Neuromate®

http://www.renishaw.com/en/neuromate-stereotactic-robot--10712

The neuromate® stereotactic robot provides a platform solution for a broad range of functional neurosurgical procedures.

The purpose of a study of Candela et al., from the Departments of Neurosurgery. Pediatric Movement Disorders Unit, Sant Joan de Déu Barcelona Children's Hospital. Neuropediatrics, and Vall d'Hebron Research Institute (VHIR), Universitat Autònoma de Barcelona, Barcelona, Catalonia, Spain.Diagnostic Imaging. Intraoperative Neurophysiology Unit, and Department of Neurosurgery, Hospital Clinic de Barcelona, Universitat de Barcelona, was to verify the safety and accuracy of the Neuromate stereotactic robot for use in deep brain stimulation (DBS) electrode implantation for the treatment of hyperkinetic movement disorders in childhood and describe the authors' initial clinical results.

A prospective evaluation of pediatric patients with dystonia and other hyperkinetic movement disorders was carried out during the 1st year after the start-up of a pediatric DBS unit in Barcelona. Electrodes were implanted bilaterally in the globus pallidus internus (GPi) using the Neuromate robot without the stereotactic frame. The authors calculated the distances between the electrodes and their respective planned trajectories, merging the postoperative CT with the preoperative plan using VoXim software. Clinical outcome was monitored using validated scales for dystonia and myoclonus preoperatively and at 1 month and 6 months postoperatively and by means of a quality-of-life guestionnaire for children, administered before surgery and at 6 months' follow-up. We also recorded complications derived from the implantation technique, "hardware," and stimulation. RESULTS Six patients aged 7 to 16 years and diagnosed with isolated dystonia (DYT1 negative) (3 patients), choreo-dystonia related to PDE2A mutation (1 patient), or myoclonus-dystonia syndrome SGCE mutations (2 patients) were evaluated during a period of 6 to 19 months. The average accuracy in the placement of the electrodes was 1.24 mm at the target point. At the 6-month follow-up, patients showed an improvement in the motor (65%) and functional (48%) components of the Burke-Fahn-Marsden Dystonia Rating Scale. Patients with myoclonus and SGCE mutations also showed an improvement in action myoclonus (95%-100%) and in functional tests (50%-75%) according to the Unified Motor-Rating Scale. The Neuro-QOL score revealed inconsistent results, with improvement in motor function and social relationships but worsening in anxiety, cognitive function, and pain. The only surgical complication was medial displacement of the first electrode, which limited intensity of stimulation in the lower contacts, in one case.

The Neuromate stereotactic robot is an accurate and safe tool for the placement of GPi electrodes in children with hyperkinetic movement disorders ¹⁾.

neuromate® has been used in thousands of electrode implantation procedures for deep brain stimulation (DBS), and stereoelectroencephalography (SEEG), as well as stereotactic applications in neuroendoscopy, biopsy, and many other research applications.

neuromate® provides consistent, rapid, precise targeting and reduces clinical complication rates in

stereotactic procedures.

neuromate® can be used with a stereotactic frame, or in frameless mode for reduced patient trauma. It is also compatible with procedures using both general and local anaesthesia.

neuromate® is routinely used in most centres where it is in operation and has pride of place as the cornerstone of functional and stereotactic procedures.

neuromate® stereotactic robot is a CE marked device.

neuromate® is manufactured in an ISO 13485:2003 and ISO 13485:2012 compliant environment and it is registered as a Class IIb (EU)/Class II (USA) medical device.

Robotic surgery is capable of delivering greater accuracy and consistency than conventional methods, improving outcomes and helping to reduce ongoing care costs.

neuromate[®] is supplied with a navigation and planning system that supports 2D and 3D image registration and frame-based or frameless navigation (most available stereotactic frames are supported).

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"Robots offer a wide array of benefits in the surgical arena. They increase the accuracy and dexterity of the surgeon, reduce the tremor of the human hand, and can amplify or reduce the movements and /or forces applied by the surgeon"

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Renishaw is pleased to announce that its stereotactic neurosurgical robotic system, neuromate®, has received marketing authorisation for sale in the Kingdom of Saudi Arabia by the Saudi Food and Drug Authority. A neuromate system has recently been installed and the first surgical procedures have been performed at the King Fahad Medical City Hospital in Riyadh. This is the first placement of a neurosurgical robot in the Kingdom of Saudi Arabia.

Prof. Mahmoud al Yamany, Chief Executive Officer of King Fahad Medical City, a Neurosurgeon by training, said, "The newly acquired neuromate system will provide our neurosurgical team with cutting-edge robotic technology that enables the surgeons to deliver neuro-implantable devices with the highest accuracy. We are excited about the new possibilities we have with a neurosurgical robot in our operating room, and are pleased to be the first center in Saudi Arabia to offer robotic neurosurgery to our patients."

Dr Ismail Ahmed, President of Gulf Medical said; "Working with Renishaw to bring in the neuromate to Saudi Arabia is consistent with Gulf Medical's long history of introducing proven medical innovations into the kingdom."

Dr. Abed Hammoud, CEO of Renishaw Mayfield SA said; "We are proud of this newest installation in Saudi Arabia. Yet another team of leading neurosurgeons has chosen the neuromate system and Renishaw as a partner in the neurosurgical operating room."

The neuromate is in use at many leading neurosurgical centers around the world, with France having the largest installed base (with 7 units currently in use). The neuromate has been cited in more than 30 published peer-reviewed scientific journal articles.

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