

## **A prospective double-blinded randomised controlled trial comparing conventional jig-based versus robotic-arm assisted medial unicompartmental knee arthroplasty**

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### **INTRODUCTION:**

The study reports the interim outcomes of a randomised controlled trial comparing the accuracy of component positions, early functional outcomes, patient-reported outcome measures and complications in conventional jig-based unicompartmental knee arthroplasty with navigational control (CO UKA) versus robotic-arm assisted unicompartmental knee arthroplasty (RO UKA) for patients with medial compartment knee osteoarthritis.

### **METHODS:**

One hundred and seven patients with symptomatic medial compartment knee osteoarthritis were prospectively randomised to undergo CO UKA (n=52) or RO UKA (n=55). Patients in both treatment groups had computerised tomography (CT)-based surgical planning. All procedures were completed using the medial parapatellar approach, and all patients received a standardised postoperative rehabilitation programme. Predefined study outcomes were recorded at regular intervals for two years after surgery.

### **RESULTS:**

RO UKA was associated with increased accuracy in executing the planned femoral ( $p<0.001$ ) and tibial ( $p<0.001$ ) component positions compared with CO UKA. RO UKA was associated with reduced inpatient pain scores ( $p<0.001$ ), decreased inpatient opioid analgesia consumption ( $p<0.001$ ) and shorter time to hospital discharge ( $p<0.001$ ) compared with CO UKA. There were no differences between the treatment groups in the Oxford Knee Score ( $p=0.714$ ), Knee Injury and Osteoarthritis Outcome Score ( $p=0.171$ ) and Western Ontario and McMaster Universities Arthritis Index ( $p=0.281$ ) at two-year follow-up. RO UKA was associated with improved Forgotten Joint Scores (FJSs) at one- ( $p=0.021$ ) and two-year ( $p=0.013$ ) follow-up. Patient recruitment declined during the trial as potential study participants developed a preference for RO UKA, and operating surgeons lost clinical equipoise between the treatment groups.

### **DISCUSSION AND CONCLUSION:**

The interim results of this study show that RO UKA was associated with increased accuracy in executing the planned femoral and tibial component positions, improved early functional rehabilitation and decreased time to hospital discharge compared with CO UKA. RO UKA was associated with increased FJSs compared with CO UKA at short-term follow-up.