Michael M. Karch, M.D., F.A.A.O.S and the Joint Reconstruction Team at Mammoth Orthopedic Institute are early adopters in the newly released Computer Navigation Techniques for the Direct Anterior Approach Hip Replacement Surgery.

JointPoint^{tm} Computer Navigation System was recently released by the FDA and has been incorporated into the Mammoth Hospital workflow. "It is unbelievable technology " says Karch who is an Associate Professor of Orthopaedic Surgery at the Georgetown University School of Medicine and member of the Carilon Clinic/Vtech Orthopaedic Joint Reconstructive Team. Karch and his group are one of the first 150 Joint reconstructive teams in the country to utilize this new platform. "This navigation tool helps me quickly identify the EXACT position that hip components need to be placed in the operating room". "No longer do we need to use estimates, intuition or guesswork to determine three-dimensional component placement. Taking multiple X-rays to try and match the leg length of one leg to the other and roughly finding the appropriate hip muscle tension are a thing of the past…the computer does it all with one simple X-ray…. And it does it much better than the human brain with an algorithm that produces accuracy to the +/- 0 degrees for component angles and +/- 0 mm for leg length" say Karch who has been doing Direct Anterior Approach hip replacements at Mammoth Hospital since 2005 and joint replacements in Mammoth since 2003. Karch was an early adopter of the Direct Anterior Approach Hip Replacement, as well, which has now proven itself superior to other described hip approaches. "Now, If I want to put the hip component in the ideal position of 40 degrees relative to the floor and 20 degrees facing forward, I get 40^0 and 20^0 every time. There is no guesswork. I walk out of the operating room knowing that we have done the absolute best for every patient, every time. This is all about confidence for myself and for my patients."

In an age where patient outcomes and controlling health care costs are two major themes in North American medicine, why is this data driven decision-making tool important to patients, physicians and the entire health care system, at large?

1. Highly accurate component placement increases the longevity of the joint replacement. This means less surgical failures and less complex revision surgeries later in life and better overall outcomes. This results in less cumulative cost to the medical system over time.

