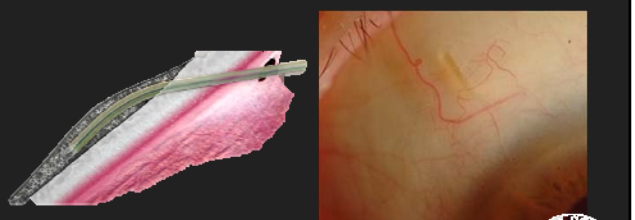
Xen gel stent : Management of postoperative complications

Reza Razeghinejad, MD
Associate Professor of Ophthalmology
Glaucoma service
Wills Eye Hospital

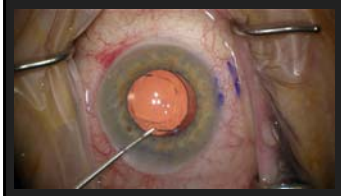
No relevant financial interest

Xen gel stent



Xen gel implantation

ab-interno

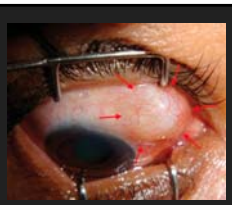


Ab-externo

3 major groups

- High IOP + a Deep AC
- High IOP + a shallow AC
- Low IOP + a shallow AC

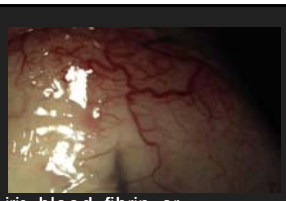
High IOP + a deep AC



- Elevated thick bleb: encapsulation
  - Steroid and glaucoma eye drops
  - Bleb needling with antifibrotic agents

Gillmann K, Mansouri K, Bravetti GE, Mermoud A. Chronic intraocular inflammation as a risk factor for XEN gel stent occlusion: A case of microscopic examination of a fibrin-obstructed XEN stent. J Glaucoma. 2018;27:758-61.
Lindfield D, Turnbull A, Dimitriou C, Bhatia B, Radwan M, et al. A multi-centre interventional case series of 259 ab-interno Xen gel implants for glaucoma, with and without combined cataract surgery. Eye (Lond). 2019;33:469-77.
Suzuki R, Sugama R Jr. Early transconjunctival needling revision with 5-fluorouracil versus medical treatment in encapsulated blebs: a 12-month prospective study. Clinics (Sao Paulo). 2013 Oct;68(10):1376-9.

High IOP + a deep AC



- Flat bleb
  - SLE and Gonio
    1. Xen AC end occlusion with iris, blood, fibrin, or Descemet's membrane
    2. Xen AC end looks patent

Gillmann K, Mansouri K, Bravetti GE, Mermoud A. Chronic intraocular inflammation as a risk factor for XEN gel stent occlusion: A case of microscopic examination of a fibrin-obstructed XEN stent. J Glaucoma 2018;27:739-41.
Lindfield D, Turnbull A, Dimitriou C, Bhatia B, Radhwan M, et al. A multi-centre interventional case series of 259 ab-interno Xen gel implants for glaucoma, with and without combined cataract surgery. Eye (Lond) 2019;33:469-77.
Sonali R, Saxena R Jr. Early transconjunctival needling revision with 5-fluorouracil versus medical treatment in encapsulated blebs: a 12-month prospective study. Clinics (Sao Paulo). 2013 Oct;68(10):1376-9.

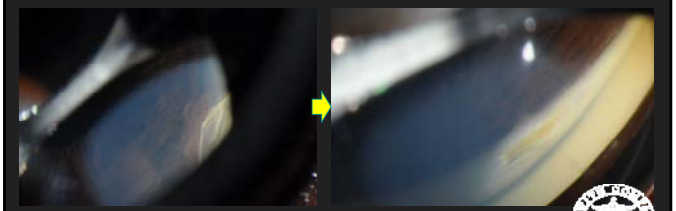
High IOP + a deep AC

1. Xen occlusion with iris, blood, fibrin, or Descemet's membrane

- Nd:yag (1-1.5 mj): Descemet's membrane, fibrin, iris strand, or blood
- Argon laser iridoplasty: (300-500 mw, 300-500 micron, and 300-500 ms)

High IOP + a deep AC

1. Xen occlusion with Descemet's membrane



David Rooney, MD and Michael Siegel, MD.

