



Surgical Procedures for Knee Osteoarthritis

by Mr Gavin Clark

Osteoarthritis of the knee is very common, affecting up to 10% of the population over 55 years of age. The incidence of knee osteoarthritis is increasing with the aging population. This condition results in wearing down of the cartilage within the knee. This, in turn, causes symptoms such as pain, swelling, mechanical locking of the knee, instability and stiffness.

The majority of treatment for osteoarthritis of the knee is undertaken by a patient's General Practitioner. This can include medication, activity modification, exercise, bracing, and steroid injections into the knee. If the GP deems these treatments either ineffective or inappropriate, they would then refer the patient to an Orthopaedic Surgeon for consideration of surgical procedures.

This article will concentrate on explaining in simple terms which types of surgery are available. I will also outline who is likely to benefit from these operations, as well as the possible complications.

Knee Arthroscopy

Arthroscopy or 'keyhole surgery' of the knee, is often considered the first stage in surgical treatment of the arthritic

knee. This procedure is in most cases a day case procedure where overnight stay in a hospital is not required. It involves a general anaesthetic. Whilst the patient is under anaesthetic, two small cuts are made in the knee. The first cut is to allow the Surgeon to place a camera inside the knee and look throughout the inside of the knee joint. The second cut allows the Surgeon to place instruments inside the knee and perform the required surgery.

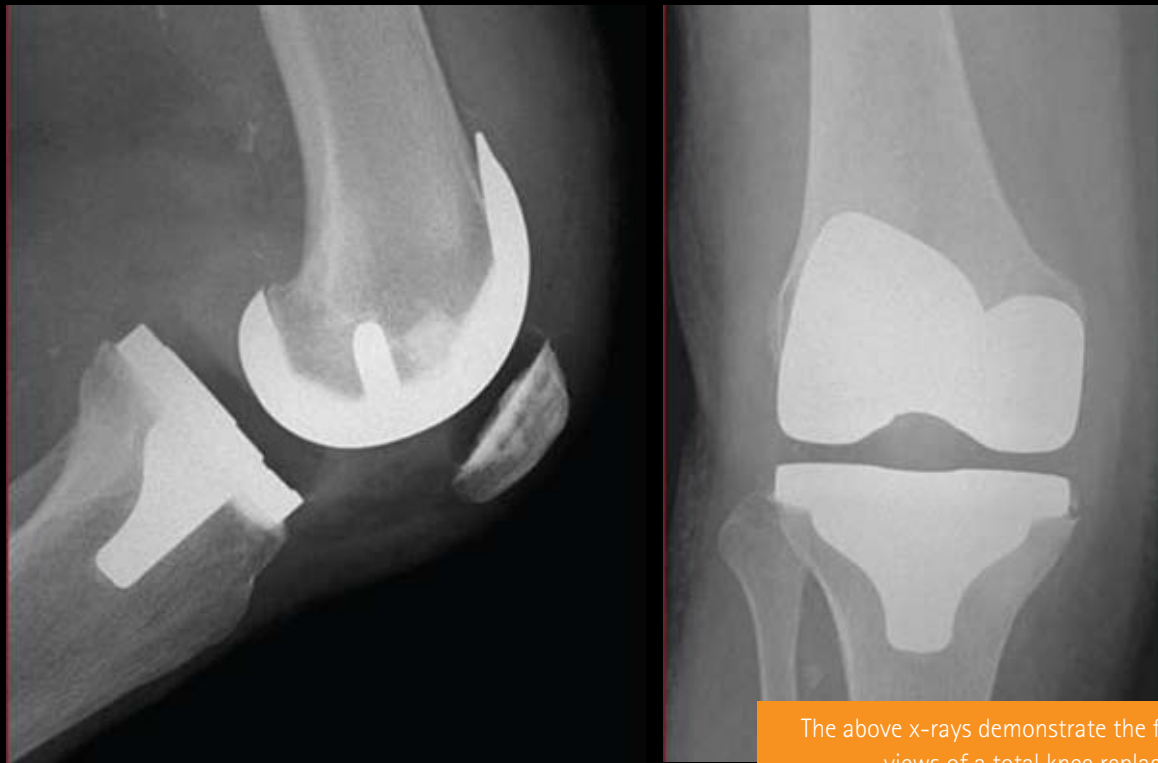
Once surgery is complete, the majority of patients are able to walk out of hospital that day, with the use of pain-relieving tablets to keep them comfortable. The dressings remain on the knee for up to ten days. The knee remains sore from the surgery for between one and six weeks. During this time, the patient continues to take tablets for pain as required. Recovery time varies depending on the severity

of the underlying osteoarthritis and the individual patient.

