



What is the Natural History of “Asymptomatic” Pseudotumours in MoM THA? Minimum 4-year MARS MRI Longitudinal Study

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Introduction: MARS MRI is an important cross sectional imaging modality in detection of adverse local soft tissue reactions in patients with metal-on-metal (MoM) hip arthroplasty. However, a high prevalence (61%) of the so-called cystic pseudotumours in patients with well-functioning hip prostheses has been reported. Potential evolution or progression of pseudotumours detected by MARS MRI in ‘asymptomatic’ patients beyond 1 year remains unknown. The aims of this longitudinal study were to: 1) determine the natural history of pseudotumours; and 2) characterize MRI feature(s) associated with progressive pseudotumours.

Methods: A total of 37 MoM hips in 32 ‘asymptomatic’ patients (24 M, 8 F) with a mean age of 56 years (range 40-71) with pseudotumours confirmed on MARS MRI, who have elected to be treated non-operatively, were evaluated longitudinally. Pseudotumour progression on MRI was evaluated based on comparison between the initial and the latest repeat follow up MARS MRI images. Serum cobalt and chromium levels were analyzed.

Results: At the minimum of 4-year follow up (range 48-51 months), 4 patients (13%) demonstrated MRI evidence of progression. 5 patients (15%) were found to have ‘regressed’. There was no measurable MRI progression of pseudotumours detected in the remaining 23 patients (72%). MRI features associated with progressive pseudotumours included the presence of increased cystic wall thickness as well as ‘atypical’ mixed fluid signal. MRI progression was not associated with increased median serum metal ion levels over time.

Conclusion: This is the longest longitudinal study evaluating the natural history of cystic pseudotumours detected by MARS MRI in the ‘asymptomatic’ patient population with contemporary MoM hip implants. At minimum 4 years follow-up, the natural history of predominantly cystic pseudotumours continue be non-progressive in the majority of ‘asymptomatic’ MoM patients, whereas the presence of MRI features of cystic wall thickening and heterogeneous fluid are associated with progressive pseudotumours.