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Patients at High Risk For Dislocation: A Matched Comparison Between Large Diameter Metal-on-Metal And Small Diameter Metal-on-Polyethylene Bearings in Total Hip Arthroplasty

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Dislocation following primary total hip arthroplasty (THA) remains a troublesome complication for the patient and leads to an increase in healthcare-related costs. The use of large-diameter femoral heads, specifically in patients who are identified to have an increased risk for dislocation, may improve postoperative stability and reduce dislocation rates. The purpose of this study was to compare the clinical, functional, and radiographic results following THA in patients who were identified to have a high risk of dislocation preoperatively and received either large metal-on-metal femoral heads (>36mm in diameter) or small-diameter metal-on-polyethylene femoral heads (26mm or 28mm). At final follow-up, no patient in the large-diameter group has sustained a dislocation compared to two patients (two hips, 3.9%) in the group of patients who had received small-diameter femoral heads. At final follow-up, Harris Hip Scores in the large-diameter femoral head group had significantly improved from a mean of 32 points (range, 7 to 75 points) preoperatively to a mean score of 90 (range, 50 to 100 points) postoperatively (Table 3, $p<0.001$). Harris Hip Scores in patients in the small-diameter femoral head group significantly improved from a mean of 30 points (range, 3 to 61 points) preoperatively to 83 points (range, 7 to 100) postoperatively with a mean improvement of 54 points ($p<0.001$). While preoperative Harris Hip Scores were similar between the large- and small-diameter femoral head groups ($p=0.374$), postoperative Harris Hip Scores in the large-diameter group were significantly greater at final follow-up ($p=0.005$). Preoperative evaluation of every patient considered for THA should include a careful stratification of risk factors for dislocation. Patients with one risk factor for dislocation (e.g. age older than 80, higher body mass index, inflammatory arthritis, etc.) are considered for implantation of a large-diameter component and this option is discussed with the patient. In patients with two or more risk factors for dislocation, large-diameter implants have become the treatment of choice, while considering potential adverse effects of metal-on-metal implants. Both patients in the small-diameter group who sustained postoperative dislocation and ultimately underwent revision THA with a constrained acetabular liner may have benefitted from a large-diameter femoral head. However, these components had just become available prior to the study period and limited experience with these devices was available. The results of the current study suggest that large-diameter femoral heads may be a suitable treatment for patients at high-risk of dislocation.