

# Bunions (hallux valgus), lesser toe deformities and arthritis of the big toe (hallux rigidus)

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# BUNION (HALLUX VALGUS) AND LESSER TOE DEFORMITIES

THE FOLLOWING INFORMATION SHEET HAS BEEN PRODUCED TO PROVIDE OUR PATIENTS WITH AN OVERVIEW OF THEIR CONDITION AND WHAT TREATMENTS THEY MAY EXPECT. HOWEVER, EACH PERSON IS DIFFERENT AND THE TREATMENT YOU ARE OFFERED WILL DEPEND ON YOUR UNIQUE CIRCUMSTANCES.

## What do hallux valgus and bunion mean?

'Hallux' is the Latin word for great toe and 'valgus' is the Latin term for turning outwards.

As the big toe drifts towards the second toe, a lump (bunion) appears at the base of the big toe. It is not usually due to extra bone formation, but due to the bone of the first metatarsal becoming prominent. Simple removal of the bunion (bunionectomy) is not a successful operation as it doesn't address the bony deformity causing it, and osteotomies (bone cutting procedures) are usually required.

A bunion may be painful in itself but what is more common is further pain caused by pressure from shoes over the prominent area. This results in inflammation and increased pain. The bunion can also lead to putting extra pressure through the other toes which subsequently become painful.

## Lesser toe deformities

Various names (claw toe, hammer toe, mallet toe, curly toe) are used to describe the deformed lesser toes (smaller toes); they often develop as a result of a bunion deformity but can also occur without a bunion.

The second toe is most commonly affected. Painful callosities cause pain, difficulty finding shoes and difficulty walking. With time, a flexible deformed toe may become a stiff deformed toe. The joints at the base of the toes (metatarsophalangeal) may become inflamed and may displace, leading to problems with pain under the metatarsal heads in the ball of the foot. The diagram below illustrates a bunion with an abnormal toe.



## Common causes of bunions and lesser toe deformities

It is not entirely certain what causes a bunion and/or lesser toe deformities to develop. However, they may be inherited, or may be acquired due to muscle imbalance. Inappropriate footwear is not usually the cause of the deformity but may contribute in susceptible individuals. Tight shoes do however cause pain and redness over prominent bony areas. Generalised ligament laxity, abnormal foot mechanics and tight Achilles tendons may also contribute.

## Treatment of bunions and lesser toe deformities

### Assessment

A thorough evaluation will determine the type of treatment that will be most appropriate for you. Osteoarthritis and rheumatoid arthritis, along with infection and/or gout, can all cause pain in the big toe and forefoot. Circulatory conditions or diabetes may also be present. These conditions may have an impact on the method of treatment that your surgeon provides.

### Non-surgical

Small changes in mild bunions and lesser toe deformities are best treated with modified footwear. It is possible to manage conditions affecting the forefoot by adapting your footwear and wearing shoes with a wide front and a deep toe box. Some bunions may be the result of collapsed arches. This may be resolved by providing you with arch supports.

Hard skin (Calluses) that develop under the big toe and/or lesser toe(s) may become large and uncomfortable. These can be shaved down. Pads made of silicone and other materials can be used to cushion prominent or tender areas. Corns on the lesser toes can be protected using foam tubing, or the tips of the toe(s) can be elevated with the use of soft splints. These will not reverse the deformity but will treat symptoms.

## Surgical (bunion)

Surgery should only be considered if all non-surgical measures have been explored and if symptoms are significant. Bunion and/or lesser toe surgery is not just a cosmetic procedure and you could be swapping a deformed painless foot for a painful cosmetically pleasing foot.

Greater understanding of the many complex components of hallux valgus and lesser toe deformities has led to more patient-specific surgery. Fixation with screws has significantly decreased pain in the post-operative period. Patients no longer need to be in a plaster cast for six weeks following surgery and can mobilise straight away in a flat Velcro sandal.

