

Incision Complications

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No financial and proprietary interest in any material or method mentioned.

Principal Incisional Complications

▶ Intraoperative

- ▶ Incision Leak
- ▶ Tear of Descemet's Membrane
- ▶ Iris prolapse
- ▶ Conjunctival ballooning
- ▶ Intraocular hemorrhage from the incision

▶ Postoperative

- ▶ Bad closure, leaking
- ▶ Endophthalmitis
- ▶ Astigmatism



Incisions For Cataract Surgery

▶ Placement

- ▶ Scleral Tunnel
- ▶ Near-Clear
- ▶ Clear Corneal

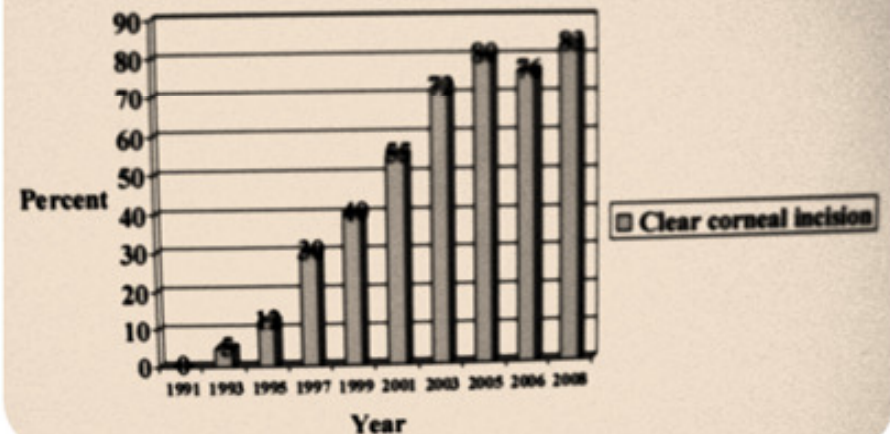
▶ Localization

- ▶ Steep Axis
- ▶ Temporal

▶ Configuration

- ▶ Frown
- ▶ Straight
- ▶ Smile
- ▶ Radial

Use of clear corneal incisions in cataract surgery
1991-2008



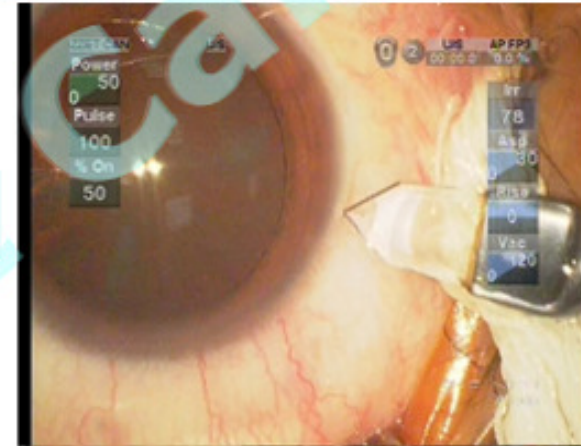
Corneal Incisions / Classifications

Localization

- ▶ Scleral Corneal
- ▶ Limbal
- ▶ Clear Corneal

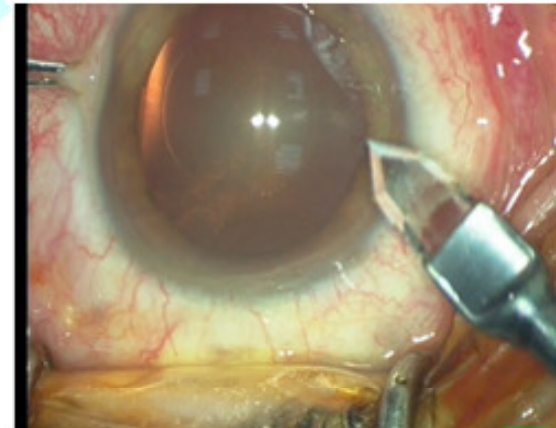


Scleral Corneal



Architecture

- ▶ Single Plan
(Paracentesis-style)
- ▶ Grooved
 - ▶ Shallow ($<400\ \mu$)
(Williamson)
 - ▶ Deep ($>400\ \mu$)
(Langerman)



Limbal

Clear Corneal

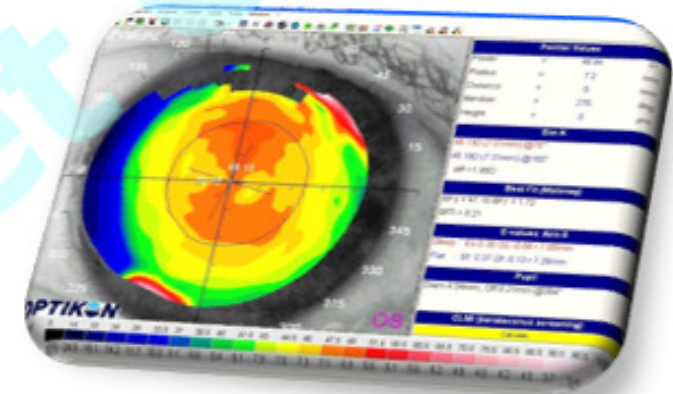


- ▶ **Fine IH.** Ophthalmology Times 1996; 21: 30.

