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Now, customised instruments for knee replacement

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PUNE: Although the traditional total knee replacement surgery has a high success rate, doctors continue to strive to improve the surgery outcome with more evolved devices and instruments. The latest in offing is 'custom fit' experience.

Using the technique, a team of doctors in Pune carried out a knee replacement on a 72-year-old man, using MRI and X-rays to design and create customised surgical instruments that enabled near-perfect precision in bone cutting and ruled out chances of misalignment. The 'patient matched' approach not only sped up the surgery and enhanced surgical precision, but also made the post-operative recovery faster than earlier, doctors said.

According to joint replacement surgeon Mahesh Kulkarni, in the new technique, the patient's knee joint X-rays and MRI scans were carried out in Pune. "These were then updated on the computer and sent across to the Memphis in the US. Based on the shape of the knee, defined set of instruments customised for the concerned patient were engineered in a span of 3 weeks, after which they were immediately dispatched back to India. This technique is known as the 'Oxinium Patient Matched Technology'."

S R Tulpule had been suffering from severe arthritis of the left knee since 2008. A retired engineer by profession, Tulpule underwent the surgery using the custom-fit approach. He was operated upon by Mahesh Kulkarni and orthaopaedic surgeon Nitin Bhagali at the Bhagali hospital on July 18. The pain and deformity had affected mobility to the extent that Tupule could not even perform his daily activities.

"Initially, the pain was unbearable but I could walk some distance. Later, the pain made me immobile. That's when I opted for the surgery," Tulpule said. Asked about his experience post-surgery, he said it made him feel young. "I feel like a young man

again. I have become very much active, doing all my routine works on my own. There is absolutely no pain," said Tulpule, a resident of Sadashiv Peth.

Elaborating, Kulkarni said, "Compared to regular knee replacement surgery, the 'custom fit' approach ensures more bone conservation, the anatomically precise cuts of the bone allow the implant to accurately fit the patient's anatomy providing more stability, reduces anesthesia time and minimises the risk of infection."

The newer technique costs Rs 30,000 more than what it costs in traditional knee replacement.

Based on the patient's MRIs and X-Rays, a software maps out the patient's anatomy and re-establishes true alignment.

Specific cutting blocks and instruments are created that match the outer shape and contours of the patient's knee joint bones. The software also calculates the proper knee joint implant size. "The custom-designed cutting guides and instruments allow orthopaedic surgeons to precisely position the knee implant during surgery avoiding misalignment which can potentially lead to early implant failure," Kulkarni said.

Compared to the customary cobalt chrome material used for the knee replacement caps, the new Oxinium metal technology significantly reduces long term wear and tear.

"India is now at the forefront of new technologies in replacement surgery as the latest advancements in the world are being launched here almost simultaneously with the western world. The promises of modern science have raised the hopes of people to fix any health related issues, so that they can continue to live an independent, mobile and active life. And, here is where the new joint replacement technology holds value added potential," Bhagali said.

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