Arthroscopy allows a Surgeon to remove cartilage (meniscal) tears and loose bodies from within the knee. In addition to this, they can smooth roughened and unstable articular cartilage and wash out the knee.

The patients that benefit most from knee arthroscopy are those with a sudden onset of mechanical symptoms such as catching, locking or sharp pain on twisting or squatting. Those patients with a shorter duration of pain and swelling also tend to do better. Conversely those patients with longstanding severe pain and very severe x-ray changes, tend to have less improvement with arthroscopy.

Complications from arthroscopy are rare. Infection is not common as the Surgeon is constantly washing the knee with



The above x-rays demonstrate the frontal and side views of a total knee replacement.

fluid during the procedure. The risk is higher in diabetic patients and those on steroids and other immuno-suppressive medication. The major risk is that of ongoing pain which occasionally, can be more severe than before the operation. The risk of ongoing pain is directly related to the severity of your arthritis.

Establishing who will benefit from arthroscopy is now slightly easier with the increased availability of imaging techniques, such as MRI scans and CT arthrograms. Clinical history and examination are most important, but these investigations help in the decision making process. Whilst only Specialists are currently able to order MRI scans (and receive a Medicare rebate for the patient), CT arthrograms can be organised by your General Practitioner. These investigations involve an injection of dye into the knee and then a CT (Cat) scan. This demonstrates the presence of cartilage tears and the severity of the arthritis.

Recently in the local newspapers, there have been articles suggesting that arthroscopy in osteoarthritis is not effective. Whilst this may be true in very severe arthritis, there are a large number of patients with osteoarthritis who have complete relief of their pain with an arthroscopy. This is particularly true of patients with an unstable cartilage tear.

Knee Replacement Surgery

This is currently the treatment of choice in the majority of patients with severe knee osteoarthritis requiring surgery. Knee replacement surgery involves cutting off the worn surfaces of the knee joint and replacing them with metal implants. Between these implants, a plastic insert is placed. The femoral (thigh bone) component rotates on the plastic (polyethylene) insert to allow the knee to flex, whilst in most cases, using your own ligaments and muscles for stability.

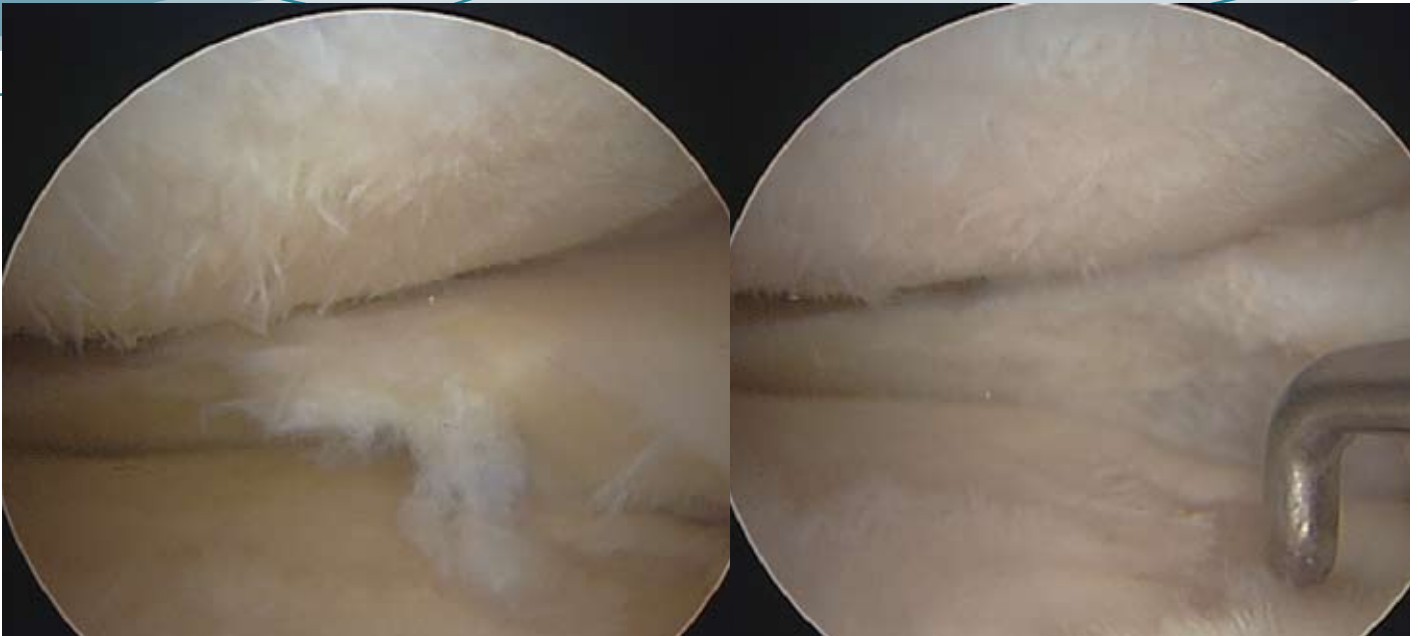
The aim of knee replacement surgery is to provide a stable pain free knee that enables patients to return to a moderate level of function. This would ideally involve a pain free night's sleep, the ability to walk unlimited distances without discomfort, and be able to bend the knee well past 90° of flexion. A good knee replacement allows people to ride bikes and return to golf and lawn bowls. It rarely feels completely natural and return to running is unlikely.

