

Rapid Fire Cornea
COPE ID: 77228-TD

Walt Whitley, OD, MBA, FFAO
Director of Professional Relations and Education
Virginia Eye Consultants
Regional Medical Director
Eyecare Partners, LLC

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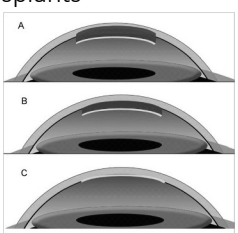
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ABC's of Corneal Transplants

- PK
- DALK
- PLK / DLEK
- DSEK / DSAEK
- DMEK / DMAEK






Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2880365/pt1/3/31>

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Corneal transplantation techniques:

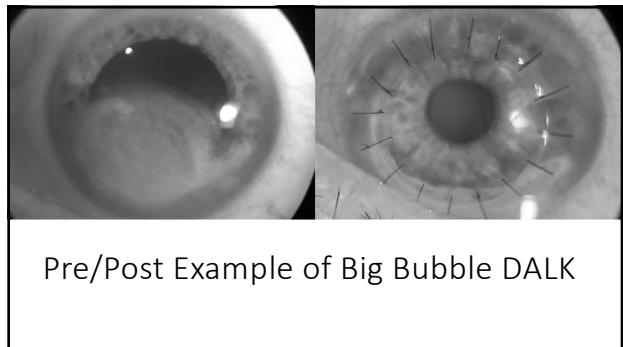
DALK (deep anterior lamellar keratoplasty)

PK 	1. PK: All corneal layers are transplanted.
DALK 	2. DALK: Only the superior corneal layers are transplanted.
DMEK 	3. DMEK: Only the deep corneal layers are transplanted.

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Post-Operative Care

- Moxifloxacin QID OD x 1 week and Difluprednate starting at QID OD and tapered down to Loteprednol QHS OD for maintenance
- Several corneal sutures removed after 6-9 months
- Cataract extraction OD
- Final BCVA 20/25 OD

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KCN: Old Mantra

Diagnose Monitor Spec. CL PKP/DALK

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KCN: New Mantra

Diagnose Early Stop Progression Rehabilitate VA

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Cross-Linking

What Do You Need?

FDA approval:
 April 2016 – Progressive KCN
 July 2016 – Corneal ectasia following refractive surgery

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Cross-linking Procedure Summary

1. Remove epithelium
2. Soak cornea (riboflavin 5'-phosphate in 20% dextran ophthalmic solution) for 30 minutes
3. Check for flare
4. Once flare is observed, measure corneal thickness
 If corneal thickness is less than 400 μ m, instill 2 drops of riboflavin 5'-phosphate in ophthalmic solution until the corneal thickness increases to at least 400 μ m
5. Irradiate for 30 minutes
 Continue applying riboflavin 5'-phosphate in 20% dextran ophthalmic solution during irradiation.

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Follow-up Care Landmarks

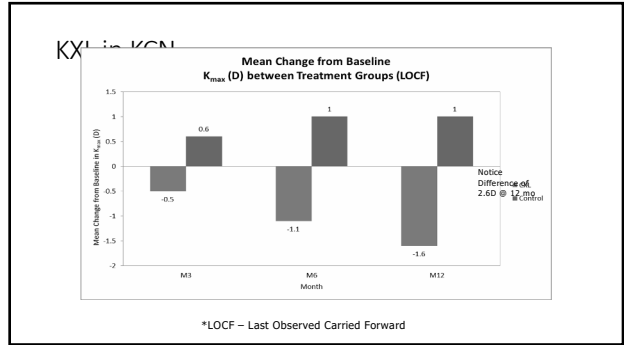
Due to Zero Global period, those may be billable to insurance for follow up when medically indicated

VISIT	PLAN
Day 1 to 1 Week	Topical antibiotic, steroid Frequent lubricants No eye rubbing Remove BCL once epithelium heals
Month 1	OCT Imaging Tomography/Topography Vision assessment Contact lens refitting evaluation
Month 3, 6, 12 <i>(Follow up)</i>	Continued evaluation utilizing tomography/topography Vision assessment

