

New Hope for Chronic Ankle Pain

Two years ago, at age 59, Fred Kolar was fed up with the continuous arthritic pain in his ankle. Determined to learn all he could about reducing or eliminating his pain once and for all, Mr. Kolar met with orthopedic surgeon **Stanley C. Graves, M.D.**, at the Institute for Bone and Joint Disorders in Phoenix.

With over 10 years as an orthopedic surgeon specializing in problems of the foot and ankle, Dr. Graves has certainly been privy to innumerable sufferers of ankle pain. According to Dr. Graves, who performs many of his surgeries at St. Luke's Medical Center, the majority of the painful ankles that he treats are the result of osteoarthritis. This form of arthritis, commonly known as degenerative arthritis, involves the breakdown of the cartilage tissue. Facilitating ease of joint movement by providing a smooth, frictionless surface between the bones, the breakdown of cartilage tissue leads directly to bones rubbing against one another, which over time can result in acute pain.

Today, the options for chronic ankle pain are improving. One such option available to Dr. Graves' patients is the Agility Total Ankle—developed by the biomedical engineers at DePuy Orthopaedics in Warsaw, Indiana. Dr. Graves is one of a select cadre of orthopedic surgeons in the United States competent in using the Agility Total Ankle.

After taking the time to carefully assess all his options for relieving the pain, Mr. Kolar made the decision to go with a total ankle replacement using the Agility Total Ankle prosthesis. According to Dr. Graves, "This particular procedure's success is contingent upon precisely balancing the ligaments on the inside and outside of the ankle so the replacement doesn't tilt or rock open when one puts weight on it."

During Mr. Kolar's surgery, Dr. Graves removed and replaced both sides of his ankle joint with two highly-machined components made out of a cobalt chromium alloy. One component simply fits snugly into the leg bone and the other into the ankle bone with fluid joint movement provided by a molded polyethylene plate residing between the two metal components. In addition, cobalt chromium alloy is a porous metal that allows the body's bone to grow directly into the artificial material, explains Dr. Graves.

The prosthetic ankle offers an alternative to people with painful arthritis who have lived with the pain or are confronting surgery to fuse specific bones in the ankle together. Fusion often relieves



Orthopedic specialists Stanley Graves, Richard Zipnick and Theodore Firestone.

the pain, but leaves the foot solidly set in one position, which may affect gait. Over time, the stress on the fused surgery can potentially increase the chance of surrounding foot joints becoming arthritic, Dr. Graves adds. The artificial ankle, on the other hand, provides

greater movement and flexibility with a more natural gait. "While we don't have significant long-term follow-up yet, preliminary data looks promising for significant relief of pain and improvement of function," notes Dr. Graves.

Two years after surgery, 61 year-old

Fred Kolar's artificial ankle has impressively withstood athletic rigors. Since surgery last year to ease excruciating arthritis pain, Mr. Kolar has painlessly scaled 2,200-foot Mt. Eldon in northern Arizona five times, backpacked in Alaska, and is still going strong.

Advancements in Hip and Knee Replacement Surgery

"Refinements in techniques and materials have improved not only the quality of hip and knee replacements but their longevity as well", says **Theodore P. Firestone, M.D.**, a joint replacement specialist in Phoenix, Arizona. "Implant companies working with engineers and orthopedic surgeons have developed better bearing surfaces which are more resistant to wear. Highly cross-linked polyethylene and ceramics have shown great promise in the lab and in early reports of hip replacement. Obviously, only time will tell if our expectations that our patients will get 25 or more years of use from the current implants are correct."

Since the 1970's, the number of patients undergoing joint replacement surgery each year has increased dramatically. Since 1990, three to four hundred thousand hip and knee replacement surgeries are performed annually nationwide. Concurrently, the need for redo or revision joint replacement surgeries has tripled. Dr. Firestone is one of those surgeons across the country who specializes in revision joint replacement surgery. "Since leaving Johns Hopkins in 1990 to join Dr. Anthony Hedley at the Institute for Bone and Joint Disorders," Dr. Firestone states, "I have seen a significant increase in the number of patients who present with hip and knee replacements which have become problematic. Cement breakdown and polyethylene wear are two of the more common reasons why revision surgery represents more than a third of my practice."

