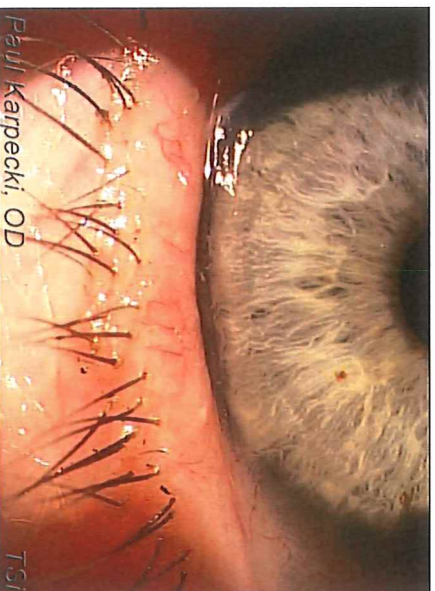


Advanced OSD and New Procedures for the Optometric Physician

Paul M. Karpecki, OD, FAAO

Kentucky Eye Institute, Lexington KY
UPike KY College of Optometry



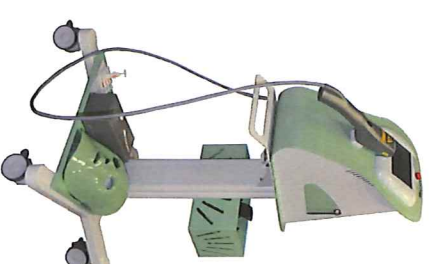
Paul M. Karpecki, OD, FAAO

Financial Disclosures:

AQOM	Eyedattec	Orasis
AI Optics	Harrow Health	Pieridia
Alcon	Healthe	PxSight
Aideyra	Hue AI	Samsara
Allergan/Abbvie	iCare USA	Science Based Health
Apellis Biopharma	Iverna	Scope
Atlas Medical	Iverre	Sentiss Pharma
Aurion	Johnson/Weid MD	Sight Sciences
Azura Pharmaceuticals	Korhan Medical	Silk Technologies
Barti	Lentechs	Sun Pharmaceuticals
Bausch + Lomb	LKC	Synexis
BiOptics	Lumibird	Tarus Medical
BiOptex	Mallinckrodt	TearClear
Bruder Healthcare	NeuroLens	Thea
Bruno Vision Care	Novaliq	TruKera
Canbulun Pharma	Oasis Medial	Twenty-Twenty
Dompe	Oculus	Vail
Essilor	Ocuphire	Vartis
Eyedaptic	OcuSoft	Visant Medical
	Oculterra	Vital Tears
	Omega Optnathics	Zeiss

IP/L/LLT

- MGD/EDED
- DEMODEX
- Ocular Rosacea
- CHALAZION
- HORDEOLUM



Treatment

IT CONSISTS OF A PHASE 1 (WITH A SPECIFIC BLUE LIGHT MASK) AND A PHASE 2 (WITH THE STANDARD SUPPLIED RED LIGHT MASK)



PHASE 1 -

Blue light stimulates porphyrins and creates an anti-bacterial, anti-parasitic action. BLUE MASK



PHASE 2 - RED MASK

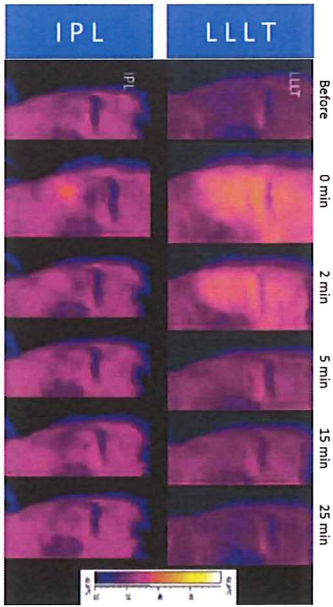
Red light stimulates ATP by increasing and improving cellular activity, it reduces inflammation and edema
Targets the Meibomian glands.

