SPECIALTY EYE INSTITUTE

Mahmoud El-Yassir, MD

1

Dropless Cataract Surgery Pros & Cons

Presented by Mahmoud El-Yassir, MD

2

No Financial Disclosures

3

Mahmoud El-Yassir, MD

- Undergraduate: UC-Davis, CA
- Graduated from NE Ohio
- Ophthalmology Training: Case Western Reserve, OH
- Comprehensive Ophthalmologist:
  - *Cataract surgery: standard & Refractive*
  - *Glaucoma: MIGS*
  - *Corneal disease: pterygiums, Superficial keratectomy*
  - *Severe Dry Eye*

4

Presentation Goals

- Discuss pharmacology
- Uses and contraindications
- Pros and Cons
- Potential complications

5

Why Dropless?

- Good Compliance = Good outcome and Risk Reduction
- Topical drops are expensive & challenging to instill for patients
- Noncompliance or poor compliance is serious and could lead to post surgical complications
- New approaches are emerging:
  - Intracameral injection
  - sustained or slow-release drug delivery
  - Recently introduced "Dropless cataract surgery."

6

What is Dropless Cataract Surgery?

- Dropless cataract surgery involves a transzonular delivery of a medication called TriMoxi

- TriMoxi is compounded, preservative-free triamcinolone acetone and moxifloxacin HCL

- It is designed to be delivered to the posterior chamber, directly into the vitreous

7

Pharmacology

- Triamcinolone acetonide
- Moxifloxacin HCL
- Suspension
- Injectable
- 15mg/1mg/1ml

8

Transzonular Approach

- The technique involves gently stretching the ciliary sulcus and zonules with viscoelastic and directing the cannula under the iris and above the anterior capsule
- The cannula is then advanced through the zonules, which separate but do not break, and into the vitreous
- A visual movement or release of the lens capsule sometimes confirms zonular penetration
- TriMoxi is injected slowly into the anterior vitreous

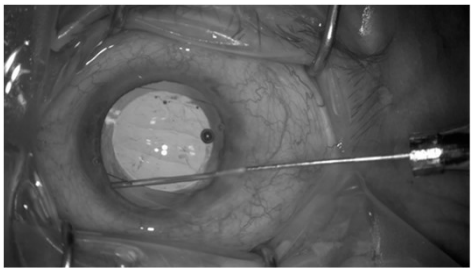
9

Pars Plana Approach

- 3 to 3.5 mm posterior the surgical limbus
- Injection directly into the anterior vitreous

10

Video Illustration



- https://www.youtube.com/watch?v=7cZ1Jghadjo

11

Approach Disadvantage

- Transzonular:
  - -Some surgeons might not feel comfortable about going through the zonules
  - Risk of zonular damage
- Pars Plana:
  - Blind maneuver: anatomically we don't always know the exact location of the pars plana
  - Additional incision leads to increased risk

12

Common Approach

- Mostly used intracameral
- About 0.2 cc injected directly in the capsular bag and the anterior chamber

13

Contraindication

- Steroid responder
- Monocular status (decreased vision pod#1)
- Hx of uveitis needing slow taper

14

Advantages: Compliance

- Drops are a challenge for some patients (Tremor, artheritis, dexeritiy, etc)
- Underdiagnosed Dementia with our patient population
- Far more often that we may think, patients do not take their medications in the way we prescribe them.
- Patients forget
- Some patients also report that drops will burn, sting, or cause redness, so they end up not using the drops as prescribed to limit these side effects
- Dropless cataract surgery essentially eliminates the issue of having to rely on patients to use drops as directed.

15

Advantages: Cost

- Following cataract surgery, patients are typically prescribed 3 separate topical medications: antibiotic+steroid+NSAID
- The cost of these medications can reach upwards of hundreds of dollars in out-of-pocket expenses for patients
- Significant burden to patients on a fixed income
- Some patients will stretch the doses of their eyedrops to avoid needing refills.
- Dropless cataract surgery significantly reduces the out-of-pocket expenses for many cataract patients

16

Advantages: Better penetrance

- More reliable drug delivery…we know the medications are getting into the eye
- Poor compliance is multifactorial, and injecting medication *into* the eye, as opposed to applying it *on* the eye, offers advantages

17

Advantages: Less Confusion/Fewer calls

- Minimizes post-operative instructions and eliminates confusion associated with the administration of topical eye drops
- Can reduce the number of labor-hours spent by office staff talking to patients about their drug regimens, obtaining prior authorizations from insurance companies, and talking to pharmacists about alternative medications if a certain topical medication is not covered by insurance

18

Advantages: Less ocular surface toxicity

- Topical medications can cause and exacerbate ocular surface disease through multiple mechanisms
- Dropless means reduced risk of corneal toxicity by eliminating preservative-containing topical medications that cause ocular surface damage, ranging from allergic reactions to direct epithelial toxicity

