# Degree Matters: Optimising Outcomes with 180° and 360° Micropulse CPC

By

**Mohammad Moataz M.Murad AlMarzouky, MD**

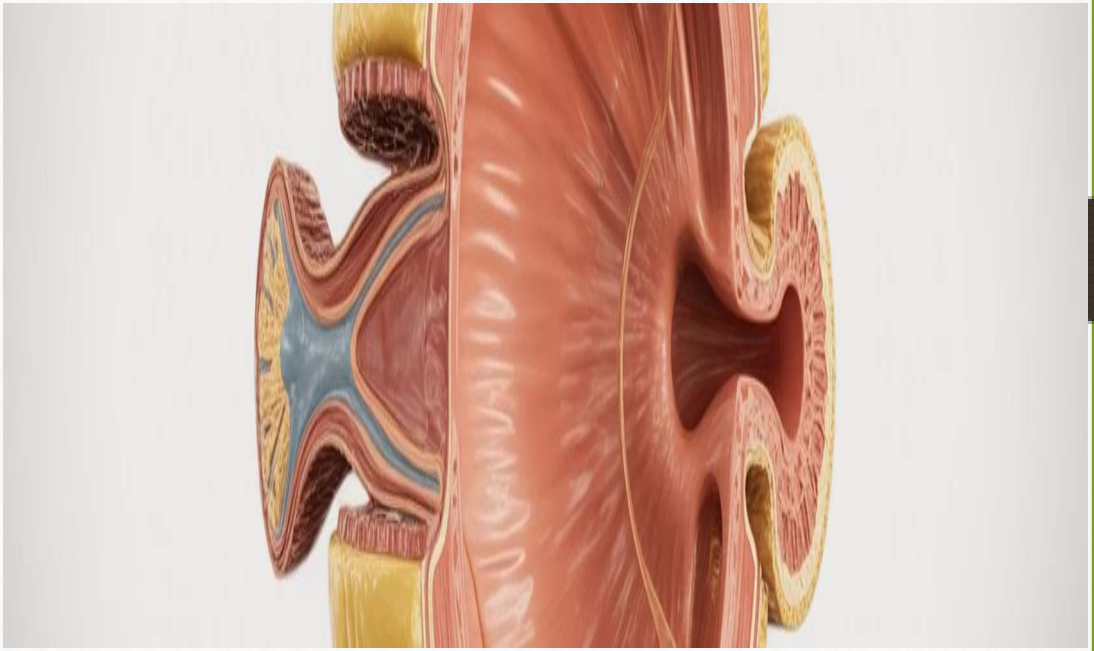
Ass. Prof. of Ophthalmology Head of Glaucoma unit

Research Institute of Ophthalmology

# Understanding Micropulse Cyclophotocoagulation

➢ **(MP CPC) represents a paradigm shift in cyclodestructive therapy.**

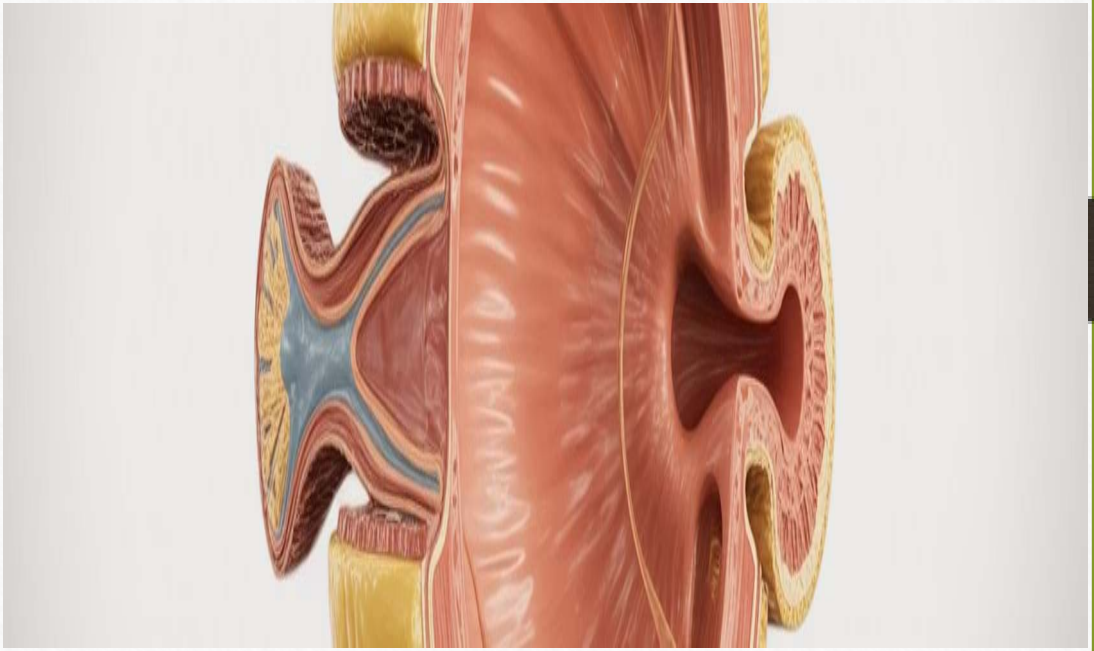
- ✓ **An 810 nm diode laser in micropulse mode targeting ciliary epithelium selectively is used (partial ablation)**
- ✓ **Delivering energy is in short pulses with rest periods (ON/OFF cycles), allowing heat dissipation**
- ✓ **This technique Preserves the surrounding tissues**