Endogenous Heat

	Temperatures At Times After Treatment										Standard deviation and the p-values at specific times					
	Before	T = 0 min	T = 2 min	T = 5 min	T = 15 min	T = 35 min	T = 0 min	T = 2 min	T = 5 min	T = 15 min	T = 35 min					
IPL	Lower lid	36.2°C	35.7°C	35.8°C	36.0°C	35.9°C	36.1°C	36.1°C	36.0°C	36.0°C	36.0°C	p=0.028	p=0.100	p=0.270	p=0.177	p=0.326
	Upper lid	30.12	30.04	30.00	30.01	30.09	30.06	30.06	30.06	30.06	30.06	p=0.257	p=0.371	p=0.300	p=0.103	
	Lid	40.05	40.09	40.67	40.73	40.66	40.72	40.72	40.72	40.72	40.72	p=0.001	p=0.001	p=0.001	p=0.001	
	Cheek	35.5°C	39.6°C	37.1°C	35.7°C	35.6°C	35.5°C	35.5°C	35.5°C	35.5°C	35.5°C	p=0.001	p=0.001	p=0.001	p=0.001	
	Temple	40.70	40.72	40.59	40.68	40.70	40.71	40.71	40.71	40.71	40.71	p=0.001	p=0.016	p=0.316	p=0.171	
LLLT	Lower lid	40.67	40.68	40.63	40.65	40.64	40.66	40.66	40.66	40.66	40.66	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Upper lid	35.9°C	40.4°C	39.6°C	37.7°C	36.5°C	35.7°C	35.7°C	35.7°C	35.7°C	35.7°C	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Lid	40.69	40.58	40.60	40.72	40.63	40.72	40.72	40.72	40.72	40.72	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Cheek	36.2°C	41.8°C	40.7°C	37.2°C	37.5°C	36.1°C	36.1°C	36.1°C	36.1°C	36.1°C	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Temple	40.65	40.65	40.67	40.69	40.67	40.70	40.70	40.70	40.70	40.70	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
LLLT	Lower lid	35.0°C	37.7°C	37.1°C	36.7°C	36.1°C	35.6°C	35.6°C	35.6°C	35.6°C	35.6°C	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Upper lid	40.79	40.75	40.63	40.67	40.71	40.76	40.76	40.76	40.76	40.76	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Cheek	40.73	40.70	40.69	40.70	40.65	40.69	40.69	40.69	40.69	40.69	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Temple	35.0°C	37.7°C	37.1°C	36.7°C	36.1°C	35.6°C	35.6°C	35.6°C	35.6°C	35.6°C	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001
	Chin	40.73	40.70	40.69	40.70	40.65	40.69	40.69	40.69	40.69	40.69	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001

Puli, H. Messung der Hauttemperatur nach Intense Pulse Light (IPL)-Anwendung sowie Low-Level-Light-Therapie (LLLT), die KONTAKTLINSE 4/2020.

Endogenous Heat



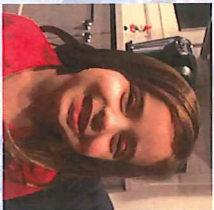
Puli, H. Messung der Hauttemperatur nach Intense Pulse Light (IPL)-Anwendung sowie Low-Level-Light-Therapie (LLLT), die KONTAKTLINSE 4/2020.

SUGGESTED PROTOCOL: HORDEOLA, EARLY CHALAZION, MGD

Red Mask for IS	Week 1			Week 2			Week 3 (if necessary)		
	1 Application	1 Application	1 Application	1 Application	1 Application	1 Application	1 Application	1 Application	1 Application



SUGGESTED PROTOCOL: CHALAZION, HORDEOLA



BEFORE



AFTER 1 TREATMENT

WITH STANDARD RED LLT MASK

The information shared in this presentation is based on Dr. Paul Karpagly's own clinical experience as a practitioner.

