



**Royal National
Orthopaedic Hospital**
NHS Trust



A patient's guide to

Ankle and Hindfoot Arthrodesis / Ankle and Hindfoot Fusion

The foot and ankle unit at the Royal National Orthopaedic Hospital (RNOH) is a multi-disciplinary team. The team consists of three specialist orthopaedic foot and ankle consultant surgeons (Mr Singh, Mr Cullen and Mr Welck), specialist doctors in training, clinical nurse specialists, orthotist, physiotherapists and a physician assistant. All team members are specialists in foot and ankle care and work together to provide and deliver a quality service.

What is an arthrodesis (fusion)?

An arthrodesis or fusion is an operation performed to fix a joint or joints in the foot and/or ankle. It may be used to treat a joint that is affected by severe arthritis or to correct deformity.

Your body is tricked into treating the joint as it would a broken bone. The joint surface is removed and screws or other metalwork are passed across the joint to maintain the position while the bone healing occurs. Bone then grows across the joint, fusing it solid.

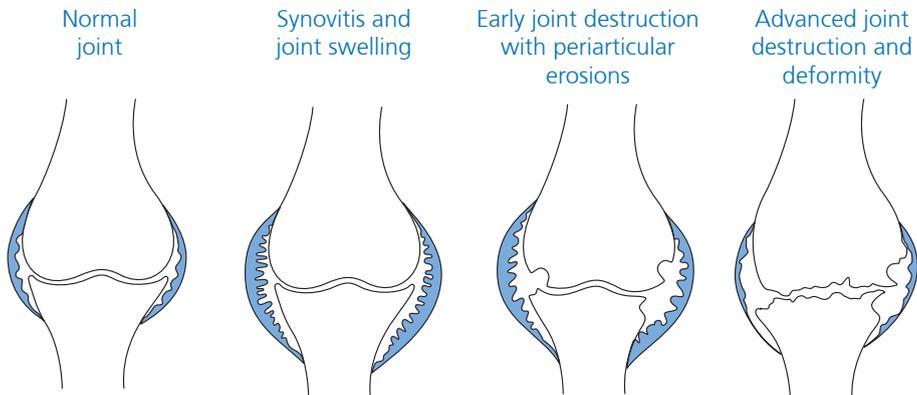
The aim of this operation is to turn a stiff painful joint into a stiff painless joint. The operation is carried out only when all non-surgical measures have failed to control your pain.

Arthritis

There are many various forms of arthritis, but the two types which are common are osteoarthritis and rheumatoid arthritis.

Osteoarthritis is often referred to as wear and tear. It is a painful condition, and may be accompanied with deformity. Osteoarthritis can occur following injury/trauma or years of high impact activities. Sometimes there is no obvious cause. The normal cartilage lining of the joint is slowly destroyed and the bone surfaces have little or no protection, resulting in inflammation, swelling and pain.

Rheumatoid arthritis is an inflammatory disease often accompanied by varying degrees of pain and deformity. In those individuals affected by rheumatoid arthritis, the body's immune system is overactive, producing substances that cause inflammation, pain, stiffness and reduced mobility.



Prior to a fusion the surgeon will carry out an initial consultation with you in clinic. They will perform a clinical assessment of your foot and ankle and ask questions regarding the nature and level of pain that you experience.

X-rays of the affected ankle or foot are required so that the severity of the arthritis in your joint can be determined. It is sometimes necessary to carry out further tests and investigations to isolate a specific area of pain.

The surgeon may arrange a **CT scan** (Computerised Tomography), **MRI scan** (Magnetic Resonance Image) or **guided injections** into one or more joints. Injections are carried out to assess what effect numbing of one specific joint has on your pain.

Following this, the radiologist will ask you to keep a pain diary. It is important that you maintain the diary for the period requested. This gives an idea of whether a fusion procedure will be carried out on this joint.

Just because a joint is damaged does not mean that it will be very painful. Some people have very severe arthritis on the X-rays but very little pain. Other people have very little changes on the X-ray but a lot of pain. The doctor will examine the X-ray to see how much damage has occurred to the joint. This will help decide on the best treatment but the decision to have surgery is based on your symptoms, (for example, pain, limitation of activity and disturbed sleep), not the X-ray.

