# For the outcomes of hip arthroscopy, you need to consider not only the patient's sex and age

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*Comment on:* Frank RM, Lee S, Bush-Joseph CA, *et al.* Outcomes for Hip Arthroscopy According to Sex and Age: A Comparative Matched-Group Analysis. J Bone Joint Surg Am 2016;98:797-804.

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Femoroacetabular impingement (FAI) is an increasingly recognized hip disorder; it has been thought to be a causative factor for the development of hip arthritis (1). Many recent studies have significantly improved our overall understanding of FAI, exploring concepts such as extra-articular impingement, the role of acetabular and femoral version, impingement induced instability, capsular management techniques, and the role for capsular and labral repair (2). Arthroscopic FAI correction has had an increasing role for the management of FAI. Many factors, for example, acute injury, microfracture, femoral and acetabular version, age, sex, etc. have been shown to have an impact on outcomes for hip arthroscopy. Previously, there was little data available that compare outcomes of FAI following hip arthroscopy on the basis of age and sex alone.

In a study performed by Cvetanovich *et al.* (3), adolescent and young adult patients experienced statistically significant improved functional outcomes 2 years after hip arthroscopy for FAI compared with preoperative assessment, but these results did not show any significant difference based on gender. Furthermore, an additional study showed that the outcomes of FAI following hip arthroscopy were independent of patient sex (4). In Chahal's research (5), 130 FAI patients ( $35.6\pm11.7$  years of age) were treated with arthroscopic labral surgery, of which age and sex were found not statistically significantly related to the outcomes. Nawabi (6) also demonstrated that, in "Outcomes After Arthroscopic Treatment of Femoroacetabular Impingement for Patients With Borderline Hip Dysplasia", female sex did not appear to be a predictor for inferior outcomes. As a result of these studies, effects of sex and age on outcomes of FAI following hip arthroscopy do not provide any statistically signification correlations.

In "Outcomes for Hip Arthroscopy According to Sex and Age: A Comparative Matched-Group Analysis" (7), a total of 150 patients with FAI were divided into six equal cohorts as follows: female patients younger than 30 years of age, female patients 30 to 45 years of age, female patients older than 45 years of age, male patients younger than 30 years of age, male patients 30 to 45 years of age, and male patients older than 45 years of age. After receiving the same surgical procedure, the patients were scored by various different subscales; the Hip Outcome Score Activities of Daily Living subscale (HOS-ADL), Hip Outcome Score Sport-Specific subscale (HOS-Sport), the modified Harris Hip Score (mHHS), and ultimately clinical improvement at the time of follow-up. Compared with preoperative HOS-ADL, the HOSSport, and the mHHS, statistical analysis demonstrates that all groups had significant improvements in these scores post-surgical procedure (P<0.0001). However, incorporating both sexes, patients older than 45 years of age scored significantly worse on all outcomes compared with patients younger than 30 years of age (P<0.0001 for all) and patients 30 to 45 years of age (P≤0.001 for all). Though

both sexes older than 45 years of age scored worse, female patients had significantly reduced radiographic preoperative joint space width compared with the two younger female groups as well as the male groups who were 45 years of age or younger (P<0.05 for both). In general female patients older than 45 years of age showed worsened outcomes in all preoperative and postoperative assessments.

Apart from age and sex, Rachel et al. also explores the preoperative hip joint space width. Among all six age and gender groups, the joint space of the female patients older than 45 years old was significantly lower than patients in other groups, while there is no significant difference between the other five groups. Joint space width is an important factor that affects the outcomes of hip arthroscopy because the joint space is a factor used to estimate the health of a patient's cartilage. The prevalence of hip osteoarthritis (OA) increases significantly with age, and joint space loss at the hip may be a feature of normal aging or a reflection of the OA process. According to Lanvon et al. (8), men had larger joint space width than women (3.85 mm in women, 4.19 mm in men, mean difference 0.34 mm) at all ages. A significant decline in joint space width with age was seen in women, with a mean difference between ages 45-54 and 75-84 years of 0.36 mm (P=0.001). No significant change in joint space width with age was seen in men (mean difference 0.16 mm). Analysis of an additional 64 women and 61 men who were without hip pain and had overall qualitative grade 1-2 changes gave similar results. This suggests that in women, loss of cartilage may be an age-related phenomenon that is independent of other aspects of structural change. And this may explain the reason that older female patients often have worse postoperative outcomes than male and younger patients.

Joint degeneration will occur naturally as a patient ages and the stability of cartilage will worsen. As the cartilage degrades, joint space width will narrow, which ultimately makes it more difficult for older patients to heal completely. Gender accompanies this phenomenon, as female joint degeneration is shown to occur earlier and more prominently compare to males (9,10). In Vincent *et al.*'s study (11), female patients and patients 85 years and older showed significantly worsened postoperative outcomes and scores compared to male and younger counterparts. However, these two studies question the results found in a number of other papers that suggest gender and age does not predispose a patient to poor post-operative results.

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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