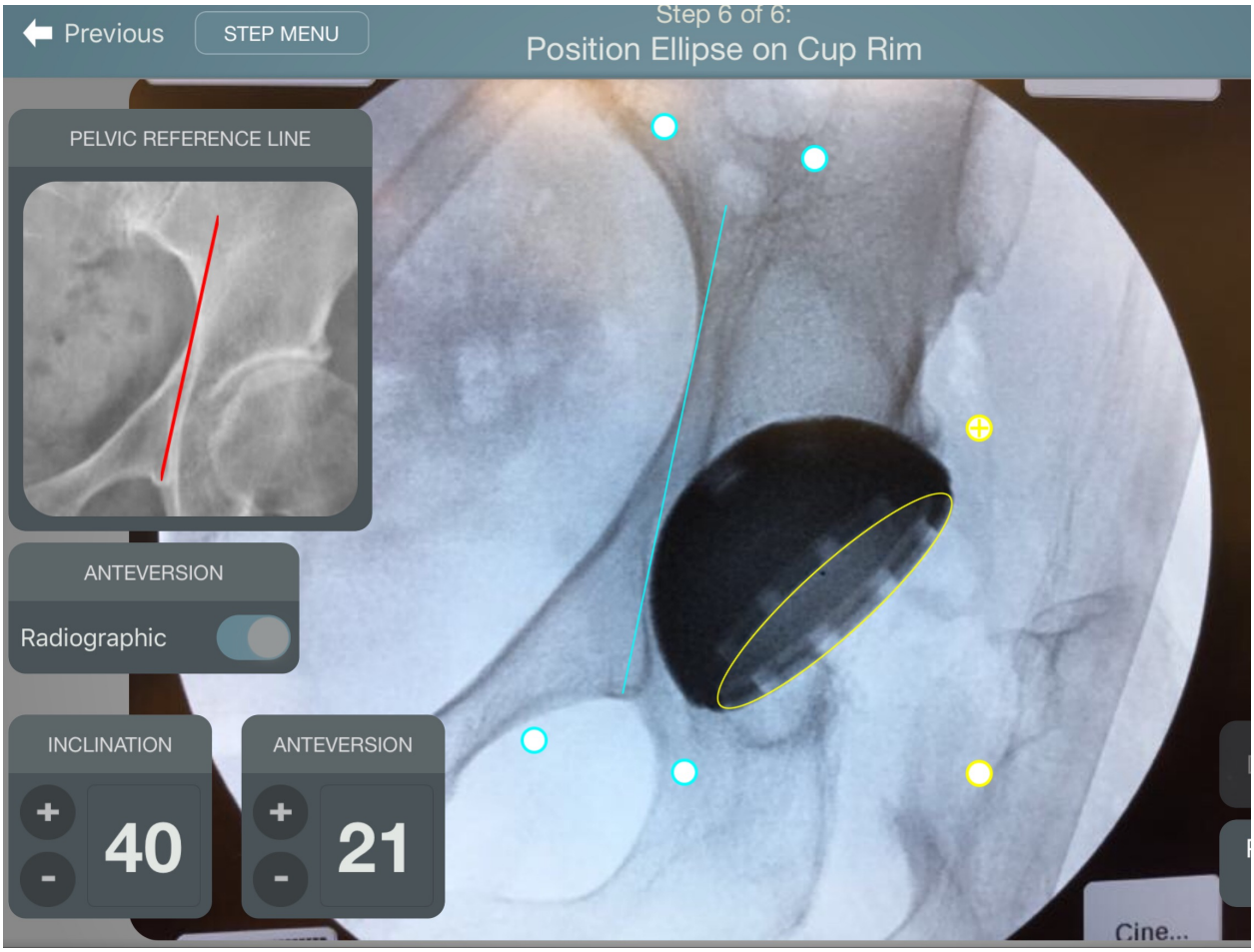

Figure 1: Computer tells the surgeon to change anteversion angle by 1 degree to achieve optimal cup angle of 40^0 and 20^0.

2. Computer navigation has been shown to decrease hip dislocation rates. Hip dislocations are painful, they require an Emergency Room and possibly hospital re-admission. Dislocations are costly and are the most common complications associated with hip replacement surgery. This new technology saves money for the entire health care system and results in less 30 and 90-day readmissions to the hospital, less dislocation-related fractures and less overall revision surgery.

3. Often times hip surgery can result in one leg being longer or shorter than the other. These results are due to variables that are beyond the control of a surgeon using traditional techniques. Computer navigation can produce exact measurements of leg length discrepancy and eliminate this difference between legs to 0 mm. Leg length differences after hip surgery are a major source of patient dissatisfaction causing decreased ability to resume normal work and recreational activities. Leg length differences are a source of chronic low back pain resulting in increased demand for opioid pain medications and possible addiction. These cases contribute to our national opioid addiction crisis. A difference in leg length of just a few millimeters can result in lower patient satisfaction scores. Leg length discrepancies are a major source of medical litigation after hip surgery. This again, adds to the overall cost of the health care delivery system. This new technology virtually eliminates this problem.

