



NEUROMODULATION
Health care

DEEP BRAIN STIMULATION

Neuromodulation Center



What is Deep Brain Stimulation Surgery?

Deep Brain Stimulation is based on the logic of stimulating some specific areas of the brain through electrodes and a stimulation and thus suppressing the abnormal signals produced in the brain.

Today, people who are resistant to medication or who cannot use medication due to side effects,



- **Parkinson's disease**, which can be characterized by tremors in the hands, feet or voice in the head



- **Essential tremor**, that is, tremor disease and involuntary contraction movements

- In **dystonia**

- In **Obsessive Compulsive** disorder

- And in treatment of **Epilepsy** this treatment method is successfully applied.



How is the Deep Brain Stimulation Surgery Performed?

Deep Brain Stimulation surgery is performed in two stages;

In the first stage, a frame is placed on the patient's skull and then taken to the operating room and electrodes are sent to the previously targeted area of the brain through two holes opened under local anesthesia. The size of the holes is at most the size of a 50-cent coin and the patient does not feel any pain during this process.

While the electrodes are inserted into the brain with special systems, the electrical activity of the brain is monitored (microelectrode recording) and then test currents are given to evaluate the effectiveness or side effects during the surgery (Macrostimulation), so that corrections can be made if necessary.

For this reason, the first stage of the surgery is performed awake under local anesthesia. After the electrode placement is successfully completed, our patient is taken to CT scan and the location of the electrodes is confirmed radiologically and then the second stage of the surgery is started. In this stage, which is performed under general anesthesia, the electrodes are connected to the battery placed under the collarbone.

Who is a candidate for Deep Brain Stimulation Surgery?

It is used safely and with FDA approval for Parkinson disease, Dystonia, tremor, obsessive-compulsive disorder, major depression (severe depression) and epilepsy in our country.

Who is candidate for Deep Brain Stimulation Surgery in the treatment of Parkinson's disease?

- Cases where drug treatment is no longer sufficient,
- Cases where the drug dose can not be increased due to the onset of drug side effects.

Who is a Candidate for Brain Stimulation Surgery in the Treatment of Dystonia (Involuntary Contraction and Movement)?

This disease is divided into two groups as primary and secondary:



▪ Those who suffer from dystonia after a cause (such as trauma, meningitis, drug use, etc.) are in the secondary dystonia group, and although patients in this group do not benefit as much as the other group, the benefit they may see at a low rate makes a great contribution to their life comfort. Deep Brain Stimulation surgery is successfully applied in cases where drug treatment or interventions such as botox treatment are insufficient in dystonia, that is, involuntary contraction disease.

Who is a Candidate for Brain Stimulation Surgery in the Treatment of Tremor (Essential Tremor)?