Incision / Placement

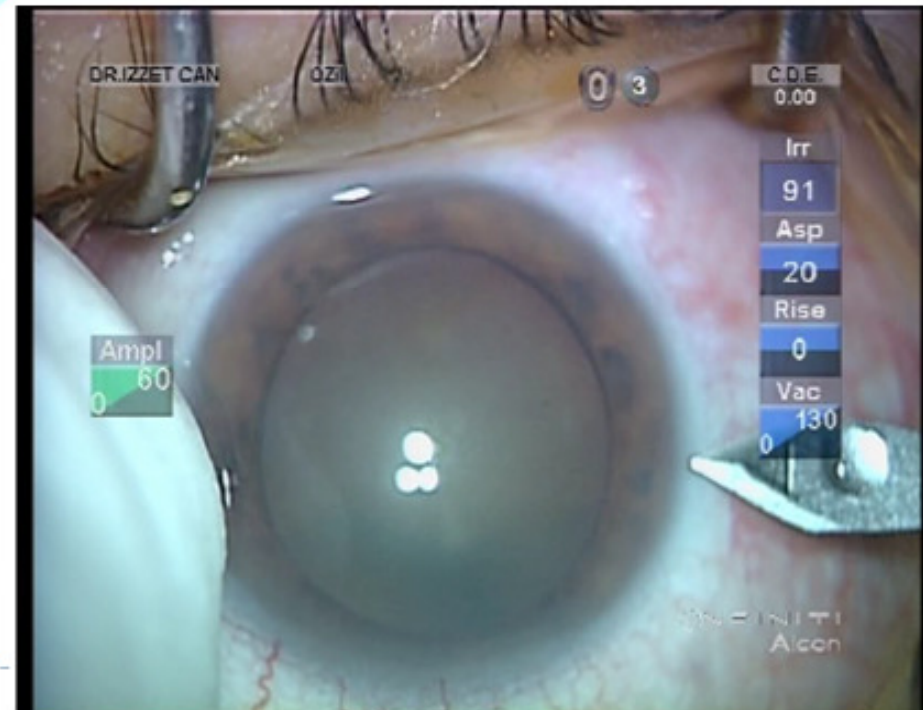
Important determinants of axis placement

- ▶ Superior orbital rim
 - ▶ Superotemporal
 - ▶ Temporal
- ▶ Astigmatism
- ▶ Special anatomy
 - ▶ Prominent blood vessels
 - ▶ Peripheral anterior synechiae
 - ▶ Corneal opacities
 - ▶ Pre-existing filter or tumor



Incision / Localization and Length

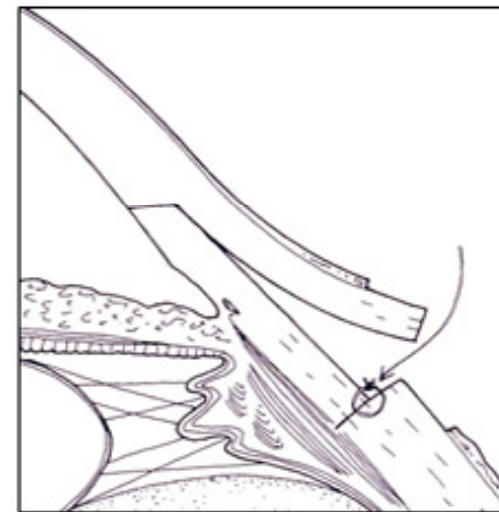
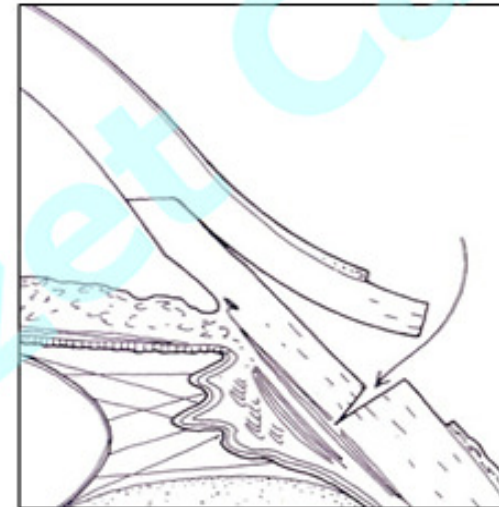
- ▶ Distance from central cornea
 - ▶ Astigmatism
 - ▶ Endothelial cell loss
- ▶ Tunnel length
- ▶ Shorter
 - ▶ Avoiding central cornea
 - ▶ Facilitate maneuvers in the anterior chamber
- ▶ Too short
 - ▶ Leaking
- ▶ Too long
 - ▶ Hindering phaco tip
 - ▶ Excessive globe movement
 - ▶ Corneal distortion



