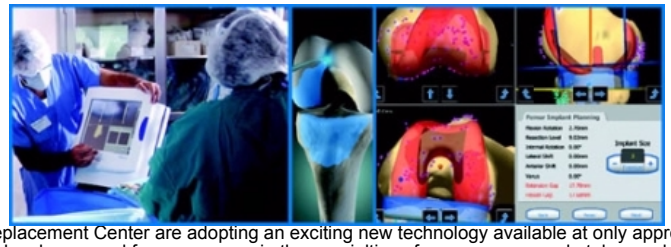
Innovative Orthopedics – Joint Replacement Surgery Goes High Tech at Eisenhower



Surgeons at the Eisenhower Joint Replacement Center are adopting an exciting new technology available at only approximately 20 hospitals in the country. Computer-assisted surgery, an innovation that has been used for many years in the specialties of neurosurgery and otolaryngology, is revolutionizing the field of orthopedics. Until recently, orthopedic surgeons used the “naked eye” in order to perform a joint replacement. Now, with the advent of the computer, the surgeon is assisted in minute adjustments that are imperceptible to humans. “Eisenhower has always taken great pride in being on the cutting edge of the latest surgical technology,” explains Louise White,Vice President, Patient Care Services, and Chief Nursing Officer. “Computer-assisted surgery is one more tool that enhances the care that we are able to provide our orthopedic patients.”

The Eisenhower Joint Replacement Center is the first in the desert to use computerassisted surgery in the field of orthopedics. The end result is an increase in the accuracy and longevity of joint replacements. “The positioning of the implant, especially in the knee, is extremely important because the two most common things that cause failure are wear and loosening,” says Robert Murphy,MD, an Eisenhower orthopedic surgeon, with the Desert Orthopedic Center. “If an implant is put in perfectly in the knee, it has the probability of surviving 20 to 25 years.... But, if it is put in three degrees or more out of ideal position, then the failure rate in the first five years is as high as 20 percent.”

Joint replacement surgery relies heavily on the surgeon’s ability to precisely maneuver and fit the replacement prosthesis to the bone. However, a growing emphasis on “minimally-invasive” or tissue-sparing procedures in the surgical community has resulted in smaller incisions. Although these smaller incisions yield less trauma to the patient, they make it more difficult for the surgeon to maneuver and fit the implant accurately.

Computer-assisted surgical applications, like the DePuy Ci™ System used at Eisenhower, uses technology that is similar to the global Positioning Systems used by the military and in animated Hollywood movies: infrared cameras detect small glow balls, or refractive spheres, attached to surgical instruments… all of which combine to provide a three-dimensional image of the bone. Previously, surgeons relied solely on skill and experience, whereas now, with computer technology, they can achieve surgical accuracy within less than .1 millimeter.

“There’s no question that surgeons who have extensive experience putting in joint replacements can put them in accurately most of the time, but there have been some studies showing that even the very best surgeon who puts those in perfectly, doesn’t put them in perfectly every time,” asserts Dr. Murphy.

Pioneers of the newest technologies, Eisenhower Joint Replacement Center is among an elite group of the first health care providers in the nation to use yet another technological advance in computer-assisted surgery – the new EMAT, or Electro- Magnetic Autonomous Transponder. One of only five centers in North America, Eisenhower surgeons are utilizing microtransistors, smaller than a grain of rice, to evaluate the bone structures and precise positions, both prior to (for surgical planning) and during the surgery.

The new EMAT technology, and other emerging technologies, allow surgeons to visualize a patient’s anatomy in increasingly advanced and less invasive ways, improving accuracy and enhancing patient outcomes. The new Eisenhower Joint Replacement Center will continue to advance the latest technologies and set new standards of excellence in the field of orthopedics.

For more information on the Eisenhower Joint Replacement Center, call 760-773-4545

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