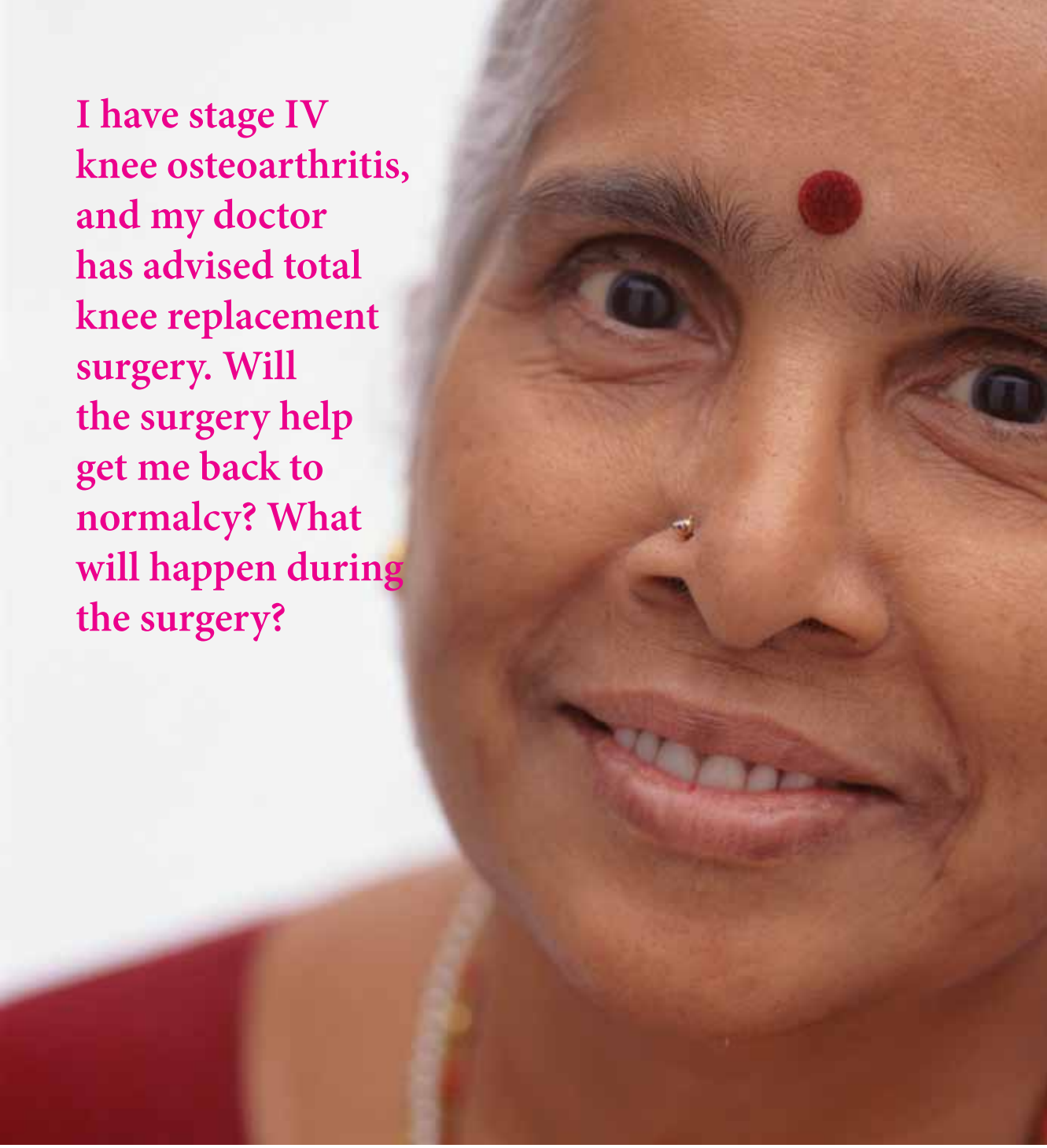
2nd Innings

Khelo Front Foot Pe

Your Journey With Arthritis...Now Gets Easy

# Will surgery help get me back to normal?



## I have stage IV knee osteoarthritis, and my doctor has advised total knee replacement surgery. Will the surgery help get me back to normalcy? What will happen during the surgery?

Osteoarthritis (OA) is the most common form of progressive joint disease that gives rise to joint pain (during or after movements), tenderness, stiffness (on waking up or after a period of inactivity) and a limitation in the range of movement of the affected joint. Although OA more commonly affects the knees, hips and spine, any joint of the body can be affected.

