

# Editorial Commentary: The Hip-Spine Connection in Patients Undergoing Hip Arthroscopy: Should We Learn From Total Hip Replacement and Counsel Patients Differently If They Have Had Previous Back Surgery?



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**Abstract:** Disorders of the adult hip and spine are common, and there is evidence that there is a hip-spine connection in patients with hip femoroacetabular impingement (FAI). Many reports have shown that patients undergoing lumbar fusion and subsequent total hip arthroplasty have a higher risk of complications and worse outcomes following total hip arthroplasty. However, there has been a paucity of research on the effect of a history of lumbar spine surgery in patients undergoing hip arthroscopy for the treatment of FAI. Variations in lumbar lordosis, pelvic incidence, tilt, and sacral slope may modify the degree of FAI, symptoms, and patient-reported outcomes following hip arthroscopy. In the future, we should continue our efforts to better understand the impact that limited range of motion in the spine has in joint mechanics of the hip and the possibility of affecting patient-reported outcomes after hip arthroscopy. Future studies incorporating novel imaging technology, such as EOS, may be an objective way of assessing the effect of abnormal spine-pelvic function in patients with hip FAI.

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Femoroacetabular impingement (FAI) commonly affects young active patients and is now recognized as a common cause of hip dysfunction in this patient population. The hip-spine syndrome has been described in patients with degenerative structural disorders of the hip, lumbar spine, or both.<sup>1</sup> Patients with low back pain can present with a distribution of pain including the groin, lateral hip, and buttock that also coincides with pain related to the hip, lumbar spine, or both. History of previous lumbar spine surgery is carefully evaluated in patients undergoing total hip replacement. Many reports have shown that patients undergoing lumbar fusion and subsequent total hip arthroplasty have significantly higher risks of dislocation and revision of their hip arthroplasty. Additionally, these patients have

worse outcomes following total hip arthroplasty.<sup>2-5</sup> However, there has been a paucity of research on patient-reported outcomes (PROs) and complications in patients with a history of lumbar spine surgery undergoing hip arthroscopy for the treatment of FAI.

It has been well reported that there is a hip-spine connection in a predominantly nonarthritic population and that patients with FAI are at an increased risk for back pain. Prather et al.<sup>6,7</sup> showed that a high percentage (79%) of patients consulting for back pain have a positive hip-provocative test result. Patients with reduced hip range of motion in different planes of motion and positive provocative hip tests reported worse lumbar back pain and worse hip and spine function at presentation than patients with lumbar back pain and no positive physical examination findings in the hip. Despite the prevalence of pathologies of the hip and spine, little has been published regarding the interplay of these 2 common conditions in patients with prearthritic hips and how this may impact on PROs following a preservation procedure.

Additionally, some radiographic and clinical studies have shown the role of lumbar lordosis and pelvic sagittal

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balance in FAI. Differences in spinopelvic mechanics between FAI and non-FAI patients may contribute to the progression of FAI symptoms. Individuals with the morphological features of FAI may remain asymptomatic if the spine is sufficiently mobile to provide compensatory flexion to avoid excess flexion at the hip joint.<sup>8</sup> A decreased pelvic incidence has been related to radiographic signs of FAI, as well.<sup>9-12</sup> These results suggest that limited range of motion in the spine can alter spinopelvic parameters and subsequently change the joint mechanics of the hip.

The article published by Chandrasekaran, Darwish, Suarez-Ahedo, Lodhia, and Domb,<sup>13</sup> "Outcomes of Hip Arthroscopy in Patients With Previous Lumbar Spine Surgery: A Matched-Pair Controlled Cohort Study With Minimum Two-Year Follow Up," brings a good topic of discussion suggesting that patients with a history of lumbar spine surgery undergoing hip arthroscopy should expect improvement in symptoms following surgery. The authors did an excellent job matching a cohort of patients with a history of lower lumbar spine surgery undergoing hip arthroscopy to a group of patients with no history of lumbar spine surgery. The authors showed no difference in PROs between the study group (with lumbar spine surgery) and the control group, and propose that a history of previous lumbar spine surgery does not adversely affect early outcomes of hip arthroscopy.

One limitation of this article is that none of the patients with a history of lumbar spine surgery were objectively evaluated to assess range of motion of the back, pelvic tilt, and other spinopelvic parameters. To understand the effect of lumbar lordosis and pelvic incidence in PROs following hip arthroscopy for the treatment of FAI, I would encourage the authors to continue this study by adding innovative methods technology, such as EOS x-ray technology.<sup>14</sup> This technology would allow identification of patients with an abnormal spine, and promote a true understanding of how this abnormality may impact PROs and if operative planning will need to be adjusted considering the patient's lumbar-pelvic motion.

Again, I want to congratulate the authors for bringing this topic to discussion and doing a great effort to perform this novel clinical study. I am sure this is the first of many studies that will help us understand the true effect of a pre-existing back condition on hip FAI symptomatology and PROs following hip arthroscopy.

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