

Pre-Resection Balancing with a Novel Miniature Handheld Robotic System for Total Knee Arthroplasty

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Dissatisfaction after total knee arthroplasty (TKA) is reported by up to 20% of patients. Achieving a well balanced knee in surgery could potentially improve patient satisfaction. Manual total knee arthroplasty (MA-TKA) balancing is subjective and without quantifiable numbers proving hard to reproduce. Robotic assisted total knee arthroplasty (RA-TKA) enables the ability to quantify the knee balance in terms of millimeters for each compartment gap and by laterality. Traditional robotic offerings have a large OR footprint, are disruptive to surgical workflow and are costly resulting in a challenge for wide adoption. This case report video demonstrates a how a novel miniature handheld robotic system for TKA enables the patient's knee to be planned prior to any bone resections to a quantifiable balance via software utilizing a pre-operative CT-scan and an intra-operative assessment of soft tissue laxity. The novel robot and surgical workflow shown demonstrate an encouraging step towards widely accessible robotics minimizing prior concerns for adoption while still providing accurate and objective measurements.