

Hip replacement

A patient's guide to alternatives, benefits, risks and options. An aid to shared decision-making.

In the early phases of hip arthritis (degeneration), there are a number of strategies that can be employed to minimise symptoms, maintain function and prolong the useful life of the natural hip joint. Dietary measures to maintain a body mass index (BMI) between 18.5 and 25 may delay deterioration of the smooth cartilage that covers the rubbing surfaces of the joint. Around the hip there are more than twenty muscles that move and stabilise the joint. One of the features of arthritis is the formation of new bone around the edges of the rubbing surfaces (osteophyte formation) and thickening of the soft tissue walls of the joint. These changes cause the hip to stiffen and the surrounding muscles to shrink, as they are no longer being used properly. Physiotherapy, Pilates and other strengthening exercises will help to minimise muscle wasting. In cases where osteophyte formation is mild, the exercises will also help maintain joint movement and minimise symptoms.

Medications can also help control symptoms. Ibuprofen, Diclofenac (Voltarol), Naproxen and Celebrex are all classed as anti-inflammatories and will dampen down the inflammation that often occurs while a joint is deteriorating. As with all medicines and interventions, there are benefits and also potential risks. Some people can take anti-inflammatories, for long periods, with no significant side effects. Other people will be more vulnerable and may suffer gastric irritation or impaired kidney function, amongst other problems. Opiate derived painkillers can also be helpful for short periods but can be addictive, cause constipation and interfere with mental function. In some countries, it is considered normal to take medications by suppository rather than tablets or syrups. Your general practitioner (GP) is the best person to advise you on which medications would be safest for you to use and what additional medications (such as Omeprazole or Lansoprazole) would be required to reduce the risk of gastric side effects. Your GP will also take into account potential interactions with any other medications that you may be taking.

In addition to tablets, syrups, patches and suppositories, injections into the hip joint can be helpful. An injection of local anaesthetic will numb the joint for a few hours and can be useful to determine the degree to which an individual's symptoms are coming from their hip rather than being referred from their back. Steroids can be injected with the local anaesthetic. There are many different types of steroids. While some types are used by bodybuilders to help develop their muscles and others can modify the function of the reproductive organs, the steroids that are used for painful joints are ones that have anti-inflammatory properties.

There are a number of other preparations that can be injected into deteriorating joints. These include, Hyaluronic acid, Platelet Rich Plasma (PRP) and adipose or

bone marrow derived stem cells. From time to time, the National Institute of Clinical Excellence (NICE) reviews the research available on these treatments. At present, NICE is not persuaded that any of these treatments are superior to steroid injections. In consequence, steroid injections are the only alternative available to NHS patients and most private insurance companies will not reimburse any of the other options.

When exercise, medications and injections no longer provide effective control of an individual's symptoms and they are unable to pursue a normal lifestyle, hip replacement should be considered. Patients cite many different reasons for choosing to have their hips replaced. By far the commonest is pain. The best time to go ahead with a hip replacement also varies from person to person. Problems that most frequently motivate patients to undergo a hip replacement are, pain preventing a good night's sleep; a limp that is being commented upon by friends and family; being unable to keep up with others when walking together and not being able to enjoy recreations that others of a similar age can do.

Hip replacement is one of the most successful operations ever invented. Around the world, more than a million people have their hip replaced every year. More than 90,000 of these operations are undertaken in the UK. 19 out of 20 (95%) of hip replacement patients report that they are pleased with the outcome of their surgery. Hip replacement completely relieves their symptoms and they are able to get back to a normal lifestyle. Indeed, most hip replacement patients report that the within a few months, they are completely unaware of having an artificial joint.

When hip replacement was first developed, in the 1960s, patients were kept in bed for three weeks and told that the most vigorous activity that they should undertake was walking. In America, many centres now discharge their hip replacement patients on the day of their operation. In the UK, a growing number of hospitals offer day of surgery discharge programmes and some of Prof Field's patients do go home on the day of their operation. At present, most leave hospital the day after their hip replacement but a longer hospital stay is sometimes necessary. Hip replacement patients can expect to walk without aids within a few weeks, drive their cars after about a month, walk long distances by three months and, when fully recovered, enjoy such activities as golf, tennis, skiing, hiking, rowing, sailing and cycling.

