



# Università degli Studi di Palermo Scuola di Medicina e Chirurgia

Dipartimento di Biomedicina Sperimentale  
e Neuroscienze Cliniche

Sezione di Oftalmologia

Responsabile: Prof. Salvatore Cillino



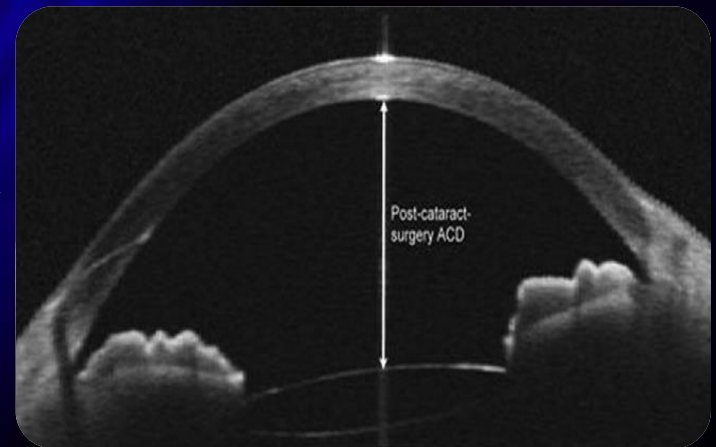
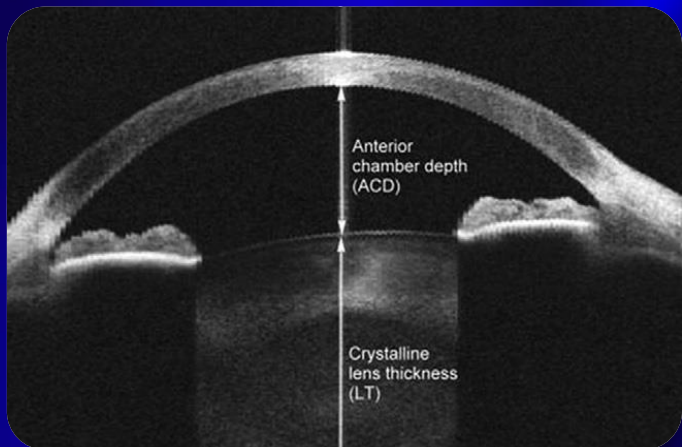
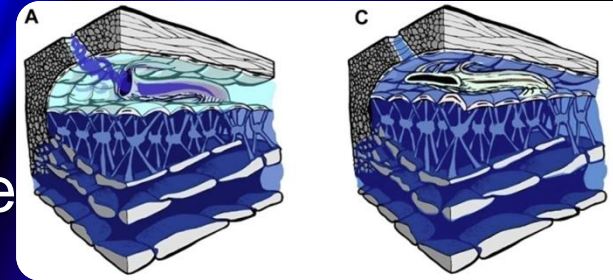
## Il Timing del Glaucoma Quando la Chirurgia della Cataratta

*S. Cillino    A. Casuccio    G. Cillino*



# Effetto ipotonizzante della chirurgia della cataratta

- Risoluzione blocco pupillare
- Shift posteriore diaframma irido-lenticolare
- Ampliamento angolo CA
- Riapertura PAS (sinechie periferiche anteriori)
- Ripristino del fisiologico drenaggio dell'acqueo  
(muscolo ciliare si rilassa, ritorna alla posizione fisiologica, il trabecolato e lo Schlemm si tendono)



# Association of biometric factors with anterior chamber angle widening and intraocular pressure reduction after uneventful phacoemulsification for cataract

Guofu Huang, MD, PhD, Eduardo Gonzalez, MD, Roland Lee, BA, Yi-Chun Chen, MD, Mingguang He, MD, PhD, Shan C. Lin, MD

J Cataract Refract Surg. 2012

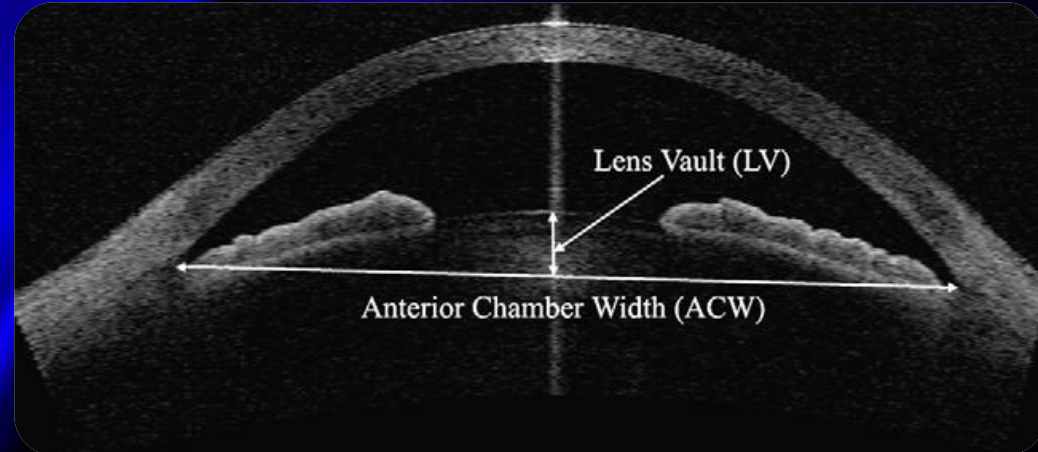
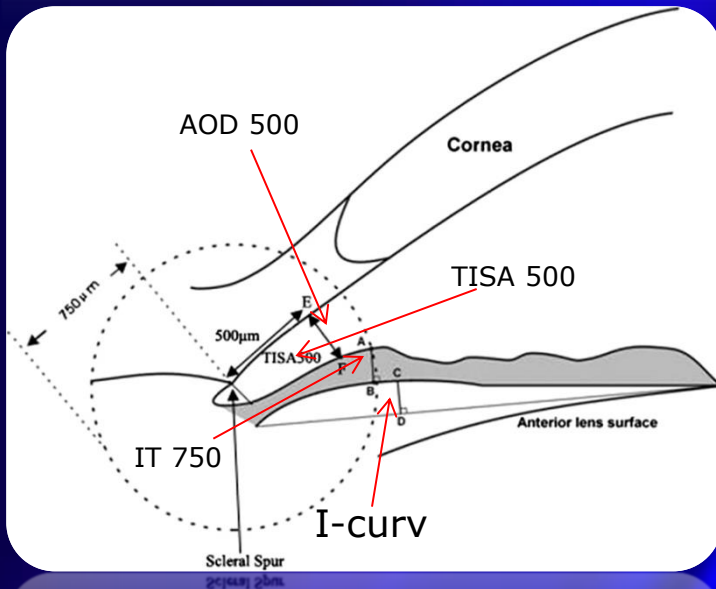
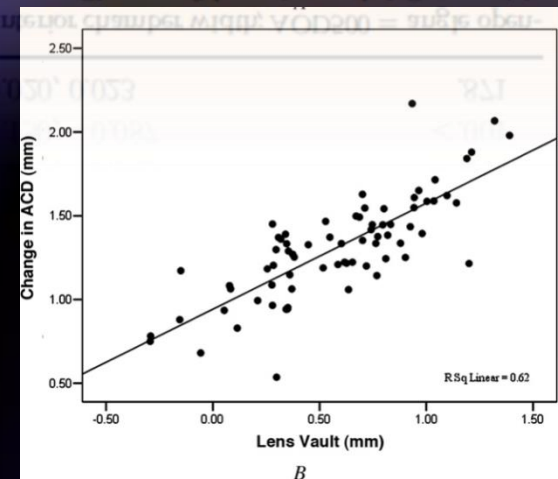
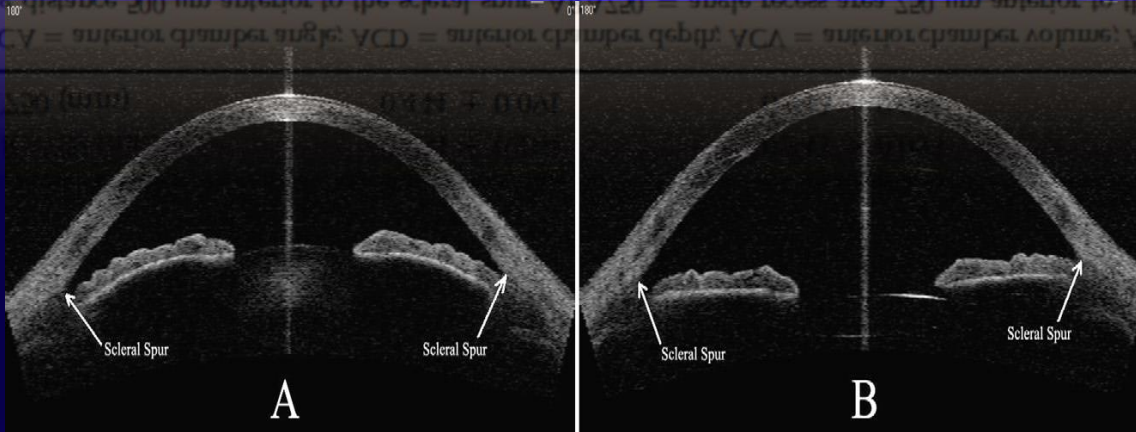


Table 2. Comparison of biometric parameters between preoperatively and 3 months postoperatively.

