

# Bearing surfaces and wear

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## What you're feeling

Every artificial hip wears a little with use. The moving surfaces rub against each other, and tiny particles come off over time. Usually the harder surface wears the softer one. For most people this happens slowly and causes no trouble at all.

When wear builds up, the loose particles can irritate the tissue around your hip. This can cause pain deep in the groin, sometimes spreading to the thigh. You might notice swelling near the joint. The pain often flares after activity and tends to ease with rest. Some people find it disturbs their sleep at night.

Wear can also loosen the bond between the implant and your bone. Daily tasks that load the hip, like getting out of a low chair, climbing stairs, or walking to the letterbox, can become harder or uncomfortable. You may feel the joint is less steady than it used to be.

Some older implant combinations produced more wear than others. Metal-on-metal hips, where both moving surfaces are metal, caused problems for some people. These can lead to pain in the groin, swelling, and sometimes a fluid-filled lump or sac near the joint. Some people with these hips also noticed weakness in the muscles around the buttock. This type of bearing is now rarely used.

If your hip becomes painful or swollen, your surgeon can check for wear. This usually involves plain X-rays, and sometimes a scan such as an ultrasound or MRI to look at the soft tissues around the joint. These checks can pick up wear early, often before it causes serious damage. Catching it early can sometimes mean a smaller operation, replacing only the plastic liner and the ball, rather than the whole implant.

Regular long-term check-ups are part of looking after a replaced hip, even when you feel well. If you notice new pain, swelling, or a change in how your hip feels, tell your surgical team rather than waiting for your next scheduled visit.

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## What's actually happening

A replaced hip works like a ball sitting in a socket. The ball and the socket liner glide over each other every time you move. Surgeons call these moving surfaces the bearing, in the same way a wheel turns on a bearing. All bearings give off tiny particles as they rub. The harder surface slowly wears the softer one.

Your body treats these particles as unwanted debris. Billions of them can build up over the years. When there are too many, the tissue around the hip becomes inflamed. That inflammation can slowly eat away at the bone holding the implant in place. This is called osteolysis, which simply means bone loss around an implant. It is the reason wear can loosen a hip that was once solid.

The type of bearing matters. Most modern hips use a metal ball moving on a tough plastic liner. This combination has a long track record and is the usual choice today. Some older hips used metal rubbing on metal. These shed cobalt and chrome particles that can irritate soft tissue, and this type has now been almost entirely abandoned.

Wear speeds up when something goes wrong between the surfaces. A scratch on the metal ball can grind away at the plastic. So can a stray fragment of cement or a fleck of metal trapped in the joint. If the parts sit at a slightly wrong angle, the surfaces can rub unevenly and wear faster. Your own walking pattern plays a part too.

The symptoms you read about above follow directly from this process. Inflamed tissue causes deep groin pain and swelling. Bone loss makes the implant loose, so stairs and low chairs feel harder. Catching wear early matters because the bone loss is easiest to treat before it goes far.

## What we can do about it

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Dr Kieran Hirpara, an orthopaedic surgeon at Mater Private Hospital Rockhampton, matches the treatment to what the wear is doing inside your hip. Patients are generally referred to our clinic by their GP; if a physiotherapist has suggested you see us, you will still need a referral from your GP in order to be eligible for the Medicare rebate. At your first visit we take a history, examine your hip, and arrange X-rays or scans where they are needed. Wear usually builds up slowly, so we normally start with the least invasive options first.

The first step is often watching and adjusting. We keep a close eye on the wear with regular X-rays, because measuring how fast the plastic liner is thinning helps us judge the risk of bone loss around the implant. If your symptoms are mild, you may be asked to ease off high-impact activities like running or jumping, which puts less force through the implant. Physiotherapy can help with walking patterns and the strength of the muscles around your hip. We usually give this approach a few months before deciding whether it is enough.

Medication can settle the pain while we monitor things. Simple pain relievers and anti-inflammatories, taken as your GP directs, are the usual starting point. If your hip has a metal-on-metal bearing, we also check the metal levels in your blood and arrange a special type of MRI scan that can see clearly past the metal. These checks look for irritation in the soft tissue around the joint, which blood tests alone can miss.

Surgery comes into the picture when wear has caused real damage or your pain will not settle. If the implant shell is still firmly fixed to your bone, we can sometimes do a smaller operation, swapping out just the plastic liner and the ball for new ones. If the parts have come loose, or bone loss has gone too far, the whole implant needs to be replaced. For hips with a worn metal joint surface that has damaged the surrounding tissue, we remove any affected tissue and rebuild the hip with modern bearing materials.

The right option depends on which parts are worn, how solid they are, and how much bone is left to work with. We will talk you through what the scans show and what each choice involves, and decide together on the plan that suits you.

## What to expect

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For most people, a modern hip replacement wears slowly and causes no trouble for many years. The usual combination today, a metal ball moving on a tough plastic liner, has a strong track record over the first 10 to 15 years of use. Ceramic surfaces, where both moving parts are a very hard polished material, have also held up well over long periods.

If wear does cause problems, it usually builds gradually rather than arriving suddenly. The groin pain and swelling described earlier tend to worsen over months and years, not days. Catching it early makes a real difference. Checked regularly, a wearing hip can often be treated before the bone loss goes far, sometimes with a smaller operation to replace just the liner and the ball.

Leaving a worn hip alone rarely works out well. The particles keep building up, the inflammation keeps eating bone, and a hip that could once have been fixed with a smaller operation may end up needing a full replacement. With metal-on-metal hips the risks run higher. People with these bearings face a greater chance of needing revision surgery than people with other bearing types, and some develop soft tissue damage that needs careful monitoring with blood tests and scans.

Some numbers give a sense of the range. Around 7 in 100 people with conventional bearings report groin pain after hip replacement. That rises to 15 in 100 with metal-on-metal hips and 18 in 100 after hip resurfacing. Hip resurfacing in people 40 or younger has shown a 7-year survival of 90.5%, which falls short of what modern bearings achieve. Ceramic-on-ceramic and ceramic-on-plastic bearings have tracked closely together out to 15 years.

No bearing is trouble-free, and no outcome can be promised. What the evidence supports is this: modern bearings wear less, cause fewer complications, and give your replacement hip its best chance of lasting. Regular check-ups, honest conversations about any new symptoms, and early action when something changes are what keep a wearing hip from becoming a bigger problem.

## When to see someone

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Most replaced hips wear slowly and quietly, but some changes deserve a prompt check. See your GP if you have new or worsening groin pain, swelling around the joint, or a fluid-filled lump near your hip that has not settled after a couple of weeks. Ask for a specialist review if your hip feels less steady than it used to be, if stairs or low chairs have become noticeably harder, or if you hear a new noise such as squeaking or clicking from the joint. Go to an emergency department if you have a fall and cannot put weight on the leg, or if the hip becomes suddenly very painful, hot, and swollen with fever, as these need same-day assessment.