Incision / Depth

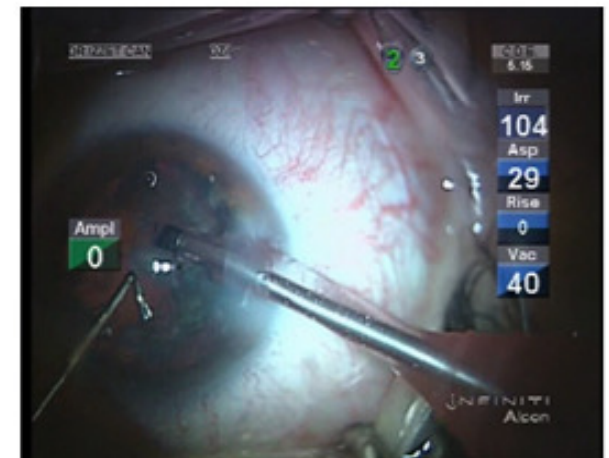
▶ Too deep

- ▶ Prematurely enter the chamber angle
 - ▶ Iris prolapse
- ▶ Suprachoroidal space
 - ▶ Bleeding
 - ▶ Hypotony



Incision / Width and Localization

- ▶ **Too large**
 - ▶ Shallow anterior chamber
- ▶ **Too tight**
 - ▶ Restrict the phaco maneuvers
 - ▶ Thermal injury
 - ▶ Descemet's membrane trauma
- ▶ **Too anterior**
 - ▶ Endothelial cell loss
 - ▶ Visualization problems
 - ▶ Difficult manipulation at the subincisional site
- ▶ **Too posterior**
 - ▶ Iris prolapse

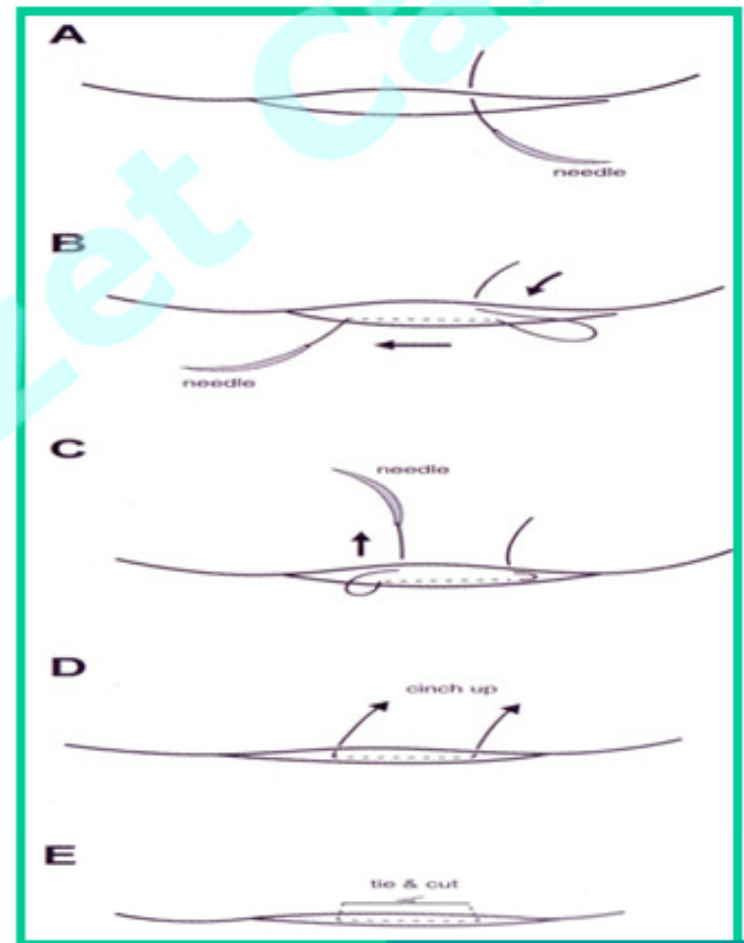


Incision Site Burn and Leak

- ▶ Hydration lateral stroma
- ▶ 10-0 nylon suture
- ▶ Incisional burn
 - ▶ Osher's radial gape suture
 - ▶ Osher's trapezoidal (horizontal) gape suture



Radial Gape Suture



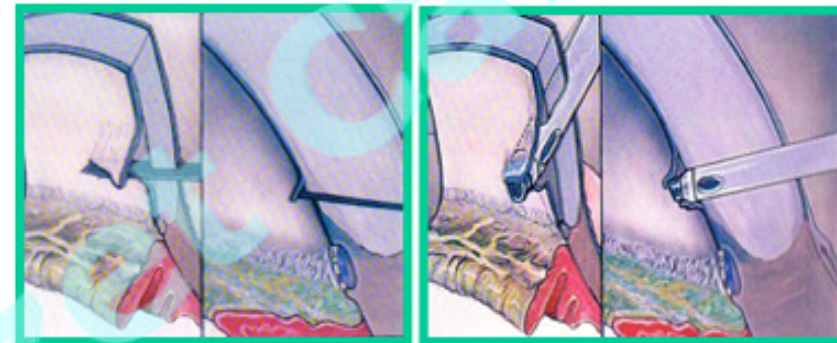
Horizontal Gape Suture

Osher RH. Thermal injuries. In: Chang DF, ed. Curbside consultation in cataract surgery. Thorofare, NJ,: Slack, Inc. 2007; 97-101.