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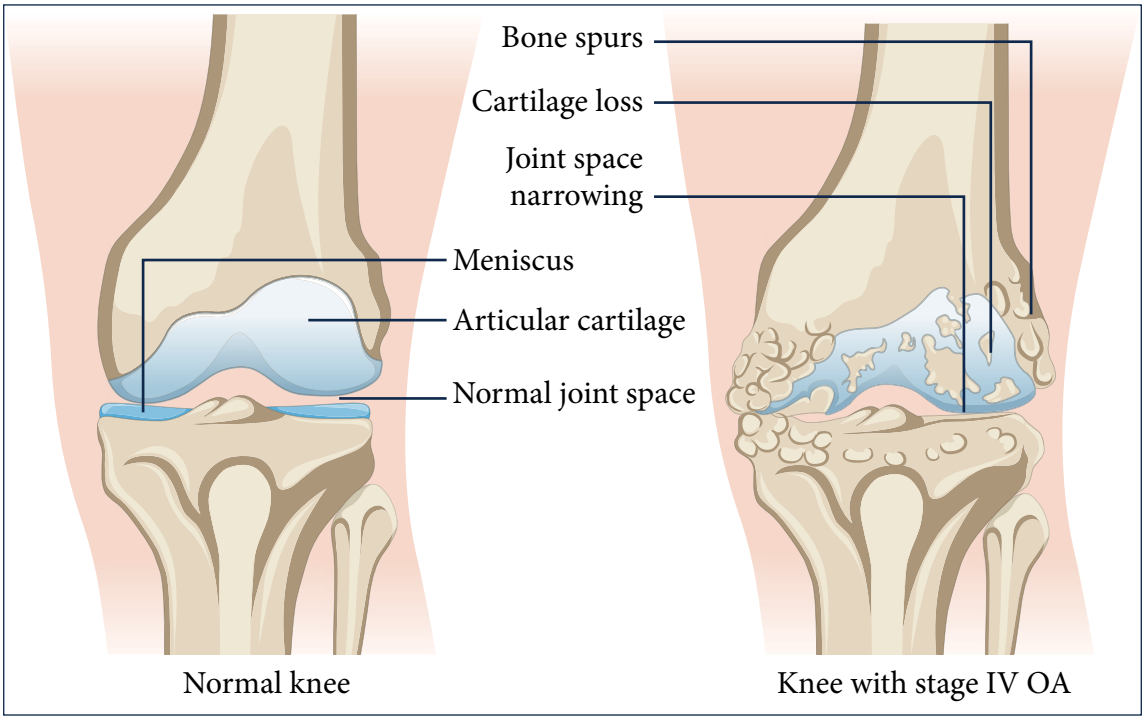
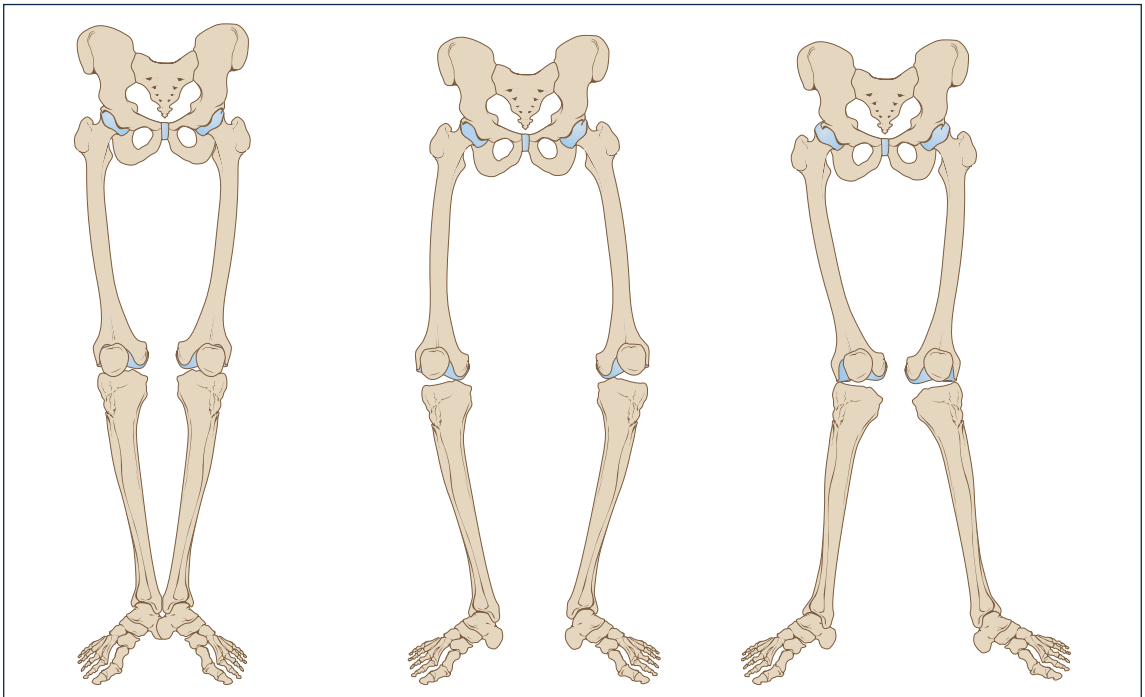



