Does surgical approach in the context of spinal stiffness and deformity affect postoperative dislocation after total hip arthroplasty?

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INTRODUCTION:
Patients with spinal-stiffness and deformity (group 2B hip-spine classification) are at the highest-risk for dislocation (6.9%) after total hip arthroplasty (THA). Previous reports of this cohort are limited to posterolateral (PL) THA. We compared the dislocation rate after PL and direct anterior (DA) THA, identifying dislocation risk-factors in this high-risk cohort.
METHODS:
We reviewed our institutional-registry of patients undergoing primary-elective THA with preoperative biplanar standing/sitting EOS imaging from January-December 2019. Patients were identified using radiographic-criteria of spinal-stiffness (<10°-change in sacral-slope from standing to relaxed-sitting) and deformity (pelvic incidence-lumbar lordosis mismatch >10°). The primary outcome was dislocation rate at 2-years postoperatively. Data were analyzed using independent t-tests and Fisher's exact tests with critical p-value 0.05. Risk-factors for dislocation were evaluated using logistic regression.
RESULTS:
367 patients were classified as 2B (181 DA, 186 PL). At 2-years, there were 6 (1.6%) dislocations in the entire cohort, with no significant difference in dislocation rate between DA and PL approaches (0.6% vs 2.7%, p=0.215). We observed increased utilization of dual-mobility (DM) bearings in the PL cohort (34.4% vs 5.0%, p<0.01) and conversely increased utilization of 32mm-heads in the DA cohort (39.4% vs 7.0%, p<0.001). Within this 2B cohort, patients with lumbar-fusion history had 8-times risk for dislocation (OR: 8.2, p= 0.020). Surgical approach (PL) was not a significant risk-factor for dislocation (OR 5.0, p=0.15).
DISCUSSION AND CONCLUSION:
This is the first series to-date comparing contemporary DA versus PL-THA in the hip-spine 2B-group. Patients with history of lumber-spine fusion were particularly high-risk for dislocation. While we did not find a significant difference by surgical approach, the study was limited by the low dislocation-rate in either group. With odds 5x higher for PL, further work should be undertaken to determine whether this finding holds in a larger cohort.