Robotic-Arm Assisted Conversion of a Medial Unicompartmental Knee Arthroplasty to Total Knee Arthroplasty

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Background
Unicompartmental knee arthroplasty (UKA) positioning and limb alignment are prognostic of implant longevity. Patients usually present with failed UKA within 5 years postoperatively. Conversion to total knee arthroplasty (TKA) involves the challenges of scarring, implant and cement removal, and loss of bone and reference points. Robotic conversion of UKA to TKA may lessen the amount of bone removed, reduce the need for augments, and more accurately restore mechanical alignment because of precise planning and execution.

Purpose
This video demonstrates how to achieve reliable conversion of UKA to TKA via a robotic-arm assisted technique.

Methods
Modes of failure and challenges in conversion are reviewed. The literature comparing conventional versus robotic-assisted conversion is summarized. The case presentation of a 76-year-old man with bilateral knee pain (right-sided pain more than left-sided pain) who underwent right medial UKA 2 years ago. The patient began to experience poorly localized pain 1 year after UKA. On physical examination, the patient had a right antalgic gait and a varus deformity. Imaging studies revealed mechanical loosening of the implant. After discussing the risks, advantages, and prognosis of conversion to TKA, the patient elected to proceed with surgical treatment.

Results
The previous implant was extracted, and a 5-mm medial tibia augment was placed before cementing the tibial and femoral implants. Mechanical alignment was successfully restored via robotic technology. The patient reported reduced pain.

Conclusion
Robotic precision removes the need for tradeoffs in translation, resection depth, and implant angle governed by a fixed intramedullary guide. Although direct costs are higher, minimal uncertainty may reduce the need for additional revision.