C.Diag® in Dry Eye Practice: A Clinical Supplement

By Dr. Rolando Toyos

Hello, everyone. I'm Dr. Rolando Toyos, and I want to share how the C.Diag® imaging device from Lumibird Medical has transformed my dry eye practice. I've been treating dry eye for over 20 years, pioneering treatments like intense pulsed light (IPL) for meibomian gland dysfunction (MGD). In that time, I've learned that a successful dry eye clinic hinges on three pillars: knowledge, time, and tailored treatment. The C.Diag® delivers on all three, making it an indispensable tool in my practice. Let me walk you through why this technology is a game-changer for diagnosing and managing dry eye disease.

Why C.Diag®?

When Lumibird Medical introduced me to the C.Diag® several months ago, I was intrigued. After just a few weeks of using it, I was so impressed that I ordered another unit. Now, we use it on every dry eye patient in our clinic. It's rare to find a piece of technology that applies to every single patient, but with dry eye, C.Diag® is that tool. Doctors, technicians, and staff who visit our New York City clinic to observe our workflow consistently ask about two things: confocal microscopy and the C.Diag®. Why? Because it provides critical diagnostic data and saves time while empowering patients to understand their condition.

Image provided by Dr. Rolando Toyos

In a dry eye practice, knowledge comes from seeing patients and leveraging diagnostics that give actionable insights. The C.Diag® does exactly that. It's like shaving years off the 10,000 hours needed to become an expert. By providing detailed images and videos, it accelerates your ability to diagnose and treat effectively. Time is another critical factor. Dry eye patients have a lot of questions, and there's little public awareness about the disease. Without tools to streamline education, you can spend an hour per patient explaining their condition. That's unsustainable. The C.Diag® cuts that time dramatically, allowing me to explain complex concepts in minutes while ensuring patients leave satisfied. Finally, tailored treatment relies on showing patients their disease. Pictures and videos from the C.Diag® make the invisible visible, helping patients grasp why specific treatments are necessary.

My Journey with Dry Eye and IPL

My approach to dry eye stems from a discovery I made in my aesthetics clinic. While performing IPL on rosacea patients, I noticed not only did their skin improve, but some reported better dry eye symptoms. Examining their lid margins and tear films, I saw healthier glands and improved tear quality. This led me to develop IPL as a dry eye treatment, fundamentally changing how I view the disease. Dry eye isn't just an eye problem—it's a skin and gland condition that produces inflammatory tears. Any skin disease, like rosacea (80% of patients have MGD), acne, or sun-damaged skin, increases the risk of MGD and dry eye. By improving the skin and glands, we can enhance the tear film and alleviate symptoms.

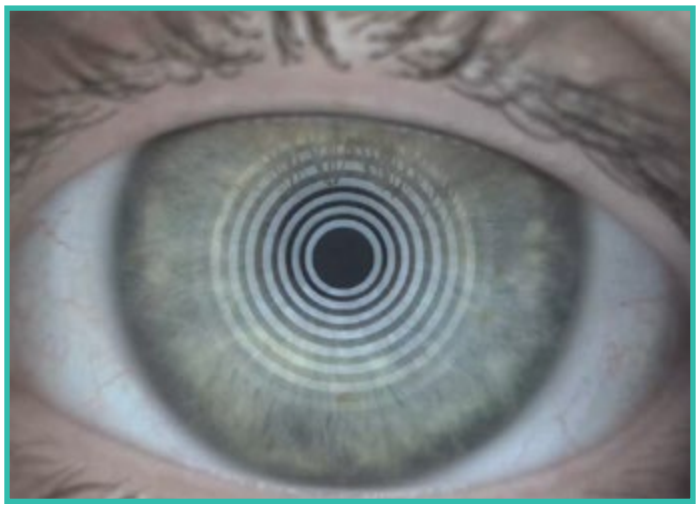
My philosophy is simple: dry eye is a skin-gland condition causing the tear glands to produce an inflammatory tear. This tear, whether due to local or systemic inflammation, breaks down the ocular surface, leading to decreased vision, nerve damage, redness, irritation, and pain. While we'll focus on evaporative dry eye and MGD today, the C.Diag® also provides insights into lacrimal gland dysfunction, which I'll touch on later.

