

Choosing among different types of hip replacement FAQs

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October 2025

Do I really need a hip replacement? What are the alternatives?

Please see 'Treatment of arthritis of the hip FAQs' at www.asiamedicalspecialists.hk.

When should I consider hip replacement?

We believe that modern hip replacements will last for many years, so there is little advantage in delaying the procedure if pain is affecting sleep or daily life despite optimal non-operative treatment. Usually the pain and disability from hip arthritis gradually gets worse, until it is 'worse than death' [1]. The commonest complaint of patients after hip replacement is 'I wish I had done the operation earlier....'

What kind of hip replacements are available?

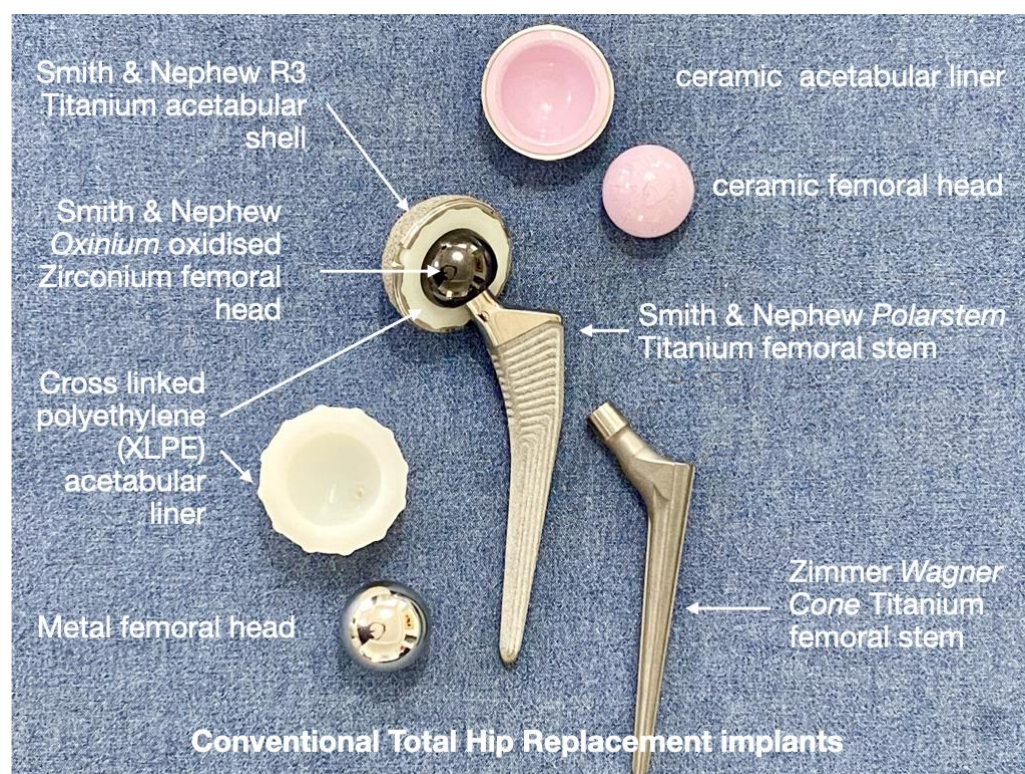
There is a variety of modern total hip replacements, most of which give very good results.

There are three major types of hip replacement:

1. Conventional – for the majority of people
2. Resurfacing – for active young people
3. Dual Mobility – for people with special risks of instability of the joint

There are three major modern bearing combinations:

1. polyethylene with metal *or* ceramic *or* ceramicised metal – conventional only;
2. ceramic-on-ceramic – conventional and resurfacing;
3. metal-on-metal – resurfacing types only



