Article from Ocular Surgery News March 25, 2010 Issue

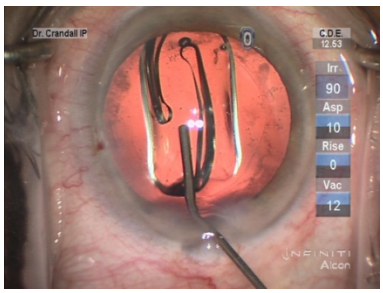
New microscope and lighting module offer enhanced visualization and constant red reflex

With visible detail more defined, the surgeon must avoid the temptation to remove too much debris.

A new ophthalmic surgical microscope has a unique illumination function that improves visualization with enhanced contrast, depth of focus, resolution and red reflex, proponents of the device say.

The ILLUMIN-i illumination module, a component of the Endure Reflex Plus microscope (Endure Medical), offers high optical quality, **Rob Hewlett,** Endure's vice president, said. "It lets the surgeon see details during the surgical procedure that they've never seen before," Mr. Hewlett told OCULAR SURGERY NEWS. The ILLUMIN-i module is particularly beneficial in cataract and glaucoma surgery, Mr. Hewlett said.

Cataract/anterior segment surgeon **Robert J. Cionni, MD,** said he likes the wide viewing field. "With this, you get a great depth of field, you get an incredible red reflex, you get clarity like I've never seen on previous scopes," Dr. Cionni said. "It should give you a nice wide field of things that are in focus, and not just right in the very center."



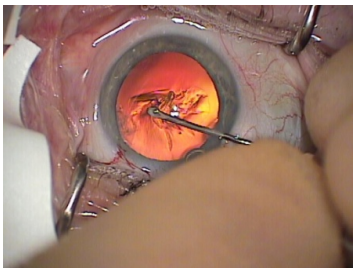
The Endure Reflex Plus with the ILLUMIN-i lighting module offers enhanced red reflex, which maximizes visualization of the surgical field. Image: Crandall A

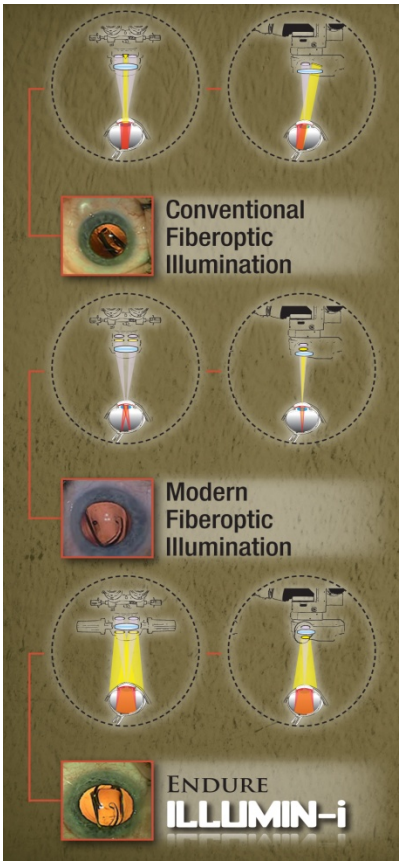
Surgeons may purchase the microscope and illumination module together, or acquire the module alone and add it to an older microscope. "It doesn't change the optics of the microscopes," **Richard L. Lindstrom, MD,** OSN Chief Medical Editor, said. "You can have the optics of whatever microscope you like. All this does is enhance the illumination system."

Visual 'sweet spot'

The ILLUMIN-i lighting module projects two overlapping beams of light and a larger oblique beam to ensure a consistent red reflex while maintaining contrast and depth of field, according to an Endure brochure. "It enhances your visualization during those parts of the surgery or any surgery where the red reflex is important," Dr. Lindstrom said. "That's especially important when you're doing the capsulorexis. It's certainly helpful when you're removing the nucleus and cortex and polishing the posterior capsule."

The Endure Reflex Plus with the ILLUMIN-i lighting module offers enhanced red reflex, which maximizes visualization of the surgical field. Image: Lindstrom RL





This diagram shows the evolution of microscope illumination over the last quarter century. The top illustration shows fiberoptic illumination developed around 25 years ago. The middle drawing shows modern fiberoptic illumination with a small-diameter, focused light. The bottom drawing depicts Endure's ILLUMIN-i technology, which generates collimated light that provides a large "sweet spot" for an enhanced red reflex. Image: Endure Medical Inc.

According to Endure literature, coaxial or stereo illumination is ideal for lighting a cavity or opening. "The light beam is actually physically getting a little bit larger in diameter as it goes down," Mr. Hewlett said. "That creates a huge sweet spot for this beautiful visualization."

Other competitive microscopes have a narrow light beam that limits visualization. Regardless of the patient's eye position, Endure's ILLUMIN-i technology offers a constant red reflex, enhanced depth perception and "3-D" visualization, Mr. Hewlett said. Dr. Lindstrom said that the Reflex Plus is quite tolerant of decentration. "With other microscopes, you lose the effect even if you are a tiny bit off of center," Dr. Lindstrom said. He continues to say that Endure's ILLUMIN-i technology is more forgiving of that decentration and gives you enhanced red reflex throughout the surgical procedure.

Adapting to improved visuals

Some surgeons will require time to adapt to the added visualization provided by the illumination system, Mr. Hewlett said. "Some doctors say that they see too much," he said. "There's so much they're seeing that they haven't seen before that it's almost distracting. When using this technology, there's a little bit of a learning curve. The first eight or 10 cases might be a little bit uncomfortable because they're seeing things they haven't seen before. It just takes some getting used to." Enhanced visualization requires the surgeon to exercise restraint in removing material that had not been clearly visible with other microscopes, Dr. Cionni said.

"The enemy of good is better," he said. "If you're heroic and try to get every little piece that you see, you can end up breaking the capsule. That would be the only thing that I would consider something that the surgeon might take heed of." Ideally, future incarnations of the Reflex Plus would have overlays of degree markings for axis identification and optimal toric IOL placement, and ring overlays in the visual axis to facilitate accurate implant centration, Dr. Cionni said. – *by Matt Hasson*

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Disclosure: Both Dr. Lindstrom and Dr. Cionni are unpaid consultants for Endure Medical.