19

Disadvantages

- Dropless cataract surgery is not without potential limitations and risks

20

Disadvantages: Compounding concerns

- There has been significant concern that triamcinolone-moxifloxacin injections prepared by 503A pharmacies can cause endophthalmitis.
- There are differences between a 503A and 503B compounding pharmacies
- Only medications from 503B pharmacies to be used for intraocular injection.
- **503B compounding pharmacies that provide patient specific medications are held to higher regulatory standards. These facilities are required to maintain full compliance with current good manufacturing practices**

21

Disadvantages: Floaters + Decreased view

- Patients may report decreased vision and floaters in the immediate postoperative period.
- Floaters can mimic post op RD symptoms, but limited view 2/2 Tri-moxi
- Difficult view also means difficult Toric IOL assessment on POD#1

22

Disadvantages: Continued/Rebound inflammation

- Probably the greatest concern with dropless therapy
- Rebound inflammation or need for topical drops 8.6% to 9.1 % based on 2 large retrospective studies
- At risk are patients proinflammatory ocular pathologies:

1. Diabetic retinopathy
2. Hx of Uveitis
3. Epiretinal membranes
4. Dense cataracts
5. Wet AMD
6. Femto assisted cataract surgery?

23

Disadvantages: Potential IOP spikes

- Any time steroids are injected into the eye, there is the potential risk for IOP elevation in steroid responders
- IOP spike has shown to be similar in those with topical steroid use as it is with those undergoing dropless cataract surgery
- Most of the cases of increased IOP can be attributed to retained viscoelastic material rather than a true steroid response

24

Disadvantages: FBS

- Patients undergoing the dropless procedure have reported an increase in foreign body sensation post-operatively
- Presumably due to the lack of topical anti-inflammatory drugs at the wound site itself
- Treat with a steroid or AT alone

25

Disadvantages: Additional counseling/High expections

- Patients do require slightly more counseling pre-operatively- brief reduction in visual acuity after surgery
- Over 90% of these patients will not need to use any post-op drops.
- High expections! Patients disappointment if NSAIDS/additional drops are needed and additional cost is involved

26

Disadvantages: Limited Data

- The Tri-Moxi outcomes have not been researched enough

27

Some patients need more

- Some patients may need supplemental NSAID due to an increased risk of inflammation.

1. History of CME (including fellow eye)
2. History of ERM (in the surgical eye)
3. Diabetic Retinopathy (more than mild)
4. Chronic Iritis (in the surgical eye)
5. African American

28

Risk Factor	Point Value	Risk Factor	Point Value	Risk Factor	Point Value
PDR in past 6 months	4	Active wet AMD (or in past 6 months)	2	LCS	2
NPDR in past 6 months	3	Dry AMD	1	Standard phaco	0
Mild to moderate NPDR	2	Young age < 55 years	1	History of retinal surgery (PPV)	1
Injection history for DME	2	Older age > 55 years	0		
Diabetes	1				
Uveitis history (inactive at time of surgery)	1	Grade of cataract (3+ or more)	2		
Presence of ERM	2	Grade of Cataract (<3+)	0		
Abbreviations: PDR, proliferative diabetic retinopathy; AMD, age-related macular degeneration; LCS, laser cataract surgery; NPDR, nonproliferative diabetic retinopathy; PPV, pars plana vitrectomy; DME, diabetic macular edema; ERM					

29

HORV

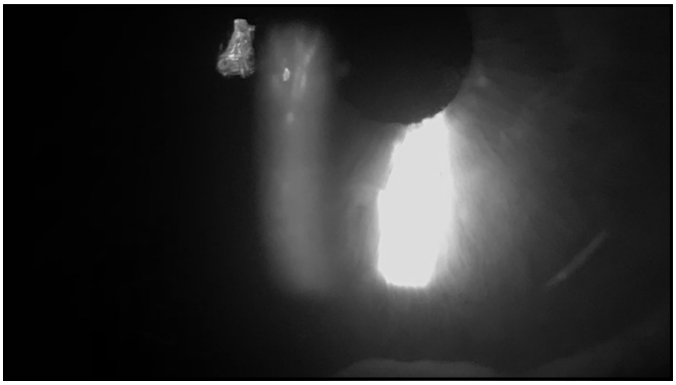
- A joint task force formed by the ASCRS and ASRS reported a strong association between hemorrhagic occlusive retinal vasculitis and the use of intraocular vancomycin
- Most surgeons have stopped using vancomycin, and no cases of hemorrhagic occlusive retinal vasculitis have been reported with a tri-moxi alone
- Imprimis no longer makes Tri-Moxi-Vanc.

30

TASS

- Recent cases of Atypical TASS with intracameral Tri-Moxi
- Absence of limbus to limbus corneal edema
- Decreased vision, Severe AC reaction, hypopyon, minimal conj injection
- Culture yielded no growth

31



32

Conclusion

- We are far away from truly dropless cataract surgery
- Tri-Moxi or our current "Dropless" therapy as a standalone intervention may not be sufficient to control postoperative inflammation in certain patient populations
- Some risk factors have been identified, but more research is needed to further optimize patient outcomes

33

Thank you

34