

High Tibial Osteotomy

The Knee

The knee is made up of 3 bones. The femur (thigh bone), the tibia (shin bone), and the patella or knee cap. When describing arthritis in the knee doctors talk of three 'compartments' which are the three areas where the bones of the knee make contact with one another.

The medial (the inside half) and lateral (the outside half) compartments are formed by the rounded ends of the femur (condyles) making contact with the flat top of the tibia. The patello-femoral compartment is where the knee cap makes contact with the femur bone, behind it.

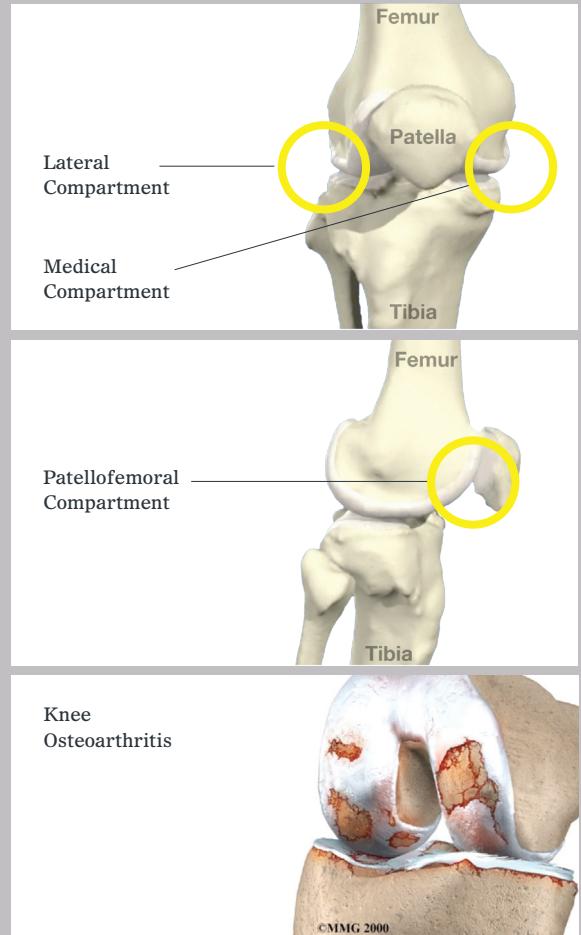
Within each compartment the ends of the bones are coated in articular cartilage. The function of articular cartilage is to absorb shock and provide an extremely smooth surface to facilitate motion. We have articular cartilage essentially everywhere that two bony surfaces move against one another, or articulate.

Arthritic knee

Arthritis is a general term covering numerous conditions where the joint surface (articular cartilage) wears out. When this occurs, the bone ends rub together and this is painful. There are numerous conditions that cause arthritis and often the exact cause is unknown. In general it affects people as they get older (Osteoarthritis-wear and tear arthritis).

Other causes:

- Trauma (Fracture)
- Infection
- Increased stress e.g overuse, overweight etc
- Inflammation (Rheumatoid arthritis)



Rationale for treatment

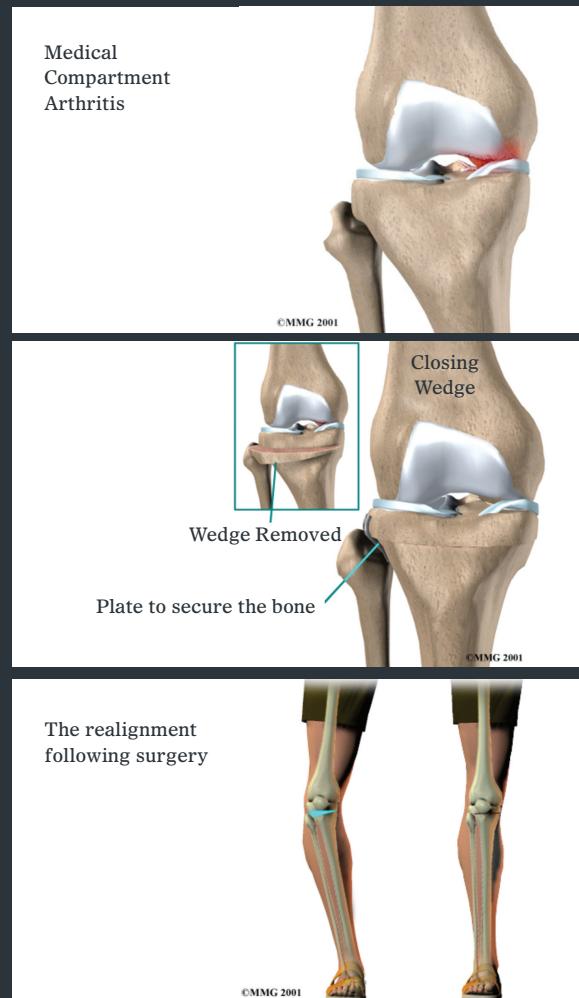
Osteoarthritis of the knee sometimes affects one side of the knee far more than the other. While either side can suffer greater damage, usually the inside half of the knee joint (the medial compartment) is more affected. When this uneven damage occurs to one side of the knee, the other side may still have good cartilage on the joint surfaces.