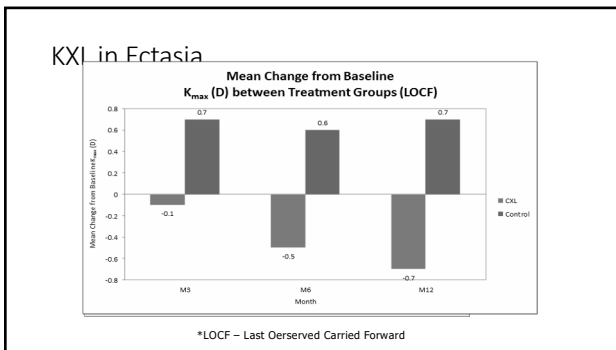
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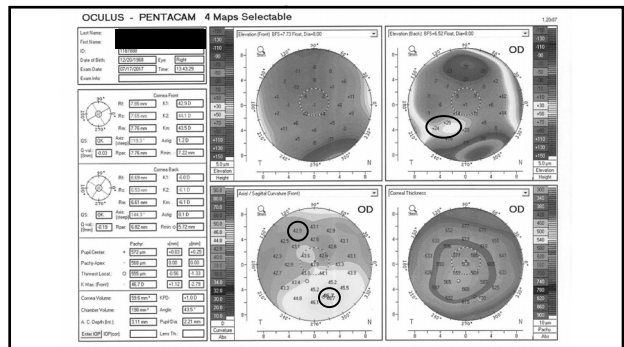
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How far do we go with crosslinking?

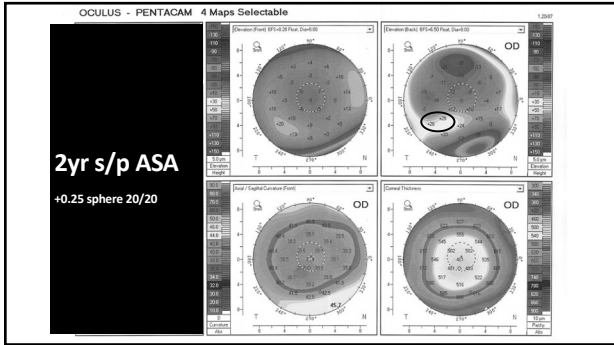
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50 yo male
 ASA with WFG iDesign post CXL for KC
 Pre-op LVC MR -4.75 -1.00 x 025

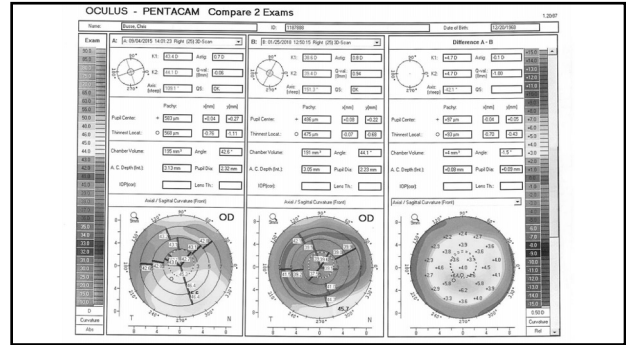
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What are Intacs?

- 150° Arcs of PMMA (same as rigid lens)
- Placed between stromal layers
- Inner Diameter = 6.8 mm
- Outer Diameter = 8.1 mm
- Hexagonal-Shaped
- Intacs[®] are:
 - Replaceable
 - Removable
 - Upgradable

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Photorefractive Intrastraval Cross-linking

PIXL is a minimally invasive refractive procedure aimed at reducing myopic refractive error through the application of customized UVA patterning for corneal cross-linking to the riboflavin soaked cornea.

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Technology | Topo-integrated wavefront-guided

Treatment captured and sent to Excimer using both Wavefront and Topo

- K values only provide estimate of corneal surface
- Topographic data used instead of estimation by keratometry
- Wavefront propagation from pupil to corneal plane is potentially more accurate

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Technology | Topo-integrated wavefront-guided

COSINE COMPENSATION FOR CORNEAL CURVATURE

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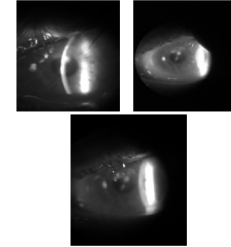
Culture Club

- 51 y/o Caucasian male referred for corneal ulcer
- Patient complains of blurry and foggy vision, discomfort, and redness OS
- H/o soft contact lens wear
- Drops: OTC anti-histamine
- Started on tobramycin q2h OS

