Eye Implant Can Restore Some Vision in Rare Cases

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Patients who have lost their sight due to a rare disorder may be able to regain some vision using a new implantable device that takes the place of damaged cells inside the eye.

The Food and Drug Administration approved the Argus II Retinal Prosthesis System as the first treatment for an inherited disorder that causes the breakdown of cells in the retina, a membrane inside the eye.

The technology will initially only be available to a small number of patients, but could eventually be used to treat vision disorders that affect millions of people. The device was previously approved in Europe in late 2011.

The system includes a small video camera and transmitter mounted on a pair of glasses. Images from the camera are processed into electronic data that is wirelessly transmitted to electrodes implanted into the patient's retina.

FDA says that while the device will not fully restore patients' vision, "it may allow them to detect light and dark in the environment," which could help them perform daily tasks.

The FDA approved the device from Second Sight Medical Products for patients 25 years and older who have advanced retinitis pigmentosa. Starting in their twenties, people with the disease slowly lose vision as the light-sensitive cells that line the retina deteriorate. Over a period of decades the condition eventually leads to blindness.

"It's like looking down a tunnel that gradually narrows until it disappears entirely," said Dr. Robert Greenberg, CEO and founder of Second Sight. "What we're doing is reopening the window that had closed on them."

Greenberg first proposed the technology for the Argus device as a doctoral student at Johns Hopkins University's medical school about 20 years ago. He founded Second Sight to develop the technology in 1998.

About 100,000 people in the U.S. have retinitis pigmentosa, though the FDA estimates fewer than 4,000 will initially receive the device under its currently approved indication. Patients must have little to no light perception in both eyes but a prior history of being able to make out basic shapes and forms. They must also have signs of at least some remaining retinal function.

Results from a study of 30 patients with the condition showed that most were able

to perform daily activities better with the implant than without it. Activities included navigating sidewalks and curbs, matching different color socks and recognizing large words or sentences.

Second Sight hopes to eventually win approval to treat a wide variety of vision disorders, including macular degeneration, the leading cause of blindness in developed countries.

Research and development of the Argus II was supported by $100 million in grant funding from the National Institutes of Health, the National Science Foundation and the Department of Energy.

Second Sight Medical Products, Inc. is a privately held company based in Sylmar, Calif.