Patients Undergoing Hip Arthroscopy With Prophylactic Losartan Demonstrate Similar Short-Term Outcomes To Matched Controls: A Propensity Matched Analysis

Lucas Y. Kim[1], Andrew R. Schab[2], Michael S. Lee[3], Philip Stevenson[1], Andrew E. Jimenez[1]
[1]Yale Department of Orthopaedics and Rehabilitation, New Haven, CT, [2]Chicago Medical School at Rosalind Franklin University, North Chicago, Illinois
[3]Medical College of Wisconsin, Milwaukee, WI

Lucas.kim@yale.edu

INTRODUCTION: Hip arthroscopy has been shown to be an effective intervention for the treatment of femoroacetabular impingement syndrome (FAIS) and labral tears. Hip arthroscopy can be complicated by postoperative adhesion formation which can cause pain and potentially require revision hip arthroscopy. To minimize these adhesions, angiotensin II-type receptor blockers (ARBs), such as losartan, have recently been used as a pharmacologic tool to reduce postoperative fibrosis. Prior study has suggested losartan may decrease fibrosis in muscle tissue after injury by blocking activation of TGF-Beta1. While large database studies have begun to support the anti-fibrotic use of losartan after orthopedic surgery, limited cohort studies directly assessed the efficacy of losartan in preventing postoperative stiffness and inferior surgical outcomes – particularly in the instance of hip arthroscopy.

The present study aimed to report short term outcomes of patients undergoing primary hip arthroscopy with the postoperative administration of losartan compared to a propensity-matched control group of patients undergoing primary hip arthroscopy without postoperative administration of losartan.

METHODS: Data were prospectively collected and retrospectively reviewed for patients undergoing hip arthroscopy for FAIS or labral tears between February 2023 and August 2024. Patients were included in the analysis if they had preoperative and one-year follow-up patient reported outcome scores (PROs). Patients prescribed 12.5mg of losartan twice daily postoperatively were propensity matched based on age, sex, and BMI in a 2:1 ratio to patients who were not prescribed or taking an ARB. All data collection and reporting received approval from our institutional review board.

At baseline and one year after surgery, PROs including the International Hip Outcome Tool (iHOT-12), Patient-Reported Outcomes Measurement Information System (PROMIS) Physical Function (PF), Pain Interference (PI), Anxiety (A), and Depression (D), Hip Outcome Score-Sport Specific Subscale (HOS-SSS), and visual analog scale (VAS) for pain were compared between the matched losartan and no losartan groups using medians and Mann-Whitney U tests. The rates of achieving the minimum clinically importance difference (MCID), patient acceptable symptomatic state (PASS), and substantial clinical benefit (SCB) were compared using Chi-Square tests. Statistical significance was defined as $p < 0.05$.

RESULTS SECTION: A total of 68 patients met initial study criteria, which consisted of 47 that were prescribed losartan after the index procedure. A 2:1 propensity match was performed to match 36 losartan patients to 18 control patients. Demographics were similar between the losartan and control groups. The losartan and control groups had a respective mean age of 25.5 ± 1.1 and 18 ± 2.2 years, consisted of 63.9% and 55.56% females, and mean BMIs of 23.5 ± 0.9 and 25.7 ± 0.9 kg/m^2 ($P > 0.05$ for all).

For preoperative PROs, the losartan group had higher PROMIS-Physical Function (PF), but lower PROMIS-Pain Interference (PI) and PROMIS-Anxiety when compared to the control group ($p < 0.05$). For iHOT-12, HOS-SSS, PROMIS-PI, and PROMIS-PF both groups demonstrated significant improvements ($p < 0.05$). For PROMIS-Anxiety and PROMIS-Depression, the losartan group demonstrated a significant improvement ($P < 0.05$) and the control group demonstrated no significant change ($P > 0.05$). The return to sport rate for the losartan and control was 92.3% and 83.3% ($P > 0.05$). The losartan and control groups achieved the anchor question, MCID, PASS, and SCB at similar rates ($P > 0.05$).

DISCUSSION: Hip arthroscopy patients prescribed postoperative losartan showed similar levels of improvement in the iHOT-12, HOS-SSS, and PROMIS-PF, and PROMIS-PI PROs compared to patients not on losartan. While losartan patients showed superior outcomes in PROMIS-Anxiety and PROMIS-Depression scores compared to control patients, the underlying reason for this difference is unclear. This study has several limitations, including a low sample size and limited follow-up duration. However, this study is among the first to investigate the effect of postoperative losartan use on clinical surgical outcomes. These results will begin to contribute to discussion of an increasingly common clinical practice of augmenting arthroscopic outcomes with various pharmacological interventions. Longer term follow-up is warranted to evaluate the durability of this result and guide clinical practice.

SIGNIFICANCE/CLINICAL RELEVANCE: Postoperative losartan administration has been used increasingly as a prophylaxis for fibrosis and adhesions in the setting of orthopedic procedures, based on prior basic science research and biologic plausibility. The present study is among the first to compare clinical outcomes of patients receiving losartan and those not receiving losartan following hip arthroscopy, offering evidence to guide clinical practice.
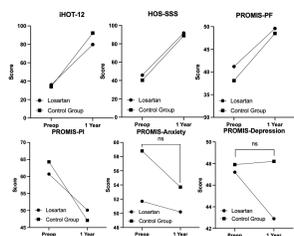

Figure 1: Preoperative and 1-year patient reported outcome measures for losartan and control patients. Differences between preoperative and postoperative outcomes were significant at $p < 0.05$ unless otherwise specified.
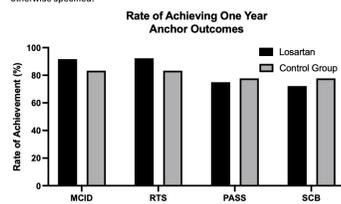

Figure 2: Rate of achieving the minimum clinically importance difference (MCID), return to sport (RTS), patient acceptable symptomatic state (PASS), and substantial clinical benefit (SCB) was equivalent between the losartan and control group.