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Ulcer Case

- VA: 20/200
- Conjunctiva: 2+ injection
- Cornea: central ulcer with multiple (8) infiltrates, 3mm x 1.4 mm epithelial defect
- Cultures obtained including blood, chocolate and fungal
- Tx???
- Vancomycin q2h OS
- Tobramycin q2h OS



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Bacterial Keratitis: Risk Factors

- Contact lens wear - #1
- Nonsurgical trauma
- Surgical trauma
- Lid dysfunction
- Ocular surface disease
- Corneal epithelial abnormalities
- Systemic diseases
- Topical medications

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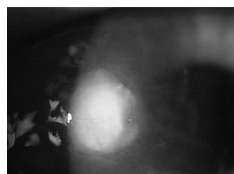
Indications for Cultures

- Hyperacute conjunctivitis
- Neonatal conjunctivitis
- Post-operative infections
- Chronic conjunctivitis
- Central corneal ulcers
- Membranous / Pseudoconjunctivitis
- Preseptal / Orbital cellulitis
- Post-traumatic infections
- Marginal infiltration / ulceration
- Atypical external disease
- Severe dry eye
- Bullous keratopathy
- Axial and severe keratitis

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Work-up

- History
- Slit lamp examination
- Photodocumentation
- Culture - Rules of 1-2-3
 - Within **1** mm of visual axis
 - Ulcers with **2** or more infiltrates
 - **3** mm or more in diameter



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Equipment

- Slit lamp
- Sterile Kimura spatula
- #15 Blade, sterile
- Calcium alginate swab
- Culture media
- Microscopy slides
- Alcohol lamp



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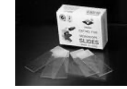
Procedure

- Anesthetize the cornea
 - Preservative-free tetracaine
- Scrape ulcer base / leading edge of infiltrate
- Place specimen on slide, then culture media
 - Smears – fixing organisms to be stained / observed
 - Culture – microbial growth
- Sterilize spatula over flame between slides / cultures

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Slides / Stains

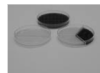
- Multiple slides
 - Bacterial
 - Fungal
 - Acanthamoeba if suspected
- Routine
 - Gram stain – bacteria, yeasts
 - Giemsa stain – cytology, bacteria, fungi, chlamydia
 - Calcofluor white – acanthamoeba, fungi
- Optional
 - Acid-fast, KOH wet mount, etc.



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Medium

- Routine
 - Blood agar – all-purpose, grows most bacteria
 - Except for Neisseria and Haemophilus
 - Chocolate agar – Haemophilus, Neisseria
 - Sabouraud's agar – fungal isolation
- Optional
 - Lowenstein-Jensen – mycobacteria, Nocardia
 - Non-nutrient agar w/E. coli overlay – acanthamoeba
 - Thayer-Martin agar – gonococcal isolation



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Example of Culture Report

- Hold for
 - Bacteria 1 week
 - Viral 2 weeks
 - Fungal 1 month
- Test for all sensitivities



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Polymerase chain reaction (PCR)

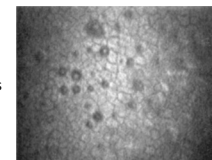
- Rapid diagnostic test - hours vs days to weeks (culture)
- Procedure
 - Obtain sample via cotton swab, metal spatula, or recently developed FTA filter paper
 - DNA of micro-organisms is extracted and amplified
 - DNA compared to DNA in literature using software
- High sensitivity
- Unacceptable specificity
 - Low specificity = high false positives
 - High amounts of unnecessary treatment
 - Increased corneal toxicity

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Confocal Microscopy

- Historically used for endothelial cell evaluation
 - Fuch's dystrophy
 - Post-surgical bullous keratopathies
- Recently, studied for use in diagnosing infectious keratitis
 - Acanthamoeba
 - Fungal keratitis



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Confocal Microscopy & Fungal Keratitis

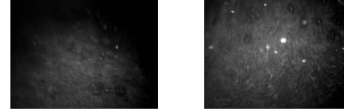
- Studies show
 - Sensitivities: 80-94%
 - Specificities: 78-93%
- Procedure
 - Thick fluid-coupling agent on cornea
 - Scans all layers



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Dx: Acanthamoeba Ulcer

- Day 1: Initial treatment?
- Day #2: epithelium debridement and subconj. Gentamicin injection
 - Added Bactrim DS 1 PO BID along with Polyhexamethylene Biguanide/PHMBG 9-11x/day



