

Conclusions: Only about one third of TKA recipients engage in the level of physical activity specified by federal PA guidelines six months after surgery. Women are less likely than men to be compliant with PA guidelines, and this impact is largely mediated by obesity. These data should help inform discussions between providers and patients scheduled for TKA about the health benefits and potential barriers of physical activity, especially in obese persons with end stage OA.

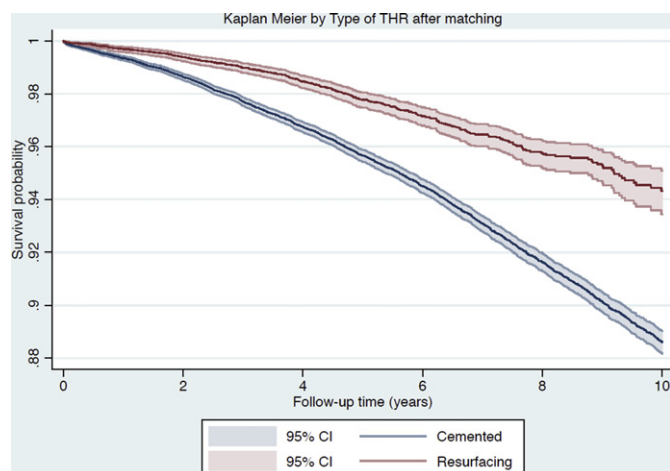
305 MORTALITY FOLLOWING ELECTIVE TOTAL HIP REPLACEMENT AND HIP RESURFACING

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Purpose: Although hip replacement is a highly successful surgical treatment for symptomatic hip osteoarthritis, the operation has inherent risks including death. Severe hip pain can be so debilitating that people balance their expectations of improved lifestyle against this risk. Information is lacking on the long-term mortality risks of different types of hip replacement surgery performed in the UK. The aim of this study was to compare 10-year mortality rates amongst patients undergoing hip resurfacing to those undergoing total hip replacement in England.

Methods: Data was obtained from the English Hospital Episode Statistics (HES) database linked to Office for National Statistics (ONS) mortality records provided information on date and cause of death in all adults receiving elective primary hip replacement for osteoarthritis in NHS hospitals in England between 1999 and 2012. The exposure of interest was prosthesis type classified as: total hip cemented, total hip uncemented, total hip unspecified fixation, and hip resurfacing. Confounding variables included age, gender, Charlson comorbidity index, rurality, and Index of Multiple Deprivation. The outcome was time from surgery to death (all cause mortality). Kaplan-Meier plots estimated the probability of survival up to ten years following surgery. Cox regression modelling described the association of prosthesis type on time to death, adjusting for confounders. Propensity score matching was used to minimise the potential for confounding by indication.

Results: Data was available on 429,806 patients receiving hip replacement. 263,916 (61.4%) were cemented, 121,144 (28.2%) uncemented, 26,147 (6.1%) unspecified and 18,599 (4.3%) hip resurfacing. Hip resurfacing was more common in younger patients and in men compared to other prosthesis types. Compared to cemented hip replacements, Cox regression models demonstrated a survival advantage in uncemented [hazard ratio (HR) 0.86 95%CI (0.84 to 0.88)] and hip resurfacing [hazard ratio (HR) 0.52 95%CI (0.47 to 0.57)] operations, after adjustment for confounders. There was no evidence of interaction between prosthesis type and age. To address the issue of confounding by indication, 12,576 hip resurfacing patients were propensity score matched to 3 comparable cemented hip replacements (37,728 patients). Kaplan Meier survival curves demonstrated that matched hip resurfacing patients had a much higher survival probability. Cox regression models on matched patients confirmed a lower risk of death in hip resurfacing patients versus cemented [HR 0.49 95%CI (0.43 to 0.55)].



Conclusions: Patients receiving hip resurfacing have reduced long-term mortality compared to patients receiving other types of hip replacement. This persisted after adjustment for confounding factors but the potential for residual confounding remains. Although patients receiving hip resurfacing are younger, there was no evidence of interaction with age. These findings require validation in external cohorts.

306 THE RELATIONSHIP BETWEEN SERUM LEPTIN AND MEASURES OF MAGNETIC RESONANCE IMAGING-ASSESSED KNEE JOINT DAMAGE IN THE MICHIGAN STUDY OF WOMEN'S HEALTH ACROSS THE NATION COHORT

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Purpose: Serum leptin measures are associated with radiographic knee osteoarthritis. Leptin may be associated with joint damage through anabolic mechanisms (development of osteophytes), catabolic mechanisms (cartilage, meniscal degradation), or creation of a pro-inflammatory environment. The objective of this study was to relate serum leptin levels to measures of knee osteoarthritis from magnetic resonance imaging (MRI).

