Hip replacement

Introduction

The hip joint has a wide range of movement and is subject to a range of disorders. Conditions that commonly lead to a hip joint replacement are osteoarthritis, rheumatoid arthritis, fracture of the neck of the femur (thigh bone), and damage resulting in loss of blood supply to the head of the femur (avascular necrosis).

Hip replacement surgery

Hip replacement surgery provides a long term solution for worn or damaged hip joints which can cause severe pain and loss of mobility. At least 50,000 total hip replacements (arthroplasties) are carried out in Britain each year. The operation replaces both the natural socket (the acetabulum) and the rounded ball at the head of the thigh-bone (the femoral head) with artificial parts (prosthetics). These parts replicate the natural motion of the hip joint.

Hip resurfacing

Total hip replacement surgery is usually very successful, but it can be invasive and require a lengthy recovery period. An alternative method, known as metal on metal (MoM) hip resurfacing, involves replacing the diseased, or damaged, surfaces in the hip joint with metal plating, which requires less prosthetics and less bone removal.

Hip resurfacing should be considered for people with advanced hip disease. Resurfacing is likely to last longer than a conventional replacement joint, although because the technique is still relatively new, it is not known precisely how long the resurfacing will last.

All types of hip replacement surgery are extremely beneficial, offering an end to joint pain, increased mobility and a better quality of life.

Why it should be done

Hip replacement is the most effective treatment for a hip joint that cannot function adequately and painlessly. The most common causes for surgery are:

- **osteoarthritis** - is the most common form of arthritis and occurs when connecting tissue between the joint is damaged, causing bones to rub together painfully,

- **rheumatoid arthritis** - is caused by the immune system attacking the lining of the joint, resulting in pain and stiffness,
- **septic arthritis** - is a form of arthritis which occurs when the joint becomes infected,
- **fracture of the neck of the thigh bone** (femur) - which causes a loss of the blood supply to the rounded head of the bone and may also lead to crumbling (avascular necrosis),
- **Paget's disease of bone** - which affects bone growth and can make bones weak and deformed,
- **bone tumours**, and
- **other joint injuries**.

Hip replacements are also sometimes required:

- in late cases of **developmental dysplasia of the hip**, which is a condition that prevents the ball and socket hip joint from developing properly. If left untreated, it can cause permanent deformity and walking problems, and
- for **hip joint fractures** caused by osteoporosis, which affects the bones, making them thin and weak. Certain cells within the bone are no longer able to break down old bone and replace it with strong, healthy bone.

How it is performed

As with many surgical procedures, all hip replacement operations are carried out under anaesthetic. This will be either a general anaesthetic, in which case you will be asleep, or a spinal anaesthetic (an epidural), which means you will be awake but will lose feeling from the waist down. If you have a spinal anaesthetic, you may also be sedated, if necessary.

Hip replacement surgery

In a total hip replacement operation, the existing hip joint is completely replaced. The upper part of the femur (thigh bone) is removed and the natural socket for the head of the femur (the acetabulum) is hollowed out. A plastic socket is fitted into the hollow in the pelvis. A short,

angled metal shaft, with a smooth ball on its upper end that fits into the socket, is placed into the hollow of the thigh-bone. The plastic cup and the artificial bone-head may be a press-fit, or may be fixed with acrylic cement.

Hip resurfacing surgery (Metal on Metal)

Metal on Metal (MoM) hip resurfacing is carried out in a similar way to traditional hip replacement surgery. The main difference is that much less of the bone is removed as only the joint surfaces are replaced with metal inserts. Hip resurfacing requires less recovery time and carries a lower risk of dislocation, which can allow you to take part in activities, such as skiing. However, it is not suitable for those with low bone density or osteoporosis.

Materials used for hip replacements

Both types of hip replacement surgery use the same sort of prosthetic parts which can be cemented or uncemented. Cemented parts are secured to healthy bone using a special glue. Uncemented parts are made from permeable material (which has many tiny holes) that allows the bone to grow into it, holding it in place.

