A New Classification for "Pistol Grip Deformity"-Correlation Between the Severity of the Deformity and the Grade of Osteoarthritis of the Hip.

Abstract:

PURPOSE: Two types of femoroacetabular impingement (FAI) are described as reasons for the early development of osteoarthritis of the hip. Cam impingement develops from contact between an abnormal head-neck junction and the acetabular rim. Pincer impingement is characterized by local or general overcoverage of the femoral head by the acetabular rim. Both forms might cause early osteoarthritis of the hip. A decreased head/neck offset has been recognized on AP pelvic views and labeled as "pistol grip deformity". The aim of the study was to develop a classification for this deformity with regard to the stage of osteoarthritis of the hip. MATERIALS AND METHODS: 76 pelvic and axial views were analyzed for alpha angle and head ratio. 22 of them had a normal shape in the head-neck region and no osteoarthritis signs, 27 had a "pistol grip deformity" and osteoarthritis I and 27 had a "pistol grip deformity" and osteoarthritis II°-IV°. The CART method was used to develop a classification. RESULTS: There was a statistically significant correlation between alpha angle and head ratio. A statistically significant difference in alpha angle and head ratio was seen between the three groups. Using the CART method, we developed a three-step classification system for the "pistol grip deformity" with very high accuracy. This deformity was aggravated by increasing age. CONCLUSION: Using this model it is
possible to differentiate between normal shapes of the head-neck junction and different severities of the pistol grip deformity.

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