ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

11th Biennial ISAKOS Congress • June 4-8, 2017 • Shanghai, China

Paper #12

CAM Morphology and Limited Hip Range of Motion is Associated with Early Osteoarthritic Changes in Adolescent Athletes: A Prospective Matched Cohort Study

Cody C Wyles, MD, UNITED STATES
Benjamin Matthew Howe, MD, UNITED STATES
German Norambuena, MD, CHILE
Brandon Yuan, MD, UNITED STATES
Bruce A. Levy, MD, UNITED STATES
Robert T Trousdale, MD, UNITED STATES
Rafael J Sierra, MD, UNITED STATES

Mayo Clinic
Rochester, MN, UNITED STATES

Summary:
At 5 years, young athletes with LROM of the hip show increased progressive degenerative changes on MRI and radiographs compared to matched controls; although the majority of these patients remain asymptomatic, those with LROM seem to be on an accelerated path toward development of osteoarthritis.

Abstract:
Background: The natural history of femoroacetabular impingement (FAI) remains incompletely understood. In particular, there is limited documentation of joint damage in patients with limited range of motion (LROM) of the hip, which is commonly associated with FAI.

Purpose: The purpose of this investigation was to evaluate changes in MRI, radiographs, and clinical examination over 5 years in a group of athletes with asymptomatic LROM of the hip compared to matched controls.

Study Design: Prospective matched cohort study (prognosis); Level of Evidence, 2.

Methods: We screened 226 athletes age 13-18 presenting for pre-participation sports physicals. Thirteen participants were identified with internal rotation <10°. These participants were age- and sex-matched to 13 controls with internal rotation >10°. At the time of enrollment, all participants were asymptomatic and received a complete hip examination and radiographic imaging with x-rays and MRI. Participants returned at 5-year follow-up and completed repeat hip examination, imaging, and hip function questionnaires.

Results: At the time of study enrollment, 16/26 hips (62%) in the LROM group had abnormal MRI findings within the acetabular labrum or cartilage compared with 8/26 hips (31%) in the control group (RR=2.0; 95% CI=0.95-4.2; P=0.067). Mean a angle measured from radial MRI sequences was 58° in the LROM group versus 44° in the control group (P<0.001). At 5-year follow-up, 18/19 hips (95%) in the LROM group had abnormal MRI findings compared with 14/26 hips (54%) in the control group (RR=1.7; 95% CI=1.1-2.7; P=0.014). New or progressive findings were documented on MRI in 15/20 hips in the LROM group compared to 8/26 hips in the control group (RR=2.4; 95% CI=1.2-4.8; P=0.011). Six of 22 hips (27%) in the LROM group progressed from Tönnis 0 to Tönnis 1 degenerative change, whereas all 26 hips in the control group remained at Tönnis 0 on hip radiographs. Mean HOOS Score was significantly lower in the LROM group at 5-year follow-up: 94.4 (range 86.3-100) versus 99.5 (range 97.5-100) (P<0.001). The following variables at baseline were associated with increased risk of degenerative changes at 5-year follow-up for the entire cohort: decreased hip internal rotation, positive anterior impingement sign, decreased hip flexion, increased alpha angle, and presence of a CAM lesion.

Paper #12

Conclusions: At 5 years, young athletes with LROM of the hip show increased progressive degenerative changes on MRI and radiographs compared to matched controls. Furthermore, multiple elements from basic physical examination as well as plain radiographs showed predictive value in risk stratifying active adolescents. Although the majority of these participants remain asymptomatic or minimally symptomatic, those with features of FAI have radiographic findings consistent with early osteoarthritis. These outcomes suggest that more aggressive screening and counseling of young active patients may be helpful to prevent hip osteoarthritis in those with FAI.