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"The Utility of Bone Marrow Aspirate in Healing of Fifth Metatarsal Fractures and Return to Play in Athletes: A Systematic Review."

Background:

Fractures of the proximal fifth metatarsal (Jones fractures) are common in athletes.[1] These fractures cause significant pain and dysfunction, especially in patients who compete in numerous sports, such as: tennis, soccer, basketball, and running. Standard of treatment options exist for this injury, but the focus of this study was centered around surgical fixation with an intramedullary (IM) screw along with the addition of bone marrow aspirate concentrate (BMAC). In conjunction with surgical fixation, BMAC has shown promising results in the early healing and successful union of Jones fractures and the early return to play for athletes. The goal of the present systematic review is to determine if there is evidence to support the use of BMAC in the successful union of fifth metatarsal fractures and whether there is a discrepancy in the rate of refracture of those patients who do not undergo BMAC treatment. The primary outcomes investigated by this study are return to play (RTP) in athletes, rate of refracture, and rate of nonunion after surgical fixation. The secondary outcomes focused on patient reported outcomes (PROs) such as American Orthopedic Foot and Ankle Scores (AOFAS) and Visual Analogue Scale (VAS) scores.

Methods:

A comprehensive review of the literature utilizing PRIMSA guidelines was performed. Databases such as PubMed, Embase, Scopus, and Google Scholar were searched from 2011 through January 2023 to identify clinical outcomes of operative treatment of fifth metatarsal fractures in patients who participate in sports and either received BMAC or not. Articles were reviewed by 4 reviewers, independently, to determine inclusion or exclusion based on established criteria. The studies were also reviewed to determine their level of evidence and potential sources of bias. Any disagreement amongst reviewers was settled with open discussion and by a third-party reviewer.

Results:

By looking at patient demographics, post-operative radiographic images, and comparison of patient reported outcomes within the studies reviewed, it is likely that orthobiologic augmentation by way of BMAC use is beneficial to healing in athletes. As this project progresses, future findings will be documented and assessed in order to contribute to the enhancement of treatment for Jones fractures. It should be noted that more prospective studies are necessary in order to conclude if the healing rate is increased in fifth metatarsal fractures and their subsequent RTP is reduced.