How C.Diag® Fits into My Workflow

Before C.Diag®, my process was time-intensive. A patient would be worked up by a technician, then I'd examine them at the slit lamp, record findings on video monitors, and explain the disease. This could take an hour, especially with all their questions. With six new dry eye patients, that's an entire day gone. The C.Diag® has streamlined this dramatically.

Now, my technician performs the C.Diag® exam while I'm seeing other patients. When it's done, I'm alerted, and I sit with the patient to review the results. The C.Diag® provides five key exams:

1. Blink rate, frequency, and coverage
2. Tear film (non-invasive tear breakup time)
3. Lipid layer analysis
4. Tear meniscus height
5. Meibography (standard and infrared for upper and lower lids)



"I can go through all five [exams] in 5–10 minutes, and the patient leaves with a clear understanding of their condition."

Let's break down each exam and how I use it to educate and treat patients.

Blink Rate, Frequency, and Coverage

One of the biggest revelations from C.Diag® is the importance of blinking. I didn't focus on this much before, but the device's AI, backed by over 1.2 million images, shows what's normal and abnormal. It graphs blink frequency and shows a video of whether the patient is blinking fully. Many patients aren't blinking enough or aren't achieving full lid closure, especially those staring at screens all day. There's even a psychological component—patients continue to blink less even when they're off screens.

When I see inadequate blinks or incomplete coverage, I tell patients, "You're not blinking enough, and your blinks aren't fully covering your eye." I prescribe two exercises:

1. Forced blinks: Every hour, set a timer and perform forced blinks by squeezing your cheekbone to bring the lids together. This squeezes out any oil from the meibomian glands and activates the trigeminal nerve to stimulate tear production.
2. Japanese method: Instead of the 20/20/20 rule, I have patients close their eyes for two minutes every hour, block out light, and think of a relaxing scene, like their last beach vacation. This relaxes eye muscles and breaks the habit of staring. I use this myself on surgery days when I'm under a microscope for hours.

These simple interventions, informed by C.Diag®, address a root cause of dry eye that I previously overlooked.

Non-Invasive Tear Breakup Time (NIBUT)

The C.Diag® measures tear breakup time using Placido rings, which is faster than fluorescein-based methods. It detects the first spot of dryness, typically reading about two seconds quicker than fluorescein (e.g., a 2-second NIBUT correlates to about 4 seconds with fluorescein). I explain to patients, "Your natural tear should stay on your eye for 10–30 seconds. If it's breaking up in less than 10 seconds, your glands aren't producing enough oil, causing your tears to evaporate quickly. That's why you feel irritation, inflammation, and pain." The visual of the Placido rings blurring out makes this tangible for them.

Lipid Layer Analysis

The lipid layer exam shows the oil on the tear film. I tell patients, "If I put oil on water, you'd see it reflect light. Your tear film has some oil, but it's not enough compared to a healthy eye." The C.Diag® quantifies this against its database, but I focus on the video because patients understand it better. They see the sparse reflections and grasp that their glands aren't producing enough fat, reinforcing the need for treatments like IPL.

Tear Meniscus Height

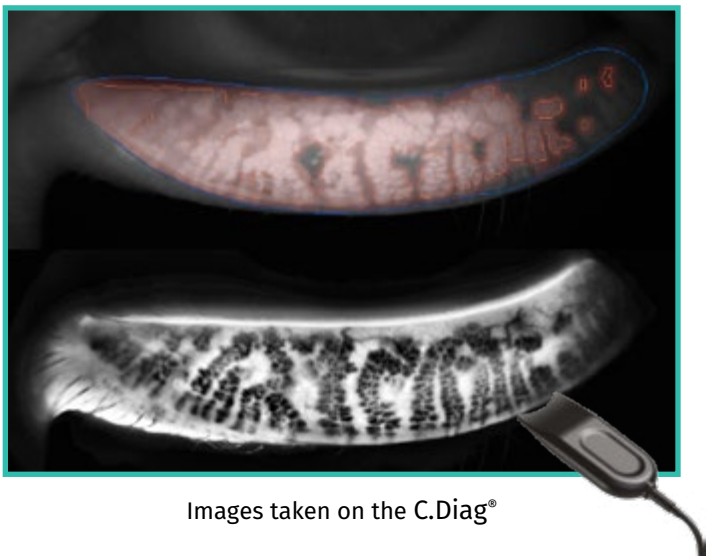
The tear meniscus exam assesses lacrimal gland function. I explain, "Your lacrimal gland makes the watery part of your tear, and a normal tear meniscus should be a certain height. If it's low, you may have a lacrimal gland problem." Interestingly, severe MGD often leads to a higher tear meniscus because the body compensates for poor oil production by producing more water. This addresses the paradox patients raise: "If my eyes are watering, how can I have dry eye?" The C.Diag®'s AI compares the patient's meniscus to normals, making it a more reliable indicator of lacrimal dysfunction than Schirmer's test.