Surgery can be performed as a day case either under general anaesthesia (asleep) or under a regional ankle block (awake); the anaesthetist will discuss this with you. You will usually go home on the same day as your surgery but occasionally it is necessary to stay a night in hospital. This will depend upon your general health and how quickly you recover from the operation. You will be advised of the most suitable choice for you.

The surgery commonly involves a procedure called an osteotomy, meaning 'bone cut'. There are many variations on the choice of osteotomy carried out, but modern forefoot surgery usually involves the procedure known as a scarf osteotomy. An incision (cut) is made along the inside of the bunion. The bone is then surgically cut and the fragments are placed into a more normal position. The bone is held in position by two small surgical screws. The screws are buried in the bone so usually they do not need to be removed. The fix is stable and there is usually no need for a plaster cast post-operatively. The bony protrusion (bump) is trimmed at the same time as the cut is made. The soft tissues attaching to the outside of the big toe are often tight and may be released to allow correction of the toe. This may be done through a small second incision on top of the foot.

A further procedure known as an akin osteotomy may be carried out on the big toe (phalanx) at the same time. This involves removing a wedge of bone from the big toe; the aim of this is to achieve a better correction of the sideways deviation of the big toe. The bone is fixed in position using a small metal staple.





## Surgical (lesser toe)

Procedures for conditions affecting the lesser toes vary according to the exact type of deformity. Soft tissue procedures such as tendon release (tenotomy) and tendon transfers are usually sufficient for deformities that are flexible. Fixed deformities are usually treated by operations on the bone around the deformed joint, for example, an interphalangeal arthrodesis (fusion) is performed by removing a small sliver of bone from each side of the joint and fixing it with a fine wire called a Kirschner wire (K wire). The wire protrudes from the end of the toe and is removed between four to six weeks in clinic, (when the two bone ends have begun to join). Removal of the K wire is relatively painless and does not require an anaesthetic as by that time the wire has loosened itself within the bone.

The metatarsophalangeal joint is the joint between the foot and the toe. This sometimes needs to be corrected to allow the toe to sit properly, if for example your toe has moved inwards or outwards. Your surgeon can often do this by releasing the tight tendon and some soft tissue on the back of the foot. Occasionally the bones need to be realigned to straighten the toe.

## Benefits of surgery

The purpose/benefits of this surgery are to straighten the toe(s), narrow the forefoot and correct deformity in order to reduce pain. The exact procedures performed are individualised for each patient and the benefits also vary.

## Important post-operative advice

### Wound site

You will have stitches with a dressing covering the wounds. A padded bandage will be in place. If you have undergone surgery to correct deformities of the lesser toes, you may also have K wire(s) protruding from the toe(s). You will be allowed to walk in a flat Velcro shoe. It is extremely important to keep the affected foot elevated above groin level as much as possible for the first two weeks following your operation. This is important to avoid swelling and help wound healing. You will find that when your foot is lowered it will throb and swell. This results in elevated levels of pain. Pain relief will be prescribed by your doctor. The wounds should be kept clean and dry until they are fully healed. A special shoe will be provided for you to wear following your operation. The shoe is designed with a rigid sole to it that does not bend easily and allows the wounds and the bones to heal. This shoe should be worn for six weeks after your surgery. Crutches will be provided and instructions on the safe use of them will be given to you by the physiotherapist. You should be able to walk and will be shown how to manage stairs. You can gradually increase your walking distance.

You will be shown exercises on how to move the affected foot and ankle. Failure to comply with the exercises increases the risk of developing stiffness of the big toe after surgery.

### An appointment

You will be given an outpatient appointment two weeks following your procedure. The bandage will be removed and your wound site will be inspected, and sutures removed at this visit. Some of our surgeons use dissolvable stitches. Bunion surgery – if you have undergone surgery to correct bunions and the wounds are sufficiently healed (following your review at two weeks), then it will be possible to bathe/shower. If wounds have not healed, then the area must be kept dry.

