Impact of Built Environment on Short-Term Outcomes for Hip Arthroscopy Patients

Rishi P. Earla, BA[1], Jackson G. Woodrow, BS[1,2], Rachel L. Poutre, BS[1], Brandon J. Allen, BA[1],Srish S. Chenna BS[1,5] , Jeffrey S. Mun, BA[1,3], Stephen M. Gillinov, MD[1,4], Bilal S. Siddiq, MD[1], Scott D. Martin, MD[1]

[1] Sports Medicine Center, Department of Orthopaedics, Massachusetts General Hospital, Mass General Brigham, Boston, MA, USA
[2] University of Arizona College of Medicine – Phoenix, Phoenix, AZ, USA
[3] Geisinger Commonwealth School of Medicine, Scranton, PA, USA
[4] Yale School of Medicine, New Haven, CT, USA
[5]Cleveland Clinic Lerner College of Medicine, Cleveland, OH, USA

Disclosures: Rishi P. Earla (N), Jackson G. Woodrow (N), Rachel L. Poutre (N), Brandon J. Allen (N), Srish S. Chenna(N), Jeffrey S. Mun (N), Stephen M. Gillinov (N), Bilal S. Siddiq (N), Scott D. Martin (N)

Introduction: There is a paucity of research on how environmental factors, like built environment (lack of recreational parks, housing built pre-1980s, and lack of walkability), affect outcomes after hip arthroscopy. The purpose of this study is to evaluate the effect of built environment on Patient Reported Outcome Measures (PROM) and rates of achieving MCID and PASS.

Methods: Patients who underwent hip arthroscopy for symptomatic labral tears were prospectively enrolled in this study. Patients were excluded if they were < 18 years of age, had radiographic evidence of hip dysplasia (LCEa < 20°) or Tönnis grade ≥ 2, or had prior ipsilateral hip surgery. The study population was divided into BEP_{Low} (0-30%), BEP_{Mid} (30-67%), and BEP_{High} (67-100%) cohorts according to the CDC's Built Environment Percentile (BEP), with the BEP_{High} indicating a poor built environment. Study participants completed PROM surveys before and at 3, 6, 12, and 24 months after surgery. This study was IRB approved.

Results: 203 patients (108 male and 95 female) met the inclusion criteria and were stratified into three cohorts: BEP_{Low}(mean BEP: 20.4% ± 9.5), BEP_{Mid}(mean BEP: 47.8% ±10.0), and BEP_{High}(mean BEP: 74.4% ± 6.0). At baseline, the BEP_{Low} reported significantly higher scores in mHHS, HOS ADL, HOS SSS, NAHS, and iHOT scores when compared to the BEP_{High} cohort ($P < 0.05$). At 2 years, both the Low and Mid cohorts reported significantly higher PROMS scores for all PROMs when compared to the High cohorts ($P > 0.05$). There were no significant differences ($P > 0.05$) between cohorts in achieving MCID values; however, the Low cohort was able to achieve PASS values at a significantly higher percentage for HOS ADL at 12 and 24 months, HOS SSS at 12 and 24 months, NAHS at 12 months and 24 months, and iHOT at 24 months when compared to the High cohort. The Mid cohort was able to achieve PASS values at a significantly higher percentage for HOS SSS at 12 and 24 months, NAHS at 24 months, and iHOT at 24 months when compared to the High cohort.

Discussion: Hip arthroscopy patients with a worse built environment reported lower preoperative baseline scores, and these differences still prevail at 24 months after surgery. Patients in a highly disadvantaged built environment at 24 months report significantly worse PROM scores when compared to patients in a middle and low built environment, while the middle and low cohorts do not differ significantly at any time point. While patients did not differ significantly in achieving MCID values, both the Low and Mid cohorts reported significantly better odds of achieving PASS values when compared to the High cohort.

Significance/Clinical Relevance: The findings suggest that environmental factors can influence the recovery of patients and highlight the need for targeted interventions to improve outcomes in disadvantaged populations.