

## Total Knee Replacement

### Knee Arthritis

Arthritis of the knee can be an extremely debilitating condition. The knee joint is lined by cartilage, which allows the surfaces of the joint to articulate smoothly, with minimal friction. Arthritis is when the cartilage becomes thin and deficient. In the process, the menisci (shock absorbers of the knee) also become torn. In severe cases, the cartilage is lost completely and the underlying bone becomes exposed. Bone may articulate against bone. This results in inflammation which causes pain and swelling.

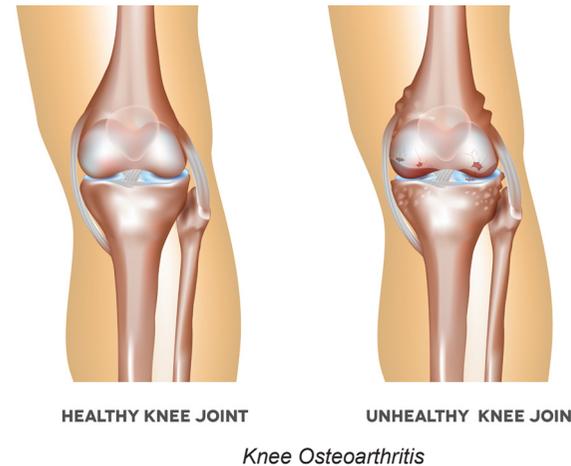
Initially, the pain is only activity related. Walking, rising from a seated position, stair climbing or squatting may cause discomfort. As the disease progresses, the pain becomes more severe, requiring less provocation. Ultimately, rest pain occurs and sleep is interrupted.

Arthritis occurs due to a combination of genetic and environmental factors. It often runs in families. Previous knee injuries, physical labor, repetitive loading and an increased body weight put the knee at risk of arthritis.

The non-operative management of knee arthritis involves regular low impact exercise (including swimming, a treadmill or stationary bicycle), weight loss, physiotherapy (for quadriceps strengthening), analgesia (including paracetamol and anti-inflammatories such as ibuprofen), walking aids, activity modification (avoiding stairs, inclines and lifting) and injections (cortisone, hyaluronic acid or PRP). These treatments unfortunately do not reverse the damage to the joint but are effective means to delay disease progression. The use of stem cells is currently not supported by the scientific literature and remains experimental with no benefit over the aforementioned treatments.

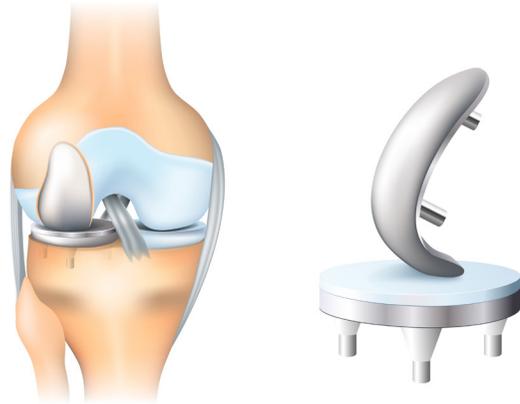
If pain and disability are still severely affecting quality of life despite a trial of the appropriate non-operative treatment, surgery may be

considered. In some instances, joint sparing surgery such as an osteotomy (breaking and realigning the shin or thigh bone to offload a diseased compartment in the knee) or arthroscopy (key-hole surgery) may be appropriate. Generally speaking, unless for very specific circumstances, such as painful locking from a loose body, knee arthroscopy is no longer indicated for the treatment of arthritis.



### Knee Replacement

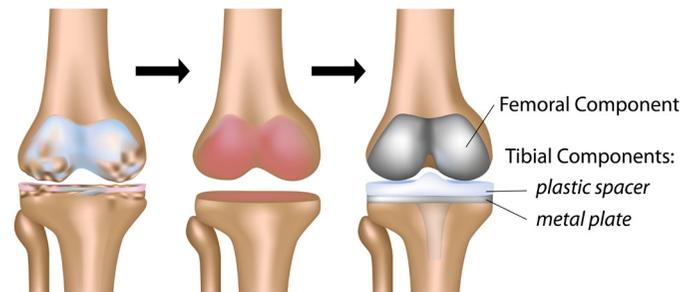
A knee replacement can reliably provide pain relief and restore function. The diseased compartments of the knee are replaced with metal. Metal thus lines either side of the joint, with a polyethylene (plastic) liner in between. Polyethylene thus articulates with metal. Knee replacements can be partial or total. A partial knee replacement is a consideration if the arthritis is confined to a single compartment of the knee and if other conditions such as weight, age and alignment are favorable. In a total knee replacement, all the compartments are replaced. The back of the knee cap is usually also replaced with a polyethylene button. The implants can either be cemented in position with bone cement or press-fit into the bone (cementless). Advances in knowledge and manufacturing have led to the increased longevity of knee replacements with the general risk of the implant failing, leading to revision surgery, being less than 5% at 10 years. Advances in surgical techniques, such as computer and robotic assisted surgery may help improve the accuracy of component placement. These techniques are still evolving and being evaluated to determine if there is indeed a benefit over traditional techniques.



Unicompartmental  
knee arthroplasty

Uni knee  
implant

*Partial knee replacement*



Diseased joint

Bones cut  
and shaped

Implants in place

*Total knee replacement*

Dr Lau is experienced and trained in all the different surgical techniques utilized to treat knee arthritis and will tailor each operation to suit the individual patient's function and anatomy.

The knee replacement generally takes 60-90 minutes and is performed under a general anaesthesia, supplemented by a spinal anaesthetic and a regional local anaesthetic block, to minimize post-operative pain. Ambulation begins either on the same day or the next day. A hospital stay of 3-4 nights is usually required. Physiotherapy starts immediately and continues for around 6 weeks after the operation. At the time of discharge, a patient will be independently mobile. Walking aids such as crutches may also be required for the first 6 weeks. In some instances, a prolonged stay in the rehabilitation ward of the hospital may be required. Brake response time does not return to normal until 4 weeks and thus driving is not permitted until then.

The operation will be performed with the utmost care. However, complications, although increasingly rare, can still occur. These include bleeding, nerve injury, blood clots and infection. There will be close follow up postoperatively, to ensure that any potential problems are identified early and treated appropriately.