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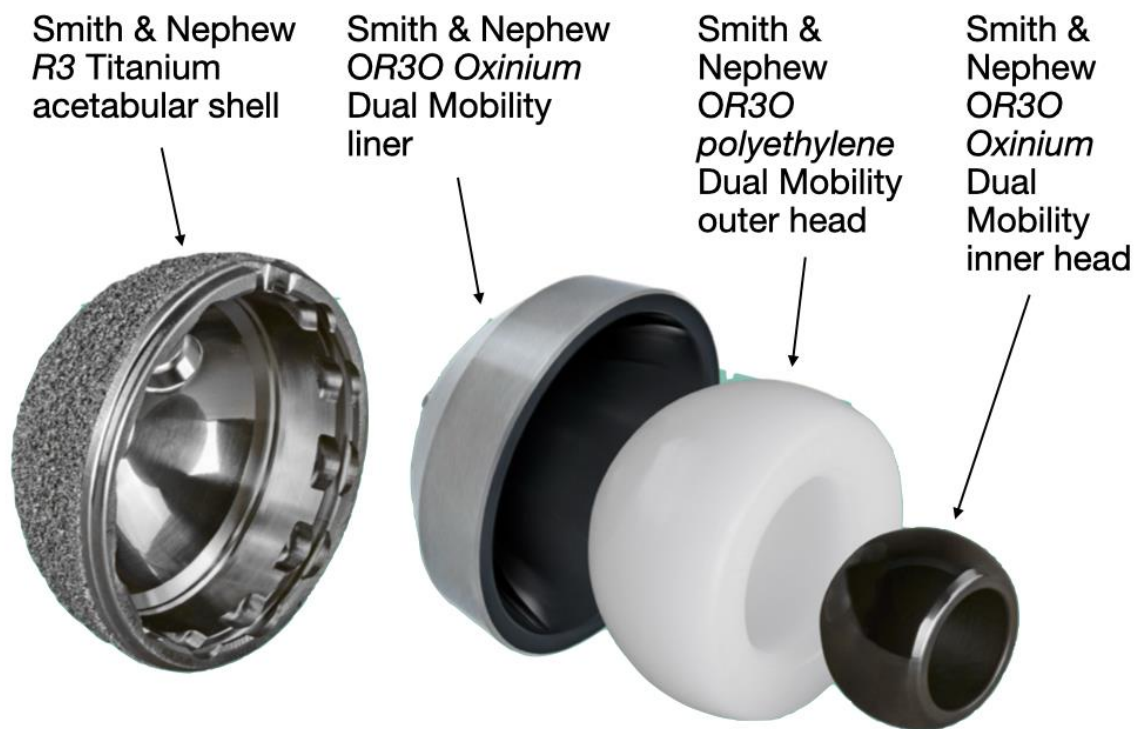


MatOrtho *ReCerf* ceramic-on-ceramic hip resurfacing



MatOrtho *Adept* metal-on-metal hip resurfacing

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Smith & Nephew OR30 Oxinium Dual Mobility total hip system
compatible with Smith & Nephew *Polarstem* or Zimmer *Wagner Cone*
femoral stems

How long do they last?

Modern hip replacements are expected to last for life.

The most important issue affecting the longevity of a hip replacement is wear particles generated by the bearing.

The early designs of conventional metal-on-polyethylene hip replacement (developed by Sir John Charnley) functioned well in the medium term, but eventually failed because the wear particles caused a reaction which led the bone supporting the implant to be eaten away.

New bearings have been developed to overcome this problem.

The original polyethylene bearings have been treated with radiation to cross-link the molecules in the polyethylene (similar to vulcanising rubber) and improve wear resistance, and the first group is doing very well at 28 years [2]. In addition, new materials have been developed to replace the original polished metal (stainless steel or cobalt-chrome alloy) femoral heads, including ceramic and ceramicised metal.

Ceramic-on-ceramic bearings have been developed which produce a lesser total volume of wear debris relative to polyethylene, although a higher numbers of particles, because the individual particles are smaller, but they seem to be less biologically active, and cause less bone reaction.

There are number of reports of good results at around 20 years for ceramic-on-ceramic [3, 4] and ceramic and ceramicised metal on crosslinked polyethylene in young patients (under 50 years of age) [5].

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Metal-on-metal bearings (made of cobalt-chrome alloy) are, when correctly positioned, fully lubricated, and do not produce any significant wear, however, if they are poorly positioned they produce very corrosive wear debris which eats away the tissues very quickly. Some of the early metal bearings, implanted in the 1960s, outlived their owners, so it is possible that a lubricated metal bearing could last indefinitely.