While almost all patients achieve these milestones and, by six months, cannot remember what their bad hip felt like, a small percentage of people do encounter complications and this is something that should be borne in mind.

We know that our blood becomes a little stickier after any significant trauma. This change lasts for between six and twelve weeks and is the reason air travel is discouraged for the first few months after hip or knee replacement. Having stickier blood after trauma may have been advantageous in ancient times as it could take several months for wounds to heal. Nowadays, stickier blood is no longer necessary as most wounds are made by surgeons and repaired at the end of an operation. However, the stickier blood response is hard wired into our DNA. In

consequence we are more vulnerable to blood clots forming in our leg veins or spreading to our lungs during the first few months after pelvic or lower limb surgery. To counteract this effect we treat our hip replacement patients with a blood thinning anticoagulant for 30 days. More importantly, we encourage patients to get back on their feet as quickly as possible to maintain the flow of blood through their legs.

Another problem that has become less common over the decades is the risk of a bug getting into the new hip joint. In the early days of hip replacement, up to 6% of hip replacements became infected. Nowadays, the risk is less than 1% and down to about 0.3% in the best centres. When infection presents in the first few weeks after surgery it is sometimes possible to leave the new joint in position and eradicate the infection by debriding the infected tissue and treating the patient with a course of antibiotics. When the infection is identified at a later stage it is usually necessary to remove the joint replacement, treat the patient with antibiotics and only when the bugs have been cleared can a new hip be implanted.

A potential complication that can beset hip replacement is the risk of the ball slipping out of the socket. This is known as a dislocation. In the past, dislocation occurred in about 1 in 30 cases. The rate is now below 1%, as surgeons better understand how to optimise component alignment and cause less disturbance to the soft tissue envelope that surrounds the joint. Approximately half of all dislocations occur within the first six weeks after surgery and this is the reason that some surgeons ask their patients to observe movement restrictions while the soft tissue structures around the joint begin to heal and strengthen. Prof Field is happy for his patients to sleep on their side immediately after their hip replacement but does ask them to put a pillow between their legs for the first few weeks. He also advises his patients to avoid extreme positions and to wait six months before resuming vigorous activities.

Not everyone has arms and legs that are exactly equal length or a spine that is completely straight. Over the course of our lives we adjust to these differences and are often unaware of any discrepancy between the two sides of our body. One of the consequences of arthritis is that the smooth cartilage, that covers the rubbing surfaces of the hip, wears away and the underlying bone can also be eroded. In consequence the affected leg gradually becomes shorter. One of the surgeon's tasks is to try to work out how much difference between the two sides is longstanding and how much is the consequence of the arthritis. The surgeon then needs to work with the patient to identify what change would best suit them. This is one of the areas where pre-operative CT scans may be helpful to improve the accuracy of measurements and enable planning for more precise surgery. Fortunately, patients are generally able to adapt to a small difference in leg length and so long as the difference is less than a centimeter most people will be able to adjust over a few months.

There are many different surgical approaches to the hip joint and each has advantages and disadvantages. In the UK, most surgeons have been trained to use the 'posterior' or 'lateral' approach to the joint and prefer to stick with the approach that they are experienced and confident to use. In other countries a substantial

proportion of surgeons have switched to the 'anterior' approach. This is the approach that Prof Field has used since 2008.

One of the potential hazards of the posterior approach is proximity to the sciatic nerve that can sustain temporary or permanent damage. This results in a foot drop and loss of feeling in the foot. The posterior and lateral approaches also necessitate detachment of muscles from the upper part of the thighbone (femur) to access the joint. These muscles need to be reattached to the bone at the end of the operation and take a few months to heal. This is one of the reasons why patients having their hip replaced using the posterior or lateral approach have a slower early recovery than patients whose hips are replaced using the anterior approach.

