Vitreous Loss and Dropped Lens Fragments
(and other vitreoretinal complications of cataract surgery)

A Vitreoretinal Perspective

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Disclosures

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  – Paid Consultant (ever)
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Disclosure

• Off-label discussion disclosures:
  – Topical steroid and nonsteroidal ophthalmic drops for treatment of cystoid macular edema
  – Intravitreal steroid injection for treatment of cystoid macular edema
  – Sutured sulcus fixation of dislocated intraocular lenses
Complications of Cataract Surgery often referred to Retina Specialists

- Complications of vitreous loss:
  - Endophthalmitis
  - Cystoid Macular Edema
  - Retinal Detachment

- Retained crystalline lens fragments and sequelae:
  - Inflammation
  - Elevated Intraocular Pressure
  - Retinal Detachment

- Dislocated Intraocular lenses
  - Retinal tears and detachment
Before you have a complication

• Get to know your friendly neighborhood vitreoretinal surgeon(s) and have a back up if solo VR surgeon
  – Meet them before you start doing surgery
    • Learn their preferences and recommendations – discuss hypotheticals for managing emergencies (endophthalmitis, dropped nucleus or IOL, RD)
    • If solo VR surgeon discuss contingency plan with them if they are unavailable
  – Have their phone number on speed dial
  – Facilitate patient referral
    • Map
    • Transportation for patients with transportation problems
  – Communicate
    • Assure VR colleague you will help with post op care if needed
    • Provide copies of pertinent records as needed
Vitreous Loss
Clean up of Vitreous Loss
Vitreous Loss - Complications

- **Endophthalmitis**
  - Overall incidence after CE is 0.04 – 0.11% in
  - Rate of vitreous loss in resident cases is 4.5% – 6.7% in 2 large series
  - Incidence of endophthalmitis is 10 fold higher after vitreous loss

Bhagat N, et al, complications in resident-performed phacoemulsification cataract surgery at New Jersey Medical School. BJO 2007, Oct;91(10):1315-7
Blomquist PH and Rugwani, RM. Visual outcomes after vitreous loss during cataract surgery performed by residents. J Cat Refract Surg 2002 May;28(5)847-57
Endophthalmitis After Vitreous Loss

Ultrasound

Signs on B scan:
- Vitreous opacities/strands/membranes
- Choroidal thickening
- Often see posterior vitreous detachment
Endophthalmitis after Vitreous Loss Management

• Management
  – VA > HM
    • Vitreous tap/intravitreal injection of antibiotics
  – VA < HM
    • Vitrectomy + intravitreal antibiotics
  – No intravenous antibiotics indicated (EVS* demonstrated no benefit);
  – Oral 4th generation fluoroquinolones not sufficiently studied to make recommendations
  – Topical, intravitreal steroid – variable, no definitive Randomized Clinical trials

Vitreous Loss with Cystoid Macular Edema

- Irvine-Gass Syndrome first described in 1953
- CME typically presents 3 – 12 weeks post-op but delayed onset up to years reported
  - With IOL shift/subluxation
- Angiographic CME in 20% of uncomplicated CE/IOL
  - only 1% have significant vision loss
  - 69-80% resolve spontaneously
- 10%-20% of “clinically apparent CME” in CE/IOL with vitreous loss
  - Usually due to vitreomacular traction
  - Vitreous to the wound associated with poorer prognosis
CME after Vitreous Loss

• FA- classic CME

Typically get FA only if CME not apparent on OCT.
CME after Vitreous Loss Management

**Without Vitreomacular traction**
- Topical steroid/Nonsteroidal
- Subtenon’s triamcinolone
- Intravitreal triamcinolone
- Carbonic Anhydrase Inhibitor
- Vitrectomy with ERM/ILM peeling for refractory cases

**With Vitreomacular traction**
- Pars Plana Vitrectomy with release of traction is definitive
- Other therapies usually only temporary – do not relieve mechanical cause of CME
CME without vitreomacular traction

Usually responds well to topical and/or periocular/intraocular steroids and topical nonsteroidals.
CME due to Vitreomacular traction

Responds well to Pars Plana Vitrectomy with release of traction.
Vitreous Loss Complication

Retinal Detachment

– Low incidence with vitreous loss alone in the early post-operative period

– Long Term – more difficult to determine

• Longitudinal Study in Australia*

  – 10 year cumulative incidence: 0.68%

  – Risk factors:

    » Anterior Vitrectomy         HR  27.6
    » Age < 60                   HR  3.76
    » Male Sex                   HR  1.91
    » Year of Surgery            HR  0.43


*Clark, et al, Risk of RD after Phacoemulsification. A whole population study of cataract surgery outcomes. Arch Ophth 2012; 1307 (7); 882 - 888
RD after Vitreous Loss Management

• Options:
  – Pneumatic Retinopexy has a lower success rate in pseudophakic (50%) than phakic eyes (85%)
  – Laser if very small and peripheral
  – Scleral buckle alone
    • Not “obsolete” or “archaic” – do not bias patient
    • Discuss post-op refractive change
  – Pars Plana Vitrectomy (+/- scleral buckle)
    • RD after vitreous loss usually requires vitrectomy because of need to relieve vitreous traction caused by vitreous loss – often vitreous to cataract wound/IOL
RD repair
Minimize Complications of Vitreous Loss - Recommendations

• Meticulous vitreous clean up
  – Consider using very small gauge vitrectomy instrument (25 gauge)
  – Triamcinolone staining of vitreous

• Please Suture the Cataract Wound!

