

Resource

## Surgery of the Foot & Ankle

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Rheumatoid arthritis is a disease which affects 1-2% of the population. Approximately 15% of patients who have the disease will have pain and/or swelling affecting the feet as their first symptom. It is, contrary to popular belief, more common for the disease to first manifest itself in the form of foot problems than hand problems.

Rheumatoid arthritis is much more common in females than males, and although it can develop at any age, it most commonly presents between the ages of 40-60. This means that some patients with

rheumatoid arthritis have the disease for well over half their life. During the progress of the disease, up to 90% of patients will develop foot problems. This has major implications for mobility and even such mundane things as finding a comfortable pair of shoes to wear. The main problems with rheumatoid arthritis in the foot are: pain, swelling and deformity. It does not take much pain, swelling or deformity to make it impossible to wear a shoe at all. Unfortunately, “rheumatoid feet” are often even more uncomfortable out of shoes than in shoes.

Whenever a patient has a foot problem, whether or not this is associated with rheumatoid arthritis, there are realistically only five options for managing the problem.

These are:

- Ignore it
- Modify footwear
- Medication (tablets and/or injections)
- Physiotherapy and
- Surgery

Most rheumatoid arthritis patients have several joints that are painful and are usually very stoical about their condition. The mainstay of management remains medical. There are many medicines which can have a dramatic effect on the quality of life of patients. These drugs are aimed at suppressing inflammation and in doing so are good at alleviating pain. However, the inflammatory process cannot be totally halted, and when the disease process is aggressive joint damage will often follow. This leads to a different kind of pain, which relates to damage to the joints. This is so-called mechanical pain. Not surprisingly, the weight-bearing joints of the lower limb are particularly prone to mechanical pain and, when affected, this can have a major effect on mobility. Limb joint damage is also debilitating, but it rarely affects mobility, unless of course crutches etc. are being used.



Whilst the knee and the hip joints can be replaced as 'routine surgery', it is not possible to replace all the joints of the foot. When the foot and/or ankle is affected by rheumatoid arthritis, usually both feet are involved and multiple joints as well. Including the ankle, there are 33 joints in a foot, and only two of them lend themselves to joint replacement: the ankle and the big toe joint. This means that there are plenty of joints which can be the source of pain and are not suitable for replacement. In the hind-foot and the midfoot, the mainstay of orthopaedic surgical treatment is joint fusion, i.e. permanent joining of the two bones on either side of the joint. Unfortunately, there is no such thing as bone glue and therefore achieving a solid fusion involves holding the joint rigidly with screws, plates or staples. The two bones then have to join together, like two halves of a broken bone, which takes approximately 3 months. In many RA patients, the bones are relatively soft, due to a combination of drugs (such as steroids) and relative disuse. All these factors mean that the foot has to be immobilised in a plaster of Paris for three months, and the patient may have to be non-weight-

bearing. If there is significant upper limb involvement in the rheumatoid arthritis this can make crutches almost impossible to use. Sometimes, for three months, a wheelchair may be required, or the use of a knee scooter, e.g. [StrideOn](#). If a patient's house does not lend itself to wheelchair access, she/he may need to be hospitalised for the duration of cast immobilisation. Following any foot operation it takes at least six months to recover function. If both feet are operated upon consecutively, it then takes about a year to get over the surgery. It should be clear from the above that foot surgery is not to be entered into lightly.

For reasons that are not easily explained, foot surgery historically was neglected by orthopaedic surgeons, particularly in the UK. Foot and ankle surgery, however, has developed enormously in the last 40 years, the main developments having come from America and France. So, what can now be done surgically for the affected foot and ankle? The answer is actually quite a lot, but it has to be carefully considered and carefully executed. If a joint is fused in an incorrect position, it may have a devastating effect on the foot.

The foot can be divided into three main parts: the forefoot, the midfoot and the hind-foot, i.e. the front part, the middle part and the back part. It is best to consider these parts of the foot individually.

## The Forefoot

If rheumatoid arthritis affects the forefoot, the usual problem is deviation of the big toe associated with dislocation of the lesser toes, so that weight is borne on the knuckles. This means that the forefoot is broad and weight-bearing can be exceedingly painful. If wearing trainers, soft cushioned shoes, or custom-made shoes is still very painful; then serious consideration should be given to surgical correction.

Conventionally, removing the metatarsal heads (the bony prominences in the ball of the foot) and fusion of the big toe can transform the quality of life of an affected patient. Needless to say, this surgery has to be meticulously performed if it stands a chance of success. Although it leaves the big toe stiff and the other toes floppy, the pain relief can be spectacular. Although this kind of surgery does not cure the condition, it can relieve pain for many years and make the wearing of "off the shelf" shoes possible. There are some feet, however, which do not need such destructive surgery. If the rheumatoid process has not destroyed the joints of the toes, it is possible to preserve the joints and maintain good function. This surgery has been revolutionised by Louis Barouk in Bordeaux, France and Lowell Scott Weil from America. In some patients, it is still worth considering preserving the big toe joint as opposed to fusing it, accepting that if it does fail, further surgery may be required to fuse the joint. Such surgery can be technically challenging and in some severe cases impossible, but it should be remembered that restoring anatomy is the single best way of preserving function in the long-term. It goes without saying that the "occasional" foot surgeon is more likely to be unfamiliar with these techniques and more likely to make an error of judgement or technical error than a dedicated foot and ankle surgeon.

