Blink Prosthesis for Facial Paralysis Patients

Principal Investigator: MCDONNALL, DANIEL
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View Technical Abstract

PUBLIC ABSTRACT

The proposed innovation will provide a fundamental improvement in the treatment of facial paralysis. These improvements will apply to both the aesthetic and functional use of the paralyzed eyelid by preventing painful dry eye complications and profound facial disfigurement.

The goal of this program is to create an implantable blink prosthesis to restore functional eye blink in patients with paralysis on one side of their faces. The system will use electrodes implanted in the eyelid to stimulate the adjacent muscles to close the eye. Another set of electrodes implanted in the healthy eyelid will listen for the onset of a blink and send a timing signal to the electronic system to turn on the stimulator to produce a bilateral symmetric blink.

The device consists of an implant with stimulation electrodes for the paralyzed eyelid, recording electrodes for the healthy eyelid, and a sealed electronics package that is placed behind the ear. The device also includes an external module worn over the ear (appears similar to a hearing aid) to provide a wireless power source for the implant and to control stimulation levels.