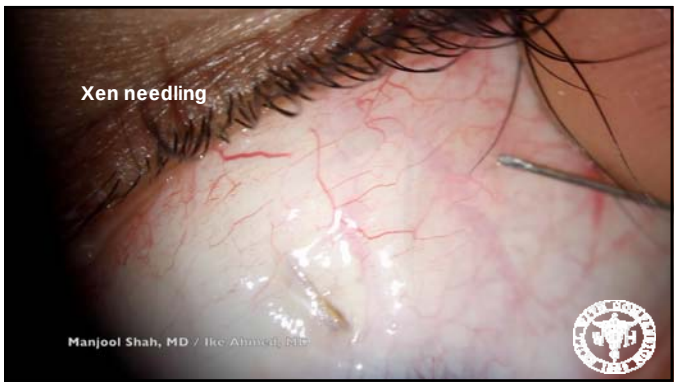
High IOP + a deep AC

1. Xen occlusion with iris tissue
safer to avoid iris manipulation surgically or by laser

High IOP + a deep AC

2. The AC end of Xen looks open in SLE and Gonio

- **Bleb needling**
  - MMC: 0.1 ml of 0.2-0.4 mg/ml=20-40 microgram
  - 5-FU: 0.1 ml of 500 mg/10 ml=5 mg



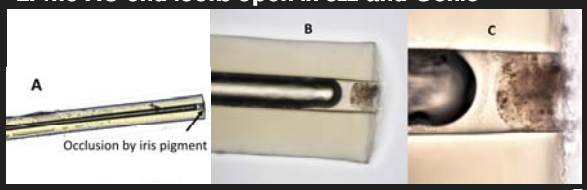
High IOP + a deep AC

2. The AC end looks open in SLE and Gonio

- If needling fails, consider
  - Nd : yag laser to AC end of Xen
  - Open Xen revision/Trab/Tube

High IOP + a deep AC

2. The AC end looks open in SLE and Gonio

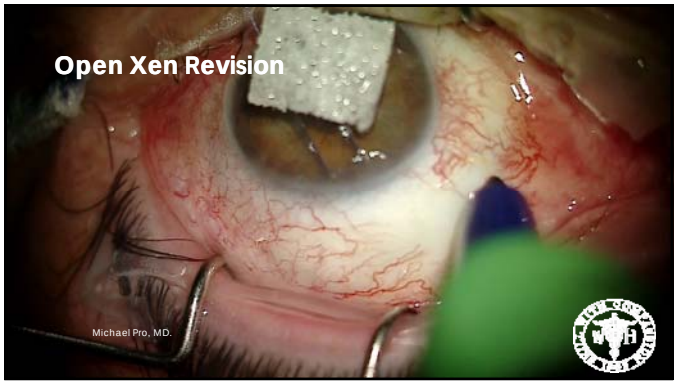


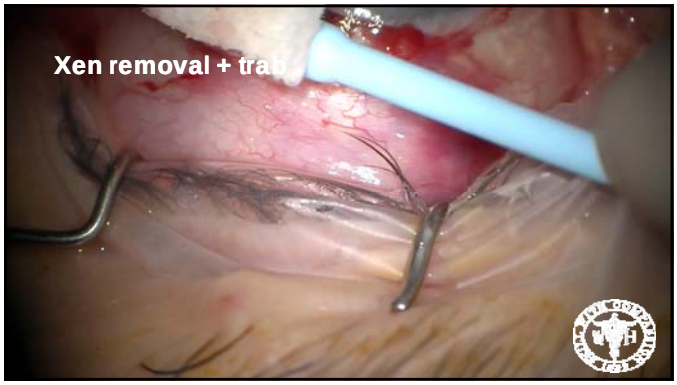
Eagle RC Jr, Razeghinejad R. Xen gel stent occlusion with iris pigmentepithelium. Clin Exp Ophthalmol. 2019 Oct 15. doi: 10.1111/ceo.13659