Parameter	Mean $\pm$ SD		Mean Difference (95% CI)	P Value
	Preop	Postop		
IOP (mm Hg)	14.97 $\pm$ 3.35	12.62 $\pm$ 3.37	1.99, 2.70	<.001
AOD500 (mm)	0.254 $\pm$ 0.105	0.433 $\pm$ 0.108	-0.207, -0.151	<.001
ACW (mm)	11.62 $\pm$ 0.55	11.62 $\pm$ 0.52	-0.106, 0.004	.069
ACD (mm)	2.52 $\pm$ 0.43	3.84 $\pm$ 0.29	-1.384, -1.241	<.001
Pupil (mm)	3.74 $\pm$ 0.95	3.67 $\pm$ 0.96	-0.020, 0.148	.131
ACV (mm <sup>3</sup> )	132.06 $\pm$ 32.69	181.49 $\pm$ 33.67	-56.64, 42.21	<.001
ACA (degree)	19.33 $\pm$ 3.97	26.12 $\pm$ 6.80	-8.46, -5.12	<.001
I-Curv (mm)	0.235 $\pm$ 0.130	0.183 $\pm$ 0.100	0.017, 0.086	.004
TISA500 (mm <sup>2</sup> )	0.105 $\pm$ 0.035	0.159 $\pm$ 0.035	-0.063, -0.045	<.001
ARA750 (mm <sup>2</sup> )	0.234 $\pm$ 0.104	0.343 $\pm$ 0.093	-0.130, -0.087	<.001
IT750 (mm)	0.444 $\pm$ 0.091	0.443 $\pm$ 0.096	-0.020, 0.023	.871

ACA = anterior chamber angle; ACD = anterior chamber depth; ACV = anterior chamber volume; ACW = anterior chamber width; AOD500 = angle opening distance 500  $\mu$ m anterior to the scleral spur; ARA750 = angle recess area 750  $\mu$ m anterior to the scleral spur; CI = confidence interval; I-Curv = iris curvature; IOP = intraocular pressure; IT750 = iris thickness measured at 750  $\mu$ m; TISA500 = trabecular-iris space area 500  $\mu$ m from sclera spur



# Association of biometric factors with anterior chamber angle widening and intraocular pressure reduction after uneventful phacoemulsification for cataract

Guofu Huang, MD, PhD, Eduardo Gonzalez, MD, Roland Lee, BA, Yi-Chun Chen, MD, Mingguang He, MD, PhD, Shan C. Lin, MD

J Cataract Refract Surg. 2012

“In summary, eyes with higher LV, deeper I-Curv, narrower TISA, shallower ACD, and narrower ACA are more likely to achieve greater angle opening after cataract removal.

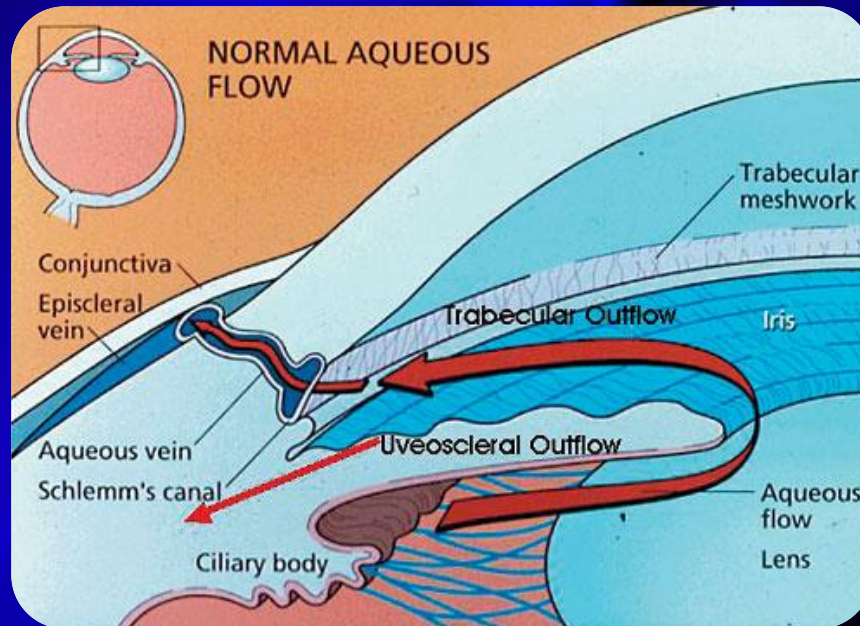
Preoperative LV was the only factor among these that correlated with greater IOP reduction. Its relationship is likely mechanistically mediated by the wider angle opening associated with cataract surgery. These findings can have clinical significance for patients with IOP control issues”

# Effetto ipotonizzante della chirurgia della cataratta

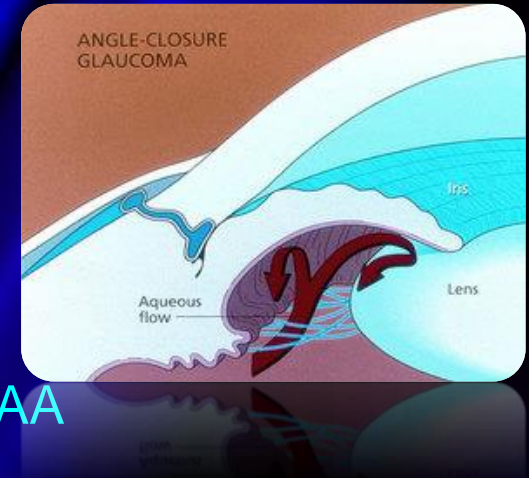
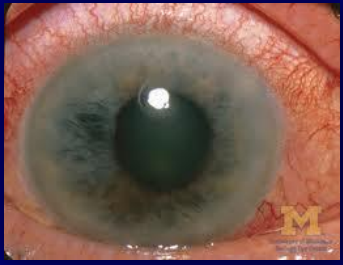
Rilascio di prostaglandine (flogosi):  $\text{PGF}^{2a}$ ,  $\text{PGE}^2$



Incremento del deflusso uveo-sclerale



# Glaucoma acuto ad angolo chiuso (AACG)



Fattori di rischio:

Età: 60, e incremento progressivo prevalenza

Genere: F>M 4:1

Razza: SE asiatici > Cinesi > Eschimesi > Caucasici > AA

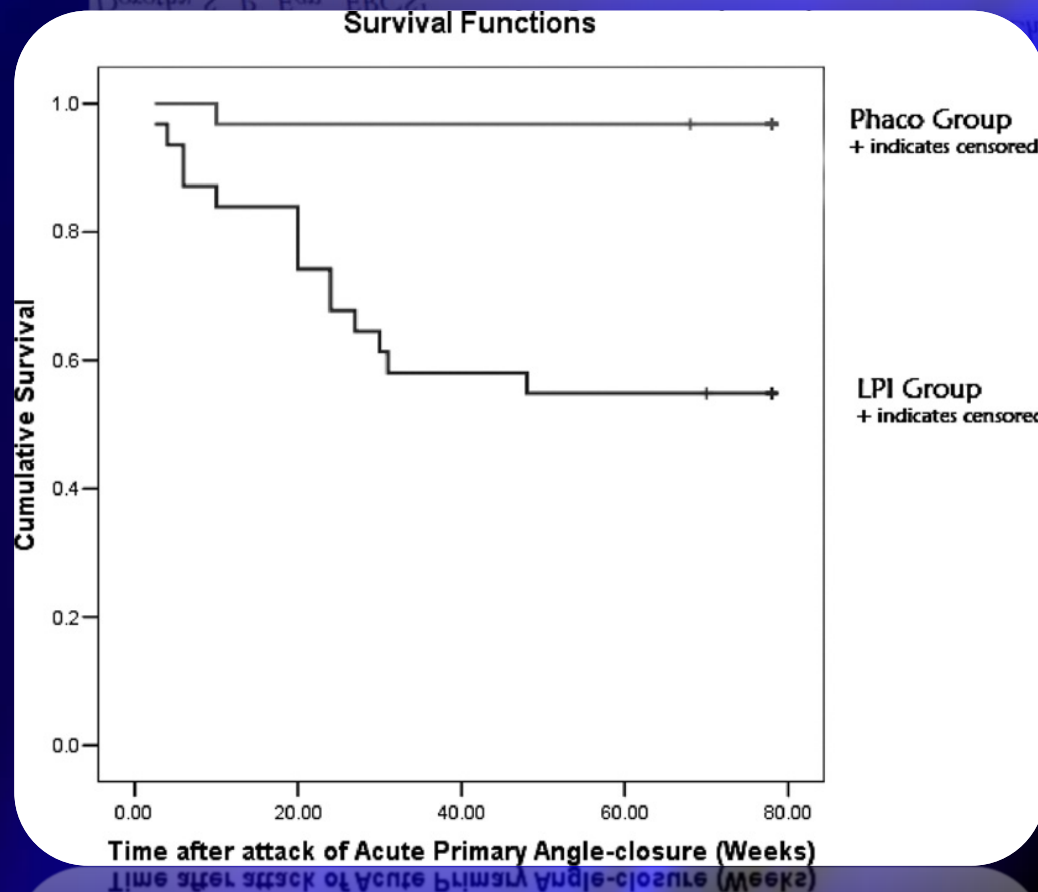
Fattori anatomici predisponenti

- ✓ Anteriorizzazione diaframma irido-lenticolare
- ✓ CA bassa
- ✓ Angolo ristretto
- ✓ Diametro corneale: correlazione con profondità AC e ampiezza angolo.
- ✓ Dimensione lente: superficie anteriore vicino alla cornea
- ✓ Lunghezza assiale (occhio corto = piccolo diametro corneale e lente anteriorizzata)

# Randomized Trial of Early Phacoemulsification versus Peripheral Iridotomy to Prevent Intraocular Pressure Rise after Acute Primary Angle Closure

Dennis S. C. Lam, MD, FRCOphth,<sup>1</sup> Dexter Y. L. Leung, FRCS, DRCOphth,<sup>1</sup> Clement C. Y. Tham, FRCS,<sup>1</sup> Felix C. H. Li, MRCS,<sup>1</sup> Yolanda Y. Y. Kwong, MRCS,<sup>1</sup> Thomas Y. H. Chiu, FRCS,<sup>2</sup> Dorothy S. P. Fan, FRCS<sup>1</sup>