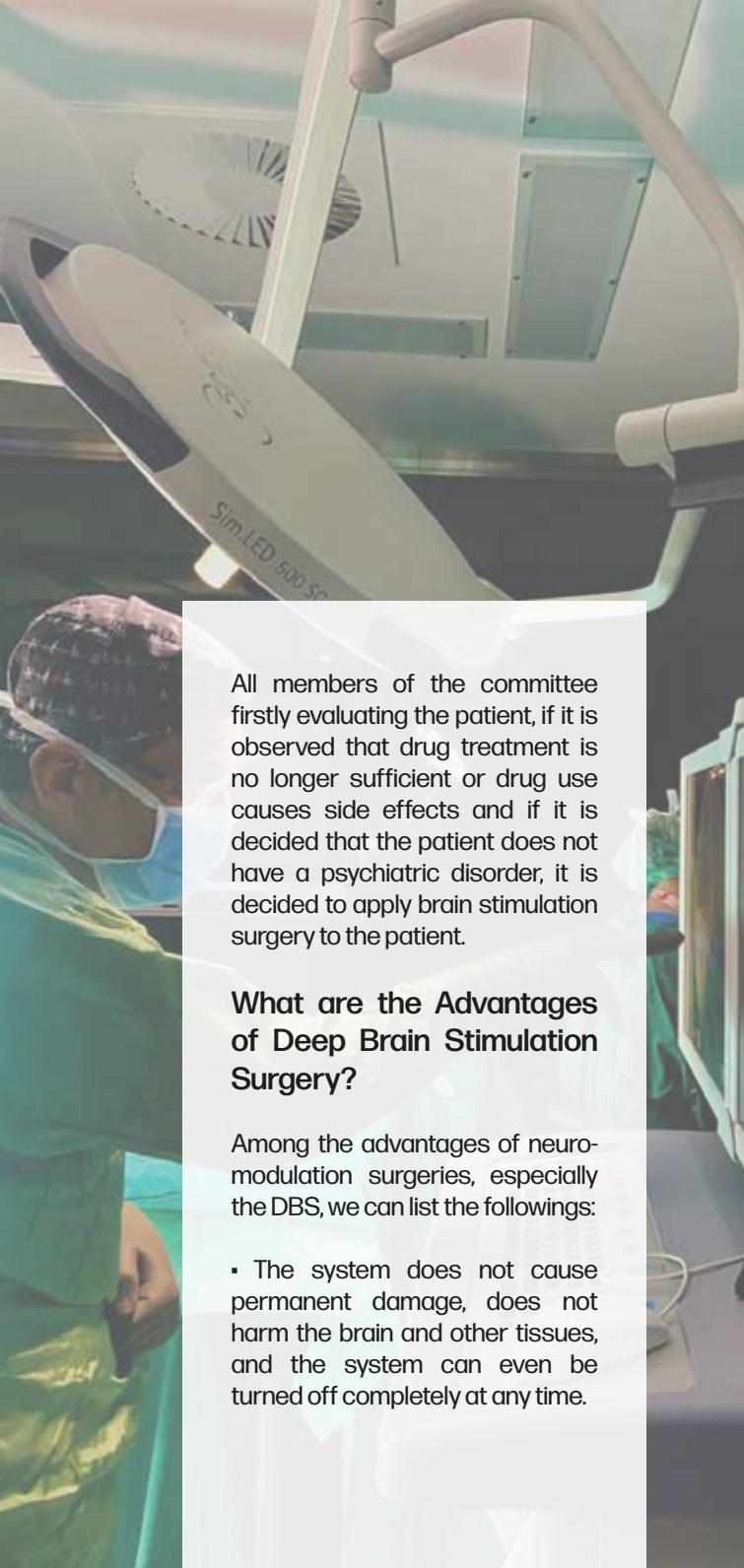


- Cases where drug treatment is no longer sufficient,
- Cases where the drug dose can not be increased due to the onset of drug side effects.

How is Deep Brain Stimulation Surgery Decided?

The application of the surgery is decided by a committee consisting of Neurology, Neurosurgery and Psychiatry physicians.





All members of the committee firstly evaluating the patient, if it is observed that drug treatment is no longer sufficient or drug use causes side effects and if it is decided that the patient does not have a psychiatric disorder, it is decided to apply brain stimulation surgery to the patient.

What are the Advantages of Deep Brain Stimulation Surgery?

Among the advantages of neuro-modulation surgeries, especially the DBS, we can list the followings:

- The system does not cause permanent damage, does not harm the brain and other tissues, and the system can even be turned off completely at any time.



- Thanks to the remote control, the necessary programming can be made at any time and even if the disease progresses, the values of the current to be given through the remote control can be changed to combat the progression of the disease.

- In rechargeable pulse generator life can be extended up to 15-20 years as the pacemaker can be recharged.

- In non-rechargeable pulse generator can be easily replaced with a very small incision under local or general anesthesia if the pulse generator life is exhausted.



In case the pulse generator life is exhausted non-rechargeable pulse generator can be easily replaced with a very small incision under local anesthesia.

What are the Risks of Deep Brain Stimulation Surgery?

The electrodes are placed in the targeted areas of the brain while the patient is awake, but the patient does not feel any pain during this process.

Among the risks of brain stimulation surgery, we can generally list the following:

▪ Risk of infection

It can be considerably reduced with the dose of antibiotics to be given before, during and after the surgery and by paying utmost attention to sterilization conditions during surgery.





▪ **Bleeding Risk**

All of our patients undergoing MRI under general anesthesia before surgery. During this MRI scan, we give a contrast material to create a 3-dimensional map of all the vessels of the brain. This process allows us to carefully evaluate the target coordinates of the electrodes we will place during the surgery and the paths we will follow during the placement of the electrodes, thus reducing the damage to any vascular structure to very low rates.



▪ **Damage to Brain Regions**

The rate of occurrence of such risks is very low, and careful consideration of the path to be followed in preoperative calculations ensures that such damage is prevented.



Our Services

You can be sure that you will receive the best service during your treatment. If you decide to visit our center, we are offering a complete treatment package.

The package includes:

- **Full examination of the patient by all necessary specialists;**

- *Neurologist,
- *Neurosurgeon
- *Psychologist
- *Anesthesiologist
- *Nutritionist
- *Cardiologist
- *Physical Therapy and rehabilitation specialist.



- **Establishing the correct diagnosis before the surgery.**
- **Discussion the expectation with the patient and patient's relatives**

- **All laboratory and Radiological examinations;**

- Serological evaluations
- Chest Radiology
- Necessary blood tests
- 2 times Whole Brain Computerized Tomography (preoperative for planning and postoperative for electrode position checking) Under sedation
- Detailed Whole Brain Cranial MRI (under general anesthesia for higher quality of images).