Conservative (non-surgical) treatment of arthritis

There are many ways of reducing the pain caused by arthritis of the ankle, for example:

- Anti-inflammatory pain relief such as paracetamol (discuss with your GP)
- Injections, such as steroids are occasionally helpful in delaying the need for surgery
- Restricting activity, such as avoiding long walks or running
- Orthoses (braces or insoles)
- Footwear adjustment, such as shoes with cushioning and boots that lace up above the ankle
- Walking aids, such as crutches or a walking stick

There is no evidence that herbal remedies such as glucosamine or chondroitin reduce pain in foot and ankle arthritis but some patients like to try such remedies.

You will usually be offered an arthrodesis **when most or all non-surgical measures have failed to control your pain.**

Common types of hind foot fusion

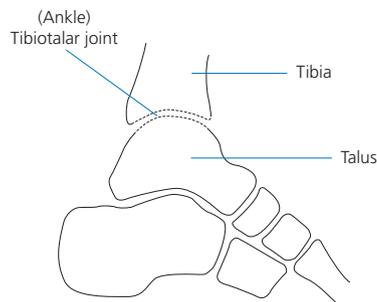
Ankle fusion

The ankle (tibiotalar joint) is the joint between the shin bone (tibia) and the uppermost bone of the foot, the talus. This operation involves fusing the tibia (shin bone) and talus. It has a 90% success rate.

Patients usually express concerns with regards to the level of mobility/movement following an ankle fusion. The operation removes ankle movement completely; however you are likely to do more following the procedure, as your pain will be greatly diminished.

It is likely your ankle joint will already be quite stiff but it is expected to be painful and stiff. The operation changes your ankle from a painful and stiff joint to a painless and stiff joint. You will retain as much as 50% of the extension-flexion (up and down) movement of the foot, which is achieved because your other foot joints are still mobile.

The diagram below indicates the joints involved in the procedure.



How the operation is performed

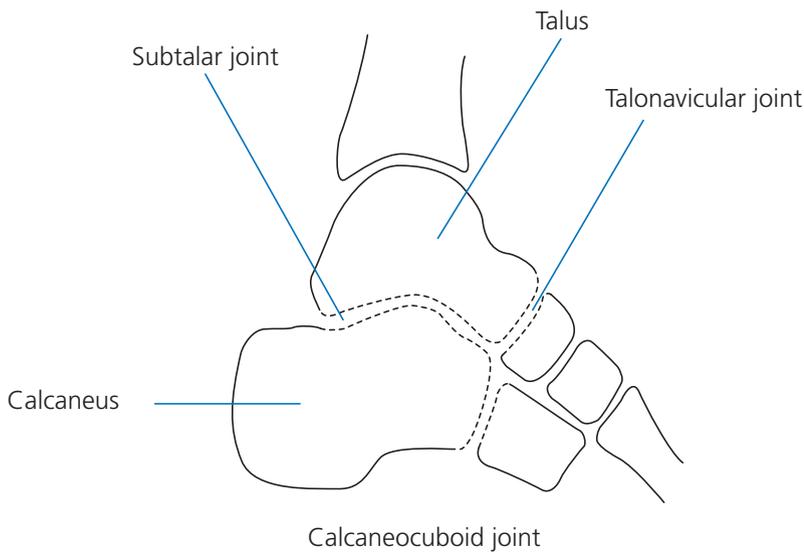
Incisions (cuts) are made over the front and on the inside of the ankle. Sometimes patients are suitable for arthroscopic fusions. This is performed through two small incisions. The degenerate surfaces are cleared away and if necessary re-shaped to correct any deformity. The joint is placed into the correct position and fixed using screws. Your ankle will then be protected by a plaster cast. Weight bearing will be limited until the bones knit together, which should be at about three months (see post-operative instructions).

The operation usually takes one and a half hours and is normally carried out under a general anaesthetic (asleep). A lower leg anaesthetic block is used to provide pain relief following the procedure. The anaesthetist will discuss the most suitable method of anaesthesia for you.

