Meridian Park adds robotic-assisted knee resurfacing

Precision surgical procedure preserves healthy tissue and normal feel not possible with total-knee replacement surgery

By Cliff Collins
For The Scribe

Portland-area doctors now can offer patients a precise means of **knee resurfacing** that preserves healthy tissue and a normal feel not possible with total-knee replacement.

The technological advance that allows this is medicine's **first robotic-arm system for orthopedic surgery.** Called the MAKO Surgical Corp.'s RIO Robotic Arm Interactive Orthopedic System, it is a procedure known as **MAKOplasty,** available at **Legacy Meridian Park Medical Center**.

Before now, surgeons haven't had the technology to do partial knee resurfacing in a precise way, said **James C. Ballard, MD**, one of four orthopedists on the Meridian Park medical staff using the technology.

He explained that the knee contains three compartments: the lateral, medial and patellofemoral. "Those three areas commonly are affected differently," he said. "It's common for only the inside to wear out."

Partial knee replacement is not new, but until MAKOplasty became available, the procedure was not exacting enough: Replacement components were difficult to place in optimal positions. That is where the MAKO RIO excels, he said. "It allows the implants to be customized to the patient's anatomy. You plan the surgery before you get in the operating room."

The system features a robotic arm and a three-dimensional, visualization system. This system gives the surgeon a pre-surgical plan that details the technique for bone preparation and customized implant positioning using a CT scan of the patient's knee. During the procedure, the system creates a 3-D, live-action, virtual view of the patient's bone surface and correlates the image to the pre-programmed surgical plan. The robotic arm then limits the surgeon to just the diseased areas.

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> JAMES C. BALLARD, MD

"It fine-tunes the placement of the pieces," Dr. Ballard said. "The computer will show you how pieces will marry each other. The robotic arm carves out what you planned. It lets you plan this entire thing before you even touch the person, which is completely unheard of."

About 85 percent of Dr. Ballard's surgical work is in joint replacements, and he emphasized that MAKOplasty "is an excellent alternative, but total knee replacement is ridiculously successful. (MAKO) just offers a quicker recovery and a more natural feel." That's because total knee replacement removes the ligaments that drive the knee, and as a result, the knee never returns to completely normal feel or function.

MAKOplasty patients may experience a shorter hospital stay, quicker recovery and a smaller incision as compared to total knee replacement, in addition to minimal blood loss, faster rehabilitation and a smaller scar. Many patients return to normal activity within weeks of the procedure, compared to a total knee replacement, which can take several months of rehabilitation.

When MAKO RIO first came out, Dr. Ballard said he was skeptical about it, thinking it was "a marketing thing." His attitude changed dramatically when he went to California to observe surgeons using it there.

He had been using computer-assisted surgery for four or five years before that, so "interacting with a computer was normal for me. MAKO combined robotics and computer-assisted surgery. When I saw it (being used), it was a combination of everything I like."

The technology is too new to have produced long-term studies to weigh results, but Dr. Ballard noted that we have "lots of long-term studies on partial replacements," which showed that "results have been good for skilled practitioners who did them all the time. The designs are very similar, and the plastic is identical."

Careful patient selection is crucial to good outcomes, he stressed. The preferred patient has only the outside part of the knee worn out, or just the kneecap worn out. In addition the candidate's quality of life must be severely hampered. "It's definitely not something that should be done if (the patient is) functioning well."

Meridian Park began offering the procedure in December and has performed more than 19 cases to date. The hospital's knee replacement surgery volume will be approximately 400 cases at the end of its fiscal year March 31, according to spokeswoman Lisa Wood.

Besides Dr. Ballard, orthopedic surgeons who will perform the procedure at Meridian Park include **Scott R. Grewe, MD; Kevin J. Murphy, MD; and Christopher J. Nanson, MD,** who practices in Salem.

The RIO costs about $1 million. Meridian Park is the first hospital in Oregon to obtain the technology, and will remain so until November. The hospital signed an exclusive arrangement with the manufacturer to be the only facility to provide the procedure in Multnomah, Washington, Clackamas, Marion and Polk counties through the end of 2011, Wood said. Such arrangements allow a hospital that makes the investment in the technology time to build its market for the procedure, Wood said.

Legacy's Salmon Creek Medical Center was the first hospital in the Pacific Northwest to offer MAKO RIO, beginning in December 2009. To date, 141 MAKOplasty surgeries have been performed at Salmon Creek. **Todd A. Borus, MD**, who practices with **Rebound Orthopedics**, has done the vast majority of those, with 123 MAKO surgeries, according to Wood.

For referrals: Meridian Park Total Joint Center Referral Line, tel. 503-692-2411, or see www.legacyhealth.org/mako

For more information about the technology, see www.makosurgical.com

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