Dry Eye in Cataract Surgical Patients

MARCUS RHEM, MD

1

KEY POINTS

- Dry Eye is under diagnosed and under treated in the cataract patient
- Dry Eye affects accuracy of preoperative testing and can result in postoperative refractive errors
- Dry Eye affects postop vision itself and the measured refraction post surgery
- More than one test/assessment is likely to be necessary
- High suspicion
- When in doubt treat
- Be aggressive then back off

2

OSD Prevalence

- DEWS 2007: Prevalence in general population : 3.5% to 33.7%
- Follow-up studies suggest 30% is closer to reality
- Under diagnosed and under treated
  - Original DEWS work published in OCULAR SURFACE 2007: vol 5
  - J Gayton et al CLINICAL OPHTHALMOLOGY 2009

3

PHACO STUDY 2017

- Prospective randomized multi-center observational study
- 143 patients 55 years old or older scheduled for routine cataract surgery
- Goal: determine the incidence of dry eye and its severity and to assess the signs and symptoms of dry eye in this patient population
- Exclusion: patients already using cyclosporine eye drops or with previous ocular surgery
- Questionnaire for symptoms
- Osmolarity, TBUT, Schirmers, Examination

4

- Initially 27% already diagnosed with dry eye
  - 22% on no treatment at all
  - 4.9% already on Cyclosporine A and were excluded from the rest of the study

5

International Task Force (ITF)Severity grading

TABLE 1. ITF Guidelines for Determining the Severity Level of DTS[23]

	DTS Severity			
	Level 1	**Level 2**	**Level 3**	**Level 4**
Symptoms*	Mild–moderate	Moderate–severe	Severe	Severe
Signs†	Mild–moderate conjunctival signs	Tear film signs Fluctuation of vision/blurred vision	Corneal filamentary keratitis	Corneal erosions Conjunctival scarring
Staining†	None	Mild punctate corneal staining Conjunctival staining	Central corneal staining	Severe corneal staining

*Ocular discomfort, ocular fatigue, and visual disturbance each ranked on a scale of 0 (none) to 4 (extremely severe).
†Graded on a scale of 0 (low) to 4 (high).

6

Severity ITF score

- LEVEL 0 = 25%
- LEVEL 3 = 28.7%
- More severe than general population
- Barber et al; BMC OPHTH 2018 (18:260) Eye Symptoms and the Impact on vision-related functions across ITF guidelines severity levels in the United States.
  - Level 1 = 33%
  - Level 2 = 34%
  - Level 3 and 4= 33%

7

PHACO STUDY Subjective Questionnaire

- Many had no typical symptoms
  - 69% had NO STINGING OR BURNING
  - 63% had NEVER FEELINGS OF DRYNESS
  - 59% had NO FOREIGN BODY SENSATION
  - 53.7% had NO ITCHING
  - 78.7% had no PAIN

8

DRY EYE UNDER DIAGNOSED

- FEWER than 25% already diagnosed with dry eye
- At least 30% had at least occasional dry eye symptoms
- 76.8% had corneal staining with 50% being central

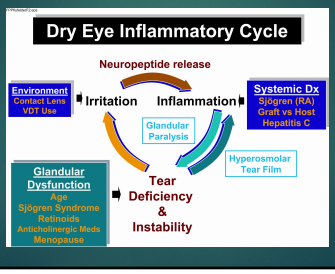
9

CO-MORBIDITIES

- ROSACEA
- DIABETES MELLITUS
- SYSTEMIC INFLAMMATORY DISEASE
- POOR NUTRITION
- PREVIOUS OCULAR HERPES OR ZOSTER
- CONTACT LENS WEAR
- GLAUCOMA DROPS
- SYSTEMIC MEDICATIONS