Methods: Participants in the Michigan Study of Women's Health Across the Nation underwent bilateral knee MRIs at follow-up visit

11 (n=364) for assessment of cartilage defects, bone marrow edema, osteophytes, meniscal tears, synovitis and joint effusion. Serum leptin measures were available from baseline, follow-up visits 1 and 3-7. Multivariable analyses using ordinal logistic regression analysis were conducted to relate each of the knee MRI variables from follow-up visit 11 with baseline leptin measures adjusting for relevant covariates. Longitudinal linear mixed models (PROC MIXED) with random intercepts and slopes for age were used to examine the level and rates of change in leptin measures over time, stratified by category of cartilage defects, bone marrow lesions, osteophytes, meniscal tears, synovitis and joint effusions at follow-up visit 11.

Results: Baseline serum leptin levels were associated with greater odds of having more severe knee joint damage at follow-up visit 11 after adjustment for age, smoking status, menopause status and BMI residuals. The greatest effect was observed for osteophytes; a 5 ng/mL increase in baseline leptin was associated with 52% higher odds of having larger osteophytes (OR=1.52, 95% CI 1.40, 1.65). Correlations with baseline serum leptin were greatest for MRI-assessed osteophytes (r=0.41), followed by effusion (r=0.34), synovitis (r=0.31), cartilage defects (r=0.28), bone marrow edema (r=0.24) and meniscal abnormalities (r=0.22).

Conclusions: Leptin levels ten years prior to MRI assessment were associated with the presence of cartilage defects, bone marrow lesions, osteophytes, meniscal tears, synovitis and effusion among a population of mid-aged women. Understanding the role that leptin plays in the joint degradation process is critical for development of more targeted interventions for osteoarthritis.

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307 THE BURDEN OF OSTEOARTHRITIS: VALIDATING A SPECIFIC QUESTIONNAIRE

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Purpose: The individual burden is of interest in the evaluation of the effect on the patient and/or family. This is a burden that influences the quality of life, social integration, home life, and use of medical resources (consultations, treatments, etc.).

Methods: The goal of this study was to validate a questionnaire that can measure the individual burden of osteoarthritis.

Results: The pilot version of the BONE'S (Burden Osteoarthritis New Scale) questionnaire had 25 questions with a score expressed in %. The higher the score, the heavier the burden.

An exploratory factorial analysis made it possible to structure the questionnaire by identifying the most correlated items: the 5 group model was the most effective. 5 questions were deleted due to crossed factor loadings. Each group of items was associated to a dimension: "Independence" (7 questions), "Interaction & Recreation" (4), "Psychological" (3), "Budget" (3), "Hygiene & Beauty" (3). All dimensions correlated well to the overall BONE'S score except for "Budget". However, this dimension appeared significant and strong in the sub population of active subjects ($r = 0.40$), confirming its importance.

For its psychometric evaluation, BONE'S was administered to a random sample of subjects with OA. The questionnaire's internal validity and dimensions were studied using Cronbach's alpha. BONE'S was administered alongside 2 validated questionnaires (SF-12 and PGWBI) in order to validate it externally by calculating the Spearman coefficient (r).

200 questionnaires were considered evaluable. The average age was 69.4 years (± 7.0), 86% of subjects were over the age of 60 and 92% were women. 43%, 26%, 18.5%, and 12.5% of subjects had 1, 2, 3, and 4 joints affected by arthritis respectively. 57% had knee OA, 34% had hip OA.

Cronbach's alpha was equal to 0.86 for the entire questionnaire, which indicates excellent internal coherence. Intra-dimensional coherences were all acceptable (>0.67).

The average BONE'S score was 21.9 (± 16.0) (median = 17.6). The average score of subjects with 1 or 2 affected joints is significantly different from the score of subjects with 3 or more affected joints (18.6 (± 14.9) and 29.2 (± 16.0) respectively), which reinforces the discriminative validity of BONE'S. The BONE'S score also differed according to sex.

The average PGWBI score (on 100) was 50.5 (± 12.6) (min = 6, max = 70). Analysis of the SF-12 demonstrated an altered quality of life for the physical dimension (38.9 ± 9.9), but not for the mental dimension (49.9 ± 11.8). The BONE'S score showed good inverse correlation with the physical dimension of the SF-12 ($r = -0.70$) and, to a lesser extent, with the mental dimension (-0.40), as was the case with the PGWBI score ($r = -0.45$).

Conclusions: The internal and external validity of the Q was confirmed during the assessment. BONE'S is higher when more joints are affected by OA, with a significant difference between 1 or 2 affected joints and 3 or more joints. BONE'S is a validated tool that is short and easy to use. It can evaluate the burden of OA in a much more general manner than the available quality of life questionnaires that only assess a single affected joint (upper or lower body limb) and that do not assess the economic impact on the subjects' daily life. The burden of OA must be evaluated on a larger scale and with homogeneous groups based on the affected joint. The questionnaire's sensitivity to change through a prospective cohort would be interesting to study, as would be a confirmatory factorial analysis. Linguistic and cultural validation has made it possible to make BONE'S available in US English and Russian.