Normal knee

Knee with stage IV OA



Normal

Bow-leggedness (varus)

Knock knees (valgus)

In OA, the cartilage lining at the ends of the femur and the shin bone wear off and bone-to-bone contact occurs, which then results in inflammation, severe pain, tenderness, bony spurs and fluid build-up in the joint space. As the condition tends to worsen with time, an affected individual may find it difficult to:

- perform his or her daily tasks
- take part in routine activities
- walk without help that may seem impossible

If left untreated, it can also lead to joint deformities such as severe bow-leg (varus) and knock knees (valgus) and impaired gait.

The patient may experience persistent pain (even at rest), joint stiffness and functional limitations when this kind of severe joint damage occurs. Various conservative forms of treatment (medications, physiotherapy, steroid injections and arthroscopy) may prove unsuccessful in advanced stages of OA. At this stage, the doctor would prescribe knee replacement surgery.

## Basics of knee surgery

Knee replacement surgery involves removing diseased parts of the knee and replacing them with prosthesis. Post anaesthesia, the surgeon will:

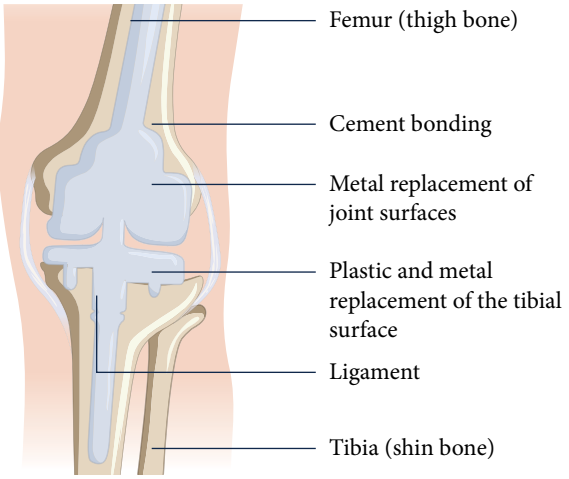
- remove the arthritic and worn-out portion of your knee
- select and implant the right prosthetic component according to your individual anatomy
- suture the knee with a series of stitches post implant

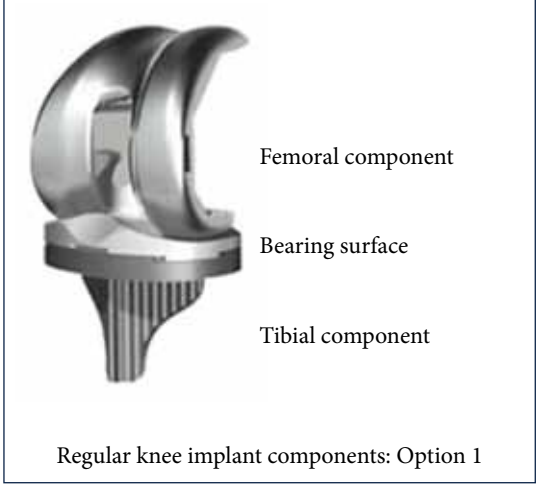
The time duration of this type of surgery is usually between 0.5 and 2 hours, depending on the severity of your condition and the demands of your surgery.

