Is the hip-spine association with dislocation approach-dependent? – A prospective, multi-center study

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Background:
Adverse spinopelvic characteristics are associated with increased dislocation-risk following total hip arthroplasty (THA). Whether surgical approach influences dislocation-risk and outcome in patients with adverse spinopelvic characteristics is unknown. This study aims to (1) describe prevalence of adverse spinopelvic characteristics among THA-patients; (2) assess whether differences in early-term dislocation-rate among patients with adverse spinopelvic characteristics exist between different approaches; and (3) test for association with patient-reported outcome.

Methods:
In this prospective, multi-surgeon, consecutive cohort study from 4 high-volume academic centers, 1000 consecutive patients with hip osteoarthritis were included (age: 65±12y, 46% males, BMI 29±6kg/m^2) and underwent THA through anterior- (43%), anterolateral- (20%) or posterior- approach (37%) as per surgeon-preference, without dual-mobility (75% 36-mm femoral head)bearings or navigation/robotics. All participants underwent standing and deep-flexed seated spinopelvic radiographs pre-THA. Adverse spinopelvic characteristics were considered high standing pelvic-tilt (PT≥20°); spinopelvic imbalance (PI-LL>10°); and spinal stiffness (lumbar flexion<20°). Dislocation rates were prospectively recorded at follow-up(1.5±0.9 years). Patient-reported outcome was measured using Oxford-Hip-Score (OHS).

Results:
At least one adverse spinopelvic characteristic was present in 36% of patients, with high pelvic-tilt (33%) being most common. Only 3% had all three characteristics. At 1-year, 4 patients sustained a dislocation (0.4%), all had at least 1 adverse spinopelvic characteristic (p=0.01). Two sustained a dislocation following posterior and 2 following lateral approach, with no difference between approaches (p=0.2). There was no difference in pre-operative OHS between patients without or with adverse spinopelvic characteristics (19±10 vs. 20±8; p=0.1), and no difference in ΔOHS (23±11 vs. 22±11; p=0.3).

Conclusion:
Although adverse spinopelvic characteristics were common among patients undergoing THA (32%), the overall dislocation-risk is low (0.4%), even without the use of dual-mobility or robotics, with increased awareness and consideration/identification of those at-risk. There was no difference in dislocation-risk between commonly used THA-approaches. Patients with adverse spinopelvic characteristics may expect similar clinical improvement.