

A photograph of three healthcare professionals, likely surgeons, in an operating room. They are wearing blue scrubs and hairnets. The woman in the center is smiling broadly, and the two men on either side of her are also smiling. The image has a blue and green color overlay.

Orthopaedic surgery and Paget's disease

Version 1

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This booklet is part of a series of information booklets available from the Paget's Association.

Orthopaedic surgery and Paget's disease

Normal bone is renewed and repaired through a process called bone remodelling. In bone affected by Paget's Disease of Bone, remodelling is accelerated and disorganised leading to formation of bone with an abnormal structure. This can cause changes in the shape, size, and strength of the bone.

Paget's disease may cause no symptoms or complications for some people but for others, this is not the case. In certain instances, individuals affected by Paget's disease may find it necessary to see an orthopaedic surgeon. Successful surgical management of complications of Paget's disease can reduce pain and improve quality of life.

When might surgery be required?

Surgery may be required under the following circumstances:

- If an affected bone breaks (fractures), an operation may be required to fix the fracture.
- When Paget's disease puts strain on joints it can lead to damage (osteoarthritis) and if pain and disability from this become severe, joint replacement may be required.
- When there is marked bone deformity, usually seen in the lower leg, a controlled fracture called an osteotomy can be carried out. This involves breaking the bone and realigning it to correct the shape.
- If nerve compression occurs, surgery may be necessary, e.g. Paget's disease in the spine can cause deformed bone to press on the spinal cord. This can cause narrowing that occasionally needs to be corrected surgically, if medical treatment is unsuccessful.
- Paget's disease can cause bone cancer but is very rare. When it does occur, surgery may be used to remove the tumour.

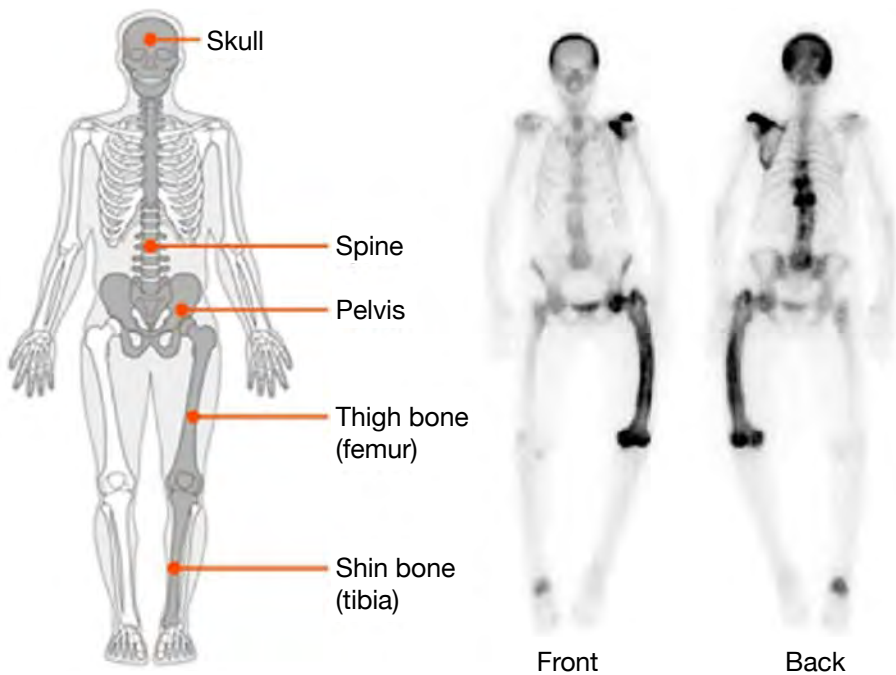


Figure 1

The image on the left indicates the most commonly affected bones: pelvis, thigh, spine, skull, and shin.

The image on the right shows the front and back views of a radionuclide bone scan. Paget's disease can be seen in the skull, left shoulder, spine and left thigh, as is indicated by the dense black areas.

Bent bones and fractures

Paget's disease might affect only one bone (monostotic) or several (polyostotic). The left of *Figure 1* shows a skeleton and indicates the most commonly affected bones: pelvis, thigh, spine, skull, and shin. The image on the right shows an individual's bone scan, seen from the front and back. They have polyostotic Paget's disease affecting the skull, left shoulder, spine and left thigh (femur) bone, which is indicated by the dense black areas.

In Paget's disease bending of the long bones that take the weight of the body, such as the femur or shin (tibia) bone, occurs in around one in ten people with symptomatic disease and can make the bone more likely to fracture.

The most common way to evaluate a fracture is with an x-ray which can show the type of fracture and exactly where it is located within the bone.

Fissure fractures

Small cracks can appear on the bone's surface and are known as stress or fissure fractures. They can occur as a result of Paget's disease, or from playing a sport or a repetitive motion as part of someone's occupation. Symptoms may be bone pain and difficulty walking. When these occur, they can be assessed and treated as necessary by an orthopaedic surgeon.

