



Restoration of tetraplegic hand function by use of the NeuroControl Freehand System.

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Abstract

Nine tetraplegic subjects with C5 or C6 level spinal cord lesion received an eight channel implanted Functional Electrical Stimulation device for provision of hand opening and grasp, known as the Freehand System. This paper describes the surgical implementation of the system and describes the challenges encountered. Seven of the subjects are currently daily users of the device. One subject is unable to use the system due to disruption of bowel function when the system is used, thought to be related to disturbance of the autonomic system. A second subject suffered a lesion of the posterior interosseus nerve, but this was not thought to be related to system use. Additionally, one subject exhibited symptoms of autonomic dysreflexia, which were alleviated by reduction of the strength of the stimulus. Despite problems the Freehand system can significantly improve the functional ability of C5 and C6 lesion tetraplegics.