



Total Knee Replacement Surgery with Computer Navigation Technology (KICK)

Joint problems – a common scenario today

Joint problems are widespread and one of the most common problems affecting millions worldwide. Today, there is a steep increase in the number of people reporting joint problems especially knee pain. Although they can be found across various age groups, they are most prevalent in those above the age of 55. Pain in the knees can be due to various reasons, but the most common causes are:

- ❖ Osteoporosis
- ❖ Arthritis
- ❖ Injury
- ❖ Aging
- ❖ Deficiency
- ❖ Developmental Abnormality
- ❖ Lifestyle or Nature of Work
- ❖ Genetics or Inheritability

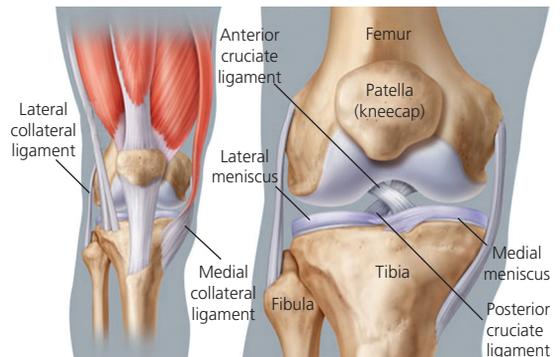
Mostly we don't know what is causing the pain and try various methods to treat it on our own. Analgesics, home remedies, massage or weight loss are some ways which help in managing the condition. But since they do not treat the underlying cause, it only leads to delay due to which a majority of people would eventually need knee replacement surgery at some point. Delaying a surgery means that you are aggravating the condition further and compromising on the results.

Understanding the knee

The knee joint is one of the largest and most complex joints in the body. It composes of - thigh bone (femur), the shin bone (tibia), a smaller bone that runs alongside the tibia (fibula) and the kneecap (patella).

Tendons connect the knee bones to the leg muscles that move the knee joint & ligaments join the bones and provide stability to the knee. The mobility & functionality of the joint is dependent on:

- ❖ The anterior cruciate ligament: prevents the femur from sliding backward on the tibia (or the tibia sliding forward on the femur).
- ❖ The posterior cruciate ligament: prevents the femur from sliding forward on the tibia (or the tibia from sliding backward on the femur).
- ❖ The medial and lateral collateral ligaments prevent the femur from sliding side to side.



Two C-shaped pieces of cartilage called the medial and lateral menisci act as shock absorbers between the femur and tibia during injury or falls. Numerous bursae, or fluid-filled sacs in the joint help the knee move smoothly. All remaining surfaces of the knee are covered by a thin lining called the synovial membrane which releases a fluid that lubricates the cartilage, reducing friction to nearly zero in a healthy knee. Normally, all of these components work in harmony, but disease or injury can disrupt this harmony, resulting in pain, muscle weakness, and reduced function.

A diseased knee joint

Any pain, inflammation, swelling or infection in any part of the knee joint – be it the bone, muscle, tendon or ligament can cause severe pain, which can be debilitating if ignored. Injuries to the joint or dislocations require proper treatment and recovery otherwise can cause stiffness in the joint that limits mobility. Many knee conditions can be caused by continuous wear and tear or due to fluid build-up. The progressive conditions can be slowed down by physiotherapy or medication but eventually requires surgical intervention for relief and restoration of mobility in the joint.

Common Knee Conditions

- Knee osteoarthritis
- Rheumatoid arthritis
- Knee effusion
- Meniscal or ligament tear
- Knee bursitis
- Gout

Cause of chronic knee pain

Although knee pains and ailments can be caused due to number of reasons, they become chronic due to delay in treatment. Most knee ailments are progressive and require timely intervention. But, ignoring it as a common pain leads to delay that causes continuous wear and tear in the joint. Eventually the deterioration of the joint and ligaments is so severe, that the damage is irreversible and surgery is the only option left as an effective long-term treatment – the results of which also reduce as the condition worsens.

Osteoarthritis: main cause for a total knee replacement

Is one of the main conditions that cause patients to undergo a total knee replacement surgery. In osteoarthritis, there is debilitating pain in the affected joints, especially the knee due to repetitive use. Affecting mainly those above the age of 55 years, the patients can get swelling, heat, and creaking in the affected joints. Pain and stiffness can also occur after long periods of inactivity. In severe osteoarthritis, complete loss of cartilage causes friction between bones, causing pain at rest and limited motion.

The severity and the complete degeneration of the joint and surrounding tissue make movement difficult in this condition affecting the quality of life of the patient. Although pain killers and lifestyle management help with symptomatic relief, surgery becomes inevitable after a certain point. To get mobility back in the joints, patients opt for a total knee replacement which not only frees them from the constant pain but also dramatically improves their lives by enhancing mobility. With advanced technologies and minimally invasive procedures, these complex surgeries have now become more precise, simple and ensure short recovery times. The various advantages of total knee replacement for patients of osteoarthritis make it one of the most sought after treatment option that gives long-term relief.

Living with knee pain

Treatment for knee pain depends on the condition, type of injury and its progression and current state. Mild to moderate injuries that cause knee pain heal on their own, given time. But most ailments require

medical treatment or in severe cases – surgery. To speed the healing, you can:

- ❏ **Rest your knee** – Give your knee a rest for a few days and avoid intense activity
- ❏ **Ice your knee** – to reduce pain and swelling. Do it for 20-30 minutes every 3-4 hours for 2-3 days or until the pain is gone
- ❏ **Compress your knee** – Use an elastic bandage, straps' or sleeves to keep down swelling or add support
- ❏ **Elevate your knee** – on a pillow when you're sitting or lying down to reduce swelling
- ❏ **Take anti-inflammatory painkillers** – Off the counter analgesics will help with pain and swelling. However, these drugs can have side effects and should be used in moderation and not long-term
- ❏ **Practice stretching and strengthening exercises**

Sometimes other non-surgical procedures may be needed to provide relief. For e.g. - People with bursitis sometimes need to have excess fluid drawn from the knee. Surgery might be needed to remove bone chips, fix dislocated kneecaps or replace disease and damaged parts in the knee joint.

