

**- Bones**

# Realign the joint and save the knee

Knee preservation surgery could help people delay or avoid knee replacements, say experts

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Mr Segar Sivanasen hurt his knee while playing football in January 2019 and could not walk, squat or sleep comfortably for months because of worsening pain.



The 44-year-old founder of a logistics company suffered severe discomfort as a result of knee osteoarthritis, or damage to the cartilage tissue which cushions the bones in the knee.

Advanced cases of knee osteoarthritis can be treated by knee replacement surgery, where the knee joint is replaced by a metal or plastic implant that can last 20 to 25 years.

But Mr Segar's doctor recommended a high tibial osteotomy, a surgery that realigned the knee joint and took the pressure off the damaged part of the knee.

Such surgery which preserves the knee could reduce the need for future knee replacement, and keep younger people mobile and pain-free for longer, experts say.

Mr Segar had the surgery in August 2019 and, within two months, was able to walk on crutches. "The nagging pain was no longer there," says the father of two, who has given up football and now swims and goes for brisk walks instead.

A key consideration when opting for the osteotomy was the risk of having to go under the knife again in his late 50s or 60s, if the knee replacement implant wore out.

The lifespan of a knee replacement is a reason that knee preservation surgical procedures, which include osteotomies, might be recommended for patients who are below 60 with moderate knee osteoarthritis.

Addressing knee osteoarthritis is a key concern for Singapore's ageing population, say experts.

The associated pain and stiffness affect quality of life and health. At least 10 per cent of the population suffers from knee osteoarthritis and this is set to rise as people live longer and exercise later into life.

## KNEE OSTEOARTHRITIS EXPLAINED

Knee osteoarthritis is a degenerative joint disease and the most common type of arthritis in the knee, says Dr Wang Lushun, consultant and head of division at Ng Teng Fong General Hospital's division of hip and knee surgery, department of orthopaedic surgery.

Other types of arthritis affecting the knee include rheumatoid arthritis and gout, which are both inflammatory conditions.

He says: "Knee osteoarthritis is an age-related 'wear and tear' type of arthritis. The cartilage that cushions the bones of the knee softens and wears away. The bones come closer together, reducing joint space, and form bone spurs. This causes knee deformity, pain and stiffness. It is one of the leading causes of disability in the elderly."

Dr Wang says that in Singapore, the prevalence of knee osteoarthritis increases sharply after 40 years of age, and affects up to twice as many women as men.

Professor James Hui, head and senior consultant at the National University Hospital's department of orthopaedic surgery, says knee osteoarthritis can result in changes to the shape of the joint and affects how people move and walk.

“These changes usually develop slowly and get worse over time. Knee osteoarthritis can cause pain, stiffness and swelling. In some cases, it may also cause reduced function and disability. As a result, some people are no longer able to do daily tasks or work.”

Injuries such as the fall suffered by Mr Segar can also cause knee osteoarthritis and affect mobility.

Experts say that in the longterm, this lack of mobility could increase patients’ risk of developing chronic diseases such as diabetes and hypertension.

Treatments for pain caused by knee osteoarthritis include physiotherapy; modifying one’s activity to reduce stress on the knee joint; and getting orthotic support.

But if these fail, surgical procedures could be done to ease pain and improve the patient’s mobility.

Knee preservation surgery includes knee arthroscopic procedures, which are operations to treat damage to the cartilage, meniscus or ligaments.

In contrast, knee osteotomies cut the bones to correct the alignment of a patient’s limbs. These are generally suitable for younger patients with earlier-stage arthritis that has damaged only one side of the knee joint, says Dr Wang.

“An osteotomy shifts weight off the damaged side of the joint by altering knee alignment. This can prolong the lifespan of the knee joint before potential knee replacement surgery,” he adds.

Knee osteotomies are generally less common than knee replacements.

At Ng Teng Fong General Hospital, the number of lower limb osteotomies carried out last year was 10 per cent of knee replacement operations done.

But this type of knee preservation surgery is becoming more popular, for example, at Singapore General Hospital (SGH), which had about 100 cases of osteotomies for knee preservation last year, up from nearly 50 cases in 2020.