The general indications as to when to have this surgery is if the pain from your osteoarthritic knee severely interferes with your life, despite taking adequate levels of pain relieving medication. Common complaints are difficulty sleeping through the night due to pain, inability to walk around the shops and having to use walking aids for stability. If you get those

symptoms even though you are taking your recommended medication, it would be worth talking to your local GP about the option of a knee replacement.

Patients are usually in hospital for between five and eight days following a knee replacement. The surgery is performed with the patient either undergoing a spinal or general anaesthetic. The choice of anaesthetic is individualised depending on a patient's medical conditions and would be discussed with the patient by the Anaesthetist. Following the surgery, patients will be gradually mobilised until they are safe walking with either crutches or a frame. The surgery is painful but controllable with medication. Once a patient's wound is dry, they are comfortable walking and are gaining a good range of knee motion, they are ready for discharge home. The patient will progress their exercises, often under the supervision of a Physiotherapist, until they have achieved their maximal flexion and are walking comfortably without crutches. The knee continues to slowly improve for over twelve months.

There are risks and possible complications with any knee replacement. Infection of the knee replacement occurs once for every one hundred patients. Infection is very serious, as the metal does not have a blood supply, so any bacteria are difficult for antibiotics or your immune



These photographs demonstrate a degenerative cartilage tear before and after arthroscopic surgery. The probe in Image 2 indicates an area of full thickness cartilage loss. This 59yo lady has had good symptomatic relief for the 18 months since the procedure.

system to reach. If infected, this may be treated with operations to wash out the joint, but may require complete removal of the knee replacement for a period of time to control the infection. All possible precautions will be taken by your Surgeon to prevent infection. Post-operatively patients can develop blood clots (DVT) in the leg, which if they travel to the lungs, are very dangerous. Most Surgeons will use blood thinning medication around the time of operation to prevent this. Other complications can occur and would be discussed with patients by their Surgeon when considering knee replacement.

Knee replacements are mechanical joints and like any machine, can wear out with time and use. Older style knee replacements lasted ten to fifteen years, before requiring revision. With advances in technology, the current knee replacements are expected to last longer.

Knee replacements can be revised if they wear out. With regular follow up by your Surgeon, early wear can be detected and it is possible to change just the plastic insert. If left for too long, the metal components will also need to be changed in a more complicated procedure. The difficulty and risk of surgery increases with each revision procedure.

The science of implanting knee replacements is always improving. Currently Surgeons in Perth are able to use computer guidance to insert the knee replacement in a similar manner to which

you use GPS in your car. This allows the knee to be implanted more accurately. As the knee replacement is a mechanical bearing, it is thought that this should improve long term wear and therefore lifespan of the implant. Research is underway to establish if this is the case.

If your osteoarthritis is limited to just one part of your knee, it may be possible to undertake a partial knee replacement. When performed on the right patient, these knees provide excellent pain relief and better function than a total knee replacement. Your Surgeon will be able to tell if you are suitable for this type of procedure.

Surgery In Younger Patients With Osteoarthritis

Osteoarthritis in younger patients is becoming more common. This is as a result of sporting and motor vehicle injuries damaging the cartilage in the knee precipitating arthritis. As discussed above, knee replacements wear out with time and so in young patients, will often require revision. Traditionally Surgeons have avoided undertaking knee replacements in young people for that reason.



Mr Gavin Clark is a lower limb Orthopaedic Surgeon in the Hollywood Orthopaedic Group who has subspecialist training in computer assisted knee and hip replacement surgery. He also performs arthroscopic surgery of the lower limb.