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# Foot and Ankle Update: Ankle Arthritis

The ankle is the most commonly injured joint in the body. Both ankle sprains and fractures are very common injuries and in the most part are responsible for the development of ankle arthritis.

Interestingly, unlike the hip and knee, the ankle is protected from primary/genetic arthritis, and most cases follow an actual injury. Although not as common as hip and knee arthritis, ankle arthritis has steadily become more common, and the upward trend is still continuing.

When fully established, studies have shown that the symptoms of end-stage ankle arthritis have the same effect on quality of life as end-stage hip arthritis.

## What are the causes of ankle arthritis?

Ankle arthritis refers to the loss of joint cartilage that covers the tibia and talus bones, which constitute the ankle joint. Figure 1 shows an arthritic joint, demonstrating loss of joint space and the presence of osteophytes (bony overgrowth).

The most common type of ankle arthritis is osteoarthritis, often referred to as 'wear and tear' arthritis. The following list summarises the important causes:

- **Trauma:** Ankle fractures and recurrent ankle sprains are by far the most common reasons for developing ankle arthritis
- **Abnormal joint loading:** When a fracture of the tibia does not heal in perfect alignment, abnormal forces and stresses can be placed across the ankle joint, leading to arthritis. Equally, a flat or high-arched foot commonly transfers stresses to the ankle joint, leading to premature wear and tear

- **Infection:** Joint infection (septic arthritis) will often progress rapidly to arthritis, if not treated promptly
- **Inflammatory conditions:** Such as rheumatoid arthritis, which commonly affects the ankle joint
- **Primary arthritis:** This is the most common cause of hip and knee arthritis, and has a significant genetic element. Essentially, it is wear and tear that develops without an injury or obvious cause
- **Other causes:** These include gout (also called crystal arthritis), haemophilia (recurrent bleeds into the joint) and diabetes, which can result in damage to the nerves that supply the ankle joint. This produces a problem known as 'Charcot ankle', where the resulting lack of sensation allows the injury to go unrecognised, leading to severe ankle arthritis and deformity

## What are the typical symptoms?

A combination of pain, stiffness and swelling are the most common symptoms. Pain is often felt deep within the ankle, although bony spurs (osteophytes) typically form at the front of the joint and can cause catching or impingement. Start-up pain, felt first thing in the morning, is common. Walking long distances, hill walking, and negotiating stairs can become increasingly difficult as the arthritis progresses. Eventually pain may be felt at rest and at night.

## Non-surgical management strategies

Ankle arthritis can often be treated without surgery, especially in the early phases.

There are a variety of non-surgical treatment options available, including:

- General measures, such as weight loss, activity modification and, if allowed, anti-inflammatory medication
- Physiotherapy, which can be helpful in the early phase, concentrating on strengthening the muscles that control the ankle joint; although pain can be a limiting factor
- Orthotic devices and footwear modification, as a flat or high arched foot can be supported, and sometimes corrected, with an insole that will take the pressure off the ankle joint. A rocker (curve) to the sole of a shoe can be adapted to reduce the work the ankle joint needs to do during walking
- Local anaesthetic and steroid injections, which can help reduce the inflammation associated with the ankle arthritis, and are often successful short term solutions
- Other injections (under the umbrella of 'viscosupplementation'), which involve injecting hyaluronic acid, a naturally occurring substance that lubricates and cushions the joint. However, at the moment, in the UK, this is not a common treatment for the management of ankle arthritis



Figure 1

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## Surgical options

All surgeons depend on a number of factors when deciding which specific procedure will best suit their patient. For those treating ankle arthritis, the following factors are important in decision-making:

- Age
- The extent of arthritis and the degree of deformity (tilting of the joint)
- Bone quality
- Job and current level of activity
- The surgeon and his/her philosophy/training

## Arthroscopic debridement

This involves two small 1cm incisions over the front of the ankle.

A camera (arthroscope) and specialised instruments are used to inspect the ankle joint and clear any bony overgrowth or unstable areas.

