# Correlation of the Modified Magnetic Resonance Observation of Cartilage Repair Tissue (MOCART) Score with Patient-Reported Outcome Measurement Information System (PROMIS) Scores for Postoperative Radiographic and Clinical Assessment of Osteochondral Lesions of the Ankle

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INTRODUCTION:

The Magnetic Resonance Observation of Cartilage Repair Tissue (MOCART) scoring system is commonly used in both the knee and ankle literature to quantitatively assess cartilage repairs on MRI. For both the knee and ankle, MOCART scores have demonstrated little ability to correlate with clinical outcomes such as survey scores. The system also suffers from issues with repeatability and reproducibility of individual scores.

This study seeks to analyze the correlation between MOCART scores and Patient-Reported Outcome Measurement Information System (PROMIS) scores obtained from the same time period from patients undergoing surgical management of an osteochondral lesion of the talus with extracellular matrix and bone marrow aspirate concentrate (ECM-BMAC) treatment. It also seeks to determine MOCART's intra-rater reliability by analyzing multiple independent scoring attempts by the same radiologist and inter-rater reliability by analyzing multiple independent scoring attempts between two radiologists. We hypothesized that MOCART scores would correlate with PROMIS outcomes and be repeatable for a given rater.

METHODS:

Patients treated for an osteochondral lesion of the talus by a single surgeon in our department were screened for the existence of MRI and survey scores completed within five months of one another. Each MRI was scored using the MOCART system by two radiologists fellowship-trained in musculoskeletal radiology on two separate occasions, with at least one week between scoring attempts. Each MOCART category and the overall score was compared to each PROMIS category. We also compared the presence of cysts and edema, as noted by the raters, to each PROMIS category.

RESULTS:

MOCART scores were found to be repeatable between scoring attempts for individual categories except for structure of cartilage and scores were especially repeatable for the overall score. This was true both among individual raters, and between them. Preoperative MOCART scores correlated positively to preoperative PROMIS scores for the Physical Function ($r= 0.0636$), Pain Interference ($r=0.128$), and Depression ($r=0.232$) domains. Postoperative MOCART scores correlated positively with postoperative PROMIS scores for the Physical Function ($r=0.242$) and Global Physical Health ($r= 0.234$) domains. Postoperative MOCART scores did not correlate positively to change in PROMIS scores nor did change in MOCART scores to change in PROMIS scores as we had expected. One significant correlation existed between postoperative MOCART score and pre to postoperative change in PROMIS Global Mental Health, but the correlation was negative ($r= -0.527$; $p= 0.044$). The presence of cyst and edema likewise did not demonstrate any consistent pattern.

DISCUSSION AND CONCLUSION:

While the MOCART score may be repeatable for a given reader, it faces significant issues with correlation to PROMIS outcomes. This has been noted before for certain surgical techniques and other outcomes measurements. We find that this pattern holds true more broadly when looking at a range of methods for the treatment of osteochondral lesions. While quantitative evaluation of MRI is important for better understanding cartilage repair techniques, problems with the MOCART system should be acknowledged and solutions considered.