Dislocation after Debridement, Antibiotics, and Implant Retention for Periprosthetic Joint Infections of the Hip

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INTRODUCTION:
Debridement, antibiotics, and implant retention (DAIR) is an increasingly common treatment option for hip periprosthetic joint infection (PJI), however, non-infectious outcomes of DAIR such as instability and dislocation are not well reported. The purpose of this study was to evaluate both the patient-level and intraoperative-level factors related to the risk of hip dislocation post DAIR for PJI of both primary and revision THA. We hypothesized that patients undergoing DAIR who had modular components exchanged to those providing a greater level of stability (e.g., increasing femoral head size, increasing neck length, increasing offset, and/or placing lipped, face-changing, constrained or dual-mobility liners) would have a decreased risk of hip dislocation post-DAIR compared to patients who had unchanged component constructs after DAIR.
METHODS:
A retrospective chart review was performed to identify all patients who underwent DAIR of a primary or revision THA over a 20-year period with minimum 1-year follow up. Demographic and intraoperative variables, especially for the modular components exchanged at DAIR, were obtained. Patients who had modular components exchanged during DAIR to those with increased offset, increased "jump distance," or to a more stable acetabular liner were defined as patients who had "components exchanged to increase stability." Predictors of hip dislocation post-DAIR were inserted into a multivariate linear regression.
RESULTS:
151 patients met inclusion criteria, 19.86% of whom had a post-DAIR dislocation during our study period. Post-DAIR dislocation rates were 16.30% in primary THAs and 25.42% in revision THAs, respectively.
In the patients undergoing DAIR of primary THAs, there was a trend towards the no dislocation post-DAIR group having components exchanged to increase stability more frequently than the dislocation post-DAIR group, although this was not statistically significant (40.57% vs 15.38%, p 0.08), while in the patient cohort who had DAIR of revision THA, there was a significant difference between the no dislocation post-DAIR and dislocation post-DAIR groups for having components exchanged to increase stability (60.00% vs 16.67 %, p 0.008).
In patients who had "components exchanged to increase stability" during hip DAIR, there was at least a 12-fold reduction (1/OR 0.081) in dislocation risk compared to patients who had no components altered during modular component exchange during hip DAIR (OR 0.081, 95%CI 0.014-0.463, p = 0.005). Performing an anterior versus posterior approach without changing the construct did not change the odds of hip dislocation post- DAIR (OR 0.656, 95%CI 0.131-3.271, p 0.607). We did observe that performing a posterior-based approach with changing the construct significantly reduced the odds of hip dislocation post DAIR compared to a posterior approach without changing the construct (OR 0.084, 95%CI 0.015-0.484, p .006).
DISCUSSION AND CONCLUSION:
This study demonstrates that in the setting of hip DAIR for PJI management, patients who had any components exchanged to increase stability during hip DAIR had at least a 12-fold reduction in dislocation risk compared to patients who did not have their construct altered to increase stability during modular component exchange. Patients undergoing hip DAIR via a posterior-based approach specifically may benefit from component exchange to increase stability as well. If a patient's anatomy and clinical circumstance allow, modular components should be exchanged to increase stability during hip DAIR.