Deep Brain Stimulation Surgery includes:

- Necessary equipments for the surgery (FDA approved)
- All necessary medication
- The work of the medical team led by **Dr. ATILLA YILMAZ**
- Postoperatively daily DBS system check and wound care.
- Postoperatively daily DBS programming
- Post-operative rehabilitation and physiotherapy exercises.
- Walking and occupational therapy

These services are available as standard in all our service packages, service packages including extra services are also available.



Our services also includes:

- 7 DAYS at the hospital for the patient and his/her two relatives.
- 7 DAYS accommodation at the hotel for the patient and his/her relatives during the rehabilitation and physical therapy period.
- Three meals a day for patients and his/her relatives during the stay (hospital and hotel).
- Transfer to and from the airport.
- Airport - Hospital transfer Hospital - Hotel transfer After discharging Daily Hotel - hospital transfers.
- Long-term Postoperatively online consultations (for 2 years).
- Your treatment will continue for approximately 14 DAYS. Experienced staff and translators will be with you at every stage of your treatment. They will give you all the support and attention you need.



Transfer

When you land at the airport in Turkey, we welcome you with a V.I.P transfer vehicle. A comfortable journey awaits you from the airport to our hospital with our transfer vehicle. And after your treatment is completed, we drop you back to the airport.

‘We provide the best transfer and accommodation opportunities for you.’

Hotels

During the 2 weeks period here, you will stay in our hospital for the first week to monitor your medical process. In the second week, we provide accommodation in the hotel located in an area close to our hospital so you can come everyday for dressing, examination, and stimulation programming.

We have two different hotel options. In standard package you will have room in a 3-star hotel with suites. Additionally you can upgrade your package with 5-star hotel with standard rooms. During these stays, 2 relatives of our patient can accompany.

Post operative Rehabilitation

For every patient we provide physical therapy and Psychological support at the hospital and hotel.

Physical therapy is very important for patients who have difficulty in walking or moving for a long time due to their illness.

Physical therapy is applied to correct posture, walking, and muscle imbalance, to increase mobility and endurance. It may include point therapy to reduce stiffness and relieve pain, in addition to strenuous therapy exercise to strengthen the joints, mobilize them, and restore soft tissue.

We also support our patients by psychological evaluation and therapy.

Food

Our package also includes 3 times meal per day for the patient and 2 relatives, and also we prepare some traditional surprises, and welcoming snacks.

Our center and our Professor have provided training opportunities on Neuromodulation surgeries to 25 countries named below.

Our professor

Assoc.Prof. Dr. Atilla YILMAZ

has contributed to the realization of such surgeries in all these countries.

- Germany
- Azerbaijan
- United Arab Emirates
- Algeria
- Morocco
- South Africa
- Georgia
- Croatia
- Iraq
- Iran
- Qatar
- Kazakhstan
- Kyrgyzstan
- Libya
- Lebanon
- Egypt
- Mongolia
- Moldova
- Uzbekistan
- Pakistan
- Romania
- Russia
- Saudi Arabia
- Tajikistan
- Jordan

Our professor
Assoc.Prof. Dr. Atilla YILMAZ has
successfully operated more than 500
patients from 30 different countries in
terms of neuromodulation surgeries.

- Germany
- Austria
- Azerbaijan
- Bulgaria
- Algeria
- Palestine
- Georgia
- Netherlands
- Iran
- Iraq
- Kazakhstan
- Kyrgyzstan
- Kosovo
- Kuwait
- Turkish Republic
of Northern Cyprus
- Libya
- Lebanon
- Mongolia
- Nigeria
- Uzbekistan
- Pakistan
- Russia
- Saudi Arabia
- Serbia
- Syria
- Tajikistan
- Tunisia
- Turkmenistan
- Ukraine
- Jordan

NEUROMODULATION

Nerve

Regulator

Neuromodulation, which literally means regulating the nervous system, consists of 5 different surgeries applied on different diseases.

Deep Brain Stimulation

Parkinson's
Dystonia (involuntary movement and contraction)
Essential Tremor Treatments



Spinal Cord Stimulation

Diabetic Neuropathy
Back or Neck Surgery
Pain Due to Vascular Diseases (Bueger)
In the treatment of pain (phantom) resulting from the amputation of a certain limb

Sacral Stimulation (Bladder Stimulation or Hip Stimulation)

Urinary Incontinence, Failure to Urinate, Inability to Urinate,
Incomplete Urine Discharge,,
Frequent urination
Involuntary incontinence of flatulence
Interstitial Cystitis, Pelvic Pain, Chronic Constipation
Neurogenic Bladder Treatments



Vagus Nerve Stimulation (Epilepsy)

Epilepsy resistant to drug treatment

Baclofen Pump

In the treatment of involuntary contractions (Spasticity)



All these Neuromodulation Interventions are successfully applied in our Center.



neuromedulationcenter



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NeuromedulationinTurkey



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