Imagine going from having a painful arthritic hip to a squeaking but pain free hip. That can happen after a total hip replacement (THR). What causes this problem? And what can be done about it? Those are the two questions answered in this article.

In a recent survey of 149 patients with a THR, about one in 10 reported a squeaking hip. The sound was most noticeable when bending, walking, using the stairs, and during sexual activity.

There are many theories about what can cause this to happen. The best way to find out for sure is to remove the implant and take a look at what's going on. But this isn't always possible. One specimen from the 149 in this study was retrieved and inspected. There was a broad stripe of wear on the femoral head.

The wear pattern on the implant also showed signs of impingement (pinching) of the femoral neck where it meets the rim of the acetabulum (socket). Further testing with an electron microscope showed metal debris along the area of wear.

Rim impingement is probably the number one cause of hip squeaking. But there isn't just one cause of impingement. Besides socket malposition, there could be a loss of fluid film lubricating the joint. Some patients have lax (loose) ligaments that can lead to impingement.

There's been some suggestion that an incomplete seal around the socket liner could cause squeaking. Some studies have shown that thicker sockets don't squeak but thin ones do. It's possible that the thinner sockets deform when they are put in place. Incomplete positioning of the liner may be the problem there.

It is possible to use sound vibrations to identify the cause of the squeaking. Some researchers have recorded the sounds and analyzed them. Different materials have different recognizable frequencies.

By examining which components vibrate at what frequency it is possible to match the acoustical (sound) sample with the implant. This method isn't foolproof. Sometimes an incompletely sealed liner resonates at the same frequency as the titanium shell, making it impossible to detect as the source of the squeak.

But overall, it has been shown that certain combinations of implant components are more likely to squeak. The Trident cup with an Omnifit stem has the lowest incidence of squeaking.

But when the Trident cup was put together with the Accolade stem, the vibration was amplified (increased) until it was audible (could be heard). The difference in resonance between the two parts was enough to cause friction that created vibration and then squeaking. Adding this variable to a patient with malpositioned components increases the risk of squeaking.

Knowing all this, what can be done to stop the problem of squeaking in total hip replacements? First of all, the authors suggest a plan of prevention. Placement of the implant in the correct position and correct orientation is number one.

Patients with loose ligaments need some extra care and consideration during the procedure. The authors suggest using a polyethylene (plastic) liner for these patients. And for all patients, matching up the sockets with the right stem is a helpful strategy.
Of course, once the squeak occurs, prevention is too late. It may be time for a second surgery to revise the implant. Some patients (especially those who are pain free and mobile) may prefer to live with the squeak rather than have a second (revision) surgery. Others may choose to have the surgeon remove and examine the implant. Looking at the wear patterns is often enough to point to the cause of the problem. Then it can be fixed.