Implantation and Testing of Wireless Multichannel Stimulators in Macaque Cortex

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Abstract

Our on-going work to develop an intracortical visual prosthesis has motivated the design, fabrication, and testing of a Wireless Floating Microelectrode Array (WFMA) stimulator. This implantable device can be used for an electrical stimulation interface in the peripheral and the central nervous system. Here implantation of two WFMAs in motor cortex of two NHP (Macaque – two devices/animal) is described. Preliminary functional testing show the implanted devices to be fully functional with stimulation-induced motor movements obtained. Continued functional testing and preparations for a human visual prosthesis is on-going.

Methods

a) Side view of stimulator, b) stimulator on a penny, c) Two stimulators implanted in Macaque motor cortex.

Results

Telemetered stimulus waveform revealing the access resistance and polarization of the activated iridium oxide electrodes.

Adduction of the wrist elicited by 25 uV intracortical stimulation in the primary hand motor area.

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