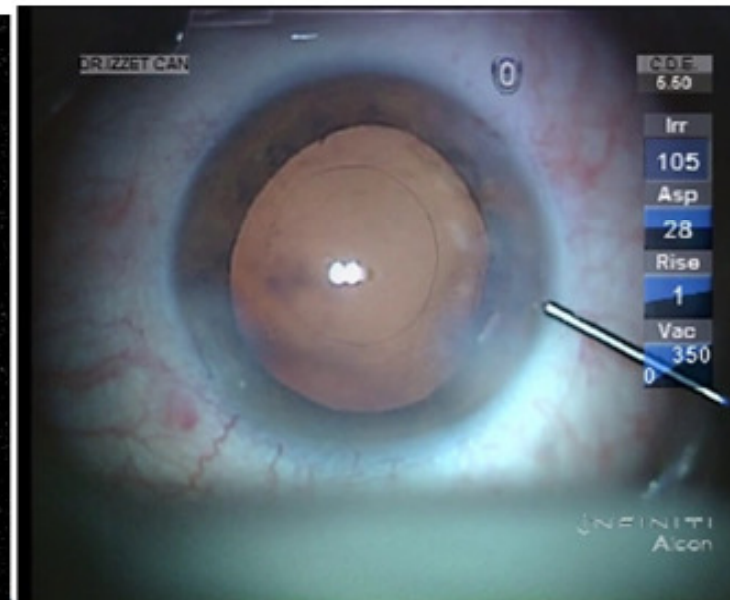
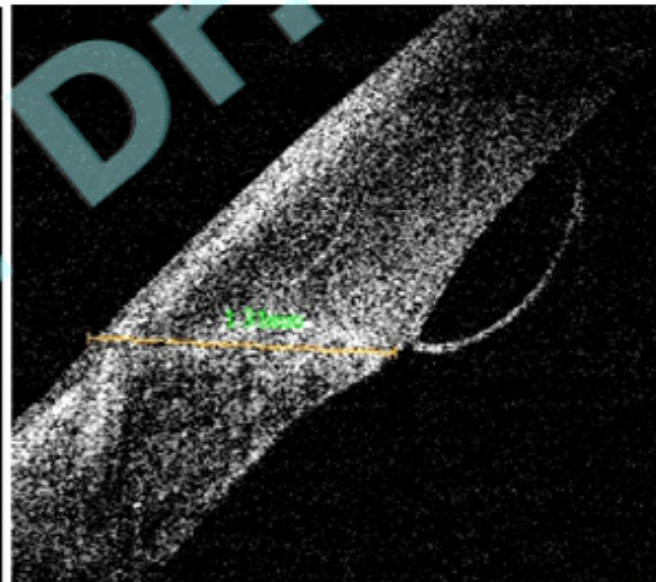
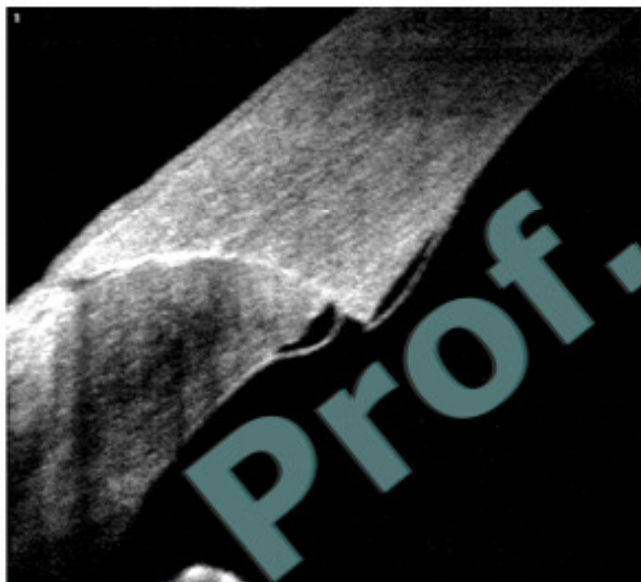
Tear of Descemet's Membrane

Literature Data for Descemet's Membrane Detachment (DMD) Ratios (1st Day)

- ❑ Behrens, **50%** (2008)
- ❑ Elkady, **60-80%** (2009)
- ❑ Xia, **82%** (2009)
- ❑ Dupont-Monod, **42-67 %** (2009)
- ❑ Can, **66.6%** (microcoaxial), **53.3 %** (biaxial) (2011)



(Fishkind WJ. Complications in Phacoemulsification; 2002)



Tear of Descemet's Membrane Management

- ▶ Early recognition
- ▶ Pressure on the posterior lip
- ▶ Small air bubble or OVD bolus
- ▶ Suturing
 - ▶ (Olson RJ. In: Complications in Phacoemulsification: 2002)
- ▶ Gas (20% non-expansive SF6)
 - ▶ (Kim T, Hasan SA. Arch Ophthalmol, 2002; 120:181-3)
- ▶ Tissue glue