Current metal-on-metal bearings are mostly 'resurfacing' type implants. The first widely successful resurfacing was the *Smith & Nephew Birmingham Hip Resurfacing*.

One of the *Birmingham Hip Resurfacing* design team has reported excellent 25 year results in young men [6] and independent surgeons have reported excellent 20 year results in young men [7]. Surprisingly, despite the excellent results, Smith & Nephew are withdrawing the *Birmingham Hip Resurfacing* in 2026 for commercial reasons.

Recently, ceramic-on-ceramic hip resurfacings have become available, and, though they are relatively new and we don't have long-term data, the short-term outcomes are excellent, and it's reasonable to expect the long-term outcomes will be even better than those for metal-on-metal hip resurfacings [8]. There are two new ceramic-on-ceramic hip resurfacings now available, the *MatOrtho ReCerf* and *Zimmer H1*. The *ReCerf* has a longer and wider history of use and is essentially a ceramic copy of the successful *MatOrtho Adept* metal-on-metal hip resurfacing.

What about activity?

Resurfacings offer the best chance of the highest possible functional recovery, with many patients returning to impact sport, including professional sport. Tennis Player Andy Murray returned to top-level competition with a *Birmingham Hip Resurfacing*.

I believe the benefits of activity outweigh the potential risks to the hip replacement, and I encourage my patients with both resurfacing and conventional hip replacements to be active, and I have many patients with both resurfacing and conventional hip replacements playing impact sports and in other ways using their hips to their fullest ability without problems, including returning to running, skiing, professional dance and acrobatics.

What give the quickest recovery?

Conventional total hip replacement, using a minimally-invasive SPAIRE approach [9], gives a very quick recovery, with only a few activity restrictions until 6 weeks and none after 6 weeks.

Hip resurfacing, because it is a bigger operation, requiring release of more muscles, has a slower recovery, and it's necessary to take it very easy for 6 weeks to allow the soft tissues to heal, and then to limit walking for another 6 weeks to reduce the risk of a fracture of the neck of the femur, giving a total of 3 months of activity restrictions.

What about other factors?

For most people, the most important issues are longevity and activity, and then speed of recovery. People with unusual anatomy – for example after an injury or spinal problems – or weakness of muscles around their hips – may be at increased risk of instability (dislocation)

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and may benefit from a special 'dual mobility' implants which have improved stability, though at the potential risk of more early complications and, possibly, shorter overall life of the implant.

I'm a young man – what type of hip replacement should I choose?

If you are a young man with osteoarthritis, there is little doubt that you are best with a resurfacing. Resurfacing was designed for young men with osteoarthritis, and the Australian National Joint Replacement Registry reports that for men under 55 years of age with osteoarthritis, the *Birmingham Hip Resurfacing* and the *Adept* are the best performing of all kinds of hip replacements in Australia [9].

If you have osteonecrosis of the femoral head (ONFH) (also known as Avascular Necrosis or AVN) you could expect the same excellent results as in osteoarthritis, as long as your ONFH is not too severe. There are various reports, many from Asia, of the results of BHR in ONFH equalling the results in osteoarthritis [10-15]. If the ONFH is severe, and the femoral head is over 50% damaged [16], you'd be best with a conventional hip replacement.

I am an older man – what should I choose?

For the average older man, a conventional total hip replacement is a safe and reliable procedure with a relatively rapid recovery and excellent function.

For a very active older man (eg Heli-skiing, hill running, martial arts, competitive sport) it may be worth the added risks of resurfacing for the likely improved performance.

As one ages and the bones become less dense, there is increased risk of femoral neck fracture with a resurfacing, and one has to take things easy for 3 months after the operation to let the bone regain its strength. Apart from this, there are no specific risks with resurfacing in older men.

There are reports of good success in older people [10, 11]. My oldest patient was 88 when he had both of his hips resurfaced in one operation. He was soon back on the golf course and continued playing until passing at 97 years of age .

Could they have done this with conventional THRs? Possibly. I have young female patients who, being unable to have resurfacing, have returned to very high level activity, including acrobatics and professional dance, with conventional THRs.