## Types of surgery

Based on the extent, location and number of surgeries conducted, knee replacement procedures can come under any one of the following categories:

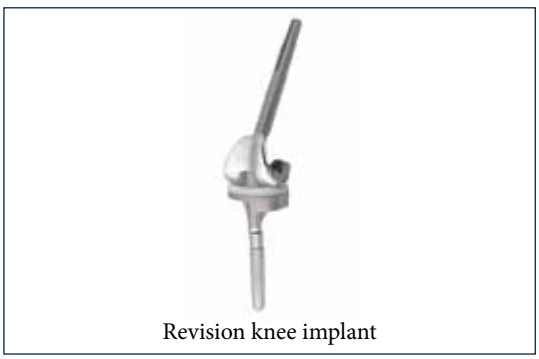
- Partial knee replacement—performed when only one side (usually the inner side) of the knee joint is affected
- Primary total knee replacement—replacing the joint surfaces at the ends of the thigh and the shin bones
- Revision knee replacement—performed when repeat surgery has to be conducted on the same knee. This may be conducted for a variety of reasons such as a potential infection and replacement of a prosthesis



Regular knee implant components: Option 1

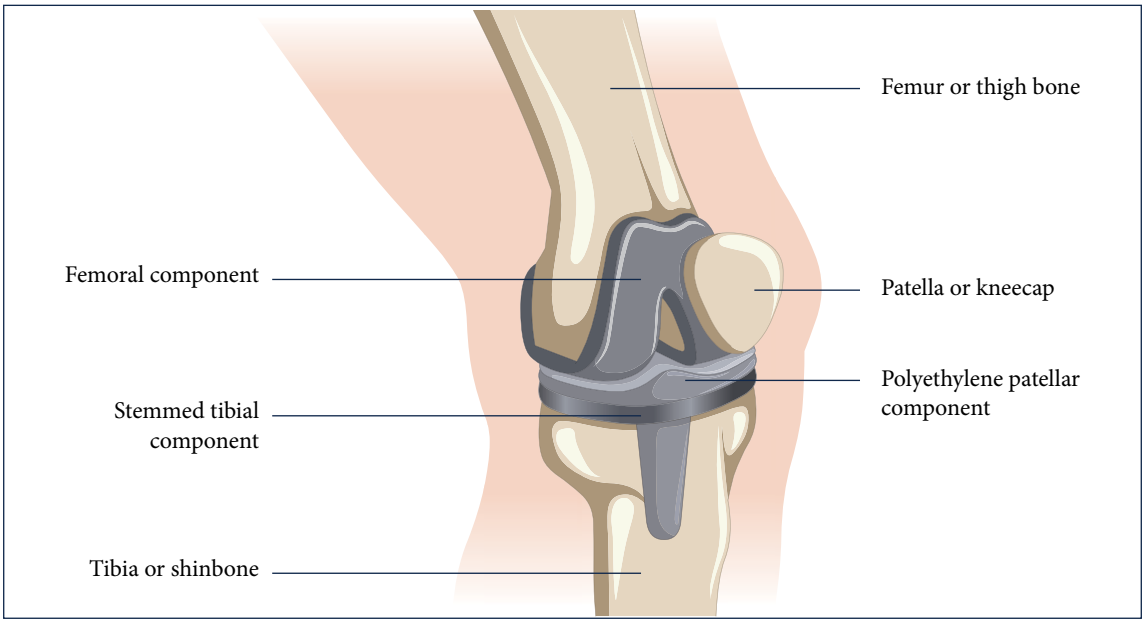

Scorpion NRG implant


Revision knee implant

Different types of knee surgeries

## Various implants used

In a knee replacement surgery, the surgeon makes use of an artificial prosthesis to replace the damaged and diseased portion of the knee. An artificial joint made up of metal and plastic parts functions in a manner similar to a normal, healthy joint.




- Metal component—cobalt-chromium–based alloys
- Plastic—ultra high-density (high molecular weight) polyethylene; some components are made of ceramic

The components of the knee implant consist of:

- Metal femoral component
- Tibial component consisting of flat metal platform with a cushion of polyethylene
- Metal/plastic component duplicating the shape of patella

With advances in technology, various new designs (more than 150) are now available in the market that make use of existing joint ligaments (collaterals) and thus help achieve good mechanical alignment and soft tissue balance.

## Will surgery help get me back to normal?

The choice of the artificial components used to create a prosthetic joint depends on a number of factors such as patient age, weight, health status, level of activity along with prosthesis cost and experience of the surgeon.

**Cemented implants**—make use of fast-curing bone cement (polymethylmethacrylate) to hold implant components in place.

**Cruciate-retaining implants**—the posterior cruciate ligament is retained if found in a healthy condition. In a majority of cases, it is removed because this ligament demonstrates some measure of wear by the time a patient consults the doctor for knee pain.

**Posterior stabilised implants**—the posterior cruciate ligament is removed and special implant components are used to achieve knee flexion. This is the most common type of knee replacement surgery conducted globally, including India.

