Meibomian Gland Dysfunction in a Cataract Surgery Patient: A Chronological Timeline

Elizabeth Yeu, MD

View the interactive timeline online at crstoday.com/lipiflowtimeline

Interactive Case Study

A 61-year-old woman who was a previously practicing optometrist presented for cataract surgery and expressed interest in a TECNIS SYMFONY IOL.* Casey Claypool, OD, at Empire Eye Physicians examined her 1 month prior and noted an overall 2+ meibomian gland dysfunction (MGD) characterized by 1+ telangiectasis of the lid margins, poor expressibility of the meibum, and 2+ turbidity of the meibum. An incomplete blink and an average lipid layer thickness of 100 nm was noted on LIPIVIEW II reports.* Dynamic Meibomian Imaging demonstrated minimal gland loss, with mild truncation, but overall decent meibomian gland architecture. At this time, she reported minor dry eye symptoms, including visual fluctuations and a significant increase in symptoms in the morning that persisted until she instilled artificial tears. Treatment with vectored thermal pulsation therapy was performed. After the LIPIFLOW* treatment, the patient noted a reduced reliance on artificial tears, more consistent vision, and that her morning dry eye symptoms were much improved. Seven weeks later, she presented to me for cataract surgery and preoperative testing showed a 1.00 D shift in IOL recommendation compared with biometry measurements taken 3 months prior. Ultimately, a +22.50 D TECNIS SYMFONY* was selected. At 1 day postoperative, the patient's VA was 20/20 at both distance and near and 20/16 at intermediate range.

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WEEK 1

CASE DETAILS

- A 61-year-old woman
- Minor dry eye symptoms, most prominent in the morning
- Desires an extended depth of focus IOL

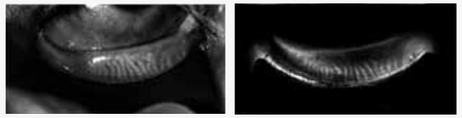
IOL RECOMMENDATION:
+23.50 D

WEEK 7

EXAM FINDINGS

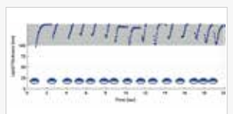
- 1+ telangiectasia, good contour of inferior lid margin observed through slit lamp exam
- Examination with MEIBOMIAN GLAND EVALUATOR showed poor expressibility of the meibum inferiorly
- 2+ turbidity of meibum observed through manual gland expression

LIPIVIEW II Dynamic Meibomian Imaging



LIPIVIEW II Lipid Imaging Report

Average LLT: 100 nm



Blink Report:
Shows 15 partial blinks out of 15 blinks

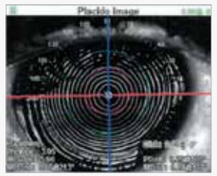
LIPIFLOW TREATMENT (OU)

WEEK 8

Patient reported a reduction in dry eye symptoms included reduced drop usage, and reduced burning of the eyes in the morning.

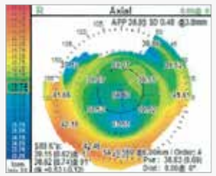
WEEK 14

Placido Image



Average K's = 38.76

Topography



BARRETT IOL FORMULA RECOMMENDATION:
+22.5 D

This new IOL recommendation is +1.00 D less (original +23.5 D) from measurements prior to MGD treatment.

A TECNIS SYMFONY* +22.50 D lens was selected.

Intraoperative

1-DAY POSTOPERATIVE EXAM

Manifest Rx: plano to -0.25
Distance UCVA 20/20
Intermediate UCVA 20/16
Near UCVA 20/20

WEEK 16

2-WEEK POSTOPERATIVE EXAM

Manifest Rx: plano to -0.25
Distance UCVA 20/20-
Near UCVA 20/20

Had we used the original IOL, the patient would have ended up with ~-0.75 D myopic refractive error postoperatively.

> ***Tear film stability is essential to high quality measurements for cataract surgery. Effective management of MGD helps to improve meibomian gland function and stabilize the tear film. Management of ocular surface health preoperatively can support improved accuracy of refractive outcomes postoperatively.***
>
> - Elizabeth Yeu, MD

Patient is scheduled to get a TECNIS SYMFONY lens in the second eye in four months.