Ophthalmology 2008



Phaco + IOL works better than LPI in terms of IOP reduction and IOP rise prevalence

“...this might be related to the significantly more opened angle after phacoemulsification compared with LPI”

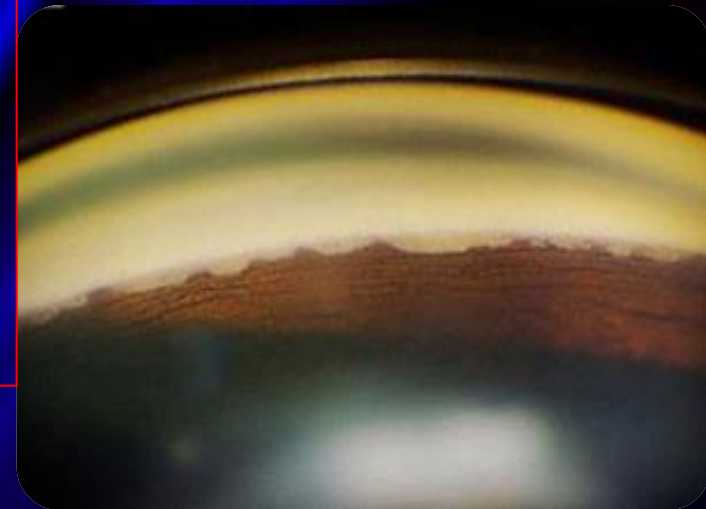


# Combined phacoemulsification and viscogoniosynechialysis in patients with refractory acute angle-closure glaucoma

Mohammad Reza Razeghinejad, MD

J Cataract Refract Surg. 2008

Results: Preoperatively, the mean intraocular pressure (IOP) was 39.4 mm Hg and the mean number of antiglaucoma medications, 3.8. Postoperatively, the mean IOP decreased to 13.4 mm Hg and the mean number of medications, to 0.4. In all patients except the one whose IOP was controlled by 3 medications, the previously occluded trabecular meshwork was exposed over 360 degrees on gonioscopy.



*CONCLUSION: Combined phacoemulsification and viscogoniosynechialysis was an effective and safe treatment for the management of refractory acute ACG that was unresponsive to laser iridotomy and medical therapy*

# Chirurgia cataratta: Timing

**AACG** il timing della facoemulsificazione non è ancora chiaro

- 1) Dopo che l'occhio va in quiete
- 2) Prima dell'instaurarsi di PAS significative con o senza aumento IOP.
- 3) 1 mese dopo la remissione dell'acuzie**
- 4) Necessari ulteriori studi
- 5) Impossibile generalizzare

**Lens extraction for chronic angle-closure glaucoma.**

Friedman DS, Vedula SS.

**Source**

Wilmer Eye Institute / Johns Hopkins University, Ophthalmology Department, 600 North Wolfe Street, Wilmer 120, Baltimore, MD 21287, USA.  
david.friedman@jhu.edu

**Abstract**

**BACKGROUND:**

Angle-closure glaucoma is characterized by obstruction to the outflow of aqueous humor and consequent rise in intraocular pressure. The obstruction may result from an anatomical predisposition of the eye or may be due to pathophysiologic processes in any part of the eye. The former is considered the primary form and the latter a secondary form of angle closure. Relative pupillary block obstructing free flow of aqueous from the posterior chamber of the eye to the anterior chamber is considered to be the most common mechanism of angle closure. Crowding of the angle is another mechanism, which often coexists with pupillary block. This can result from an anterior placement of the lens due to an increase in the thickness of the lens (as occurs with aging), anterior displacement by a posterior force (for example choroidal effusion), or laxity of the zonules.

**OBJECTIVES:**

The objective of this review was to assess the effectiveness of lens extraction for chronic primary angle-closure glaucoma compared with other interventions for the condition in people without past history of acute-angle closure attacks.

**SEARCH STRATEGY:**

We searched CENTRAL (2005, Issue 3), MEDLINE (1950 to April 2006), EMBASE (1980 to April 2006), and LILACS (to August 2005). We searched the reference lists of included studies and used the Science Citation Index database.

**SELECTION CRITERIA:**

In the absence of any randomized trials we included non-randomized studies comparing lens extraction with other treatment modalities for chronic primary angle-closure glaucoma including, but not limited to, laser iridotomy, medications, and laser iridoplasty. We excluded studies with a case-series design.

**DATA COLLECTION AND ANALYSIS:**

Two authors independently extracted data on methodological quality of the included studies, outcomes for the review, and study characteristics including participant characteristics, interventions, and sources of funding. Differences were resolved through discussion.

**MAIN RESULTS:**

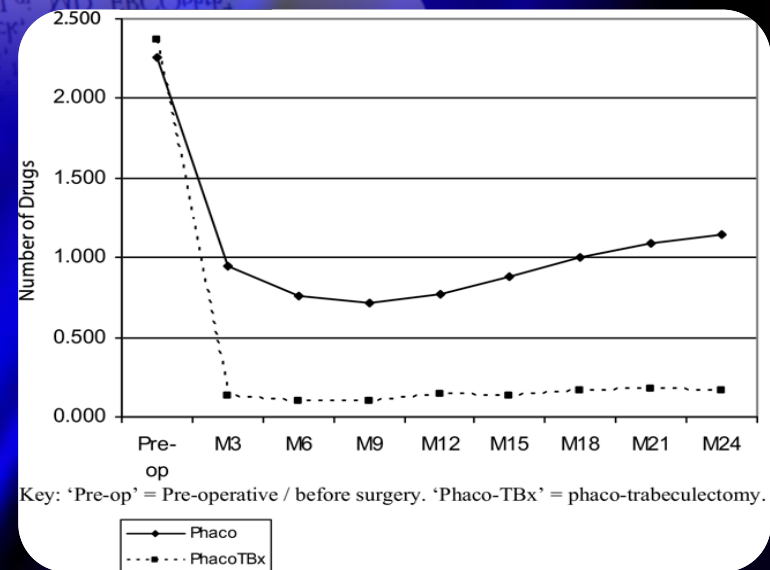
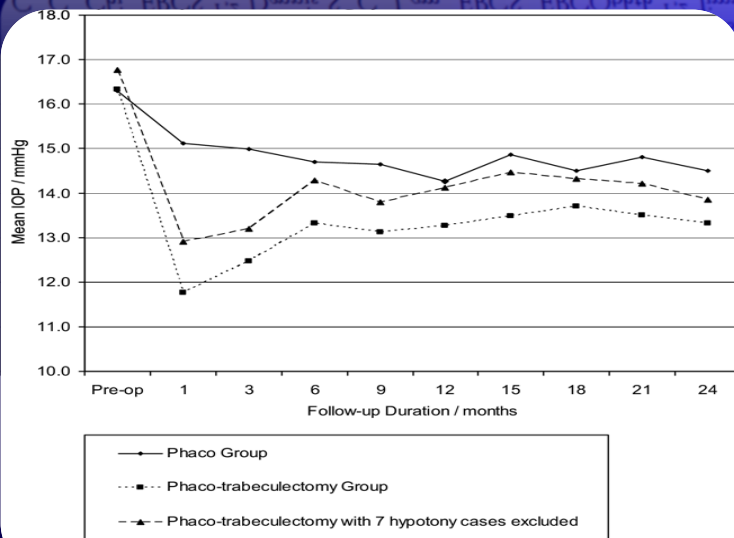
We found no randomized trials evaluating the effects of lens extraction as a treatment for chronic primary angle-closure glaucoma. Two non-randomized comparative studies included in the review have several methodological flaws including selection bias. While these studies and other

**AUTHORS' CONCLUSIONS:** There is no evidence from good quality randomized trials or non-randomized studies of the effectiveness of lens extraction for chronic primary angle-closure glaucoma.

# Phacoemulsification Versus Combined Phacotrabeculectomy in Medically Controlled Chronic Angle Closure Glaucoma with Cataract

Ophthalmology 2008

Clement C. Y. Tham, FRCS,<sup>1,2</sup> Yolanda Y. Y. Kwong, MRCS,<sup>1,2</sup> Dexter Y. L. Leung, FRCS,<sup>1,2</sup>  
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 Catherine H. Y. Chan, FRCS,<sup>1,4</sup> Agnes S. Y. Poon, FRCS,<sup>1,3</sup> Doris W. F. Yick, FRCS,<sup>1,5</sup>  
 C. C. Chi, FRCS,<sup>1,2</sup> Dennis S. C. Lam, FRCS, FRCOphth,<sup>1,2</sup> Jimmy S. M. Lai, MD, FRCOphth<sup>4</sup>



Both groups demonstrated statistically significant IOP lowering effect and statistically significant less antiglaucoma medications needed with respect to preoperative

# Phacoemulsification Versus Combined Phacotrabeculectomy in Medically Controlled Chronic Angle Closure Glaucoma with Cataract

Ophthalmology 2008

*Clement C. Y. Tham, FRCS,<sup>1,2</sup> Yolanda Y. Y. Kwong, MRCS,<sup>1,2</sup> Dexter Y. L. Leung, FRCS,<sup>1,2</sup> S. W. Lam, MRCS,<sup>1,3</sup> Felix C. H. Li, MRCS,<sup>1,2</sup> Thomas Y. H. Chiu, FRCS,<sup>1,3</sup> Jonathan C. H. Chan, FRCS,<sup>1,4</sup> Catherine H. Y. Chan, FRCS,<sup>1,4</sup> Agnes S. Y. Poon, FRCS,<sup>1,3</sup> Doris W. F. Yick, FRCS,<sup>1,5</sup> C. C. Chi, FRCS,<sup>1,2</sup> Dennis S. C. Lam, FRCS, FRCOphth,<sup>1,2</sup> Jimmy S. M. Lai, MD, FRCOphth<sup>4</sup>*

