Comparing Complication Rates of Hip-Spine Syndrome Patients with Total Hip Arthroplasty and Lumbar Spine Surgery

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INTRODUCTION:

Hip-spine syndrome is a common disorder in the elderly patient population, defined as the coexistence of degeneration in the hip and lumbar spine. Lumbar degeneration is associated with a notable decrease in lordosis and limited range of motion, leading to altered pelvic mechanisms. In contrast, hip osteoarthritis can result in abnormal pelvic tilt and subsequent hyperlordosis and lumbar nerve compression. There is much debate on whether the hip or lumbar spine should be prioritized for surgical intervention. While lumbar spine surgery (LSS) and total hip arthroplasty (THA) are well-investigated with proven success, there is limited knowledge on whether order of surgical intervention influences outcomes. The purpose of this study is to investigate differences in complications between patients who undergo LSS before THA, and patients who undergo THA before LSS. Furthermore, this study seeks to determine whether the approach of THA impacts dislocation and complication rates in patients with hip spine syndrome or those who have undergone LSS.

METHODS:

Following IRB approval, a retrospective chart review of 453 patients was performed to examine outcomes in patients with hip-spine syndrome. These patients were identified as those diagnosed with lower back pain who underwent primary THA and those who underwent primary THA and LSS. Demographic and operative data was collected on each patient, including date of THA, date of LSS, surgical approach, and comorbidities. Furthermore, data on complications, such as deep vein thrombosis (DVT) and pulmonary embolisms (PE), readmissions, and revisions were collected. Statistical analysis including Fisher's exact tests and logistic regressions were performed.

RESULTS:

A total of 448 patients were included in the analysis. Among these, 384 patients underwent THA only, 41 underwent LSS prior to THA, and 23 underwent THA prior to LSS. The overall hip dislocation rate was 1.5%, with patients who underwent LSS prior to THA having a higher dislocation rate (7.3%, 3/41), compared to those who underwent THA prior to LSS (0%, 0/23) or THA only (1.0%, 4/384) ($p = 0.019$). Logistical regression showed that patients with prior LSS had 5.23 times greater odds of dislocation (OR 5.23, 95% CI: 0.93-29.47). Anterior compared to posterior surgical approach did not show a statistical difference in either patients undergoing THA (1.6%, 3/185 vs 1.9%, 4/211 respectively) or LSS (4.0%, 1/25 vs 3.2%, 1/31, respectively). DVT and PE events occurred 7 times each, all in the THA only cohort. Age, sex, and race were had no significant associations with dislocation or complication rates. Smoking was associated with a non-significant trend toward increased dislocation risk (OR 4.36; 95% CI: 0.51-37.69).

DISCUSSION AND CONCLUSION:

This study investigated the association between surgical sequence and dislocation risk in patients with hip-spine syndrome undergoing LSS and THA, finding that patients undergoing LSS prior to THA had a significantly higher dislocation rate (7.3%) compared to THA prior to LSS (0%) and THA alone (1.0%). Surgical approach was not associated with dislocation risk. While age, sex, and race showed no associations, smoking demonstrated a non-significant trend toward increase dislocation risk. DVT and PE events were low overall and observed in patients who underwent THA only. These findings suggest that surgical sequence may play a role in postoperative hip stability in patients with coexisting lumbar and hip pathology. Careful preoperative assessment of altered lumbopelvic mechanics may help guide surgical planning and reduce dislocation risk in patients with hip-spine syndrome.