I am female – what should I choose?

Currently, women are recommended to have conventional hip replacements or ceramic-on-ceramic resurfacings, but not metal-on-metal resurfacings.

Women generally did much worse than men with metal-on-metal resurfacings, and in 2015 the makers of the *Birmingham Hip Resurfacing* and the *Adept* hip resurfacing recommended that resurfacing not be performed in women.

Very active women may choose ceramic-on-ceramic bearing resurfacings, however a less active woman is probably best with conventional hip replacement.

With good rehabilitation, the performance of modern conventional hip replacements is excellent, with women returning to sport and dance at high level.

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I am not very tall – what should I choose?

Shorter people do well with conventional total hip replacements.

The smallest resurfacings have 40mm head diameter and are suitable for very small people.

I am very tall – what should I choose?

If you are very tall, resurfacing best recreates normal anatomy. My tallest patient is 6'10" and he did not require the largest standard size. For patients over 7' tall, extra-large resurfacing implants are available via special order.

I'm allergic to metal – is this a problem?

Currently the question of metal sensitivity or allergy is controversial.

We don't believe anyone is allergic to the Titanium widely used in conventional hip replacement.

Metal-on-metal resurfacings, some conventional hip replacements, and many other types of orthopaedic implants are made of an alloy of Cobalt and Chromium.

Although both of these metals are normally used in human biology (Cobalt in Vitamin B and Chromium in the liver enzyme Cytochrome p450) it is thought that some people are sensitive to higher levels of these metals.

A test for sensitivity to the Cobalt and Chromium used in resurfacings (and other implants) has recently been reported, and will most likely become widely available [17].

Some older women may be sensitised to metal owing to wearing nickel-containing jewellery.

A few men seem to be allergic to metal, developing inflammation and fluid collections around their metal-on-metal hip resurfacings.

Can I have a baby after a hip replacement?

There is no definite risk to having a baby after having a hip replacement, however, if one has the luxury of being able to schedule both the hip replacement and the pregnancy, it is recommended to either have the baby first, or to delay the becoming pregnant until about one year after the hip replacement [18] because of the theoretical risk of birth defects from chemicals leaking out of the implants. I say 'theoretical' risk, because, so far, no birth defects have been tied to hip replacements, and most mothers with hip replacements have had healthy babies.

The placenta reduces the levels of many chemicals reaching the baby including metal ions from metal hip replacement bearings [19].

Often the pain of arthritis is less in early pregnancy because of the increase in steroid hormones in the mother's circulation. In later pregnancy increased weight and altered posture may make pain worse. It is safe to take paracetamol and/or to have a steroid injection into the hip joint whilst pregnant.

For women who already have hip replacements, some have increased pain during pregnancy, and many of those who have continuing pain after delivery require revision of their hip replacement, however, compared to age-matched hip replacement patients who do not have babies, there is no difference in revision rate – suggesting that pregnancy does not affect the

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life of the hip replacement [20, 21]. Most likely the pain is owing to changes in posture associated with pregnancy.

Hip replacement has no effect on childbirth, it does not affect the safety or practicality of either a natural or Caesarian section delivery [18].

It is safe to breast feed with a hip replacement [22].

What gives better function? Hip resurfacing or conventional THR?

As with most things in medicine, there is much debate, but much recent evidence supports the position that hip resurfacings give better function [23-26].

However there are at least two papers which report no difference [27, 28]. One of these papers [28] was criticized [29] for reporting a difference of 10% in walking speed as '*no different*' when many would argue that the ability to walk 10% faster is very significant, and the authors are wrong in concluding there is '*no difference*'.

The other paper [27] describes a well-designed trial, so there is at least one study reporting no difference in function. In a private discussion, one of the authors of this trial expressed surprise at the outcome, and suggested that, because the trial involved many surgeons, most of whom were not hip specialists, and some were in training, that the resurfacing operations were not done as well as the conventional THRs (because resurfacing is a more complex operation) and thus, on average, the resurfacings were not performing at their theoretical maximum potential. However the trial was not designed to look at this, and, though he theorised that a well-performed hip resurfacing should provide a higher level of function than a well-performed conventional THR, his trial did not demonstrate this.