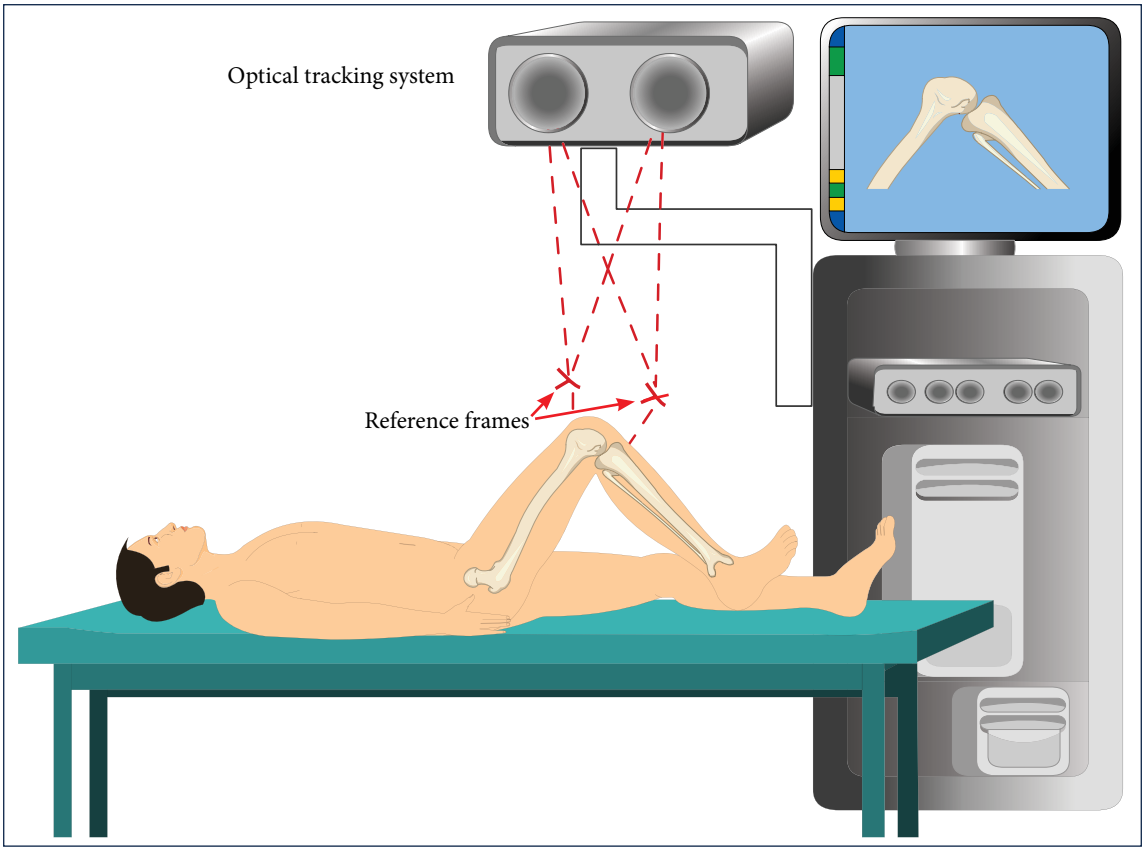
(Left) A cruciate-retaining component
(Right) A posterior-stabilised component

# Surgery using advanced technology

## Computer-based knee navigation surgery

With the advent of new technologies, surgeries such as navigation-based knee replacement have become highly successful and safe. Achieving a proper alignment for the implant is one of the key factors for the success of knee replacement surgery.