Treatments For More Conditions

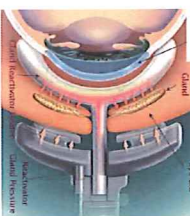
WITH STANDARD RED LLT MASK



1 Treatment >>>> Resolution of 46% Of Eyes
2 Treatments >>>> Resolution of 92% Of Eyes



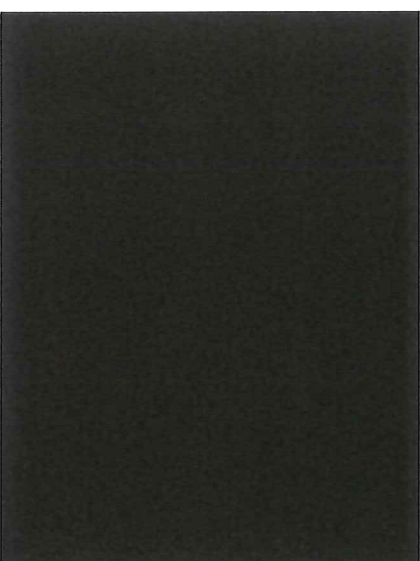
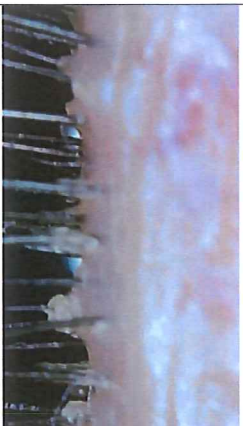
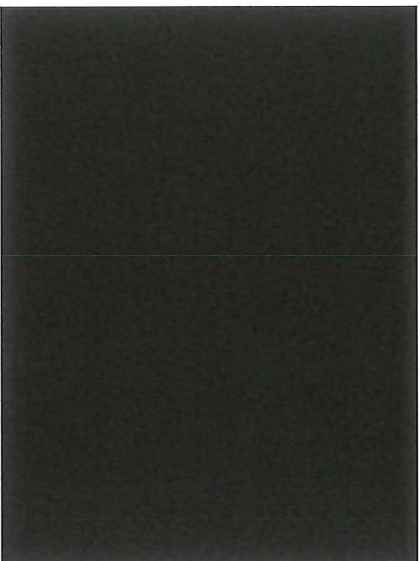
Expressible MGD



BioFilm and Blepharitis Removal



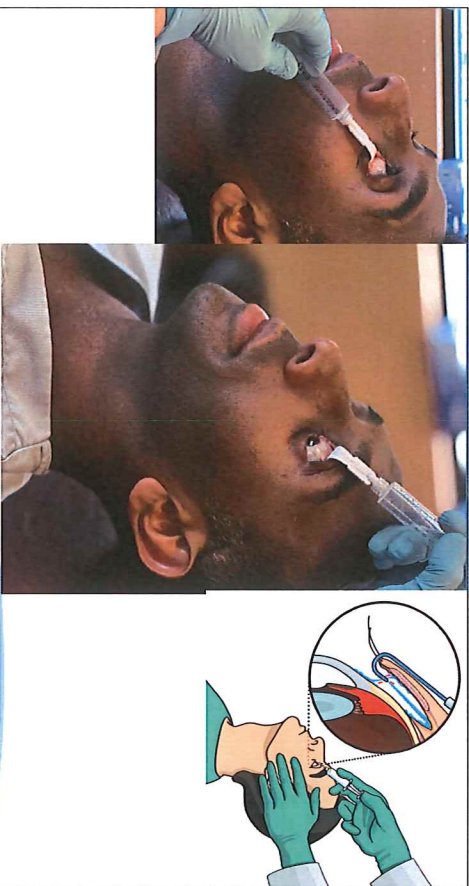
MBE



Irrigating Eyelid Retractor

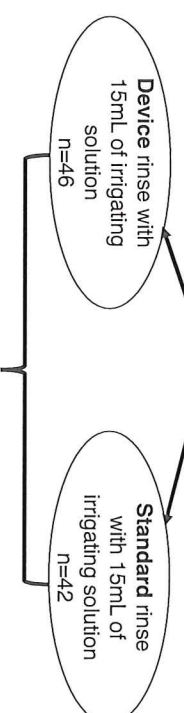
Fixed to a syringe, the retractor has 5 ports which aim fluid at the palpebral conjunctiva, bulbar conjunctiva and conjunctival fornix.





