

## Surgery for 1st metatarsophalangeal joint arthritis

### Arthritis of the first metatarsophalangeal joint (Hallux Rigidus)

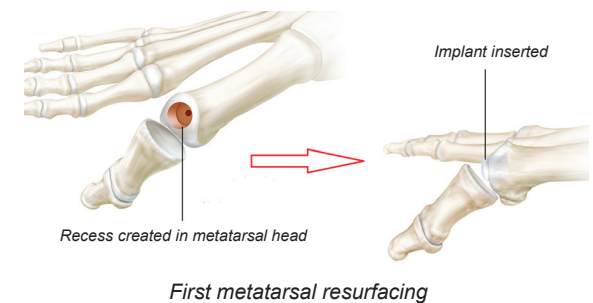
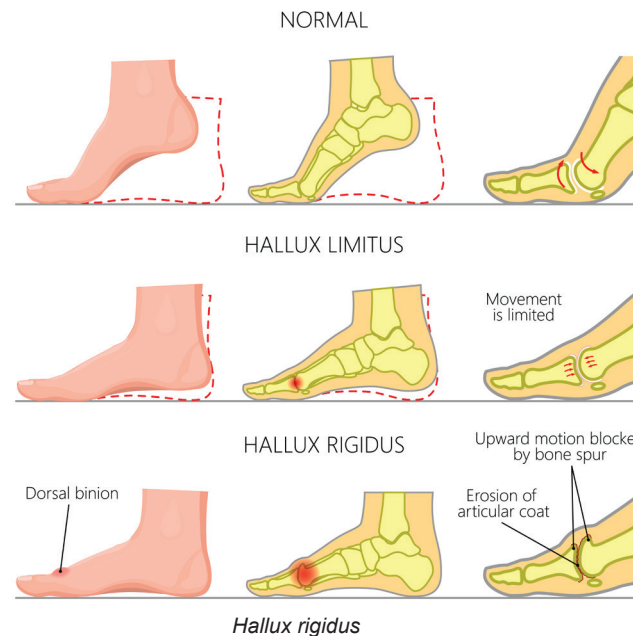
The first metatarsophalangeal joint is the main joint of the great toe. It is the articulation between the head of the metatarsal and the base of the proximal phalanx. This small joint, like any other joint in the body, is lined by cartilage. Arthritis occurs when the cartilage deteriorates. The underlying bone becomes exposed and the articulating surfaces become incongruent. Inflammation thus occurs within the joint and this causes pain and swelling. Osteophytes (bone spurs) form on the edges of the joint. This results in stiffness and causes pain at the end of the range of motion as the osteophytes impinge on soft tissue.

Arthritis of this joint generally presents from the fifth decade of life. It is usually due to a combination of genetic and environmental factors. There is often a family history. There may be a history of trauma to the joint.

Initially, the pain is activity related. It interferes with shoe wear, the ability to exercise and the ability to walk distances. Eventually, as more cartilage is lost, the pain occurs at rest and significantly interferes with quality of life.

The initial management of hallux rigidus is non-operative. Shoes with wide toe boxes, soft uppers and a stiff sole are recommended. A podiatrist may be able to assist with an orthotic to help offload the joint. Simple analgesia such as paracetamol and anti-inflammatories can also be used, as required.

Once the pain and stiffness become unresponsive to non-operative measures or if these measures are impractical, surgery can be considered.



### Cheilectomy (removal of spurs)

In the early stages of the disease, the osteophytes may be removed to improve the range of motion and the pain that occurs due to impingement. This is a day surgery procedure. It is performed under a general anaesthetic, supplemented by a local anaesthetic block. A small incision is made on the top of the joint and the osteophytes are removed using a saw. A special sandal is applied at the end of the procedure and this is worn for 2 weeks. Weight bearing is commenced straight away but crutches may need to be used for up to 2 weeks for comfort and balance. Range of motion exercises and physiotherapy begins immediately to prevent stiffness. Driving is not recommended for 2 weeks. This procedure is a temporizing measure only as it does not stop the progression of the disease.

### Arthrodesis (fusion of the joint)

Surgical fusion of this joint remains the gold standard for the treatment of end-stage arthritis. A return to full function is expected after this procedure. The joint becomes painless. Normal walking and running is

anticipated. The operation is performed under a general anaesthetic supplemented by a local anaesthetic block. Through a small incision over the joint, the osteophytes are removed and the surfaces of the joint are cleared of any remaining cartilage. A small amount of bone graft is harvested from the calcaneus (heel bone) and inserted into the joint to improve the chances of a successful fusion. The joint is then compressed in the most functional position using a plate and multiple screws. An x-ray is taken to make sure that the position of the toe and the implants are satisfactory. A special sandal is applied at the end of the procedure. This is worn for 6 weeks. Weight bearing commences immediately. An overnight stay in hospital is usually required. If the right foot is operated on, driving is not recommended for 6 weeks. This is generally a reliable procedure with the rates of successful fusion being around 95%.

#### **Arthroplasty (joint replacement)**

This is also an option for end-stage arthritis. Either one or both sides of the joint are replaced. Traditionally, this has been with metal implants. Historically, this has not been as successful an operation as arthrodesis with failure rates being as high as 25%. There are specific instances when this is possibly favoured over an arthrodesis, such as in the presence of arthritis involving the adjacent joint, where the concern is that the great toe may become too stiff. There has been a renewed interest in arthroplasty with the introduction of a hydrated polymer implant (cylindrical elastic spacer) which is inserted into the joint, rather than a metal implant. This polymer has mechanical properties similar to articular cartilage. This operation is performed under a general anaesthetic, supplemented with a local anaesthetic block. A small incision is made over the joint. The osteophytes are then removed. A recess is created in the metatarsal head and the implant is inserted into it. The implant then acts as a spacer, replacing the cartilage that has been lost. A special sandal is applied at the end of the operation and this is worn for 6 weeks. Weight bearing, physiotherapy and range of motion exercises commence immediately.

An overnight stay in hospital is usually required. If the right foot is operated on, driving is not recommended for 6 weeks. Medium term (5 year) follow up studies have shown good results with this implant, similar to that of an arthrodesis. Dr Lau has experience using this implant and offers this surgery as an option to his patients, following a discussion regarding the risks and benefits particularly as there is no long term data available yet.

Although every operation is performed with the utmost care, complications can occur. With surgery to the great toe, these complications include numbness, stiffness, infection, non-union (joint not fusing in an arthrodesis) and implant failure. These are all rare but Dr Lau will closely monitor the toe for weeks after the operation to identify and treat any potential problems early.