# Understanding Micropulse Cyclophotocoagulation

- **(MP CPC) represents a paradigm shift in cyclodestructive therapy.**

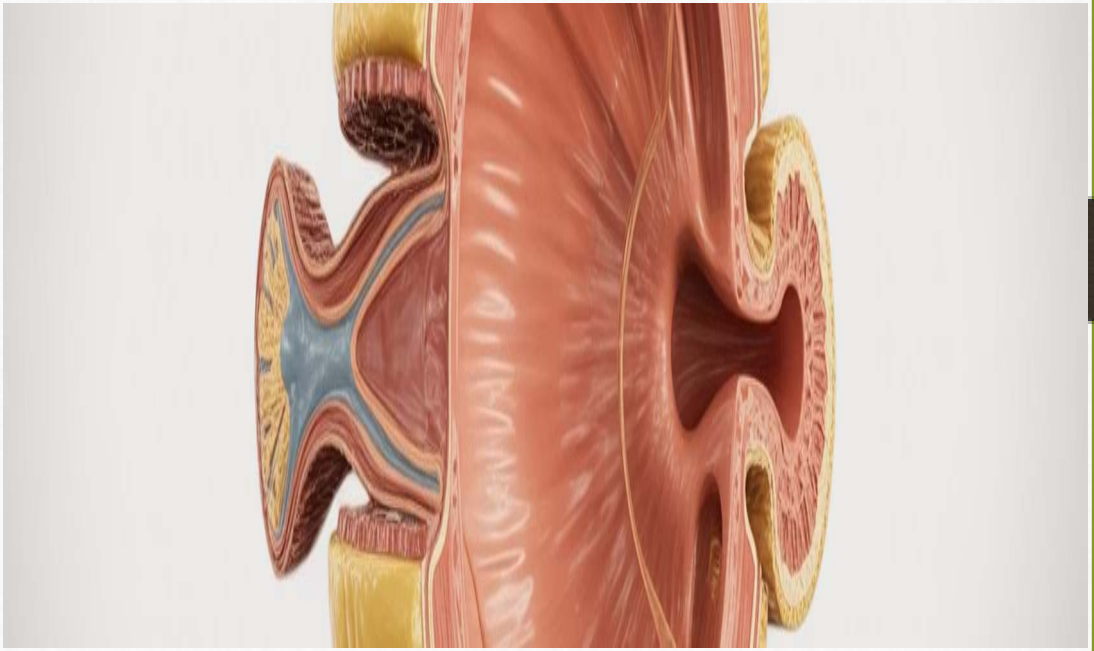
**Unlike continuous-wave CPC, which was reserved for end-stage disease due to high complication risks, MP-CPC can be safely applied even in eyes with good visual potential, expanding treatment options for a broader range of glaucoma patients.**



# Understanding Micropulse Cyclophotocoagulation

- **(MP CPC) represents a paradigm shift in cyclodestructive therapy.**

**Unlike filtration surgery, MP-CPC preserves conjunctiva for future procedures. This makes it an excellent bridge therapy or alternative when trabeculectomy/tube may be needed later.**



# Understanding Micropulse Cyclophotocoagulation

## Treatment Technique

- **Probe applied 3 mm posterior to limbus**
- **Sweeping motion over treated arc**
- **Avoid 3 and 9 o’clock positions to spare neurovascular bundles.**

