



# ALL YOU WANTED TO KNOW ABOUT **DEEP BRAIN STIMULATION SURGERY**



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# All you wanted to know about Deep Brain Stimulation Surgery

## What is Deep Brain Stimulation (DBS)?

Deep Brain Stimulation (DBS) involves implantation of an electrode deep within the brain, usually, under local anaesthesia. In recent times, Subthalamic Nucleus (STN) stimulation has emerged as the favored site for DBS for Parkinson's disease. This electrode is permanently left in place and connected to a small implantable pulse generator (IPG). This remotely programmed pacemaker emits small pulses of energy through the electrode to block the abnormal activity in the brain that cause the symptoms of Parkinson's Disease. The first procedure of the modern DBS was performed by Prof. Benabid, in France and reported in 1995 and published in 1997. **After extensive training with Prof. Benabid, Dr. Paresh Doshi performed the first DBS surgery in India in 1999.**

Pict of DBS



Thanks a million for contribution of DBS to medical field. But for this surgery which you performed on me, I would have been a living corpse.

- Mrs. Mendes, Teacher

**Praveen Kumar**  
10 years post DBS

My father diagnosed parkinson disease in 2007. In 2013 we did the Deep brain Stimulation (DBS) surgery from some other private hospital. But my father couldn't get any benefit of DBS. Then we contacted several top neurologist in India. Most of them not given positive response to review my father. Luckily we found Dr.Paresh via internet. Contacted him via his office, he not only given positive response to review my father, he talked with me over phone and given me confidence. I brought my father in wheel chair to his clinic. He and his team reprogrammed DBS device, and my father health and life quality improved a lot. He even resumed going his office till he his retirement in 2016. Its a decade now, my father is under care of Dr.Paresh Doshi and his team. My father still walks normally, does his daily activities on his own and plays with my kid. Thanks a lot to Dr. Paresh Doshi and his team. Dr. Paresh Doshi expertise has benefitted my father and my family happiness.

Dr.Paresh doshi team member Sister Bharathi is very polite and handles the patients with care. Mr pankaj who is Dr. Paresh secretary is very prompt and replies for any queries and connects with Dr whenever required. Ms Deepali who at his office supports and coordinates the admission and other related processes with care.

Thank you Dr. Paresh Doshi for your expertise and your wonderful team.

**Pranav Purvant**

My Mother is suffering from Parkinson since 7 years. We had done DBS operation at Global hospital... but after operation she is facing same issue like before. From Google I could know the profile of Dr. Paresh Doshi about D.B.S and reprogramming.

Then I decided to reprogramming at Jaslok hospital (Dr. Paresh Doshi) and I did so.

Now my mother is fine and improving.

Thank you Dr. Paresh Doshi sir and Team.

In 2006, with my husband we visited South Africa to be with our daughter for our first grandchild's birth. God bless, but I would be the last person to retire for bed after the midnight feed and managing meals for five of us during the day. I know that without the ticker, the pace-maker, Would not have been possible.

- Mrs. Katy Merchant, Trustee of Parkinson's Care Trust

*A story of life*  
For those who supported me during my sickness

Thank you  
Dr. P.K. Doshi  
Ms. Bahanti - Nurse  
Staff of Dr. Doshi

I know it is small and the my hand writing before operation and it means nothing towards what you have done but no other word to say.

Thank you with tears

Really I am writing this with tears in my eyes because I will be back to my life again to join my four kids play with them teach them and you and your hospital Jaslok will be a part of the story.

Thank you M. Alamin  
Jeddah KSA  
965591971522  
omermudami@yahoo.com

Omer Alamin (From Saudi Arabia)



## What does our patients say (As the testimonials are in patient's own language, pl excuse the grammar)

### Mahendra Dhingra



I am Mahendra Dhingra. I was suffering Parkinson disease since 2005. I was not aware about this disease. Earlier time, my hand used to tremor or shake badly, not able to hold a cup of coffee. My cousin sister noticed it and informed that it's a early stage of Parkinson disease. Then I consulted with family physician and Dr. Confirmed that it is Parkinson's disease. Later on I met neurosurgeon Dr. Paresh Doshi at Jaslok hospital on 2013 and was suggested for DBS surgery. I udnerwent DBS in 2014 by Dr. Doshi.

After surgery I felt many positive changes, before surgery I used to get acute feet pain, body stiffness, slow movement, if I got stress then my full body used to tremor, changing in hand writing. But after surgery, the entire mentioned problem has removed. Thanks a lot Dr. Paresh Doshi. I personally believe that he is the best Neurosurgeon in India for Parkinson's disease. Sister Bharati in sir's team is an amazing nurse who took complete care of me. Thanks a lot Dr. Paresh Doshi.

### R.T. Thomas



Dr. Paresh Doshi provided great guidance to help my father get the best DBS surgery for his Parkinson's disease. Especially when other hospitals/doctors had closed doors, Dr Doshi gave us an unbiased option and positive reinforcement. He has an excellent supporting staff at Jaslok hospital and special thanks to sister Bharati for educating us about DBS and Parkinson's symptoms. I recommend consulting Dr.Doshi for all Parkinson's patients.

