AMIT AMIN
FOOT & ANKLE SURGEON

Ankle Replacement

Preservation of movement is something that we all prefer. It is human nature to want to keep movement, as this represents normality. Total Ankle Replacement (TAR) is an option and has seen resurgence in recent years. I am specifically trained in this complex surgery, having been exposed to over 100 cases in 2010 whilst on fellowship in Canada. To put this in context, only 1000 cases are performed every in year in the whole of the UK, spread amongst over 200 foot and ankle surgeons.

What is a total ankle replacement (TAR)?

Fig 1. X-ray showing ankle arthritis. The joint space is narrow and the irregular.

This is a procedure to treat ankle arthritis (fig 1), where the worn out ankle joint surfaces are cut and prepared to accept an artificial (metal) prosthesis. In between the metal implants sits a plastic liner, which allows for smooth motion. The principles are very similar to both a hip and a knee replacement, however the complex mechanics of the ankle joint, make the surgery much more challenging and hence the outcome potentially less predictable.

Am I am a candidate for an ankle replacement?

Not everyone is suitable, and patients with more than 10 degrees tilting of the joint, are at risk of early failure of a TAR. Other factors to consider include your age, occupation, weight and bone quality. If you are involved with heavy labour, a fusion may be a better option. TARs tend to preserve and occasionally improve your range of movement, and so a fusion can be a better option if you have a very stiff ankle to start with.

What are the benefits over a fusion?

Clear benefits of a TAR, include preservation of movement, and gait studies have shown that patients have a more symmetrical walking pattern compared to those with a fusion. Although not yet proven, the preserved movement is thought to protect the surrounding joints from 'wear and tear', or at least slow down the process. This can potentially avoid the need for further surgery. The best candidates for a replacement are patients with a good range of movement to start with, and minimal deformity (tilting).

How is the surgery performed?

The surgery requires a General Anaesthetic, and we always perform a nerve block at the same time, to help with post-operative pain. The surgery is performed through a 10-15cm incision made over the front of the ankle. The joint surfaces are cut to allow the prosthesis to be inserted. The tibia and talus are resurfaced with a metal prosthesis usually made of cobalt chrome, and a plastic liner sits between the two metal components. Sometimes extra procedures are required to 'balance' the ankle, and ensure the limb is properly aligned (fig 2).

It usually takes 2-2.5 hours to perform. Following surgery, you will be placed into a cast, and most patients stay in hospital for 1-2 days.

What happens after surgery?

