Meniscus Repair Outcomes with and without Bone Marrow Aspiration Concentrate

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Objectives: The purpose of the current study is to review the results of meniscus repairs with and without bone marrow aspiration concentrate (BMAC). It is hypothesized that with BMAC, meniscus repair outcomes will be improved when compared to without BMAC at 1 year after surgery.
Methods: This is a prospective case control study performed from August 2014 until August 2017. Patients were included if they had a meniscus repair performed with no history of prior meniscus surgery to the operative knee. Patients were excluded if there was a full thickness cartilage tear or International Cartilage Repair Society (ICRS) Grade IV cartilage tear not treated in a single staged surgery. Patients were also excluded if they did not reach the one year follow-up, had a multi-ligamentous knee injury requiring multiple staged procedures. From August 2014 until November 2015, patients had meniscus repair without BMA. Menisci were all repaired arthroscopically using inside-out, outside-in and all-inside techniques. After November 2015, all meniscus repairs were augmented with BMAC. In the BMAC group, all bone marrow was obtained from the ipsilateral femur during the time of surgery. The Biocue BMAC system (Zimmer Biomet, Warsaw Indiana) was used for bone marrow aspiration and BMAC was injected directly into the tear site after repair. Numerical data such as VAS, lysholm and IKDC was analyzed using a 2 sample T-test. Categorical data such as sex, tear location, type of tear and zone of tear were analyzed using a chi-square.
Results: A total of 150 patients were initially included in the study. The average age in the control group was 26.3 versus 29.4 in the BMAC group (P=0.27). Thirty seven percent of the control group had an ACL reconstruction versus 40 % in the BMAC group (P= .77). The control group improved from an average pain level of 6.1 to 1.2 and the BMAC group improved from an average pain level of 5.9 to 0.7 at the 1 year end point. Both the control group and BMAC group improved with respect to pain with no difference at the 1 year end point (P=.19). There was, however a significantly larger reduction in pain at the 6 week and 3 month time point with BMAC compared to the control group (P=.02 and P=.02 respectively). At the 1-year follow-up, the mean lysholm score improved from 43 to 92 in the control group and 43 to 90 in the BMAC group. The mean IKDC score improved from 37 to 87 in the control group and 36 to 83 in the BMAC group at the one year follow-up.
Conclusion: Meniscus repair outcomes were improved at 6 weeks and 3 months post-operatively, when BMAC is used to augment meniscus repair compared to repair without BMAC. Both groups, control group and BMAC meniscus repair group had improved outcomes at 1 year post-operatively with respect to VAS, lysholm and IKDC, with no difference in complication rate.

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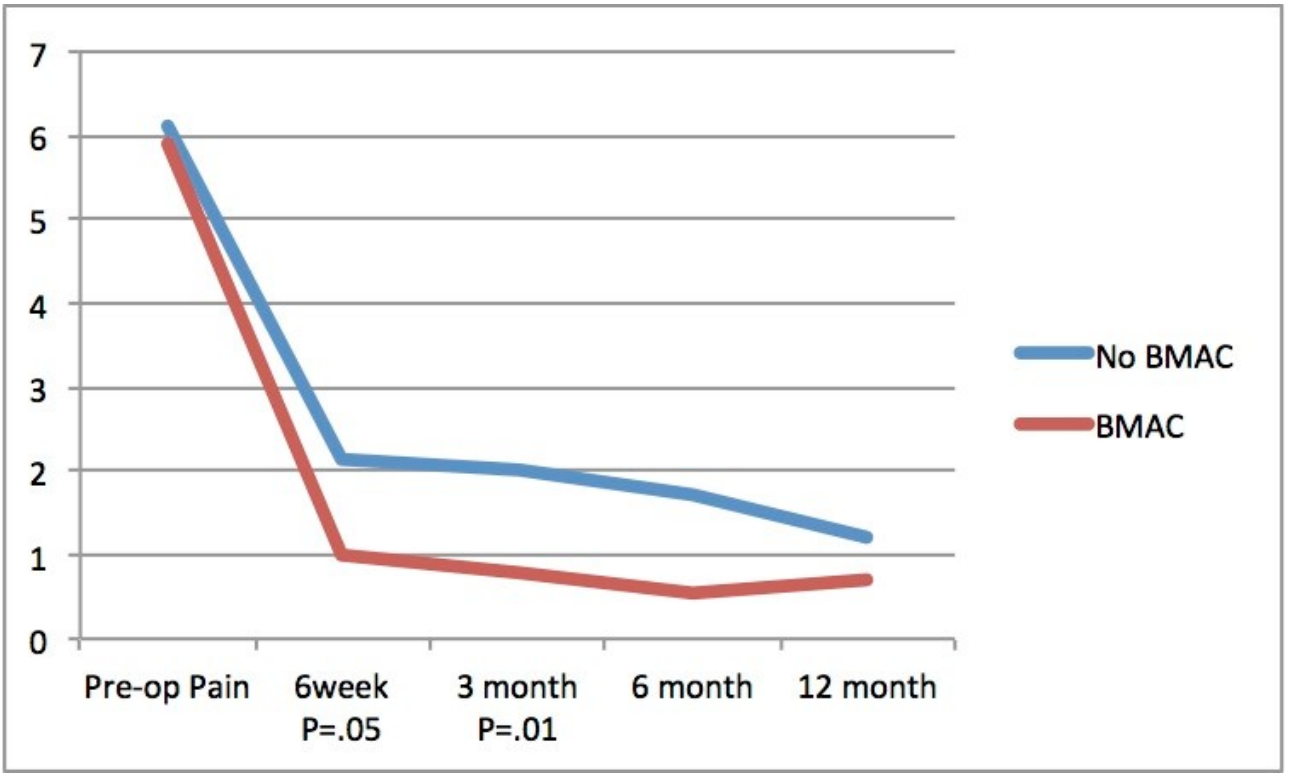

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