Phaco-Trabe  
Vs  
Phaco

- IOP lowering effect slightly superior (only at 1 and 3m)
- Reduced glaucoma medication (0,8 less)
- Same glaucoma progression rate (15%)
- More postoperative complications (delayed rehabilitation, more visits, more costs)

# Phacoemulsification versus Combined Phacotrabelectomy in Medically Uncontrolled Chronic Angle Closure Glaucoma with Cataracts

Ophthalmology 2009

Clement C. Y. Tham, FRCS,<sup>1,2</sup> Yolanda Y. Y. Kwong, MRCS,<sup>1,2</sup> Dexter Y. L. Leung, FRCS,<sup>1,2</sup> S. W. Lam, MRCS,<sup>1,2</sup> Felix C. H. Li, MRCS,<sup>1,2</sup> Thomas Y. H. Chiu, FRCS,<sup>1,3</sup> Jonathan C. H. Chan, FRCS,<sup>1,4</sup> Dennis S. C. Lam, FRCS, FRCOphth,<sup>1,2</sup> Jimmy S. M. Lai, MD, FRCOphth<sup>†</sup>

Phaco-  
Trabe Vs  
Phaco

- Better IOP lowering effect
- Reduced glaucoma medication (1.25 less)
- Higher glaucoma progression rate (ON damage)
- More postoperative complications (delayed rehabilitation, more visits, more costs)

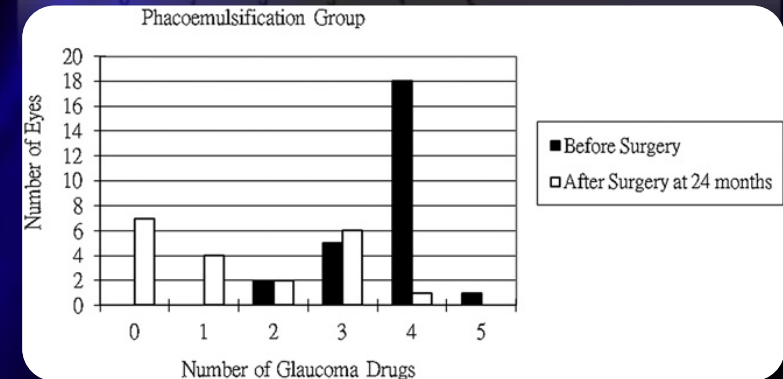
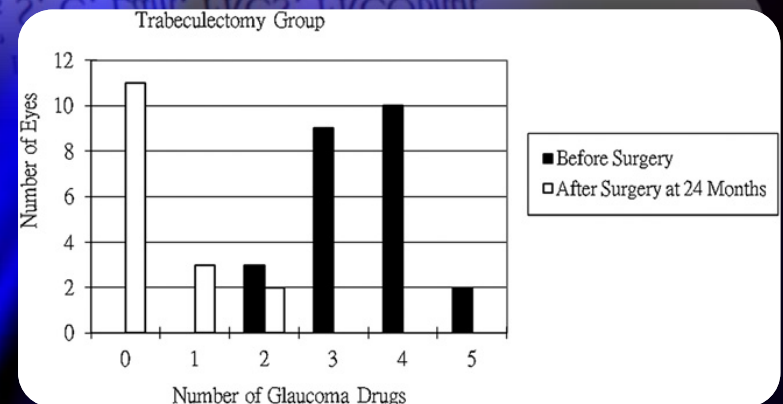
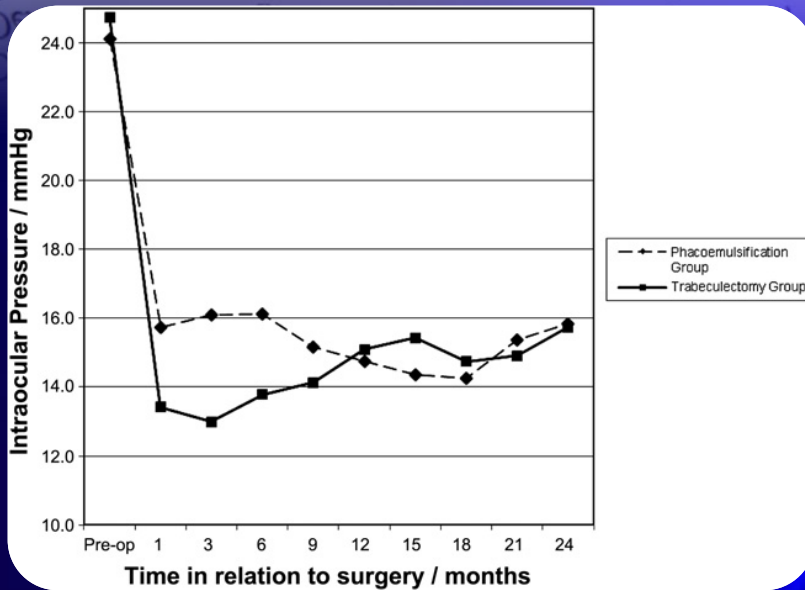
Table 7. Proportion of Chronic Angle Closure Glaucoma Cases with Controlled Intraocular Pressure after the Two Treatments

No. of CACG Eyes with IOP Controlled by Medications* (Percentages)	Phaco Group (n = 27)	Combined Phacotrabelectomy with Adjunctive Mitomycin C Group (n = 24)	P Value <sup>†</sup>
Preoperative	0 (0%)	0 (0%)	
12 mos after surgery	25 (92.6%)	24 (100%)	0.17
24 mos after surgery	25 (92.6%)	22 (91.7%)	0.90

# Phacoemulsification versus Trabeculectomy in Medically Uncontrolled Chronic Angle-Closure Glaucoma without Cataract

Ophthalmology 2013

Clement C. Y. Tham, FRCS,<sup>1,2,3</sup> Yolanda Y. Y. Kwong, FRCS,<sup>1,2,3</sup> Nafees Baig, FRCS,<sup>1,2</sup>  
 Dexter Y. L. Leung, FRCS,<sup>1,2</sup> Felix C. H. Li, FRCS,<sup>1,2</sup> Dennis S. C. Lam, FRCS, FRCOphth<sup>1,2,3</sup>



# Phacoemulsification versus Trabeculectomy in Medically Uncontrolled Chronic Angle-Closure Glaucoma without Cataract

Ophthalmology 2013

Clement C. Y. Tham, FRCS,<sup>1,2,3</sup> Yolanda Y. Y. Kwong, FRCS,<sup>1,2,3</sup> Nafees Daig, FRCS,  
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Both groups demonstrated statistically significant IOP lowering effect and statistically significant less antiglaucoma medications needed with respect to preoperative

Trabe  
Vs  
Phaco

- Same IOP lowering effect (-35%)
- Fewer glaucoma medication (1.1 less)
- More postoperative complications (46% vs 4%)
- 33% had cataract during the first 24 months
- More additional surgical interventions needed (25% vs 12%)



**INCLUSION CRITERIA:**

- Diagnosis: (1) PACG or (2) PAC with IOP  $\geq$  30 mmHg at diagnosis
- Newly diagnosed, (i.e. either (i) untreated or (ii) under medical treatment for six months or less)
- Angle closure in 180 degrees or more
- Patient must be phakic in the affected eye(s)
- Participants will be  $\geq$  50 years

Assessed for eligibility

**EXCLUDED:**

- Advanced glaucoma
- Previously diagnosed acute angle closure attack in the otherwise eligible eye
- Increased surgical risk

# The effectiveness of early lens extraction with intraocular lens implantation for the treatment of primary angle-closure glaucoma (EAGLE): study protocol for a randomized controlled trial

Augusto Azuara-Blanco\*, Jennifer M Burr, Claire Cochran, Craig Ramsay, Luke Vale, Paul Foster, David Friedman, Zahidul Quayyum, Jimmy Lai, Winnie Nolan, Tin Aung, Paul Chew, Gladys McPherson, Alison McDonald and John Norrie, for Effectiveness in Angle-closure Glaucoma of Lens Extraction (EAGLE) Study Group

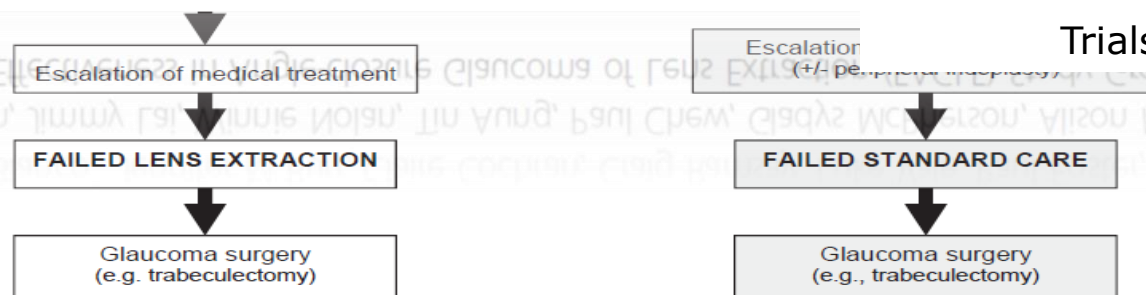


Figure 1 Participants flow diagram.