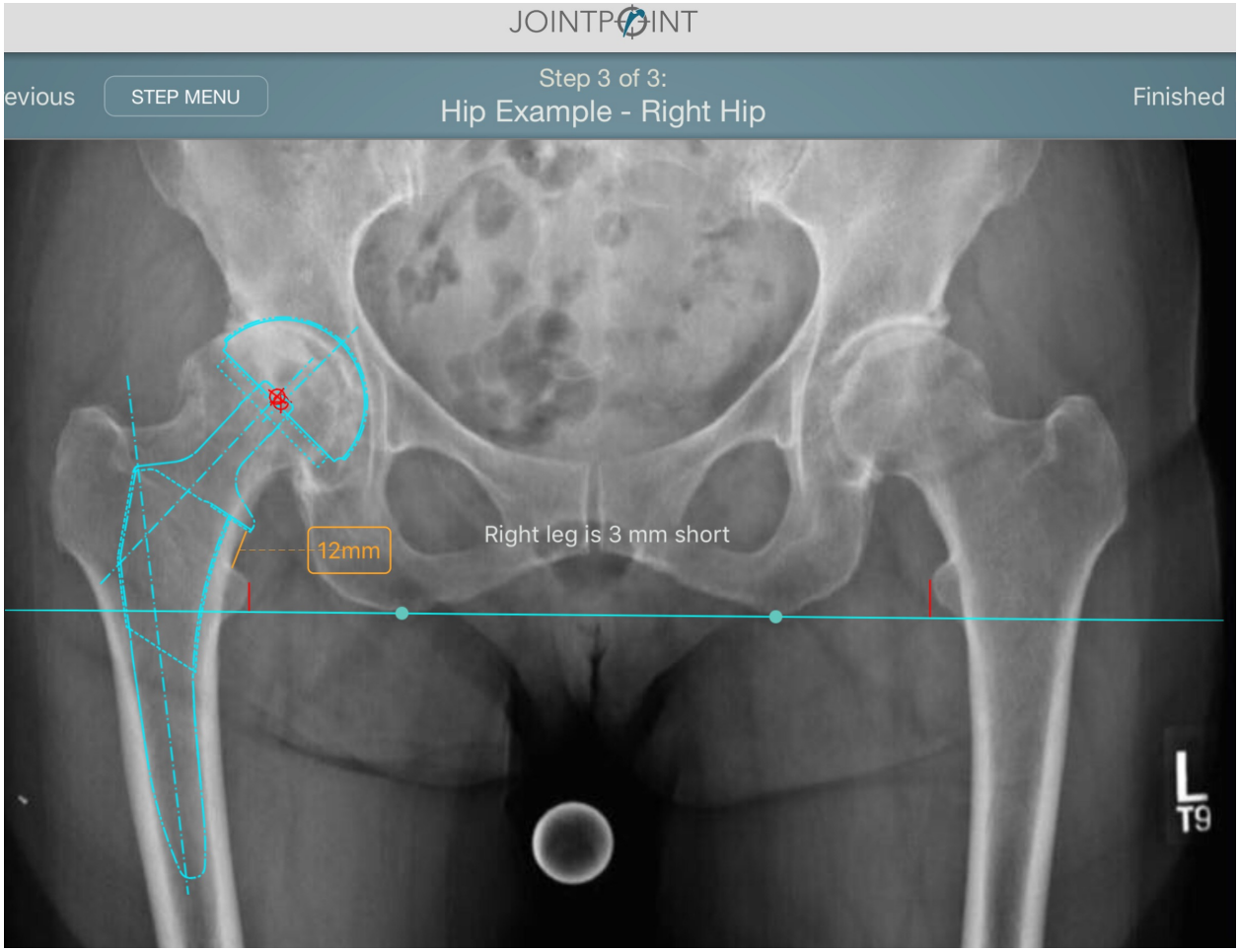

Figure 2: Computer tells surgeon to increase leg length by 3mm to match the length of the other side with an accuracy of +/- 0 mm.

4. Traditional surgical techniques often result in a hip that is too tight or too loose. A hip that is too tight is stiff and painful while a hip that is too loose may dislocate or not be trustworthy. Computer navigation can produce exact measurement of offset (appropriate tension of the of hip muscles). This allows the re-creation of normal hip mechanics, gait, strength and endurance and a higher likelihood that the patient will resume full work and recreational activity after hip surgery. This puts more people back to into the workforce, allows them to contribute at full capacity and improves overall patient satisfaction.