### Sandesh Godbole



I am suffering from parkinsons. I undergo DBS last year, and now I am more than happy. Now I am again an independent person. I travel a lot now as if now nothing has happened. Thanks to Dr. Paresh Doshi, Dr. Raghavendra, Ms. Bharti and Pankaj.

## When is the ideal time to undergo DBS procedure?

In the initial years, Parkinson's disease (PD) is well controlled by medications, the exception being, uncontrolled tremors for which an early surgery may be needed. However, a few years down the line the disease tends to progress and the side effects of medicines can be seen. Most common side effects include motor fluctuations, in the form of sudden off periods or unpredictable off periods, hallucinations, dyskinesias or symptoms attributable to dopamine dysregulation. At this time increasing the dose of medication is not helpful as it only brings in more side effects. Patient usually start changing doctors in search of better control of the disease, however, every change that brings some improvement, becomes increasingly short-lived. Usually this period comes, 6 to 7 years after the disease's progress , however, it can occur earlier in some patients, especially if the patient gets PD at a young age of less than 40. It has been in the opinion of all international experts in the field that onset of motor fluctuations should initiate the discussions for surgery. **We believe that the surgery should be offered to the patient when disease is not adequately controlled by medical management and his quality of life is getting impaired.**

In 2013, a landmark study was performed across seven centres in Europe which concluded that offering surgery early in the course of disease, after the motor fluctuations are set in, would not only improve the quality of life but also help patients reduce the medication dosage and avoid long term side effects. One can Google this by the name of EARLY STIM study for more information. Even the USA FDA has given approval for performing studies early in the disease.





# What are the benefits of surgery?

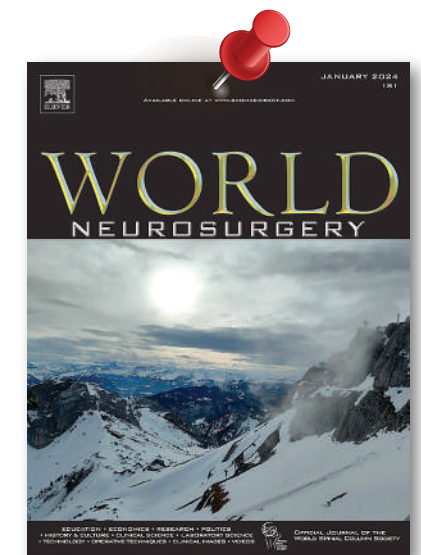
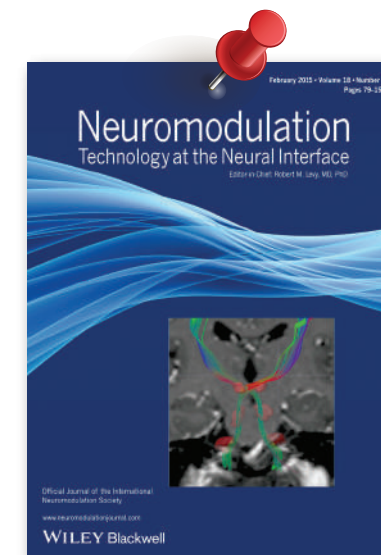
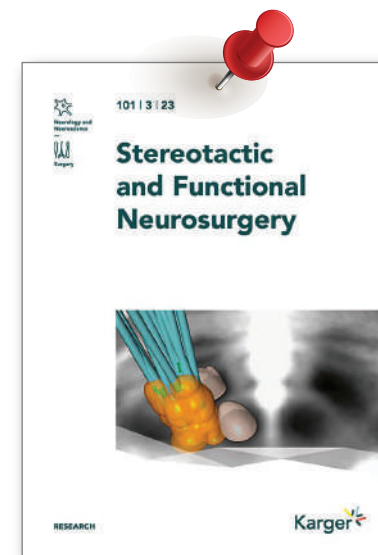
It is known that the surgery will improve the duration of your ON period, i.e. the period when you are fully functional without the side effects of medicines and not slow or frozen, as in, without the effect of medicine. Typically, the surgery will increase the ON period to last for 70 to 80% of the day and the rest of the day the patient would experience OFF periods which are not as severe OFF periods as they used to suffer before the surgery. After successful surgery, in most of the patients, we have found that we are able to reduce the medications by 40%, while for some patients who have opted for surgery earlier in the disease we have also been able to take them off medications entirely. The surgery also offers significant benefit on tremors and rigidity, alleviates dyskinesias and hallucinations, improve depression, increases weight and generates an overall positive feeling to help in improving the quality of life. **However, not all the patients benefit equally and hence it is very important that your surgeon understand what he can deliver by surgery and what he can improve by medical management so that you can understand the exact outcome of surgery. Most of the centres do not have adequate experience to give you a convincing and confident answers to all these questions which are very important to the patient.**

“  
My father was suffering from Parkinson's disease for 3 years. Tried many treatments from 5 countries without any benefit. Finally we found Dr. Paresh and he did a surgery for my father and since 6 years he is very well.”  
– Mohamed Ali



“  
If there is a miracle in life, it has to be this.” (Seeing the post operative results of PD surgery)  
– H.E Nawal Kishore Sharma, Governor of Gujarat

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## Can you describe a typical surgical procedure?