# Understanding Micropulse Cyclophotocoagulation

- **MP CPC advantages:**

- ✓ **<u>Safely applied</u> even in eyes with good visual potential**

# Understanding Micropulse Cyclophotocoagulation

➢ **MP CPC advantages:**

✓ **It Expanded the treatment options for a broader range of glaucoma patients:**

- **POAG:** high success, good durability
- **Neovascular glaucoma: effective but retreatment common**
- **Uveitic & refractory glaucoma: (safe, doesn't induce inflammation)**

# Understanding Micropulse Cyclophotocoagulation

➢ **MP CPC advantages:**

✓ **It Expanded the treatment options for a broader range of glaucoma patients:**

- **It can be used Post-surgical for additional IOP control**
- **Also can be used for Patients unable to tolerate filtration surgery**

# Treatment Scope: 180° vs 360°

## 180° Hemispheric approach

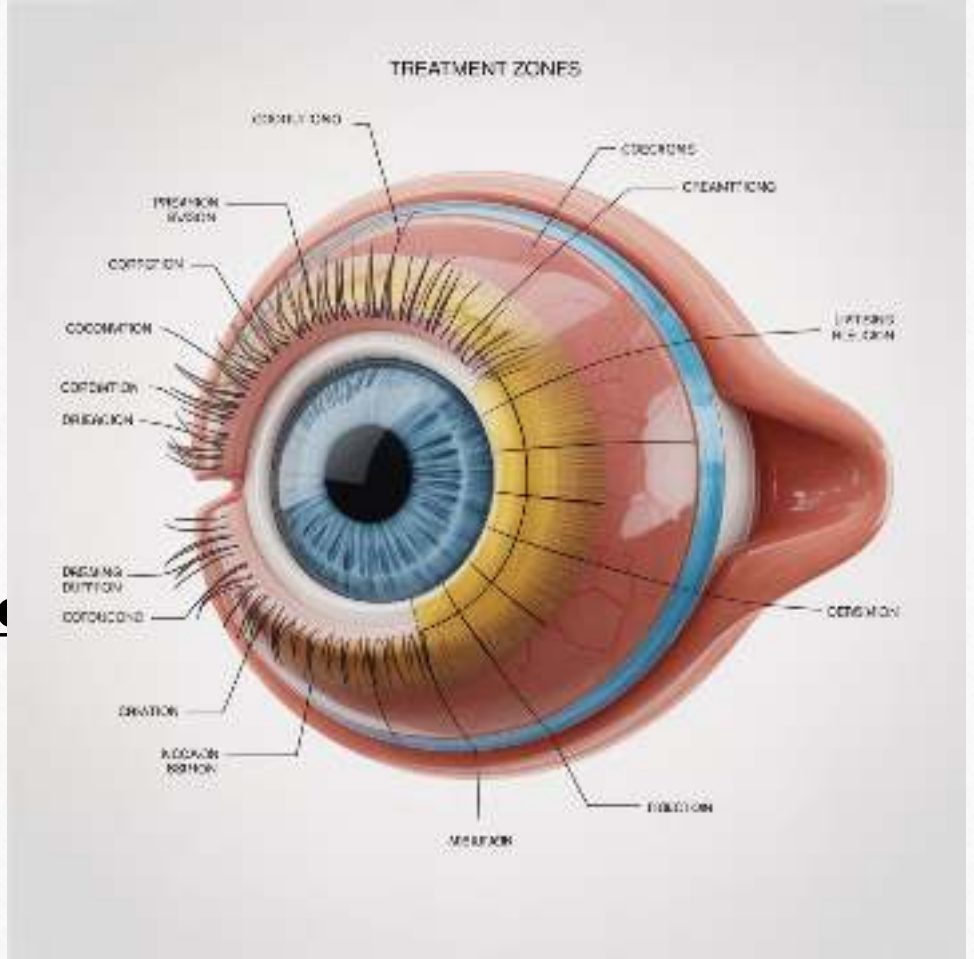
**Targets approximately half of the ciliary processes, typically treating the superior or inferior hemisphere.**

## 360° Circumferential approach

**Treats the entire ciliary body circumference, delivering laser energy to the full extent of aqueous-producing tissue for maximum IOP reduction potential.**

# IOP-Lowering Efficacy

**In the absence of a direct randomized comparison varying only treatment extent :**
**indirect evidence suggests that more exte treatment provides better IOP control.**

