

# Are Self-Reported Medication Allergies Associated With Worse Hip Outcome Scores Prior to Hip Arthroscopy?

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**Purpose:** To determine if there are significant differences in preoperative patient-reported outcome (PRO) scores in patients with and without self-reported medication allergies undergoing hip arthroscopy. **Methods:** Consecutive subjects undergoing hip arthroscopy for femoroacetabular impingement (FAI) syndrome by a single surgeon were retrospectively reviewed. PROs were collected within 6 weeks of the date of surgery. PROs included International Hip Outcome Tool (iHOT-12), Hip Outcome Score (HOS), and Short-Form (SF-12) scores. Allergies to medications were self-reported preoperatively within 6 weeks of the date of surgery. Patient demographics were recorded. Bivariate correlations and multivariate regression models were calculated to identify associations with baseline hip outcome scores. **Results:** Two hundred twelve subjects were analyzed (56% female, mean age  $35.1 \pm 13.2$  years). Seventy-two subjects (34%) self-reported allergies (range 1-10; 41 subjects had 1 allergy; 14 subjects had 2; 8 subjects had 3; 2 subjects had 4; 7 subjects had 5 or more). The most commonly reported allergies included penicillin (18), sulfa (13), and codeine (11). Female gender was significantly correlated with number of allergies (Pearson correlation coefficient, 0.188;  $P < .001$ ). SF-12 Mental Component Score (MCS) was significantly correlated with HOS-ADL (Pearson correlation coefficient, 0.389;  $P < .001$ ), HOS-SSS (Pearson correlation coefficient, 0.251;  $P < .001$ ), and iHOT-12 (Pearson correlation coefficient, 0.385;  $P < .001$ ). There was no significant correlation between number of allergies and all hip PROs. In all multivariate models, the SF-12 MCS had the strongest association with HOS-ADL, HOS-SSS, and iHOT-12 ( $P < .001$  for all). Allergies were not significantly associated with any hip PROs. **Conclusions:** In patients undergoing hip arthroscopy for FAI syndrome, self-reported medication allergies are not significantly associated with preoperative patient-reported hip outcome scores. **Level of Evidence:** Level III, retrospective comparative case series.

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**H**ip arthroscopy is a common procedure used to treat several conditions such as femoroacetabular impingement (FAI) syndrome, acetabular labral tears, chondral defects, and extra-articular causes of hip pain.<sup>1-4</sup> Expanded indications, advancements in arthroscopic techniques, and significantly improved postoperative outcomes have led to a substantial increase in hip arthroscopy use throughout the world.<sup>5-8</sup> However, patient selection remains critical in optimizing patient outcomes.

There are additional patient-specific preoperative factors that may affect postoperative pain, function, and outcomes after arthroscopic hip surgery. The presence of psychiatric distress may negatively impact patients with low back pain, arthritis, chronic shoulder pain, or hand and elbow conditions.<sup>9-13</sup> In patients undergoing hip arthroscopy, psychological distress on the Distress Risk Assessment questionnaire has also been associated with inferior preoperative hip outcome scores and postoperative pain.<sup>14,15</sup> Lower preoperative Harris Hip

Scores and Hip Outcome Scores (HOS) have been shown to correlate with worse postoperative pain control in these patients.<sup>16,17</sup>

Anecdotal reports have long proposed that allergies may be associated with decreased psychiatric wellness in patients. These reports have been definitively confirmed by prior epidemiology studies showing that self-reported allergies are significantly correlated with mood and anxiety disorders.<sup>18-20</sup> In patients undergoing interventional radiology procedures, allergies are a marker for psychiatric history (major depressive disorder, generalized anxiety disorder, adjustment disorder, and personality disorder).<sup>21</sup>

As such, recent studies in the orthopaedic literature have begun to investigate the association between allergies and outcomes, with Nam et al. and Otero et al. showing that patient allergies are associated with worse postoperative outcomes following total knee and total hip arthroplasty.<sup>22,23</sup> However, Rosenthal et al.<sup>24</sup> found that patient allergies were not correlated with worse outcomes after total shoulder arthroplasty. These contradictory findings necessitate the need for further investigation as the effect of allergies on arthroscopic hip surgery patients' preoperative symptoms has yet to be determined.