PP2019TS4086

Sponsored By
Johnson & Johnson VISION | LIPIFLOW | LIPIVIEW II

The patient in this case is employed by Johnson & Johnson Vision.

INDICATIONS AND IMPORTANT SAFETY INFORMATION for LIPIFLOW® Thermal Pulsation System Rx Only
INDICATIONS The LipiFlow® Thermal Pulsation System is intended for the application of localized heat and pressure therapy in adult patients with chronic cystic conditions of the eyelids, including meibomian gland dysfunction (MGD), also known as evaporative dry eye or lipid deficiency dry eye. **CONTRAINDICATIONS** Do not use the LipiFlow® System in patients with the following conditions. Use of the device in patients with these conditions may cause injury. Safety and effectiveness of the device have not been studied in patients with these conditions.
• Ocular surgery within prior 3 months, including intraocular, oculo-plastic, corneal or refractive surgery procedure
• Ocular injury within prior 3 months
• Ocular herpes of eye or eyelid within prior 3 months
• Active ocular infection
• Active ocular inflammation or history of chronic, recurrent ocular inflammation within prior 3 months
• Eyelid abnormalities that affect lid function
• Ocular surface abnormality that may compromise corneal integrity. PRECAUTIONS The Activator or Activator II (Disposable) may not fit all eyes, such as eyes with small palpebral fornices
Use of the LipiFlow® System in patients with the following conditions may result in reduced treatment effectiveness because these conditions may cause ocular symptoms unrelated to cystic meibomian glands and require other medical management. Safety and effectiveness of the device have not been studied in patients with these conditions.
• Moderate to severe (Grade 2-4) allergic, vernal or giant papillary conjunctivitis
• Severe (Grade 3 or 4) eyelid inflammation. Patients with severe eyelid inflammation should be treated medically prior to device use.
• Systemic disease conditions that cause dry eye
• Taking medications known to cause dryness
• Esthetic eyelid and eyelash procedures
In addition, the treatment procedure may loosen previously inserted punctal plugs, which may worsen the patient's dry eye symptoms. **ADVERSE EFFECTS** Potential adverse effects that may occur as a result of the procedure include, but are not limited to, the onset or increase in:
• Eyelid/eye pain requiring discontinuation of the treatment procedure;
• Eyelid irritation or inflammation;
• Ocular surface irritation or inflammation; and
• Ocular symptoms (e.g., burning, stinging, tearing, itching, discharge, redness, foreign body sensation, visual disturbance, sensitivity to light).
Potential serious adverse events (defined as permanent impairment or damage to a body structure or function or necessitates medical or surgical intervention to preclude permanent impairment or damage to a body structure or function) that are not anticipated because of the device mitigations to prevent occurrence include:
• Thermal injury to the eyelid or eye, including conjunctiva, cornea or lens;
• Physical pressure-induced injury to the eyelid; and
• Ocular surface (corneal) infection. **ATTENTION** Reference the *LipiFlow Thermal Pulsation System Instructions for Use* for a complete listing of indications, warnings, and precautions. **INDICATIONS AND IMPORTANT SAFETY INFORMATION for LIPIVIEW® II Ocular Surface Interferometer Rx Only INDICATIONS** The LipiView II Ocular Surface Interferometer is an ophthalmic imaging device that is intended for use by a physician in adult patients to capture, archive, manipulate and store digital images of:
• Specular (interferometric) observations of the tear film. Using these images, LipiView II measures the absolute thickness of the tear film lipid layer.
• Meibomian glands under near-infrared (NIR) illumination.
• The ocular surface and eyelids under white illumination. **CONTRAINDICATIONS** Contraindications are conditions in which the device should not be used because the risk of use clearly outweighs any benefit. No contraindications have been identified for LipiView II. **PRECAUTIONS** The following patient conditions may affect the interferometry assessment of a patient's tear film using LipiView II:
• Use of ophthalmic drops such as artificial tear lubricants, ointments, and medications. Advise patients not not instill oil-based ophthalmic drops (e.g., Soothe ®, Restasis®, Systane Balance®) for at least 12 hours prior to device use and not to instill ointments for at least 24 hours prior to device use. Wait at least four (4) hours after the instillation of all other ophthalmic drops prior to device use.