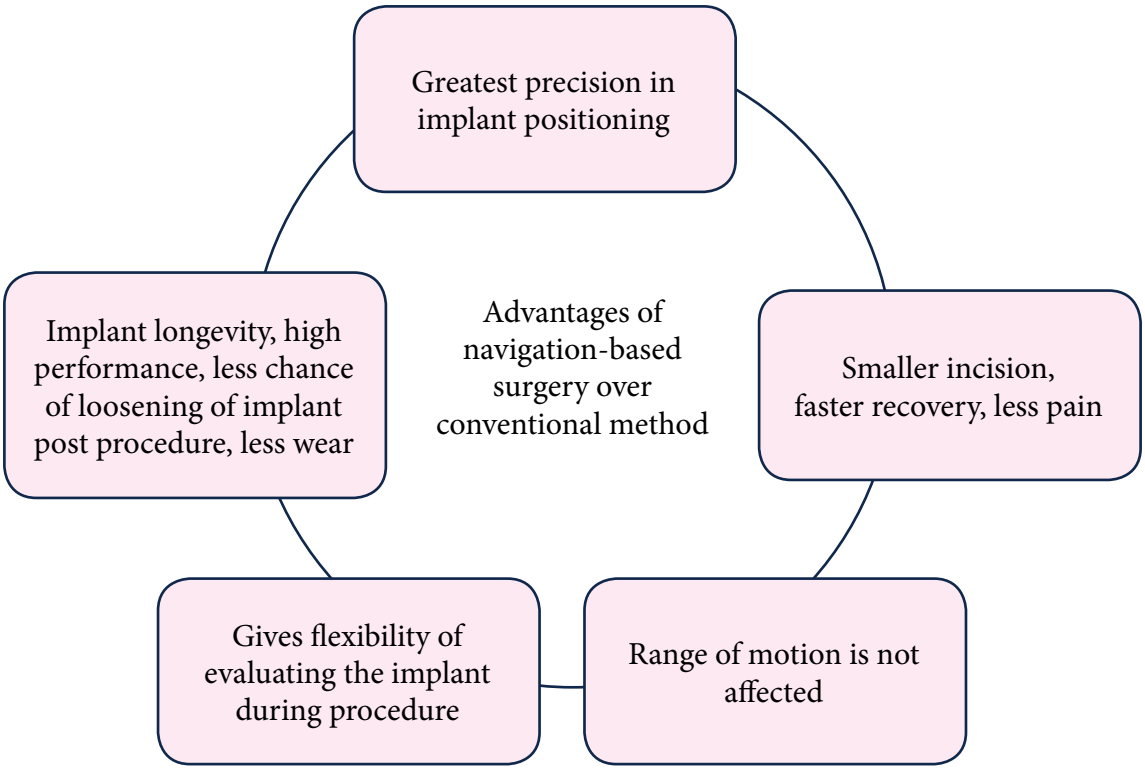
Computer-based knee navigation surgery provides an added degree of precision, accuracy and speed. It is designed to offer a visual mapping of the patient's anatomy or bone structure that helps the surgeon to make crucial decisions before and throughout the procedure. It combines the precision and accuracy of computer technology with the surgeon's skill to aid in a total knee replacement surgery.



## Will surgery help get me back to normal?

Because the software algorithm guides the implant alignment, navigation-based knee replacement surgery helps reduce some key surgical steps, thereby leading to reduced blood loss, faster recovery and shorter hospital stay.

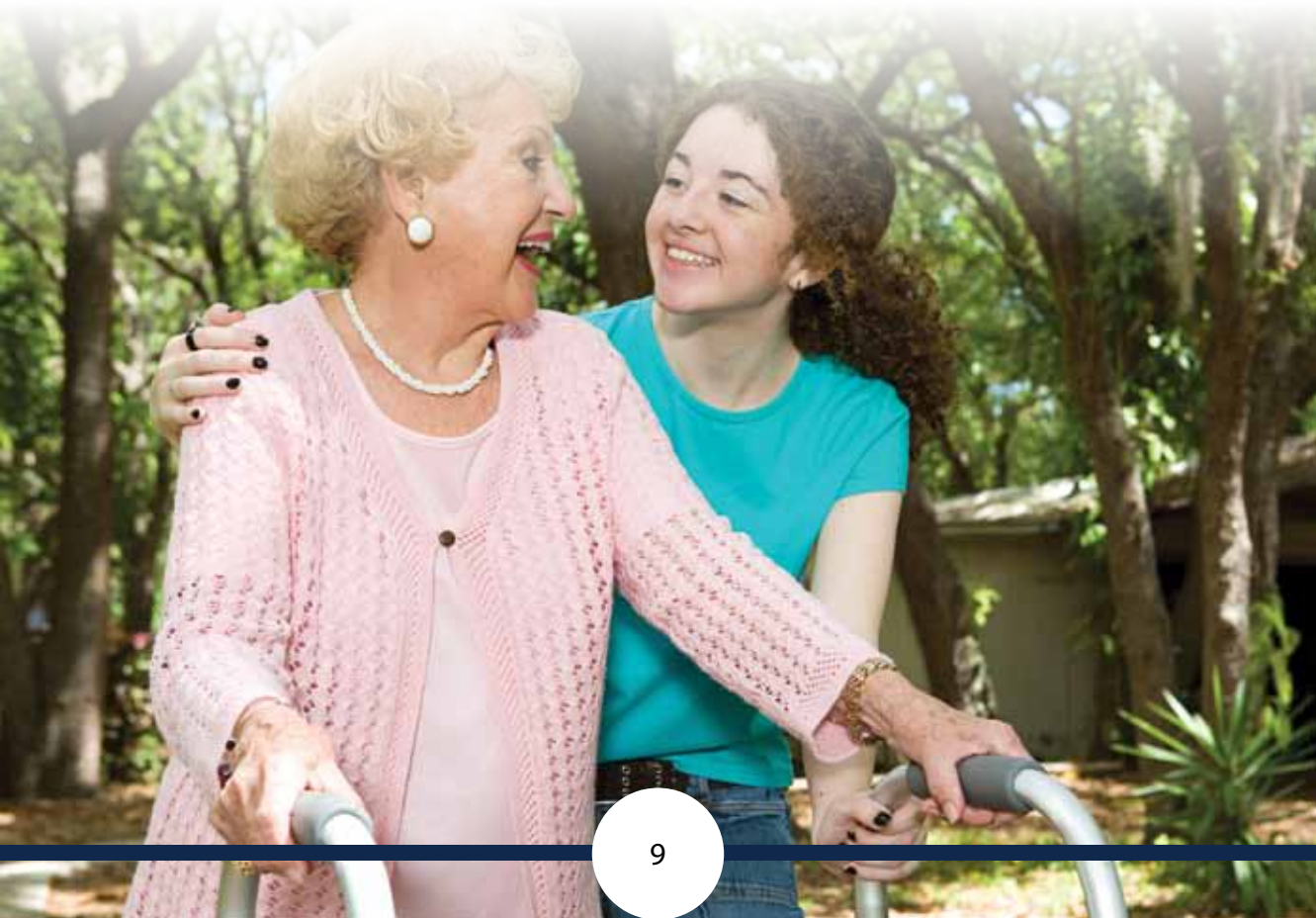
***Navigation-based knee surgery reduces few key surgical steps and is also less invasive.***



