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Dry Eye Update

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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
Causes and Contributing Factors

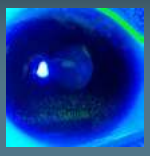
- Age
- Sex
- Environmental
- CL wear
- Refractive surgery
- Other ocular surgeries
- Ocular conditions
- Systemic conditions

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



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 +/-
    - TheraLife – HydroEye – Theratears Nutrition

Aggressively treat any concomitant lid disease
- Lid hygiene – Doxycycline/Alodox kit
  - 60 tablets of 20mg + lid cleaner on pre-moistened pads

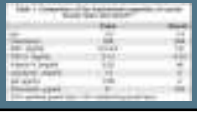
Serum Autologous Tears

Eye drops made from patient's serum
Contains unique essential components
- Vitamin A
- Fibronectin
- Growth factors
- Immunoglobin
- Closely mimics human tears

Method
- Blood draw
- Centrifuge to remove RBCs
- Dilute to 20% with saline

Utilize
- As you would artificial tears

It works!!!

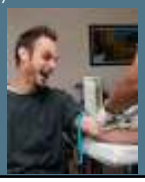


Serum Autologous Tears
…..so why not

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

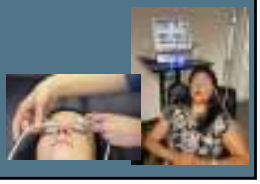
Not everyone is cool with blood draws
So not a first line therapy



Tears Again Eye Spray

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

Lipiflow

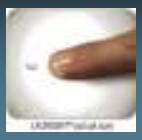


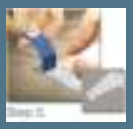
Lacrisert

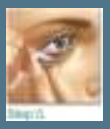
Hydroxypropyl Cellulose

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