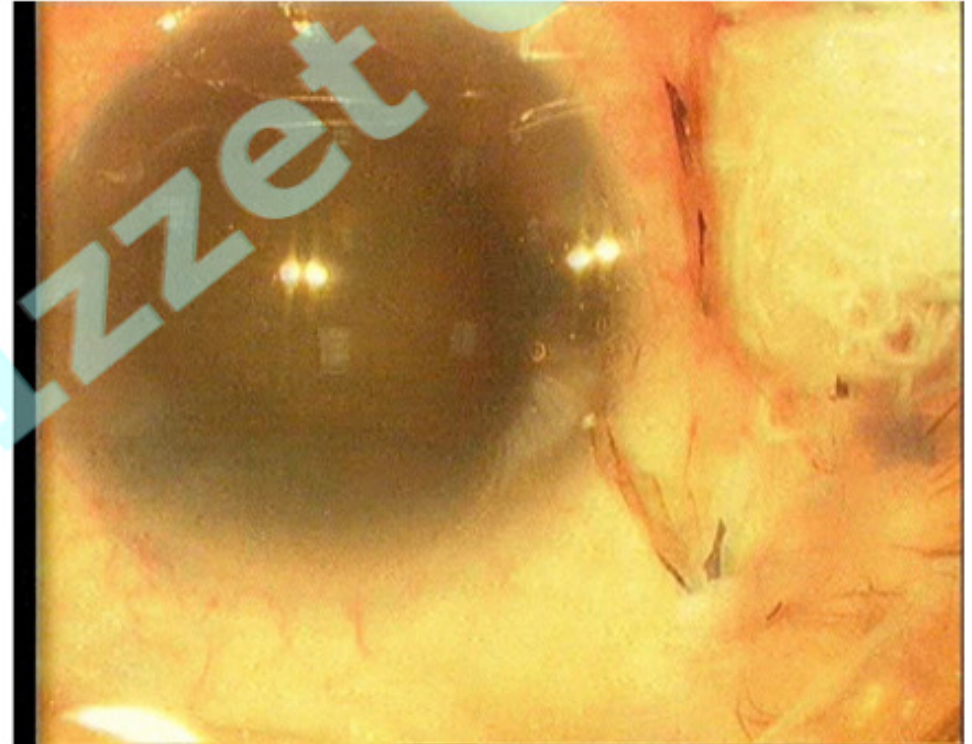
Iris Prolapse / Consequences

▶ Postoperative

- ▶ Pupil irregularities
- ▶ Iris transillumination defects
- ▶ Peripheral anterior synechiae
- ▶ Uveal incarceration

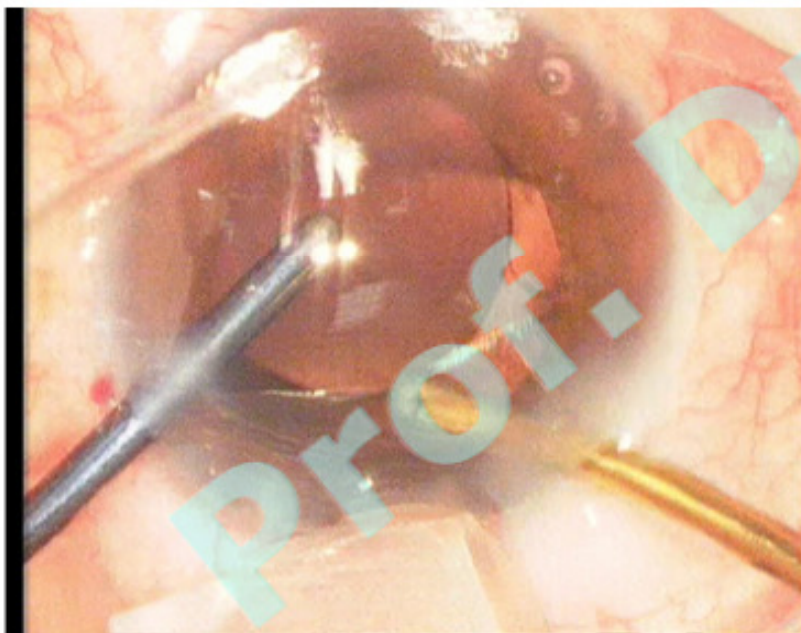
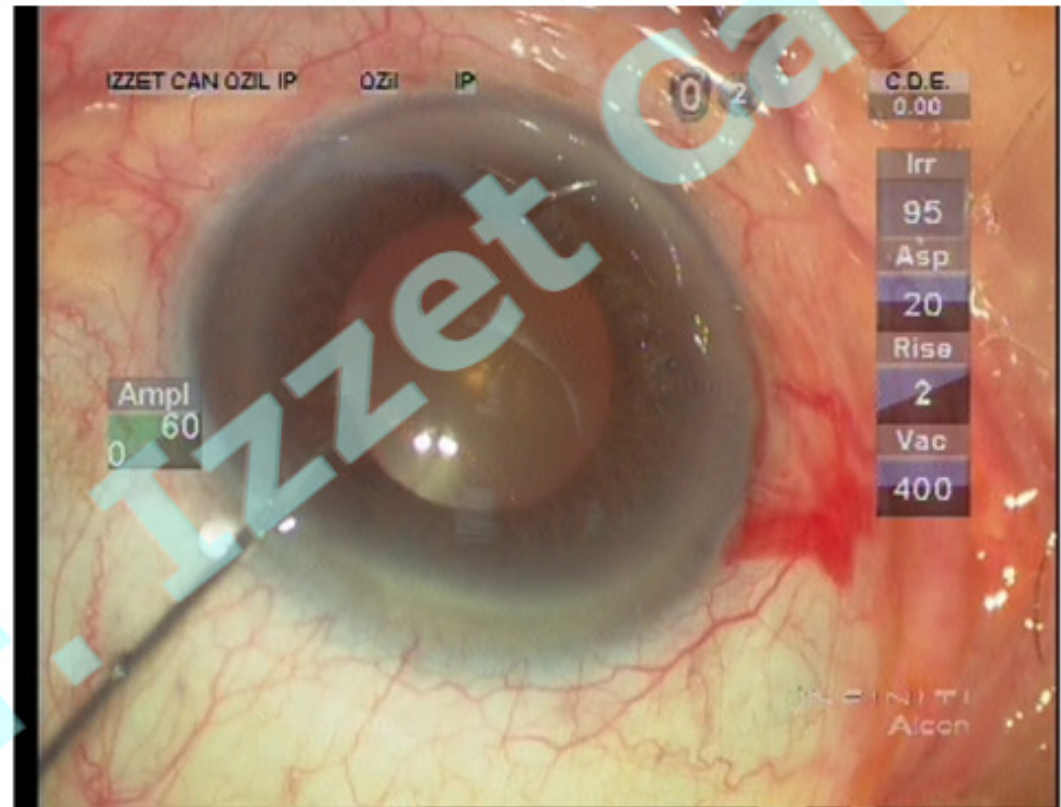
▶ Intraoperative