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Acanthamoeba

- Parasitic infection - *A. castellanii* and *A. polyphaga*
- Typically pain is out of proportion to findings
- Culture on dish of *E. coli* plated over non-nutrient agar

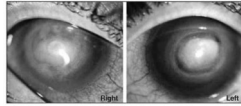


Figure 1 - Bilateral Acanthamoeba keratitis

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>

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Acanthamoeba

Symptoms

- Decreased vision
- Pain
- Light sensitivity
- Redness
- Foreign body sensation
- Lid edema

Signs

- Epithelial irregularities
- Epithelial or subepithelial infiltrates
- Satellite lesions
- Stromal infiltrates (ring-shaped, disciform)
- Anterior uveitis
- Scleritis
- Chorioretinitis

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>

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Differential Diagnoses of Acanthamoeba

- Herpes Simplex Virus Keratitis
- Recurrent Corneal Erosion
- Bacterial Keratitis
- Fungal Keratitis
- Contact Lens Associated Keratitis
- Dry Eye Syndrome

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Treatment and Management of Acanthamoeba

- Early stages- topical antibiotics
- Cationic antiseptics- polyhexamethylene biguanide (PHMB)
- Combination therapy with a diamidine - chlorhexidine
- Debridement of tissue
- Penetrating keratoplasty
- Steroids?

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746000/>

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Back to Patient...

- All satellite lesions healed ~15 days following initial evaluation
- Cryopreserved AM was inserted at 1 month visit
- Patient continued to improve; PHMG was tapered weekly (7x/week, 6x/week, 5x/week, 4x/week, etc.)

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Case It's a Whorl of a Day

- 30 year old woman complains of decreased vision. Pt wearing CL for the last 16 years. Occasionally sleeps in CL. Pt also notes her eyes are itchy and feels like her allergies have worsened since last appointment.
 - BCVA OD 20/40 OS 20/50
 - Corneal staining shows whorl like pattern in both eyes

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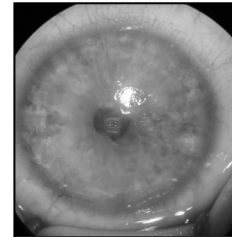
Limbal Stem Cell Deficiency

- Limbal stem cells help to regulate the renewal of stratified non-keratinized corneal epithelium
 - When these cells are damaged or destroyed LSCE can occur
 - Eventual conjunctivalization of the cornea

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LSCD

- Signs and symptoms
 - Neovascularization
 - Persistent epithelial defects
 - Chronic pain
 - Conjunctivalization of the cornea
 - Decreased vision



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LSCD

- Diagnostic exam findings
 - Conjunctivalization of cornea
 - Late fluorescein staining
 - Pill shaped staining
 - Different from more punctate staining of SPK
 - Whorl like pattern of staining extending from limbus inward to apex of cornea
 - Areas of negative staining from abnormal epithelial elevation

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LSCD

- Congenital causes
 - Aniridia
 - Ectodermal dysplasia
- Acquired (more common)
 - Typically inflammatory related
 - Contact lens overwear
 - Toxicity from topical medications
 - Severe dry eye
 - Chemical injury
 - Thermal injury
 - Stevens Johnson syndrome
 - Mucous membrane pemphigoid

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LSCD

- Treatment
 - Remove offending agent if possible
 - Decrease inflammation
 - Topical steroids
 - Oral omega-3 fatty acid supplements
 - Cyclosporine or lifitigrastr
 - Amniotic membrane
 - Grafts vs topical drops
 - Surgical limbal stem cell transplantation



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Case Another Dry Eye Patient

- The 84 year old, AA female presents for 3-4 month DES check (no touch) and MMP-9 testing. Pt has a h/o DES and POAG mild OU. Pt states OS>OD has some itching. Pt states she has only been using her cyclosporine 0.05% and AT's. She never picked up fluoromethalone drops and is not using AT's ointment or a heat mask.

