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CORR Insights®: What Are the Risk Factors for Dislocation of Hip Bipolar Hemiarthroplasty Through the Anterolateral Approach? A Nested Case-control Study

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Where Are We Now?

Li and colleagues performed a retrospective study investigating whether patient, surgical, or predisposing factors contribute to dislocations in patients who have undergone bipolar hemiarthroplasty

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through an anterolateral approach. They found that dementia and insufficient offset were associated with an increased risk for hip dislocations.

Individuals older than 65 years of age are living longer and participating in more activities. Because of this, surgeons are likely to see an increase in fractures for this patient population in the near future. Surgeons are moving away from treating these fractures with internal fixation, and are instead performing THA or hemiarthroplasty [4]. As more surgeons choose THA or hemiarthroplasty, we should expect complications related to artificial hip joints, like dislocation, to increase as well.

Dislocation is a serious complication, and a number of factors—including

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abductor weakness, joint deformity, and neurological problems—may cause it. There is conflicting evidence regarding a patient's mental status as a contributing factor for dislocation. Prior to the publication of the current study, some earlier work suggests that dementia, difficulties with communication, decreased response to pain, and diminished ability to walk can increase the likelihood that dislocation might occur [3, 14]. On the other hand, another recent study found no association between dislocation and mental status [7].

Surgical factors can contribute to dislocation. Decreasing femoral offset and limb-length shortening may reduce muscle tension, decreases the length of the lever arm, and may induce impingement between prosthesis and acetabulum, leading to dislocation [7–9]. Recent publications [5, 8] also found a high association between a low center-edge (CE) angle and dislocation. A low CE angle denotes a shallow acetabulum, perhaps resulting in decreased prosthetic joint stability. Kim and colleagues [5] proposed using

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an anterior or anterolateral approach to the hip joint instead of posterolateral approaches in case of insufficient covering of lateral acetabular edge.

Patients with femoral neck fractures should be treated in a reasonable time. However, some patient-related factors like mental status or neurologic problems are unlikely to quickly improve. Although little can be done to improve patient-related factors like mental status or neurologic problems, it seems prudent to take precautionary measures such as short external rotator repair and preservation of posterior structures when a posterior approach is used [6, 12, 13].

Where Do We Need To Go?

The current study brings to light several topics of interest: (1) As the authors have concentrated on the anterolateral approach to the hip joint, we are left to wonder if there are different dislocation risks among the different approaches? (2) Every different approach to the hip joint requires different, specific treatments of soft-tissue structures (muscular detachment, capsulotomy, or capsulectomy). That being so, to what extent does sparing or reconstruction of these structures reduce the risk for dislocation? (3) Given that we know of at least a few risk factors for hip

dislocation, how can a surgeon use this knowledge to prevent the problem?

It remains unclear whether a specific surgical approach is associated with dislocation risk. Dislocation rates of hemiarthroplasties range from 1.6% to 16% [2, 10]. Clinical studies have reported higher dislocation rates with arthroplasties performed through a posterolateral approach [1, 6]. Some authors, therefore, concentrate on the importance of preventive measures like the type of short external rotator repair and preservation of posterior structures [6, 12, 13]. Although muscle-sparing procedures like the direct anterior approach have emerged as a popular treatment option for femoral neck fractures, few studies examining dislocation rates are available [11]. However, because the direct anterior approach is relatively new, we are likely to see more studies examining the direct anterior approach in the future.

There is a strong association between low CE angle and a higher risk for dislocation. Additionally, coverage of the lateral acetabulum predicts the size of the hip labrum [12]. In borderline dysplastic hips, as a compensatory reaction to the lack of bony coverage, an increased labral length can be expected. Taking these findings into consideration, future studies should examine which treatment option for acetabular labrum

decreases dislocation rates on hips showing low CE angles.

How Do We Get There?

In order to determine what kind of surgical approach to the hip joint is most preferable, a meta-analysis of surgical approaches for THA for hip fracture should be performed. To my knowledge, there is no meta-analysis or systematic review comparing surgical approaches in hip fractures currently available. Of course, prospective randomized trials comparing the most common approaches to the hip joint would be most helpful, but seldom is this type of study performed in just one facility.

We still need to gather more evidence regarding the best approaches for treating soft tissues in bipolar hemiarthroplasties. If capsulectomies are found to be associated with higher dislocation rates or if capsulotomies are resulting in a more stable hip in comparative, prospective studies, then a physician could reasonably consider adapting his or her surgical technique. This type of study could also determine whether the acetabular labrum should be left intact in dysplastic hips. The knowledge we gain from these studies could help surgeons identify potentially problematic anatomic situations before surgery.

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