Unfortunately, a small percentage of patients having their hip replaced using the lateral approach will not enjoy good healing of the detached muscles and others suffer damage to the nerve that supplies the muscle. In such cases, the patient will tend to walk with a lurching gait and can experience persistent pain. When the anterior approach is used, the surgeon does not need to detach or cut any muscles but, a nerve that passes close to the wound may be bruised and, occasionally, its upper branches can be cut. This is the lateral cutaneous nerve to the thigh. It is a sensory nerve that runs in the fat beneath the skin and provides sensation for the outer side of the thigh. Most patients having their hip replaced using the anterior approach experience some temporary loss of feeling in the territory supplied by this nerve. In the great majority of cases the feeling returns to normal over three to six months. Occasionally, there is a small area that remains numb and in one out of two thousand cases, Prof Field has had a patient whose cut nerve end became entrapped in the scar tissue and needed to be released.

The hip replacement comprises a cup (the acetabular component) in the pelvis and a stem (the femoral component) in the upper thighbone. Both the cup and the stem can have several parts so that attachment to the bone is secure and the rubbing surfaces are hard wearing. In the early days of hip replacement, cups tended to be made out of polyethylene and were cemented into the pelvis. Some surgeons still advocate the use of cemented polyethylene cups and this may be the most cost-effective solution for older patients. Most surgeons now favour a cup that comprises an uncemented titanium shell with a polyethylene or ceramic insert. The patient's bone grows onto the titanium shell and the ball at the top of the stem rubs against the polyethylene or ceramic insert.

In the early days of hip replacement, the femoral component was a single stainless-steel implant with a prong that was cemented into the marrow canal in the upper thigh bone and a ball, at the upper end, to fit into and rub against the polyethylene socket. Over the years, femoral components have developed so that the stem and ball are now separate parts. This means that the stem can now be made of stainless steel and cemented into the femur or titanium for uncemented fixation with the patient's bone growing directly onto the titanium surface. The ball can be made of metal or ceramic and is available in different options that allow the surgeon to adjust the length of the leg and the stability of the joint.

Prof Field normally uses uncemented cups with ceramic or highly cross-linked polyethylene bearings. On the femoral side he favours uncemented stems in younger patients and cemented stems in older patients. He also tries to use shorter uncemented stems in the most active patients. Uncemented stems need to be fixed tightly inside the upper thighbone and this can result in high stress points with cracks in the bone. Nationally, this affects about 2-3% of hip replacements when an uncemented stem is used. When a crack occurs, the bone may heal with a period of restricted weight bearing or further surgery may be required to apply wires around the bone or to replace the stem.

When a cemented stem is used, the component is firmly fixed from the time of surgery and there is no need for the patient to restrict their weight bearing during their recovery. When an uncemented stem is used, it takes a few months for the bone to grow onto the metal and this means that the patient needs to restrict their activities for the first few months. Thus, the older patients with cemented stems are often able to resume normal activities sooner than younger patients who need to wait for their bone to attach to their implants.

Unfortunately, the bone does not always make a firm attachment to the implants. This can result in an ache in the thigh after heavy activity. In the rare cases where the component is completely loose, there will be pain on any weight bearing. In such circumstances the implant needs to be taken out and a new one put in (a revision procedure).

The different combinations of materials that are used for the bearing surfaces also have potential advantages and disadvantages. When the bearing is ceramic against ceramic, there will be almost no wear but the ceramic can crack and the bearing can squeak. When the socket bearing is polyethylene, there will be more wear debris but the polyethylene cannot crack and the bearing will not squeak. Fortunately, the current generation of ceramics are very crack resistant, and squeaking is rarely reported. Likewise, the modern highly cross-linked polyethylenes produce very little debris and should last for many decades.

Patients often want to know how long their hip will last and what would happen if it wears out. It is impossible to tell a patient how long their hip will last but we do have good information on how long hip replacements from twenty or thirty years ago have lasted. As a rule of thumb, a patient in their seventies has a better than 70% chance that their hip would not require any further attention for more than thirty years. In contrast, a patient undergoing hip replacement before the age of fifty, has a nearly 30% chance that the hip will need to be redone within the first fifteen years. Overall, only one in eight people having a hip replacement ever require any further surgery for their joint.

Further useful information on total hip replacement can be obtained from the excellent learning tool at www.consentplus.com. If you have any additional queries, please contact Prof Field's secretary to arrange a further appointment.