Study Design

Randomized Controlled Trial of Patients with Dry Eye Disease & Positive MMP-9 via POC Testing (n=88)



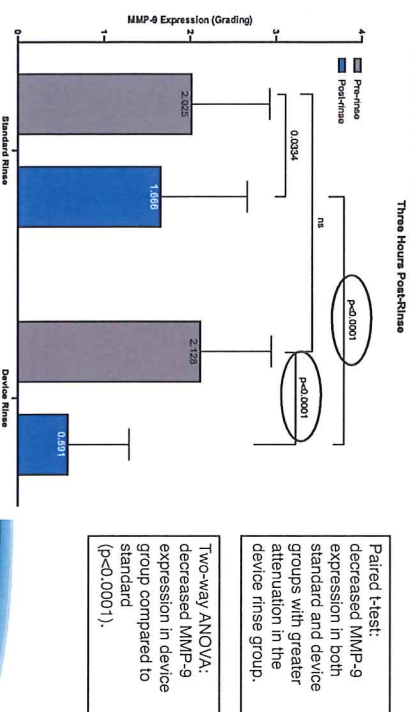
Three Hours Post-Rinse

Primary Endpoint: Change in MMP-9 POC Testing
Secondary Endpoint: Percentage of patients negative MMP-9

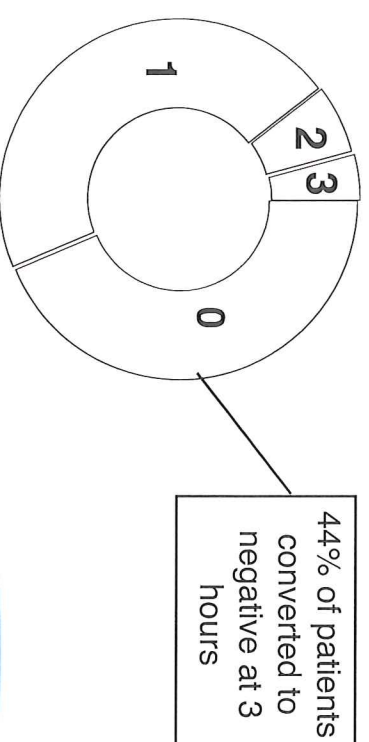
1 week & 4-12 weeks Post-Rinse

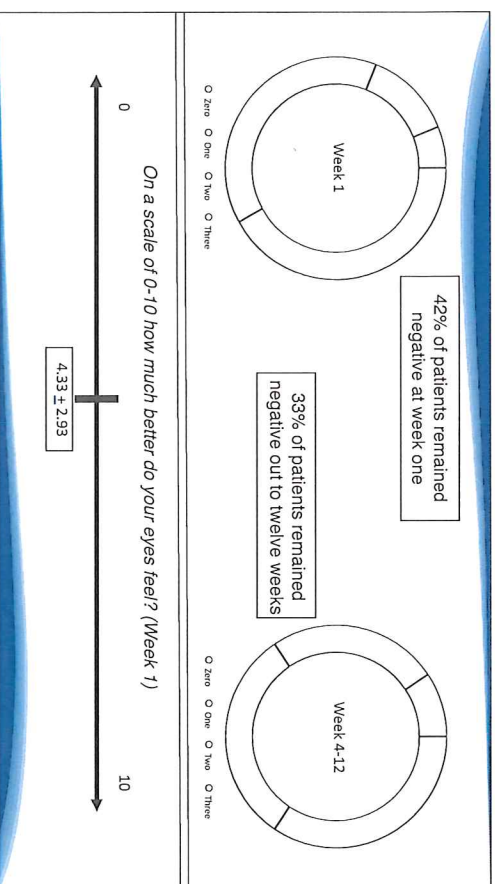
Exploratory EPs: Percentage of patients negative MMP-9 in Device Arm; Results of CDSES-Q*

