



PATIENT INFORMATION SHEET

<b>50</b>	<b>TOPIC</b>	<b>FAILED JOINT PROCEDURE with Destruction of joint &amp; Shortening</b>	
<b>PROCEDURE</b>		<b>1: LENGTHENING of CONTRACTION USING EXTERNAL FIXATOR AND 2: FUSION OF JOINT WITH AUTOGRAFT FROM CALCANEUM</b>	
			<p>Graft of bone from Heel</p> <p>inserted in big toe joint to replace lost bone and allow fusion</p>
<b>AIMS OF SURGERY</b>		<p>To reduce pain and deformity</p> <p>To improve the big toe alignment [make the toe straighter/longer]</p> <p>To remove the problem joint implant and stabilise the deterioration</p>	
<b>ADVANTAGES OF THIS OPERATION</b>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Replaces lost bone and allows minor adjustment during correction of deformity</li> <li><input type="checkbox"/> Reduces risk of vascular compromise of sudden lengthening of toe with graft</li> </ul>	
<b>SPECIFIC RISKS OF THIS OPERATION</b>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Toe still too short</li> <li><input type="checkbox"/> Pressure to Hallux</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Non-union of bone (bone does not knit together)</li> <li><input type="checkbox"/> Fixation problems (with the screws/plates/pins)</li> </ul>
<b>OVERVIEW</b>		The Example shown is a Hallux – but the procedure may be applied to most joints	
<b>Operation time</b>		<p><b>Stage 1:</b> The problem implant removal and placement of the external fixator is relatively short and takes about 30 minutes. This is allowed to heal and the fixator used to correct the shortening.</p> <p><b>Stage 2:</b> some weeks later is more complex and requires removal of bone graft from the calcaneum, fixation of the bone graft into the space created at the MTP joint and takes 90 minutes</p>	
<b>Incision placement</b>		Stage 1: Usually on top of the toe Stage 2: top of toe and lateral edge of heel.	
<b>Stitches</b>		We try to use absorbable stitches (where possible)	
<b>Fixation</b>		A combination of external and Internal fixation is used in sequence; bone screws, pins, a fixation plate with screws and the external fixator.	
<b>Will I have plaster?</b>		This is usually necessary. Usually for about 4- 6 weeks	
<b>Is this a Day Procedure?</b>		Yes, you can usually go home the same day (you will usually be admitted for half a day)	
<b>Estimated time off work</b>		<p><b>Excluding the period between stage 1 &amp; 2:</b> Non-manual work approximately 6-8 weeks Manual work 12 weeks at least</p>	
<b>INDICATIONS FOR THE PROCEDURE</b>		Unstable or failed 1 <sup>st</sup> MTP joint procedure/implant with problematic chronic Hallux (big toe) shortening	
<b>ALTERNATIVE TREATMENTS</b>		<p>Manage your symptoms by altering activity levels, using painkillers, changing footwear/ extra-width or special footwear possibly with a toe protector or in-shoe foot support.</p> <p>One stage 1<sup>st</sup> MTP joint fusion by graft from heel or other site. Keller type arthroplasty</p>	
<b>GENERAL RISKS OF SURGERY</b>		<p>The anaesthetic options and general risks of foot surgery are outlined in the Generic Pre-operative Information Booklet for Patients with which you will have already been provided</p> <p><b>YOU SHOULD READ THIS LEAFLET IN CONJUNCTION WITH THE GENERIC PRE-OPERATIVE INFORMATION BOOKLET FOR PATIENTS (Numbered 1)</b></p>	
<b>MORE INFO BY:</b>		<ol style="list-style-type: none"> <li>1 Speaking with your consultant or one of his team</li> <li>2 Reading the information provided</li> <li>3 Looking at our Department's NHS Choices information or the Faculty of Surgery website</li> <li>4 See our Podiatric Surgery public facing website pages on <a href="http://www.herefordshire.nhs.uk/">http://www.herefordshire.nhs.uk/</a></li> </ol>	

# Surgery to Reduce Hallux Rigidus 1<sup>st</sup> MTP JOINT FUSION

## Answers to Common Questions

### Step 1: Removal of damaged joint and Placement of External Fixator

#### The Operation

The operation is usually performed under a local anaesthetic injection, around the ankle or back of the thigh and most patients find this to be more comfortable than a dental injection.

The operation takes about 30 minutes, although you will be in the Day Surgery unit for longer. You must have a competent adult at home for the first day and night after surgery. This allows us to be sure you will be safe for the first night.

#### First 2-4 days

- This is the worse time for pain; you will be given painkillers to help & should rest for 2-4 days.
- You will be able to stand and take weight carefully (using crutches) after the operation, but you must rest, with your feet up, as much as possible.
- You should restrict your walking to going to the bathroom and when getting about use your crutches in the way you will have been shown.
- You can get about a little more after 3 days.

#### 3 – 5 days after surgery

- You will need to attend for your foot to be checked and re-dressed.
- You may start to do a little more within pain limits. Pain means you are doing too much.

#### Two weeks after surgery

- Sutures will be removed / trimmed. You will not need a bandage, probably will no longer need the crutches.
- You will be shown how to clean & adjust the external fixator (to lengthen the tight tissue).

#### Between 2-8 weeks after surgery

- The toe will be in a suitably corrected position to allow stage 2 of the procedure to be performed.