10

INFLAMMATORY NATURE OF DRY EYE



11

MEDICATIONS

- ANTIHISTAMINES
- ANTIDEPRESSANTS
- ANTICHOLINERGICS
- DIURETICS

12

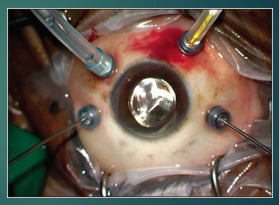
CONTACT LENSES

- EFFECT ON EPITHELIUM
- EFFECT ON CORNEA CURVATURE
- RELATIVE HYPESTHESIA
- ALTERED OCULAR SURFACE

13

PREVIOUS SURGERY

- LASIK
- PPV
- BLEPHAROPLASTY
- TRABECULECTOMY



14

GLAUCOMA

- ALTERED LIMBAL STEM CELLS
- REDUCED AQUEOUS TEAR FILM
- ATROPHY OF MUCIN LAYER
- BAK

15

PREPARATION

- DISCONTINUE ALL CL WEAR FOR MINIMUM 2 WEEKS
- INITIATE ARTIFICIAL TEARS 4X DAY
- SCREENING QUESTIONAIRRE UPON ARRIVAL

16

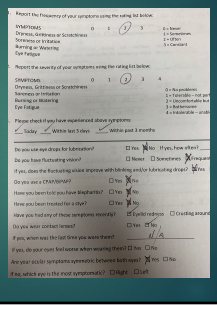
MODIFIED OSDI QUESTIONAIRRE

USEFUL FOR KEEPING SUSPICION HIGH

REMEMBER: HIGH % OF OSD PATIENTS RE ASYMPTOMATIC

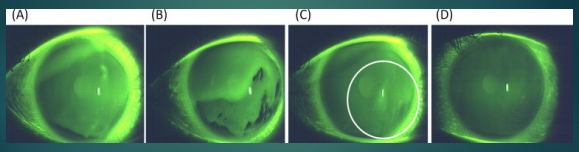
NOT LOOKING FOR A SCORE AS MUCH AS A HINT

CONFIRM SUSPICION



17

TBUT



18

ASCRS : LOOK, LIFT, PULL, PUSH

- LOOK
  - TEAR MENISCUS
  - STAINING
  - CONJ CHALASIS
  - PTERYGIA/PINGUECULA
  - MAP-DOT

19

ASCRS : LOOK, LIFT, PULL, PUSH

- LIFT: UPPER AND LOWER LID
  - SLK
  - SUPERIOR MAP-DOT (OFTEN MOST OBVIOUS)
  - SYMBLEPHARA

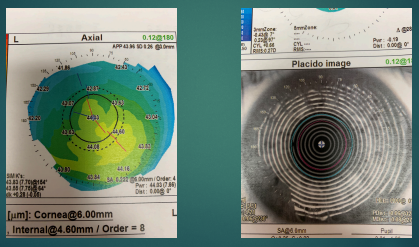
20

ASCRS : LOOK, LIFT, PULL, PUSH

- PULL: IDENTIFY LID POSITION AND LAXITY
- PUSH: TO EXPRESS MEIBOMIAN SECRETIONS

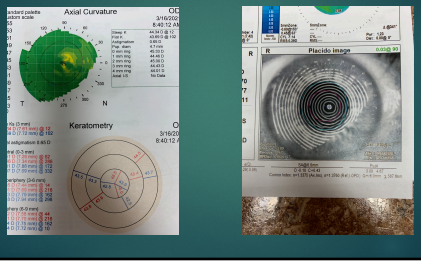
21

Patient 1



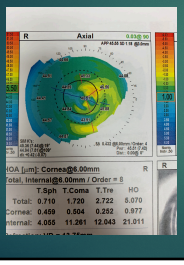
22

Patient 2



23

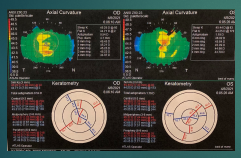
Patient 2



- Irregular Curvature plot
- Poor Placido Mires
- Inconsistent, variable Ks on IOL Master

24

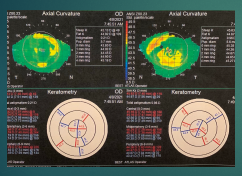
Patient 3: Irregular astigmatism

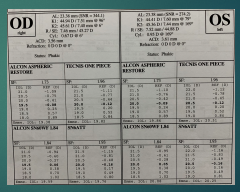


- Obviously irregular map
- Keratometry meridian display makes little sense

25

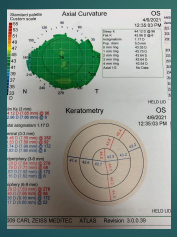
Patient 4: Is there really 1.0 D @180?

