

Short Term Survivorship and Outcomes of Robotically Assisted Bicompartamental Arthroplasty

Thomas Coon MD¹, Alvaro Hernandez MD², Michael Conditt PhD³

¹Coon Joint Replacement Institute, St. Helena, CA, USA

²Sierra Medical Center, El Paso, TX, USA

³Stryker Corp, Fort Lauderdale, FL, USA

INTRODUCTION

Bicompartamental knee arthroplasty (BKA) is an alternative to total knee arthroplasty (TKA) for degenerative joint disease when present in only two compartments. BKA spares the cruciate ligaments and preserves bone in the healthy compartment, possibly leading to better knee kinematics and clinical outcomes when compared to TKA. Historical BKA results with traditional manual technique have shown good clinical outcome with good pain relief¹⁻³. TKA patients frequently have limited or reduced mobility after their operation. It has been reported that retention of ACL and PCL are crucial to maintaining more natural feeling knee kinematics⁴. While BKA is a technically demanding procedure when performed with manual instrumentation, robotic assistance allows for accurate implant placement and soft tissue balancing of the joint. Robotic unicompartmental knee arthroplasty (UKA) has shown favorable clinical outcomes and survivorship at short term (2 year) follow up compared to manual UKA. The purpose of this study is to evaluate the short term functional outcomes and survivorship of patients undergoing robotically assisted BKA.

METHODS

45 patients (48 knees) were identified in an initial and consecutive single surgeon series receiving robotically assisted BKA to correct disease in the medial and patellofemoral compartments. As part of an IRB approved study, every patient in the series was contacted at a minimum two year (± 2 months) follow up and asked a series of questions to determine implant survivorship and functional outcomes (using the patient portion of the Knee Society Score). 9 patients were lost to follow up and 1 patient was deceased. 35 patients (38 knees) at a minimum two year follow up enrolled in the study for an enrollment rate of 79%. There are 22 male patients and 13 female patients; the average age at time of surgery is 67.0 ± 6.8 and the average BMI is 29.5 ± 4.6 . Five patients in this series also qualified for a 5 year follow up assessment. All patients received Restoris MCK implant components including a metal-back onlay tibial component and resurfacing of the patella (Mako Surgical Corp, Fort Lauderdale, FL).

RESULTS

Only 1 BKA was reported as revised to a TKA at two year follow up. The revision was reported by the patient due to severe pain and occurred 25 months after the index BKA procedure. The

patient did not return to the same surgeon for the revision procedure. The average pre-operative Knee Society Function Score was 58.1 ± 9.9 (n=18) and improved at 2 years post-operatively to 81.5 ± 15.9 (n = 36) (p<0.001). Of the 5 patients contacted at a minimum 5 year follow up, there were no reported revisions.

CONCLUSIONS

Robotically assisted BKA shows good survivorship and functional outcomes at a short term 2 year follow up. This procedure may be a viable option to patients with only two diseased compartments. Bicompartamental osteoarthritis(OA) has been reported to occur in 28% of those patients with knee OA⁵. Sparing of healthy bone and cruciates may improve overall kinematics and outcomes of the joint^{6,7}. This study remains ongoing to include a larger cohort and longer term follow up.

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DISCLOSURES

Thomas Coon and Alvaro Hernandez are consultants of Stryker Corp.

Michael Conditt is an employee of Stryker Corp.