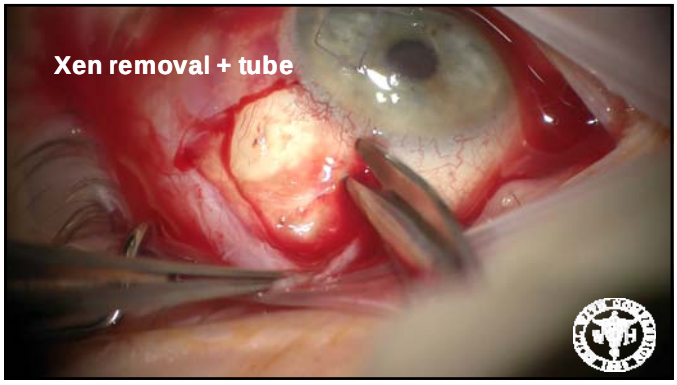
High IOP + a deep AC

2. The AC end looks open in SLE and Gonio

Gillmann K, Mansouri K, Bravetti GE, Mermoud A. Chronic Intraocularinflammation as a Risk Factor for XEN Gel Stent Occlusion: A Case of Microscopic Examination of a Fibrin-obstructed XEN Stent. J Glaucoma. 2018 Aug;27(8):739-741.


Open Xen Revision
Michael Pro, MD.

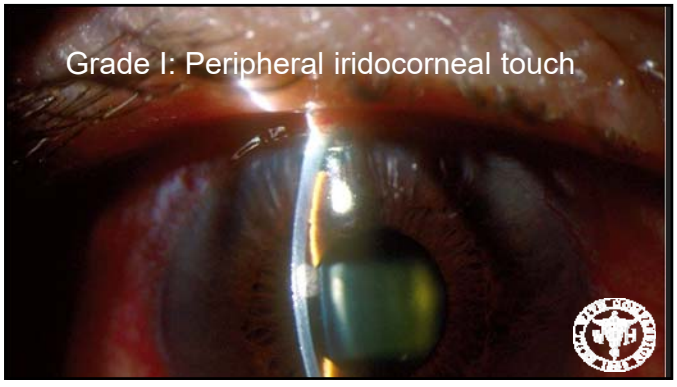

Xen removal + trab

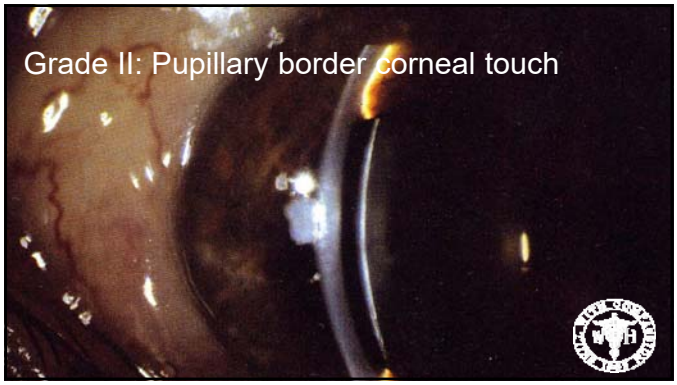

Xen removal + tube

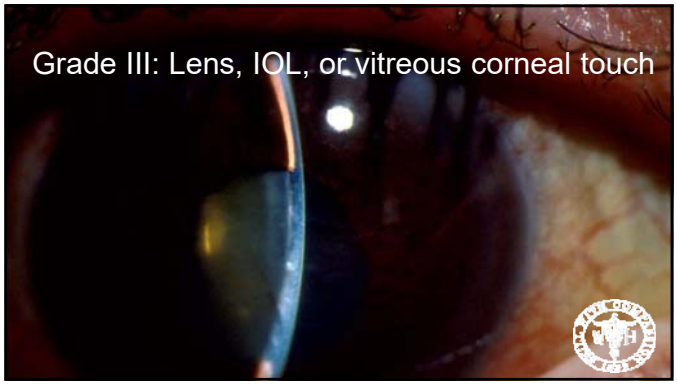
High IOP+ a shallow AC

High IOP+ a shallow AC

- Do a fundoscopy or B scan
- Grade AC depth: I,II,III







High IOP+ a shallow AC

- Normal fundus or normal B scan
  - Pupillary block
  - Aqueous misdirection syndrome
- Dark black elevation, vit hem, RD or echodense mass in B-Scan
  - Suprachoroidal hemorrhage

