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Metal Artifact Reduction Sequence MRI Findings in Ceramic-on-Polyethylene Total Hip Arthroplasty

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Introduction: MRI is a commonly utilized screening modality in patients with a metal-on-metal (MoM) total hip arthroplasty (THA). An overestimation of the incidence of clinically significant fluid collections may be present since these collections have been reported in asymptomatic patients with MoM and other bearing surface. The purpose of this study was to determine the frequency, size and types of MRI-documented adverse local tissue reactions (ALTR) in asymptomatic patients with a ceramic-onpolyethylene (CoP) total hip arthroplasty.

Methods: Fifty hips (44 patients) with a minimum 2-year follow-up after CoP THA and a Harris hip score > 90 were enrolled in this study. Inclusion criteria were patients without pain and appropriate follow-up radiographs. All patients underwent a metal artifact reduction sequence (MARS) MRI to determine the presence of fluid collections in asymptomatic patients with a CoP bearing surface.

Results: Fluid collections were observed in 9 of 50 (18 %) asymptomatic hips in this cohort. There were five hips with intracapsular synovitis. Two of these hips had a thickened synovium. Extraarticular fluid collections with direct intracapsular communication were identified in four additional hips. Two of these hips had a thickened synovium. No signs of osteolysis or evidence of ALTR were noted on most recent radiographic follow-up.

Conclusions: The following study revealed that fluid collections are not uncommon after CoP THA. Synovial thickening appears to be present and is more prevalent than previous reports with MoP bearing surfaces. The clinical significance and natural history of these findings remain unknown.