Fractures

When a fracture occurs for any reason it may cause pain, swelling, heat and bruising. Not all fractures require an operation and sometimes treatment will involve not putting any weight on the fracture (for example, using crutches). If the break is mild and your bones did not move far out of place (non-displaced), you might need a splint or a cast to keep the bone in place while it heals.

Some fractures need an operation to help them heal. Surgery to repair a fracture may be more complex in those with Paget's disease because of the size and shape of the bone, however, in general the results are good.

Some bones and some fractures take longer to heal than others. As a rough guide, arm bones heal twice as quickly as leg bones. Minor fractures can heal in six to eight weeks, whilst others may take three to six months.

If the fracture requires fixing by an orthopaedic surgeon to realign and fix the broken bone, metal wires, plates, screws or rods can be used. Plates, screws and rods will usually be left in place permanently, whereas wires may be removed a few weeks after the operation. *Figure 2* shows x-rays of a fracture in the femur to the left and its repair to the right. Sometimes it is necessary to attach an external frame to the broken bone. This is removed once the fracture has healed.

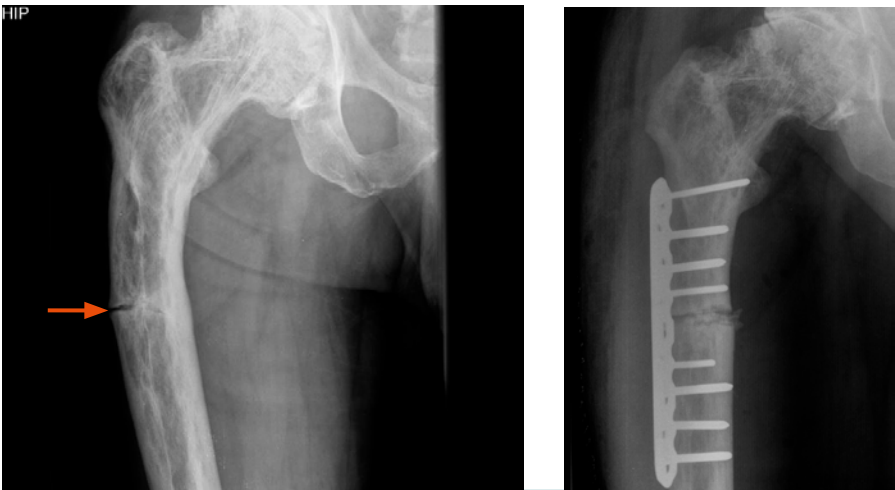


Figure 2

The x-ray on the left shows a fracture (indicated by the arrow) of the femur and on the right its repair

Pain usually stops long before the fracture is solid enough to handle the stresses of normal activity. During recovery muscle strength and range of motion may be reduced in the injured area. Specific exercises will help you restore normal muscle strength, joint motion, and flexibility.



Figure 3

On the left, member of the Association, Bill, is seen here attending one of the Association's events. He has not had his bent leg straightened but, for him, his mobility has not been too badly affected; he manages well with a walking stick. On the right is an x-ray of his lower leg from 33 years earlier, showing his tibia (shin bone). You can see that it's affected by Paget's disease, bowing of the bone and, at that time, also fractures (indicated by the arrows).

Straightening a bent bone

A bend in the bone may put abnormal stresses on the surrounding tissues and cause pain. An orthopaedic surgeon may recommend straightening the bone by an osteotomy operation. Osteotomy means 'cutting of the bone'. It may also be carried out to shorten or lengthen a bone.



Figure 4

Figure 4 shows x-rays with a bowing deformity of the shin bone with the arrow showing where a fissure fracture has occurred. The surgeon has made other breaks (osteotomies) and uses an external frame to gradually correct the deformity and at the same time fix the fracture. This type of treatment is very successful but can take many months of wearing the frame until the treatment is complete.



Figure 5 shows another example of a frame which has bolts screwed into the tibia and wires going through the bones and out the other side of the leg.

An interesting fact about the treatment of fractures in Paget's disease is that when the bone heals, it usually occurs with normal-looking bone at the site of the fracture, rather than appearing as bone affected by Paget's disease (Pagetic bone).

Figure 5
An example of a frame

Joint replacement

Often Paget's disease is an incidental finding when an x-ray is taken of a joint. The changes of Paget's disease usually affect only one side of a joint and are not present in both bones that make up the joint. Paget's disease at one side of the joint puts it at higher risk of developing osteoarthritis due to strain on the joint.