High IOP+ a shallow AC

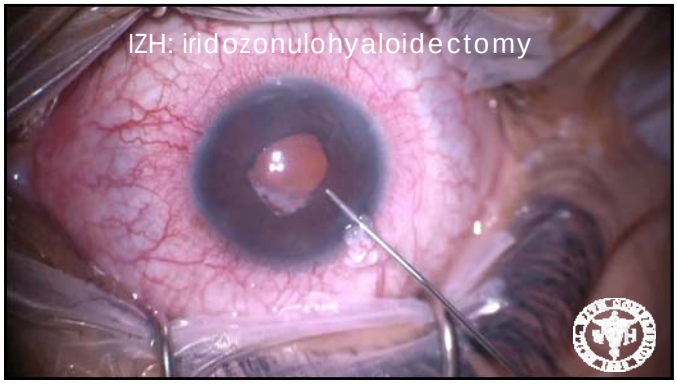
- Normal fundoscopy
- Laser PI
  - Abraham lens, high magnification
  - Sussman or G4 goniolenses to indent

High IOP+ a shallow AC

PI does not work → Aqueous misdirection

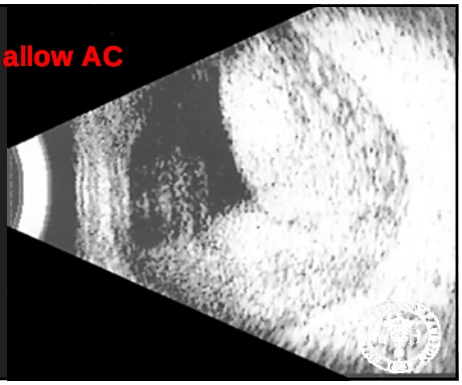
- Glaucoma medication
- Topical Atropine, phenylephrine and steroids

- Phakic
  - PP Vitx
  - Phaco+ IOL+ IZH
  - Phaco+ IOL+ PPV
- Pseudophakic
  - Yag laser capsulotomy and hyaloidotomy
  - IZH
  - PPV



High IOP+ a shallow AC

suprachoroidal hemorrhage



High IOP+ a shallow AC

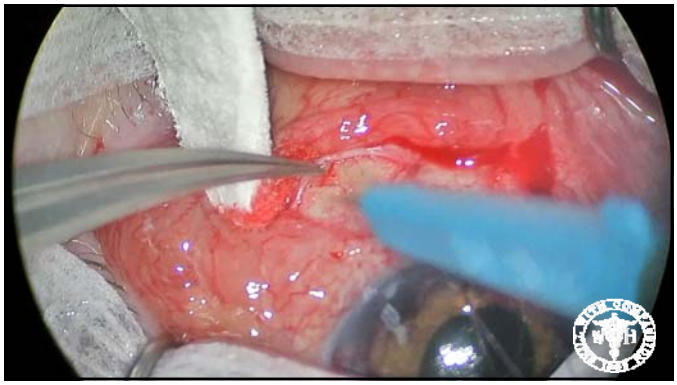
Suprachoroidal hemorrhage

- Glaucoma medical therapy
- Steroids and cycloplegics
- Wait 10-14 days before drainage to allow clot liquefaction
  - Serial ultrasound can help determine when clot lysis occurs

High IOP+ a shallow AC

Suprachoroidal hemorrhage

- Immediate drainage
  - concurrent retinal detachments
  - uncontrollable IOP
  - Expulsed ocular content
  - Grade 3 shallow AC
- SCH drainage +/- PPV



Low IOP + a shallow AC

Low IOP + a shallow AC

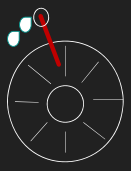
- Seidel test: leakage
- SLE: over-filtering bleb, flow through the Xen insertion tract
- Fundoscopy: choroidal effusion