Results—Primary Endpoint



Results—Secondary Endpoint





Biofilm Removal

Inherent in MGD and EDED

- Disease is not symptomatic until fairly late
- We must learn to recognize the signs before serious damage occurs
- Volcano sign or collarette
- Signal Vessels
- Target Signs - telangiectatic vessels
- Ryerson Red Line

Biofilm Removal

Inherent in MGD and EDED

- Recognize
- Exfoliate (MBE) - blepharize
- Vaporize
- Mobilize

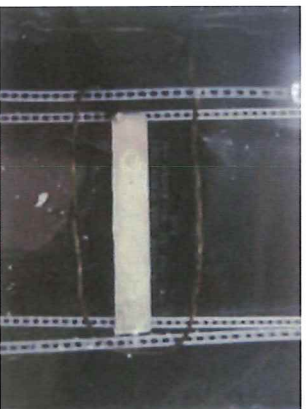
Telangiectatic Vessels signal inflammation or ocular rosacea

Inherent in MGD and EDED

Ryerson Red Line correlates
with meibomian gland atrophy



DC current
Very low voltage & amperage



Courtesy Montana State University Center for Biofilm Engineering

The doctor uses a this technology to deliver a 6 volt current
(equivalent of 2 AA batteries) through a specialty contact lens that is
harmonically tuned to separate the bonds of a bacterial
polysaccharide biofilm



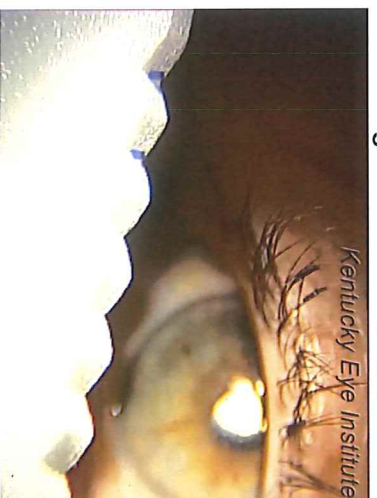
Innovations in OSD Instrumentation and Advanced Procedures

Innovations in Punctal Plugs

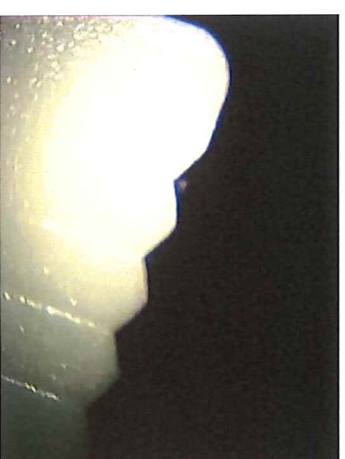


Extended Duration Punctal Plug Insertion

- Variable sizes
- Last ~180 days



Tapered Extended Duration Plugs Vertical Canal



Form Fitting Punctal Plugs

Vertical Canal is Key

- Fits any size punctae
- Can be flushed with BSS

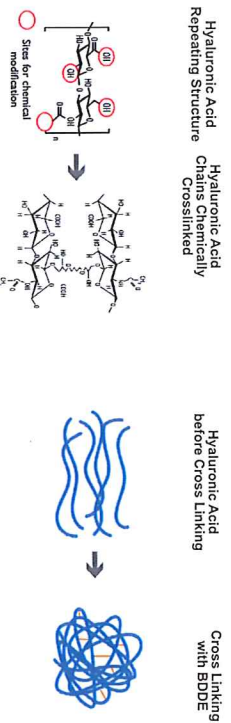


Canalicular Gel

- Cross-linked hyaluronic acid gel that allows patient's eyes to be bathed in their own natural tears
- Customized for each individual patient or provide full fill of the canalicular system