Last year at St. Luke's Medical Center in Phoenix, Arizona, Drs. Hedley and Firestone performed over 700 joint replacement procedures including nearly 200 revision surgeries. "Revision joint replacement is a specialty in itself. These patients have often undergone more than two or three surgeries which makes dealing with scar tissue and bone loss a real challenge," says Dr. Firestone. "Revision surgery is labor intensive. Grafting is often required to make up for lost bone." He continues, "With as many problems as we see, experience does help. In most cases we have been able to return these patients to normal lifestyles while fortunately minimizing the complication rate".

One of these patients is 61-year-old David Rudolph of Scottsdale, a single digit handicap golfer who plays six times a week. "My knee was so uncomfortable, I used to be like a three-year old in church," he says "where I couldn't sit still for three seconds." Incapacitated by the arthritic knee and two failing hip replacements, David found Dr. Firestone, who within a five month period performed a knee replacement and revised both hip replacements. Six



Hip and knee specialist Theodore Firestone during a recent knee surgery procedure.

months later, David was crowned club champion at the Pinnacle Peak Country club. Adds Rudolph, "There isn't anyone I wouldn't tell to have this done. You'll know when you're ready by the quality of life and discomfort". He advises: "Don't let the fear of surgery stop you."

An avid golfer himself, Dr. Firestone has had the unique opportunity to see the results of his labor on the golf course. "I've played golf with several patients that I've had the pleasure of taking care of, and after playing with David I knew I shouldn't quit my day job, he's pretty good."

The Future of Spine Surgery Today

"Bone substitutes made from genetically manufactured materials are revolutionizing spinal surgery," says **Richard I. Zipnick, M.D.**, a spinal reconstructive surgeon in Phoenix. In fusion, two vertebrae are stabilized and joined together with bone grafts. For the past year, Dr. Zipnick has been using artificial bone-graft materials made of cadaveric bone proteins and collagen.

"This is the wave of the future," he notes. "We take a piece of cadaveric

bone treated with an acid wash, which exposes the growth factors by removing some calcium and minerals. This exposes the bone's protein, which is essential to bone healing."

A key advantage: "We don't have to take as much bone from the patient which eliminates the pain and time needed for another incision. This means a lower infection rate. Because the surgery is faster, there is less blood loss and fewer complications. A spinal fusion can now be performed in one to two hours." Adds Dr. Zipnick, "Materials are aseptically processed and sterilized, lowering the chance of rejection. There is no need for rejection medications."

Still another advantage of bone-substitute materials is an infinite supply of materials. Patients have a very limited supply of their own bone, especially if they have osteoporosis.

Bone substitutes are chiefly used during spinal fusion, a common surgery Dr. Zipnick performs at St. Luke's to relieve chronic back and neck pain. Fusion involves joining together two vertebrae, and may also involve removal of the lamina if leg pain (sciatica) is present. The lamina is the posterior bony arch of the vertebrae and attached ligaments which can compress the spinal nerves.

"If the vertebral bones are slipping past each other, then we do a fusion to join them together so there is no longer motion to pinch the nerves," explains Dr. Zipnick. "Bone substitutes, along with new titanium and stainless steel implants hold the spine together and allow it to heal," he says.

There are more than 1,000 causes of back pain, from tumors, infections, degenerative changes, trauma, metabolic causes, osteoporosis and arthritis. Back pain is often caused by damage to one or more disks in the lumbar spine. The disks act as shock absorbers between the vertebrae, explains Dr. Zipnick. Injury, aging or disease can wear down disks and cause bone spurs to form. Weak muscles can also lead to worn disks by allowing the three natural curves of the spine to get out of line. Disks that bulge, tear or rupture can put direct pressure on nerves in the spine. Bony outgrowths (bone spurs) can also form and cause the passageways for the nerves to narrow (stenosis) and irritate the nerves.

For more information or referrals: (602) 553-3113. ■

Stanley C. Graves, M.D.
Theodore P. Firestone, M.D., F.A.C.S.
Richard I. Zipnick, M.D.
Institute for Bone & Joint Disorders
2222 East Highland Avenue, #400
Phoenix, AZ 85016
(602) 553-3113