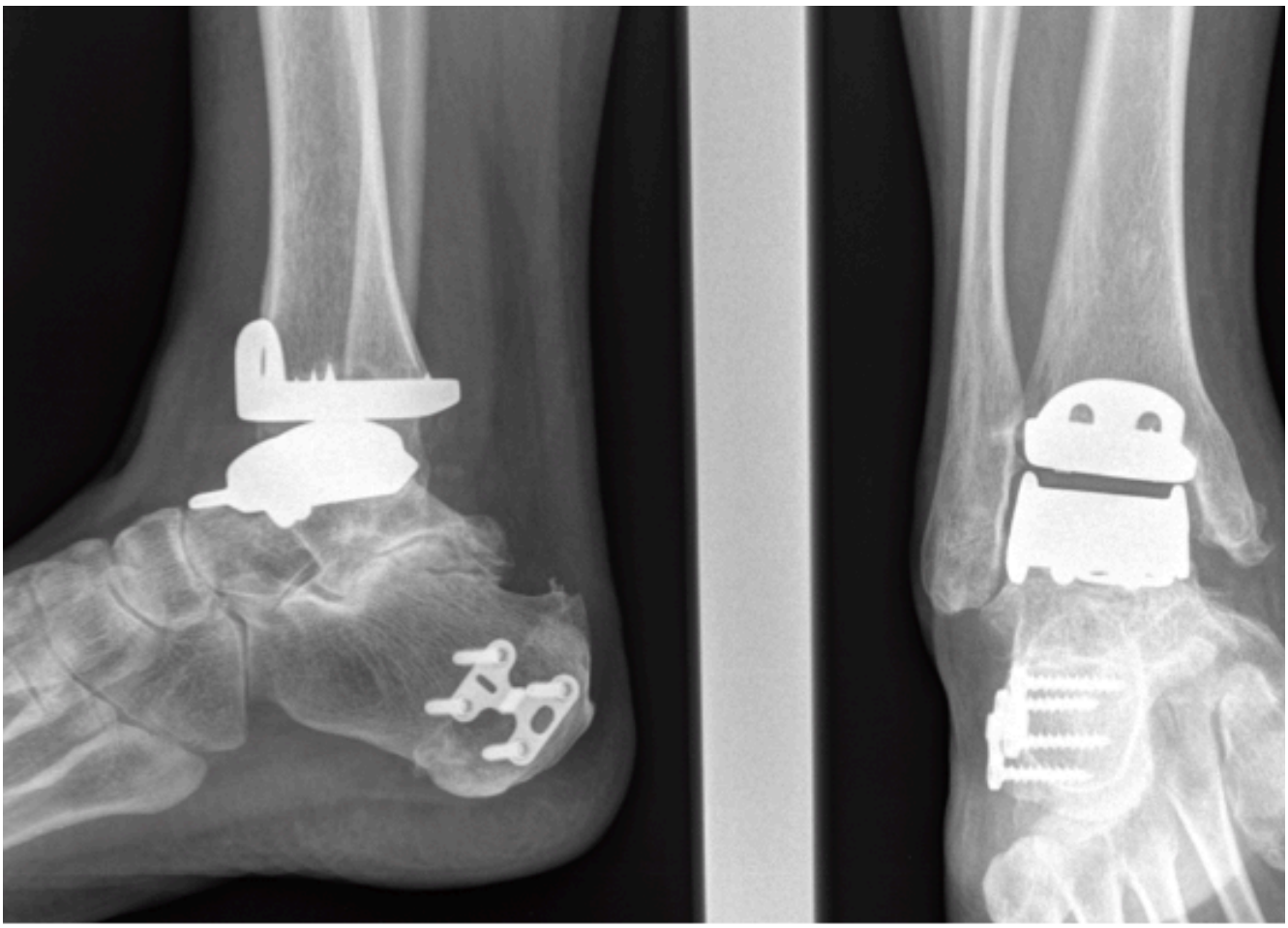

Fig 2. Example of ankle replacement (Hintegra) with calcaneal (heel) osteotomy. The extra procedure was required to re-align the foot and ensure pressures through the ankle are evenly distributed.

A physiotherapist will help mobilise you non-weight bearing with crutches. You will be non-weight bearing for 2 weeks. It is important to keep the foot elevated for 80% of the time for the first 2 weeks, to minimise swelling and promote wound healing In the clinic at 2 weeks, the plaster will be removed and the wound reviewed. If all is well, an aircast boot will be applied and you will be allowed to fully weight bear on the limb with crutches, which are usually needed for about 4-6 weeks. We will encourage you to start moving the ankle from the 2-week mark, and start some gentle physiotherapy from 4-6 weeks. From 6 weeks, you can wean out of the boot and start using well supported shoes, if the swelling allows.

The overall recovery from an ankle replacement is in the order of 9-12 months, with a gradual improvement over this time frame.

What are the complications?

Wound healing problems – The risk of serious wound healing problems is approximately 1%. It is important to keep the foot elevated over the first 10 days to reduce the swelling and risk of wound healing problems. In rare circumstances when the wound is problematic, further surgery can sometimes be required.

Infection – Wound infection tends to settle with antibiotics. Infection can be serious if it penetrates into the joint. Fortunately this is rare (less than 1%). Established and confirmed infection initially can be treated with a washout and liner exchange. More serious infection will require removal of the whole TAR, putting in a spacer for six weeks, with intravenous antibiotics and a further TAR or fusion when the infection settles.

Fracture – Occasionally a fracture can occur during surgery, which if recognised immediately will be fixed. It is unlikely to affect the long-term outcome, but you may need to keep your weight off the ankle for a little longer.

Numbness – injury to the superficial peroneal nerve or tibial nerve, can result in patches of numbness over the foot. This is quite common in the order of 10-15%, but rarely problematic.

Swelling– This will be persistent, but gradually improving upto the 9-12 month mark.

Stiffness – this is common to begin, as you will be immobilised for 2-6 weeks in a cast, and then in a boot for about 4 more weeks. Long-term stiffness is rare, but does occur as we are keeping you immobilized for a period of time. Sometimes permanent stiffness requires you to modify life around the problem.

On-going pain – There are a small percentage of people who continue to experience pain, without any obvious detectable abnormality, and is in the order of 2-5%. It usually relates to the ankle ligaments, which are difficult to balance.

Chronic Regional Pain Syndrome – this is where the nerves around the foot and ankle become overly sensitive. The area swells, changes colour and becomes stiffer than expected. It is exceptionally uncommon, but can be very debilitating. If this is diagnosed, then I will refer you to a specialist pain doctor. The outcome of surgery can be suboptimal in this situation.

Loosening – Like all prosthetic joints, they have a limited lifespan, and can loosen. If this happens, a further TAR can be performed if there has not been too much bone softening. If the bone has been eroded, a fusion is required which can be challenging as a large hole needs to be filled, and often allograft bone (from another person) is required to bridge the gap.

Deep Vein Thrombosis (DVT) – This is a clot of blood in the deep veins of the leg. The risk of a clot occurring is reported as less than 1% after foot and ankle surgery which is generally substantially lower than after hip or knee surgery. Suspicion of DVT is raised if the leg becomes very swollen and painful. There are tests that can be performed to confirm / exclude the presence of a DVT. If confirmed, you will probably require treatment with a blood-thinning agent (heparin preparation and / or warfarin). The main concern with regards a DVT is that rarely (<1:1000 chance with foot and ankle surgery) a piece of clot can break away in the leg and travel to the lungs which is much more serious and can be life-threatening. This is called a pulmonary embolus and signs of this include chest pain and shortness of breath. For the first 2 weeks following surgery, you will be treated with a blood thinning agent (LMWH – low molecular weight heparin injections) to minimise the risk of DVT / PE but this does not afford total protection and exercises to keep the toes and knee moving are advised, as well as remaining generally mobile. If you are concerned that the leg has become more swollen and painful (some swelling always occurs after surgery), or if you experience chest pain / shortness of breath, then you should contact the hospital, general practitioner, or accident and emergency department immediately.

What type of ankle replacement will I have?

Many different prostheses are available on the market, and currently there are no long-term studies from independent surgeons (those not involved with prosthesis design). In the hip, we can quote 99% 15-year survival, in the knee 95%, but the complexity of the ankle joint, together with the small surface area of contact (resulting in higher stresses), means that the few long-term studies available quote 80% 10-year survival. Therefore it is very important that you make a careful informed decision with me in clinic before you proceed.

These notes are intended as a guide and some of the details may vary according to your individual surgery.