

Triple Fusion of the Hindfoot

A **Triple fusion** involves fixing together all the joints at the back part of the foot such that they become solid and never move again. Much like a fracture unites so the bone should grow across between the bones (Talus/Calcaneus/Navicular) becoming one solid structure.



Click Images for external video of the Procedure

Triple Fusion is a recognised treatment for improving the chronic pain of arthritic hindfoot joints, it can also be used for correcting deformity. It is considered in the situation where all sensible and practical non-surgical methods have failed to provide or sustain adequate quality of life with respect to pain and mobility related to the joints to be fused.

A nice animated video of the procedure is available by clicking on the images above. It represents the principles I use though the recovery may be more casting rather than Boot in the initial stages.

The Triple Fusion Operation

During the operation skin cuts will be made in appropriate positions to allow access to the joints that need to be fused.

Once the joint is accessed all the damaged cartilage is removed to expose healthy bone underneath. This removes the joint and stimulates the body to behave as it would in a broken bone and start to fuse the bones together by making new bone.

Metalwork is placed into the bones to secure and compress the old joints together and hold it in position while they heal together.

X-rays are used during the operation to determine the position of the bones and the screws are correct. The metalwork usually stays in the foot for the rest of your life. Triple fusion has been shown to surgically work in up to 85-95% of cases. However the patient satisfaction resulting from this surgery is a more realistic 80-85%. Stopping the joints from moving causes stiffness in this part of the foot especially moving the foot from side to side, this is however often acceptable in the presence of a significant reduction in pain. Other potential complications are discussed later.

What is the ‘standard’ Triple Fusion recovery like?

- Triple fusion is performed as an inpatient procedure and usually under a **General anaesthetic** unless there are medical reasons to avoid this.
 - It takes between 2- 3 hours to do.
 - You will stay in for 1 night, occasionally longer.
 - You will need someone to take you home.
 - You will need an adult with you in the house for the initial 3 days after going home.
 - You will require regular tablet painkillers for first 1-2 weeks
 - You may have some thigh discomfort or bruising from the pressure of the tourniquet (300mmHg) used during the surgery. This will usually settle in few days or weeks
 - We use x-rays during the operation. We know that pregnant women are at risk from the use of x-rays and therefore we ask

****If there is any chance you may be pregnant at the time your procedure is due you must inform us before your operation.****

What about mobilising after Triple Fusion?

- You will be using crutches / walking frame to mobilise during the first few weeks.
- After the operation your foot will be wrapped in a ½ plaster cast (Backslab) and should be comfortable with the use of tablet painkillers when you go home.
- **Weight bearing** after Triple Fusion:
 - Your instructions regarding will be discussed with your surgeon.
 - Usual regime:-
 - 4 weeks Non-weightbearing in cast
 - 4 weeks Partial weightbearing in cast

- 4 weeks Full weightbearing in cast
- **Follow up Appointments**
 - 1st appointment at 1 week = Wound check appointment
 - Checking for signs of infection.
 - 2nd appointment at 2 weeks = Wound check appointment
 - Change to full cast
 - 3rd appointment at 8-10 weeks = Fusion progression appointment
 - You will likely have an x-ray at this stage
 - 4th appointment at 12 weeks = Progress to removable boot
 - You will likely have a second x-ray at this stage
 - You may begin to move the foot at this stage
- **Physiotherapy** = The timing of this varies but is usually reserved for when you get out of the cast and begin weaning from the boot.
- **Driving –**
 - Right foot surgery = No driving until out of Boot / Cast
 - Left foot Surgery = No driving for 3 weeks. Subsequently OK if comfortable **and** in Automatic car
 - **IF IN ANY DOUBT ABOUT YOUR ABILITY TO SAFELY CONTROL THE VEHICLE DO NOT DRIVE**
- **Returning to work** is a minimum of 3 weeks to allow wound healing & swelling to settle but can be longer depending. Afterwards should be discussed with the team.

For various reasons, during triple fusion, its recovery or even recognised before we start, it may be necessary to stay in a full cast for a full 12 weeks or more after the surgery. This will always be discussed and explanation provided.

What I can I expect longer term after a Triple Fusion?

A successful triple fusion should provide significant improvement in pain and therefore mobility.

The foot will be stiff and deliberately move less than normal. This trade-off is why very few people are 100% happy with the outcome no matter how well it goes.

The joints in the rest of your foot, ankle and in-fact your knee adapt to the triple fusion. Some people notice a significant alteration in the way they walk due to the stiffness, most are affected much less.

What are the downsides to Triple Fusion surgery?

With the hindfoot joints fused together the other joints in your foot and ankle have to adapt and perform movements or functions they were not expecting or designed to do.

- If you have any pains from joint arthritis in other parts of your foot and ankle they may worsened by a hindfoot fusion.
- In the long term the excessive stress on normal surrounding joints can cause them to develop arthritis. This can take years but on occasions can occur more quickly.

What are the Alternatives to Hindfoot Triple Fusion?

These should be discussed with your surgeon but they include:-

- **Footwear modification** – usually provided in conjunction with the Orthotic department modification to footwear and the way the foot moves can sometimes help to improve pain or function to the point where the symptoms are acceptable and surgery is not needed.
- **Injections** – Many people will have a [Cortisone injection](#) before they go on to be recommended a fusion. These are done with x-ray in the operating theatre for accuracy and can help with diagnosis and have a variable effect on pain. Some people get long term relief for months and some only a very short period of improvement.
- **Bracing** – Any brace that restricts the stabilising motion of the hindfoot (wigwag/side to side) will help calm the pain experienced.
- **On-going conservative Treatment** - Fusion is a quality of life improving procedure and you can of course decide to avoid the surgery at any point. This may be in conjunction with the General practitioner (GP) or a specialist pain team.