In some cases, surgery to realign the angles in the lower leg can result in shifting pressure to the other, healthier side of the knee. The goal is to reduce the pain and delay further degeneration in the weaker half of the knee.

This procedure is most often used for younger, active patients and for those who have osteoarthritis in only one side of their knee joint. Its aim is to increase the life span of the joint and prolong the time before a knee replacement surgery becomes necessary.

The surgical procedure

Surgery is performed under sterile conditions under spinal or general anaesthesia. An incision is made on the outside of the knee to allow the surgeon to see the upper end of the tibia. Care is taken to protect the nerves and blood vessels that travel across the knee joint. Once the tibia bone is exposed, two cuts are made through the upper tibia in the shape of a wedge. The surgeon uses X-rays to make sure the wedge is the right size and is placed correctly. The wedge of bone is removed, and the two sides of the tibia are brought closer together and held in position with a metal plate. This changes the angle of the tibia to offload the inside of the knee. Following surgery the leg is placed in a padded splint or cast to protect the knee joint and allow the bone to heal.



What is involved for you as a patient?

Before the operation

- A full medical assessment to ensure that you are fit for surgery and to minimise the risk of complications
- Please notify your surgeon if you are taking any anticoagulants (blood thinners).
- You must contact your surgeon before you go into hospital if you have any evidence of broken skin, ulcers or pimples around the knee which is to be operated on or if you have a cold, cough or infection. Your surgery may have to be postponed until you have clearance that you fit again to have the surgery.

Operative Day

- Admitted the night before or morning of surgery.
- Re-assessed and examined on the ward by the surgeon or member of surgical team – opportunity to ask questions.
- The consent form will be completed and your leg marked for the correct side.

Following the operation

- The day following surgery you will be mobilised with the help of a physiotherapist.
- Most patients are able to go home after spending one to two days in the hospital.
- A long-leg brace is worn for the first 6-8 weeks post-operatively. Initially you are not allowed to weight bear through your operated leg. At 2 weeks following surgery you will be allowed to remove your brace and start range of motion exercises for your knee. This will be supervised by a physiotherapist
- At 4 weeks, 25% weight bearing is allowed and gradually increased to full weight bearing at 8 weeks at which stage the brace will be fully removed.
- 9-12 weeks aerobic exercises such as swimming, static cycling and walking are begun.

Instructions On Discharge From Ward

- Keep the wound dry for 8 days or until the wound has sealed.
- All stitches are dissolvable therefore do not need removed.
- Driving Advice: A return to driving at 10-12 weeks following brace removal and after adequate knee range of motion and strength regained.

As with any major surgery there are potential risks involved. Prior to considering surgery a number of non-operative interventions must be tried. The decision to proceed to surgery is made when the advantages of surgery outweigh the potential disadvantages.

Local Complications

Clots in the leg (Deep venous thrombosis)	The clots cause leg swelling and may break off and travel to the lungs in 1 in 100 people and can cause death in 1 in 3000.
Inadequate correction	10 in 100 people will have inadequate or overcorrection following surgery.
Infection	This occurs in 1 in 100 people.
Need for revision to a total knee replacement	After 10 years 1 in 20 unicompartamental knee replacements need revised to a total knee replacement due to further arthritis in other parts of the knee.
Non-union or delayed union	1 in 10 people will have a delay in bone healing following their surgery and 1 in 50 patients will require further surgery to achieve bone union.
Numbness around the wound	Numbness at the side of the incision can occur. This may be temporary or permanent.
Damage to blood vessel behind the knee	This is exceedingly rare but if it occurs it requires further surgery, or possibly amputation of the leg.
Stiffness of the knee	Stiffening of the knee causing difficulty in walking and sitting.
Fracture	This occurs in 1 in 100 people and may require a period of immobilisation after the operation or possibly the need for further surgery.

Medical Complications

Anaesthetic risks	Allergic reactions to medications and damage to nerves from nerve blocks can occur.
General complications	Following or during surgery there is a risk of heart attack, stroke, kidney failure and pneumonia. These risks are increased if you have current medical problems.

Alternative treatments include:

- Pain relief- NSAIDs and regular Paracetamol
- Physiotherapy and an exercise program.
- Weight loss program
- Walking aids

You must not proceed to surgery until you are confident that you understand this procedure, particularly the complications.