Results: Of 387 enrolled patients 5 were excluded due to poor quality or radiographs > 6 months leaving 382 TJR cases for inclusion. Follow-up was complete for >95% of patients. The median (SD) age was 68.9 (9.3) years and were female and the mean BMI was 29.1 (7.6). The change in HHS pain scores from baseline was 27.1 (9.6) at 1 year and 27.1 (9.5) at 2 years. When pain was dichotomised into 2 groups based on the MCID (≥5 points), 96% of patients demonstrated a clinically meaningful improvement in pain at 1 and 2 years. The change in function scores from baseline was 16.2 (10.9) and 15.9 (11.8) at 1 and 2 years. When function was dichotomised into 2 groups based on the MCID (≥6 points), 81% and 78% of patients demonstrated a clinically meaningful improvement in function at 1 and 2 years. Regression analysis demonstrated significantly lower odds of a clinically meaningful improvement in pain and function for patients with less severe baseline radiographic changes, when compared to severe changes, (mK-L 4b).

Conclusions: We have demonstrated an inverse relationship between the severity of pre-operative radiographic changes and improvement in pain and function at 1 and 2 years in people undergoing primary THR for OA, and suggest that this has important clinical implications for patient selection.

296 FEATURES ASSESSED ON MAGNETIC RESONANCE IMAGES IMPROVE PREDICTION OF TOTAL KNEE ARTHROPLASTY IN SUBJECTS WITH SYMPTOMATIC RADIOPHGRAPHIC KNEE OSTEOARTHRITIS: DATA FROM THE OSTEOARTHRITIS INITIATIVE
M.C. Hochberg, A. Yip, K. Favors, J. Sorkin, J. Martel-Pelletier, J.-P. Pelletier,1 Univ. of Maryland, Baltimore, MD, USA; 1 VA Maryland Hlth.Care System, Baltimore, MD, USA; 1 Univ. of Montreal, Montreal, QC, Canada

Purpose: Features assessed on magnetic resonance images (MRIs) of the knees, including cartilage volume (CV), bone marrow lesions (BMLs) and synovial effusion, are associated with pain and structural progression in subjects with knee osteoarthritis (OA). Few studies, however, have examined the association of MRI findings with total knee arthroplasty (TKA) or estimated the ability of MRI findings to improve prediction of TKA over and above routine demographic, clinical and radiographic parameters.

Methods: Data from the “Progression” subcohort of the Osteoarthritis Initiative (OAI) were analyzed. Subjects included in these analyses were aged 45 to 79 years and had symptomatic radiographic knee OA (defined as pain on most days of at least one month during the past year AND a definite biotibial osteophyte in the same knee) in one or both knees at baseline; had at least one annual follow-up visit; had all available knee radiographs from the baseline through their 48-month follow-up visit centrally read for structure by trained readers; and had baseline knee MRIs analyzed for CV at the femoral condyle and tibial plateau (mm²), presence of BMLs in the femoral condyles, and synovial fluid (SF) volume (mm³) using fully automated quantitative methodology developed by ArthroLab Inc. (Montreal, Quebec, Canada). Fixed-flexion posterior-anterior knee radiographs and knee MRIs were obtained using standard protocols with a SynaFlex™ platform and 3.0T Siemens magnets, respectively. TKA was self-reported at annual follow-up visits through 72 months and validated with medical records. Base knee-specific multiple variable Cox proportional hazards models were constructed with the following variables from the OAI baseline visit (age, gender, race, marital status, body mass index, depressive symptoms, KOOS quality of life scores, pain on motion and effusion on physical examination and KL grade) as independent variables and time to TKA as the dependent (outcome) variable. Improvement in prediction of TKA was assessed by examining the improvement in the likelihood ratio when CV, presence and size of BMLs and logSF volume were added individually and together to the best base models. Finally, change in area under the receiver operating characteristic curve (AUC) was calculated from logistic regression models further adjusted for follow-up time.

Results: Of 1390 subjects enrolled in the “Progression” subcohort, 1024 and 982 subjects with symptomatic radiographic knee OA involving the right and left knees, respectively, had complete data and were included in these analyses. There were a total of 81 (6.0%) and 83 (8.4%) TKAs in the right and left knees, respectively, among these subjects during 72 months of follow-up. In knee-specific bivariate Cox proportional hazards models, medial compartment CV (P < 0.005), size of BMLs in the medial femoral condyle (P < 0.0001) and logSF volume (P < 0.0001) were significantly associated with TKA in both knees. Inclusion of these MRI features individually to the best base knee-specific models, however, only size of BMLs (P = 0.02 in both knees, respectively) and logSF volume (P = 0.02 in both knees) were significantly associated with TKA. Furthermore, size of BMLs and logSF volume remained significantly associated with TKA when all 3 MRI features were added to the best base model. The improved prediction based on change in AUC, however, was minimal with an increase from 0.686 to 0.87 in both knees.

Conclusions: These data suggest that some MRI findings, particularly BMLs and SF volume, minimally improve the prediction of receiving a TKA in subjects with symptomatic radiographic knee OA when compared to demographic, clinical and radiographic variables.