Dry Eye

Ocular Surface Disease (OSD)
Dysfunctional Tear Syndrome (DTS)

- Dry eye patients are pervasive in most optometric practices and are among our most difficult & frustrating patients to treat.
- Dry eye has been reported in up to 25% of patients in routine ophthalmic practices and in up to 80% of LASIK patients.
  - Vision truly starts with the tear film
  - #1 complication following LASIK
- Mild dry eye is a motivating reason for many patients to have refractive surgery!

Dry Eye

Diagnosis

- History
  - Lifestyle
  - Study linking dry eye to use of digital devices
  - Symptoms
- Clinical evaluation
  - External
  - Slit Lamp
- Structural/eyelid issues
- Marginal lid disease
- Tear film evaluation
- New tests
  - LipiView/Keratograph/PRS/TearLab/TearScan

Dry Eye

Tools to Evaluate and Monitor Treatment

- History
  - Symptoms/Dry Eye questionnaires
- Slit Lamp
- Vital Stains
  - NaFL
  - Lissamine Green
- Tear production
  - Phenol Red Thread test
- Tear osmolarity
- Adjunct Tear film evaluation
  - Topographer/Keratograph

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Zone-Quick Phenol Red Thread Tear Test
Easy
Quick
No discomfort
No anesthesia
Place folded end onto lid
Lower lid -> outer canthus
Test for 15 sec w/ eye open
Measure red portion
< 10 mm is low value

Management
.........doctor must understand
• You must convince them their eyes are dry
• There will be hand holding
  • Lots of chair time so need adequate compensation
• Success may be slow & incremental
• Signs often improve prior to symptoms
• Why patients are often non-compliant
  • Didn’t fully understand
  • We’re an immediate gratification society
• How to boost compliance
  • Education/Expertise/Empathy

Management
.........patient must understand
• Dry eye is very complicated
• Expectation is to manage, not cure
• Improvement will be incremental
  • It’s not immediate gratification
  • And improvement will probably not be constant
• It is often frustrating for both of you
• Success is a relative term
• Compliance is vital

Management Options
Tear supplementation
Artificial tears
Gels/Ointments/Inserts
Tear preservation
Punctal occlusion
Humidity
Moisture chambers
Tape lids/tarsorrhaphy
Tear stimulation
Restasis
Orals/Nutritional counseling
Other

Supplemental Techniques
Hydrate
Drink lots of water
Humidify
Decrease caffeine
Oral supplements
Increase omega-3 fatty acids (cold water fish & legumes)
  • Fish oil
  • Flax seed oil = prostate CA link +/–
  • Theracryl – HydroEye – Theratears Nutrition
Aggressively treat any concomitant lid disease
  • Lid hygiene = Dexamethasone/Aloxix 10
  • 40 tablet of 20mg = lid cleaner on pre-moistened pads

Serum Autologous Tears
Eye drops made from patient’s serum
Contains unique essential components
• Vitamin A
• Fibrinectin
• Growth factors
• Immunoglobulin
  • Closely mimics human tears
Method
Blood draw
Centrifuge to remove RBCs
Dilute to 20% with saline
Utilize
As you would artificial tears
It works!!!
**Serum Autologous Tears**

...so why not

There’s a certain hassle factor
- Need someone to make it
- And you may not want to
- Needs to be refrigerated
- The bottle being used
- Extra bottles must be kept frozen

It’s relatively expensive
- Most charge $100-$200 for 1-2 month supply
- Amount given depends upon blood draw
- Insurance generally doesn’t cover
- Not everyone is cool with blood draws
- So not a first line therapy

**Tears Again Eye Spray**

Contains water, lipids & Vit A, C, E
For patients who can’t insert drops
"Close your eyes and spray"

**Lipiflow**

Lacrisert

Hydroxypropyl Cellulose

By Rx only

Patient self inserts

**Topical cyclosporine Restasis**

Immunosuppressor

Possible immunomodulator
- Indicated to increase tear production
- Mechanism unclear
- Believe decrease inflammation lacrimal gland & surface
- FDA trials showed it to be very safe

Relatively expensive

Needs to be discussed/explained to prevent surprise

Techniques to soften the $ impact

Pearls
- Consider adding topical steroid for 1st 2 weeks
- Don’t stop using artificial tears
- Stinging/burning lessened if refrigerate

**Topical cyclosporine Restasis**

May take up to 3 months for symptomatic effect

Month 1 -> works ~ like standard artificial tears
Month 2 -> suppressing inflammation and repairing damage
Month 3+ -> symptoms relief

Don’t stop using artificial tears

Add topical steroid for 1st two weeks to ‘jump start’
**Restasis + Punctal Occlusion?**

Study by Roberts, Carniglia, & Brazzo

- Cornea Vol 26, # 7, August 2007
  - Plugs alone
  - Restasis alone
  - Combination
  - All 3 regimens were effective
  - Combo therapy -> greatest improvement

**Temporary Occlusion**

Absorbable Copolymer Implants

- Start with inferior puncta, but consider uppers
  - Technique same as with collagen plugs
- Available in 0.2 – 0.4mm diameter
  - Comes 2/pack rather than 6/pack
  - Cost is ~$6/plug versus $1/plug for collagen
- Absorbs in 1-3 months
- My plug of choice for LVC patients
  - Typically implant only once during p/o period

**Silicone**

Internal

- Herrick
  - Easy to insert
  - Hard to remove
  - Difficult to monitor

External

- Variety of options – I like the Parasol
  - Insertion skill is easily acquired
  - Removal and monitoring is easy
  - More complete blockage

**When Your Dry Eye Patients are Considering Refractive Surgery**

*Educate, Educate, & Educate some more*

- Predict prior = genius doctor
- Try to explain after the fact = hmmm....not genius doctor
- Rehabilitate the cornea prior to surgery
  - No signs. No symptoms. No staining
- Consider punctal plugs prior to surgery
  - Long lasting, synthetic
- Consider Restasis prior to surgery
  - I tell patients to expect to maintain for few months s/p
- Use nonpreserved gtts for first week s/p
- PRK & thin flap LASIK appear to be equal re dry eye
  - Thicker flaps definitely cause more dry eye symptoms

**Preoperative Counseling**

- Tell EVERYONE to expect some level of dryness in the immediate p/o period.
- Expect few days – few weeks
  - Rarely last beyond 3 months
  - Expect everyone to return to preop status
- Educate re fluctuations
  - Patients don't make the dry eye connection
  - Windshield analogy

**Aggressively treat ANY dry eye prior to surgery.**

If you can’t rehabilitate the cornea, don’t do surgery.
Causes of p/o dryness

- Disruption of superficial corneal nerves
  - Thick flaps
  - Thin flaps
  - Smaller diameter flaps
  - ASA
- Alteration of lid/cornea relationship
- Disruption of accessory tear glands
- Hinge position is debatable

What’s in the Pipeline?

New Drugs
- Lifitegrast
- Cyclosporine 2.0
- Anakinra
- Tacrolimus
- Other

New Therapies
- Pulsed Light Therapy

Questions