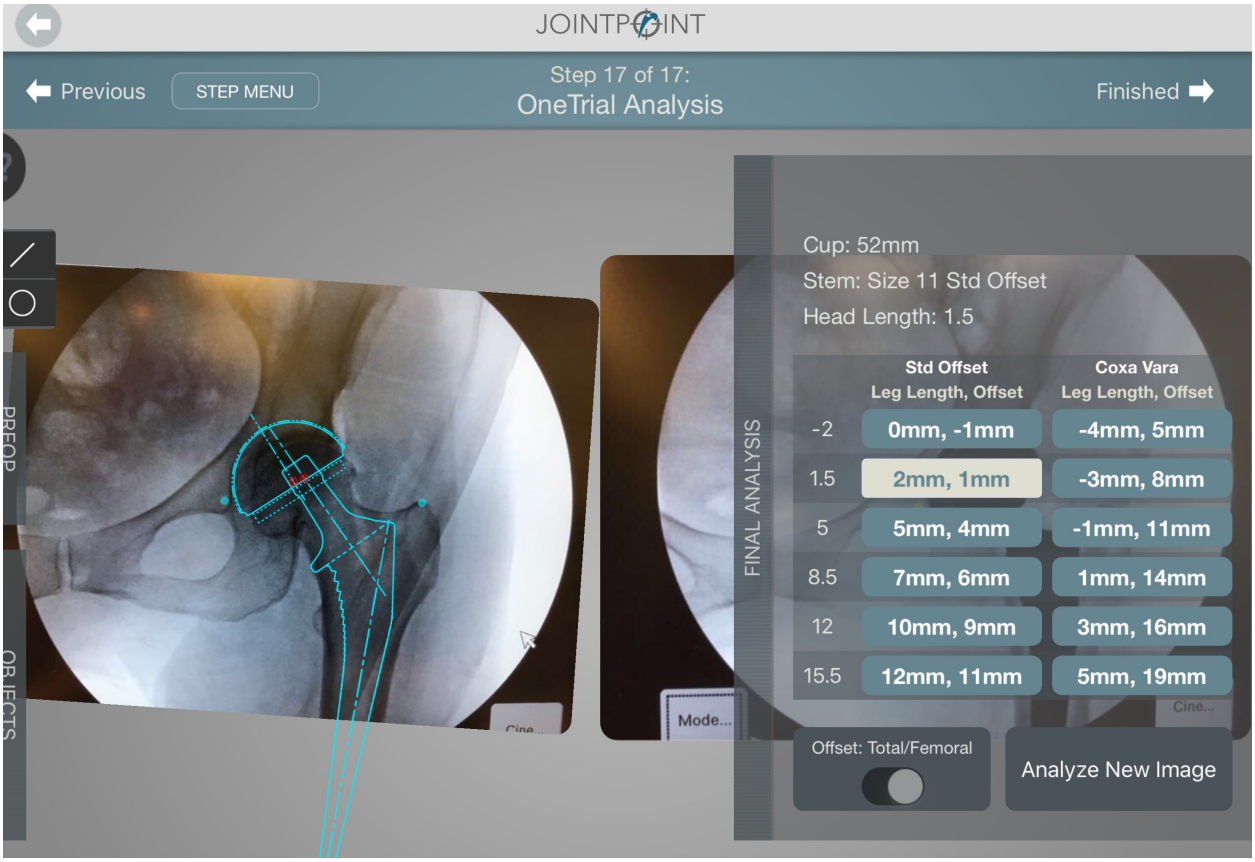

Figure 3: Computer tells surgeon to increase length by 2 mm and offset or hip tension by 1 mm producing better overall hip mechanics, power and gait.

5. Finally, this technology is non-invasive, it fits into the surgeon's existing workflow in the operating room, it decreases overall surgical and anesthetic time and reduces exposure of the patient and the surgical team to dangerous Ionizing radiation while in the operating room.

The Multi-Disciplinary Joint Reconstruction Program at Mammoth Orthopedic Institute, in conjunction with Mammoth Hospital, is committed to providing University-level orthopaedic care at a Critical Access Rural Hospital. This team's success was recently recognized by

Orthopedics Today, a nationally distributed monthly newspaper highlighting innovative orthopaedic surgical ideas. Our team in Mammoth believes in “Cura Personalis”, treating the entire patient and not just the joint, and being on the cutting edge of technology and innovation and working at the forefront of medical literature with regards to Hip and Knee replacement surgery.