The surgical procedure differs from centre to centre. We have perfected the art of surgery and have realised that each patient is an unique individual and we have to tailor the surgery to suit his/her needs. A typical surgical procedure involves the admission of the patient on day 0, followed by various clinical and psychological evaluations on Day 1, followed by MRI under sedation or general anaesthesia on Day 2, surgery for electrode implantation under local anaesthesia on day 3, and pacemaker implantation under general anaesthesia on Day 4. During the first two days there are extensive Parkinson's Disease related assessments, video recordings and patient counselling by our team in order to ensure that the patient can undergo surgery with confidence and with a smile. Usually the patient stays in the hospital for the six to seven days till the removal of sutures. During this time he undergoes programming of the pacemaker and simultaneous reduction in medications. We have different strategies for operating younger patients and elderly patients, and patients with comorbid diseases. We are very particular in our protocol for example, we only perform MRI using 3T MRI machine, navigation system used for the surgery is in the hospital and not procured from outside, the microelectrode recording equipment which is one of the most sensitive tools for guiding the success of therapy also belongs to the hospital and hence chances of error are minimised. During both the parts of surgery, i.e. under local anaesthesia on day 3 and general anaesthesia on day 4, the senior most anaesthetist, who has been a part of our team for the last 20 years, monitor the patient, thus ensuring the safety of the patient.





# What would be the follow up schedule after surgery?

As we have a large experience of operating patients of Parkinson's Disease we are very confident that our initial programming will give the desired benefit to around 70% of the patient. However there are some patients who may need reprogramming in the first three months after surgery once the initial effect of surgery wears off. We always recommend to the patient that, they should be prepared to come back to our centre once in the first three months.. We do not charge for any reprogramming for the first time and this is covered in the cost of surgery (except if the patient gets admitted). One's the patient has reached stable programming parameters we give them two or three different programs so that they can adjust to the requirement after they go back to the routine. We usually have to see them only once a year or once in two years.



### जसलोक हॉस्पिटल ने एशिया में पहली डीप ब्रेन स्टिम्युलेशन सर्जरी सफलतापूर्वक की

**प्रयागराज।** जसलोक हॉस्पिटल एंड रिसर्च सेंटर ने हाल ही में पार्किंसन रोग के लक्षणों को नियंत्रित करने के लिए एक उन्नत ऑटो-सेटिंग डिवाइस (पर्सनेट पीसी) का उपयोग करके एशिया-पैसिफिक की पहली डीप ब्रेन स्टिम्युलेशन सर्जरी की यह सफल सर्जरी प्रसिद्ध न्यूरोसर्जन डॉ. परेश दोशी न्यूरोसर्जरी निदेशक, के द्वारा एक 42 वर्षीय ऐसे पुरुष पर की गई जिसमें युवावस्था में ही पार्किंसन रोग की शुरुआत निर्दिष्ट की गई थी।

मरीज श्री हरिकृष्ण बहुत कम उम्र में पार्किंसन रोग के संकेतों में आ गए थे पिछले सात वर्षों में वह दवाओं से अपना इलाज कर रहे थे और उनकी बीमारी को उन्होंने पर्याप्त रूप से नियंत्रित कर लिया था। दुर्भाग्य से, पिछले दो वर्षों से उनकी स्थिति खराब हो गई जिसमें उनके हाथ और पैर एक लठ्ठे की तरह अकड़ गए अंगुठे और उंगलियां मुड़ गईं और उनमें गंभीर दर्द हुआ करता था वह सब ज्यादातर दवाओं के सहारे चल रहा था, लेकिन कई बार दवाएं भी काम नहीं करती थी इन दवाओं के कारण कई दुष्प्रभाव हो गए जिन्हें सामूहिक रूप से डिस्केनेसिया कहा जाता है।

डॉ. परेश दोशी ने अपने विचार व्यक्त करते हुए कहा

जसलोक हॉस्पिटल एंड रिसर्च सेंटर 1998 से डीप ब्रेन स्टिम्युलेशन सर्जरी कर रहा है। ये सर्जरी पिछले 20 वर्षों में की गई है और जो अब उन्नत पार्किंसन रोग से पीड़ित मरीजों के लिए एक अच्छी तरह से स्थापित उपचार है। एशियाई क्षेत्र में पर्सनेट पीसी का उपयोग करके सफल सर्जरी करने वाले पहले संस्थान होने पर हमें बेहद गर्व है और हमें यकीन है कि यह पार्किंसन रोग से पीड़ित भारतीय मरीजों के परिदृश्य को बदल देगा। हम वास्तव में उन्हें बेहतर जीवन जीने में मदद करने में सक्षम होने के लिए आशा करते हैं।

### Remote control miraculously mutes Parkinson's afflictions

**Deep Brain Stimulation Helps Doc To Get Back On His Feet**

Ahmedabad: Dr N. Joshi's life improved by a remote control. Literally. One moment he is sitting relaxed, talking, his body movements extremely fluid and normal. Then, a button on the remote control is switched off, and Dr Joshi becomes stiff like a statue.

