New Cutting-Edge Technology Provides NYEE Surgeons with Unprecedented 3D Visualization

Celebrating 200 YEARS 1820–2020

New York Eye and Ear Infirmary of Mount Sinai

Throughout its 200-year history, New York Eye and Ear Infirmary of Mount Sinai (NYEE) has been in the forefront of patient care, technological innovation, and medical training. The hospital's recent acquisition of the new **Ngenuity® 3D Visualization System,** which provides surgeons with enhanced magnification, detail, and depth perception of the back of the eye, advances all these goals.

With this new technology, instead of looking down through a microscope during surgery, surgeons wear special 3D glasses and look at an 80-inch, high-definition video monitor that projects three-dimensional images of the eye in real time. This "heads up" view provides a better depth of field, unparalleled levels of contrast, sharpness, and color, and greater intensity of the imagery, allowing fine details to be visible in very dim light, potentially leading to more successful surgeries. Integrated software allows surgeons to track key data parameters in real time, such as intraocular pressure, flow rates, infusion pressure and laser power, on one screen. The technology is ideal for surgeries, including retinal and corneal transplants, which require the removal of ultrathin layers of tissue.

Ronald Gentile, MD, a retina specialist, performing vitrectomy surgery using the Ngenuity 3D Visualization System.

In addition to providing better patient outcomes, the new system is a groundbreaking teaching tool. "With traditional technology, there have been limitations for students and residents to appreciate the detail of what the surgeon sees," says Richard B. Rosen, MD, Professor of Ophthalmology, Surgeon Director and Chief of Retina Service, Mount Sinai Health System. "But now students, nurses, residents, and fellows can all wear 3D glasses with polarized filters that create brilliant stereo images projected on a huge screen." The technology also allows surgeries to be recorded, so operations can be reviewed by students and presented in 3D to the surgeons' peers.

According to Alcon, which developed the system, compared to traditional analog microscopes, Ngenuity delivers up to 19 percent increased magnification to amplify the view for intricate tasks, up to 2.7 times extended depth of field to maintain focus across an expanded surgical space, and up to 19

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percent increased depth resolution to resolve fine details when manipulating delicate tissue.

"Ngenuity allows everyone in the room to be involved in the surgery," says Dr. Rosen. "It allows the surgical team to get out of the tunnel vision associated with microscopes, enabling surgeons to see more detail and to better direct their instruments for finer manipulation."

Dr. Rosen notes that the new technology is less physically taxing on the surgeon. "It's easier on the neck and back of those performing surgery," he says. "When surgeons are physically more comfortable, it reduces the likelihood of a tremor and leads to better outcomes." Also, since the system requires less bright light for greater clarity, it is more comfortable for patients who are awake during the procedure.

"This is a transformative technology," says Dr. Rosen. "It holds a lot of promise for the future of microsurgery and helps NYEE fulfill our mission of offering the most advanced medical training to the next generation of surgeons while providing the highest level of patient-centered care."

Richard B. Rosen, MD, *is the Belinda and Gerald Pierce Distinguished Professor of Ophthalmology at Icahn School of Medicine at Mount Sinai, Chief of the Retina Service of the Mount Sinai Health System, and Vice Chair and Director of Ophthalmology Research at New York Eye and Ear Infirmary of Mount Sinai.*

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