MARS MRI Abnormalities in Asymptomatic Revision Total Hip Arthroplasty Patients with a Titanium Sleeved Ceramic Head

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INTRODUCTION: Titanium sleeves are the gold standard to protect ceramic heads placed on a previously used trunnion. However, this introduces another articulation that may lead to local soft tissue reaction. The purpose of this study is to determine the prevalence of abnormalities on metal artifact reduction sequence (MARS) MRI in asymptomatic patients with a titanium sleeve in revision total hip arthroplasty (rTHA).

METHODS: Sixteen asymptomatic patients (17 hips) with a minimum of 1-year follow up after rTHA with titanium sleeves in a ceramic head were enrolled in this study. The inclusion criteria included the absence of hip pain. All patients underwent a MARS MRI scan interpreted by a fellowship-trained musculoskeletal radiologist to determine the presence of fluid collections in asymptomatic patients with titanium sleeves.

RESULTS: The average follow up from rTHA to MRI was 5.58 +/- 4.61 years (range 1-13.1). Fluid collections were observed in 13 (76%) of the 17 asymptomatic hips in this cohort. Most of these collections were extra-articular in nature over the greater trochanter, with only three having direct intracapsular communication. All of these collections except two were a type 1 lesion based on the Hart classification, while the remaining were type 2a. The average pseudocapsule thickness was 11.2mm in the patients with fluid collections, in comparison to 7.5mm in those who did not. There were no signs of osteolysis at most recent follow up.

DISCUSSION AND CONCLUSION: Fluid collections are not uncommon after r-THA with a titanium sleeved ceramic femoral head. Unlike primary THA, synovial thickening may be present in this population. The clinical importance of these findings remains unknown, but this provides information to providers who may obtain MARS MRIs after r-THA.