ddkjq7iQ](https://youtu.be/Qx9Ddkjq7iQ)

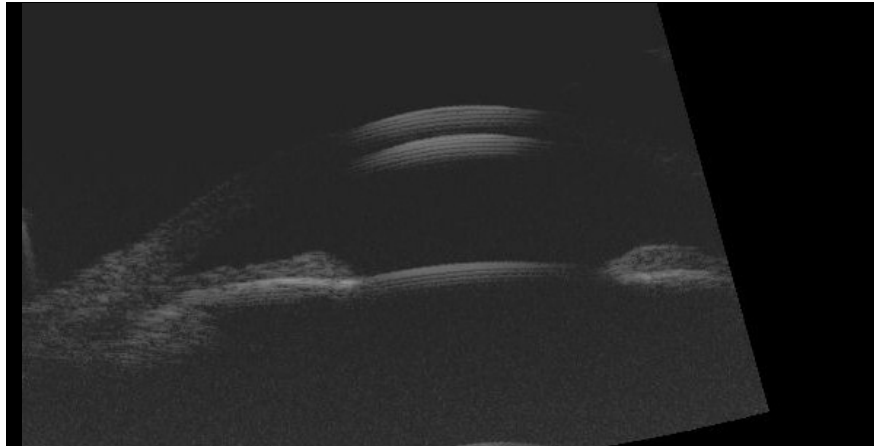
**Video:** first note the anterior chamber is shallow by Van Herrick. On indentation gonioscopy, the "double hump" is observed.

**Figure 2: Anterior Segment OCT: Pre-Laser peripheral iridotomy (LPI)**



**Figure 3: Anterior Segment OCT: Post-LPI, note widening of the angle**





**Figure 4: Ultrasound biomicroscopy:**

The anterior position of the ciliary body pushes the peripheral iris against the trabecular meshwork.

**Course:** This patient was initially treated with LPs in each eye. Her angle depth improved in each eye but there was concern that the angle in the left eye was still occludable. She underwent a laser iridoplasty OS without complication and repeat gonioscopy demonstrated improvement in the angle depth OS. At present, the angle in the right eye does not appear to be occludable and we are monitoring her with repeat gonioscopy exams every 6 months.

**Discussion:** Plateau iris syndrome is a relatively uncommon form of primary angle closure glaucoma that is seen more often in younger adults than pupillary block angle-closure glaucoma. It is caused by large or anteriorly positioned ciliary processes that push the peripheral iris forward. The mechanical position of the ciliary processes against the trabecular meshwork crowds the angle and obstructs aqueous outflow. A component of pupillary block is often present.

The central anterior chamber may appear to be of normal depth on slit lamp examination. On examination with gonioscopy, the iridocorneal angle is usually crowded or even closed. The iris typically appears to have a flat approach (on a plane to intersect Schwalbe's line) with a steep drop-off just before the trabecular meshwork. On indentation gonioscopy the "sine wave" or "double-hump sign" is seen. The peripheral "hump" is created by the iris draping over the ciliary body and the more central hump by the iris curving over the anterior lens surface.

Ancillary imaging modalities can be helpful in making the diagnosis of plateau iris. Ultrasound biomicroscopy can provide information of the anterior segment anatomy as well as help confirm any element of pupillary block. Anterior segment optical coherence tomography (OCT) can also provide insight into the anatomy, but it is not a dynamic examination and does not provide as much information as gonioscopy.

### **Treatment:**

Some element of pupillary block frequently exists in patients with plateau iris configuration and generally, peripheral laser iridotomy should be performed as the first intervention in patients suspected of having plateau iris. This often times is an adequate treatment for eyes with *plateau iris configuration*. However a subset of patients will have a persistent occludable angle despite a patent iridotomy causing *plateau iris syndrome*. Eyes where the iridocorneal angle has persistent apposition or the intraocular pressure remains

elevated should be treated with laser iridoplasty. The goal of laser iridoplasty is to place laser burns at the peripheral iris to shrink the iris and pull it from the angle. Of course, if laser surgical treatment is ineffective in controlling the intraocular pressure, conventional surgical procedures such as a trabeculectomy or a tube-shunt may need to be implemented.

Laser settings recommended by Wallace L.M. Alward, MD in *Glaucoma: The Requisites in Ophthalmology*.

### **Laser Iridotomy:**

Argon Laser Peripheral Iridotomy:

Spot size: 50 micrometers

Duration: 0.02-0.2 seconds

Power: 1 Watt

Lens: Abraham or Wise

### **Nd:Yag Laser Peripheral Iridotomy**

Spot size: fixed

Duration: fixed

Energy: 1-12 mJoules

Lens: Abraham or Wise

### **Argon Laser Iridoplasty:**

Spot size; 200-500 micrometers

Duration: 0.2-0.5 seconds

Power 150-300 mWatt

Lens: none or Goldmann 3 mirror

Note: larger spot size and longer duration

**Diagnosis:** Plateau Iris Syndrome

### **Differential Diagnosis**

“Pseudo plateau iris” caused by iris cysts or ciliary body cysts

Primary angle closure

Pupillary block

Peripheral anterior synechiae

<p><b>Epidemiology</b></p> <ul style="list-style-type: none"> <li>• Exact incidence is not well known</li> <li>• Diagnosis should be suspected when angle closure occurs in patient who is young or myopic and when angle narrowing persists despite iridotomy</li> <li>• Generally occurs in younger age group vs. primary pupillary block glaucoma. Average age 30-50s</li> <li>• Slight female and hyperopic preponderance</li> </ul>	<p><b>Signs</b></p> <ul style="list-style-type: none"> <li>• Narrowed or closed angle with iris on a plane to intersect with Schwalbe's line then with a sharp drop-off of the peripheral iris</li> <li>• Indentation gonioscopy reveals the "double-hump" sign</li> </ul>
<p><b>Symptoms</b></p> <ul style="list-style-type: none"> <li>• May present with angle closure, either spontaneously or after pupillary dilation</li> <li>• More commonly, patients are asymptomatic and the diagnosis is made on routine examination</li> </ul>	<p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Often an element of pupillary block exists so laser peripheral iridectomy is indicated</li> <li>• If not improvement in appearance of the angle laser iridoplasty to contract the peripheral, pulling the iris away from the crowded angle</li> </ul>

Additional Resources available at [www.gonioscopy.org](http://www.gonioscopy.org)

**References:**

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