# CACG e cataratta

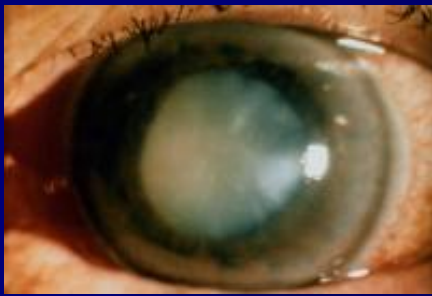
La semplice facoemulsificazione è un'alternativa chirurgica valida alla facotrabeculectomia, con IOP preoperatoria sotto controllo o meno

In caso di successiva trabeculectomia per il controllo della IOP, l'outcome a lungo termine è equivalente ad occhi sottoposti a combinata, in termini di visus, controllo IOP, complicitanze

# Chirurgia cataratta: Timing

## CACG

- 1) Valore di IOP
- 2) Valutazione dettagliata morfologia angolare (estensione PAS)
- 3) Grado di neuropatia ottica
- 4) **Il ritardo nella chirurgia della cataratta può risultare in una chirurgia tecnicamente più complessa**
- 5) **Un intervallo di circa 1-2 settimane dalla presentazione alla chirurgia sembra ragionevole**



# Glaucoma ad angolo chiuso facogeno

## Glaucoma facomorfico: difficoltà intraoperatorie

### Capsulotomia difficile e CA ridotta:

- Viscoelastico alto peso molecolare
- Puntura e aspirazione cortex
- PPV limitata
- Trypan blue
- Can opener
- **Femtosecond**

### Distacco Descemet:

- Evitare ingressi ripetuti in CA
- Inserimento IOL accurato
- Viscoelastico

### Pupilla ristretta:

Midriasi meccanica

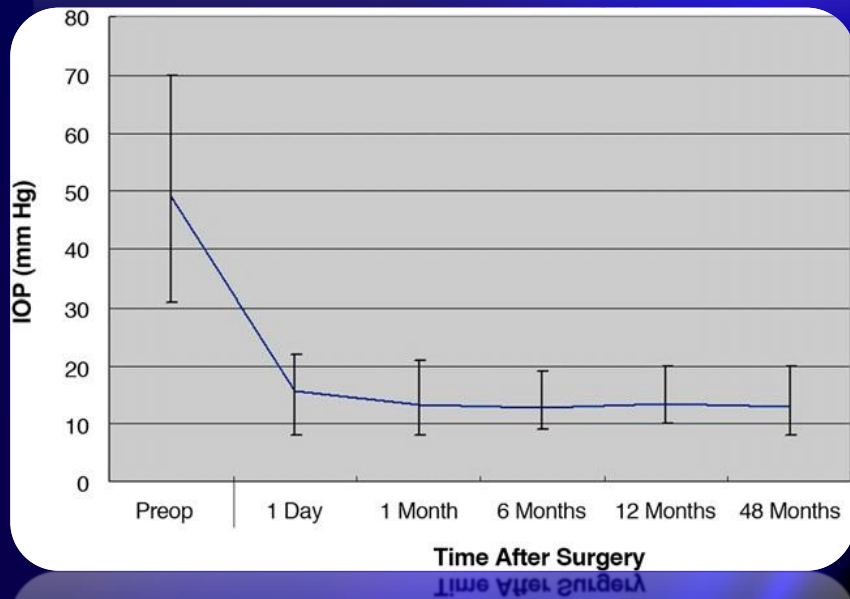
- Viscoelastici
- Dilatatori pupillari
- Retrattori pupillari
- Piccole sfinterotomie
- Iridotomie a settore



# Long-term therapeutic efficacy of phacoemulsification with intraocular lens implantation in patients with phacomorphic glaucoma

Soo Jung Lee, MD, PhD, Chang Kyu Lee, MD, Wan-Soo Kim, MD, PhD

J Cataract Refract Surg. 2010





## Glaucoma ad angolo chiuso facogeno

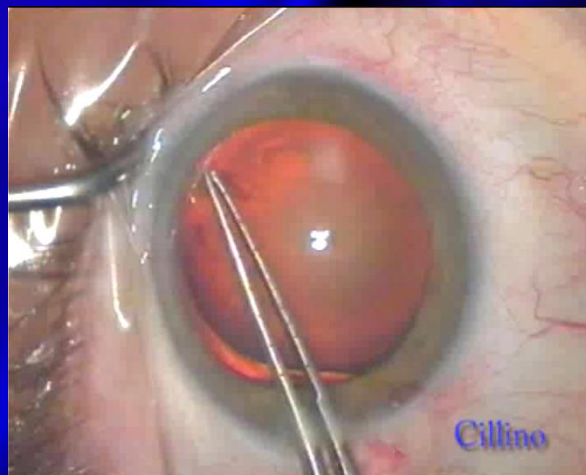
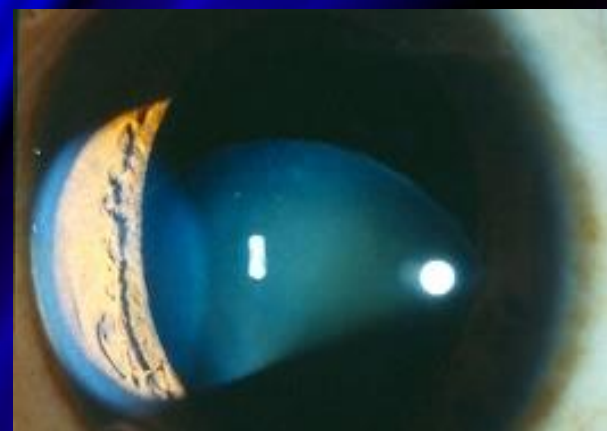


✓ Condizione correlata al sito della lente

- Sublussata
- Dislocata
- Microftalmo

Meccanismo:

- Chiusura angolare diretta
- Blocco pupillare



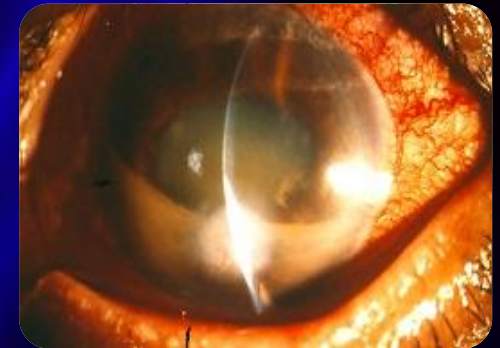
# Glaucoma ad angolo chiuso facogeno

## Glaucoma facolitico

### Management:

- **Terapia medica**
  - Terapia anti-glaucoma
  - Agenti iperosmotici
  - Steroidi topici

- **Chirurgia**
  - Estrazione cataratta "I/A"



# FC VII – Acute Primary Angle Closure Attack - Management

## Medical Procedures

**Decrease AH\* production**

Topical therapy

$\beta$ -blockers /  $\alpha_2$ -agonists

Systemic therapy (IV / oral)

Acetazolamide / Mannitol  
(repeat if necessary)

+

**Re-open the angle**

Pharmacologically

Pilocarpine 2%

Mechanically

Corneal indentation (4 mirror lens)  
Consider clear cornea paracentesis

+

**Reduce inflammation**

Topical Steroids

## Laser / Surgical procedures

**Break pupillary block + re-open angle**

Iris procedures

← and/or →

Lens extraction

Clear Cornea ←

Try topical glycerin 10%

→ Cloudy Cornea

Iridotomy / Iridectomy

Iridectomy

**!Remember prophylactic  
iridotomy  
in the other eye!**

\*Aqueous Humor

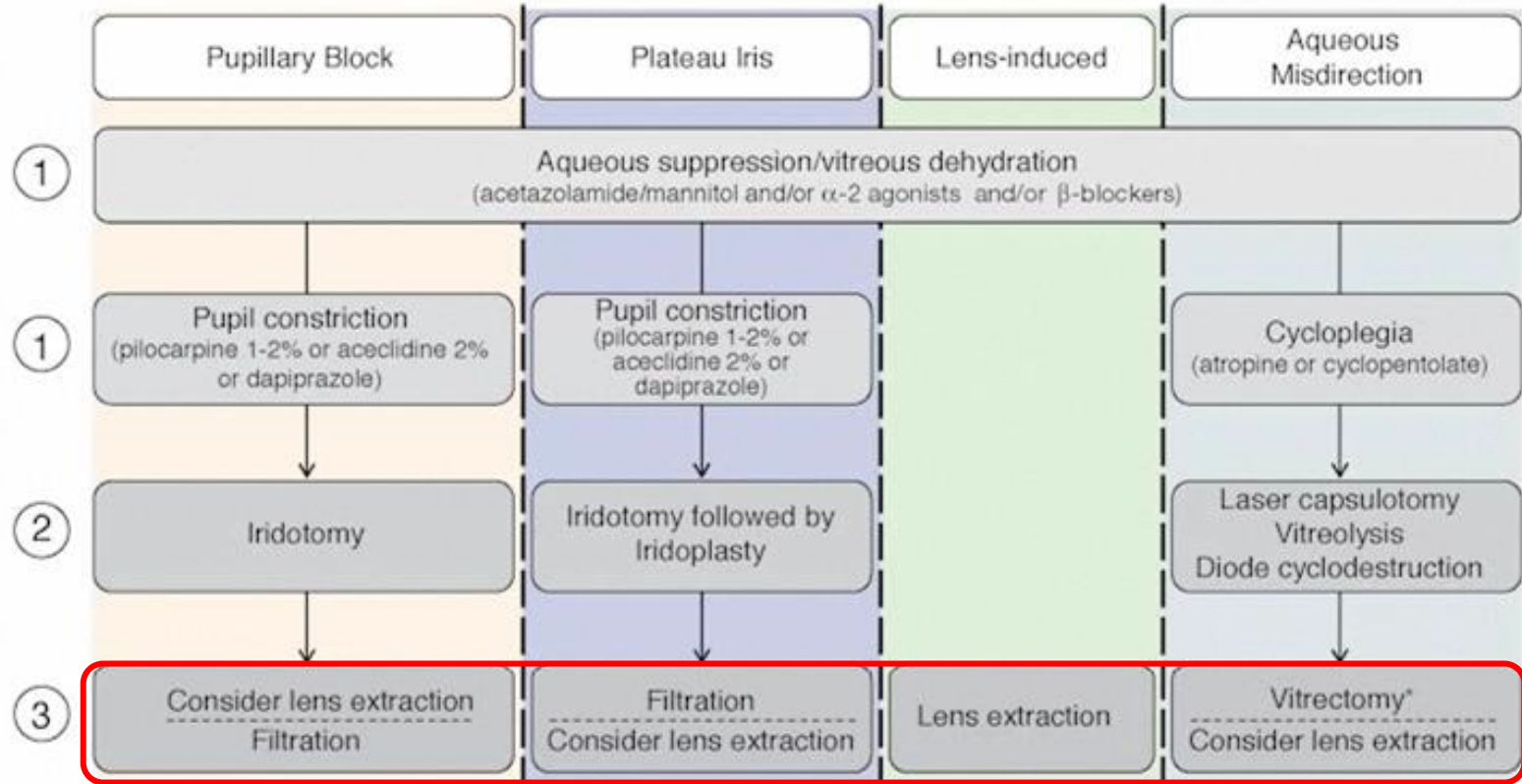
Depending on availability, consider laser  
iridotomy a first treatment option