Triple fusion or isolated hind foot fusion

The term triple arthrodesis refers to a surgical procedure that fuses three joints; (see the dotted lines, which are illustrated overleaf). This operation is designed to correct deformity, relieve pain and improve function. These three joints allow side to side movement below the ankle joint. Fusing them will prevent almost all side to side movement. However, it is important to understand that these joints are often already very stiff when affected by arthritis or deformity.

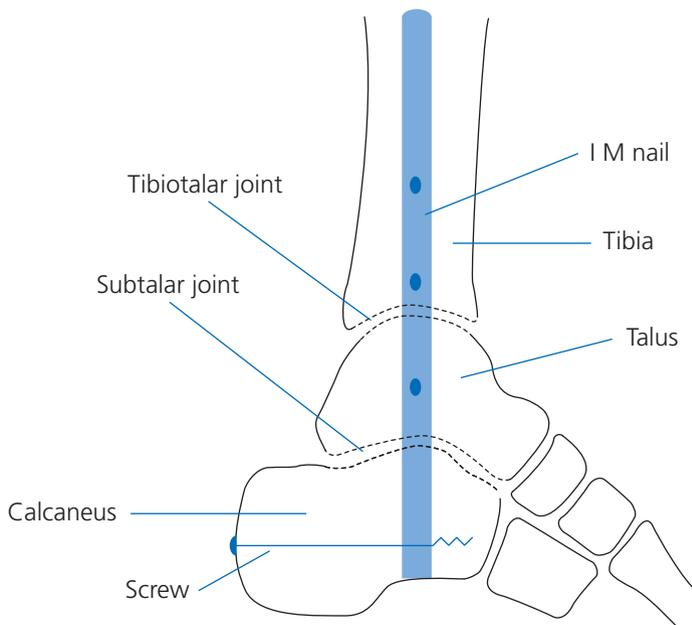
The diagram below indicates the joints involved in the procedure. Sometimes the surgeon may advise that these joints are fused in isolation, or a variant combination of fusion may be required to correct deformity.



IM nail fusion

Occasionally, a procedure called a **tibiotalocalcaneal fusion** may be required. If you have a tibiotalocalcaneal fusion, this fuses the shin bone (tibia) to the main bones in the back of the foot (talus and calcaneus).

If you have a tibiotalocalcaneal fusion the bones are usually fixed together using a large metal nail inserted into the middle of the shin bone. The nail is inserted through an incision in the bottom of the heel and screws are passed through the nail to prevent it from moving within the bone. The main scar for this surgery will be on the outside of the ankle. Sometimes a bone graft is required, particularly when a deformity needs to be corrected. This may either be taken from the bone that has already been removed during preparation of the joint surfaces, or from the pelvis or tibia.



A tibiototalcalcaneal fusion is a major operation that is carried out to treat severe arthritis or major deformity. If you have severe deformity, or associated medical conditions, the risks associated with this operation are higher.

The duration of the operation may vary but usually takes about two hours. It will usually be carried out under a general anaesthetic (asleep). A lower leg block anaesthetic provides pain relief following the procedure. However, each individual is unique and the duration of pain relief may vary accordingly. The anaesthetist will discuss the most suitable method of anaesthetic for you. The diagram on page nine (dotted line) indicates the joints involved in the procedure.

The decision to have surgery is primarily based on whether you have pain that interferes with sleep or activities that you usually perform during the day. When this pain cannot be controlled by medication or other conservative measures, it is appropriate to consider surgery. Patients often have concerns as to how the arthrodesis will affect the way they walk. In most cases, the gait will be improved due to the pain relief obtained. Most patients with a successful arthrodesis are able to, for example, walk without a limp, cycle and play golf. You can ask to attend a group meeting where you will meet a patient who has had an arthrodesis and have the opportunity to ask more questions.

What to bring with you

- Please ensure that you have a flat sturdy shoe to wear on the un-operated foot following surgery
- If you use a walking stick or crutches, please ensure you bring these with you

Important post-operative advice

Following your operation, you will remain in hospital for two to four days. When you arrive back on the ward from theatre, your leg will be in a backslab (half plaster cast) from toe to knee.

Wound site – you will have stitches to the wound with a dressing covering them. It is extremely important to keep your leg elevated above groin level for 55 minutes in every hour for the first two weeks following the operation. This helps to limit swelling and reduce post-operative complications. You will be seen and assessed by a physiotherapist who will instruct you on the safe use of crutches.

