Introduction: Total Knee Arthroplasty surgeons have traditionally aimed for a neutral mechanical axis to enable equal load sharing through the TKA with the aim of prolonging implant survival. This is measured on a weight bearing long leg X-ray with the mechanical axis determined by measuring the angle between the center of the femoral head / center of the tibial plateau and the center of the tibial plateau / center of the ankle. However we don’t walk on our ankle we walk on our heel which is typically in more valgus than the ankle Method Long leg X-rays were performed on 543 patients one year after a Total Knee Replacement performed by a single surgeon using a Patient Specific Balanced TKA technique using Brainlab 3. A metal disc was taped to the center of the heel and the patient stood on a wooden box to enable the mechanical axis to be collected from hip to ankle and hip to heel Results The hip to heel mechanical axis ranged from 6.1 degrees more valgus to 4.1 degrees more varus compared to the hip to ankle mechanical axis. The hip to heel mechanical axis was more valgus 80% of the time with a mean 1.6 degrees more valgus (range 1 degree - 6.1 degrees), more varus in 9.5% (range 1 degrees - 4.1 degrees) and 10.5% of patients had the same mechanical axis. There was a statistical difference between the hip to heel mechanical axis and the hip to ankle mechanical axis (p<0.001). Preop varus knees (>5 degrees) had a valgus TKA (>1 degrees) in 18% of patients with a hip to ankle mechanical alignment. In comparison 39.2% had a valgus TKA with a hip to ankle mechanical alignment. Conclusion: Navigation and Robotic technologies use the hip to ankle mechanical axis measurement to determine the alignment of a TKA. This study demonstrates that 80% of the time this will result in more valgus alignment of the lower limb.

Category: Knee - Arthroplasty

Does the Severity of Preoperative Patellofemoral Joint Degeneration Influence the Clinical Outcome of Total Knee Arthroplasty without Patella Resurfacing?

Abstract ID# 22604

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Summary:
It is recommended that patella resurfacing be applied in patients with severe Iwano Stage 3 or 4 patellofemoral osteoarthritis during TKA.

Data:
Abstract Objective: To determine whether the preoperative degree of degeneration of the patellofemoral joint really affects the outcome of total knee arthroplasty (TKA) surgery without a patella button and thus to establish a parameter that might serve as guiding factor to decide whether or not to perform retroflexion during surgery. Methods: Application of a retrospective-comparative design based on the basis of arthroplasty registry data that included patients with primary TKA with and without patella resurfacing. Patients were allocated to the following groups: a) mild patellofemoral osteoarthritis (Iwano Stage 1-2) and b) severe patellofemoral osteoarthritis (Iwano Stage 3-4). For patient-reported outcome measurement the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score was taken once preoperative and once 1-year postoperative (0: best, 100 worst). In addition, implant survival was calculated from the arthroplasty registry data. Results: In 1209 primary TKA without patella resurfacing, 3-year survival was 97.4% and 92.5% in patients with preoperative mild and severe patellofemoral osteoarthritis, respectively (p<0.002). Five-year survival was 95.8% vs. 91.4% (p=0.033) and 10-year survival was 93.3% vs. 88.6% (p=0.033). Postoperative WOMAC total and WOMAC subscores did not differ significantly between groups, but potentially suffered from type 2 error. Conclusion: From the study findings it is concluded that patients with preoperative severe patellofemoral osteoarthritis have significantly higher risks for reoperation than do those with preoperative mild patellofemoral osteoarthritis – when treated with TKA without patella resurfacing. Hence, it is recommended that patella resurfacing be applied in patients with severe Iwano Stage 3 or 4 patellofemoral osteoarthritis during TKA.

Category: Knee - Arthroplasty

Varus Thrust May Influence Patient Clinical Outcome Measures After Total Knee Arthroplasty