Bone-Marrow Stimulation for Arthroscopic Rotator Cuff Repair: A Meta-Analysis of Randomized Control Trials

Eoghan T Hurley, Bryan Crook, Richard Michael Danilkowicz[1], Laith M Jazrawi[2], Raffy Mirzayan[3], Jonathan F Dickens, Oke A Anakwenze[4], Christopher Klifto
[1]Duke University Medical Center, [2]Center For Musculoskeletal Care, [3]Kaiser Permanente, [4]Duke Orthopedics Arringdon

INTRODUCTION: Bone marrow stimulation (BMS) has been proposed to augment healing at the time of arthroscopic rotator cuff repair (ARCR), by creating several bone marrow vents in the footprint of the rotator cuff at the time of repair, allowing mesenchymal stem cells (MSCs), platelets, and growth factors to cover the area in a crimson-duvet. The purpose of this study was to perform a meta-analysis of the randomized controlled trials (RCTs) to compare the outcomes following BMS and a control for those undergoing ARCR.

METHODS:

A literature search of three databases was performed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. RCTs comparing BMS and a control for ARCR were included. Clinical outcomes were compared, and a p-value < 0.05 was considered to be statistically significant.

RESULTS: Seven RCTs with 576 patients were included. Overall, 18.8% of patients treated with BMS and 21% of patients in the control group had a retear ($p = 0.51$, $I^2 = 42\%$). With BMS the average Constant score was 88.2 and with the control the average Constant score was 86.7 ($p = 0.12$). Additionally, there was no significant difference in the ASES score (94.3 vs. 93.2, $p = 0.31$), or VAS score (0.9 vs. 0.9, $p = 0.89$).

DISCUSSION AND CONCLUSION: The level I evidence in the literature does not support BMS as a modality to improve retear rates following ARCR, or any of the subsequent clinical outcomes.