An appointment to attend the Outpatients' Department two weeks following your procedure will be arranged. The backslab will be removed, sutures removed and your wound site inspected. If the wounds are sufficiently healed, then a complete lightweight plaster cast will be applied.

You will be in a plaster cast for approximately 12 weeks following the fusion of your joints.

- The first four weeks following the fusion – non weight bearing. (This means **NO** weight is to be put on the operated limb)
- The second four weeks following the fusion – partial weight bearing. (This means **SOME/MINIMAL** weight bearing is acceptable)
- For the remaining four weeks following the fusion – full weight bearing

A check X-ray will be taken at three months following the fusion. This is done to ensure that union/fusion has occurred. If this is the case, the plaster cast will be removed. Some patients take longer to fuse (especially those who smoke).

Returning to work – this depends on the type of employment. If you have an office or sedentary type of employment and there are provisions for you to elevate the affected limb, you may return to work four weeks following surgery. However, if your employment is physically demanding and usually involves long periods on your feet then it is advisable to refrain from work for up to six months. This decision will entirely depend on where your type of employment falls between these two extremes.

Driving – if you have a fusion on the left foot and drive an automatic car you can usually drive four weeks after your operation. You must be able to perform an emergency stop. Your insurance company must be notified regarding the type of operation that you have undergone to ensure that your cover is valid.

Sport – following the removal of the plaster cast, you may start to increase exercise. Walking on uneven ground will still be difficult following a hind foot fusion. The foot will obviously be stiffer than previously. However, due to the fact that you are now pain free, you will find that you are able to walk more comfortably and a reasonable distance on flat surfaces, slopes and stairs along with drive and cycle. You will be unable to move your ankle up and down following an ankle fusion and your calf may become thinner (due to decreased muscle tone). Vigorous sports such as football and squash are unlikely following a hind foot fusion or ankle fusion.

Possible complications of surgery

Swelling – you should expect some swelling for up to one year after surgery. Each person heals at differing rates. If swelling persists and you are concerned, seek advice from a member of the foot and ankle team.

Infection – this occasionally occurs in a small percentage of patients. However, if this is the case then it is possible that further surgery may be required to remove the infected bone or screws/pins. Minor infections are slightly more common and normally settle after a short course of antibiotics.

Numbness or tingling – this can occur at the surgical site(s) as a result of minor nerve damage. Most often this is temporary; however, numbness or a sensitised area may be permanent.

Incision site – the outer surface of the foot, where the blood supply is not so good, may be slow to heal. If this is the case, more frequent wound dressings may be required to ensure that it does not become infected.

Position – research has shown that 5 to 10% of fusions do not heal in the exact position intended. This may either be due to the fact that the position was not achieved at the time of surgery or that the bones have shifted while in plaster. This does not usually cause any major problems. Further surgery may be required to correct this, but this is rare.

Non union – occasionally bones fail to unite (not join). If you smoke, your risk of non union or major complications is greatly increased. It is essential that you stop smoking before surgery and refrain from smoking until all bones have healed. You will be advised against a fusion if you smoke.

Screws – occasionally they may need to be removed if prominent.

Scarring – any type of surgery will leave a scar. Occasionally this can cause pain and irritation.

Blood clots – deep vein thrombosis (D.V.T.) or pulmonary embolus (P.E.) are rare. Please inform the team if you have had a D.V.T. or P.E. before or if you have a family history of clotting disorders.

You will be given an anti - embolic stocking to wear on your unoperated leg and blood thinning injections - usually daily - for the first six weeks whilst in the cast.

**REPORT SEVERE PAIN, MASSIVE SWELLING, EXCESSIVE
NUMBNESS OR PINS AND NEEDLES.**

If you would like this leaflet translated into another language/large print, please contact the Quality Team on 020 8909 5439.

Royal National Orthopaedic Hospital NHS Trust
Brockley Hill
Stanmore
Middlesex
HA7 4LP

Foot and Ankle Unit 020 3947 0050

Email: rnoh.footandankle@nhs.net

www.rnoh.nhs.uk

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Author: Karen Alligan