

Metal Sensitivity

The awareness of metal sensitivity with respect to total joint replacement implants has increased recently. Some patients have true metal allergies particularly to nickel. Nickel is a major component of stainless steel. Although we no longer use stainless steel for total joint replacement prostheses there are traces of nickel in Cobalt-Chromium. Cobalt-Chromium alloys are commonly used for both total hip and total knee replacement prostheses. For total hip replacement it has been quite easy to use a ceramic femoral head as an alternative to Cobalt-Chromium.

Almost all total knee prostheses have used a Cobalt-Chromium femoral component. Oxidized zirconium is available but only from one vendor and only in a few designs. Titanium also commonly used for orthopedic implants. It has excellent biocompatibility but is much softer than Cobalt-Chromium, making it more susceptible to scratching. Therefore it did not perform well when used as a bearing surface. A process called thermal nitriding can be used to create a nitrogen enriched zone on the surface of a titanium prosthesis. The resulting alloy is called Tivanium and these prostheses have minimal particulate release. Even our most metal sensitive patients are able to receive Tivanium implants. We find very few metal ions in the tissues surrounding the implants even in our highest demand patients

More than 20,000 Tivanium implants have been implanted. We have many years experience with these prostheses. The current prostheses have all the modern design features and are available in every size. Our patients with these prostheses have performed very well and they have not had issues with metal sensitivity. This has proved to be an excellent solution to a difficult problem.