• Soft or rigid contact lens wear. Advise patients to remove contact lenses at least four hours prior to device use.
• Use of oil-based facial cosmetics around the eye.
• Eye rubbing.
• Recent swimming in a chlorinated pool. Advise patients to not to swim for at least 12 hours prior to device use.
• Any ocular surface condition that affects the stability of the tear film. These conditions include disease, dystrophy, trauma, scarring, surgery, or abnormality. **ADVERSE EFFECTS** There are no known or anticipated adverse effects associated with use of this device. **ATTENTION** Reference the *LipiView II Ocular Surface Interferometer Instructions for Use* for a complete listing of indications, warnings, and precautions. **INDICATIONS AND IMPORTANT SAFETY INFORMATION for the MEIBOMIAN GLAND EVALUATOR RX only INDICATIONS FOR USE**
The Meibomian Gland Evaluator is a hand held instrument used by a physician to evaluate Meibomian gland secretions in adult patients during a routine eye examination. The instrument provides a standardized method to apply consistent, gentle pressure to the outer skin of the lower eyelid while visualizing the secretions from the Meibomian gland orifices through a slit lamp biomicroscope. **CONTRAINDICATIONS** No contraindications are known. **PRECAUTIONS**
• Do not depress the shaft to the endpoint of the spring. Do not apply any additional force after the shaft has been depressed approximately 6 mm. Applying additional force negates the benefit of using the instrument to apply standard force.
• Familiarity with use of a slit lamp biomicroscope is required to use Meibomian Gland Evaluator for assessment of the meibomian gland secretions. **POTENTIAL ADVERSE EFFECTS** Potential adverse effects that are unlikely but may occur with use of the Meibomian Gland Evaluator include but are not limited to:
• Skin abrasion (e.g., from a rough surface on the device)
• Eye abrasion (e.g., from improper contact of the instrument with the eye)
• Infection of the skin or eye (e.g., from improper or lack of disinfection after use and between patients)
• Allergic or toxic reaction (e.g., from exposure to any residue on device during user handling) **ATTENTION** Reference the *Meibomian Gland Evaluator Package Insert* for a complete listing of indications, warnings, and precautions. **INDICATIONS and IMPORTANT SAFETY INFORMATION for TECNIS SYMFONY and TECNIS SYMFONY TORIC IOLs Rx Only**
INDICATIONS FOR USE: The TECNIS Symfony Extended Range of Vision IOL, Model ZXR00, is indicated for primary implantation for the visual correction of aphakia, in adult patients with less than 1 diopter of pre-existing corneal astigmatism, in whom a cataractous lens has been removed. The lens mitigates the effects of presbyopia by providing an extended depth of focus. Compared to an aspheric monofocal IOL, the lens provides improved intermediate and near visual acuity, while maintaining comparable distance visual acuity. The Model ZXR00 IOL is intended for capsular bag placement only. The TECNIS Symfony Toric Extended Range of Vision IOLs, Models ZXT150, ZXT225, ZXT300, and ZXT375, are indicated for primary implantation for the visual correction of aphakia and for reduction of residual refractive astigmatism in adult patients with greater than or equal to 1 diopter of preoperative corneal astigmatism, in whom a cataractous lens has been removed. The lens mitigates the effects of presbyopia by providing an extended depth of focus. Compared to an aspheric monofocal IOL, the lens provides improved intermediate and near visual acuity, while maintaining comparable distance visual acuity. The Model Series ZXT IOLs are intended for capsular bag placement only.
WARNINGS May cause a reduction in contrast sensitivity under certain conditions, compared to an aspheric monofocal IOL. Inform patients to exercise special caution when driving at night or in poor visibility conditions. Some visual effects may be expected due to the lens design, including: perception of halos, glare, or starbursts around lights under nighttime conditions. These will be bothersome or very bothersome in some people, particularly in low-illumination conditions, and on rare occasions, may be significant enough that the patient may request removal of the IOL. Rotation of the Tecnis Symfony Toric IOLs away from their intended axis can reduce their astigmatic correction, and misalignment >30° may increase postoperative refractive cylinder. If necessary, lens repositioning should occur as early as possible prior to lens encapsulation. **ATTENTION:** Reference the Directions for Use labeling for a complete listing of Indications and Important Safety Information.