### Lesser toe surgery

You may have K wires in place. These wires will remain for a total of four to six weeks. They will be covered with a light protective dressing. The purpose of this dressing is not only to protect from infection, but, for example, to prevent the wires from catching on clothing or bed sheets. The pin site(s) will be inspected and cleaned at your two-week follow-up outpatient appointment. The area will be redressed and the wires will remain in place for a further four weeks. It is essential that you keep the wires dry and covered until they are removed and that the site(s) are completely healed before you submerge your foot in water.

### Returning to work

This depends on your individual circumstances and your type of employment. If you have a sedentary type of employment and are able to elevate your affected foot, then you may return to work from two weeks following the surgery but it may take three months for someone to return to a physically demanding job.

### Driving

If surgery is undertaken on your left foot and you have an automatic car, you can usually drive at around three weeks following your operation. Otherwise, you should be able to drive within six to eight weeks. You must be able to perform an emergency stop. You should notify your insurance company of the type of procedure that you have undergone to ensure that cover is valid. Your surgeon will write a letter that can be used to inform your insurance company. Sport – you can usually return to sport between three to six months from the date of operation; recreational walking or light sporting activities may be resumed earlier.

### How soon can I fly after my surgery?

You should avoid flying for approximately one month after surgery. This reduces the risk of deep vein thrombosis (blood clots).

## Possible complications of surgery

Modern forefoot surgery has a success rate of more than 90% but, as with all surgery, complications can occur. You should not contemplate surgery for cosmetic reasons only.

### Recurrence of the deformity

This happens very rarely and further surgery may be required.

### Over correction

This again happens very rarely and may require further surgery.

### Infection

This can sometimes occur in a small percentage of patients. If this is the case, it is possible that further surgery may be required to remove infected bone or screws. Minor infections normally settle after a short course of antibiotics.

### Numbness and tingling

This can occur at the surgical site, as a result of minor nerve damage. Numbness or sensitised areas are usually temporary but may be permanent.

### Non-union

The bones occasionally fail to unite (join). If you smoke, your risk of non-union or major complications are greatly increased (up to 5 times from normal). It is essential that you stop smoking before surgery and refrain from smoking until all bones have healed.

### Screws

Occasionally, screws become prominent. These may be removed at a later stage. Scarring – any type of surgery will leave a scar. Occasionally this causes pain and irritation.

### Stiffness

Stiffness and pain in the toe(s) can occur following surgery.

### Pressure transfer

Hard skin can develop under the second toe, which is caused by transferring weight to the second toe (this applies to bunion surgery only).

### Blood clots

A deep vein thrombosis (D.V.T.) or pulmonary embolus (P.E.) is rare. The team will automatically perform a risk assessment for you. Please inform the team if you have had a D.V.T. or P.E. before, or if you have a family history of clotting disorders.

**REPORT SEVERE PAIN, MASSIVE SWELLING,  
EXCESSIVE NUMBNESS OR PINS AND NEEDLES.**

# ARTHRITIS OF THE BIG TOE

## (HALLUX RIGIDUS) WITH DISCUSSIONS ON CHEILECTOMY AND FUSION

### What is arthritis of the big toe (hallux rigidus)?

Hallux rigidus is a common term for arthritis of the metatarsophalangeal joint of the big toe (the joint where the big toe joins the foot). 'Hallux' is Latin for great toe and rigidus is Latin for 'stiff'.

Hallux rigidus is a condition caused by arthritis (wear and tear) at the base of the big toe. This condition can affect all individuals, but is more likely to affect those who are active and regularly participate in sporting activities. Patients may feel a lump on top of the big toe, in comparison to the prominence in hallux valgus (bunion) where the bump is seen on the inner side of the big toe. Pain is increased when walking or running. This is caused by the upward movement of the toe where joint stiffness is most evident.



### Treatment

#### Assessment

Medical evaluation will determine the type of treatment that will be most appropriate for you. There are a large range of treatments for this condition and the treatment is very much individualised towards the patient. Osteoarthritis (wear and tear), and rheumatoid arthritis, along with infection or gout can all cause pain in the big toe and forefoot. Circulatory conditions such as diabetes and ischaemia may also be present. These conditions may have an impact on the method of treatment that your surgeon provides.