This procedure is often called a 'tidy up'. Symptoms often improve in the short term and often arthroscopic debridement is used to delay the need for a more permanent solution.



## Ankle fusion

An ankle fusion (figure 2) is recognised as the gold standard treatment for symptomatic ankle arthritis. The principle is to eliminate movement and therefore pain.

The procedure can be performed through an open incision over the front/side of the ankle or arthroscopically (through a camera), and is possible when there is minimal deformity (not too much tilting). It generally takes 9-12 months to fully rehabilitate following an ankle fusion, and during the first six weeks post-operation, the patient is required to wear a plaster cast and refrain from any weight-bearing at all. The early results of an ankle fusion are very good, and patients often return to a very high level of function.

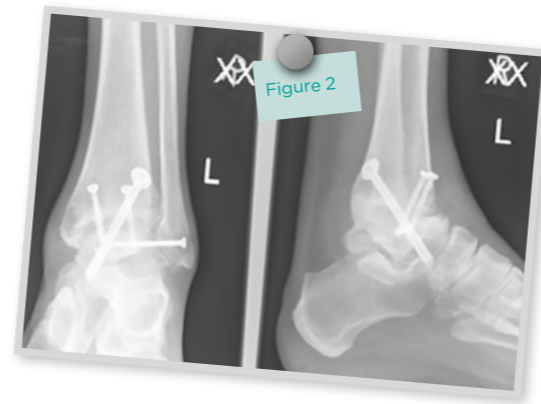
However, in the long-term, stress placed on the surrounding joints, which have to compensate for the lack of ankle movement, leads to wear and tear and arthritis. If so, further fusion of these joints may be required.

## Total Ankle Replacement (TAR)

It is human nature to want to keep mobile, and completely replacing the entire ankle joint is the only option that preserves the pre-existing mobility of the patient.

TAR is a valid option in carefully selected patients and has seen resurgence in recent years, due to improvement in prosthesis design and instrumentation.

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. After surgery, plaster and non-weight bearing is preferred for 2 weeks, followed by progressive walking in a boot. The overall recovery is similar to an ankle fusion.

However, like all prosthetic joints, they have a limited lifespan, and can loosen. If this happens, a further TAR can be performed providing there has not been too much bone softening. If the bone has been eroded, a fusion is required, which can be challenging, and often allograft bone (from another person) is needed to bridge the gap.

The best long-term studies of TAR quote an 80% 10-year survival. This is in contrast to 95-99% for total hip and knee replacements. We are now submitting data to the National Joint Registry, similar to hip and knee replacements, and we await the early results from this exciting venture. A national trial has also been set up, which is currently comparing ankle fusion with replacement.

Clear benefits of a TAR include preservation of movement, highlighted by gait studies showing 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, which can potentially avoid the need for further surgery.

Not everyone is suitable, and the success of the operation depends heavily on the individual patient. For example, more than 10 degrees tilting of the joint increases the risk of early failure. Other factors to consider include age, occupation, weight and bone quality. The long-term outcome of a TAR is directly related to the amount of stress exerted, so younger patients, and those involved with heavy labour, may be better served with a fusion. TARs tend to preserve the pre-existing range of movements, therefore a fusion can be a better option if an ankle is very stiff to begin with.

## Suitability for surgical treatment of ankle arthritis

The following is my personal philosophy on the surgical treatment of ankle arthritis. Ultimately the decision on treatment is based on a full discussion of the benefits and drawbacks of each option.

If you are under 50 years of age, I generally do not recommend TAR, as the prosthesis will certainly fail within 5-10 years, requiring multiple operations thereafter, each becoming more difficult. I would offer this age group a fusion, either arthroscopic or open, based on the degree of tilting.

For patients over the age of 65, with good bone stock and minimal ankle tilting, I consider TAR to be a good option. As the years pass, naturally less stress will be placed upon the TAR, therefore prolonging its lifespan.

Patients between the ages of 50 and 65 represent the most difficult group. I do not rely on absolute ages and each individual is unique, so a TAR can still be a good option. This is where informed decision making is especially important.