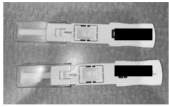
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- Ocular Hx:
 - Dry eye syndrome – 10+ yrs
 - Herpes stromal keratitis OS
 - Inactive – Last episode 2020
 - Anterior scleritis OS
 - Inactive
 - POAG - Mild OU
 - Pterygium sx OU
 - Phaco / istent OU
 - Previous treatments
 - Amniotic membrane OS (2019, 2020)
 - Punctal cautery (2011) OU
- Med Hx:
 - NIDDM 15 yrs
 - Osteoarthritis
 - Hypothyroid
 - Seasonal allergies
- Meds:
 - Ceterizine
 - Lactulose
 - Levothyroxone

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Clinical Exam

- Lids / Lashes – Clear and good position
- Conjunctiva – tr injection OU
- Cornea
 - OD 2+ Inf SPK
 - OS Dense SPK, 1+ K edema
- A/C – Deep and Quiet
- PCIOL OU
- IOP – 11 mmHg OU
- K Sensitivity – OD Normal OS Reduced



Anything else we should add???

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Differentials??

Treatments??

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Neurotrophic Keratitis: Classification

Mackie classification

- Stage I is characterized by hyperplasia and/or irregularity of the epithelium, evolving to punctate keratopathy, corneal edema, neovascularization, stromal scarring.
- Stage II is defined by a recurrent or persistent epithelial defects or a PED without stromal thinning.
- Stage III: stromal involvement leads to corneal ulcer, melting and perforation

Mackie IA. Neuroparalytic keratitis. Current Ocular Therapy. Philadelphia, PA: WB Saunders; 1995:452-4.

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Neurotrophic Keratitis: Etiology

1. Infectious: HSV, VZV, leprosy
2. CN V palsy
 - Surgery for trigeminal neuralgia, neoplasia (acoustic neuroma), aneurysm, facial trauma, congenital, familial dysautonomia (Riley-Day syndrome), Goldenhar-Gorlin syndrome, Möbius syndrome, familial corneal hypesthesia
- Topical medications: anesthetic abuse
- Iatrogenic: LASIK/PRK, corneal incisions (RK, AK), contact lens wear, scleral bands, vitrectomy and photocoagulation to treat diabetic retinopathy^{1,2}
- Chemical and physical burns
- Systemic: DM, multiple sclerosis, Vit A deficiency
- Increasing age, chronic DED³

1. Barerjee PJ. JAMA Ophthalmology 2014;132:750-2.
2. Treary CL. Eye 2009;23:1819-22
3. Ocul Surf 2007 Apr;5(2):79-92.

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Endogenous nerve growth factor (NGF) and its role in NK:

impaired trigeminal corneal innervation	Endogenous NGF maintains corneal integrity by three mechanisms
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- ↓ Lacrimation and blink reflex
- ↓ Epithelial cell vitality, metabolism, mitosis
- ↓ Epithelial trophism and repair
- ↑ Stromal and intracellular edema
- ↓ Microvilli
- ↓ Development of the basal lamina

Maizoranska et al (2017) J Cell Physiol 202:717-24

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cenergermin-bkbj 20 mcg/ml was approved by FDA in August 2018

- Approved for the treatment of neurotrophic keratitis in adults and children age 2 and older
- Available for ordering since January 2019
- Available through specialty pharmacy

Baizer L, Lamba A, Rana P et al. Phase II Randomized, Double-Masked, Vehicle-Controlled Trial of Recombinant Human Nerve Growth Factor for Neurotrophic Keratitis. Ophthalmology 2018;125:1330-1340.

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Treatment

- Continue:
 - Cyclosporine 0.05% BID OU
 - Heat Mask
- Stop
 - Oral ceterizine
- Order
 - Cenergermin 20 mcg/mL – Patient to call once meds come in to review meds / demo proper usage
 - Ceterizine ophth sol BID OU
- Follow Up
 - 3-4 months glaucoma / Dilate OCT - G

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Case Somebody Help Me

- NP 29 yowf presents for significant dry eyes. Eyes are always in pain, burning, gritty and feels like sand paper. Currently using serum tears 50% qid ou and would like to get serum tears 75%.
- Oc Hx: 8 years
- Med Hx: ADHD, Hypothyroid
- Meds: Nortriptyline, synthroid
- What questions do you want to ask?

