"My Vision Is Coming and Going" Group: The OSD patient

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Cataract Surgery is a Vision Correction Procedure

- Day in Age of Refractive Cataract Surgery
- Patient’s have very high expectations
  - Rapid Visual Recovery
    - Minimize amount of corneal swelling on Postop Day 1
  - Avoid CME with prophylactic meds
  - Diagnose and Treat Ocular Surface Disease
    - Very common in cataract surgery patients
- Expectation is good uncorrected vision regardless of IOL choice

Disclosures

- Allergan: Speaking
- Abbott/AMO: Speaking
- IOP Ophthalmics: Consulting and Speaking

Preoperative Testing

- All cataract patients
  - IOL Master
  - OPD III
- Premium cataract patients
  - Topography
  - Pentacam
  - OCT of the macula
  - Manual Ks
  - Immersion A scan
- Other Tests
  - Tear Film Testing?
OSD: Significant Staining After 3 Minutes

Dry Eye
- Evaporative
- Aqueous Deficiency

Important Part of Pre and post-op exam
- Should not be overlooked!

May be the partial or complete cause for patient vision symptoms pre OR post operatively

Important to diagnose and treat before and after cataract surgery to maximize results and patient satisfaction

What are the Main Symptoms of Dry eye?
- 1. Burning
- 2. Dryness
- 3. Foreign body sensation
- 4. Tearing
- 5. Redness of the eyes
- 6. Sensitivity to light
- 7. Blurry Vision

William Tra0ler, MD

Punctate Staining
Meibomian Gland Examination

- Squamous metaplasia of meibomian gland orifices
- Turbid secretions from meibomian gland orifices

Lid margin morphology and turbidity of secretions can be graded to assess disease severity (Bron et al, 1991; Mathers et al, 1991)

TBUT Patterns:
Aqueous Tear Deficiency

- Localized circular tear breakup
- Diffuse circular tear breakup

TBUT Patterns:
Meibomian Gland Disease

- Inferior streak tear breakup
- Broad streak tear breakup

Tear Breakup Time (TBUT)

- Tear film instability is a hallmark of dry eye
  - Correlates significantly with aqueous and evaporative tear deficiency (Pflugfelder et al, 1998)
- TBUT measures tear film quality, ability to resist thin spots
  - Fluorescein introduced from strip, yellow filter increases sensitivity
  - TBUT = time from completed blink to 1st dry spot (3 repetitions)
- TBUT < 10 seconds considered abnormal (Lemp, 1995)
  - Anesthesia decreases TBUT (de Paiva et al, 2004)
  - Local alterations of the corneal surface can cause persistent break-up spots

TBUT Patterns:
Aqueous Tear Deficiency

TBUT Patterns:
Meibomian Gland Disease

Images from Dry Eye and Ocular Surface Disorders. 2004.
73 yr old female with visually significant cataract and dry eye, on artificial tears

<table>
<thead>
<tr>
<th>OD (right)</th>
<th>Corneal curvature values</th>
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</thead>
<tbody>
<tr>
<td>K1: 44.82 D @ 158°</td>
<td>7.53 mm</td>
</tr>
<tr>
<td>K2: 45.30 D @ 68°</td>
<td>7.45 mm</td>
</tr>
<tr>
<td>ΔD: +0.48 D @ 68°*</td>
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</tr>
<tr>
<td>K1: 44.94 D @ 152°</td>
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</tr>
<tr>
<td>K2: 46.30 D @ 62°</td>
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</tr>
<tr>
<td>ΔD: +1.36 D @ 62°*</td>
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</tr>
<tr>
<td>K1: 45.76 D @ 9°</td>
<td>7.54 mm</td>
</tr>
<tr>
<td>K2: 46.73 D @ 97°</td>
<td>7.30 mm</td>
</tr>
<tr>
<td>ΔD: +1.47 D @ 97°*</td>
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</tr>
<tr>
<td>K1: 44.88 D @ 9°</td>
<td>7.52 mm</td>
</tr>
<tr>
<td>K2: 45.61 D @ 99°</td>
<td>7.40 mm</td>
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<tr>
<td>ΔD: +0.73 D @ 99°*</td>
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<td>h: 1.3375</td>
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</tbody>
</table>