Intricate Crossing of Hyaluronic Acid Chains to Create Gels



Reusable Cannula
(supplied separately)



Kit Box

Sterile Gel
(in Pre-Filled Syringe)

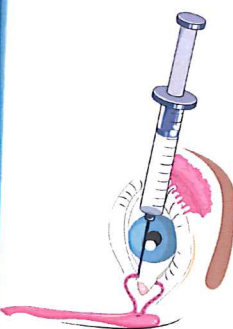
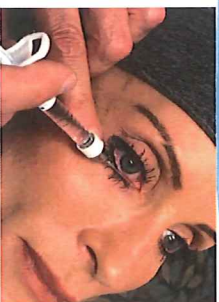
Syringe Package

Easy delivery of gel into
canaliculus. "Dilate,
Dock, Deliver" functions



Instructions for Use

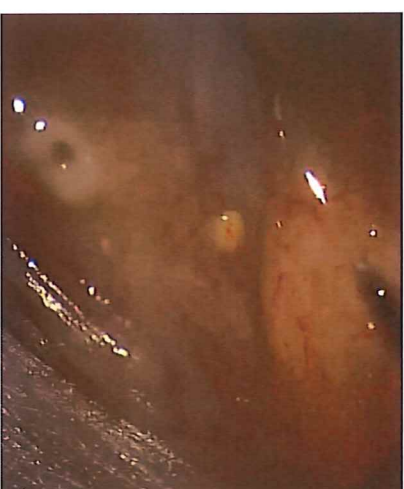
1. Pre-filled injector with enough gel to treat the lower and upper canaliculi.
2. A cannula tip is placed in the punctum and the gel is inserted.
3. The gel flows through the punctum into the lacrimal sac.
4. If you see the gel extruding from the upper punctum, you know that both the upper and lower puncta have been blocked.



Concretion Removal lower eyelid

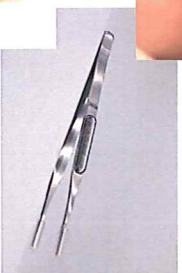
Topical anesthetic into eye

- Use 30 gauge needle, bevel out
- Remove conjunctival epithelium
- Expose and then remove with forceps
- Apply pressure with Q-tip if any bleeding
- Consider soaking Q-tip in phenylephrine



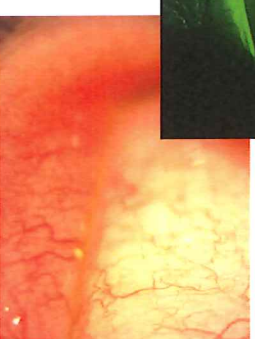
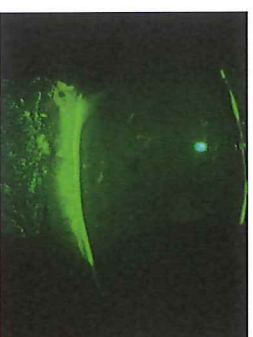
Eyelid Evertors

- Silicone soft but grips well
- Painless
- Maintains hold
- Like a 3rd hand



Eyelid Evertors

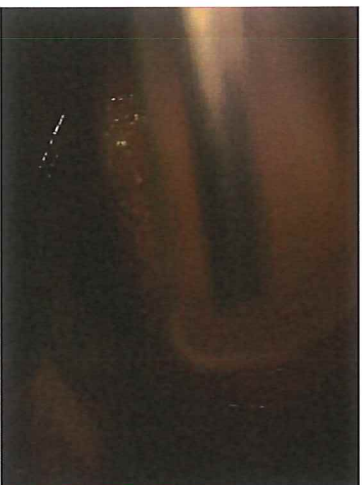
- Foreign Body Removal
- Concretion removal



