Radiographic signs for detection of femoroacetabular impingement and hip dysplasia should be carefully used in patients with osteoarthritis of the hip.

Abstract:
During the last years, terms like acetabular retroversion, excessive overcoverage, and abnormal head-neck-junction with the so called "pistol-grip-deformity" has been added to the classical description of hip dysplasia. These anatomical changes could lead to a femoroacetabular impingement (FAI). Both kinds of FAI has been indentified as a main reason for hip pain and progressive degenerative changes leading to early osteoarthritis of the hip. A lot of radiographic criteria on pelvic views have been established to detect classical dysplasia and FAI. The present study was initiated to assess the hypothesis that age and severity of osteoarthritis affect measurements of different radiographic parameters. The pelvic radiographs of 1614 patients were measured for head-ratio, CE-angle, roof obliquity, extrusion-index, depth-to-width ratio, CCD-angle, sharp's angle. To evaluate the severity of osteoarthritis of the hip the classification by Kellgren and Lawrence was used. Associations between age and radiographic parameters or severity of osteoarthritis were assessed by Spearman's (?) or Kendall's (r) rank correlation coefficient, respectively. 366 (22.7%) patients presented no sign of osteoarthritis, 367 (22.7%) patients presented I° osteoarthritis, 460 (28.5%) patients presented II° osteoarthritis, 307 (19%) III° osteoarthritis, 307 (19%) III°
osteoarthritis and 114 (7.1%) IV° osteoarthritis of the hip. The mean head-ratio of all patients was 1.13 ± 0.26 (0.76 - 2.40), the mean CE-angle 40.05° ± 10.13° (0° - 70°), the mean roof obliquity was 35.27° ± 4.96° (10° - 55°), the mean extrusion-index was 12.99 ± 9.21 (6.20 - 95.2), the mean depth-to-width ratio was 59.30 ± 8.90 (6.30 - 100), the mean CCD-angle was 127.68° ± 7.22° (123° - 162°) and the mean sharp's angle was 9.75° ± 5.40° (1° - 34°). There was a weak association between age and the severity of osteoarthritis of the hips (left: r= 0.291; right: r=0.275; both P<0.001) with higher osteoarthritis levels observable for elderly patients). Severity of osteoarthritis has a negative impact on measurements of different radiographic parameters. Therefore - in our opinion - epidemiological studies on prearthrotic deformities should only be performed in healthy adults with no signs of osteoarthritic changes.