Unlike a knee or hip joint there are no recognised joint replacements for the hindfoot.

What are the Risks of Triple Fusion Surgery?

This surgery carries risks as we have to cut through your skin to work inside your foot. The incisions are kept as small as possible to minimise these risks while being large enough to safely perform the operation.

Never the less there remains the risks of:-

- **Bleeding / vascular injury**– This is usually minimal and settles with rest and elevation. If it continues leaking out of the dressing you should seek medical help
- **Infection** –
 - Superficial skin infection around the stitches can be managed with some antibiotics and rarely affects the overall outcome.
 - Deep infection in the bone is more serious, can have a sustained effect on the outcome and occasionally require more dramatic surgery such as redoing the operation or in extreme and very rare circumstances amputation.
- **Nerve damage/ Neuritis** - The surgical wounds pass near nerves that supply sensation to your foot. Immediately after the surgery the scars and even foot can be a little numb and tingly. This usually resolves by about 6 weeks. Very occasionally it can be permanent with either loss of feeling, ‘pins and needles’ or a chronic ‘nerve’ pain occurring.
- **Tendon Damage** –The wounds pass very near the tendons that traverse the foot. Whilst naturally being careful there remains the inherent risk of slight damage to these tendons which can result in pain or rarely rupture. Any pain or new onset foot/ toe weakness – seek medical attention
- **Delayed Union** - – Despite a surgeons best efforts, this operation relies on your body growing new bone across the hindfoot joints. Occasionally this takes longer than usual requiring a cast or boot for further weeks to months. Smoking severely impair this process and it is therefore vital that you do not smoke or use nicotine replacement during your recovery.
- **Non-union** – Despite a surgeons best efforts, this operation relies on your body growing new bone across the hindfoot joints. This occasionally does not happen and a scar tissue (fibrous joint) forms instead. It presents as ongoing pain after the operation and can be seen on an Xray or Scan. If symptomatic the operation can occasionally have to be re-done. Again smoking and Nicotine have a large impact here.
- **Metalwork Problems** – Internal screws, clips and plates can be used to hold the bones compressed together at the end of the operation.
 - They are designed to stay in forever.
 - They are made of Titanium or Stainless steel
 - If you are allergic / sensitive to any metals– PLEASE LET THE TEAM KNOW BEFORE THE SURGERY.
 - Occasionally the metal can be prominent under the skin and you may request for them to be removed later in the year once fusion is complete.

- Despite a surgeons best techniques occasionally the tips of the screws can puncture into a neighbouring joint and cause damage or pain such that they require removal.
 - Metalwork can break during or after an operation and a surgeon will use their judgement to decide whether it is better removed or left if causing no harm.
- **Joint Malposition** - The aim of the surgery is to set the joints with your foot ‘square’ to the floor using both xray and experience to achieve this. Malposition can result in walking problems that require revision treatment to rectify it.
 - **Foot Joint pains** – As mentioned previously the extra requirements placed on the foot joints can exacerbate or even cause arthritis in the foot in the medium or long term. Occasionally it can be sooner.
 - **Complex Regional Pain** – Any operation on the foot or ankle seems to carry a small chance of this difficult and frustrating pain condition. It is usually not clear why it happens and there is little to predict it. Though rare this chronically painful problem can be life affecting.
 - **Asymmetric Gait effects** - Following surgery you may well use crutches or a stick and latterly walk differently. This can in turn affect you as a whole, aggravating your back or other leg. Usually short lasting and settling early, occasionally it can last. If you experience this please inform your physiotherapist who can assist in rehabilitation.
 - **Thrombosis – (Deep Vein Thrombosis / Blood Clot / Pulmonary Embolism)**.
Any operation on the leg places you at slight risk of this. A thrombosis can occur in the leg muscle veins causing pain and swelling. Pulmonary Embolism (PE) is where the leg thrombosis moves and traps in the lung which can be fatal.
 - **If you develop calf pain and / or swelling that doesn’t go away with rest and elevation – seek medical attention**
 - **If you develop sudden shortness of breath or chest pain – Seek Medical attention**
 - To mitigate against it you should:
 - drink plenty of water
 - Keep all joints moving, especially knee and ankle (within confines of bandages)
 - Wear a thrombosis prevention stocking (TED) which will be provided by the hospital.
 - Following an assessment a few people considered particularly high risk may additionally be prescribed a course of blood thinning injections. Ask your doctor / Nurse for more information

- *If you or a family member have ever had a thrombosis please let the medical or nursing staff know before the surgery*

- **GENERAL RISKS OF ANY SURGICAL PROCEDURE**

- Small areas of the lung may collapse, which increases the risk of a chest infection.
 - If you develop shortness of breath or start coughing up blood or yellow sputum – Seek medical attention
- Stress of surgery can cause a heart attack or stroke.
 - If you develop chest pain / sudden weakness or collapse - Seek medical attention
- Immediate life-threatening events may occur during any surgical procedure, which may require life saving interventions.
- Increased risk of wound infection, heart and lung complications, and thrombosis are associated with **OBESITY** and/or **SMOKING**.

What should I do if I have a problem?

If you experience any of the following you should contact the hospital team and seek advice.

- **Increasing** pain despite your painkillers
- **Increasing** leg or foot swelling despite rest and elevation,
- Sudden chest pain or shortness of breath
- Redness or oozing of blood or pus
- High temperature or Fever

Please write questions you may have down and the whole team will always be happy to answer them prior to proceeding with any surgery.