## FC VIII – Management of Chronic Angle Closure

### IDENTIFY THE PATHOPHYSIOLOGICAL MECHANISM(S) RESPONSIBLE

Make sure a **patent iridotomy** is present/made before considering mechanisms other than pupillary block



\* Combined with zonulectomy+iridectomy in pseudophakia

© European Glaucoma Society 2014

# POAG e cataratta

(2000)

Glaucoma controllato  
in monoterapia

Trattamento di scelta  
facoemulsificazione con risparmio  
congiuntivale

Altri casi di glaucoma  
e cataratta

Preferibilmente intervento  
combinato

1: [Klin Monatsbl Augenheilkd.](#) 2000 Feb;216(2):105-11.

[Glaucoma and cataract: combined operation or trabeculectomy first and cataract extraction later?]

[Article in German]

[Urban V.](#), [Kammann MI.](#), [Stürmer JP.](#)

Augenlinik Universitätsspital Zürich.

# Intraocular pressure reduction after phacoemulsification with intraocular lens implantation in glaucomatous and nonglaucomatous eyes

## Evaluation of a causal relationship between the natural lens and open-angle glaucoma

Brooks J. Poley, MD, Richard L. Lindstrom, MD, Thomas W. Samuelson, MD,  
Richard Schulze, Jr, MPhil, MD

J Cataract Refract Surg. 2009

Brooks J. Poley, MD, Richard L. Lindstrom, MD, Thomas W. Samuelson, MD,  
Richard Schulze, Jr, MPhil, MD

Table 2. Characteristics and IOP results by presurgical IOP group of glaucomatous eyes when operated with phaco/IOL.

IOP Group (mm Hg)	Eyes (n)	Age (Y)	Final FU (Y)	Mean IOP (mm Hg) ± SD					Final (%)
				At Surgery	1 Y Postop	Change at 1 Y	Final Change	Final (%)	
29-23	17	73.3 ± 8.2	5.8 ± 2.7	24.7 ± 1.7	18.7 ± 4.4	-6.0 ± 4.7	16.3 ± 3.9	-8.4 ± 4.3 (34)	
22-20	23	72.8 ± 8.4	5.0 ± 1.9	20.7 ± 0.9	17.0 ± 2.2	-3.7 ± 2.4	16.1 ± 2.5	-4.6 ± 2.5 (22)	
19-18	28	75.4 ± 8.9	4.6 ± 2.7	18.5 ± 0.5	15.8 ± 2.7	-2.7 ± 2.9	15.2 ± 2.7	-3.3 ± 2.6 (18)	
17-15	33	78.0 ± 7.4	3.2 ± 1.9	16.0 ± 0.8	14.4 ± 1.8	-1.6 ± 2.0	14.9 ± 2.4	-1.1 ± 2.3 (7)	
14-5	23	76.3 ± 11.4	4.6 ± 2.3	11.6 ± 2.6	12.9 ± 3.5	+1.3 ± 3.9	13.5 ± 3.5	+1.9 ± 3.6 (16)	
P value	—	.210	.002	<.001	<.001	<.001	.007	<.001	
All eyes	124	75.5 ± 8.9	4.5 ± 2.4	17.8 ± 0.9	15.4 ± 3.4	-2.4 ± 3.8	15.1 ± 2.9	-2.7 ± 4.3 (15)	

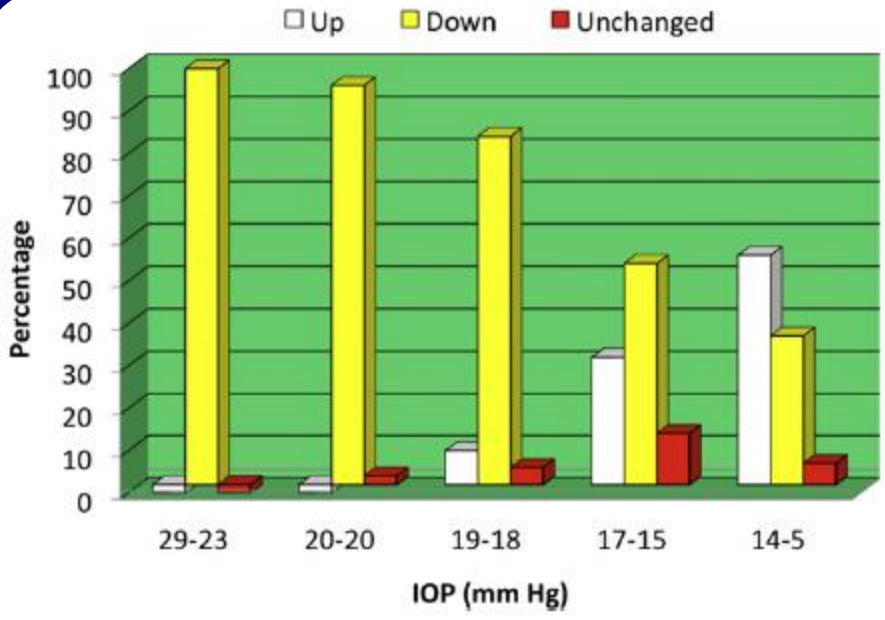
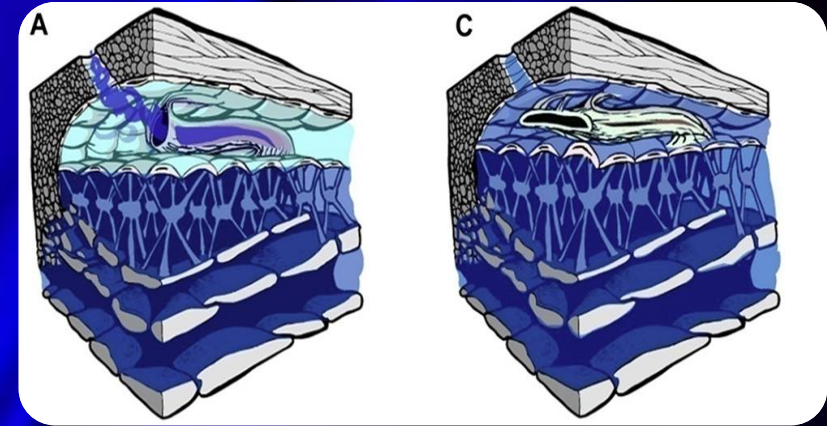
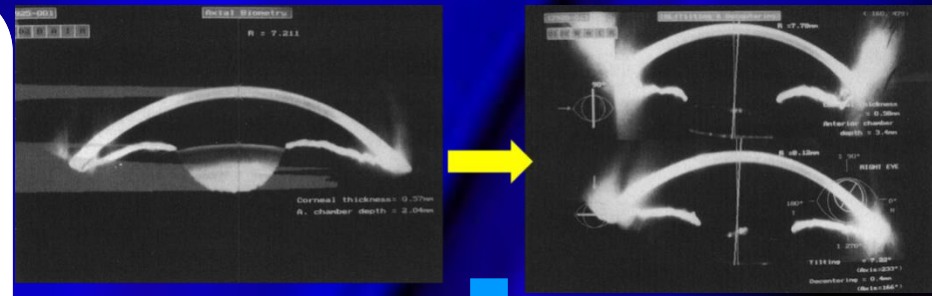


Figure 2. Postoperative change in IOP (IOP = intraocular pressure).



“However, when we stratified the eyes and sorted them into 5 groups according to preoperative IOP, we found greater IOP reductions than previously reported. Eyes with the highest preoperative IOP had the greatest IOP decrease, and eyes with the lowest preoperative IOP had an insignificant IOP reduction or an IOP elevation. This showed that IOP reduction after phacoemulsification with IOL implantation was proportional to the preoperative IOP and that the eyes most in need of IOP reduction had the greatest IOP decrease”

# The Effect of Phacoemulsification on Intraocular Pressure in Medically Controlled Open-Angle Glaucoma Patients

MARK A. SLABAUGH, KARINE D. BOJIKIAN, DANIEL B. MOORE, AND PHILIP P. CHEN

AMERICAN JOURNAL OF OPHTHALMOLOGY JANUARY 2014

- IOP decrease by a mean of -1.8 mmHg
- 38% of eyes with medically controlled OAG after phaco.