Most prosthetic parts are produced using high-density polythene for the socket, titanium alloys for the shaft and, sometimes, a separate ball made of an alloy (mixture) of cobalt, chromium and molybdenum. Some surgeons use a ceramic head.

Although the hip replacement operation has become a routine and simple procedure, as with all surgery it carries a degree of risk.

Complications

The most common problem that can arise as a result of a hip replacement is loosening of the joint, which usually occurs ten to fifteen years after surgery. This can be caused by the shaft of the prosthesis becoming loose, or dislocated, in the hollow of the thigh bone, or due to thinning of the bone around the implant. Another operation (revision surgery) is necessary in around 10% of all total hip replacement cases.

Another common complication of hip replacement surgery is caused by the wear and tear of plastic artificial sockets. Particles that have worn off the artificial joint surfaces can be absorbed by surrounding tissue, causing inflammation. Anti-inflammatory drugs may stop the problem, but otherwise further surgery may be advised.

Less common complications resulting from a hip replacement are outlined below.

- **Infection** - this can be reduced by using antibiotics at the time of surgery and by using 'clean air' ventilation in theatre. However, infection still occurs in around 10% of cases. Deeper infection is serious and requires removal and re-implantation of the joint.
- **Blood clots** - can form in the deep veins of the leg (deep vein thrombosis) due to reduced movement, but can be prevented using special stockings, exercises and medications.
- **Dislocation** - in a small number of cases, the artificial hip can come out of its socket. It can be replaced under anaesthetic, but repeated problems require further surgery.
- **Joint stiffening** - also known as ossification, the soft tissues can harden around the implant, causing reduced mobility. This is not usually painful and can be prevented using medication, or radiation therapy (a quick and painless procedure during which controlled doses of radiation are directed at your hip joint).

As it is a relatively new technique, little information is available about the long term safety and reliability of hip resurfacing. If hip resurfacing is recommended, your surgeon will explain any associated risks and benefits with you before the procedure is carried out.

Recovery

Most people who undergo hip replacement surgery are able to climb stairs and are ready to leave hospital within six to ten days. Patients should avoid high impact activities but will be encouraged to walk and follow a gentle exercise programme as early as possible in order to:

- reduce the risk of deep vein thrombosis,
- reduce joint pain and stiffness,
- increase flexibility and muscle strength, and
- improve cardiovascular fitness.

Although exercise is important, do not be tempted to test the limits of the joint after hip replacement surgery. If you develop calf swelling, chest pain, or breathlessness shortly after surgery, you must seek medical advice immediately.

Following hip surgery, a physiotherapist is usually assigned to help patients recover and to explain what should and should not be done after the operation. It is very important that their advice is followed to avoid complications or dislocation of the new joint. An occupational therapist may also be available to assist with adjusting at home. They may suggest using certain items which can assist you, such as raised toilet seats and devices to help you dress.

Many thousands of hip replacements are completed without complications every year. In order to ensure the best chance of a smooth recovery, you must:

- contact your GP if you notice redness, fluid or an increase in pain in the new joint,
- avoid bending or twisting at the hip,
- avoid low chairs and toilet seats,
- try not to cross your legs,
- try not to lie on your side, and
- always follow the advice of your doctor and therapists.

Future prospects

There are several ways in which hip replacement surgery is being improved for the future. New stronger plastics for prosthetics are in development that will allow longer wear and better joint mobility, and enhancements are being made to resurfacing and new 'cementless' implants. Younger patients can be recommended newer types of joints such as ceramic on ceramic and ceramic on plastic.

In addition to this, a new kind of minimally invasive surgery (MIS) is sometimes used in order to reduce the size of the surgical incision. This can be enhanced still further by computer-assisted surgery (CAS), which generates an image of the hip joint to allow greater visibility and precision.


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