

Paper #15

The False Profile Radiographic View Can Be Used to Accurately Measure Pelvic Incidence

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Summary:

False profile radiographs can be used to measure pelvic incidence

Abstract:

Background:

Pelvic incidence (PI) is an important variable associated with spinopelvic balance that has been implicated in a number of hip pathologies, including femoroacetabular impingement, hip osteoarthritis, and slipped capital femoral epiphysis. A lateral radiograph of the pelvis has previously been used to assess pelvic incidence. The false profile radiographic view of the hip has traditionally been used to measure acetabular coverage in the setting of hip dysplasia and femoroacetabular impingement. However, some believe it can also be used to assess spinopelvic balance due to its obliquity. The objective of this study was to examine the accuracy of using a false profile radiograph to obtain an accurate measurement of pelvic incidence.

Methods:

IRB approval was obtained. Radiographs and CT scans of 14 patients from a single institution were retrospectively reviewed. The actual angle of rotation of a false profile view radiograph was calculated using a previously reported method. PI was measured on false profile radiograph by two independent reviewers. PI was also measured on a pelvic CT scan by the same two independent reviewers. Mean PI discrepancy was determined between false profile radiograph and reference CT. Agreement between measurements made on CT scan and false profile radiographs were determined by measuring intraclass correlation coefficient. ICC was also used to determine intra-rater reliability of PI measured on a false profile and CT scan.

Results:

The mean pelvic incidence was 54.0 degrees (range 38.3-65.9 degrees). Mean rotation of a false profile radiograph was 30.8 degrees from a lateral radiograph (range 21.9-35.5 degrees). There was excellent intra-rater reliability for measurement of PI on false profile (ICC = 0.97, 95% CI 0.85-0.99) and CT (ICC = 0.99, 95% CI = 0.92-1.00). There was excellent agreement between CT and false profile radiographs with regards to PI measurements (ICC = 0.92, 95% CI 0.78-0.98). The mean discrepancy in PI was 2.6 degrees (range 0.4-5.3 degrees). Increased discrepancy in measurement was associated with increased rotation from a lateral radiograph (ICC = 0.93, 95% CI 0.78-0.98).

Conclusions:

The false profile radiograph can be used to measure pelvic incidence with reasonable accuracy. Increased pelvic rotation results in greater error when measuring pelvic incidence. These results allow for the measurement of an

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important variable associated with hip pathology on routinely obtained hip radiographs.