Study: Shoulder Function Not Fully Restored After Surgery

Shoulder motion after rotator cuff surgery remains significantly different when compared to the patient's opposite shoulder, according to a Henry Ford Hospital study.

In a study that updated prior findings, researchers used X-rays providing a 3D view of motion of the arm bone in relation to the shoulder blade, to compared motion in the shoulders of 22 patients who had arthroscopic surgical repair of tendon tears and no symptoms in their other shoulders. An earlier study looked at 14 patients.

Researchers analyzed the motion of both shoulders at three, 12 and 24 months after surgery, looking at changes in shoulder motion and shoulder strength.

"Although patient satisfaction is generally very high after surgical repair of a torn rotator cuff, the data suggest that long-term shoulder function - in particular, shoulder strength and dynamic joint stability - may not be fully restored in every patient," says Michael Bey, Ph.D., director of Herrick Davis Motion Analysis Lab at Henry Ford Hospital.

Dr. Bey presents the results Sunday at the Orthopaedic Research Society's annual meeting in Long Beach, Calif.

"We found that the motion pattern of the repaired shoulder is significantly different than the patient's opposite shoulder," Dr. Bey says. "These differences in shoulder motion seem to persist over time in some patients."

According to the American Academy of Orthopaedic Surgeons, rotator cuff tears are a common cause of pain and disability among adults, especially among those over age 40. The rotator cuff is comprised of four muscles and several tendons that create a covering around the top of the upper arm bone. The rotator cuff holds the bone in and enables the arm to rotate.

The rotator cuff can be torn from a single injury but most tears result from overuse of the muscles and tendons over years. Those at especially high risk are those who engage in repetitive overhead motions. Common treatments include anti-inflammatory medication, steroid injections, physical therapy and surgery.

Dr. Bey says the findings suggest that restoring normal joint mechanics may not be necessary to achieve a satisfactory clinical outcome.

"Our study suggests that surgery doesn't necessarily restore normal shoulder strength or normal shoulder motion," he says. "However, patient satisfaction is very

high after surgery due in part because it relieves pain and discomfort."

The study was done using a high-speed biplane X-ray system, one of only three in the country, which allows researchers to measure the position of bones and joints in the body during motion to within half a millimeter.

"The biplane X-ray system allows us to investigate subtle nuances of shoulder function that cannot be detected with conventional laboratory techniques," Dr. Bey says.

"What further complicates our understanding of rotator cuff tears is that we have also shown that there are subtle, yet important differences in shoulder function between the dominant and non-dominant shoulder of healthy volunteers. These clinical studies are aiding in our understanding of both the origin and treatment of rotator cuff tears."

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