



# Intraoperative Gonioscopy: A Key to Angle Surgery

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# Phaco vs. MIGS

	PHACO	MIGS
<b>Viewing</b>	Full corneal access	Limited AC depth; increased work distance
<b>Intraocular Surgery</b>	Posterior to dilated iris sphincter	Anterior to iris plane; risk to cornea/iris in narrow space
<b>Corneal Stimulation</b>	Limited to keratome/side-port incisions	Stimulation sub-epithelial nerve endings entire surface
<b>Instrument Handling</b>	Bimanual intraocular	Simultaneous extra and intra-ocular manipulation; one handed surgery

# Essential Perioperative Steps For Successful Angle Surgery

		STEPS	DESCRIPTOR
<b>PRE-OP</b>		1	Office Based Gonioscopy
		2	Angle Anatomy
		3	Anesthesia
<b>INTRA-OP</b>	<b>EXTRA-OCULAR</b>	4	Head/Microscope Rotation
		5	Goniolens Selection
		6	Hand Positioning
	<b>INTRA-OCULAR</b>	7	Corneal Incision
		8	Soft Shell Technique
		9	Goniolens Docking and Manipulation
<b>POST-OP</b>		10	Gonioscopy/Goniophotography

# Step 1: Office Based Gonioscopy

- **Why?** For surgical planning
- [www.gonioscopy.org](http://www.gonioscopy.org) [Dr. Alward]
- 1. Gonioscopy documented < 50% charts reviewed of patients undergoing ocular medical therapy<sup>1</sup>
- 2. Medicare Claims Data: 50% open angle glaucoma patients undergoing surgery had a claim for Pre-Op gonioscopy.<sup>2</sup>

1. Quigley HA, Friedman DS, Hahn SR. . Ophthalmology. 2007;11:1599–1606.  
2. Coleman AL, Yu F, Evans SJ. Use of gonioscopy in Medicare beneficiaries before glaucoma surgery. J Glaucoma 2006;15: 386–93.

## Step 2: Angle Anatomy

### PRE-OP

- Scleral Spur – Surgical Landmark that separates:
- Anteriorly: Canal Based surgery via the Trabecular Meshwork
- Posteriorly: Suprachoroid based surgery via the ciliary body face

## Step 3: Anesthesia

- Topical? Involuntary eye movements
- Peri- or Retrobulbar block? Akinesia
- For novice surgeons, not unreasonable to begin with a block. Why?
  1. Builds surgical confidence
  2. Avoids potential intra-ocular complications

## Step 4: Head/Microscope Rotation

- Temporal approach to reach nasal angle
- Rotate head 30-40 degrees away nasally
- Rotate microscope temporally same amount
- **End-point**: Align coaxial light along iris plane
- Increase magnification of angle
- Increase light intensity to view structures

## Step 4: Head/Microscope Rotation

- Increased working distance between oculars and surgical field
- Phaco: Full access to entire cornea
- Angle surgery: viewing space confined to AC depth [2-3 mm centrally; TM space: 0.77 mm]

# INCREASED WORKING DISTANCE: 8 INCHES

**PRIMARY PHACO POSITION**



**ANGLE SURGERY POSITION**



## Step 5: Goniolens Selection

- All are a modification of Swan-Jacob Lens
- Vary in degree of corneal contact, field of view, magnification and handle length
- Handle contiguous with goniolens
- Exception: Volk Transcend Vold Goniolens:
  1. Free floating lens originates from separate handle
  2. Fixation ring for globe stability
  3. Rotation in x and z axis

## Step 6: Hand Positioning

- Hold lens with non-dominant hand
- Place and rest palm on forehead or cheek based upon laterality
- Arch fingers over the nasal bridge
- Phaco: bimanual intraocular surgery
- Angle: extra/intra-ocular simultaneous manipulation – one handed surgery

## Step 7: Corneal Incision

Wound Construction:

- Eccentricity

1. Femtosecond laser incision offset a few millimeters inward from limbus. Potential for friction between overlying gonioleus and instrument access via keratome incision
2. Consider making incision manually

## Step 7: Corneal Incision

Wound Construction:

- Location

1. Along 3 – 9 o'clock axis
2. Use fixation ring to rotate globe nasally and initiate incision just within limbus
3. Serves as a pivot point/anchor during surgical manipulation of angle structures
4. Provides equidistant surgical access to supero and inferonasal angle structures

## Step 8: Soft Shell Technique

- Angle surgery: Takes place anterior to iris plane
- Phaco: Occurs posterior to dilated pupil
- **Viscodispersive OVD** – protects and coats endothelium from any damage
- A 2<sup>nd</sup> deeper layer of a **viscocohesive OVD** creates and maintains space in a confined trabecular space
- Helps protect intraocular structures during surgical manipulation

## Step 9: Docking of Goniolens

### o Corneal Considerations:

1. Phaco: Keratome/Side-port incisions with **minimal surface manipulation**
2. Angle Surgery: Cornea highly innervated structure in human body:
  - a. Sub-epithelial nerve endings
  - b. Limbal Plexus
  - c. With docking, **entire corneal/limbal surface stimulated by goniolens**

## INTRA-OP

# Step 9: Docking of Goniolens

- Tetracaine drops
- Viscoelastic
- Lidocaine Jelly:
  1. Topical analgesic/patient comfort
  2. Coupling medium between cornea/lens
  3. Decreased sensation tissue manipulation

## POST-OP

# Step 10: Post-Operative Goniophotography

- Self assessment for surgeon of proper anatomic placement of micro-stents
- Builds confidence and trust with patients
- Documentation purposes
- Pre-op counseling of potential surgical candidates