### Non-surgical methods of treatment

Early or mild arthritis may be treated using non-invasive procedures such as insoles. It is possible to manage hallux rigidus by adapting your footwear and wearing shoes with a firm sole. This may improve your symptoms. Tender areas on top of the big toe that are uncomfortable may be relieved by the use of protective pads made of silicone and other materials. These provide cushioning to prominent or tender areas. Prescribed medications – these contain anti-inflammatory properties that may help to reduce discomfort. Anti-inflammatory gels applied topically may also be effective in the relief of symptoms.

Manipulation and steroid injection – this procedure does not involve any surgical cuts but is usually carried out under local anaesthesia as a day case procedure. A manipulation is performed to release the contracture of the joint to allow more movement and reduce pain. A steroid injection into the joint also helps to reduce pain and inflammation. You can remove the dressing after 48 hours and return to all normal activities. The joint may become more painful for a few weeks in a small minority of patients. Pain relief is obtained in about 50% of patients for up to two years but the procedure does not cure the underlying arthritis and further treatment has to be considered later. The procedure will be discussed with you as a way of delaying surgical methods of treatment if you have mild to moderate arthritis in the joint. Surgery should only be considered if all non-surgical measures have been explored OR if symptoms are significant.

## Surgical methods of treatment

### Cheilectomy

This procedure involves removing the extra bump of bone on top of the big toe that is causing pain and discomfort. It does not cure the arthritic process within the joint, where present. By performing this operation, movement in the joint of the big toe is increased.

For those patients with less severe arthritis, there is an 80% chance of this surgery being successful for up to five years. If a cheilectomy fails to improve your condition, then a fusion may be undertaken at a later date.

### Fusion

This operation is performed to correct deformity, relieve pain, and improve function. The aim of the procedure is to fix the bones in the big toe. The operation involves holding raw bones together until they unite (join).

The joints that are exposed and surfaces that have deteriorated will be cleared away and bony prominences will be removed. The metatarsal bone (The bone at the base of the big toe) is fused to the phalanx (toe bone). The bone is held in position by metal such as a plate or two small surgical screws. The fix is stable and there is usually no need for a cast postoperatively. The body is tricked into treating the joint as it would a broken bone and bone grows across the joint, fusing it solid. This produces a stiff joint and the ability to bend the toe at the metatarsophalangeal joint is lost. The joint further down within the toe itself will still bend. Patients walk easily with a fused big toe joint and can even wear small wedge heeled shoes.

Most forefoot surgery is carried out as a day case and does not involve an overnight stay in hospital. However, sometimes it is necessary to stay in hospital for one night. This will depend upon your general health and how quickly you recover from the operation. Your surgeon will advise you of the most suitable choice.

There are some options to replace the joint which are suitable for some patients. Your surgeon will discuss this with you.

### Anaesthesia

Patients undergo either a general anaesthesia (asleep) or an ankle block using local anaesthetic (awake). In both instances a lower leg/ankle block is performed by using local anaesthetic that is injected locally. This provides pain relief following the procedure. Your anaesthetist will discuss this and offer advice regarding the most suitable method of anaesthesia.

## Important post operative advice

### Following your operation

When you arrive back to the ward from theatre your foot will be elevated, and you will have a padded bandage on.

### Wound site

You will have stitches or wool and crepe bandage with a dressing covering the wound. It is extremely important to keep your leg elevated to above groin level for the first 72 hours following the operation. This really helps to limit swelling and reduce post-operative complications. It is unlikely that you will need crutches. A physiotherapist will assess and instruct you and will usually provide you with a postoperative shoe. In some circumstances, a cast will be applied. You must keep the foot clean and dry, protecting it when you have a bath or shower until the stitches have been removed.

It may be helpful to purchase a waterproof cast protector before your operation to enable you to shower or bath and keep the bandages dry.

