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**INNOVATIONS DEVELOPED AT CRYSTAL CLINIC ORTHOPAEDIC CENTER
OFFER IMPROVED OUTCOMES IN FOOT AND ANKLE SURGERY**

Pioneering techniques, surgical implants changing patients' lives

Fairlawn, Ohio, Dec. 10, 2019 – As a physician-owned, specialty hospital focused on orthopaedics, as well as plastic and reconstructive surgery, Crystal Clinic Orthopaedic Center is in a unique position to drive new breakthroughs and standards in care through physician-led innovations. The center's foot and ankle team of Gordon Bennett, M.D.; Erin Dean, M.D.; and David Kay, M.D., collaborate in the research, development and use of widely accepted, patented surgical implants and new techniques to improve patient outcomes, while advancing care in foot and ankle surgery.

Many of the implants developed at Crystal Clinic are used in operating rooms worldwide for foot and ankle procedures. These life-changing inventions include implantable screw and plate systems, surgical navigation systems, and braces for patients with a variety of foot and ankle conditions.

"As surgeons, we were dissatisfied with the available internal fixation devices – the metal plates and screws for the bones in the foot and ankle – that did not work well. We have solved this problem," Dr. Kay said.

Improved care for foot deformities

One of the innovations developed by Dr. Bennett and Dr. Kay, in collaboration with other orthopaedic surgeons, is the Mini Maxlock™ Extreme™ Intraosseous Sliding Osteotomy (ISO) Plate, a surgical implant that has been widely used in bunion surgery for the last eight years with excellent results. Marketed to surgeons by Wright Medical Group N.V., whose U.S. headquarters is in Memphis, Tennessee, the implant is used to correct mild to moderate bunions – a bony bump that develops on the inside base of the big toe due to joint misalignment.

"Each year, more than three million people are diagnosed with hallux valgus, commonly known as bunions. Often genetics is to blame, but they can also occur as a result of wearing shoes that are ill-fitting or narrow, or from an injury that weakens the tissue around the joint," said Dr. Dean, who developed a bunion in her youth as a competitive gymnast.

The ISO Plate developed at Crystal Clinic is used in a common procedure to restore normal alignment of the toe joint. In this procedure, the bone of the big toe joint is cut where it protrudes and then realigned into the proper position. The ISO Plate stabilizes the joint and effectively holds it in alignment.

"The ISO Plate allows for guided placement of the implant by creating a template for placing the screws, ensuring a stable, consistent and cost-effective repair with a higher degree of precision," said Dr. Kay.

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Dr. Bennett has published two research studies on the ISO Plate implant in *Foot & Ankle International*, the journal of the American Orthopaedic Foot & Ankle Society. The first study, "Evaluation of an Innovative Fixation System for Chevron Bunionectomy," which was published in 2016, concluded the plate system was reliable, stable and easy to use.

In the second study, "Intraosseous Sliding Plate Fixation Used in Double Osteotomy Bunionectomy," which was published in 2019, Dr. Bennett evaluated the potential benefit of adding another procedure to a single operation to gain additional correction of the big toe. This double procedure is used to correct moderate bunions.

"This study concluded that the ISO Plate remains our implant of choice because of its ease of use, reliable healing, maintenance of the correction and reproducible results," Dr. Bennett said. "By adding another procedure to correct toe alignment, we've also increased patient satisfaction and improved pain relief for more advanced foot deformities."

In October 2019, the next generation of the Mini Maxlock™ Extreme™ Intraosseous Sliding Osteotomy (ISO) Plate was used on Crystal Clinic's first patient. This latest version reduces the size of the surgical incision.

"Our surgery practice allows us to identify new opportunities for improving patients' quality of life and health, while finding ways to make very good surgical outcomes even better," Dr. Kay said.

Pioneering total ankle replacement

The foot and ankle specialists at Crystal Clinic have also been pioneers in total ankle replacement, giving patients like Christina Gregory of Brunswick, Ohio, a new lease on life. Diagnosed with Juvenile Rheumatoid Arthritis as a child, Gregory, age 42, endured pain and limited mobility in her right ankle for eight years, but was reluctant to have ankle fusion surgery.

"At that point, I was told I wasn't a good candidate for total ankle replacement because I was too young and too active," said Gregory, who at the time was still able to work as a registered nurse. "I decided to wait until the technology improved."

As Gregory's condition worsened, her orthopedic surgeon referred her to Crystal Clinic, noting the specialty hospital's expertise and leadership position in total ankle replacement. She was thrilled to find out that total ankle replacement was an option for her.

Gregory's surgeon, Dr. Kay, used a joint replacement that required a minimum amount of cement to attach it to the bone. This will make it possible to more easily replace the implant over Gregory's lifetime. Today she is pain-free and has full range of motion in her ankle. Prior to the surgery, she could barely move her ankle in any direction. The simple act of walking was difficult at best and at times, impossible.

"Dr. Kay has given me my life back," she said. "I'm beyond happy with the result."

Crystal Clinic is nationally renowned for its comprehensive orthopaedic care and setting new standards in surgical procedures. To further support the development of new advancements, the organization is breaking ground on the region's first purpose-built, state-of-the-art orthopaedic hospital. It will feature the most advanced technology and facilities available – expanding upon Crystal Clinic's leadership position and ability to provide specialty care across the range of orthopaedic and plastic/reconstructive medicine procedures.

For more information or to schedule an appointment, visit crystalclinic.com or call 330-668-4040.

About Crystal Clinic Orthopaedic Center

Nationally renowned for orthopaedic care, Crystal Clinic Orthopaedic Center is a physician-owned, orthopaedic specialty hospital system with board-certified and fellowship-trained surgeons who perform more than 15,500 surgeries each year. Crystal Clinic Plastic Surgeons, a division of Crystal Clinic Orthopaedic Center, are experts in treating soft tissue defects related to orthopaedic injuries. They provide the entire spectrum of plastic surgery – from reconstruction to cosmetic procedures. With locations throughout Northeast Ohio, Crystal Clinic Orthopaedic Center is one of only 13 hospitals in the nation, and the only one in Ohio, to earn Joint Commission certifications in total hip, total knee, total shoulder and spinal fusion procedures. The Centers for Medicare and Medicaid Services awarded Crystal Clinic Orthopaedic Center its highest rating for Overall Hospital Quality. In ratings of America's Top-Quality Hospitals, Crystal Clinic Orthopaedic Center is among the Top 15 in the nation for major orthopaedic surgery, and rated #1 in Northeast Ohio for spinal surgery and joint replacement, according to the medical-specific CareChex National Quality Rating Database (Quantros Analytics).