People with spinal deformity also requiring a total hip replacement are at greater risk for dislocation or follow-up revision surgery, suggesting that these higher-risk patients may benefit from a more personalized approach to their surgeries to reduce the risk of poorer outcomes.

A new study led by orthopaedic surgeons at NYU Langone Medical Center provides a greater understanding of exactly how spinal deformity interacts with the pelvis, potentially increasing risk despite implanting the artificial hip in what is traditionally considered a "safe zone" by surgeons.

"Surgeons should anticipate potential instability after performing a hip replacement in patients who have existing spinal deformity, and they should adjust their surgical plans accordingly," says lead study author Aaron J. Buckland, MD, assistant professor of Orthopaedic Surgery in the division of Spine Surgery and director of spine research at NYU Langone.

The study was presented March 17, 2017 at the American Academy of Orthopaedic Surgeons (AAOS) 2017 Annual Meeting in San Diego, California. These findings also were published online December 27, 2016 in the Journal of Arthroplasty.

The lumbar spine, or lower back, moves during normal posture changes, such as transitioning from sitting to standing. This creates alterations in "spino pelvic tilt," which, in turn, changes the functional position of the acetabulum, or hip socket.

Among all study patients, 78 percent had normal placement of their artificial hip while lying down (supine). But that number significantly decreased to 58 percent when patients stood, due to increases in spino pelvic tilt. Among patients with hip deformity who have undergone a total hip replacement...
replacements that dislocated, 80 percent had "safe zone" cup placement, 80 percent had spinopelvic tilt, and 60 percent were deemed 'safe' by both parameters.

The findings have led orthopaedic surgeons who perform hip replacements at NYU Langone to collaborate with their spine surgeon colleagues on preoperative planning in an effort to secure optimal outcomes in patients.

"The fact that high rates of dislocation occurred in patients with 'safe zone' placement of their artificial hips implies that our understanding of what defines acceptable acetabular positioning for these patients remains questionable," says study co-author Jonathan Vigdorchik, MD, assistant professor of Orthopaedic Surgery at NYU Langone. "It is imperative that the degree of spinal deformity be a primary factor in preoperative planning of hip replacements".

The research team plans future projects to examine postural analysis more closely in order to develop patient-specific or pathology-specific safe zones, enhance impingement-free range of motion, and study in more detail the use of a dual-mobility bearing implant in this complex patient population.

More information: Paper Presentation 708

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