NEW CORI™ ROBOTIC-ASSISTED SURGERY TECHNOLOGY PERSONALIZES KNEE REPLACEMENTS AT JUPITER MEDICAL CENTER

A new hand-held robotic-assisted surgical system at Jupiter Medical Center is revolutionizing knee replacement surgery, enabling doctors to personalize the fit of every knee based on each patient's unique anatomy, bone structure, movement patterns and joint tension amidst surrounding muscles and tissues.

Andrew Noble, MD, board-certified, fellowship-trained hip and knee replacement surgeon with Palm Beach Orthopaedic Institute, describes the new Smith & Nephew CORI Surgical System™ as a 3-D modeling system that creates a unique, real-time image of each patient's knee, enabling surgeons to shape a new joint and align bones and tissues accurately without the need for a pre-surgical MRI or CT scan.

CORI leverages a portable, hand-held surgical device that allows for precise control, specificity and agility during a knee replacement procedure. It joins Stryker Mako SmartRobotics™ and DePuy Velys™ Robotic-Assisted Solution systems already in use in Jupiter's surgical arena for orthopedic and joint replacement surgeries.

"As a surgeon, it's great to have the ability to do surgeries at a hospital where we have three different robotic systems for knee replacements," says Dr. Noble. "We have the capability to decide which robot is best in each surgeon's hands, based on their training and their preferences. That speaks volumes about Jupiter's position at the forefront of investing in technology."

Real-time planning, execution in the OR

He highlights key system features and benefits that fuel his increasing use of the CORI system, including:

- Real-time planning in the operating suite for personalized surgery, so that each artificial knee bone cut and joint fit is unique to each patient's anatomy
- Bone-shaping features so that the components of the new artificial knee are individually measured, shaped and crafted based on a built-in library of knee structures plus each patient's unique anatomy, height, weight, size and range of motion
- Smart mapping that creates 3-D models of the joint during surgery, including the use of "digital tensioners" that measure tissue movement and flexibility of the knee throughout the entire range of motion rather than at a limited number of data points
- Handheld milling tools that comfortably support more precise, adjustable surgical bone cuts in real time

"It's almost like being a fine cabinet maker or craftsman," says Dr. Noble, who notes that robotic orthopedic surgery was not available during his medical training. "As we've increased our skills with knee replacements, we understand it's not just about cutting the ends of the bone and installing these new knees. Your ligaments, muscles and tendons play an important role in how your knee moves, bends and stabilizes the leg. This is where the robot fits in – it's creating a personalized plan for each patient's anatomy."

He is impressed by the CORI System's ability to capture and report real-time data and measurements during surgery, enabling the surgeon to make bone cuts, adjust the angles of the artificial joint components, and receive data from six different angles about muscle and tissue tension during movement on the operating room table so that each new knee is optimally positioned for the patient's bone structure, balance, stability and flexibility.

"It's hard to do this manually, but on the computer, we can dial this in and plan for nuances in small increments of movement to match each patient's knee kinematics and replicate what the natural knee does," Dr. Noble says. "We can then use all of this data to design how we're going to replace the knee with a new joint that replicates how each patient's knee normally moves."

Benefits for surgeons and patients

The ease of use for orthopedic surgeons also results in benefits for patients, too. "Ideally, patients can expect to have a less painful and quicker recovery," he explains. "Instead of applying a one-size-fits-all approach to knee replacement, we're designing and implementing a personalized surgical plan that's based on each patient's unique anatomy, bone structure, and ligament and tension balancing," he points out.

Before the introduction of robotic-assisted orthopedic surgery, knee replacement specialists would cut the patient's bones above and below the deteriorated knee at pre-specified angles, and then either manually release or tighten the surrounding ligaments and tissues to make the new artificial joint fit.

"I've been doing knee replacements now for 17 years, and I've witnessed the ongoing technology revolution in robotic-assisted orthopedic surgery," notes Dr. Noble. "We've blended the technology now to replicate what a replacement knee is supposed to do for the patient. It's still artificial, but it gives the patient a sense of a normal knee for movement, flexibility and stability."

For information about orthopedic knee surgery options, call The Anderson Family Orthopedic and Spine Center of Excellence at Jupiter Medical Center, contact the Orthopedic Navigator at 561-263-3633.