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THE ASSOCIATION OF PROXIMAL FEMUR SHAPE WITH LATERAL COMPARTMENT KNEE OSTEOARTHRITIS: THE OSTEOARTHRITIS INITIATIVE

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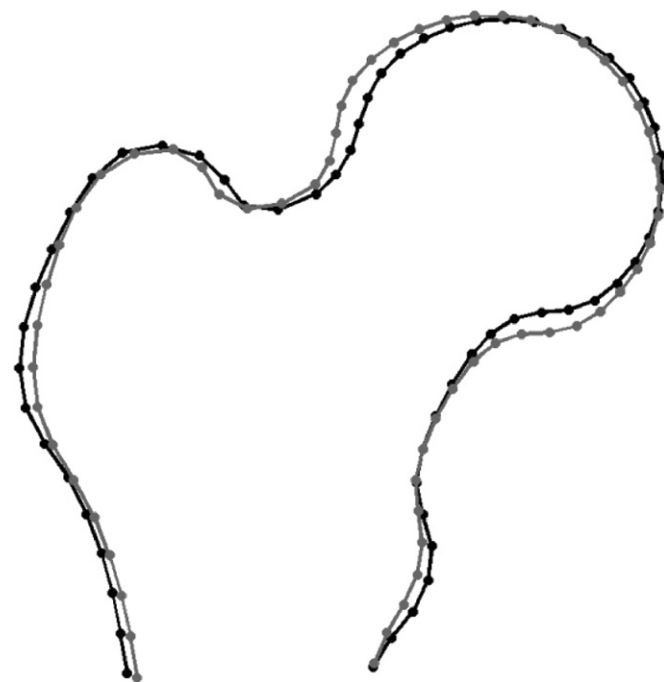
Purpose: Lateral compartment knee osteoarthritis (OA) is an understudied subtype of knee OA which manifests disproportionately in women and African Americans. One prior study suggested that dimensions in the pelvic region were associated with lateral compartment knee OA. We examined the association of proximal femur shape with ipsilateral lateral compartment knee OA.

Methods: We used information from the NIH-funded Osteoarthritis Initiative (OAI), a cohort of persons aged 45-79 at baseline who either had symptomatic knee OA or were at high risk of it. Using baseline

radiographs we defined lateral knee OA as having Kellgren/Lawrence (K/L) Grade ≥ 2 and joint space narrowing (JSN) equal to 0 in the medial compartment and >0 in the lateral compartment; we defined controls as having K/L < 2 and JSN = 0 in all compartments. Controls were frequency matched to cases by sex and by 10-year age intervals. We characterized proximal femur shape on radiograph using Active Shape Modeling to generate the modes of shape difference across our selected population. We used conditional logistic regression to examine the association of proximal femur shape with lateral compartment knee OA, adjusting for age, race, body mass index (BMI) and clinic site, reported as odds ratio (OR) per SD increase in a given hip shape mode.

Results: There were 183 cases (mean BMI 29.56 ± 5.29) and 190 controls (mean BMI 26.96 ± 4.27). 14 modes were derived for femur shape. The 14 modes described 95.5% of the total variance in proximal femur shape in the population. Mode 8 (OR = 0.65, 95%CI 0.51-0.83, $p = 0.0005$) and mode 1 (OR = 0.78, 95%CI 0.61-1.0, $p = 0.05$) were associated with lateral compartment knee OA. Mode 8 was the only mode that remained significantly associated with lateral compartment knee OA after correcting for multiple comparisons ($p < 0.004$). Figure shows mean hip shape plus two standard deviations in mode 8.

Conclusions: Hip shape is associated with lateral compartment knee OA. Further work to understand why this particular mode is associated with lateral compartment disease is warranted.



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KNEE OSTEOARTHRITIS IN A TERTIARY HOSPITAL IN SUB SAHARAN AFRICA

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Purpose: Knee osteoarthritis is the most common location of osteoarthritis, and its prevalence is increasing worldwide. Numerous studies have highlighted some major associated factors of which age, female sex and obesity are the most common. However in sub-Saharan Africa, not much has been done. We opted to determine the prevalence, clinical and radiological features of knee osteoarthritis in Cameroon.

Methods: Between February and July 2012, we did a cross sectional analysis of 148 patients with knee osteoarthritis at two Rheumatology units in Douala, Cameroon. Consecutively, we included patients with mechanical knee pain fulfilling the 1986 clinical and radiological criteria of the American College of Rheumatology.

Results: During the study period 1496 patients were seen, 148 of whom were studied giving a prevalence of knee osteoarthritis of 9.9%. Of the study population, 75% were females, 68% of whom had attained