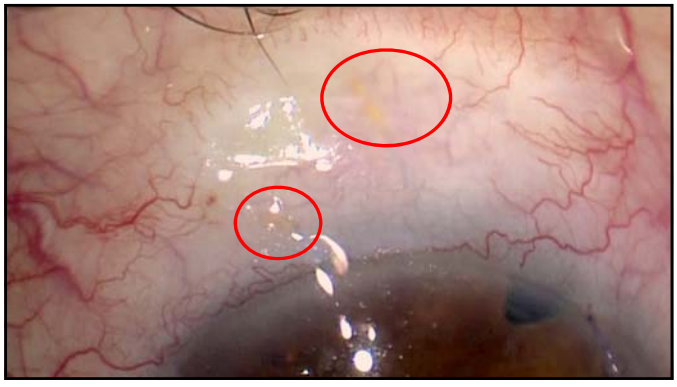
Low IOP + a shallow AC

Leakage, Seidel test

Low IOP + a shallow AC

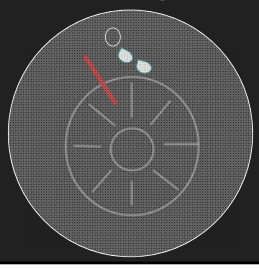
Leakage with Xen exposure

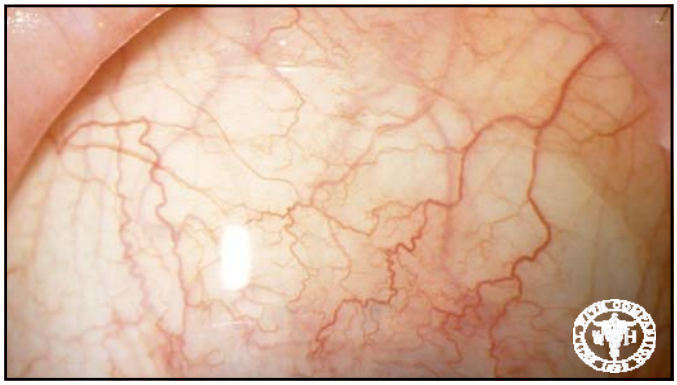




Low IOP + a shallow AC

Leakage without xen exposure





Low IOP + a shallow AC

Leakage management

- Large diameter contact lens
- Decrease steroid
- Getamicin eye drops
- Aqueous suppressants
- Cyanoacrylate glue