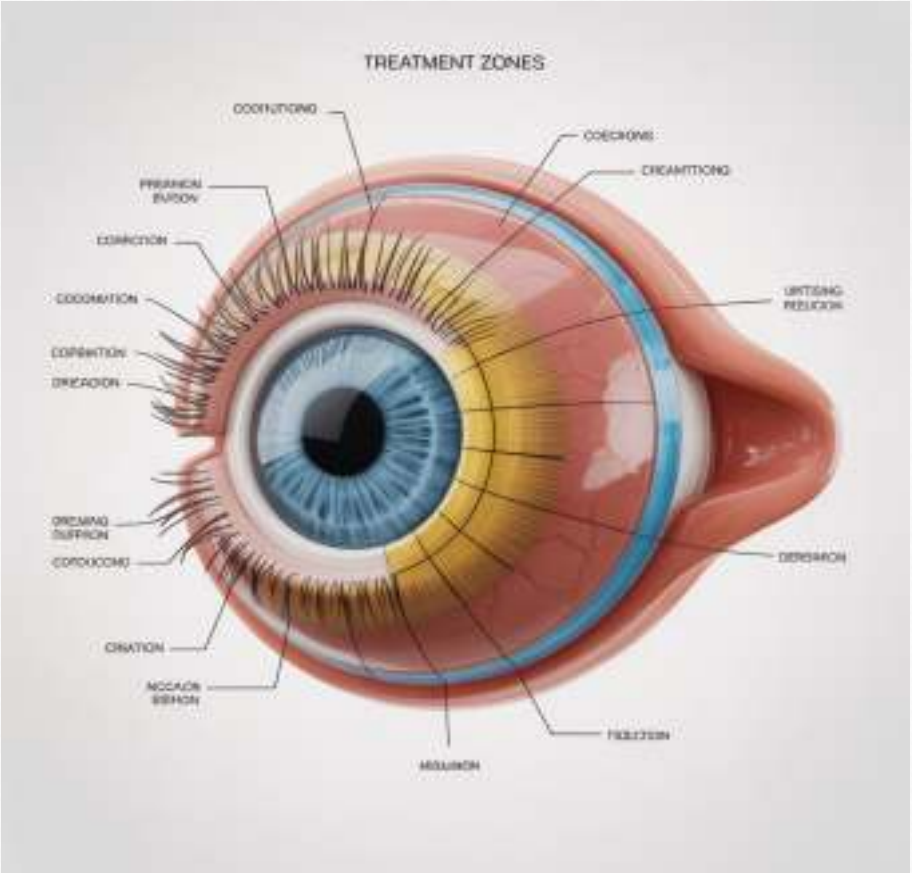



**Clinical Strategy: Surgeons may start with 180° in patients warranting caution, assess IOP response, then treat the remaining hemisphere if additional pressure reduction is required.**

# IOP-Lowering Efficacy: 180° VS 360° Treatment

Hemispheric Approach

**Treating only 180° delivers approximately half the energy of full treatment, yielding more modest IOP reduction. This approach offers strategic advantages**

