OrthoAdvice™

GPS Technology is Improving Shoulder Surgery

By Curtis Noel, MD

Total shoulder replacement is a challenging but very successful surgery. Outcomes are improved by picking a surgeon and a hospital that performs a high volume of total shoulder replacements, but even high volume surgeons can improve their outcomes. Some of the same technology that helps you navigate while driving can help a surgeon improve the placement and outcomes of a total shoulder surgery. Shoulder surgeons at Crystal Clinic Orthopaedic Center are using this technology to improve their patients' shoulder replacement surgery.

At the end of last year, ExactechGPS® released their navigation system that helps a surgeon better understand a patient's anatomy prior to surgery. Essentially, the surgeon can do a "virtual" shoulder replacement on my patient before actually taking them to the operating room.

To begin, the patient obtains a specific CT scan of his or her shoulder. From this, the software program creates a 3-D model of the scapula that allows the surgeon to identify any challenges based on specific anatomy. On the computer, the surgeon can do a virtual surgery, selecting and trialing all implant options before choosing the best one and its best position for the patient. This virtual surgery is saved and loaded into the system on the day of surgery. During the actual surgery, a special monitor and innovative instrumentation provide me live GPS feedback to place the real component in exactly the same position as on my virtual surgery. Other companies have technology to help surgeons plan a total shoulder surgery, but this is currently the only system that provides live feedback during the surgery to ensure accurate placement of the implant.

By improving the positioning of the components during surgery and inserting them into the best possible bone for the patient, we should see improved longevity of the total shoulder replacement. Also, by refining the positioning of the shoulder replacement so that it is better recreates a patient's normal anatomy, we should see enhanced motion and function.

Not every patient considering a total shoulder or a reverse total shoulder needs to use this technology. Patients who may benefit the most from GPS planning are those whose glenoid (the socket) is extremely small or whose bone has been excessively or asymmetrically eroded from severe arthritis or previous fracture. If a patient has severe glenoid wear or a difficult glenoid, traditional total shoulder or reverse total shoulder replacement surgery is much more challenging. You'll want to discuss your specific condition with your surgeon to determine if you're a candidate for the ExactechGPS surgery.

To learn more about this technology or other ways that Crystal Clinic may treat your shoulder pain, call us to schedule an appointment. We have a great team and are one of only a few hospitals nationwide that have been recognized for excellence in total shoulder replacement.

Dr. Noel is a board-certified, fellowship-trained orthopaedic surgeon, specializing in shoulder and elbow surgery and sports medicine. He is a graduate of the University of Nebraska College of Medicine. He completed his residency in Akron and his fellowship at Steadman-Hawkins Clinic of the Carolinas.

Last year, Dr. Noel performed nearly 300 shoulder replacement surgeries. When he's not in the operating room, he often travels around the country, teaching other surgeons how to master shoulder surgery. Dr. Noel has been at the Crystal Clinic since 2006 and is a member of the American Shoulder and Elbow Society as well as other national orthopaedic societies.

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