It may be time to have knee replacement surgery if –

- ❏ Severe knee pain limits everyday activities
- ❏ Moderate or severe knee pain while resting, day or night
- ❏ Chronic knee inflammation and swelling that doesn't improve with rest or medications



- ❏ Knee deformity – a bowing in or out of the leg
- ❏ Knee stiffness – inability to bend and straighten the knee
- ❏ No pain relief from analgesics or other conservative measures

When simple daily activities like getting up from a chair, ascending or descending stairs bending down become difficult, it is a sign of a severe problem in the knee joint. Doctors evaluate the damage in the joint by detailed X-rays or CT scans, according to which surgery is recommended.

Knee replacement surgery

Knee replacement surgery is the only effective solution for getting long-term relief from chronic knee pain and restoring mobility in the joint. Approximately 90 per cent of the replaced joints last 10 years or more, and you may even return to activities such as walking, ascending or descending stairs, cycling, golf, tennis and swimming after the procedure. As the pain subsides and the ability to use your knee returns, the quality of your life improves. In the procedure, the surgeons expose the knee joint to replace or cover the damaged and worn out parts of the joint with prosthetic implants. The procedure may also involve removal of bone chips, and repair of torn ligaments. At Apollo Spectra, all knee replacement surgeries are done using minimally invasive techniques, that ensure minimum exposure during surgery, less blood loss, swift recovery, reduced hospital stay which in turn decreases risk of hospital induced infections. This approach also minimises complications related to open surgery and leaves negligible scarring.

Partial knee replacement

In this procedure only a part of the damaged or arthritic knee will be replaced. The advantage to this approach is that it requires a smaller incision, involves less bone or blood loss and consequently, produces less pain.

Total Knee Replacement Surgery (TKR)

During TKR, a surgeon repairs your knee joint by covering the thigh bone with a metal covering and encasing the shinbone with plastic. The prosthesis replaces the

rough and irregular surfaces of the worn bone with smooth surfaces. In many cases, the surgeon also replaces the undersurface of your kneecap with a plastic one, in order to further reduce pain and provide a smoother functioning joint. The procedure involves some removal of bone and cartilage which does not affect the overall mobility.

Implant materials

Metal components usually consist of titanium or cobalt-chromium based alloys. Known for their durability, they have stable (inert) chemical properties that do not interact with the body. Some implants may be made of plastic, which is mainly composed of ultra-high molecular weight polyethylene. Polyethylene is common in many implantable devices because of its ability to glide smoothly within the mechanical joint and closely mimic the way a physical knee moves.

Knee Replacements with Computer Navigation Technology (KICK)

A step over conventional open surgery, surgeons at Apollo Spectra use a



state-of-the-art latest advanced Computer Navigation Technology (KICK) for minimally invasive and precise knee replacement surgeries. KICK is also referred to as “Pinless Navigation,” where the computer uses infrared beams to create a blueprint of a patient’s anatomy. The surgical navigation system gives surgeons the freedom to ‘navigate’ through the patient’s knee to help make the perfect decision for placement of the new implant, leading to a perfect fit and better long-term result.

Used worldwide in 75 per cent of total knee replacement surgeries, it is a clinically proven technology that has given patients long-term relief with a shorter recovery period. A latest development in the realm of surgery, it gives surgeons an increased edge during the procedure. It allows for high precision and accuracy, which is a major contribution factor towards the longevity of the implant and the mobility of the joint after the procedure.

Advantages of computer navigation (KICK) in replacement surgeries

- ❖ Allows mapping of patients anatomy for pre operative planning
- ❖ Helps surgeons make precise incisions and accurate alignment of the implant
- ❖ Accurate bone cuts
- ❖ Can detect errors and damage that would otherwise go unnoticed
- ❖ Minimally invasive soft tissue dissections
- ❖ Surrounding tissue and ligaments remain undamaged
- ❖ Smaller incisions, less scarring and blood loss
- ❖ Faster recovery, reduced pain

- ❖ Reduced hospital stay
- ❖ Reduced risk of hospital induced infections
- ❖ Safer and cost-effective

After Total Knee Replacement

The main aim of a Total Knee Replacement (TKR) surgery is to replace the diseased knee joint to provide long term pain relief and restore the mobility in the joint. The prosthetics implanted with high precision and accuracy help in regaining almost natural movement of the joint which enhances a patient’s quality of life.

Keeping your knee healthy

Knowing the right moves and avoiding the wrong ones will help keep your knee healthy. Know which movements and activities are safe, and which could harm your new knee. Follow-up with your orthopaedic surgeon to be sure your recovery is on track.



Do's

- ❏ Do position your knee comfortably as you go about with your daily activities
- ❏ Do continue to exercise and walk everyday
- ❏ Do use an ice pack if your knee begins to swell or feel tender
- ❏ Do wear comfortable shoes with good traction and support
- ❏ Do turn your body in small steps



Don'ts

- ❏ Don't force your knee into positions. Avoid bending your knee too far
- ❏ Don't do high-impact activities such as jumping. They could loosen your new knee joint
- ❏ Don't overdo it. Take activities slowly and rest when you need to
- ❏ Don't twist your knee. Turn your entire body instead



Follow-up care

Your orthopaedic surgeon will schedule follow-up visits to make sure that your knee is healing well. Use this time to ask any questions you have about your recovery or activities.



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