

# RESEARCHERS IN ENGLAND DEVELOP A NEW TYPE OF ARTIFICIAL HIP

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Researchers at the University of Leeds have developed a new type of hip prosthesis that they claim offers improved durability and longer life than current models in use today.

In the effort to minimize material wear, the U.K.-based researchers have created their artificial hip using a combination of ceramics and metal in the design of the ball-and-socket joint. They believe that forthcoming clinical trials on the new hip will demonstrate a significantly improved rate of material wear and degradation than in the traditional prosthetic devices employing metal or a combination of metal and polyethylene.

Standard metal and metal-polyethylene systems, while remarkably successful in hip replacements, can lose strength and stability following 20 or 25 years in service. The rubbing action of the metal components produces metallic debris that destroys healthy cells in the bone that anchors the prosthetic stem, causing the artificial hip device to loosen.

Operating on the premise that common materials in contact tend to cause friction, the research group at the University of Leeds investigated the performance of a ceramic-on-metal hip joint and in 2001 patented a working system. According to the December 2004 issue of Mechanical Engineering magazine, the head of the prostheses is built primarily with ceramic material, while the socket features a cobalt-chrome alloy.

The socket, says a University of Leeds researcher in Mechanical Engineering, generates metal debris, but far less than occurs with metal-to-metal joints.

The key to limiting material wear in the bearing surfaces of artificial hips, say the researchers, is using different materials. "Tribology tells us that we should be using materials that are different," says the lead researcher in the Mechanical Engineering article. "We simply applied that same principle to hard bearings."

While the research is promising, currently the only types of replacement hips in use in the United States and throughout Europe are the metal-on-metal or ceramic-on-ceramic varieties. About 168,000 hip replacements are performed in the United States each year.

Source: ASME

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