As far as I am aware, there are no reports of worse functional outcomes in hip resurfacing compared to conventional THR.

What if I have osteoporosis?

In general, osteoporosis is not a problem. In individuals with osteopaenia or osteoporosis of the neck of the femur (thigh bone), the bone density recovers after hip resurfacing [30-33], but it is necessary to take things easy for about 3 months after the operation.

In conventional THR the neck of the femur is removed and replaced with metal, so bone strength is not an issue and one does not need to restrict activity, but there is a greater risk of fracture during the operation in osteoporotic bone.

In very soft bone, it's probably best to have a cemented rather than cementless femoral stem.

What if I 'break my hip'?

The term 'broken hip' usually applies to older people breaking the upper end of their femur as a result of a fall. Young people can break their hips, but, as the bone becomes weaker because of age-related decreases in bone density, this injury is more common in older people. It is a serious injury.

If one has a hip replacement of some sort, one can still break one's hip – but the bone breaks around the hip replacement. If one has a hip resurfacing the broken hip follows the same pattern as in a natural hip, and is treated in the same way [34]. If one has a total hip

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replacement the bone breaks around the femoral stem, and is often more difficult to treat [35].

Is there anything else I should consider?

There are two papers suggesting that overall mortality is lower over several years in resurfacings versus conventional total hip replacement [36, 37]. This is presently unexplained, though it caused a deal of controversy.

Summary

Although every type of hip replacement represents a compromise, and we do not have the data on which to base a truly informed decision, I recommend either:

1. Ceramic on ceramic resurfacing. I specifically recommend the *ReCerf* system manufactured by *MatOrtho*. This is probably the best choice for active young people.
2. Ceramicised-metal on plastic. For older people or those whose anatomy is not suitable for resurfacing. I recommend an *Oxinium* femoral head on cross-linked polyethylene from the *Smith & Nephew* company – specifically the *R3* acetabular shell and the *Polarstem* femoral stem (non-cemented for younger people, cemented in selected cases for older people). This is a reliable and proven system – however many other orthopaedic companies make similar systems with similarly good results – but the *Polar 3* with an *Oxinium* on cross-linked polyethylene bearing is one of the best-performing total hip replacements in the National Joint Registry for England & Wales.
3. Ceramic on ceramic. Mostly in revisions where there may be debris that could cause damage to polyethylene. I recommend a ceramic-on-ceramic bearing with the *R3* acetabular shell and the *Polarstem* femoral stem from the *Smith & Nephew* company.
4. Dual Mobility. For people with unusual anatomy or other problems requiring extra stability. I recommend the *OR30* from the *Smith & Nephew* company

Why these particular implants?

The ***MatOrtho ReCerf*** is a new ceramic-on-ceramic resurfacing hip replacement. It has been in experimental use since 2018 and was CE approved in 2025. Short-term results are excellent [8]. It is a ceramic version of the very successful *MatOrtho Adept* metal-on-metal hip resurfacing, which is itself very similar to the very successful *Smith & Nephew Birmingham Hip Resurfacing*. The *Adept* and the *Birmingham* hips were originally manufactured by the same company.

The ***Smith & Nephew Polar 3 THR***, with a proprietary ceramicised metal (called ‘*Oxinium*’) on cross-linked polyethylene bearing (known as ‘*Verilast*’), is one of the best-performing total hip replacement in the National Joint Registry for England & Wales and performs very well in my hands. It has a useful design feature in the *Polarstem* trial implant which allows accurate estimation of leg length.

For patients with unusual *femoral version* (twist of the thigh bone), I use the ***Zimmer Wagner Cone*** titanium femoral stem, as this allows correction of the abnormal twist. It’s a well-proven device, in use since 1990 [38].

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For patients with unusual anatomy requiring a *dual mobility* implant, I use the **Smith & Nephew OR30** system, which works with the *Polarstem* and *Wagner Cone* femoral stems and *Smith & Nephew R3* (and *Smith & Nephew Redapt* revision) acetabular shells, and uses an *Oxinium* on cross-linked polyethylene bearing.

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