

New tech for new knees

Pratibha Masand | TNN

When former Prime Minister Atal Bihari Vajpayee underwent a knee replacement surgery a decade ago, India was introduced to artificial knee implants in a big way. Vajpayee had to undergo a surgery with a big cut, not only on the skin, but also on a large chunk of his

muscles and ligaments. And Vajpayee's implants are also likely to wear out in another five years or so. But Rajshree Mohan, (55), has a different story.

Suffering from knee problems for more than three years, she could not bend her knees without wincing in pain. On Tuesday, Rajshree (name changed) got a knee-replacement with two firsts—she became the first Mumbaikar to get an implant made of a better metal al-

loy, and the surgery used blocks tailor-made specifically for her.

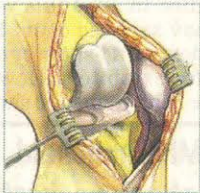
Vajpayee's surgery was a painful affair and he had to wait a year to get the second implant. Now, thanks to a combination of technology and surgical techniques, a patient can go home the next day after getting implants in both knees in one go. Joint replacement surgeon Dr Adam Mullaji for example, speaks of the 'quad-sparing' technique, where the main

muscles of the quadraceps are completely spared. "There is a small incision on the skin and hardly any pain. Patients can bend and straighten the leg right away and walk without support the same day," he says.

TOI brings to you some features of the next generation of knee replacement surgeries, where techniques or skills used in an implant have brought a revolution to painless walking, or kneeling for that matter.

Tailor-made for each patient

A patient wanting a knee replacement can now get the knee cut in such a way, that the new knee (the implant) fits exactly to the bone. With the help of patient-specific cutting blocks, a patient's joint bone is



cut so it is exactly the inside shape of the implant knee and the

implant fits like building blocks. With the help of the MRI, a three-dimensional image of the joint is transferred to a computer software which marks the bone image at places where it needs to be cut. A block is then made, which when fitted at the joint during surgery, saves all measurements and the bone can be directly sawed through the gap in the block. The drawback is that the technique to make the blocks is available only in the US, so surgeons in India have to send the images there and wait for almost a month before doing the surgery.

Dr Alfred Tria, a professor and designer surgeon of the technique, said it helps eliminate around 22 steps during the surgery. "Every block has a gap through which the blade can be inserted and the bone is cut. When the implant knee is then put, it fits right in the bone," he said.

A knee replacement with this technique would cost an Indian patient around Rs 1.10 lakh.

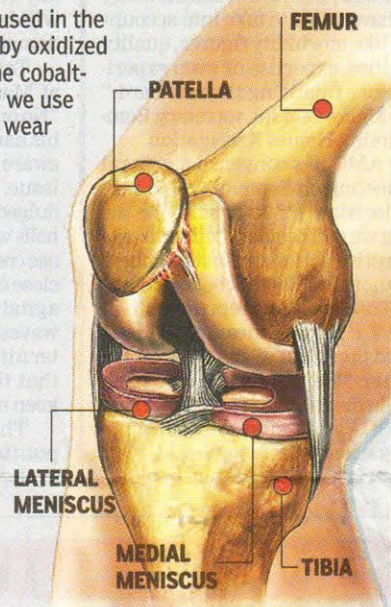
Longer lasting material for implants

Earlier, most implants lasted for 15 to 20 years. Now, with patients getting younger, implants are getting better with some able to last even up to 30 years.

Cobalt-chromium and titanium alloy, earlier used in the knee joint implants, are now being replaced by oxidized zirconium, a material which lasts longer. "The cobalt-chromium alloy is like stainless steel. Even if we use utensils with special care, they are bound to wear out after a few years. Similarly by rubbing against each other and the ligaments, the chrome-cobalt knee joint too wears out after some years," explains Dr Sanjay Agarwala, head of orthopedics in P D Hinduja Hospital.

Apart from the friction of the metal, the bone itself gets worn by the alloy implant, say doctors. The oxidized zirconium alloy on the other hand, is harder and smoother by nature, which makes it resistant to abrasions.

"For patients allergic to metals, or are likely to develop allergy, the oxidized zirconium alloy is much better as the patient's immunity system is able to tolerate the new implant," said Dr Agarwala.



Graphic: Yamini Panchal

Improved knee rotation flexibility

Getting a knee replacement so far meant that post-surgery, one could bend the knee only backward and forward, and slightly to the side. But it is now possible to achieve complete movement of the knee with better rotations.

City doctors say while knee replacement was earlier an option of the old, the age group of those coming in for a replacement has gone down by a decade. "We now get patients around 50 to 55 years of age, who, after the replacements, want to continue with all physical activities," said Dr Sanjeev Jain, orthopaedic surgeon, L H Hiranandani Hospital.

In the conventional method, the cruciate ligament, one of the major ligaments which supports the bones in the joint, is cut to reach the bone. "But now, we can reach the bone from another side, saving the cruciate ligament. Besides, less bone needs to be cut up," said Dr Jain, adding the plastic in a normal implant wears out, so the implant fails after a few years. "In the rotating platform, plastic wear-out is comparatively less as there is enough contact area between the plastic and metal," he said. As the ligament supports the bone, the new implant too gets support from the ligament which enables the patient have better joint movement," explains Dr Jain.