- ▶ Pupillary constriction
- ▶ Intraocular bleeding



Intraoperative Floppy Iris Syndrome

- ▶ Suboptimal dilatation
- ▶ Intraoperative progressive miosis
- ▶ Iris billowing
- ▶ Iris prolapse
- ▶ **Chang DF, Campbell JR. J Cataract Refract Surg 2005; 31:664-73.**



IFIS severity of patients who had a history of tamsulosin usage

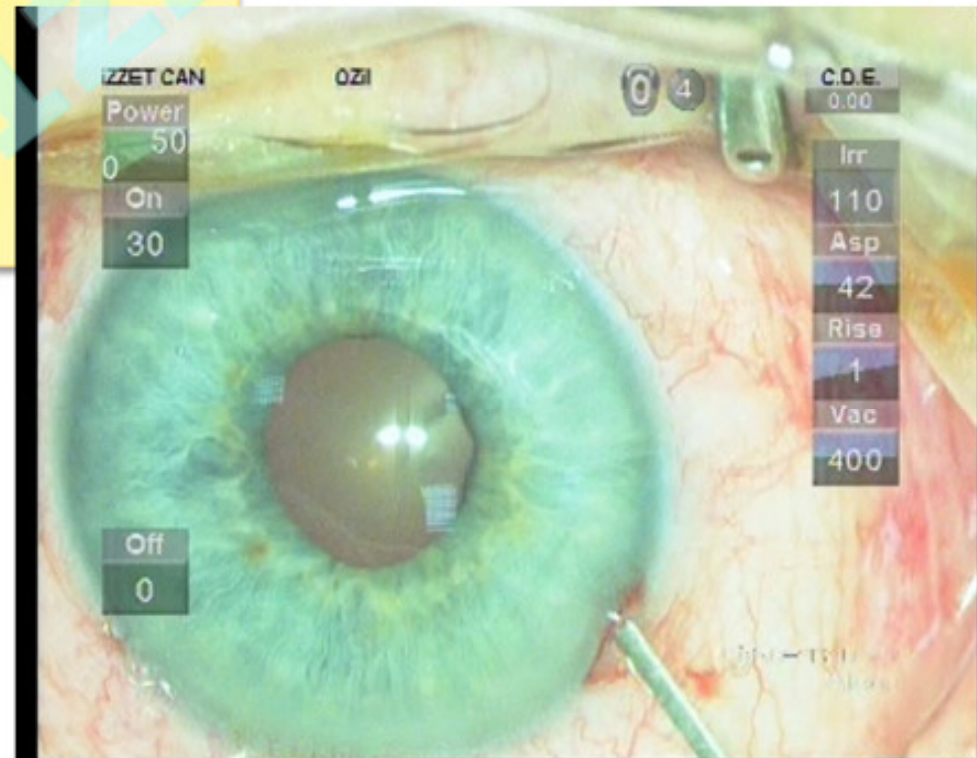
- ▶ No 10%
- ▶ Mild 17%
- ▶ Moderate 30%
- ▶ Severe 43%

Chang DF, Osler RH, Wang L, Koch DD. Ophthalmology 2007;114:957-964.