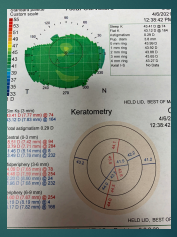




26

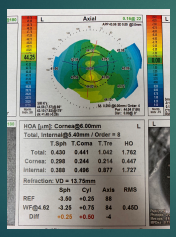
RGP AND DRY EYE





27

RGP and Dry Eye

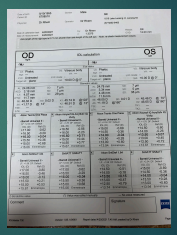


- Irregular surface with data drop out and variability
- Inferior steep
- Pt needs treatment for ocular surface and more time out of RGP

28

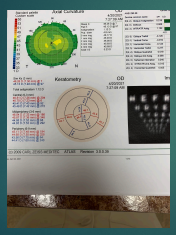
Consistent Testing

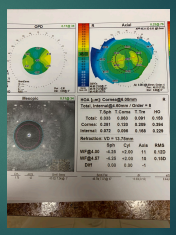
- Good tests with complete data
- Regular curvature
- Good mires
- Repeatability across all tests
- NO GUESSING



29

Consistent Testing





30

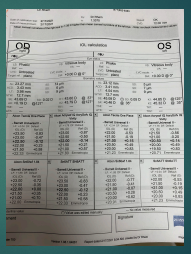
Improvement with cyclosporine or liftegrast

- Clearly ocular surface treatment is helpful
- Artificial tears, meibomian heat/massage
- What about Rx drops?
- STUDY: treatment with liposomal CsA or liftegrast for 4 weeks prior to testing.
  - No further assessment, just treat
  - Statistically significant improvement in the accuracy of testing

31

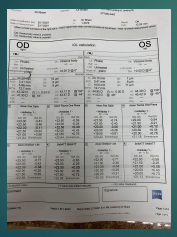
Patient pre CsA liposomal

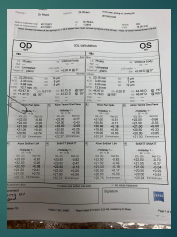
IOL MASTER with substantial variability



32

PRE CsA liposomal

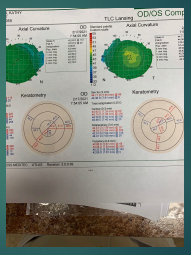




33

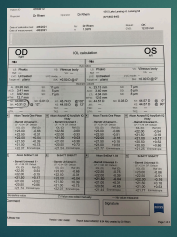
Irregularity on the Atlas

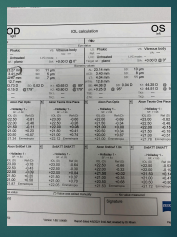
Variabillity on Ks on IOL Master



34

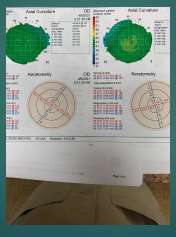
POST 28 days CsA liposomal





35

Regular ocular surface



36

Treatment

- Aggressive preop: treat rather than not to get accurate testing
- Continue this through the perioperative period
- Alter for chronicity thereafter
- Often need to remind patients, particularly premium IOL patients

37

Treatment

- Geared toward first accurate testing and good recovery
- Mainstay is still artificial tears, prefer preservative free
- Warm compresses with gel mask, Bruder mask etc. generally helpful
- Liposomal CsA or liftegrast for 4 weeks before re-test
- Soft steroids: Lotemax or EYsuVIS or at least flurometholone, particularly if insurance balks at CsA or liftegrast
- Caution with ointments for these patients: affects tear film in testing
- Plug after 4 weeks if not good enough
- Amniotears postop or Vital tears

38

SUMMARY

- Dry Eye is under diagnosed and under treated in the cataract patient
- Dry Eye affects accuracy of preoperative testing and can result in postoperative refractive errors
- Dry Eye affects postop vision itself and the measured refraction post surgery
- More than one test/assessment is likely to be necessary
- High suspicion
- When in doubt treat
- Be aggressive then back off

39

Monovision: Refractive Cataract Surgery's Shy Little Sister

RONALD BROWN, M.D.
SPECIALTY EYE INSTITUTE

1

"I have no financial interests in this material"

RONALD BROWN, M.D.

2

Refractive Cataract Surgery Is Very Flashy!