### Step 2: 1<sup>st</sup> MTP Joint Fusion with Bone Graft from Your Heel Bone

#### First 2-4 days

- This is the worse time for pain, you will be given painkillers to help & should rest for 2-4 days
- You will be in a **non-weight-bearing cast** to below the level of your knee. You will only be able to stand and take weight carefully through your other leg and crutches. You must rest, with your feet up, as much as possible. You should be restricted to bathroom privileges only.
- Always use your crutches. **DO NOT PUT WEIGHT THROUGH THE OPERATED FOOT**

#### One week after surgery

- You will need to attend for your foot to be checked and if necessary redressed and recasted.
- You are still greatly restricted because you are in a **non-weight-bearing cast**. However if practicable the use of a wheelchair may be helpful. These can be hired from your local Red Cross

#### Two to three weeks after surgery

- You must attend again. Sutures will be removed or trimmed
- You will then be placed into the non-weight-bearing cast for a further 2-3 weeks.

#### Four to six weeks after surgery

- The non-weight-bearing cast is removed and commonly replaced with a **walking boot** which enables you to put your foot to the floor and weight-bear.
- You may return to work if you have a sedentary occupation but will need longer if you have an active job

#### Six to eight weeks after surgery

- The walking boot will be removed and you will return to normal lace-up shoes. You may return to driving if you can perform an emergency stop. You must check with your insurance company before driving again.
- Whilst normal activity will be resumed, sport should be avoided.
- There will be less swelling.
- Sport can be considered after 4 months depending on your recovery.

#### Six months after surgery

- You will have a final review between 3- 6 months following surgery.
- The swelling should now be slight and you should be getting the full benefit of surgery.

#### Twelve months after surgery

- The foot has stopped improving with all healing complete.

**Please note; if a complication arises, recovery may be delayed.**

# Additional Bone Graft Information - Terminology - Definitions

## Graft Types

**Autograft** is bone transplanted from one area to another in the same individual. This has the advantage of being fresh bone with the benefit of all the living cells necessary for good healing and without any of the infection risks associated with tissue from other individuals.

**Allograft** is bone transplanted from one individual to another. The bone is specially processed and produced by approved tissue banks in a similar way to donated blood. Although numerous processes are undertaken to avoid any risk of infection from such human tissue, the risk cannot be removed completely. The processes to reduce the risk of infection also remove all the bone's living cells thereby reducing some of the potential for good healing. Allograft of bone does still work well however and may be necessary where there is no suitable donor site to obtain an autograft.

**Xenograft** is bone transplanted between animals of different species most often bovine (cow). In addition to the steps for allograft, it is also processed to make it biocompatible with human bone. This is not used in the department and the term is included just for completeness.

**Alloplastic** bone substitute is inert, man-made synthetic material latticework or scaffold of bone substitute material (usually calcium phosphate) that is gradually absorbed by the body as it is replaced by ingrowth of natural bone.

## Types of Bone

**Cortical bone** is one of two main types of bone i.e. it is the dense solid surface of the bone. It makes up most of the bone and provides the main structure and strength of the bone.

**Cancellous bone** (also called trabecular or spongy bone) is the other type of bone and is much less dense and softer. It usually occurs at the ends of long bones, i.e. the head or base of the bone, near the joint with another bone. Cancellous bone has lots of blood circulation and contains lots of blood cells.

## Autograft of Cancellous Bone

The advantage of autograft of cancellous bone graft is that it has all the factors needed to replace the bone defect and is easily incorporated into the defect and can quickly enhance new bone formation.

The process is well established after 6 months, usually complete in 12 months and is in five stages:

- Bleeding and inflammation.
- Infiltration by blood vessels and precursor bone modifying cells (2 days post-operatively).
- bone modifying cells (Osteoblast) activity and osteoid seam (joining up of graft to existing bone).
- Remodelling.
- Graft integration.

The disadvantage of autograft of cancellous bone is that it does not provide structural support.

Cortical bone has good strength, but poor healing properties.

The ideal bone graft therefore has both cancellous bone with some cortex for strength and this is called bi-cortical or tri-cortical graft.

## Donor Sites (where bone is taken from) for Autogenous Graft.

The iliac crest (edge of hip) is probably the most common source for autogenous graft. It offers many advantages, including an abundant source of bi-cortical and tri-cortical graft with inherent strength allowing it to be used as a structural graft. However, it also has several disadvantages in respect of foot and ankle surgery; an additional procedure needed in a different body area, increased operative time and the number of surgeons required, the need for spinal/epidural or general anaesthesia (rather than the ankle or popliteal block usually used for foot procedures). Iliac crest bone harvest often increases postoperative pain and need for strong analgesics, and the recovery period.

Proximal/distal tibia (leg bone) provides similar bulk of donor bone to iliac crest. There are few reported complications associated with tibial graft. One study reported no complications at recipient or donor site, another reported one tibial stress fracture (1%), 13% minor complications, 3% non-union no neurologic problems or wound infections.

The calcaneum (heel bone) is another safe alternative to using the proximal tibia, distal tibia, or iliac crest for procedures on the foot and ankle. The procedure offers the advantages of; minimal additional pain, a single operative field, use of ankle-block or popliteal block anaesthetic. In one study of the 17 patients in a calcaneum donor site graft study group, 3 had incisional symptoms and 5 had medial heel pain. The incisional symptoms were all mild and only one had numbness over in the distribution of the lateral calcaneal nerve. None of these complications in any way limited work or recreational activity, and only one required protecting the wound when wearing strapped shoes. None of these three patients viewed their heel incisions as a negative outcome. In another study it was concluded that "tri-cortical bone can be successfully harvested from the calcaneum, but there may be an associated risk of heel fracture as there had been 2 fractures in 19 grafts".