

New Information on the Reverse Shoulder Implant

Along with hip and knee joint replacements, shoulder replacement has become increasingly popular for people with pain and loss of motion from arthritis. But the shoulder is a bit different from the hip and knee. A tear in the muscles around the shoulder (called the rotator cuff) can complicate things.

Replacing the joint without an intact, functioning rotator cuff may not improve the situation. Without the muscles to hold the joint in place and move the arm, the surgery may not be successful. Surgeons who recognized this problem designed a special replacement joint (implant) just for large rotator cuff tears that cannot be repaired.

The procedure is called a reverse shoulder arthroplasty. The round ball-shaped bone that normally fits into the shoulder socket is removed and replaced with an artificial cup. The anatomic socket is replaced with a titanium round head. The two parts of the shoulder (round head and socket) are reversed in location.

The indications for this surgery are pain, loss of shoulder motion, and failed conservative (nonoperative) care. A rotator cuff tear that is too large to repair is another criterion for the use of the reverse shoulder arthroplasty.

In this study, the surgeon who designed the reverse shoulder implant investigated the results of treatment with this implant. The focus was on patients who had a massive rotator cuff tear but no sign of shoulder joint arthritis. The study was done at the Foundation for Orthopaedic Research and Education in Tampa, Florida. It was funded by the company that manufactures the implants (Don Joy Orthopaedic Surgical company).

The authors make note that the definition of a massive or irreparable rotator cuff tear can be defined differently by various surgeons. In their study, the patients had damage of at least two of the four tendons that make up the rotator cuff. They used special X-ray criteria called the Hamada classification to determine whether or not there were arthritic changes in the joint.

Results were measured using patient report about pain, X-rays to look at the joint, and several tests of shoulder strength, motion, and function. There were two groups: those who had a previous shoulder surgery (usually a failed rotator cuff repair) and those who had never had shoulder surgery before. Results were compared between the two groups.

They found significant improvements in all areas measured for both groups. There were a few failed implants and 18 of the 60 patients said they wouldn't have the surgery if they had it to do over again (unknown reasons why they felt that way). Two-thirds of the group had an excellent result and were very pleased.

The patients most likely to be disappointed with the results were those who had severe shoulder pain but fairly good motion (greater than 90-degrees). Sometimes after the reverse shoulder implant, their motion was less than before surgery.

When problems occurred with the reverse shoulder arthroplasty, it was usually because the implant came loose or broke. Other complications included fracture of a bone in the shoulder complex affecting the humerus (upper arm bone), clavicle (collar bone), or scapula (shoulder blade). Shoulder dislocation, deep infection, and hematoma (pocket of blood) were also reported in individual patients.

Each patient was followed for at least two years. Everyone will continue to be monitored and results measured at regular intervals. Later publications will report mid- to long-term results. These two-year results suggest that the reverse shoulder implant doesn't last as long in patients with a previous failed rotator cuff repair.

In summary, the reverse shoulder arthroplasty is an effective treatment option for patients with irreparable rotator cuff tears who do not have arthritis. Other treatment may be considered (e.g., muscle transfer, arthroscopic debridement, partial rotator cuff repair) but these methods only treat the pain. The reverse shoulder implant can provide pain relief and restore joint stability and function.

The reverse shoulder arthroplasty is a new enough procedure that surgeons are still studying who would benefit from this implant. Although it was designed for patients with massive rotator cuff tears that cannot be repaired, it has also been used for patients with severe bone loss, failed shoulder replacement, and humeral fractures that did not heal.

It may not be the best choice for patients with pain but preserved motion (more than 90-degrees of shoulder elevation). The authors of this study suggest trying other options first for these patients. Rotator cuff repair or debridement should be considered. Continued improvements in the design of the reverse shoulder implant and in surgical techniques will likely yield improved outcomes and greater implant survival in years to come.

Reference: Philip Mulieri, MD, et al. Reverse Shoulder Arthroplasty for the Treatment of Irreparable Rotator Cuff Tear Without Glenohumeral Arthritis. In *The Journal of Bone and Joint Surgery*. November 3, 2010. Vol. 92A. No. 15. Pp. 2544-2556.