

Retinal Implant

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My second presentation is on retinal implants. I chose this topic because it is similar to my previous presentation on laser eye surgery. A retinal implant is an implant technology still being developed to partially restore useful vision to people who have lost theirs due to degenerative eye conditions including retinitis pigmentosa or macular degeneration. Retinitis pigmentosa is number one cause of inherited blindness in the world. The components of the technology include an array of electrodes implanted on the back of the retina, a digital camera worn on the users' body, and a processor that converts the image on the camera into a digital signal. This signal is then beamed to the electrodes.

As of today there are two different types of retinal implants being clinically tested. The first is Epiretinal implants which refers to "on the retina". Here the implant sits directly on top of the retina, allowing it to directly stimulate the ganglia. The other is Subretinal implants referring to "behind the retina". Here the implant

is placed under the retina and stimulates the ganglia from the bottom.

This surgery began on the idea that most patients became blind because of the loss of rods and cones which are the photoreceptive elements of the eye. The nerve cells connecting the eye to the brain typically remain undamaged in all of these patients. Therefore, prosthesis can be used to electrically stimulate these surviving cells. One of the biggest groups testing and developing this technology is called The Boston Retinal Implant Project which is made up of the Massachusetts Eye and Ear Infirmary, Harvard Medical School and the Massachusetts Institute of Technology. Currently they have teams of retinal surgeons, neurologists, retinal physiologists, many engineers and more.

Sources

<http://www.bostonretinalimplant.org/>

http://en.wikipedia.org/wiki/Retinal_implant