**TOI Ahmedabad**  
New program started 2012

**City gets centre for advance surgery for patients with PD**

**DBS is not cure, but control**

Ahmedabad: Dr Parash Doshi who is a pioneer of DBS said, "Deep brain stimulation is a surgical procedure in which an electrode is implanted deep in the part of the brain that controls movement of a body. The stimulation delivered to this electrode is controlled by a device called a pulse generator. The surgery is recommended to patients that have been suffering from the disease for a long time, partly because the medicines give stiffness, or the advanced stages of the disease. This surgery has shown good results in controlling the involuntary movements of the body in patients. The surgery is not a cure but helps control the symptoms." said Dr Parash Doshi.

**SYMPTOM CHECK**  
MAJOR SIGNS OF PARKINSON'S DISEASE  
• Tremor  
• Postural instability  
• Loss of facial expression  
• Disturbed balance or speech, stumbling, stumbling  
• Swallowing problems  
• Drooping  
• Dystonia; involuntary cramping or "locking" of a muscle  
• Small, regular handwriting  
• Intermittent double vision  
• Non-movement symptoms  
• Apathy, mood swings, memory loss  
• Constipation  
• Low or fluctuating blood pressure  
• Sexual dysfunction  
• Pain, loss of smell and taste

### Brain stimulation surgery for Parkinson's patients on way

Our Mumbai Bureau  
JANUARY

PERSONS suffering from Parkinson's Disease, a neurological disorder, have fresh hope from a new form of brain stimulation surgery. Called subthalamic nucleus stimulation (STN), the surgery reduces the patient's dependence on drugs whose prolonged use is known to produce side effects, according to medical experts. STN involves implanting a gadget that continuously sends stimuli to the brain, thus normalising body movements and increasing the patient's chances of leading a normal life.

Parash K Doshi, a consulting neurosurgeon at the city-based Jashlok Hospital, who has performed this surgery on several patients, says it has resulted in a 70 per cent reduction in the use of drugs with four patients coming off medication completely. Parkinson's is initially treated with medicines like the Levodopa compounds which work in a chunk of the cases. However, as the disease advances in some patients, the drugs lead to side effects including abnormal body movements. This is where surgery comes into play, a small (14mm) hole is drilled into the patient's skull after injecting a local anaesthetic. An electrode is then passed into the brain at the target site to check for the response of the patient to a calculated dose of current administered through a machine called radio frequency lesion generator. Dr Doshi says there is an immediate improvement in the rigidity and in the speed of action in cycling and alternating hand movements. The patient is also examined for any weakness in the arm or legs or difficulty in cycling and alternating hand movements. If there is a good response without any unwanted side effects the electrode is either replaced with a deep brain stimulation electrode or a high temperature current is passed to cause a lesion in the brain.

In the last one year, Dr Doshi has performed this surgery on 22 patients. However, the cost of the surgery works out to an eye-popping Rs 5.5 lakh (the implant, which is imported, makes up a bulk of the cost at Rs 3.5 to 4 lakh). Dr Doshi says the implant has to be imported as there is no local manufacturer.

The entire process is done under local anaesthesia with the patient fully awake. There is no pain or discomfort during the surgery. The initial time for surgery is anywhere between 4 to 8 hours. Patients have been able to return to their normal life and activity," claims Dr Mohit Bhatt, a movement disorder neurologist with the Jashlok Hospital.

STN is the latest in a line of surgeries that have been developed to treat Parkinson's patients. The other two — cheaper alternatives — are called thalamotomy and pallidotomy where a small area of the brain is destroyed.

### City teen undergoes brain surgery for Parkinson's

Chaitya, 16, underwent a "deep brain stimulation" surgery which has been placed in his brain. From a few days ago, he has been able to walk, write and eat normally.

**Severe pain gone after the surgery, I am able to write after a long time'**

**JUVENILE-ONSET EXTREMELY RARE**

Mumbai: A 16-year-old teenager from Vadodra has become the youngest Indian to undergo deep brain stimulation surgery for Parkinson's disease to control his debilitating symptoms. Hiteshu Dave, who stopped going to school after the disease was diagnosed three years ago, was operated on in a Mumbai hospital on May 5.

The surgery — called deep brain stimulation — entails placing electrodes in one area of the brain that produce symptoms associated with Parkinson's disease. "It was a very delicate operation so that we could decide just where to place the electrodes," said neurosurgeon Dr Parash Doshi of Jashlok Hospital, Peddar Road. Dr Doshi, who operated on Hiteshu, said there are only two other cases of DBS surgery performed on such young patients, but both were done under anaesthesia.

Neurologist Dr Parash Doshi, who mapped Hiteshu's brain during the procedure, said, "As Hiteshu leaves school, we asked him to bowl during the mapping process. When he returned to home, we realized we had found the right area for placing the electrode."

It will take three months for Hiteshu to improve with physical therapy and neurological stimulations. As the disease diagnosed with Parkinson's at 13 years of age, his condition deteriorated to such an extent that he couldn't speak, eat or walk. "His mother, Nisha, took care of all his needs," said Hiteshu's father, Chaitanya.