Concretion Removal upper eyelid

Great benefit from the Meivertor

- Attach the silicone pads
- Grasp lashes
- Flip eyelid and hold



Eyelid Everter Concretion Removal

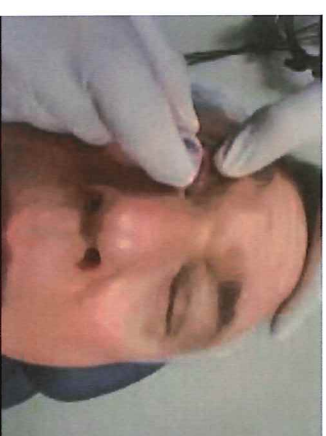


Amniotic Membrane Placement

- Persistent corneal staining from OSD ranging from NK to KCS, LSCD, SLK etc.

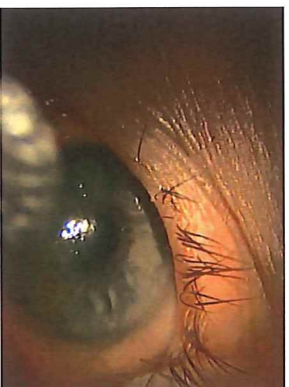


Amniotic Membrane Insertion: CryoPreserved



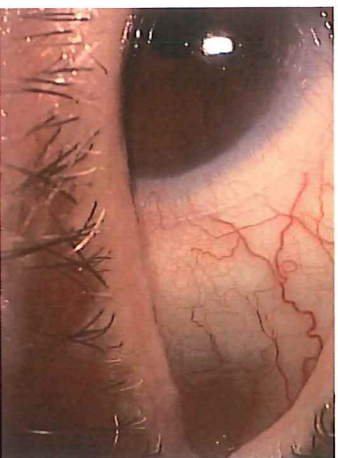
Amniotic Membrane Insertion: Dehydrated

- Dehydrated forceps
- Prevents stabbing the conjunctival or cornea
- Dry forceps prevent curling or rolling up of amnion



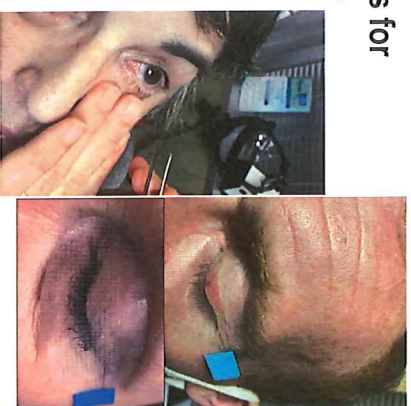
Bandage Lens Forceps

- Smooth edge
- Breaks suction
- Prevents epithelial sloughing or defects



Amniotic Membrane Forceps for Removal and Eyelid Closure

- Cryopreserved forceps
- Prevents stabbing the conjunctival or cornea
- Hypoallergenic lid seals, oxygen permeable, latex free, non-irritating



MG Expressors

- Numerous options
- Paddle first design



Debriders



- Edge between foreign body spud and a golf club spud
- 5 second procedure
- Incredible patient response
- Need for biofilm/keratin removal is significant



Eyeid Debridement

Do not use topical anesthetic



Transillumination for ILS

- Darken room
- Have patient close eyes but don't squeeze
- Place light at top of closed eyelid tarsal plate
- Look for light dispersing below



RCE Epithelial Debridement/Superficial Keratectomy for EBMD

Topical anesthetic and flood the eye with antibiotic drops (e.g. ocufloxacin)