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Previous Treatments

- Omega III – stopped on her own – NI
- Cyclosporine BID OU – stopped after 1 month / made eyes worse
- Prednisolone QID OU – stopped due to NI
- Plugs – 3 month plugs all puncta / NI
- Loftegrast BID OU – stopped after 2 mos / made eyes worse
- Loteprednol 0.2% - NI
- Doxycycline 100 mg BID po – stopped after 2 weeks
- Erythromycin ung – NI
- Neomycin/polytrim/dexamethasone ung – NI
- Multiple preservative free drops

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Clinical Exam

- Normal eye
- Nafi Normal eye

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Neuropathic Pain

- Treatment to either:
 - Regenerate nerves
 - Reduce inflammation that makes nerves more sensitive
- Treatment Options
 - Serum tears
 - Steroids
 - Amniotic membrane
 - Neurostimulation
 - Blue filter glasses
 - Systemic neuro-modulatory therapies
 - Biologics

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Differentiate Your Practice – Advanced Treatments

Patient Name:
DOB:
Date:

Disp: *Autologous Eye Serum 20%*
Sig: *Instill one drop OU QID*

Refills: 8

Signature:
Lic #:

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Autologous Serum

- Blood drawn via 18 gauge needle – 40 mL blood collected into blood tubes
- Blood set aside to clot at room temperature for two hours, then centrifuged at 5600 rpm for 10 minutes
- Serum filtered to remove fibrin strands before mixing with saline
- Typically start with 20% AS up to 50%
- Unopened bottles stored in freezer up to 3 months; open bottles in refrigerator for 48 hours
 - Potential for safe refrigerator storage for up to 1 month

Vital Tears???

Source: Review of Oculometry

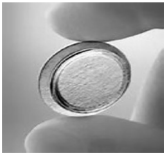
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Benefits and Pitfalls of Autologous Serum


<p>Benefits</p> <ul style="list-style-type: none"> • Preservative free and innately allergy free • Adverse events rare • Improvement in symptomology • Demonstrated improvement in staining (Tsubota – SS pts) 	<p>Complications</p> <ul style="list-style-type: none"> • Cost – no insurance coverage • Frequent blood draw • Availability of labs to make AS • Strict handling
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Amniotic Membranes / Amniotic Membrane Extract Eye Drop (AMEED)



Cryopreserved Membranes



Dry Membranes



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Pros and Cons of Amniotic Membrane Modalities

<p>Cryopreserved</p> <ul style="list-style-type: none"> • Self-retaining on cornea • Higher levels of regenerative complex HC-HA/PTX3 • Shorter storage life – requires refrigeration • Potential discomfort from symblepharon ring <ul style="list-style-type: none"> • Avoid with filtering procedures 	<p>Dehydrated</p> <ul style="list-style-type: none"> • Longer storage life – room temperature • No ring = better comfort • Frequent slippage • Requires bandage lens to maintain position
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*****For all amniotic membranes, RCTs limited**

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Hindawi
Journal of Ophthalmology
Volume 2017, Article ID 6404918, 10 pages
https://doi.org/10.1155/2017/6404918



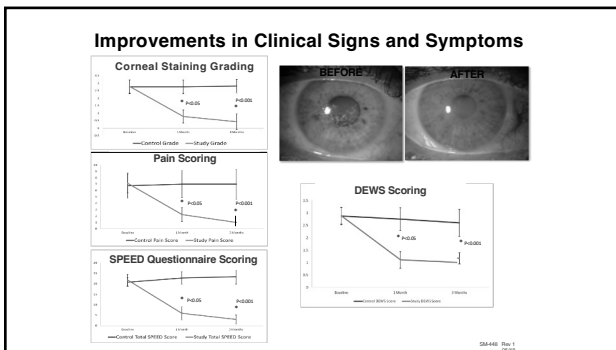
Clinical Study

Corneal Nerve Regeneration after Self-Retained Cryopreserved Amniotic Membrane in Dry Eye Disease

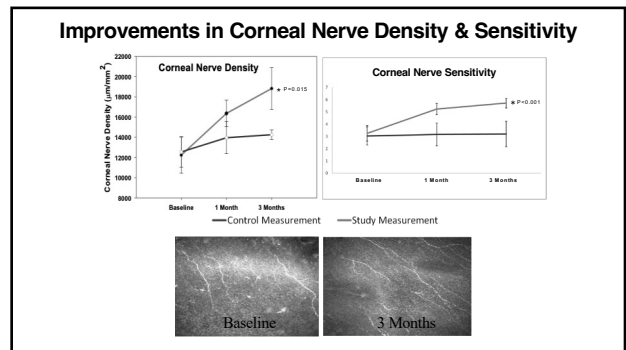
Thomas John,^{1,2} Sean Tighe,^{3,4} Hosam Sheha,^{3,4,5} Pedram Hamrah,^{6,7} Zeina M. Salem,^{6,7} Anny M. S. Cheng,^{3,4} Ming X. Wang,⁸ and Nathan D. Rock⁸

