MRI Predicts Failing MoM Hip Implants

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Synovial volume as measured by MRI is highly predictive of metal-on-metal (MoM) hip implant failure in both symptomatic and asymptomatic patients, a study has found.

The mean volume (and standard deviation) of synovitis among hip replacement patients referred for evaluation was 5 ± 7 cm3 (95% CI 1.2-8.7 cm3) among asymptomatic patients, 10 ± 16 cm3 (95% CI 1.4-19.4 cm3) among patients who were symptomatic with a mechanical cause, and 31 ± 47 cm3 (95% CI 11.5-50.5 cm3) among patients who had unexplained hip pain, according to Hollis Potter, MD, chief of the Division of MRI at New York City's Hospital for Special Surgery, and colleagues.

The coefficient of repeatability between the examiners was 1.8 cm3 for measurement of synovitis, the researchers wrote in the May issue of the Journal of Bone & Joint Surgery.

The findings suggest MRI may be useful for identifying patients who need revision surgery long before symptoms occur and significant tissue damage takes place, they said.

Implantation of metal-on-metal hip replacements sometimes results in failures that are attributed to adverse local tissue reactions, the authors noted in their introduction.

"Patients with adverse local tissue reaction present with periprosthetic fluid collections, which have been termed 'pseudotumors' and typically are not detectable on radiographs or computed tomography," they wrote. "Patients with adverse local tissue reaction may present a challenge as a result of tissue necrosis at revision surgery and poor outcomes following revision."

Although MRI is "ideally suited" for evaluating hip replacement patients "because of its high soft-tissue contrast and lack of ionizing radiation," a lack of quantitative data makes it difficult to determine if there is a difference in the degree of synovial reaction between symptomatic and asymptomatic patients, the authors continued. "Therefore, MRI showing an abnormal synovial reaction has limited utility for a surgeon attempting to decide whether to proceed with revision in an asymptomatic patient."

To add to the available data, Hollis and colleagues examined the ability of modified MRI to detect and quantify synovial responses following MoM hip replacement in 69 patients (74 hips) who had been consecutively referred for evaluation.

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