

# Advances in knee replacement

## Variety of implants and procedures improve outcomes

A judo enthusiast since the age of 12, James Bregman was a proud member of the first American team to compete in judo at the 1964 Summer Olympics in Tokyo.

THE ARLINGTON NATIVE made history at the games by winning a bronze medal. One year later, Bregman “destroyed” his right knee training for the world championships and, despite surgery, the joint never functioned properly again. Although he continued to be deeply involved in judo — conducting seminars around the country, coaching children and adults, taking teams to international competitions, and serving as president of the U.S. Judo Association Board of Directors — he was unable to return to the mat.

### Surgery restores mobility

After years of debilitating pain, Bregman consulted David Romness, MD, at Commonwealth Orthopaedics about knee replacement surgery. He received a mobile-bearing implant last year, at age the age of 65. The results have been dramatic. “My knee has been wonderful ever since the surgery,” Bregman says. “Not only has the pain virtually disappeared, but I have the full range of motion I need to get back on the judo mat and teach. I’m also playing a lot of tennis now and bike riding.”

Bregman says he owes it all to Dr. Romness and the Commonwealth team. “They are a very professional, highly competent practice



and did an outstanding job. I knew just what to expect before, during, and after surgery. I also knew the specific things I needed to do to rehabilitate myself and come back to full functionality. Everything happened just as they said it would.”

Knee problems such as Bregman’s are the most common reason patients visit orthopaedic surgeons. As the largest joint in the body, the knee is complex and particularly susceptible to osteoarthritis, fractures, and wear and tear injury. Commonwealth Orthopaedics is at the forefront, offering all of the latest treatments, procedures, and

products. One size does not fit all, however, and what is right for one patient may not be appropriate for another. For this reason, Commonwealth Orthopaedics’ total joint replacement surgeons carefully assess each patient to determine the best course of action.

For Carolyn Abshire of Alexandria, the answer was bilateral knee replacements. Suffering from debilitating and worsening osteoarthritis, this active grandmother opted to have both of her knees replaced at the same time. “I tried medicine and cortisone shots, and even had arthroscopies on each knee, but nothing much helped,” she says. “I was tired of the pain that limited my involvement with my family. And I liked the idea of having both knees replaced in a single operation.”

Abshire underwent simultaneous bilateral total knee replacement followed by several weeks of in-home rehabilitation therapy. She is now pain-free. “I can kneel, I can walk, I’m more agile than ever before,” she says. “My experience as a Commonwealth Orthopaedics patient has been a very happy one.”

### Gender-specific implants

Advances in knee replacement are focusing more frequently on customization and the recent introduction of the Gender Specific Knee (GSK) — an implant designed specifically for women — is a prime example. According to the GSK’s manufacturer, the implant offers three distinct differences: a thinner profile so it feels less bulky than a traditional replacement; more natural knee movement; and a more precise fit contoured to the unique size and

## Double knee surgeries are right for some

For patients such as Carolyn Abshire who suffer from severe arthritis pain in both knees, a simultaneous bilateral knee replacement could be the answer.

“For younger patients who are healthy, replacing both knees at the same time – in the same operative setting – has advantages,” says Thomas Martinelli, MD. “The most obvious is, of course, one surgery versus two, with patients needing just a single treatment of anticoagulation drugs such as Coumadin or Lovenox. There’s also the potential for quicker recovery, with less time in outpatient and home rehabilitation. Studies have found no difference in satisfaction rates, range of motion or late complications among patients who opt for bilateral replacements.”

Motivation is also a key factor, according to Ben Kittredge, MD. “For the right person, who is properly motivated, electing to do both knees at the same time is a good idea,” he explains. “So much depends on an individual’s attitude and outlook. The ideal candidate has very strong personal reasons for doing this, and wants to return to work and activity as soon as possible.” Dr. Kittredge cites the example of a golf-loving patient who opted to have both knees replaced in the winter, so he could be back on the links in the spring.

Although bilateral replacement candidates are typically younger, overall mental and physical health are more important than calendar age. “Just about any patient who has significant, painful arthritis in both knees and has tried all nonoperative measures such as medications, injections, and rehabilitation can be a candidate for bilateral knee replacement,” Dr. Martinelli says. “At Commonwealth Orthopaedics, we’ve done successful simultaneous replacements in patients ranging from 45 to the upper 80s.”

Dr. Martinelli adds that the best candidates have not lost the ability to walk due to deformity and

shape of women’s knees, preventing potential damage to surrounding ligaments and tendons.

The average woman’s femur, or thigh bone, is narrower at the end and attaches to the



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– Carolyn Abshire

are not significantly overweight. Preoperative activity levels are also considered, especially if patients must negotiate stairs or other obstacles during their home recovery.