Image taken on the C.Diag®

"Meibography is where C.Diag® shines. It provides a full view of the meibomian glands in both upper and lower lids, unlike other devices that capture only a partial view."

Meibography

The infrared transillumination for the lower lid is particularly clear. I show patients a normal meibography—straight, healthy glands—and compare it to theirs, which may show tortuosity, stunting, or dropout. I say, "Your glands are producing thick, toothpaste-like secretions instead of clear oil. This blocks the glands, causing them to shorten or atrophy, like muscles in a cast. They're not gone—they're just dormant. We can stimulate them with IPL to restore function."



Images taken on the C.Diag®

Patients often think their dry eye started suddenly, but I point out, "This anatomy doesn't change overnight. It's been developing for years, and you've hit a tipping point." I caution against redoing meibography too soon after treatment, as significant changes take 6–9 months. Serial meibographies from my work and Dr. Rita in Japan confirm this timeline.

High-Magnification Imaging and Expression

The C.Diag®'s high-magnification (hi-mag) imaging is another powerful tool. For the lower lid, I show patients telangiectasias and clogged glands, saying, "These white dots are your gland openings, filled with thick secretions. The tiny blood vessels are telangiectasias, part of rosacea, which shows up on your lids before your cheeks because lid skin is so thin." I explain how IPL targets these vessels, coagulating them to reduce inflammation, and heats the dermis to melt secretions, allowing expression.

For Demodex, I point out pouting hair follicles, the true sign of infestation, and loss of eyelashes from Demodex pushing out hair. I clarify, "Scrubbing can remove scurf, but only treatment with ivermectin plus for the lids and face kills Demodex follicularum and brevis." If a patient lacks a video monitor, I use the C.Diag® to perform and record gland expression, showing them the thick secretions and reinforcing the need for treatment.

Image provided by Dr. Rolando Toyos of a Gland Expression

Time-Saving and Patient Education

The C.Diag® saves 15–20 minutes per patient by consolidating diagnostics and education. Without it, explaining dry eye theoretically leads to endless questions. With pictures and videos, patients understand immediately, reducing follow-up queries. This efficiency is critical as your practice grows. Early on, with just a few patients, you don't think about saving time. But after years of IPL, my clinic is full of new and maintenance patients. Saving 20 minutes per patient translates to hours daily, allowing me to see more people without sacrificing quality.

The C.Diag® is also a teaching tool for staff. Technicians, even new ones, can perform exams easily, especially meibography, which other devices make difficult. The AI-generated reports, while available, aren't something we use often unless patients request them. Our focus is on streamlining care to help more people.

Tailored Treatment with C.Diag®

The C.Diag®'s data drives personalized treatment. If the tear meniscus is low, I suspect Sjogren's and order tests, often prescribing low-dose naltrexone. Severe MGD calls for IPL and low-level light therapy to photobiomodulate gland cells. Blinking issues prompt behavioral changes, like forced blinks and the Japanese method. The device has also highlighted a growing trend: dry eye in younger patients, especially those under 40 who spend all day on screens. The C.Diag®'s blink analysis has made me realize how many patients have trained themselves not to blink, contributing to the rise in dry eye across all age groups.

Final Thoughts

The C.Diag® checks all the boxes for a dry eye diagnostic, whether you're starting out or running an established practice. It provides knowledge, saves time, and enables tailored treatment through vivid visuals that patients understand. It's revolutionized how I diagnose and educate, making my clinic more efficient and effective. If you're looking to elevate your dry eye practice, the C.Diag® is the tool to do it.

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Disclaimer: This supplement is a transcription-based summary of a recorded webinar hold in April 2025 and is intended for educational purposes only. This supplement reflects only the clinical experience and opinions of Dr. Rolando Toyos presented during this session. This content was created with AI assistance and reviewed by our editorial team to ensure accuracy and value for our readers.

Always consult with patients and consider individual factors when applying diagnostic and treatment strategies. For more information on the C.Diag®, contact Lumibird Medical®.