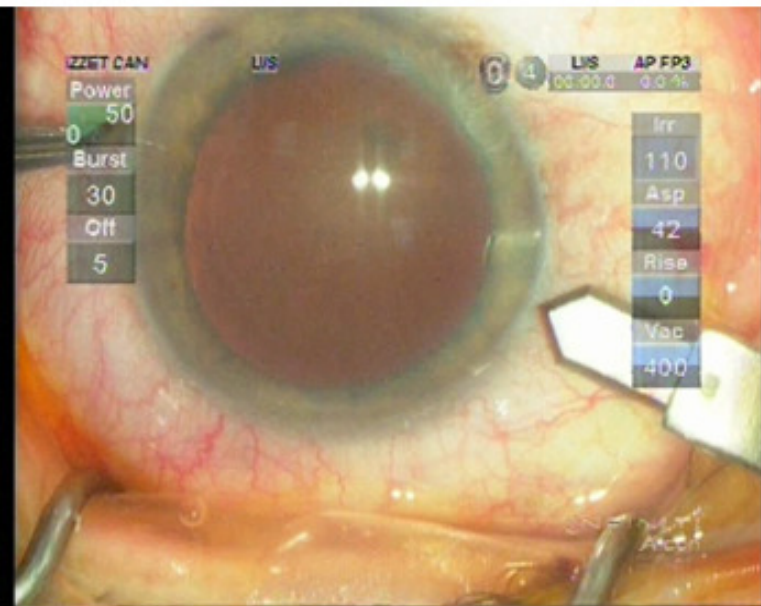
Intraoperative Floppy Iris Syndrome

▶ Prevention

- ✓ Preoperative topical atropine sulfate 1%
- ✓ Wound construction
- ✓ Avoiding acute IOP raise
- ✓ Intracameral epinephrine



Intraoperative Floppy Iris Syndrome

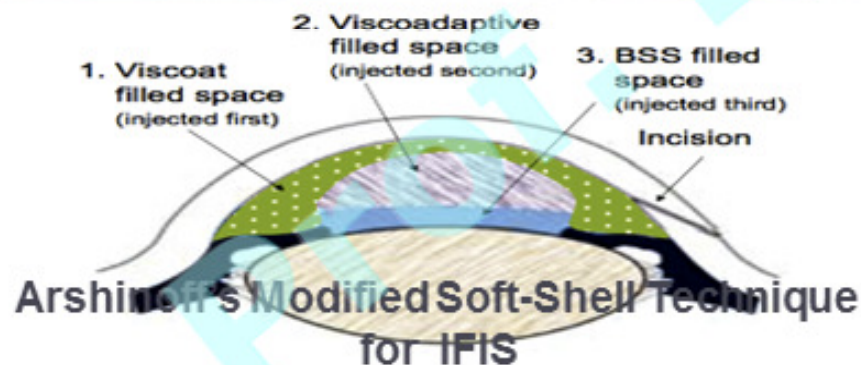
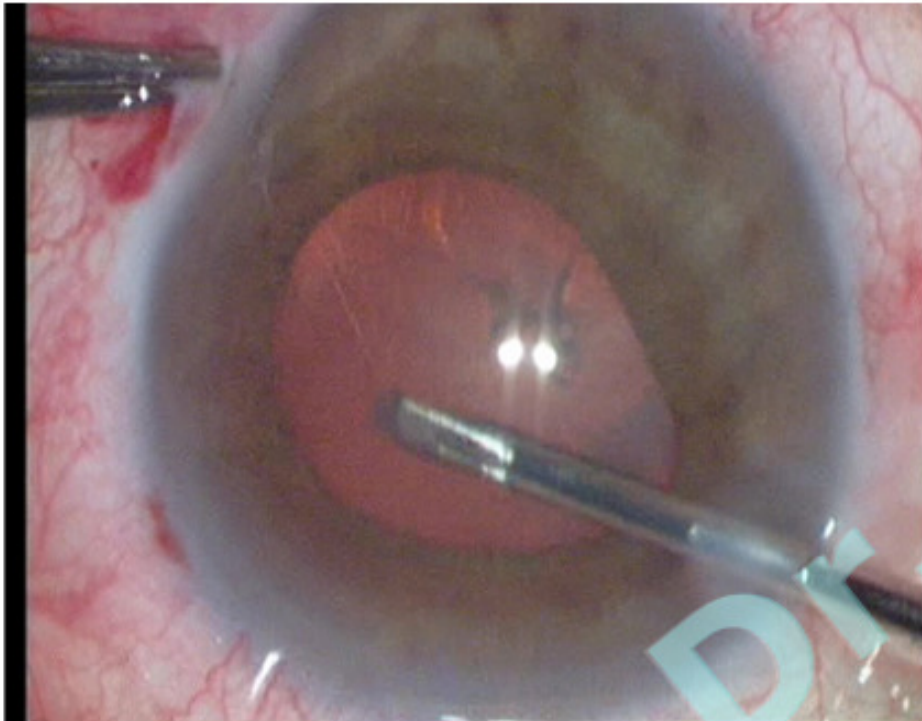


