Evidence suggests that single-bundle anterior cruciate ligament (ACL) reconstruction does not reliably prevent the development of knee osteoarthritis (OA). This study was conducted to determine the overall prevalence of and risk factors for the development of radiographic knee OA after single-bundle ACL reconstruction. Case control study; Level of evidence, 3. There were 249 individuals who had undergone primary single-bundle ACL reconstruction included in this retrospective cohort study. Follow-up radiographs were scored by a single orthopaedic surgery sports medicine fellow using the Kellgren-Lawrence (KL) scale to determine the degree of OA in the medial, lateral, and patellofemoral compartments. Radiographic OA of the involved knee was considered to be present if, compared with the noninvolved knee, there was at least a 2-grade difference in the KL score in at least 1 compartment or a 1-grade difference in at least 2 compartments. Predictors of OA that were explored included patient age, sex, body mass index (BMI), smoking status activity level, meniscectomy before or concurrent with ACL reconstruction, chondral injury present at the time of ACL reconstruction, graft type and source, tibial and femoral tunnel positions, need for revision, and length of follow-up. Univariable and stepwise multivariable logistic regressions were used to identify factors that were associated with radiographic knee OA.
Thirty-nine percent of the patients had radiographic OA an average of 7.8 years after surgery. Female sex, BMI, time from injury to surgery, medial and patellofemoral compartment chondrosis, prior medial or lateral meniscectomy, concurrent medial meniscectomy, and length of follow-up were associated with radiographic knee OA after ACL surgery. Stepwise multivariable logistic regression indicated that prior medial meniscectomy (95% confidence interval [CI], 1.39-6.85), grade 2 or greater medial chondrosis (95% CI, 1.27-6.73), length of follow-up (95% CI, 1.07-1.24), and BMI (overweight 95% CI, 1.08-3.84; obese 95% CI, 1.34-7.80) were the best set of predictors of knee OA. Despite reduced laxity and instability and improved activity and participation, individuals who have undergone ACL reconstruction are still at high risk for developing knee OA compared with the general population. The strongest predictors of knee OA after ACL reconstruction were obesity and grade 2 or greater chondrosis in the medial compartment. These results may aid in identifying patients at risk for OA after ACL reconstruction.