**CAN KNEE REPLACEMENTS BE AVOIDED?**

Dr Lee Kong Hwee, a consultant at the department of orthopaedic surgery and director of SGH’s Sport Service, says knee preservation surgery can include cartilage and meniscus transplants, ligament reconstruction and osteotomies.

Two types of osteotomies are conducted at SGH.

The first is a modified high tibial osteotomy (HTO), where a bone graft wedge is inserted into the shin bone and held in place with a titanium plate, to realign the knee and take weight off the damaged part.

The second common surgery is a proximal fibular osteotomy (PFO), where a small part of the calf bone is removed to redistribute weight equally across the knee joint.

No implants are needed for the PFO, making it suitable for people unable to tolerate a metal implant due to poor immunity or diabetes, among other factors.

Dr Lee says knee preservation surgery techniques have improved in recent years. “While such improved knee preservation surgery is being done in Singapore only in recent years, studies from overseas show that 80 per cent of patients who had HTO do not need knee replacements, 10 years after the surgery,” he says.

Prof Hui says joint preservation is important. “Natural knee joints are always better than artificial knee joints. In younger patients with less severe knee osteoarthritis, knee preservation surgery can maintain their natural knee joints and delay knee replacement surgery.

“With increasing lifespan, early knee replacement might require future multiple revision knee replacement surgery, which will be less ideal in the long run.”

Mr Liu Syn Thye, 67, hopes he will not need a knee replacement in the future. He injured his right knee while playing golf in Malaysia and sought treatment almost two years after the initial injury.

He tried to manage the pain with painkillers, but opted for surgery when the discomfort became unbearable. He had a PFO at SGH in October 2020 and followed that with a rehabilitation exercise regimen at home.

The retiree, who used to work in printing services, says he no longer feels pain while moving and goes for a 60- to 90-minute walk every morning.

The best part is he can play with his two grandchildren, aged seven and one. “Previously, I couldn’t walk because of knee pain. Now, I have no problem at all. I’ve gone back to normal,” he says.

**MR SEGAR SIVANASEN (above)**

after undergoing a high tibial osteotomy in August 2019 to realign the knee joint and take the pressure off the damaged part of the knee. The 44-year-old injured his knee while playing football in January that year

**MR LIU SYN THYE (above),**

who had a proximal fibular osteotomy in October 2020 on his right knee, which he injured while playing golf in Malaysia

**TIPS FOR HEALTHY KNEES**

Knee osteoarthritis can cause knee pain and affect a person’s ability to exercise and even move.

When it comes to treating pain and other issues related to knee osteoarthritis, experts recommend non-surgical interventions first.

Dr Ong Kee Leong, a senior consultant in sports medicine and orthopaedic surgery at the private Synergy Orthopaedic Group, recommends identifying the triggers that cause knee pain and modifying these activities to put less stress on the knee.

Orthotics such as knee braces and insoles might also help.

“Always listen to your body and don’t ignore early aches and pains. They are always effective warning signs,” says Dr Ong.

He recommends getting advice from a trainer or coach before embarking on a new exercise activity. Progressive training programmes help prevent injuries. Warming up before exercise and cooling down afterwards is also important.

He recommends treating knee pain with rest and oral medications such as anti-inflammatories, and also physiotherapy. “Surgery should usually be the last resort,” he says.

Professor James Hui, head and senior consultant at the National University Hospital’s department of orthopaedic surgery, says surgery can be considered after conservative treatments such as physiotherapy have failed.

He notes that risk factors for osteoarthritis include overuse injuries, genetic factors and being overweight. Additional weight puts extra stress on the joints and obesity “may have metabolic effects that increase the risk of osteoarthritis”.

Maintaining a healthy weight will help reduce the risk of developing osteoarthritis, says Dr Lee Kong Hwee, consultant at Singapore General Hospital’s department of orthopaedic surgery. He is also the director of Sport Service at the hospital.

He adds: “Avoid prolonged squatting, which will increase the pressure and deterioration within the knee joint.”

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