## Conventional surgeries

In conventional surgeries, the surgeons need to manually pierce a rod-like instrument into the thigh bone to assess the RIGHT implant alignment. This helps calculate the best possible angle for positioning the implant. The need for a major incision is eliminated in navigated knee surgery because the implant alignment is perfectly calculated by the navigation algorithm. As a result, there is reduced blood loss and prevention of damage to muscles and ligaments. Effectively, the patient's recovery time is faster and hospital stay is shorter. It also reduces the risk of cardiac, neuro or respiratory complications due to fat embolism.

The use of the navigation system has a special significance in the Indian context where a majority of patients opt for surgical treatment in the last stage of OA when the knee is in an utterly deformed condition. Many of the patients cannot walk or perform basic activities. Navigation system helps resolve complicated cases that are difficult to resolve manually.



## Custom fit instrumentation

'Correct alignment' of the artificial knee implant plays a critical role in the successful outcome of a knee replacement surgery. It is noted that closer the implant alignment is to the natural knee, the better will be the surgical outcome. Traditionally, achieving this alignment has been based on experience, judgement and skill of the surgeon. Although experienced surgeons may achieve a near-accurate alignment most of the times, a significant dependence on human competence cannot be denied.

With the advent of patient-specific instrumentation (PSI) such as the advanced customised jig technology for total knee replacement, the accurate implant alignment for an individual patient can be calculated much before the surgery based on his or her computerised tomography (CT) scan. In this technology, the patient's CT scan and advanced computer analysis help arrive at the most accurate alignment, based on which a precise jig is manufactured. This jig, which is customised for each patient, is used to give the most appropriate bone cuts and positioning of the implant during the surgery. Apart from the efficient surgical procedure, customised jig improves knee functions post surgery and reduces the chances of revision surgery.