But on Monday, Hiteshu could type out SMSes and eat on his own. "It is a great moment for me. We wanted him to become independent enough to be able to perform some daily activities," said Chaitanya. Juvenile onset of Parkinson's disease is a rare occurrence, but not unheard of. World Health Organisation, the Paris neurological, Louis L'Etard, diagnosed the condition for the first time in a three-year-old child in 1875.

### THE TIMES OF INDIA

Tuesday, 13 May 2014, Page - 02

## Teen has brain surgery for Parkinson's while awake

**DEEP BRAIN STIMULATION**

**HITESHU DAVE (16)** from Vadodra underwent deep brain stimulation surgery on May 5 and 6 at Jashlok Hospital, Peddar Road. Possibly the youngest child to undergo the surgery while awake.

**PARKINSON'S DISEASE**

- A progressive disorder of the nervous system, affecting movement. Starts with slight tremor in one hand, causing stiffness.
- Rarely occurs among people below 20, but is not unknown. It is then called Juvenile-Onset Parkinson's disease.
- Prevalence is 1-2% in 65-plus age group.
- When it occurs in 20-40 age group, it is called Young-Onset.
- Can't be cured, but medication can help. Brain surgery may be recommended in some cases.

**THE SURGERY**

Deep brain stimulation (DBS) is a surgical procedure to control symptoms associated with Parkinson's disease (PD), such as tremor, rigidity, stiffness, slow movement and walking problems.

**DBS SYSTEM HAS THREE COMPONENTS**

- LEAD** Wire-like electrode is inserted through opening in skull and implanted in targeted brain area.
- EXTENSION** Insulated wire passed under skin of head, neck, and shoulder, connecting lead to neurostimulator.
- NEUROSTIMULATOR** Battery, usually implanted near collarbone. Functions like pacemaker to deliver electrical stimulation to targeted areas in brain to block abnormal nerve signals that cause PD symptoms.

Doctors have to locate area where electrical nerve signals generate PD symptoms using MRI or CT scans.

Once system is in place, electrical impulses are sent from neurostimulator to lead, into brain. These interfere with and block electrical signals that cause PD symptoms.

Juvenile onset is not easy to diagnose as the symptoms are similar to many other diseases. But the disease seems to become severe faster among juveniles than among adults, said Dr Wadia.

Dr Doshi said that while the "chronic nature" of the disease (when the patient is able to perform his or her tasks independently) is long-

### Brain stimulation surgery for Parkinson's patients on way

Our Mumbai Bureau  
JANUARY

PERSONS suffering from Parkinson's Disease, a neurological disorder, have fresh hope from a new form of brain stimulation surgery. Called subthalamic nucleus stimulation (STN), the surgery reduces the patient's dependence on drugs whose prolonged use is known to produce side effects, according to medical experts. STN involves implanting a gadget that continuously sends stimuli to the brain, thus normalising body movements and increasing the patient's chances of leading a normal life.

Parash K Doshi, a consulting neurosurgeon at the city-based Jashlok Hospital, who has performed this surgery on several patients, says it has resulted in a 70 per cent reduction in the use of drugs with four patients coming off medication completely. Parkinson's is initially treated with medicines like the Levodopa compounds which work in a chunk of the cases. However, as the disease advances in some patients, the drugs lead to side effects including abnormal body movements. This is where surgery comes into play, a small (14mm) hole is drilled into the patient's skull after injecting a local anaesthetic. An electrode is then passed into the brain at the target site to check for the response of the patient to a calculated dose of current administered through a machine called radio frequency lesion generator. Dr Doshi says there is an immediate improvement in the rigidity and in the speed of action in cycling and alternating hand movements. The patient is also examined for any weakness in the arm or legs or difficulty in cycling and alternating hand movements. If there is a good response without any unwanted side effects the electrode is either replaced with a deep brain stimulation electrode or a high temperature current is passed to cause a lesion in the brain.

In the last one year, Dr Doshi has performed this surgery on 22 patients. However, the cost of the surgery works out to an eye-popping Rs 5.5 lakh (the implant, which is imported, makes up a bulk of the cost at Rs 3.5 to 4 lakh). Dr Doshi says the implant has to be imported as there is no local manufacturer.

The entire process is done under local anaesthesia with the patient fully awake. There is no pain or discomfort during the surgery. The initial time for surgery is anywhere between 4 to 8 hours. Patients have been able to return to their normal life and activity," claims Dr Mohit Bhatt, a movement disorder neurologist with the Jashlok Hospital.

STN is the latest in a line of surgeries that have been developed to treat Parkinson's patients. The other two — cheaper alternatives — are called thalamotomy and pallidotomy where a small area of the brain is destroyed.



# Prof. Dr. Paresh Doshi in the News

## Rare brain surgery performed

By A Staff Reporter

**MID-DAY, Friday, January 2, 1998**

NAGESH Shinde does not smile. The only occasional glimpse of emotion on his expressionless face is that of an uneasy uncertainty and conscious helplessness. Yet, this 27-year-old shows little signs of having undergone a rare and sensitive brain operation.

Last Wednesday, Shinde was operated upon for a perianal tumour in his brain, using the stereotactic technique. Dr Paresh Doshi, a neurosurgeon consulting in Harkisandas and Lilavati hospitals. The operation was carried out at Harkisandas Hospital. The minimal invasive technique causes less hospitalisation and quick recovery since the patient is given local anaesthesia.