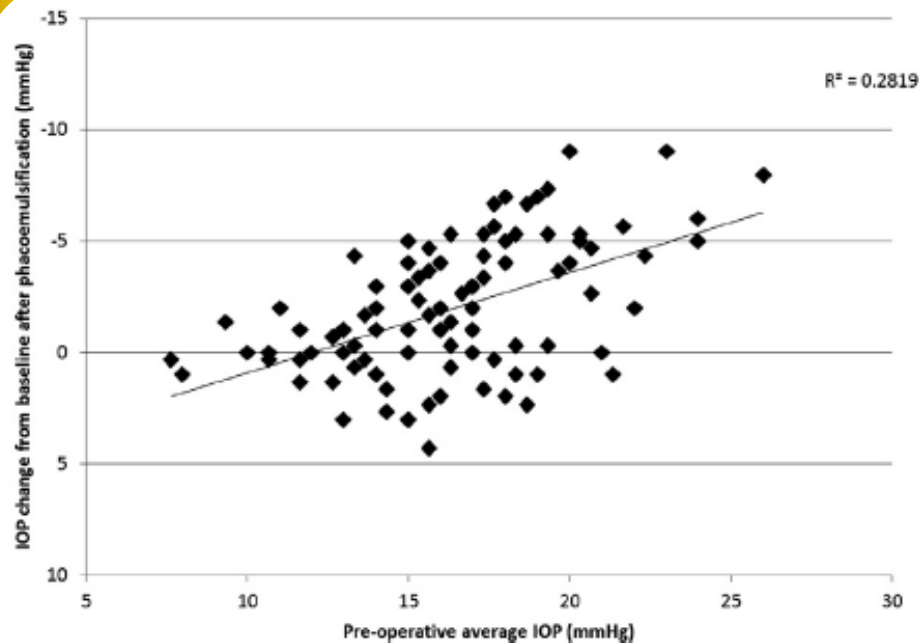


FIGURE. Relationship of IOP reduction at 1 year after phacoemulsification to preoperative intraocular pressure in medically controlled open-angle glaucoma eyes without medication change (n = 102).

- Phacoemulsification resulted in a small average decrease in IOP in patients with OAG. A sizeable proportion of medically controlled glaucoma patients with OAG undergoing phacoemulsification experienced an increase in IOP or require more aggressive treatment to control IOP

# Chirurgia della cataratta e POAG

- La semplice chirurgia della cataratta può essere di beneficio limitato nel ridurre la IOP
- Età, stadio della malattia, tolleranza alle medicazioni vanno considerati prima della decisione chirurgica.
- La IOP prima della chirurgia della cataratta è l'indicatore più forte della possibile riduzione post-operatoria
- Alternative chirurgiche combinate con la chirurgia della cataratta (trabe, canaloplastica, micro-stents etc.) possono essere utilizzate per un decremento IOP più significativo

Vestn Oftalmol. 2013 Nov-Dec;129(6):19-23.

**[Hypotensive efficacy of combined pathogenically oriented surgical treatment of cataract and primary open-angle glaucoma].**

[Article in Russian]

Vvedenskij AS, Iusef SN, Sharnina TV, Vorob'eva MV.

Curr Opin Ophthalmol. 2010 Jan;21(1).

**Cataract surgery and glaucoma.**

**Vizzeri G<sup>1</sup>, Weinreb RN.**

EDITORIALS

Cataract Surgery in Glaucoma Patients: How Much Benefit?

PETER A. NETLAND

AMERICAN JOURNAL OF OPHTHALMOLOGY JANUARY 2014

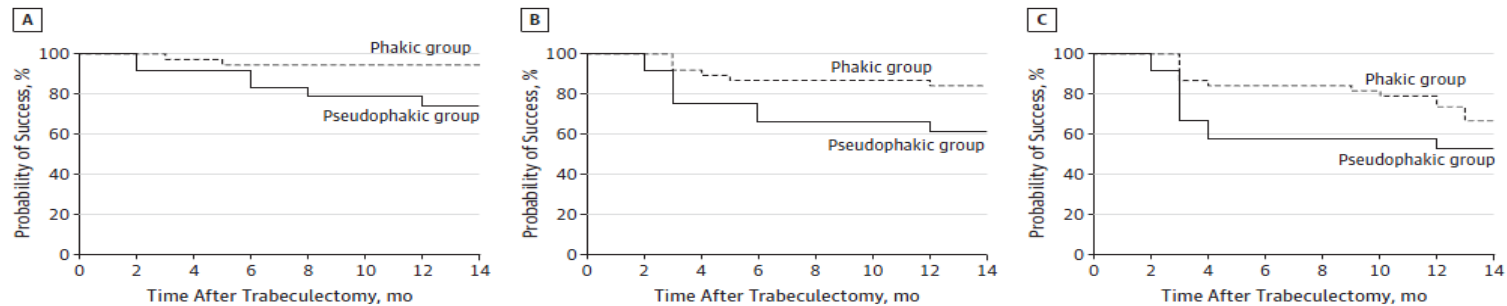
# Trabeculectomy for Open-angle Glaucoma in Phakic Eyes vs in Pseudophakic Eyes After Phacoemulsification

## A Prospective Clinical Cohort Study

JAMA Ophthalmology  
January 2014 Volume  
132, Number 1

Yuji Takihara, MD, PhD; Masaru Inatani, MD, PhD; Minako Ogata-Iwao, MD; Motofumi Kawai, MD, PhD;  
Toshihiro Inoue, MD, PhD; Keiichiro Iwao, MD, PhD; Hidenobu Tanihara, MD, PhD

Figure. Kaplan-Meier Survival Curves of the Probability of Success in the Phakic Group and the Pseudophakic Group



A, Criterion A (intraocular pressure  $\geq 21$  mm Hg,  $P = .02$ ). B, Criterion B (intraocular pressure  $\geq 18$  mm Hg,  $P = .04$ ). C, Criterion C (intraocular pressure  $\geq 15$  mm Hg,  $P = .10$ ).

Table 2. Intraocular Pressure and the Number of Postoperative Antiglaucoma Medications Over Time After Trabeculectomy

Time	Mean (SD)					
	Intraocular Pressure, mm Hg			No. of Postoperative Antiglaucoma Medications		
	Phakic Group	Pseudophakic Group	P Value	Phakic Group	Pseudophakic Group	P Value
2 wk	9.6 (3.4)	9.2 (5.1)	.32	0.0 (0.0)	0.0 (0.0)	...
1 mo	12.0 (5.3)	14.3 (5.7)	.08	0.0 (0.0)	0.0 (0.0)	...
3 mo	11.8 (4.9)	13.3 (5.3)	.27	0.0 (0.0)	0.1 (0.4)	.22
6 mo	10.7 (4.2)	13.9 (5.4)	.03	0.1 (0.2)	0.3 (0.8)	.25
9 mo	11.7 (4.1)	13.9 (4.7)	.047	0.2 (0.6)	0.4 (0.9)	.49
12 mo	12.0 (4.8)	14.4 (5.7)	.09	0.2 (0.6)	0.5 (1.0)	.11

Abbreviation: ellipsis, not applicable.

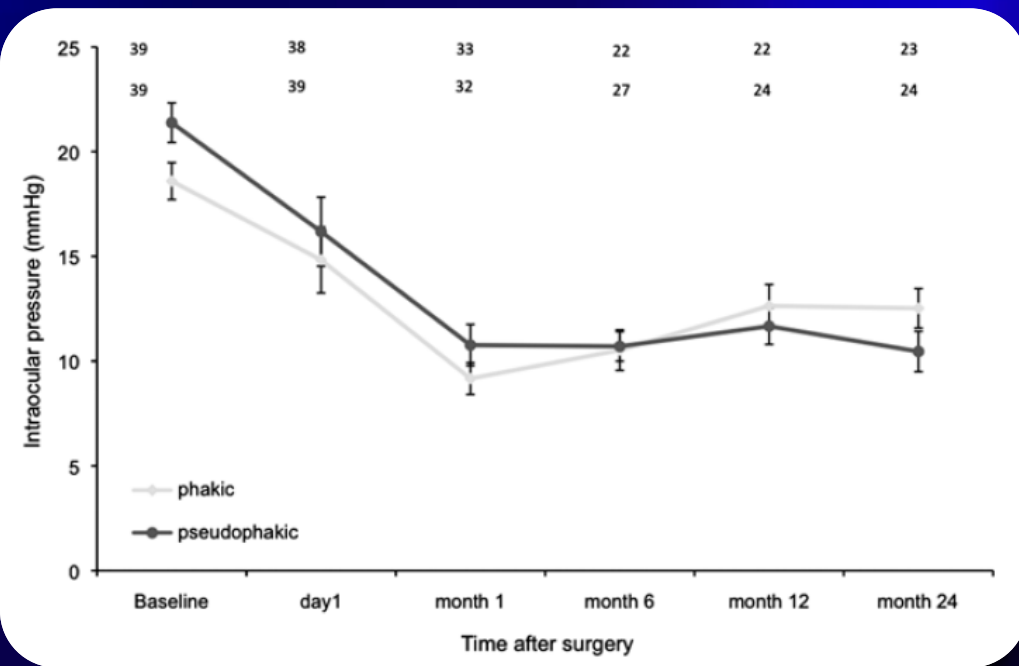
# Comparison of Results of Initial Trabeculectomy With Mitomycin C After Prior Clear-corneal Phacoemulsification to Outcomes in Phakic Eyes

Chutima Supawavej, MD, Kouros Nouri-Mahdavi, MD MSc, Simon K. Law, MD PharmD, and Joseph Caprioli, MD

*J Glaucoma* 2013;22:52-59

and Joseph Caprioli, MD

Comparison of Results of Initial Trabeculectomy With Mitomycin C After Prior Clear-corneal Phacoemulsification to Outcomes in Phakic Eyes



Results of initial trabeculectomy with MMC in eyes with prior clear-corneal phacoemulsification are comparable with those in phakic eyes. Clear-corneal phacoemulsification does not seem to affect the success rate of subsequent trabeculectomy with MMC.