An appointment to attend the outpatient department two weeks following your procedure will be arranged. The bandage and dressings will be removed along with any stitches and your wound site will be inspected.

### Cheilectomy

The recovery period is usually quicker for this operation than for a fusion. A stiff soled shoe is provided for you to wear for the first two weeks, after which you may wear a loose shoe. It is important that you exercise the joint by holding your big toe and gently moving it up and down. Performing these exercises regularly and at an early stage following surgery allows the best possible result from your surgery. Swelling after this operation persists for about three months. As raw bone is left, you do not start feeling the benefit of the operation until about six weeks after the operation, and your symptoms should then continue to improve for up to 12 months.

## **Fusion**

The recovery period for a fusion is a lengthier process than that of a cheilectomy. It will take about six weeks for your pain level to reduce and the pain and swelling will continue to improve for up to 12 months. You will be provided with a flat, Velcro shoe to wear following your operation. This shoe is designed to not bend at the sole, allowing the bones and soft tissues to heal. This shoe will be worn for six to eight weeks following your surgery. It will be a further six to eight weeks before you are able to wear a standard shoe.

## **Returning to work**

This depends on the type of operation you have had. If you have a cheilectomy and work in an office or sedentary type of employment with provisions for you to elevate the affected limb then you may return to work following your two-week outpatient appointment. If you have had a fusion, then it is usually six to eight weeks before you can comfortably return to work. However, if your employment is physically demanding and involves long periods on your feet, it is advisable to refrain from work for a longer period of time. This decision will entirely depend on, for example, your type of employment and how you get to work.

## **Driving**

If you have a fusion or cheilectomy on the left foot and an automatic car you can usually drive following your two-week outpatient appointment. You must be able to perform an emergency stop. Notify your insurance company of the type of operation that you have undergone to ensure that your cover is valid.

## **Sport**

If you have had a cheilectomy, you will be able to return to sport much sooner. If you have had a fusion, you can usually resume sport between three and six months. Vigorous sports such as football and squash is unlikely following a fusion.

## **How soon can I fly after my surgery?**

You should avoid flying for approximately one month after surgery. This reduces the risk of deep vein thrombosis (blood clots).

# **Possible complications of surgery**

## **Infection**

This occasionally occurs in a small percentage of patients. However, if this is the case, it is possible that further surgery may be required to remove the infected bone or screws/pins. Minor infections are slightly more common and normally settle after a short course of antibiotics.

## **Numbness or tingling**

This can occur at the surgical site(s) as a result of minor nerve damage. Often this is temporary; however, the numbness or sensitised area may be permanent.

## **Incision site**

The outer surface of the foot where the blood supply is not so good may be slow to heal. If this is the case, more frequent wound dressings may be required to ensure that it does not become infected.

## **Failure to relieve pain**

Patients may continue to have pain and/or stiffness following a cheilectomy; they may then require a fusion. Very occasionally, patients with a fusion may continue to have pain.

## **Position (fusion patients only)**

Research has shown that 5-10% of fusions do not heal in the exact position intended. This may either be due to the fact that the position was not achieved at the time of surgery, or that the bones have shifted. Women will find that they cannot wear high heels after a fusion.

## **Non-union (fusion surgery only)**

Occasionally bones fail to unite (not join). If you smoke, your risk of non-union or major complications are greatly increased. It is therefore essential that you stop smoking before surgery and refrain from smoking until all bones have healed.

## **Screws**

Occasionally screws may need to be removed if prominent.

## **Scarring**

Any type of surgery will leave a scar. Occasionally this causes pain and irritation.

## **Blood clots**

Deep vein thrombosis (D.V.T.) or pulmonary embolus (P.E.) are rare. Please inform the team if you have had a D.V.T. or P.E. before or if you have a family history of clotting disorders. You will be given an antibiotic stocking to wear on your other leg.

**REPORT SEVERE PAIN, MASSIVE SWELLING, EXCESSIVE NUMBNESS OR PINS AND NEEDLES.**



## NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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