Not only did Shinde, who was working at a tailoring shop, walk out of the hospital in two days but today performed all his regular functions. The spells of dizziness and temporary blindness that started soon after Doshi's brain operation were due to the accumulation of fluid within the brain. The tiny tumour (around 1.5 cm) was blocking the outlet of the third ventricle and the passage of the fluid. "If the condition would have persisted, there was a chance he may have lost his sight and even his life," Doshi told MID-DAY.

The highly specialised biopsy was done to find out the type of tumour in Shinde's brain stem. "Though not done for the first time, this operation is important because of the complication in Shinde's case," says Doshi, who has trained abroad for four years on this technique. "The tumour was surrounded by a network of veins. I had to do the biopsy without harming any of these vessels. Complications in this surgery can lead to loss of speech or hearing or vision. It depends on the expertise of the surgeon and the technique used."

The stereotactic technique involves use of a frame to fix the exact location of the tumour. Once the tumour is identified, a small 1 cm hole on the skull can help get to the tumour cavity. Normally in other brain surgeries a big part of the skull is cut and the brain is pushed aside.

"But in Shinde's case, since the brain was in pressure, it would have spilled out the moment we opened the skull. Hence it was essential that the biopsy be done without harming the brain," says Doshi.

The result of the biopsy showed that Shinde's tumour is treatable and he is presently undergoing radiation therapy at Tata Memorial Hospital. "We shall be giving him radiation for six weeks, every day so that the tumour mass reduces," says Dr Rajiv Sarda of Tata Memorial. "The important factor in this case is that intervention was at the right time."

There is just a hint of death in this case, Doshi says. "Just in case radiation therapy is not effective we will have to do an immediate operation where the fluid is diverted to the other body cavities of the brain."

The operation cost the family Rs 50,000 on a lot of cost. "Normally this surgery would have cost Rs 50,000, but for the family we

## The last resort

By A Staff Reporter

**THE INDIA EXPRESS, Thursday, September 17, 2003**

**BODY&MIND**

Parkinson's disease. When that doesn't work, only surgery can bring relief," says Dr Paresh Doshi, neurosurgeon at Jaslok Hospital's Parkinson's Disease Treatment Institute, which he says is one of the most advanced centres for functional neurosurgery, with over 100 cases performed to date.

The other techniques in the world are used in the US and Europe. In India, the first case was performed in 1996 at Jaslok Hospital, Mumbai. Since then, a number of cases have been performed at Jaslok Hospital, Mumbai. The first case was performed in 1996 at Jaslok Hospital, Mumbai. The first case was performed in 1996 at Jaslok Hospital, Mumbai.

**Stimulus surgery in progress**

When medication stops working, Parkinson's disease victims can try surgery, reports Reenuka Suryanarayan

about the surgical techniques that he had introduced in Pune. "These techniques are being practised today at Jaslok," says the specialist.

There are two kinds of surgery. While the traditional surgery calls for destroying a group of cells, the second technique involves surgery to alter deep brain stimulation. It involves implanting an electrode in the brain.

Dr Paresh Doshi, neurosurgeon at Jaslok Hospital, Mumbai, says that the first case was performed in 1996 at Jaslok Hospital, Mumbai. The first case was performed in 1996 at Jaslok Hospital, Mumbai.

## Implants break migraine patient's pain 'circuit'

Madhvi Jyoti Joshi

**TIMES CITY**

**CHAHOPI**

**NEUROVASCULAR DISORDER**

Migraine is the most common of the chronic pain conditions that can interfere with a person's life. It is a chronic disorder that won't go away just with a few over-the-counter painkillers. But there is no cure for it. In fact, about 10 per cent of people with chronic conditions such as migraine, asthma, or rheumatoid arthritis, will have a more severe form of the disease. In fact, about 10 per cent of people with chronic conditions such as migraine, asthma, or rheumatoid arthritis, will have a more severe form of the disease.

**OCCIPITAL NERVE STIMULATION PROCEDURE**

Dr Paresh Doshi, neurosurgeon at Jaslok Hospital, Mumbai, says that the first case was performed in 1996 at Jaslok Hospital, Mumbai. The first case was performed in 1996 at Jaslok Hospital, Mumbai.

## 'Surgery can slow Parkinson's progression'

Hindustan times 2007

HT Correspondent  
Indore, January 31

A PERSON suffering from Parkinson's disease (PD) cannot perform simple actions such as lifting one's hand or moving his legs, which an average person can do without any effort. PD is a degenerative, neurological disorder of the central nervous system that affects the patients motor skills, but a surgery, though costly, can be an answer to manage the ailment afflicting about 5,00,000 persons in India.

"Unlike Alzheimer's disease, Parkinson's disease can be managed," says noted neurosurgeon from Mumbai's Jaslok Hospital Dr Paresh Doshi. In PD, brain cells, which produce dopamine, a chemical that transmits brain's message to nerves and muscles, are destroyed gradually. The common symptoms include rigidity in movement of hands or legs, tremors and shuffles and a mask-like face (a face without any emotions).

