

## **World's/Asia's first Asleep Frameless Robotic (Autoguide®) implantation of Deep Brain Stimulation performed at KIMS hospitals**

When human skills are combined with artificial intelligence, the brain computer interface system can be used more efficiently and is less expensive.

Functional Neurosurgeons at KIMS Hospitals have developed a program "Parkinson's Group" to provide latest versions of treatment with Tomorrow's Technology, today for patients suffering from Parkinson's disease and Movement disorders.

Movement disorders make life miserable. However, these symptoms can be reversed with Deep brain stimulation

Speaking about this, Dr. Manas Panigrahi, HOD & Senior Consultant Neurosurgeon, KIMS Hospitals, Secunderabad, said, "Brain has very small structures named as nuclei are a group of neurons, if these structures function is modified by electricity, then we can reverse all those symptoms of Parkinson's disease and movement disorders".

"When targeting such very small areas of the brain, precision is the key. By using a Robotic assistant, we can be extremely precise in delivering this life changing treatment".

"The Stealth Autoguide® Robot helps calculate the exact position and trajectory needed to reach the targeted area of the brain. The Neurosurgeon places a very thin wire with small electrodes on its tip that will deliver electrical stimulation to a small volume of tissue".

"A standard accuracy registration for Deep Brain Stimulation usually falls between 0.8 and 1.2 millimetres. By using the Stealth Autoguide® Robot, on recent surgery the "Parkinson's group" at KIMS hospitals has registered an accuracy within 0.2, which is the first best in the nation according to Autoguide® data. That's about the fraction thickness of a hair".

Adding further, Dr. Dhanunjaya Rao Ginjupally, Stereotactic and Functional Neurosurgeon, KIMS hospitals, Secunderabad, said, "Those fractions of millimetres can make a big difference in the effectiveness and safety of Deep Brain Stimulation. If the electrodes are not implanted in just the right place, the Neurosurgeon may have to penetrate the brain several times, which increases the risk of bleeding besides multiple programming and lead repositioning. However, if the electrodes are implanted in just the right place, the effects are overwhelming while minimising the risks and revisits to hospital".

"Very few centres around the world have done DBS without a frame fixed to the head. We are very excited that we used a unique technique to perform DBS with Robot assistance without a frame fixed to the head. We have pioneered in Asleep DBS and developed unique techniques with tomorrow's standards, today".

"Talking about Frameless Robotic Deep Brain Stimulation surgery, robot help in precision and asleep surgery with no frame make the patient more comfortable and feel no pain compared to conventional awake frame-based DBS surgery".

"It's a very delicate procedure and requires a lot of precision. We are happy to perform the World's first Frameless Robotic Stealth Autoguide® Asleep procedure with 100 % accuracy. We have been working on this Robotic system for a year. Definitely it's a big advantage to patients. Artificial intelligence used for this unique procedure has reduced the time of procedure, cost and stay in hospital. We are one of the largest centres to do DBS procedures when the patients are asleep".

Very few hospitals around the world perform Asleep Deep Brain Stimulation and here at KIMS hospital, "Movements Disorders Section and Functional Neurosurgeons" adopted innovative procedures involving Robotic guidance to navigate into the centre of the brain and place the electrodes. The electrode placement is enhanced by artificial intelligence integrated robot guidance with fractions of millimetric precision on the planned target.

This procedure will help in opening the door to learn more precise procedures. Till today We are the only centre to use this type of robotic system for Deep Brain Stimulation.

### **Abhinay's story:**

32-year-old Abhinay was diagnosed with a rare disorder with symptoms of tightness of hands and legs and had difficulty in walking similar to Parkinson's disease.

Abinay Kumar had noticed a right hand tremor when he was 26. It was so subtle; it could have gone unnoticed. Due to his right-hand tremor, he had toppled his cup of hot coffee on him. He was unable to eat food and unable to write. He has never noticed any decrease in tremor and moreover his right leg had started having similar tremor with more tightness. Ever since he is not able to walk and even go to the restroom. He was restricted to home and dropped out from graduation.

His mother, Savitamma was very much worried about his condition and noticed his symptoms getting worse year after year.

"The ones I remember early in life were mild right-hand tremors, but then they changed to right side of body that mostly happened over a year. We went through a lot of change in medication trying to get rid of tremors. Initially medication helped to some extent, but days gone, medication has no effect on relieving my symptoms, moreover over dosed medication made me stiffer and drowsier all day" said Abhinay.

Post-procedure:

Now nobody knows that I ever had this disorder. I can ride a bike, can eat, can write, can run, and can do all my favourite activities. I am no more self-conscious. After all these years of suffering, I can do all things on my own without depending on anyone. Thanks to DBS. This procedure has given me life back." Says a beaming Abhinay now.

Dr. Manas Panigrahi said, A millimetre doesn't seem like much difference but here We are talking about fractions of millimetres which are hard to see with eye. The artificial intelligence used with robotic integration made us understand how such a small measurement could make a life changing difference. Brain surgery is always complicated and when it comes to reducing margin of error by even the tiniest fraction of millimetre can make a huge difference.

Dr. Dhanunjaya Rao Ginjupally said. "Precision, Accuracy is always used to define Deep brain stimulation and should always be performed in level 4 centres with the best accuracy possible. If you can have an accuracy within one millimetre, that is what allows us to precisely target whatever area you need to target.

With the right people – a skilled Neurosurgeons and Neurologists who specialises in Parkinson's disease and Movement disorders– and the right support, such as an extremely accurate Robotic tool, "Parkinson's group" at KIMS hospitals in Hyderabad is one of the very few places in Asia able to offer these treatments.

The AI integrated Robotic system helps in various brain surgeries including Epilepsy surgery, Brain tumour biopsy, Parkinson's disease (deep brain stimulation) for Parkinson's disease, Movement disorders and some Psychiatric disorders.

"Parkinson's group" has the ability to provide care for patients with Parkinson's disease, essential tremor, dystonia, Depression, OCD, Epilepsy and we can do that very accurately. All of that is reflected in our patient outcomes.

-Dr. Manas Panigrahi,  
HOD & Senior consultant Neurosurgeon.

-Dr. Dhanunjaya Rao Ginjupally,  
Stereotactic and Functional Neurosurgeon.

-Dr. Praveen Kumar Yada,  
Movement Disorder Specialist.