¹Thomas John Vision Institute, Tinley Park, Cook County, IL, USA
²Loyola University at Chicago, Maywood, Chicago, IL, USA
³Ocular Surface Center and TissueTech, Inc., Miami, FL, USA
⁴Florida International University Herbert Wertheim College of Medicine, Miami, FL, USA
⁵Research Institute of Ophthalmology, Cairo, Egypt
⁶Boston Image Reading Center, Tufts Medical Center, Tufts University School of Medicine, Boston, MA, USA
⁷Center for Translational Ocular Immunology, Department of Ophthalmology, Tufts Medical Center, Tufts University School of Medicine, Boston, MA, USA
⁸Wang Vision Institute, Nashville, TN, USA

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Amniotic Membrane Extract Eye Drop (AMEED)

- Amniotic cytokine extract (ACE) for the treatment of ocular surface disease.
 - Cryopreserved amniotic eye drops contain more than 120 cytokines, growth factors and anti-inflammatory molecules to modulate and restore balance to the tear film
- Regener-Eyes
 - Sterile, acellular biologic made from 771 anti-inflammatory cytokines, and growth factors

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Efficacy and tolerability of Nortriptyline in the management of neuropathic corneal pain

- **Purpose:** Off-label use of Nortriptyline has been used successfully in the management of non-ocular neuropathic pain – helpful in the management of neuropathic corneal pain (NCP)?
- **Methods:**
 - Retrospective cohort study at the New England Eye Center, Tufts Medical Center, Boston, Massachusetts from July 2015-March 2019
 - 54 patients with NCP with centralized component who were treated with Nortriptyline
 - Centralized NCP
 - Discordance in clinical signs and symptoms
 - Persistent ocular discomfort/pain after 90s of instillation of 0.5% proparacaine hydrochloride
 - Nortriptyline dosed at 10mg initially and tapered upward to 100mg based on response and tolerability
 - Response to treatment measured using Ocular Pain Assessment Survey (OPAS)

Ozmen et al. 2020

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Results:

- 30 patients included in final efficacy analysis:
 - 40% (n = 12) reported 50% or greater reduction in overall pain score (table 5)
 - Statistically significant reduction in all pain level dimensions (table 6)
- Statistically significant reduction in many quality of life dimensions (table 7)
- 19 of 54 discontinued due to side effects:
 - 8 of 19 were included in final analysis and discontinued despite reduction in pain score by 22.4%
 - Lethargy, dry mouth, constipation, nausea, headache, tachycardia, unspecified

Conclusion:

- Noteworthy pain decrease in patients with centralized component of NCP

QID-P	Eye Pain Question	Item	Item Score	Item Score	Percent Change in Qid Score	P
4	Worst eye pain	7.3 ± 2.2	5.5 ± 2.7	-1.2	16.3	0.008
5	Least eye pain	3.8 ± 2.0	2.4 ± 2.0	-1.4	37.5	0.003
6	Average eye pain	5.7 ± 2.1	3.6 ± 2.1	-2.1	37.0	<0.0001
7	Worst eye pain	7.3 ± 2.2	5.5 ± 2.7	-1.2	16.3	0.008
8	Least eye pain	4.4 ± 2.4	2.9 ± 2.2	-1.5	34.0	0.002
9	Average eye pain	6.3 ± 2.0	4.2 ± 2.1	-2.1	33.3	0.001
n						

QID-P	QoL Dimension	Item	Item Score	Item Score	Percent Change in Qid Score	P
13	Reading/television	6.8 ± 3.3	4.3 ± 2.4	-2.5	35.3	0.007
14	Walking/hiking	5.3 ± 3.5	3.9 ± 3.5	-1.5	28.7	0.207
15	General activity	5.3 ± 2.8	3.9 ± 3.1	-1.4	26.9	0.026
16	Work	6.7 ± 2.9	4.4 ± 3.1	-2.3	34.3	0.009
17	Sleep	3.8 ± 4.0	1.5 ± 2.7	-2.3	59.7	0.003
18	Enjoying life	6.5 ± 3.2	4.6 ± 3.5	-1.9	29.2	0.008
19	Time spent with others	7.6 ± 3.3	5.2 ± 3.5	-2.4	31.6	0.003
n						