Till the mid-90s, patients in India depended on Levodopa, though it has side effects. Surgical procedures now available since 1996 give considerable relief to patients. In the first kind of surgery a lesion, a small area in the brain is destroyed while in the second type of operation called the deep brain stimulation, an electrode is passed in the brain with wires connecting it to a device inserted near the collarbone under the skin.

An IPG (implantable pulse generator) device—a pacemaker for brain—is surgically implanted to deliver carefully controlled electrical stimulation to precisely targeted areas within the brain. "The operation to implant the device, called deep brain stimulation, is not a cure for PD but after this, the progress of the disease is slower," Dr Doshi, who was the first doctor to perform deep brain stimulation in 1998 at Mumbai, said.

Two doctors from abroad performed this surgery in India in 1996 for the first time. Since 1998, Dr Doshi has till date performed 160 similar procedures—including both lesion and deep brain stimulation (102 cases) at Jaslok Hospital. "The surgeries have been able to reduce drug dependence in many patients and in a few cases, medicines

Continued on page 3

## I Helped Operate on My Brain

BY JACOB JOHN WITH KALPANA DEUSKAR

As the disease advanced, my life became a living hell until...

Dr Paresh Doshi, neurosurgeon at Jaslok Hospital, Mumbai, says that the first case was performed in 1996 at Jaslok Hospital, Mumbai. The first case was performed in 1996 at Jaslok Hospital, Mumbai.

# What are the different types of pacemakers and what are their merits and demerits?

Presently there are two companies in the country that have the infrastructure and direct presence to offer DBS solutions. There are other companies which work through the distributors, which we do not endorse, as we do not know when they will stop the services and the patient may be left with the pacemakers which cannot be serviced.

In the last 5 years there has been significant advancement in the technology of DBS. We now have pacemakers that can last from 5 years to 25 years. There are pacemakers that offer potential of recording neural signals from the brain which can be used to tailor the treatment for each individual patient and there are pacemakers that can deliver a wide range of stimulation in a very precise manner to help limit side effects. To further increase the complexity we now have regular and directional leads. All these devices have a particular purpose and a target patient. It is very important for your consultant to be conversant with all the devices and comfortable in using all of them equally well to offer you the best option for your treatment. All these devices are now "conditional" MRI compatible.



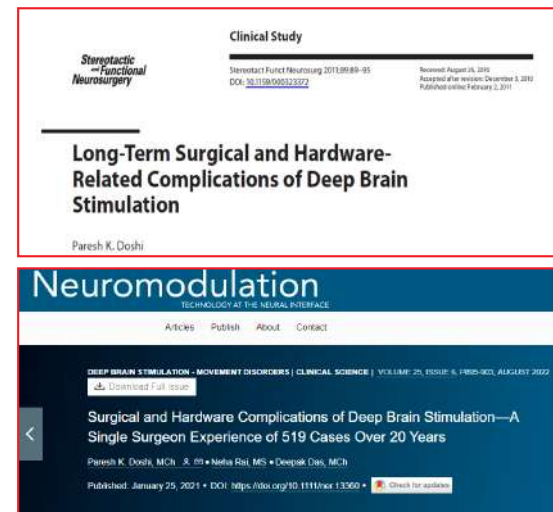


## What precautions will be needed after DBS?

After surgery we will provide you with the detailed list of do's and don'ts in order to safeguard the pacemaker. Broadly speaking, you can continue to do all the normal activities that you would like to do, e.g. swimming, dancing, jogging or any kind of exercise, use of cell phone, microwave oven, driving etc.

## What are the risks of surgery?

DBS surgery is pretty safe **in experienced hands**. The risk of surgery are minimal. We have analysed and published our own data for the first 150 DBS procedures and we had found that our risk of major complication was less than 1.5 %. This compared favorably with the best centres around the world. After 10 years, we further published a paper on our complications, after completing more than 500 procedures!! **This time the rate of severe complications almost came to zero.** As a patient you need to evaluate the risk v/s benefit ratio. The risk of the procedure reduces with learning, e.g. for the lady of the house to make a mistake whilst cooking is rare, whereas if someone less experienced cooks the same meal, it is going to taste differently each time.



## Why is the surgery done under in two stages?

We perform surgery in two stages because we feel that this increases the safety of the procedure. The first surgery is done under the local anaesthesia, after which the patient can be returned back to the room and given levodopa and meal, so as not to keep him off medications for too long. Next day we can do the surgery under general anaesthesia which is safe for the patient. We will discuss this more in detail when we meet. We are aware that this increases the cost of the surgery **but we do not want to reduce the cost and compromise on the Patient Safety.**