• Careful IOL choice
  – Do not place a lens designed for “in the bag” in the sulcus*
  – If capsular support insufficient
    • Fixate with a suture (McCannel or sulcus) if experienced in technique
    • ACIOL – well placed ACIOL better than a poorly placed PCIOL

Minimize Complications of Vitreous Loss

- Monitor closely for complications and manage promptly
  - Endophthalmitis
    - Low threshold for suspecting infection
    - Make pt aware of sx and importance of calling promptly
  - CME
    - May continue topical steroid & NSAID longer
    - Post op OCT
    - IVFA if OCT nl and VA not 20/20
  - RD/tear – counsel for sx, refer to retina prn
  - IOL dislocation
    - Choose appropriate IOL based on capsule integrity
    - Early intervention if IOL appears to be subluxing
Dropped Lenses
Dropped Crystalline Lens Material
Complications Associated with Retained Lens Material

- Inflammation and Elevated Intraocular Pressure
  - 40 – 50% of patients experience elevated IOP requiring at least one topical anti-glaucoma medication
  - Removal of lens material within 7 days of CE associated with decreased risk of developing glaucoma
Complications Associated with Retained Crystalline Lens Material

- Retinal Detachment
  - 11 year Bascom Palmer Study
  - 343 eyes
  - 12.8% retinal detachment rate
    - 7.3% before or during PPV to remove lens material
    - 5.5% after PPV to remove lens material
  - 90% successful reattachment
    - Final VA >20/40 in 18%
    - 20/50 – 20/100 in 30%
    - 20/200 – 5/200 in 30%
    - <5/200 in 23%

Removal of Retained Crystalline Lens Material
Minimize Complications of Retained Lens Material

• Meticulous anterior vitreous removal as with vitreous loss alone
• Secure IOL placement
• Please Suture the Cataract Wound!
• Prompt referral to vitreoretinal surgeon
  – Best results if patients who require surgical removal of lens fragments undergo PPV within the first week after cataract surgery
Dislocated IOL’s
Dropped Intraocular Lens

• Occurs in three settings
  – During Cataract Extraction
  – Subluxation of lens weeks to years later
  – Dislocation of “in the bag” lens years after CE
    • Pseudoexfoliation patients
    • Trauma
VR Complications of Cataract Surgery
Intraocular Lens Dislocation
Intraocular Lens Dislocation

• Intraoperative or Acute Postoperative (< 6 wks)
  – Once a portion of the lens is entangled in vitreous do not try to remove – too much traction on vitreous may cause retinal tear/RD
  – Do not place a second IOL if the first one is in the vitreous
  – Please Suture the Cataract Wound!
  – Refer to VR surgeon within a few days

• Delayed Post-operative
  – Timing of referral to VR surgeon depends on location and type of IOL
Dislocated IOL Management

• Options
  – Observation consider for a small minority of asymptomatic patients who will remain aphakic
    – Single plate haptic silicone lenses
    – “in the bag” late IOL dislocations (pseudoexfoliation pts)
    – Essentially lenses without sharp or rough edges
  – Removal
    • Any patient who wants another IOL
    • Any dislocated IOL associated with RD, CME, retinal tear
    • Non single plate haptic IOL
Removal of dislocated IOL
Secondary IOL placement after dislocated IOL removal

• At time of PPV or second surgery – timing depends on:
  – Experience of vitreoretinal surgeon and/or availability of cataract surgeon
  – Associated pathology – better to do staged procedure in the setting of:
    • RD
    • Choroidal hemorrhage
Secondary IOL placement after removal of Dislocated IOL

• Reposition or Replace?
  – Surgeon preference/experience
  – Lens characteristics
    • one piece acrylic and silicone lenses not good choices for repositioning in sulcus
    • Haptics can avulse from 3 piece foldable lenses if too much tension placed on haptics when sutured in sulcus
    • If there is not sufficient capsular support, a well-placed ACIOL is better than a poorly placed sulcus fixated IOL
Conclusions

OR: What to do when the posterior Capsule Ruptures

During the surgery:

— Stay Calm

— Take steps to minimize morbidity of potential vitreoretinal complications

• Meticulous vitreous clean-up
• Judicious “damage control” of sinking lens fragments or IOL (nothing heroic please!)
• Conservative (Acrylic) IOL placement if dropped nucleus.
• NO second IOL for dropped IOL at the time of primary surgery
• Please suture the cataract wound!
Conclusions

OR: What to do when the posterior Capsule Ruptures

After surgery:

• Call VR colleague to arrange for referral as soon as possible
  – Ask VR colleague what you should tell the patient about the timing of the surgery to manage the complication

• Explain to the patient and their family what occurred
  – Calmly
  – Factually in lay terms

• Communicate with the patient and their family
  – Info to facilitate VR referral
  – Assurance that you will help with post op care as needed
Conclusions

• Vitreous loss and associated complications
  – Can be traumatic for patient and surgeon
  – Having a good contingency plan in place to deal with this complication
    • Minimizes stress
    • Improves Outcomes
    • Keeps patients and colleagues as happy as possible
Thank You

Questions???????????