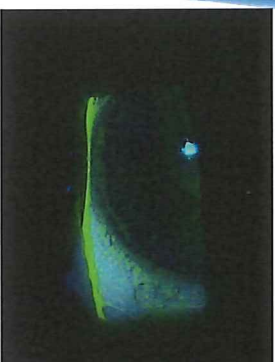
RCE Epithelial Debridement/Superficial Keratectomy for EBMD

Identifying the area of EBMD/RCE can be subtle and NaFl dye can help



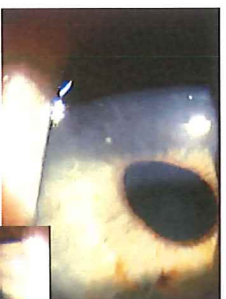
RCE Epithelial Debridement/Superficial Keratectomy for EBMD

Identifying the area of EBMD/RCE can be subtle and NaFl dye can help



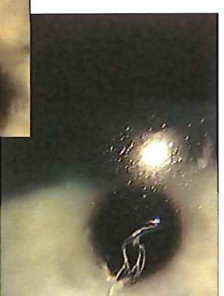
RCE Epithelial Debridement/Superficial Keratectomy for EBMD

- Begin with Weck Cell Sponge, tough areas of RCE/EBMD
- Move toward limbus but maintain 1-2 mm from the limbus in debridement
- Finish with a derider for edges that are not smooth
- Add antibiotic during and end of procedures
- Cover with amniotic membrane
- Remove in 3-4 days
- Begin topical steroids and hyperosmotics



RCE Epithelial Debridement/Superficial Keratectomy for EBMD

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SK CPT Coding Options Today

65436 (CPT code 65436 is a Current Procedural Terminology (CPT) code used to describe a medical procedure that involves the surgical scraping or cleaning of the cornea.

This procedure is often used to treat corneal conditions by removing damaged or diseased tissue and promoting healing.

The code may also include the application of a chelating agent, such as EDTA

POST-OP PROCESS

- First ever "patient trial" of final outcome
- Patient previews different refractions
- Refraction optimized after healing is complete and ocular media clear
- Must separate treatments by at least 3 days
- Can lock in final prescription

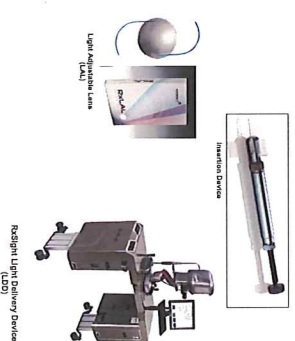


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Light Adjustable Lens

Over 65% of all enhancement procedures are performed by optometrists

- Light treatment uses a UV light source
- Align dots, confirm correction and press button while observing the patient's eye on the screen
- Takes about 90 seconds

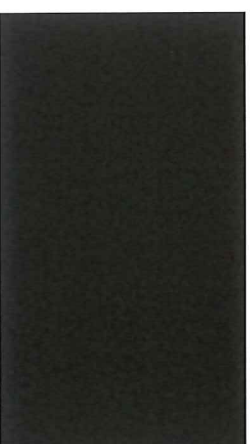
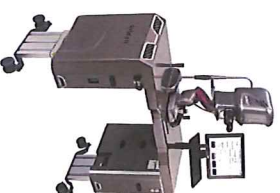


THE LIGHT DELIVERY DEVICE (LDD)

The LDD consists of the following components:

- Anterior segment biomicroscope
- Patient chin and headrest
- Computer system for planning and performing light treatments
- Ultraviolet (UV) light projection system

Treatment Range
Spectacle -3.00 to +3.00
Cylinder -4.75 to -2.00



LIGHT TREATMENTS

- Light treatments are painless, non-invasive and last approximately 90 seconds



Light Treatment Schedule

Initial Light Treatment	At least 17 days after surgery
Secondary Light Treatment	At least 3 days after initial light treatment
Additional Light Treatments (if required)	At least 3 days after each prior light treatment

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THANK YOU

kardecki@kardecki.com