Big toe joint replacement is a controversial area of foot and ankle surgery with some surgeons frequently carrying out the procedure and others hardly ever. Normally the big toe in rheumatoid arthritis is significantly deviated and merely replacing the ends of the bones does not correct the deformity. If the surgery is carried out, and for some reason, the surgery fails, it is difficult to salvage the situation. This is because too much bone has been removed in the first place to make fusion possible. It is for this reason that I recommend fusion rather than joint replacement of the big toe.

## The Midfoot



In the middle part of the foot, rheumatoid arthritis can lead to collapse of the arch. Supportive shoes and inner soles can be quite effective at “propping up” the arch, but when the deformity is rigid, such devices can be very uncomfortable and therefore if they are to be used, they have to be made of soft cushioned material. If such devices fail to relieve pain, then the mainstay of surgical intervention involves fusing the affected joints. It is important to fuse the joints which are responsible for the pain, and sometimes it is difficult to establish exactly which joints are the source of pain. If a symptomatic joint is left un-fused, then no benefit will be gained by surgery. This might mean a patient undergoes surgery, spends 3 months in a plaster only to be left with the same pain that was present prior to surgery. To aid in establishing which joints are painful, diagnostic injections can be very helpful. This involves injecting local anaesthetic into the affected joints and finding out which joints are responsible for the pain. Only when all the painful joints are successfully fused will pain be relieved. Unfortunately, not all the joints of the foot can be fused in one go, and if all joints were to be fused, the foot would be unacceptably stiff. It is therefore imperative that careful pre-operative assessment takes place followed by meticulous surgery. Having said this fusion of the mid-foot joints can be very effective at relieving pain. Because many of the mid-foot joints do not move a lot in the normal foot, fusion of

these joints is tolerated well and as a general rule, does not lead to noticeable stiffness. The surgery itself involves removing what remains of the cartilage in the joints and compressing the bone surfaces with screws.

## The Hindfoot

There are three joints in the hind-foot which although separate all act together. This means that if one of these joints is affected the others will, to a certain extent, be stiff even if they are not affected by the disease process. Rheumatoid arthritis tends to affect these three joints late on in the progression of the disease, but when it does occur, it can be disabling and lead to severe deformities. The mainstay of surgery for these joints is fusion. Conventionally in the past fusion of all three joints (subtalar, talonavicular and calcaneocuboid) has been practised. This is the so-called triple arthrodesis, and it remains a highly effective way of dealing with pain from these joints. Unfortunately, it does lead to profound stiffness of the foot. It is only recently that progressive foot and ankle surgeons have advocated fusing only the affected joint(s). In particular, isolated talonavicular and isolated subtalar joint fusions are very good alternatives to a triple fusion in appropriate cases. Although fusing the talonavicular joint leads to profound stiffness in the other two joints, the operation is shorter and normal joints are not being unnecessarily sacrificed. However, if all three joints are operated upon, and one fails to fuse the operation will be a failure. If the joint which does not fuse did not need to be operated upon in the first place, much harm will have been done.

Although the period in plaster following hind-foot fusions is normally three months, the end results can be especially pleasing, not only in terms of pain relief but also correction of deformity. This type of surgery is very complex, so it is advisable to discuss the procedure in detail with your surgeon and to ask about their level of experience in performing this surgery.

## The Ankle



Like all the other joints in the foot, the ankle joint can be the source of great pain and misery to the rheumatoid patient. The ankle is less likely to deform than the hind-foot joints when affected by rheumatoid arthritis, but when deformity occurs, it can be severe. Innersoles have a limited role in the treatment of the rheumatoid ankle, and realistically any mechanical device which is likely to help has to come above the ankle. Such devices rarely fit inside shoes and therefore usually take the form of a rather cumbersome brace. There have been great advances in the design of these braces and the materials used in recent years and for some patients bracing is highly satisfactory.

Sometimes an inflamed ankle joint can be helped by key-hole surgery (arthroscopy). This involves washing out the joint and removing the inflamed lining of the joint. Unfortunately, most ankles affected by rheumatoid arthritis are beyond help by this type of surgery. Fusion or joint replacement needs to be considered.

A successful ankle fusion can lead to excellent pain relief, but it does also lead to marked stiffness. If other joints are involved, the stiffness can be quite pronounced. Despite this, ankle fusion remains a reliable option for most cases of severe arthritis of the ankle. Ankle joint replacement is now becoming established as an alternative, but there is no doubt that it is not as successful or long-

lasting as hip or knee replacements. The early experience of ankle replacements was very disappointing indeed, but there have been great improvements in the design, and there are now several models commercially available. Some surgeons claim excellent results, and there is no doubt that when a successful ankle replacement maintains good motion, patients are very happy indeed with the operation. The problem with ankle replacement, as with big toe joint replacement, is that if it fails and needs to be removed salvage can be very difficult indeed.

## Summary

Surgery has a lot to offer the rheumatoid patient with foot and ankle problems. In the last 25 years, there has been an explosion of interest in foot and ankle surgery, and there are now many orthopaedic surgeons in the UK who specialise in foot and ankle surgery. Newer techniques are therefore more widespread and practised by a greater number of foot and ankle surgeons, providing more availability with a wider range of treatment options for the rheumatoid patient.

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## Read more

### [RA Foot health](#)

RA most commonly affects the smaller joints in the hands and feet and something like 90% of people with RA experience pain and problems with their feet, yet all too often the feet can get overlooked by patients and healthcare professionals.

### [Foot Surgery](#)

For most, foot orthotics, medication and good footwear can be enough to manage foot health in RA, but in some cases, surgery may be required, whether it's the removal of painful bunions or more extensive corrective joint surgery.