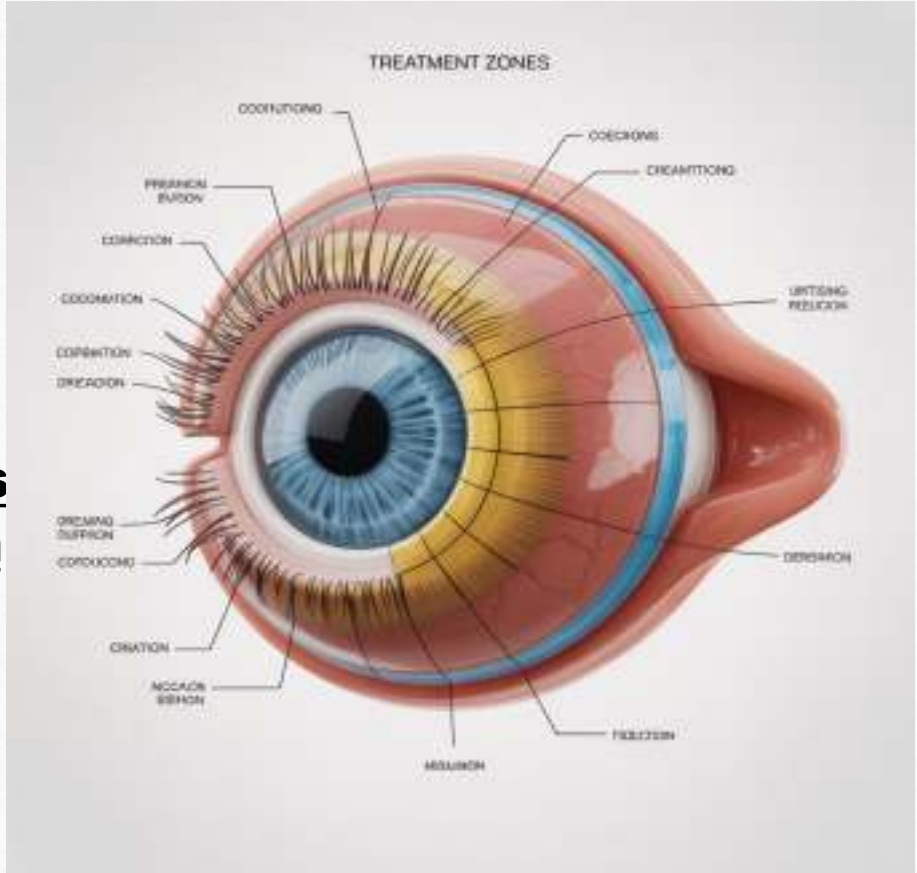



**Clinical Strategy: Surgeons may start with 180° in patients warranting caution, assess IOP response, then treat the remaining hemisphere if additional pressure reduction is required.**

# IOP-Lowering Efficacy: 180° VS 360° Treatment

**Hemispheric Approach advantages:**

- **Lower risk of overtreatment in single session**
- **Suitable for less severe glaucoma cas**
- **Option for staged treatment approach**
- **Can complete 360° therapy over two sessions if needed**

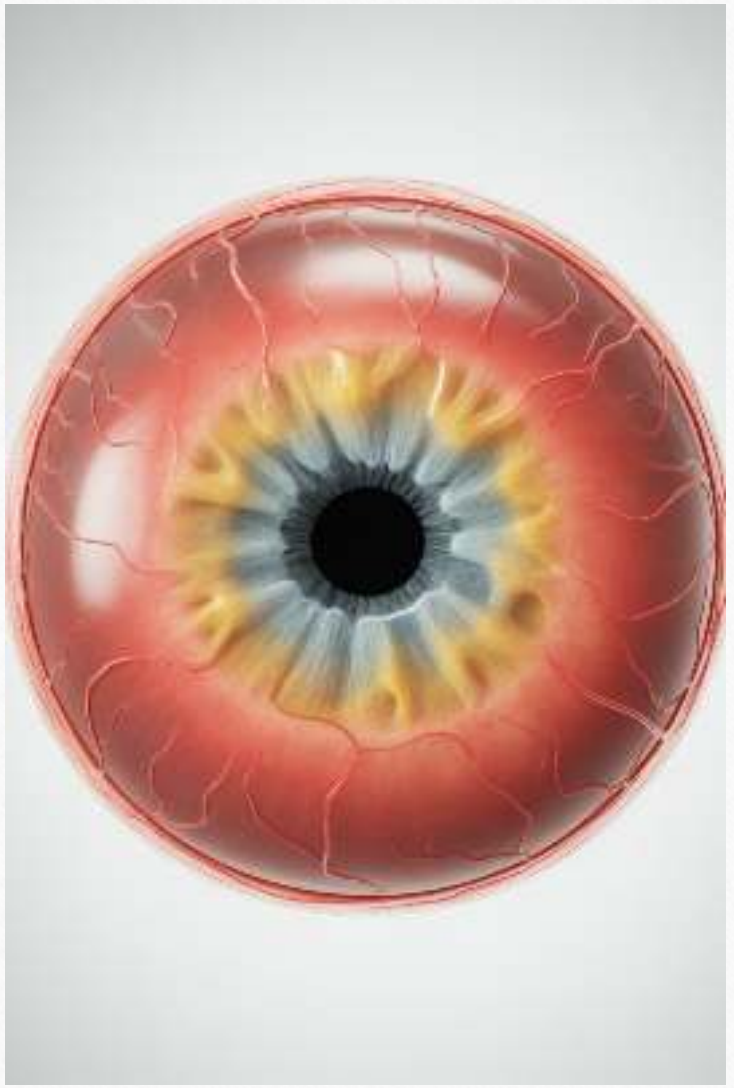



**Clinical Strategy: Surgeons may start with 180° in patients warranting caution, assess IOP response, then treat the remaining hemisphere if additional pressure reduction is required.**

