

A Novel Treatment of the Arthritic Hip: A Prospective, Cross-Sectional Study on Changes Following Bone Marrow Concentrate Injection and Arthroscopic Debridement

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Abstract : Stem cell injections are a promising alternative treatment for hip osteoarthritis. Current literature has focused on short-term outcomes for both knee and hip osteoarthritis; however, there is a significant gap for longitudinal benefits for hip OA and limited firm conclusions due to small sample sizes. The purpose of this prospective study was to determine longitudinal changes in pain, function, and radiographs following bone marrow concentrate injection (BMAC) into the osteoarthritic hip joint. **Methods:** A prospective, cross-sectional study was conducted over the course of 12 months at an orthopedic practice. The study recruited 15 osteoarthritic pre-surgical hips with mild to moderate osteoarthritic severity who were scheduled to undergo hip arthroscopy. Data was collected at both pre-operative and post-operative time frames. Data collected included: hip radiographs, i-HOT-33 questionnaire data, BMAC autologous volume, and demographics. Questionnaire data was captured using Qualtrics XM software, and participants were sent an anonymous link at the following time frames: pre-operative, 2 weeks, 6 weeks, 12 weeks, 6 months, 12 months, and 24 months. Radiographic changes and BMAC volume were collected and reviewed by an orthopedic surgeon and sent to the primary investigator. Data was exported and analyzed in IBM-SPSS. **Results:** A total of 15 hips from 15 participants (mean age: 49, gender: 50% males, 50% females, BMI: 29.7) were used in the final analysis. Summative i-HOT 33 mean scores significantly changed between pre-operative status and 2-6 weeks post-operative status ($p < .001$) and pre-operative status and 3-6 months post-operative status ($p < .001$). There were no significant changes between other post-operative phases or between pre-operative status and 12 months post-operative. Significant improvements were found between summative i-HOT 33 mean ($p < .001$), daily pain ($p < .001$), daily sitting ($p = .02$), daily distance walked ($p = .003$), and daily limp ($p = 0.03$) and post-operative status (2-6 weeks). No significant differences between demographic variables (gender, age, tobacco use, or diabetes) and i-HOT 33 summative mean scores. **Discussion/Implications:** The purpose of this study was to determine longitudinal changes in pain and function following a hip joint bone marrow concentrate injection. Results indicate that participants experience a significant improvement in pain and function between pre-operative and 2-6 weeks and 3-6 months post-injection. Participants also self-reported a significant change in average daily pain with sitting and walking between pre-operation and 2-6 weeks post-operative. This study includes a larger sample size of hip osteoarthritis cases; however, future research is warranted to include random controlled trials with a larger sample size.

Keywords : adult stem cell, orthopedics, osteoarthritis (hip), patient outcome assessment

Conference Title : ICSEM 2024 : International Conference on Sport and Exercise Medicine

Conference Location : Athens, Greece

Conference Dates : October 17-18, 2024