IOL Master Readings; Mild Keratoconus

- Topical steroids & Azithromycin

<table>
<thead>
<tr>
<th>IOL Master</th>
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<tbody>
<tr>
<td>K1: 47.27 D @ 11°</td>
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<tr>
<td>K2: 48.08 D @ 101°</td>
</tr>
<tr>
<td>ΔD: +0.81 D @ 101°*</td>
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<tr>
<td>K1: 47.27 D @ 5°</td>
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<tr>
<td>K2: 48.42 D @ 95°</td>
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<td>K1: 47.74 D @ 11°</td>
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<tr>
<td>K2: 48.08 D @ 101°</td>
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<tr>
<td>ΔD: +0.34 D @ 101°*</td>
</tr>
</tbody>
</table>

Why is the astigmatism so variable?

- Improved reliability of IOL Master K’s – but requires continued treatment

After 2 weeks of Pred & cyclosporine

After punctal plug plus more Pred & cyclosporine

After 3 weeks of Pred Forte TID, Restasis BID, and lower punctal plug

Note: No EBMD present

After 5 days of treatment:

- Topical steroids & Azithromycin
Topography; DRY EYE

Pre-op Testing

Dry Eye Identified:
One month later – after topical steroids for one week & cyclosporine BID for one month

Challenging case
Cataract Surgery OD in 2011

Returns for Cataract Surgery OS in 2013
Challenging case: Patient is now 64 with a significant change in Ks over 2 years

OS:
2011

OS:
Sept 3, 2013

1.5 D Shift in IOL power over 2 years (no surgery)

High Prevelance of Dry Eye in Cataract Population

- Patients are often **asymptomatic**
- **TBUT:**
  - More than 60% with very abnormal TBUT (≤5 seconds)
- **Corneal Staining**
  - 50% with Central staining
- **Schirmer’s score**
  - 21.3% with very low Schirmer’s (≤5mm)

Dry Eye Study: P.H.A.C.O.:
Prospective Health Assessment of Cataract patients Ocular surface

Results: Tear Break up Time

N = 136 patients (272 eyes) from 9 Centers

- Average TBUT: **4.95 seconds**
  - # of eyes with TBUT ≤ 5 seconds: 171 eyes **(62.9%)**
**Corneal Staining**

N = 136 patients (272 eyes)

- **Positive** Corneal Staining: 209 eyes (76.8%)
- **Central** Corneal Staining: 136 eyes (50%)

![Central Corneal Staining]

**Schirmer’s Scores**

N = 136 patients (272 eyes)

- Eyes with Schirmer’s score ≤ 5: 58 eyes (21.3%)
- Eyes with Schirmer’s score ≤ 10: 132 eyes (48.5%)

**Treatments**

- Lubricants
- Hot Compresses, Lid Hygiene
- Omega 3 Fish oil; 650 mg EPA/day
- Flaxseed oil; 2 Tbs/day
- Steroids
- Restasis
- Doxycycline/Minocycline
- Punctal Occlusion
  - Plugs, hyfrecation
- Oral Secretagogues (parasympathomimetic)
  - Evocac
  - Pilocarpine

**Restasis**

- Topical cyclosporin

  - Treats inflammation
  - Increases tear production by the lacrimal gland
Summary

- OSD needs to be diagnosed and managed
- Need to treat pre and post op
- Dry eye is very common in patients scheduled for cataract surgery
  - Topography
  - IOL Master
    - Symmetry of K’s power or axis of astigmatism
- Preop Topography & Preop OCT
  - IF dry eye is identified – treat the condition and have patient return for repeat testing
- Post op
  - Evaluate and treat DE