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ACETABULAR COMPONENT POSITION ON CT AS A PREDICTOR OF IPSILATERAL PSOAS ATROPHY POST TOTAL HIP ARTHROPLASTY

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ABSTRACT

Purpose: To validate a hypothesized association between psoas muscle (PM) atrophy and ipsilateral acetabular component anteversion causing flexor impingement post total hip arthroplasty.

Materials and Methods: A retrospective electronic medical record report database search was performed at two health systems for patients with unilateral total hip arthroplasty (THA) on a CT of abdomen/pelvis from January, 2008 through December, 2018. Results were narrowed by filtering for dictations including the terms “arthroplasty” and “psoas”. 67 subjects met all inclusion criteria. The maximum anterior-posterior distance of the uncovered acetabular component (UAC) was measured on sagittal reformats. The acetabular version angle was measured on both axial (AAV) and sagittal (SAV) reformats. The percentage difference between ipsilateral and contralateral PM in terms of Hounsfield unit (DHU) and cross-sectional area measurement (AM) in cm2 was assessed. The UAC, AAV and SAV were measured blindly to DHU and AM and the ensuing data was compiled and computed. Subjects were then assigned to one of two groups; Group A patients had DHU values over 50% and Group B patients had DHU values less than 50%. UAC, AAV, and SAV were compared between groups A and B.

Results: Findings revealed significant positive correlation between DHU and UAC (r2 =0.7, P <0.05). A significant negative correlation was demonstrated between AAV, SAV and DHU (r2 = - 0.4, P <0.05). Group A and B included 26 and 41 patients respectively. Group A was found to have an increased UAC (7 mm ±4, P<0.05), decreased SAV (19o ±10, P<0.05) and decreased ASV (22o±11, P<0.05) compared to Group B (0mm± 0.5,33o±11,35o±10).

Conclusion: In patients with a single THA, there is a strong association between ipsilateral psoas muscle atrophy and both uncovering of the anterior acetabular component and a small acetabular version angle.

Our findings suggest that a suboptimally positioned acetabular component may lead to a chronic flexor impingement syndrome.

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