Advances in Procedure Guidance with AI, Ultrasound, and Robotics

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ARTIFICIAL INTELLIGENCE (AI), ULTRASOUND (US), AND ROBOTICS HAVE THE POTENTIAL TO GREATLY ENHANCE MINIMALLY INVASIVE INTERVENTIONS BY IMPROVING THE ACCURACY, PRECISION, AND SPEED OF THE PROCEDURES. THE USE OF AI ALGORITHMS IN CONJUNCTION WITH US IMAGING AND ROBOTICS CAN AID IN THE DETECTION AND DIAGNOSIS OF CONDITIONS SUCH AS FLUID IN THE LUNG, AS WELL AS ASSIST IN THE PLANNING AND GUIDANCE OF PROCEDURES SUCH AS BIOPSIES, THORACENTESIS, VASCULAR ACCESS, AND ORTHOPEDIC SURGERY. THESE TECHNIQUES CAN ALSO HELP TO REDUCE THE RISK, INVASIVENESS, AND RECOVERY TIME ASSOCIATED WITH TRADITIONAL SURGICAL INTERVENTIONS, WHILE MAINTAINING OR IMPROVING OUTCOMES. OVERALL, THE INTEGRATION OF AI, US, AND ROBOTICS HAS THE POTENTIAL TO REVOLUTIONIZE THE FIELD OF MINIMALLY INVASIVE INTERVENTIONS, MAKING THEM SAFER, MORE EFFECTIVE, AND MORE WIDELY ACCESSIBLE. THIS MULTIDISCIPLINARY MINI-SYMPOSIUM WILL BRING TOGETHER EXPERTS FROM DIVERSE RESEARCH AREAS TO HIGHLIGHT THE LATEST ADVANCES IN AI, US, AND ROBOTICS. TOPICS WILL RANGE FROM AI-BASED ULTRASOUND GUIDANCE IN ROBOTIC MINIMALLY INVASIVE ORTHOPEDIC SURGERY, AUTOMATED LUNG ULTRASOUND GUIDED THORACENTESIS, TO EMERGENCY INTERVENTIONS IN PREHOSPITAL SETTINGS. CLINICAL TRANSLATION PATHWAYS FOR BRINGING TECHNOLOGIES FROM BENCH TO BEDSIDE WILL ALSO BE DISCUSSED.