

At AIIMS, a robot picking brains to cure

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New Delhi: For 10 years, 23-year-old Sumeet Mukherjee (name changed) suffered from uncontrolled epileptic seizures that wouldn't let him sleep. Medicines were not reducing the symptoms and surgery couldn't be undertaken because MRI showed no abnormality.

The brain robot—a new machine installed at AIIMS recently—came to his rescue. It guided the neurosurgeons to a precise location where electrodes could be implanted to pick up electric signal produced by seizures so as to identify the focus area and remove it. Mukherjee is seizure-free now.

But he is not the only one to have benefited from this robot-assisted surgery. At least 60 patients suffering from various neurological complications, chiefly epilepsy and pituitary tumour, have been treated at AIIMS using the modern technology in the past nine months, Dr Sarat Chandra, professor of neurosurgery, told **TOI**.

While robots have been in use in India for nearly a decade to operate on patients with neurological, gynaecological and cardiac problems, it's the

SURGICAL STRIKE ON CONVENTIONAL WAYS

AIIMS PERFORMS A ROBOT-ASSISTED BRAIN SURGERY



No. of patients operated on (in past nine months) **60**

Those with pituitary tumour **35%**

Epilepsy patients **65%**

Future usage

Surgery for Parkinson's disease, spine deformity and deep-seated tumour, etc

HOW IT WORKS

1 It has one arm and six axes of motion. The arm can hold an endoscope to help visualise, electrodes to map epileptogenic focus or probes for taking biopsy sample. All functions can be pre-programmed to the highest level of precision

2 Conventional robots have three arms—one for carrying the camera and the other two to hold necessary instruments

3 In a conventional robot, surgeons direct the robotic arm to perform the job whereas in case of a brain robot, the surgery is performed by doctors themselves. The robot only guides them in planning a surgery and to reach the precise location

BRAIN ROBOT VS SURGEONS

POSITIVE

Highly accurate, stable hand. It does not get tired

NEGATIVE

No artificial intelligence; it acts according to pre-fixed plan. No immediate feedback on errors

first time they have been used in brain surgeries, which are far more complex, he added.

"Brain controls the whole body—from movement of arms to vision and senses. A millimetre's difference during a surgery can cause se-

rious damage. These robot act as a reliable assistant. In case of patients with pituitary tumours, they act as a stable hand to hold the endoscope for hours while the surgeon operates to remove it," said Dr B S Sharma, head of the

neurosurgery department at AIIMS.

A conventional robot has three arms—one for carrying the camera and the other two to carry necessary instruments. A brain robot has only one arm. In case of conventio-

nal robots, surgeons direct the robotic arms to perform the job whereas in case of brain robots, a surgery is performed by doctors themselves. The robot only guides them in planning the surgery and to reach the precise location. The doctors say it would take long before robots can perform brain surgery on their own as is the case with other organs.

"The robots may be highly accurate, stable and tireless in functioning but they do not have intelligence unlike the surgeons. When we operate, there is a constant feedback due to touch. If there is any damage, we can act on it with promptness but robots act as per the pre-programmed data," said a doctor.

Dr Manjari Tripathi, neurologist at AIIMS, said they came across many epilepsy cases in which MRIs were normal. "Such patients can benefit from brain robot assistance," she maintained. In the US and the UK, these robots are being used to operate on patients suffering from Parkinson's, deep-seated brain tumour and even spine deformities. "We have acquired the machine recently. Its usage for different conditions will be decided later," Dr A K Mahapatra, chief of the Neurosciences Centre at AIIMS, said.