Directed Facial Nerve Stimulation

Tech ID: 25566 / UC Case 2015-665-0

BRIEF DESCRIPTION

An implantable medical device for stimulating the damaged facial nerve of a patient with permanent facial paralysis. The technology affords control of nerve fibers that contribute to facial movements, such as blinking and smiling, and facial expression of emotion.

FULL DESCRIPTION

Patients with permanent facial paralysis suffer from loss of mobility of the face, making it extremely challenging to control the muscles that make facial expressions, aid in enunciation and communication, and maintain oral competency in eating and drinking. The current method of treating facial paralysis that is caused by facial nerve damage is intensive surgery involving transplantation of bulky thigh muscle tissue into the side of the face and neck. The procedure is both costly and physically demanding, requiring a 6-12 hour surgery, as well as a multi-day in-hospital post-op care and a long-term recovery period of months.

The disclosed technology is for an alternative treatment for facial paralysis due to nerve damage. The invention is a medical device that would eliminate the need for tissue transplantation, and require a less intensive surgery and recovery. This technology mirrors that developed for cochlear implants, whereby a small implantable device would receive wireless electromagnetic signals to provide programmable and graded electric current in order to stimulate internal electrodes. Each electrode would stimulate a set of neural fibers within the facial nerve responsible for specific movements of the face, such as a brow raise, blink, or smile.

SUGGESTED USES

Treatment for restoring function in permanent facial paralysis caused by damage to facial nerve.

ADVANTAGES

-Cost and safety: Less intensive and safer surgery (two hour, outpatient surgery only requiring a small 2 inch incision, hidden behind the ear; little risk of post-op complications)

-Efficacy: The patient can adopt usage of the device within weeks of surgery

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,751,532	08/25/2020	2015-665
United States Of America	Issued Patent	10,010,713	07/03/2018	2015-665

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Devices
  - Other
- **Sensors & Instrumentation**
  - Biosensors

RELATED CASES

2015-665-0

STATE OF DEVELOPMENT

In development. The prototype device has been constructed and in vivo Guinea pig and cat evaluations have been performed.

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