

UC San Diego Medical Center Offers Nation's Only Minimally Invasive Option for Biological Ankle Replacement

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Patients suffering from severe arthritis now have an option for total ankle replacement that offers increased mobility and pain relief without permanent metal implants. Pioneered by Daniel K. Lee, D.P.M., F.A.C.F.A.S., at UC San Diego Medical Center, this technique is the first in the U.S to offer arthritis sufferers a non-metal, biological ankle replacement.

"Up until now, patients have had two options for replacing their ankle joints: metal implants or fusion of the joints," said Lee, director of foot and ankle surgery at UCSD Medical Center. "Now there is an option that actually restores the ankle with an FDA-approved biologic material that is similar to the collagen found in cartilage."

During a two hour minimally-invasive surgical procedure, Lee, a podiatric foot and ankle surgeon, removes the damaged cartilage around the ankle joint through a four centimeter incision. The collagen material is then molded into the joint where it adapts to the contour of the patient's ankle.

"Unlike a metal device, the advantage to this material is that the implant can be customized in size and contour for every patient's individual need," said Lee. "No matter how the patient's ankle is shaped, the collagen is a perfect fit."

The biologic material, processed from either human or animal collagen sources, has been used for more than 10 years in plastic and abdominal surgery and heart valve replacement. Since it is non-allergenic and sterile in nature, there is no risk of rejection or need for the patient to take immunosuppressors.

To allow the material to integrate fully with the ankle joint, a temporary external device is used to stabilize the joint area while keeping it "distracted" or open for a period of 4-6 weeks. Attached by small pins, the cylinder-shaped device serves as a shock system to keep the joint free from friction and movement until healing is complete. The device is then removed entirely, which keeps the patient's ankle free from any metal parts.

"Within 3 weeks after surgery, we see an incorporation of tissue onto the damaged cartilage," said Lee. "The idea here is to avoid fusion of the ankle and to add longevity to the joint. We want to give patients as much mobility as possible so they can get back to the activities they love the most."

Lee's patient's range in age from 30-85. Robert Adams, 82, a retired professor, received the ankle replacement after repeated attempts at physical therapy.

"My ankle collapsed on me," said Adams. "I didn't like the idea of a fusion with no motion or opening up my ankle for a metal device. Following this surgery, I no longer have sharp or stabbing pains. I am continuing to improve and can get around better."

For years, patients have had the option of total joint replacement in the hips, knees, and ankle with titanium and other metal devices. While the implants are well suited for hips and knees, metal replacements for the ankle

show a high level of failure and unwanted complications such as metal collapse and breakage. Once an ankle is replaced with metal, options for revision surgery are little to none.

According to the Centers for Disease Control, an estimated 46 million U.S. adults, approximately 1 in 5, report doctor-diagnosed arthritis. As the U.S. population ages, these numbers are likely to increase sharply. The number of adults with arthritis is projected to increase to 67 million by 2030, and a good proportion of U.S. adults will have limited activity as a result. Nearly two-thirds of people with arthritis are younger than 65.

This novel technique for ankle replacement and results of a study will be described in late 2008 in the *Journal of Foot & Ankle Surgery*.

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