- Multifocal IOLs
  - Restor, Panoptix
- Extended depth of focus IOLs
  - Symfony, Vivity
- Toric IOLs
- Light adjustable IOLs
- Accomodating IOLs
  - Crystalens

3

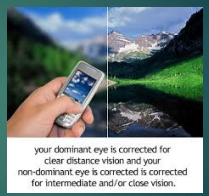
Refractive Cataract Surgery Is Very Flashy!

- Multifocal IOLs
  - Restor, Panoptix
- Extended depth of focus IOLs
  - Symfony, Vivity
- Toric IOLs
- Light adjustable IOLs
- Accomodating IOLs
  - Crystalens

4

Monovision is the Shy Little Sister

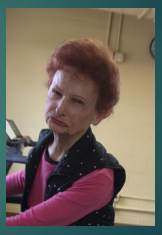
- Effective way to decrease dependence on glasses
- Very common in cataract patients
- Can't be ignored during surgical consultation
- Not very flashy, but great option and surgeon's job to consider



5

Monovision Ideal Candidates

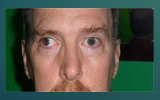
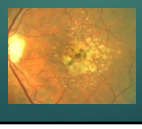
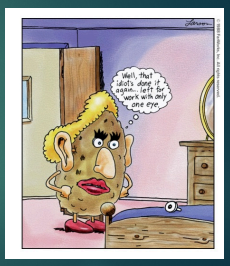
- Successful monovision patients with contacts currently or in the past
- Easy going personalities, tolerant of compromise
- Good visual potential in both eyes (avoid dense amblyopia, macula-off RDs, bad ARMD,etc.)
- Mother-in-laws



6

Monovision Bad Candidates

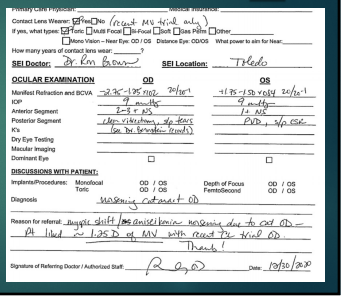
- Tried it in past and hated it
- Poor visual potential
- Currently happy with glasses
- Plano presbyopes who develop cataracts
- Alternating exotropia

7

Monovision Workup

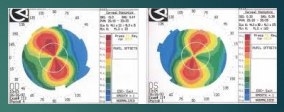
- Determine dominant eye, which eye distant/near in past
- Sometimes difficult, helpful if on preop referral
- Need to discontinue contact lens wear per usual routine (2 weeks for soft, longer for RGP)
- IOL measurements determine whether toric IOL needed, more crucial for distance eye



8

Monovision Discussion

- Often easy if current monovision patient, most will select this option if happy
- More difficult if toric IOLs needed and cost an issue, but still less expensive than toric multifocal IOLs
- Discuss multifocal IOLs or standard IOLs distance or standard IOLs near as well, so sometimes choices overwhelming!




9

What if Never tried Monovision?

- Generally I don't recommend unless low myope where can assess in between 2 eyes
- Distance eye first, pick both distance and near IOL for 2nd eye, wait at least 2 weeks between eyes
- Risky for plano presbyopes
- Kind of wish we had loaner monocles like Colonel Klink!

10

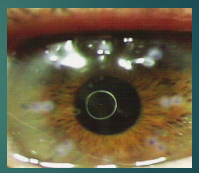
67 yo woman, hates glasses!

- No glasses until presbyopia in late 40s
- Had CK OS in 2005, but regressed
- Had hyperopic PRK OS in 2006 to create monovision
- Happy until…