# Safety Profile: Key Advantages

## Vision Preservation

**Multiple studies report no significant loss of best-corrected visual acuity attributable to the procedure, even with 360° treatment.**

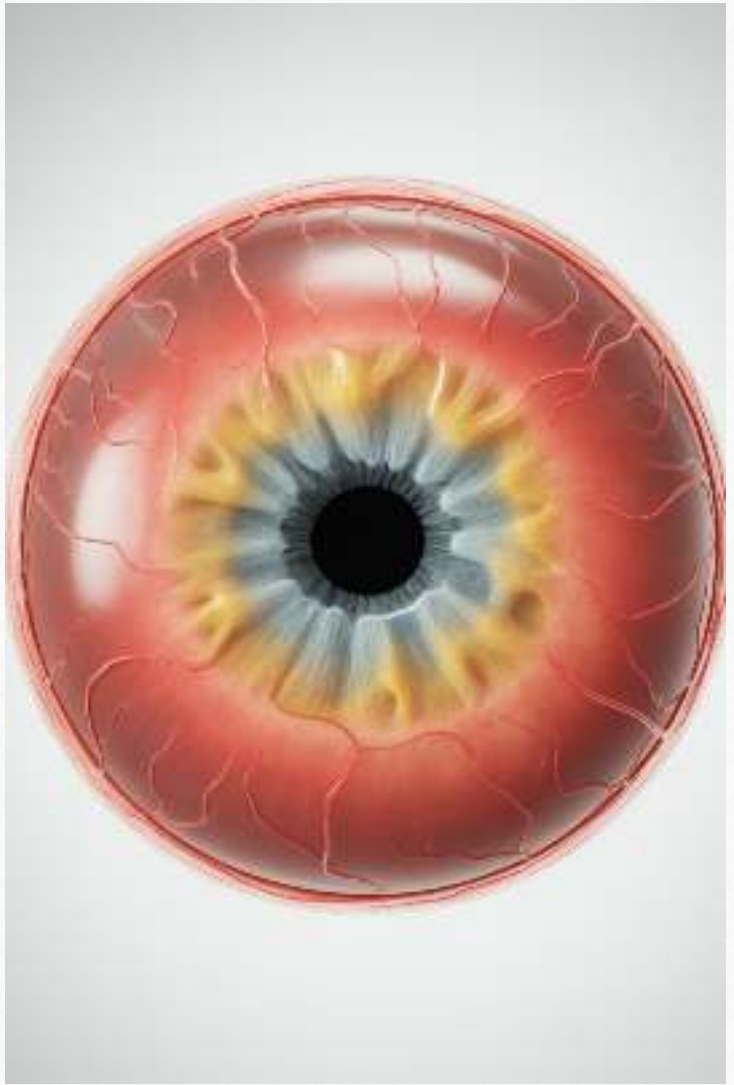


# Safety Profile: Key Advantages

**Low Complication Rate for both techniques:**

- **Serious vision-threatening complications (macular edema, phthisis ) are extremely rare**
- **hypotony is rare and typically transient**
- **Mild transient inflammation is common**

- **No clear evidence that 180° approach is safer than 360° approach**



# Conclusions: Balancing Efficacy and Safety

**Both 180° and 360° micropulse cyclophotocoagulation provide significant IOP reduction with excellent safety profiles, representing a major advancement over traditional cyclodestructive therapy.**

# Conclusions: Balancing Efficacy and Safety

- Vision preservation is achievable with both approaches

**Serious complications remain rare, and patients achieve meaningful IOP reductions without sacrificing visual function**

# Conclusions: Balancing Efficacy and Safety

- 360° treatment offers more robust, durable IOP reduction

**Ideal for advanced glaucoma with only minimal increase in transient inflammation compared to hemispheric treatment**

# Conclusions: Balancing Efficacy and Safety

- 180° treatment provides a cautious, staged approach

**Useful in milder cases or when uncertainty exists, though may require additional sessions for optimal control**

# Key Take-Home Messages :

- MP CPC has emerged as an effective, repeatable tool across various glaucoma types
- 360° offers stronger and more durable IOP control
- 180° useful as staged or cautious approach
- Individualised treatment is the key

# References


- Tan AM et al. Clin Exp Ophthalmol 2010
- Tekeli O et al. Graefes Arch Clin Exp Ophthalmol 2021
- Yelenskiy A et al. J Glaucoma 2018
- Garcia GA et al. Ophthalmol Glaucoma 2019
- Basto RC et al. J Curr Glaucoma Pract 2023


Thank
you!