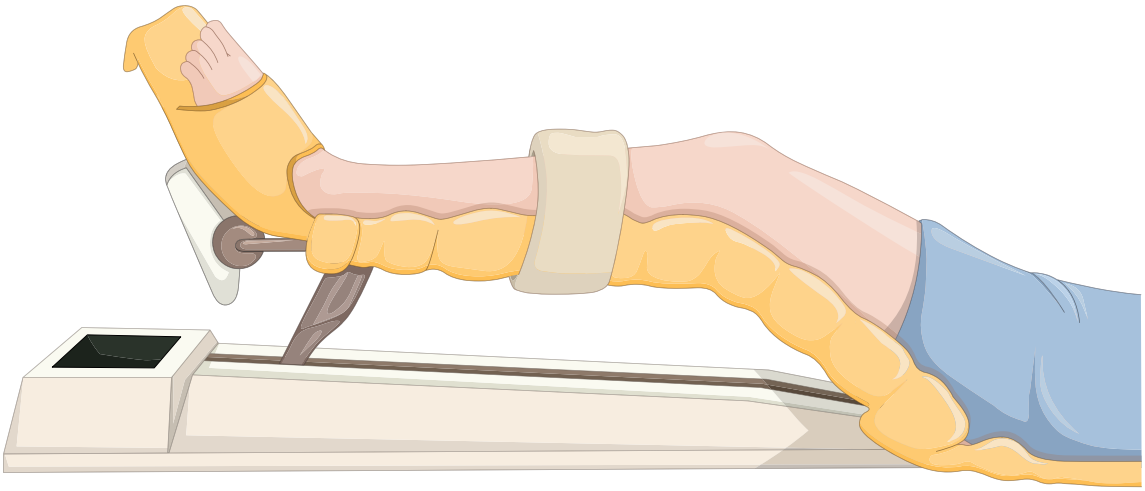
**Advantages of the customised jig technology**

- Potential for improved outcomes with less operating time
- Reduced blood loss
- Faster recovery
- Shorter hospital stay

***Custom fit instrumentation eliminates few key surgical steps and is also less invasive.***

## The first 4 weeks after the surgery

Recovery and rehabilitation after a knee replacement surgery will begin from the day after surgery. A physical therapist will play an important role during your recovery. He or she will teach you the right way to walk with crutches, some basic knee-strengthening exercises and plan an exercise regimen. You will also be given a continuous passive motion (CPM) machine while you are still in the hospital bed. This device will keep your knee in motion, thus preventing stiffness and scar tissue build-up.



Here is a recovery and rehabilitation timeline along with activities you can perform at each stage.

## Will surgery help get me back to normal?

| Post-operative day | Activities | Treatment |
|---|---|---|
| Day 1 | • Complete rest<br>• Walk a short distance with the help of the physiotherapist | • Begin bending and straightening the knee<br>• Use a CPM machine |
| Day 2 | • Stand and sit (with assistance)<br>• Walk a little longer using a walker<br>• Climb few stair steps with the help of the physiotherapist | • Fully extend the knee<br>• Increase knee flexion by 10 degrees |
| Day 3 to discharge | • Stand and sit with little/no assistance<br>• Walk approximately 25 feet with a walker<br>• Climb up and down a few stairs using a walker | • Increase knee flexion by 70 to 90 degrees |
| Week 1 to 3 | • Walk longer distances without assistance<br>• Climb stairs without assistance<br>• Perform exercises at home to increase mobility and range of motion | • Use a CPM machine at home<br>• Have regular sessions with the physiotherapist to increase mobility and range of motion |
| Week 4 to 6 | • Walk extended distances on your own<br>• Climb stairs for extended distance on your own<br>• Perform exercises at home to increase mobility and range of motion<br>• Resume household chores and activities<br>• Begin driving (only after doctor's recommendation) | • Have regular sessions with the physiotherapist to increase knee strength and flexibility |
| Week 7 to 11 | • Begin playing low-impact games (swimming and golf)<br>• Use a stationary bike<br>• Continue performing prescribed exercises | • Have regular sessions with the physiotherapist to increase knee strength and flexibility<br>• Achieve range of knee motion of 0 to 115 degrees |

## Long-term care after surgery

Knee replacement surgery is conducted to help patients with disabling pain in their knees. Restoring joint function, alleviating pain and stiffness and allowing affected individuals to return to their day-to-day activities are some of the main goals of the surgery. This surgery is helping millions of patients across the globe improve their quality of life.

However, it should be kept in mind that it is equally important to take appropriate care of the new artificial knee joint if you wish to increase its longevity and retain its functionality for a long time. Preserve the function of new joints by taking care of them and protecting them from undue damage.

***Studies have shown that artificial knee joints are designed to last for 20 years or more.***

Overstraining the joint or high-demand activity could wear off the metal and plastic components of the artificial joint, resulting in potential loosening.

Here are some useful tips to help you prevent overstraining your joint:

- Perform low-impact physical activities approved by your doctor—avoid activities that overstress the joints
- Avoid being overweight—as it can lead to undue joint stress
- Regularly perform knee-strengthening exercises—will help increase joint durability
- Avoid accidents and falls—they can damage your joint
- Avoid infections—always notify the doctor/dentist that you have an artificial joint before undergoing any other minor surgery/dental work
- Always be careful while using stairs—use hand rails while taking the stairs. It is always preferable to use the operated leg first when climbing down the stairs and use the non-operated leg first when climbing up the stairs

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