

Operations in the seat of consciousness: how modern neurosurgery deals with the brain and spinal cord.

As a specialist medical field, neurosurgery has benefited more than most from advances in microsurgical and minimally invasive techniques, state-of-the-art imaging and computer and navigation technologies. Professor Steiner, Senior Consultant at the Neurosurgery Department at Nuremberg Hospital South, is able to utilise the latest medical equipment for neurosurgery.

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In a long-established tradition of development, the Neurosurgery Department at Nuremberg Hospital continually improves its already successful treatment methods by integrating new technical standards as well as diagnostics systems, digital navigation systems and surgical procedures, all of which offer increasing levels of precision.

The treatment of tumours of the brain, spinal cord and nerves is one of the main clinical fields at the Nuremberg site. The risks of paralysis and other complications in patients who need to have tumours removed are getting lower all the time.

By deploying the latest techniques, including microsurgery, computer-assisted intraoperative neuronavigation and laser and ultrasound methods, it has become possible to perform operations even in critical functional areas of the brain, such as the centres for motor control. The neurosurgeon first has to see the exact proportions of the tumour, which he does with the aid of intraoperative diagnostics that, during the operation, provide him with precise images and even a 3D image for better visualisation.

Brain waves are measured at the same time, meaning any major disturbances are detected immediately. The better the surgeon is able to see the size and proportions of the tumour, the faster, more gently and more precisely he can remove it entirely and without any damage to neighbouring areas of the brain – that is the aim of a neurosurgical procedure.

Nowadays, it makes sense to treat brain tumours by drawing on interdisciplinary expertise for the different therapy options and radiation techniques. The neuro-oncological centre, one of the largest in southern Germany, is a certified centre of expertise comprising neurosurgeons, neurologists, neuro-oncologists, radiotherapists, neuro-radiologists and neuropathologists. If surgical removal of the tumour is no longer deemed possible, stereotactic procedures can be a option. This involves creating a 3D image of the tumour and then treating it using a different method, such as radiotherapy.

Another specialist area of neurosurgery at Nuremberg is the treatment of neurovascular diseases, i.d. vascular deformities such as aneurysms, angiomas, cavernomas and arteriovenous fistula within the meninges and the cerebral cortex. Therapy for cerebral vascular disorders is no longer an exclusively surgical domain, but instead takes place in close interdisciplinary cooperation with related departments, including neuroradiology and radiotherapy. To stabilise the blood vessels, stents are inserted in an interventional procedure using endovascular catheters.

Spinal conditions make up a high proportion of neurosurgical cases. These include deteriorative disorders such as a slipped disc and abnormal narrowings of the spinal canal as well as tumours and inflammations of the spine, spinal canal and spinal cord. Other advances in neurosurgery encompass functional methods that can be used in pain therapies or in the treatment of severe tremors in Parkinson's sufferers. This greatly improves the patients' quality of life.

In spite of all the state-of-the-art medical technology available, treatment should always focus on the person. Without respect and empathy for the patients, who often come from other cultures, attempts at treatment have little prospect of success.