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**Renishaw’s *neuromate*® stereotactic robot helps deliver Deep Brain Stimulation (DBS) to world’s youngest patient**

**The youngest patient in the world to receive deep brain stimulation (DBS) has undergone surgery at Evelina London Children’s Hospital, London, UK. The aim of the procedure was to help the patient, Viktoria Kaftanikaite, who was just two years old, to manage her symptoms of dystonia. The procedure was carried out in partnership with King’s College Hospital, London and with assistance from Renishaw’s** [*neuromate* stereotactic robot](https://www.renishaw.com/en/neuromate-robotic-system-for-stereotactic-neurosurgery--10712)**.**

**During the procedure, two stimulation electrodes were implanted into a part of the brain known as the globus pallidus internus, an area concealed deep within the brain which is responsible for the control of movement. A** device called a neurostimulator then sends electrical impulses, via the electrodes, to change brain activity in a controlled manner.

**For the procedure to be successful, the contact points at the tip of the electrode must be precisely aligned with the target anatomy. Carrying out the procedure on a patient as young as two is particularly challenging for a number of reasons, one of which is that the space within the skull is small and difficult to navigate. Renishaw’s range of products for stereotactic neurosurgery is designed to aid neurosurgeons in identifying the position of the target and deliver implantable electrodes to the chosen target with accuracy and safety.**

**The procedure began with the team creating a customised surgical plan using Renishaw’s** [*neuroinspire*™ neurosurgical planning software](https://www.renishaw.com/en/neuroinspire-neurosurgical-planning-software--8244)**. Crucially the chosen trajectory must avoid key anatomy and blood vessels. Magnetic resonance imaging (MRI) and computerised tomography (CT) scan data were uploaded into the software, allowing neurosurgeons to visualise the anatomy of the patient and identify the safest route to target. Once a route has been chosen, the *neuromate* robot is then able to move into position to align the surgical instruments along the pre-planned trajectory.**

**An additional challenge with performing this kind of surgery on a patient so young is that as the child grows, the brain anatomy will move in relation to the electrode. In preparation for this, the neurosurgeons chose to implant the electrodes with Renishaw’s** [*neuroguide*™ electrode delivery system](https://www.renishaw.com/en/neuroguide-dbs-electrode-delivery-system--6725)**. The *neuroguide* delivery system includes a long-term implantable guide tube which stays in place as the patient grows. The aim of implanting the guide tube is to allow for easy revisional surgery in the future.**

**On the performance of Renishaw’s technology, Neurosurgeons Mr Richard Selway and Mr. Haru Hasegawa, who performed the surgery, commented: “The Renishaw *neuromate* robot, with the 3D** [*neurolocate™* technology](https://www.renishaw.com/en/neurolocate-frameless-patient-registration-module--37008)**, enabled reliable and accurate placement of the electrodes into the target deep inside the patient’s brain. The implantable guide tubes that we used in this case allow electrode revisions without the need for stereotactic equipment, which is a significant advantage in this group of patients.”**

**Paul Skinner, General Manager for Renishaw’s Neurological Products Division, added: “We are delighted to hear of the success of this highly complex procedure, and we send our best wishes to Viktoria and her family as she continues to recover. We’re excited about the implications of this procedure for other young patients who might benefit from surgery, and we look forward to continuing our support to Evelina London Children’s Hospital in the future.”**

**Evelina London is celebrating its 150th anniversary this year. The hospital was founded in 1869 as Evelina Hospital for Sick Children by Baron Ferdinand de Rothschild, whose wife, Evelina, died along with their baby in childbirth.**

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Notes to editors

UK-based Renishaw is a world leading engineering technologies company, supplying products used for applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It has over 5,000 employees located in the 36 countries where it has wholly owned subsidiary operations.

Throughout its history Renishaw has made a significant commitment to research and development, with historically between 13 and 18% of annual sales invested in R&D and engineering. The majority of this R&D and manufacturing of the company’s products is carried out in the UK.

The Company’s success has been recognised with numerous international awards, including eighteen Queen’s Awards recognising achievements in technology, export and innovation.

Further information at [http://www.renishaw.com/](http://www.renishaw.com/en/renishaw-enhancing-efficiency-in-manufacturing-and-healthcare--1030?utm_source=StoneJunction&utm_medium=PR&utm_campaign=REC263)