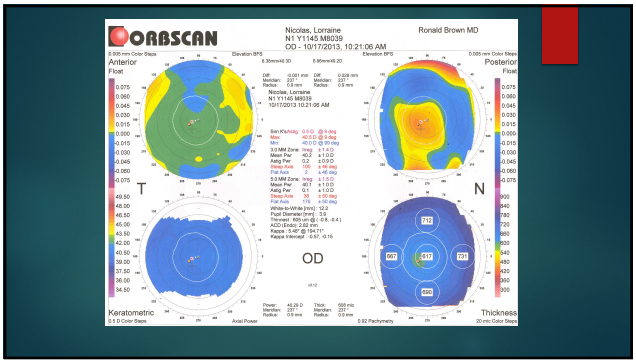
11

67 yo glasses hater

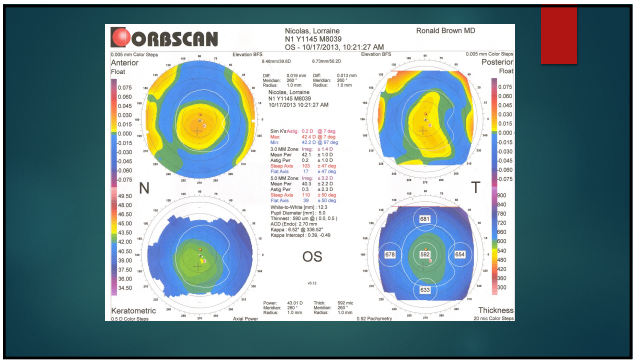
- 2013 noted trouble driving and reading for 6 months
- UCVA 20/200 OD and 20/100 OS, still J2 OS
- 3+ NS cataracts
- CK scars OS
- Won't wear glasses



12



13



14

15

Happy Mom!

- 20/25 OD uncorrected
- J1 OS uncorrected
- Doing great almost 10 years later without glasses
- Monovision also on 2 of my aunts, first with LASIK, then later with cataract surgery

16

Sometimes it's in the Genes!

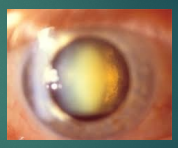
17

Sometimes it's in the Genie!

18

Inadvertent Monovision

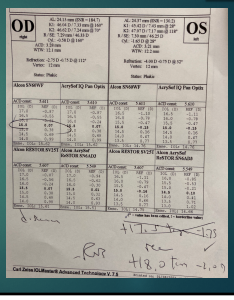
- Myopic shift after RD repair with gas bubble
- Pseudophakic plano in first eye, then years later develop myopic shift in second eye
- Natural monovision with one eye near plano and the other myopic, this can be trouble if not caught!



19

Monovision Surgical Planning

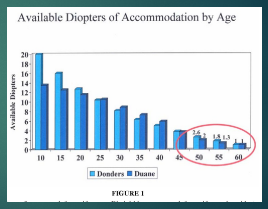
- Typically do distance eye first with plano to +0.25D target
- Near eye target 1 to 2 weeks later (unless monovision trial in low myope), target usually -1.75D for near
- Sometimes near target greater if OD recommends, or if guess more near needed (i.e. the -3D OU myope wearing one contact lens for distance)



20

Beware of Young Patients

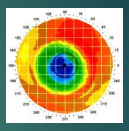
- 50 yo with cataracts may have monovision with -1D in near eye
- BUT… if they end up -2D in monovision near eye, distance will be worse
- These patients may feel like they saw better before cataract surgery, require extra counselling
- May be better multifocal IOL candidate

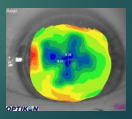


21

What about LASIK patients?

- Monovision great option for post-LASIK cataract patients
- Multifocal IOLs can create difficulties after LASIK, especially with very flat corneas and higher order aberrations
- Generally I recommend monofocal or toric IOLs, sometimes with monovision target





22

Unhappy Monovision Patients

- No previous trial, encourage to wait 3 months to adapt, then consider PRK to reverse
- Not enough residual myopia, could consider hyperopic PRK or even piggyback IOL, but usually suggest readers PRN
- Night driving issues, discuss preop that monovision is a compromise, glasses may be needed for some things

23

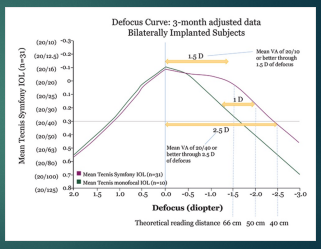
Monovision No-Man's Land

- Aunt in Georgia had cataract surgery 10 years ago, called me since unhappy
- Preop high myope wearing monovision contacts
- Distance eye great, near eye ended up -1 D
- Near eye can't read, near eye can't see as well for distance
- Suggested consider hyperopic PRK

24

Multifocal Monovision?

- Consider mini-monovision with an EDOF IOL like Symfony or Vivity with target of -0.75D
- Better distance than with monofocal target -1.75D, yet greater depth of focus gives great intermediate/near
- Could be good option for patients not good candidate for multifocal IOL (drusen, epiretinal membrane, etc.)
- Nice option for 2nd eye in plano pseudophakic 1st eye that wants better near



25

Monovision: Don't forget about that shy little sister!

26

Monovision: Don't forget about that shy little sister!

27