## The effect of approach and bearing choice on total hip arthroplasty dislocation rates in patients with concomitant lumber fusion: A systematic review.

Jacob C. Wochna<sup>1</sup>, Albert J Folgueras<sup>2</sup>

<sup>1</sup>Wellspan York Hospital, <sup>2</sup>Orthopedic Surgery, Wellspan Medical Group

INTRODUCTION: Patients with instrumented lumbar fusions (ILF) have an increased risk of dislocation following total hip arthroplasty (THA) due to altered spinopelvic biomechanics. Dual mobility (DM) bearings have been used in THA in high-risk groups to help mitigate the risk of dislocation as this type of bearing allows for an increased jump distance and larger degree of motion compared to fixed bearing (FB) implants. Furthermore, the surgical approach to the hip has been documented to affect the rate of dislocation in previous literature. The purpose of this study was to determine the dislocation rates with various surgical approaches and bearing choice in THA patients who had ILFs.

METHODS: This was a systematic review of the PubMed database from its inception to May 11, 2024, identifying studies documenting dislocation events in THA patient's with ILFs. A single reviewer (J.C.W.) independently reviewed all queried results for inclusion and exclusion criteria. Studies were included if they specifically stated that patient's had ILFs and discussed the dislocation rate associated with each surgical approach to the hip, were original research in the English language, and reported results for human subjects. Studies were excluded if they did not report dislocation rate associated with the specific approach to the hip, patient's without ILFs, and review articles. Search terms included: hip, dislocation, lumbar, and approach. Statistical analysis was performed utilizing chi-square tests.

RESULTS: A total of 13 studies met inclusion criteria for a total of 1952 patients. Approaches were carried out via 575 direct anterior (DA), 125 anterolateral (AL), 528 direct lateral (DL), 720 posterolateral (PL), and 4 direct superior (DS). Six of the included studies specifically documented the bearing choice and associated dislocation rate based on surgical approach. DM bearings were used in 179 patients (11 DA, 15 DL, 149 PL, and 4 DS). FB implants were used in 736 patients (209 DA, 49 AL, 439 DL, 39 PL). Overall dislocation rate was 3.64% across all patients. The dislocation rates in DM vs. FB implants were 0% vs. 1.49%, respectively. The overall dislocation rate across approaches were: 1.39% DA, 4.80% AL, 0.95% DL, 7.22% PL, and 0% DS (p<0.0001). Dislocation rate was significantly increased in the PL group vs DA group (p<0.0001), as well as the PL group vs. DL group (p<0.0001). Dislocation rates in the FB subgroup were: 0.96% DA, 2.04% AL, 0.91% DL, and 10.26% PL (p<0.0001). Dislocation rate increased in the fixed bearing PL group compared to DM bearing PL group (10.26% vs. 0%, respectively; p<0.0001).

DISCUSSION AND CONCLUSION: This systematic review demonstrated that the DA and DL approach groups have lower dislocation rates regardless of bearing choice. Furthermore, DM use in the PL approach resulted in lower rates.