# Incidence and management of cataract after glaucoma surgery

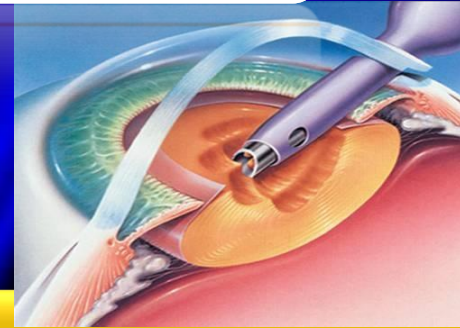
Curr Opin Ophthalmol 2014,  
25:122–126

Hussain Y. Patel and Helen V. Danesh-Meyer

Curr Opin Ophthalmol 2013, 24:15–20

## KEY POINTS

- Cataract surgery in the presence of a functioning filtration bleb can have a significant impact on bleb function and IOP control.
- Timing of cataract surgery after trabeculectomy is an important consideration with the risk of bleb failure decreasing as the time interval increases.
- Intraoperative subconjunctival 5-FU offers some protection against bleb failure.
- Clear corneal phacoemulsification through a temporal approach with minimal intraoperative iris manipulation is advised to decrease postoperative inflammation and the risk of bleb scarring.
- More aggressive postoperative anti-inflammatory treatment compared with routine cataract surgery is recommended, and for high-risk patients, repeated subconjunctival 5-FU injections should also be considered.



- Phacoemulsification leads to an increased risk of **bleb failure of approximately 33%, with changes in bleb morphology and elevation in IOP of 2-3mmHg.**
  - Younger age and higher IOP prior to cataract surgery increase risk of bleb failure
    - In glaucomatous eyes with a functioning tube shunt device, phacoemulsification does not have a detrimental effect on IOP control

## Cataract surgery after trabeculectomy: the effect on trabeculectomy function.

Husain R<sup>1</sup>, Liang S, Foster PJ, Gazzard G, Bunce C, Chew PT, Oen FT, Khaw PT, Seah SK, Aung T.

**Table 3. Cox Regression Analysis for Risk Factors for Trabeculectomy Failure**

Risk Factor	HR (95% CI)	P value
Age, y	0.981 (0.960-1.003)	.09
No diabetes	1 [Reference]	.56
Diabetes	1.166 (0.693-1.962)	
Glaucoma diagnosis		
Open angle	1.726 (1.076-2.770)	.013
Closed angle	1 [Reference]	
No. of pretrabeculectomy antiglaucoma drops	1.044 (0.926-1.772)	.48
Pretrabeculectomy IOP	1.044 (1.008-1.082)	.015
No. of postoperative steroid drops	1.072 (0.980-1.173)	.13
Trabeculectomy augmentation		
5-FU	1.329 (0.846-2.089)	.22
Placebo	1 [Reference]	
Reciprocal of time to cataract surgery	1.731 (1.050-2.854)	.03

Abbreviations: HR, hazard ratio; IOP, intraocular pressure; 5-FU, 5-fluorouracil.

- The closer these 2 surgical procedures were to each other in time, the shorter the time to trabeculectomy failure.
- **Prolonged low-grade inflammation associated with phacoemulsification** resulting an up regulation of fibrogenic cytokines in the aqueous humor and, hence, an increased risk of bleb failure.

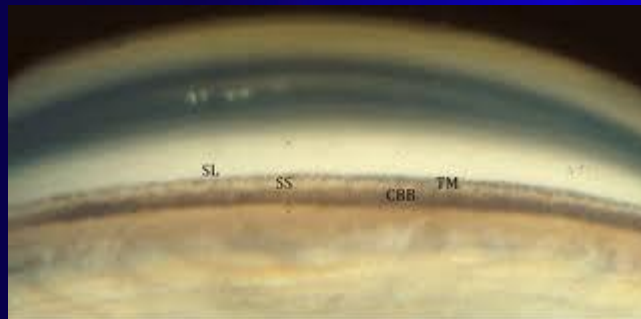
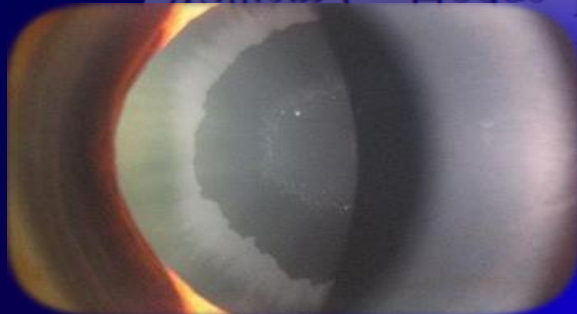
# Intraocular pressure decrease after phacoemulsification in patients with pseudoexfoliation syndrome

Andrew Merkur, Karim F. Damji, MD, George Mintsioulis, MD,  
William G. Hodge, MD

J Cataract Refract Surg. 2001

Table 2. Mean IOP over time.

IOP (mm Hg)	PEX	POAG Control	P Value†	Cataract Control	P Value
<b>Baseline</b>			.342		.220
Mean	16.14	17.22		14.22	
SD	2.50	3.19		2.97	
n (eyes)	21	23		23	
<b>At 1 day</b>			.717		.003
Mean	17.57	20.68		16.91	
SD	6.54	7.95		6.94	
n (eyes)	21	22		23	
Change*	+1.43	+3.46		+2.69	
<b>At 3 months</b>			.323		.012
Mean	14.33	15.00		11.73	
SD	2.92	2.87		2.41	
n (eyes)	9	9		11	
Change*	-1.81	-2.22		-2.49	
<b>At 6 months</b>			.012		.001
Mean	11.63	14.90		14.67	
SD	2.20	3.51		3.06	
n (eyes)	8	10		3	
Change*	-4.52	-2.32		+0.45	
<b>At 12 months</b>			.002		.050
Mean	13.83	15.33		14.50	
SD	2.32	2.24		2.35	
n (eyes)	6	9		6	
Change*	-2.31	-1.88		+0.28	
<b>At 18 months</b>			.041		.190
Mean	15.25	15.67		13.71	
SD	3.77	2.07		2.43	
n (eyes)	4	6		7	



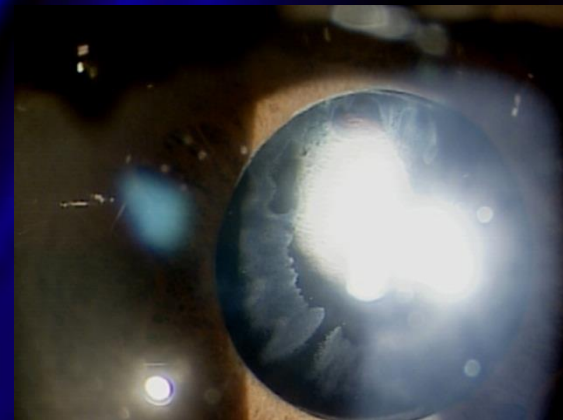
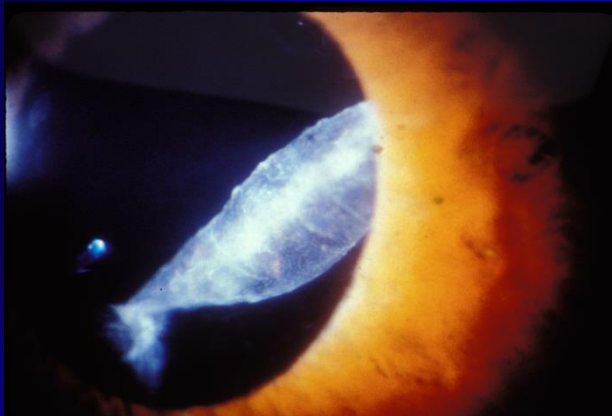
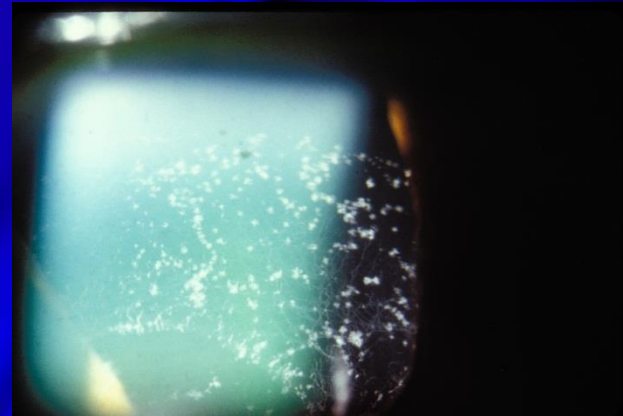
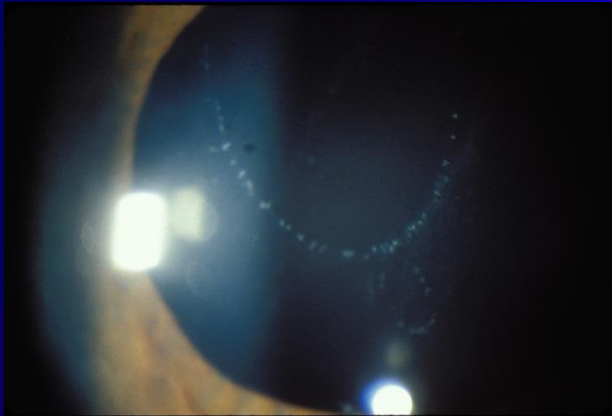
# Intraocular pressure decrease after phacoemulsification in patients with pseudoexfoliation syndrome

Andrew Merkur, Karim F. Damji, MD, George Mintsioulis, MD,  
William G. Hodge, MD

J Cataract Refract Surg. 2001

“Phacoemulsification removes a source of pseudoexfoliative material and results in or stimulates clearance of pseudoexfoliative and pigment debris from the anterior segment, in particular the trabecular meshwork ”

# XFS – Deposizione dopo estrazione del cristallino



## EBM: EC in glaucoma



- EC riduce il tono nella maggior parte di casi di ACG
  - Facio + IOL + goniosinechiolisi (da ampliamento CA con visco) è efficace nel trattamento del ACG
  - Facio + IOL pieghevole è più efficace di iridectomia periferica nel ACG
  - EC in PEXG riduce il tono più che in POAG
- 
- EC in POAG, dopo lo spike pressorio iniziale, spesso provoca una riduzione della PO, talvolta a lungo termine, correlato al livello di IOP e al parametro LV. Fondamentale il follow-up.