## Finally, what are the differentiating points of your centre?

- 1) **DBS is not a procedure for us but it is a religion.** We practice it with great faith and passion to ensure that the patients who are putting trust in us are rewarded to the best of our abilities.
- 2) We have one of the largest experiences of performing DBS surgery by a single centre over last 25 years of having operated on more than 650 patients (2023).
- 3) **The team:** PD patients have several intercurrent problems, ranging from depression and hallucinations, to urological problems to gastrointestinal problems. We understand that it is important to address all these, along with PD, if we have to improve the quality of life. Hence we have in our team experienced Psychiatrist, Urologist, Gastroenterologist, over and above a movement disorder specialist to assist in offering a complete solution to the patient.
- 4) **The equipment:** We are the only centre in Asia to have two sets of equipments, i.e. two stereotactic frame, two planning stations, two MRI and two MER equipments. This is a very huge infrastructure expense, but Jaslok Hospital has invested in it to improve the patient safety (You never know when one of the computer stops working!!)
- 5) The engagement with the centre is not limited to the surgical procedure, as this (surgical procedure) can be done by other people also, however the post-operative management, understanding the Symptoms and Signs of advancing PD, understanding the limitations of what you can treat and not treat and having the ability to use all the skills that are needed to program these patients is the USP of our centre, which no other centre can replicate.
- 6) Apart from offering the best care and support to the patient we have worked very hard to minimise the risk and complications of surgery and we are confident today to offer this surgery to patients who are usually considered not amenable to surgical treatment e.g. patients above 80 years.
- 7) We are the only centre in the country who have extensively published our work in Peer reviewed journals to give credibility to our program.
- 8) There have been several research projects, like comparing the infection rate amongst different categories of room accommodation at our hospital, which method of targeting is fool proof, can we use a resterilise pacemaker, etc. conducted at our hospital in last 25 years to improve the patient outcome.







“  
**More than 650 DBS  
 now performed at  
 Jaslok hospital**  
 ”

## Is the surgery painful, as it is done under local anaesthesia?

There is an initial pain of a minimal pinprick when we give local anaesthesia, however, once the local anaesthesia takes effect you will not feel any pain during the surgery. However you would notice that we are working on your head and we will be keeping you informed of all the things that we would be doing during the procedure as we go along the procedure. This increases the patient comfort and confidence in the procedure and none of our patient have ever felt that he had a traumatic experience from the surgery. **We have performed more than 650 procedures and not had a problem with any patient, who may be as young as 16 years old to 85 years old.**

## I am an elderly patient and I have heard that the surgery is risky or not advisable?

Usually people are reluctant to offer surgery to elderly patient for several reasons. One of them being skepticism about getting a good outcome. **However, long standing experience and the opportunity to probably operate on the largest number of elderly patients in the world** has helped us to tailor the treatment to make the surgery safe and effective for elderly patients. For example, we use different targets if the patient has got some amount of cognitive or memory impairment. If the patient cannot tolerate surgery under local anaesthesia we can do it with conscious sedation. We also prepare ourselves, patients and relatives to ensure that the surgical experience remains as comfortable as one would wish it to be. We recently published our outcome of elderly patients versus young patient operated at our centre and found that there was no increase rate of complication and the improvement in Parkinson's disease was more or less similar.





## Will I be required to follow up with my Neurologist? Who adjusts the medical treatment after surgery?

If you are in touch with the movement disorder specialist then we may be able to speak to him and explain to him the parameters that we have set and what we expect in terms of medication changes. However, if you feel that you are more comfortable with us making both the changes i.e. stimulation parameters and medications we would be happy and confident to do the same.

## What is programming and how important is it in the outcome of surgery?

**Programming is The Key to success of DBS.** Even if the surgery goes well, if you cannot program the pacemaker correctly, it is like having the best computer at your disposal, but not having the skills to use it. If I have to give an example, Microsoft Excel is a program used by everyone, but the way an analyst/accountant can use that is far different from me using it. Hence, to extract the full benefit of surgery, correct knowledge to program the pacemaker is very critical. Our team has 1000s of hours of programming experience and hence we can immediately assess the response of each program subset and offer the best. In fact **we have been able to capture the benefit of surgery for the patients who have been operated in other centres, just by fine tuning the pacemaker, which that particular centre could not do.**

## I am leaving very far and what happens if my pacemaker stops working ?

The pacemaker is in addition to your medical management, so even if it stops working, or malfunction, in the worst case scenario you just switch it off. In our experience of >25 years, and >900 pacemakers, such situation has not arisen.

## What are the Recent Advancements in the field of neurostimulation?

- **Current steering using directional electrode designs:** The conventional cylindrical/'ring shaped' electrode contacts deliver current circumferentially, resulting in a sphere-shaped field of stimulation. Current steering is done by dividing the 360 degrees of the ring-shaped electrode contact into three or four sectors, each of which could be separately activated. Current steering and modification of the shape of stimulation field could be helpful in reducing the adverse effects related to stimulation. However, **current steering does not compensate for surgical inaccuracies and is also cumbersome to program. And needs a special expertise.**
- **Closed loop stimulation or "adaptive DBS":** Adaptive DBS is based on the principle of detection of a signal (for example, changes in the local field potential) from the target nuclei or from elsewhere that is indicative of a pathological neuronal activity; the signal, in turn, triggers or modifies the delivery of stimulation. Thus, the closed loop DBS delivers stimulation as and when required and does not modify or disrupt functionality when the neuronal activity is normal.

## Is DBS covered under Insurance?

Due to the relentless efforts from our centre, DBS for Parkinson's disease is now covered by major insurance companies. @ Jaslok Hospital, most of our patients opt for cashless benefits too and this is also acceptable by all insurers.

