Breakthrough could prevent hip implant replacement

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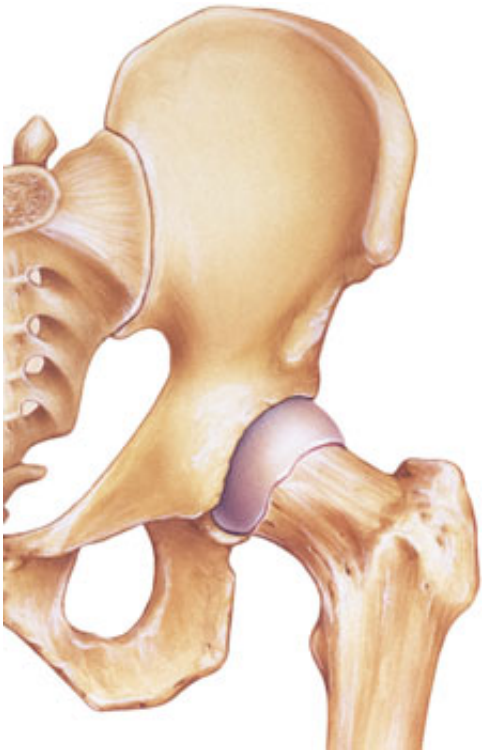

New research could prevent secondary hip replacements

Hip implants rely on the normal functioning of bone cells to achieve fixation of the implant with the bone. However, small metal particles released from hip implants, due to friction between the moving surfaces, have been shown to be toxic to the surrounding bone cells.

This causes the implant to loosen in the bone and often leads to patients

requiring second surgery to replace the failed implant.

Using X-ray light from the Diamond Light Source, the UK's synchrotron science facility at Harwell Science and Innovation Campus in Oxfordshire, researchers were able to map the locations of metals inside bone cells.

The findings, published in the *Journal of Orthopaedic Research*, show that the location of the metals that are released from implants is different inside bone building and bone destroying cells.

Dr Alison Gartland, Senior Lecture from the University's Academic Unit of Bone Biology, said: "The fact that we found metal ions in different places within the two types of bone cells suggest that they get into the cells by separate ways.

"When investigating how the metals entered bone cells we found that when they blocked a molecule called the P2X7 receptor using a specific drug, the entry of metals into the bone cells was reduced.

"These results are really exciting because, if we can prevent the entry of the metal into these cells, we can hopefully prevent the metal joint from failing."

Over the last decade, it is estimated that nearly half a million hips have been replaced in England and Wales as a result of osteoarthritis.

Osteoarthritis is the most common joint disorder in adults, affecting nearly eight million people in the UK alone. Surgical replacement of the joint using artificial metal implants is the most effective way to restore activity and reduce pain and disability in osteoarthritis sufferers.

Provided by University of Sheffield