The purpose of this study was to determine if there are significant differences in preoperative patient-reported outcome (PRO) scores in patients with and without self-reported medication allergies undergoing hip arthroscopy. The authors hypothesized that the presence of 1 or more allergies will be associated with lower preoperative PRO scores for patients undergoing hip arthroscopy.

## Methods

Institutional review board approval was obtained for this retrospective comparative case series (Level III evidence) of consecutive subjects ( $n = 308$ ) that underwent hip arthroscopy by a single sports medicine fellowship-trained orthopaedic surgeon from December 2013 to April 2017. Subjects with FAI syndrome (defined by Warwick agreement as a triad of symptoms, clinical signs, and imaging findings consistent with cam and/or pincer morphology) who had completed a minimum 3-month course of nonsurgical treatment (included rest, activity modification, physical therapy, education, oral anti-inflammatory non-narcotic medications, or intra-articular injections [local anesthetic diagnostic with or without corticosteroid therapeutic]) and were dissatisfied with their hip condition were eligible for arthroscopic hip preservation surgery.<sup>25</sup> Patients with advanced arthritis (Tonnis grade  $>1$  or joint space  $<2$  mm), more than borderline dysplasia (lateral and/or anterior center-edge angles  $<20^\circ$ , and/or Tonnis angle  $>15^\circ$ , and/or femoral head extrusion index  $>25\%$ , and/or broken Shenton line), femoral head avascular necrosis, synovial chondromatosis (and osteochondromatosis), or septic arthritis were excluded.<sup>25</sup> Patients

without FAI syndrome that underwent an isolated peritrochanteric space endoscopy for abductor tendon pathology, and/or trochanteric bursitis were excluded.

Patients completed PRO scores within 6 weeks prior to surgery. All PRO forms were completed exclusively by the patient without assistance from any staff or research personnel (research assistants, fellows, residents, students, nurses, physicians, physician assistants, or nurse practitioners). These included the 12-item International Hip Outcome Tool (iHOT-12), HOS Activities of Daily Living (ADL) and Sport-Specific Subscore (SSS), and the 12-item Short Form Health Survey (SF-12) Mental Component Scores (MCS).

Allergies were self-reported preoperatively within 6 weeks prior to surgery. Recording of number of allergies was based exclusively on the number reported by the subject without regard for duplication of medication trade brand and generic names (e.g., Ancef vs cefazolin), route of administration (oral, intramuscular, intravenous, subcutaneous; e.g., Ancef vs Keflex; cefazolin vs cephalexin), or different medications in same class (e.g., cephalosporins, cephalexin, cefazolin). Patients were excluded if they did not complete preoperative scores or self-reported allergy questionnaire (Figure 1).

Data analysis was performed using SPSS Statistics software, version 20 (IBM Corp, Armonk, NY). Bivariate correlations were determined by Pearson correlation coefficients. Multivariate linear regression models were built to determine the effect of independent variables (patient age, gender, 0 allergies, 1+ allergies, SF-12 MCS) on continuous outcomes scores (iHOT-12, HOS-ADL, HOS-SSS). All  $P$  values were reported, with significance set at  $P < .05$ .

## Results

Two hundred twelve patients were analyzed (Figure 1). There were 94 male (44%) and 118 female patients (56%). The mean age was  $35.1 \pm 13.2$  years.

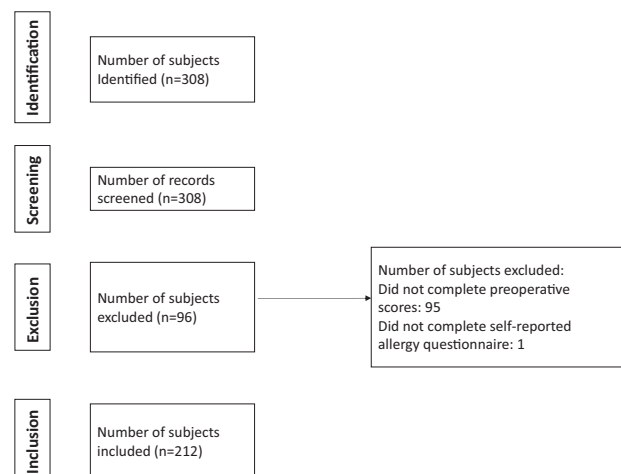


Fig 1. Flow diagram of patient exclusion and inclusion.

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