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Corneal Pathology in the Presence of Cataracts

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Recurrent Corneal Erosion

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RCE Treatment

- Treat abrasion first
- Loteprednol with taper X 2 mos
- Muro 128 ung X 2 mos
- Freshkote TID X 2 mos
- Doxy BID X 2 mos
- Restasis BID
- Bandage Contact Lens
- Superficial Keratectomy

Karpecki, P. Pearls: Management of Recurrent Corneal Erosion. Accessed from http://www.eyecareeducators.com/sites/pearls_management_of_recurrent_corneal_erosion.htm

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Post op - Superficial Keratectomy

- Post op just like a PRK case
- Steroid, antibiotic, NSAID for 1 week with BCL

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The diagram shows a flowchart for the GENETEST THE GENETIC COR TEST. At the top, a box labeled 'GENETEST THE GENETIC COR TEST' leads to four circular nodes containing the numbers 75, 2k+, 1, and 70. Below these nodes, a box labeled 'Proprietary Algorithm' leads to two final circular nodes: 'KERATOCONUS RISK' and 'CORNEAL DYSTROPHY PRESENCE'. The nodes are also labeled with 'Keratoconus Related Genes', 'Keratoconus Related Gene Variants', 'TGFBI Gene', and 'TGFBI Gene Variants'.

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**WHEN I ORDER AN Genetic testing...
Ocular Diagnostic Assessment**

	1 Family History	2 Irregular Topography	3 Refractive Concerns	4 Refractive Concerns
Corneal Topography	•	•	•	•
Corneal Biomechanics	•	•	•	•
Refractive Error	•	•	•	•
Glaucoma	•	•	•	•
Cataract	•	•	•	•
Other	•	•	•	•

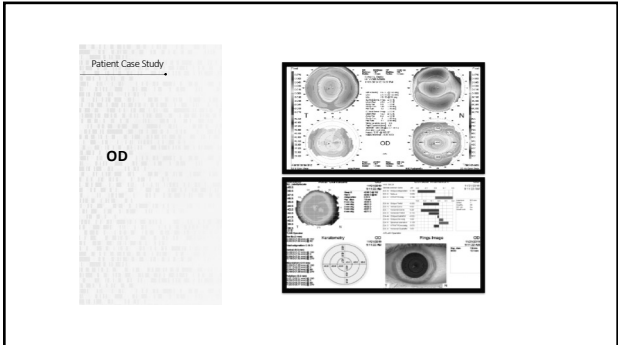
79

Patient Case Study - Refractive Evaluation

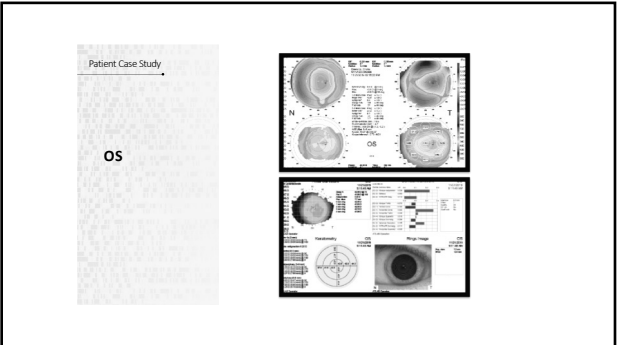
Patient Profile

- 28 year old AA male patient
- Unable to wear ICL
- Wears Rx contacts for past years
- PRKX: unremarkable
- MRX: CD 3.00 +0.50x 184 CD 3.00 +0.25 x 138
- CCT: 535/551 microns

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What Does Genetic testing Tell Us

WITH Genetic testing...

- Understand the right treatment plan
- Patient demonstrated risk score of **99** indicating a **HIGH** risk for KC

DIAGNOSTIC RESULTS SUMMARY

TREATMENT DECISION

- Deferred LASIK / PRK, patient can consider ICL surgery

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Rapid Fire Cornea: Final Thoughts

- Consider corneal sensitivity
- Aggressively treat the ocular surface
- Treat K abnormalities prior to cataract surgery

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Thank You!!

wowhitley@eyecareassociatesnv.com