**Short,
Posterior
incision**

**Iris
prolapse
following
hydro
dissection
with
sudden
IOP rise**

- ▶ Management
1. Reduce the IOP
 2. Neutralize the pressure between anterior and posterior chamber
 3. Peripheral iridectomy
 4. Viscomydrisis with high-viscosity OVDs
 5. Low phaco parameters, torsional phaco
 6. Mechanical pupillary expanders

Intraoperative Floppy Iris Syndrome

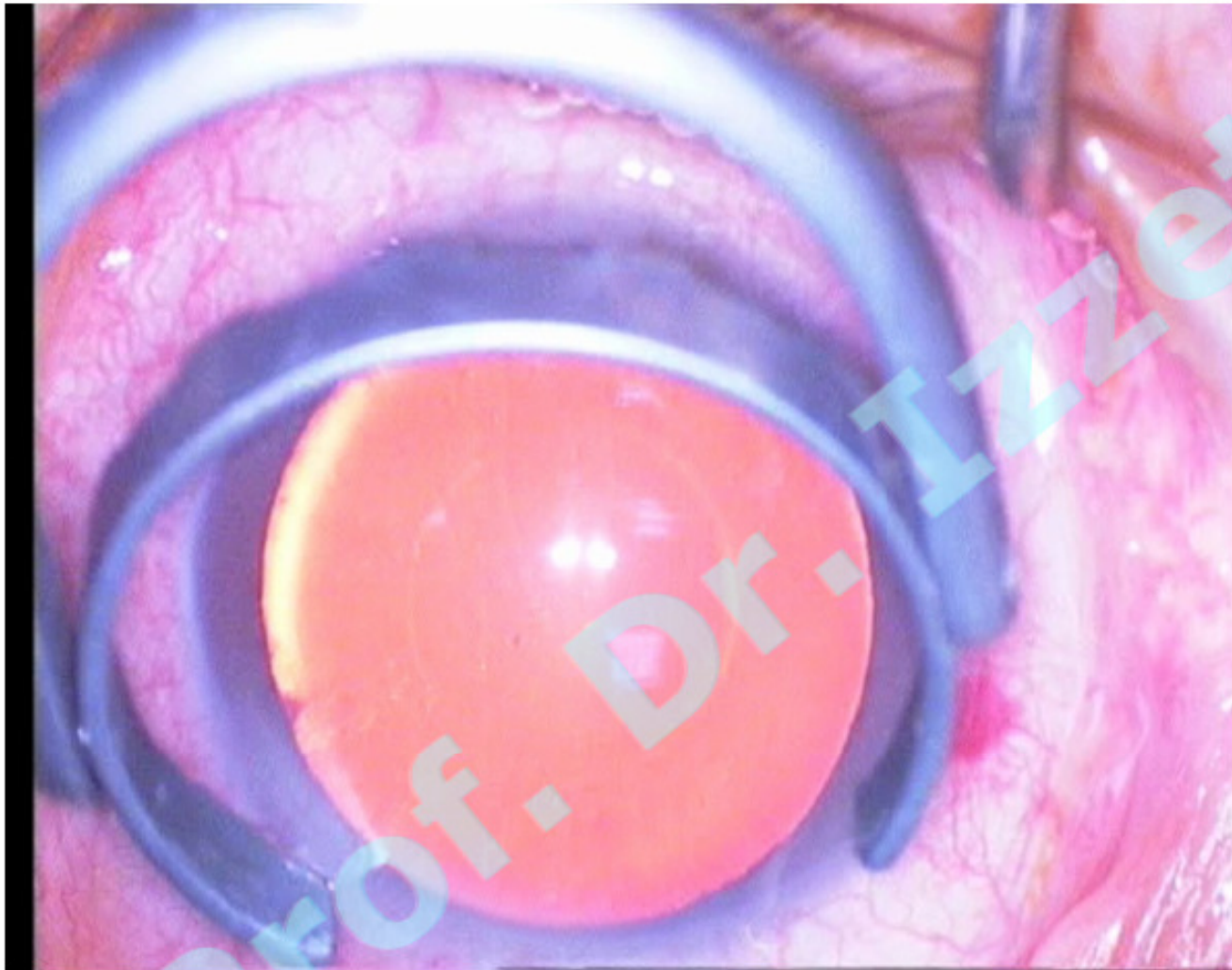


▶ Management

1. Reduce the IOP
2. Neutralize the pressure between anterior and posterior chamber
3. Peripheral iridectomy
4. Viscomydriasis with high-viscosity OVDs and Soft Shell
5. Low phaco parameters, torsional phaco
6. Mechanical pupillary

▶ **Chang DF, Campbell JR.** Intra-operative floppy-iris syndrome associated with tamsulosin. J Cataract Refract Surg 2005; 31: 664-73.

Ballooning of the conjunctiva



- ▶ **Management**
 - ▶ Intense suction
 - ▶ Conjunctival incision
 - ▶ Tenonectomy
- ▶ **Prevention**
 - ▶ Monitoring the posterior edges of keratome

Intraocular Hemorrhage From The Incision

▶ Management

1. OVD injection
2. Elevating IOP
3. Evacuation of blood
4. Finishing with firm globe

Prof. Dr. Izzet Can





▶ Thank you for your kind attention