OBJECTIVE: To develop a magnetic resonance imaging (MRI) scoring system for follow-up of knee cartilage repair procedures integrating assessment of the repair site and the whole joint called Cartilage Repair OsteoArthritis Knee Score (CROAKS), and to assess its reliability.

DESIGN: MRI examinations of 20 patients that had undergone matrix-associated autologous chondrocyte transplantation (MACT) of the knee 12 months before were semi-quantitatively assessed for the repair site using features of the magnetic resonance observation of cartilage repair tissue (MOCART) system and for the whole joint based on experiences with the MRI Osteoarthritis Knee Score (MOAKS) instrument. Intra- and inter-observer reliability was calculated using weighted (w) kappa statistics for plates (medial/lateral tibia, medial/lateral femur, trochlea, patella), compartments (medial tibio-femoral, lateral tibio-femoral, patello-femoral) and the whole joint. For certain features with low prevalence the overall percent agreement was calculated in addition.

RESULTS: For cartilage, reliability on a plate level ranged between 0.48 (lateral femur) and 1.00 (medial femur). BML assessment showed comparable results ranging on a plate level between 0.46 and 1.00 with overall percent agreement between 83.3% and 100%. Meniscal morphology assessment ranged between 0.62 and 0.94. For repair site assessment reliability ranged from 0.41 (signal intensity intra-observer) to 1.00 (several features). Overall percent agreement was above 80% for 17 of 22 features assessed (intra- and inter-observer results combined).

CONCLUSIONS: Combined scoring of the repair site and whole joint assessment for common osteoarthritis features using CROAKS, which is based on experience with two established semi-quantitative scoring tools, is feasible and may be performed with good to excellent reliability.

KEYWORDS: CROAKS; Cartilage repair; Magnetic resonance imaging; Osteoarthritis; Reliability; Scoring

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