The majority of Commonwealth Orthopaedics’ bilateral surgeries are knee replacements, with

simultaneous hip replacements performed far less often due in part to the need to reposition patients in mid-surgery. Small joint replacements are frequently done in multiple fingers on the same hand, but bilateral hand, elbow, shoulder, and wrist replacements are exceedingly rare.

tibia, or shinbone, at a slightly different angle than a man’s because women have wider hips. Commonwealth’s total joint replacement surgeons believe standard implants accommodate these differences perfectly well.

“Knee implants already come in all shapes and sizes and we pick the implant that best fits the individual patient, male or female,” says Dean Bennett, MD. “Although the GSK is designed to be more anatomically consistent with the female anatomy, >>

## Knee Replacement

there is no evidence that it produces better results than a properly sized, standard knee implant.”

“Women are asking for this implant and we do offer it,” says Dr. Romness. “Our job as surgeons is to discuss the pros and cons with patients before making any decision. We believe that as long as we have the right sized component and the procedure is done correctly, there is no difference in terms of outcome or long-term success. Multiple studies have shown no difference in outcome using GSKs.”

Mark Hartley, MD, agrees that there is no study to date that proves better results with a GSK. However, he believes there is a plus side to products like the GSK, which have caused patients and doctors to recognize anatomic differences in all patients. “Doctors and manufacturers are focusing on the anatomic differences that can lead to potential problems in implant sizing that will lead to a greater variety of implants and more customization of the surgery for an individual patient,” he says. “Ultimately, I believe this will make us look at customization for hip and shoulder implants in the future, as well.”

### Unicompartmental knee surgery

Although not new, partial knee replacement, or unicompartmental knee arthroplasty, is another option gaining popularity thanks to advances in surgical techniques and materials. Instead of removing all cartilage from the knee joint and inserting a metal and plastic implant, surgeons remove only the most damaged tissue and resurface the affected area, preserving the remainder of an otherwise healthy knee. Patients are typically younger, with severe arthritis confined to a single knee compartment, and who have tried all other conservative treatments, including medications, injections, strengthening exercises, rehabilitation, and weight loss.

Because it is minimally invasive surgery, partial knee replacement is far less traumatic than total knee replacement. Advantages include a smaller incision, less pain and bleeding, shorter hospitalization, and faster rehabilitation and recovery.

“This is a worthwhile option for the right patient – someone who has arthritis in just part of the knee, for example, and hasn’t had success with nonsurgical treatments,” Dr. Bennett says. “It allows us to take the bad and leave the good, removing far less bone and preserving more natural motion.”

The procedure can also buy time for younger patients who may ultimately need total knee replacements later. “For those with localized knee pain, we may consider a partial knee replacement as a less invasive option that may or may not be a bridge procedure before a full replacement is necessary,” Dr. Hartley says. “Many patients want a less invasive partial knee replacement if possible, but in my practice, only a small percentage of patients are candidates for this procedure. Patient selection is critical.”

### Mobile-bearing implant

The advancement that helped James Bregman is the rotating, or mobile-bearing, knee implant, which swings back and forth like a hinge and rotates in and out in a twisting motion, more closely replicating natural mechanics of the knee. The hope is that by acting more like a normal knee, the rotating replacement puts less stress on the implant and may last longer. This potentially benefits younger, active patients, at risk for wearing out a standard replacement during their lifetimes.

Dr. Romness, who performed Bregman’s surgery, agrees. “With the rotating technology, the plastic moves with the knee as part of a controlled smooth surface, resulting in less wear and debris from the polyethylene,” he says. “I think this is a good option for younger, active patients under 65, with excellent potential for long-term benefit. However, the life of any implant ultimately depends on a variety of factors, including the patient’s age, weight, and activity level.”

Commonwealth’s surgeons stress the importance of carefully screening all patients who are considering a rotating platform or partial knee replacement. “But if the patient is a good candidate, this will result in a major improvement in quality of life,” Dr. Bennett says. [co](#)



**Dean R. Bennett, MD**, earned his medical degree at the University of Pittsburgh. He interned in General Surgery at Mercy Hospital in Pittsburgh and did his residency in Orthopaedic Surgery at the U. of Pittsburgh and the University of Glasgow. Dr. Bennett is board certified in Orthopaedic Surgery and a Fellow of the American Academy of Orthopaedic Surgeons.



**Mark C. Hartley, MD**, earned his medical degree from Georgetown University School of Medicine. He completed surgical internship and orthopaedic residency at Georgetown University Medical Center. Dr. Hartley was Chief of the Total Joint Replacement Service at Eisenhower Army Medical Center in Augusta, Georgia, and was a Major and Orthopaedic Surgeon with the 350th Evacuation Hospital in Saudi Arabia during Operation Desert Storm.



**Ben W. Kittredge IV, MD**, earned his medical degree and completed his residency in orthopaedic surgery at the University of Virginia. He performed his internship in general surgery at the Roanoke Memorial Hospital and completed fellowship training in sports medicine at Jefferson College and Pennsylvania Hospital. Dr. Kittredge is board certified in orthopaedic surgery and a Fellow of the American Academy of Orthopaedic Surgeons.



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