Figure 6 is an x-ray of the pelvis that shows Paget's disease affecting the pelvic bone on the right side of the image. This can be seen as a coarse texture of the bone and is bigger than the same bone on the other side of the pelvis. The hip joint also has osteoarthritis due to Paget's disease. This can be seen as a narrowing of the gap between the bones at the hip joint on the right of the image compared to the hip joint on the other side. Use of the joints such as when walking worsens joint pain. The pain is also often worse at night and can affect the ability to work and engage in social activities. Even daily activities such as dressing can cause problems.

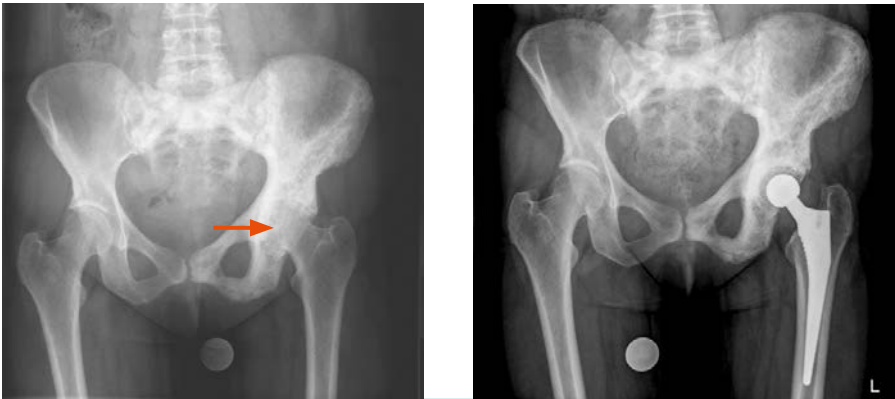


Figure 6

The x-ray on the left shows a narrowing of the gap between the bones (indicated by the arrow) compared to the hip joint on the other side. The x-ray on the right shows the same hip following replacement.

Blood loss during the operation is slightly higher in people with Paget's disease than those who do not have Paget's, even if the disease has been treated with bisphosphonates. However, overall incidence of complications following joint replacement surgery is low.



Figure 7
This x-ray shows a hip replacement where the femur bone has been previously repaired (see Figure 2)

Provided that the bone is not bent, the same joint replacement implants are used in those with disease as in those without. *Figure 7* shows the same hip as in *Figure 2*, however, the hip has now been replaced. You can see that the previous repair to the bone has not prevented a hip replacement. The individual concerned was able to return to normal activities. If the bone is bent the operation might need to correct the deformity as well, but surgeons have ways of doing that too!

The operation itself may be more technically challenging due to deformity and altered bone quality. Careful pre-operative planning can ensure optimal outcomes. Those with Paget's disease experience a similar amount of pain relief and improved function as those who do not have Paget's. The joint replacement does not wear out more quickly. Nor does it seem to matter which method is used

to fix the implant into the bone (with or without bone glue) as both types seem to last equally well.

- Read our booklet on pain to learn more about osteoarthritis and Paget's disease.

Back pain and spinal canal narrowing

Back pain in Paget's disease can be due to bone pain from the disease itself or because of changes in the small joints of the back. In most cases, this can be treated with simple measures such as maintaining a healthy weight, back strengthening exercises and regular activity.

Sometimes the disease can cause narrowing of the spinal canal and nip the spinal cord or cause narrowing at the point where the nerve leaves the spine. Where the spinal canal is narrowed it can cause symptoms of an aching in the buttocks and legs that can be accompanied by weakness in the legs on walking, and occasionally numbness in the legs.

Where the symptoms are severe or worsening and medical treatment is unsuccessful, spinal surgery may be required and would usually be performed by a spinal surgeon. This sort of surgery can involve opening up the tightness at the site where the nerve leaves the spinal canal (known as decompression), or can involve removing parts of the bone and fusing some of the spinal bones.

Paget's disease and bone cancer

Very rarely Paget's disease can cause cancer to grow in affected bone (Pagetic bone). This happens in less than one in a thousand people with the disease. Treatment depends on the bone involved and the stage of the disease. Possible treatments include surgery, radiotherapy and chemotherapy.

Questions?

If you have any questions or concerns that you would like to discuss, you can contact our Paget's Nurse Helpline by email helpline@paget.org.uk or by telephone **0161 799 4646**.

Summary

- The most common reason that someone with Paget's disease sees an orthopaedic surgeon is when they have osteoarthritis and are seeking advice about joint replacement.
- Orthopaedic surgeons have a wide range of possible treatments for problems directly related to Paget's disease and the surgeon will liaise with the individual's medical doctor as necessary regarding the best way to treat the problem.
- Whilst the operation itself can sometimes be more challenging, most surgical treatments are just as successful in those who have Paget's disease as in those who do not.

Visit the Paget's Association's
website to read personal
experiences of surgery

www.paget.org.uk



Get in touch

Telephone

0161 799 4646

Email

helpline@paget.org.uk

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The Paget's Association is a registered charity

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