Cataract Surgery
in the
Diseased Eye:
Ocular Surface Disease

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I am a consultant to Allergan, Alcon, B&L, and Tear Science
I have no financial interest in any product discussed herein

What's the most important refracting surface of the eye?

- Cornea?
- Lens?

The Tear Film!

Image Courtesy of Marguerite McDonald, MD
Minimal Disruption of the Ocular Surface can Severely Degrade Visual Acuity

Image Courtesy of Marguerite McDonald, MD

The Ocular Surface: Role in Vision Quality

- Vision quality depends in large part to a healthy ocular surface and tear film
- The most advanced wavefront-guided laser refractive procedure or the latest generation presbyopia-correcting IOL is meaningless in the setting of a dysfunctional ocular surface

Dry Eye in Cataract Patients

How common is it?

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

Objective
- To determine the prevalence of dry eye in patients undergoing cataract surgery

Methods
- Prospective, multi-center study
  - Mark Packer, MD
  - Damien Goldberg, MD
  - Parag Majmudar, MD
  - Eric Donnenfeld, MD
  - Marguerite McDonald, MD
  - Karl Stinecipher, MD
  - Jon Vukich, MD
  - Chaz Reilly, MD
  - Gregg Berdy, MD
  - Ranjan Malahotra, MD
  - William Trattler, MD
- 200 patients scheduled for cataract surgery
Tear Break up Time

What time is considered abnormal?
– 5 seconds?
– 7 seconds?
– 9 seconds?

Results:

Tear Break up Time
N = 102 patients (204 eyes)
Average TBUT: 4.93 seconds
– # of eyes with TBUT ≤ 5 seconds: 126 eyes (61.7%)
– # of eyes with TBUT ≤ 7 seconds: 169 eyes (82.8%)

Corneal Staining

N = 102 patients (204 eyes scored)
Positive Corneal Staining: 154 eyes (75.5%)
Central Corneal Staining: 92 eyes (45.1%)

Schirmer’s Scores

N = 102 patients (204 eyes)
Eyes with Schirmer’s score ≤ 10: 95 eyes (46.6%)
Eyes with Schirmer’s score ≤ 5: 38 eyes (18.6%)
Summary of PHACO Study (Patients scheduled for cataract Surgery)

- Dry eye signs are very common in patients scheduled for cataract surgery
  - TBUT:
    - More than 60% with very abnormal TBUT (≤ 5 seconds)
    - 83% with TBUT ≤ 7 seconds
  - Corneal Staining
    - 45% with Central staining
  - Schirmer’s score
    - 18.6% with very low Schirmer’s (≤5mm)

Recommendations for all cataract surgery patients:
Preop Topography

58 year old male with visually significant cataract OS, interested in a premium IOL.

Preop Topo after 1 day of Treatment

Same patient: 1 day after starting lubricating drops.
Preop Topo after one week of Treatment

Same patient: one week after initiating topical steroids along with lubricating drops

Preop Evaluation

60 year old male: Initial Consultation for Presbyopic IOL

Preop testing can identify less than ideal candidates for Presbyopic IOLs
- Topography
- OCT of the macula
- Fluorescein staining of the cornea:
  - Dry Eye
  - EBMD

Summary

Dry eye is very common in patients planning cataract surgery
- More than 60% with very abnormal TBUT
- 50% with Central staining
- 21% with very low Schirmer’s (≤5mm)

Dry Eye Identified:
One week after cyclosporine BID

Dry eye is very common in patients planning cataract surgery
- More than 60% with very abnormal TBUT
- 50% with Central staining
- 21% with very low Schirmer’s (≤5mm)
**Pre-Op Evaluation**
- Careful evaluation of pre-existing dry eye and blepharitis is mandatory
- High risk for endophthalmitis if blepharitis untreated

**Treatment of Tear Film Disorders**
- Physical Measures:
  - Hot compresses/lid massage
- Nutritional Supplements
  - Flaxseed oil, essential fatty acids
- Pharmaceutical Measures:
  - Lipid-altering substances (doxycycline)
    - Inhibition of MMPs
- Corticosteroids
- Antibiotics: azalides (Azasite)
- Cyclosporine A (topical, Restasis)

**MGD: Toothpaste**

Image Courtesy of Gary N. Foulks, MD

**Treatment of Tear Film Disorders**
- MGD probing/expression
- Lipiflow
LipiFlow® Thermal Pulsation System

The Lid Warmer: Comprised of a precision heater, eye insulation & vaulted shape
The Eye Cup: Comprised of an inflatable bladder & rigid eye cup

Mean Meibomian Gland Score

SUMMARY

Ocular Surface Disease is more prevalent than we previously believed. It is a major factor in visual outcomes after cataract surgery. Greater awareness by patients and physicians will enable more prompt treatment and greater patient satisfaction.
Thank you for your attention!

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