Low IOP + a shallow AC

Leakage with or without xen exposure, no response to office interventions

- Revision surgery
- Xen explant and trab or tube

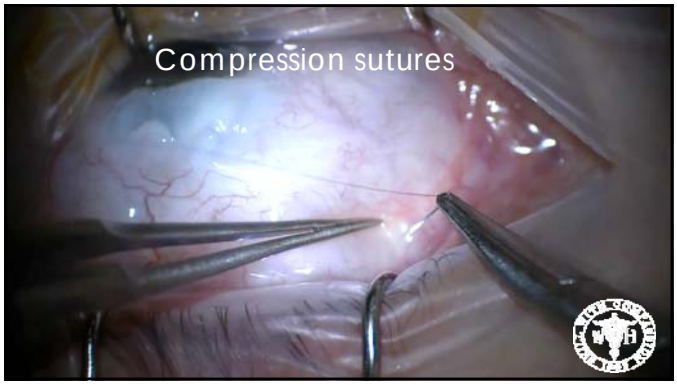
Low IOP + a shallow AC

Over-filtering bleb
No effusion

Low IOP + a shallow AC

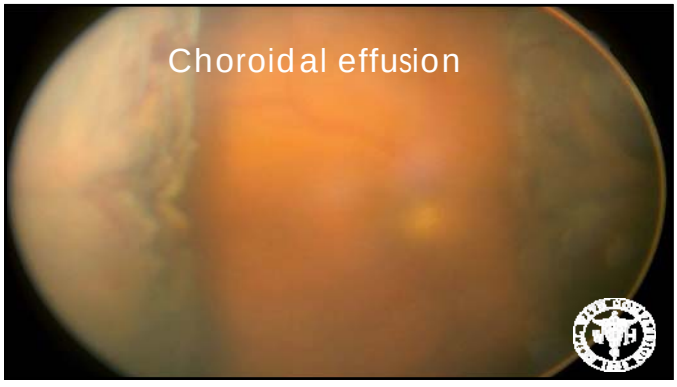
Overfiltering bleb management

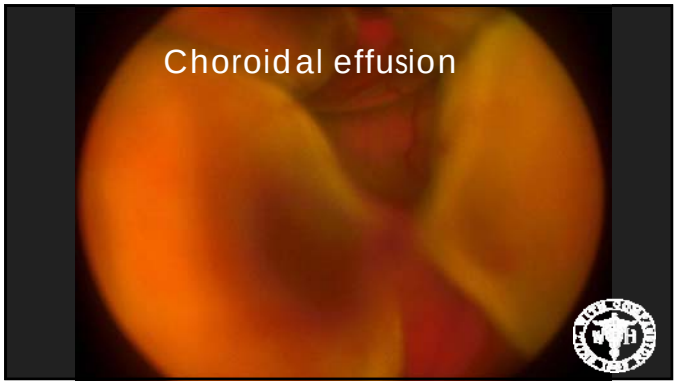
- Decrease steroids
- Large diameter contact lens
- Persistent hypotony →compression sutures

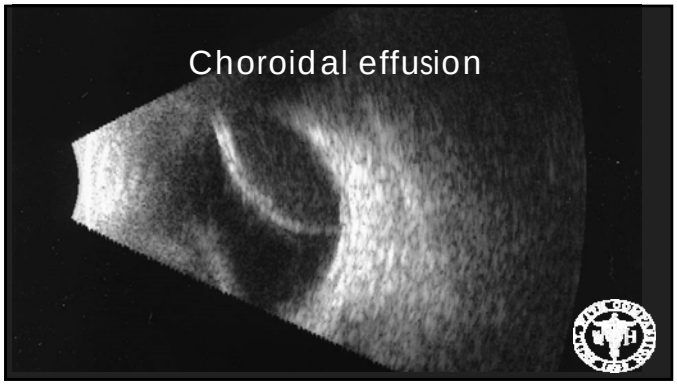


Low IOP + a shallow AC

- **Choroidal detachment in fundoscopy or B-Scan**







Low IOP + a shallow AC

Choroidal effusion, AC grade I or II

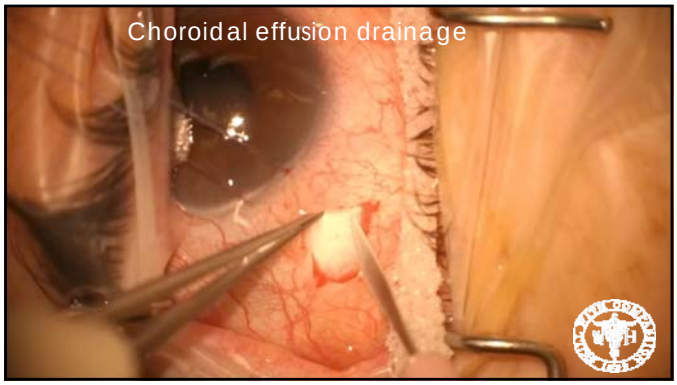
- Topical steroids
- Cycloplegic agents
- Oral steroid
- AC reformation with OVD

Low IOP + a shallow AC

- Choroidal effusion, AC grade III
- Unresolved Grade I and II after few days
  - PAS formation

↓

Drainage



Low IOP + a shallow AC

Ciliary body shutdown

- Findings
  - Low IOP
  - AC shallow or deep
  - No leakage
  - No choroidal effusion
  - No huge bleb
- Observation and continue topical steroid and cycloplegic

Acknowledgment

- Michael Pro, MD.
  - Glaucoma Service, Wills Eye Hospital
- Manjool Shah, MD
  - Kellogg Eye Center
- David Rooney, MD and Michael Siegel, MD
  - Department of Ophthalmology, William Beaumont Hospital

Thank you

reza@willseye.org