

NEW FRONTIERS IN ORTHOPAEDIC SURGERY

At **Summit Sports Medicine & Orthopaedic Surgery**, two robotic technologies are revolutionizing joint replacement surgery.

Robotic joint replacement surgery may sound futuristic, but it's an everyday occurrence at Summit Sports Medicine & Orthopaedic Surgery. Its experienced orthopaedic surgeons repair and reconstruct fractures and broken bones, torn ligaments, faulty joints, and other ailments at Southeast Georgia Health System's Brunswick and Camden campuses, utilizing the most advanced technologies available in medicine—including robotics.

Two robotic technologies in particular have proven transformational in joint replacement surgery: the ROSA® Knee System, available at the Health System's Camden Campus, and the Mako® Robotic-Arm Assisted Surgery for knee and hip replacements, available at the Health System's Brunswick Campus. These technologies are not robots per se—they don't perform surgery—but they are assistant systems that help orthopaedic surgeons plan and implement complicated operations with astounding precision, resulting in knee and hip replacements that feel and function like natural joints.

"Both hospitals offer state-of-the-art technology for joint replacement," says Denny A. Carter, M.D., an orthopaedic surgeon and expert in Mako robotic surgery. Michael "Christopher" Yonz, M.D., an orthopaedic surgeon and ROSA knee replacement



Brunswick Campus orthopaedic surgeons Denny A. Carter, M.D., (left) and Beau Sasser, M.D., pictured with the Mako® Robotic-Arm Assisted Surgery.



surgery specialist, adds, "We use technology that a decade ago you'd only see in major metropolitan areas. Southeast Georgia Health System is proof that you don't need to drive to a big urban area to get great orthopaedic care."

A Hip that Fits

Like any piece of machinery, the body suffers wear and tear. Over time, osteoarthritis, pain, and stiffness set in. Joints fail to function properly,

compromising a person's ability to walk and maintain balance, leaving him or her vulnerable to a bad fall. If noninvasive treatments have proven ineffective, it could be time to consider hip replacement surgery.

"The goal of any joint replacement surgery is to replicate a normal joint as closely as possible," says Dr. Carter, who performs Mako robotic surgeries in the Brunswick Campus's new state-of-the-art operating suite. "Mako helps us achieve this through advanced imaging, which yields a perfect picture of the joint we're trying to replace."

The process starts preoperatively with a CT scan of the joint to be replaced. During



Camden Campus orthopaedic surgeons Christopher Yonz, M.D. (left), and J. Melvin Deese, Jr., M.D., pictured with the ROSA® Knee System.

the procedure, Mako's surgeon-operated probe maps out the surface of the joint and compares it to the CT image to confirm a perfect match. This informs the surgeon exactly where and how much of the bone to cut in order to fit the exact dimensions of the implant. In the operating room, the surgeon guides the Mako robotic arm as it moves along the mapped-out route, shaping bone in predetermined areas. "The preoperative process tells me what size implant I will use," Dr. Carter says. "During surgery, I remove the exact amount of bone that will make that implant fit perfectly."

Not only does Mako allow greater surgical precision than traditional methods, but it's also likely to speed up the entire operation—a huge benefit when dealing with bone and tissue. "The goal with this kind of operation is to do it as precisely and

rapidly as you can to lower the chance of infection," Dr. Carter says. "Mako helps me plan the surgery before I'm even in the operating room. I just have to execute that plan." The result is a new hip joint so similar to the original that its positioning and relationship to the surrounding ligaments feels natural. Once on the move, patients experience improved mobility, pain relief, and, after rehabilitation, a rapid achievement of their physical goals.

Perfectly New Knees

At Summit Sports Medicine & Orthopaedic Surgery in St. Marys, a new kind of knee replacement surgery is helping patients of all ages and physical capabilities regain mobility. The first of its kind in Camden County, the ROSA (RObotic Surgical Assistant) Knee System works in a similar fashion to the

Mako system by helping surgeons plot and perform surgeries with stunning accuracy.

"Precision is key in knee replacements," says Dr. Yonz. "The knee itself is comprised of the bones as well as the spaces between the bones. As a surgeon, I'm trying to achieve a good alignment that keeps the knee well balanced. A knee that's out of balance in any of its planes can affect range of motion and stability and can cause persistent pain."

ROSA solves this problem by creating an X-ray or MRI-informed map of the knee that includes bony landmarks and gaps. This allows surgeons to play with the sizing and rotation preoperatively without having to make soft tissue cuts in the operating room. "ROSA gives me a preliminary idea of balance throughout the knee—side to side and front to back—in millimeters," Dr. Yonz says. "This allows me to prepare how I want to align the knee." During surgery, ROSA utilizes a camera and optical trackers attached to the patient's leg to know exactly where their knee is in space. If their leg moves even a fraction of an inch, the robot can tell and adjust accordingly. This results in straighter, more naturally set and long-lasting knees with a greater range of motion—an ideal postoperative outcome.

High-tech treatments like the ROSA Knee System and Mako Robotic-Arm Assisted Technology are a huge draw for orthopaedic patients in the region, as is the quality of personalized care found at both Southeast Georgia Health System campuses. "I treat my patients like my neighbors because, in many cases, they are," says Dr. Yonz. "When I'm out for a jog, I might pass six or seven people I've done surgery on. It's my duty to give them the best orthopaedic treatment within this close-knit community setting."



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