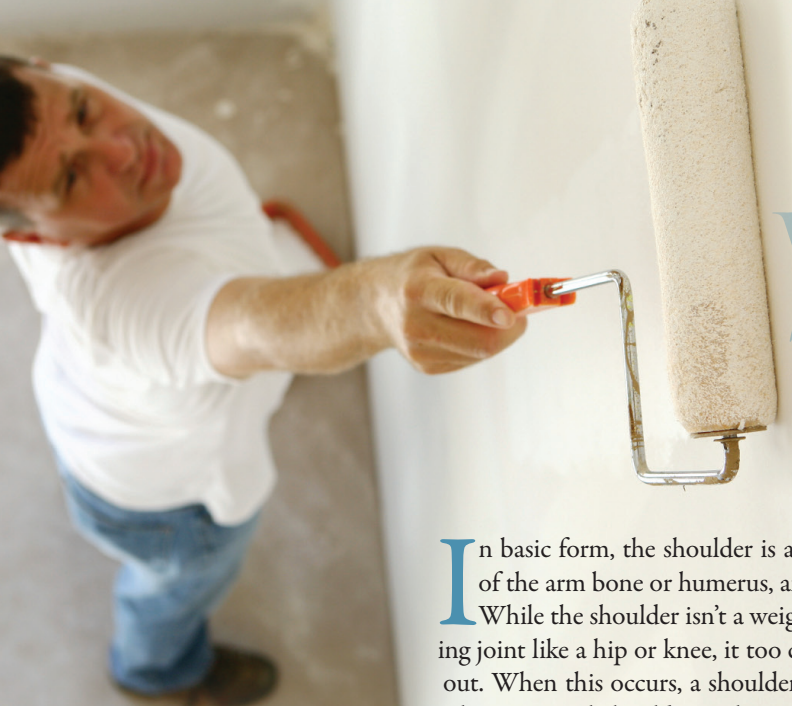
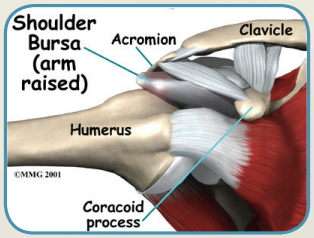


What is a Reverse Total Shoulder?

By Jason P. Dieterle, D.O., M.S.

In basic form, the shoulder is a ball and socket joint. The ball is the top of the arm bone or humerus, and the socket is the wing bone or scapula. While the shoulder isn't a weight-bearing joint like a hip or knee, it too can wear out. When this occurs, a shoulder arthroplasty or total shoulder replacement may be the solution.



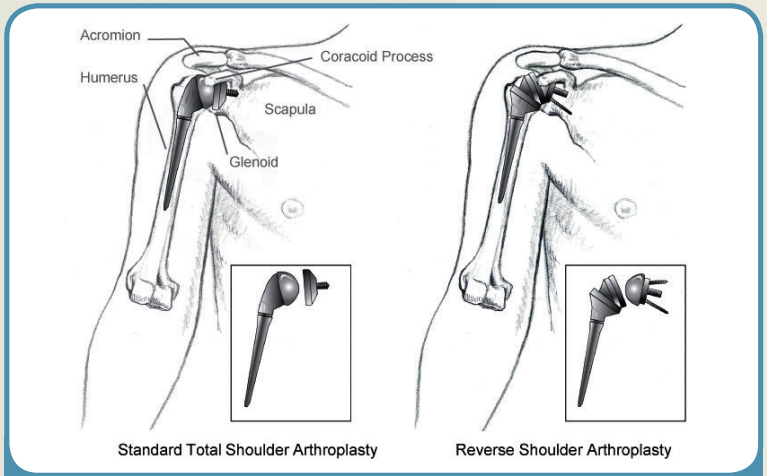
A standard total shoulder replaces the ball of the joint with a metal ball and the socket with a plastic socket. This solution is used when the joint is worn out but the muscles that control the shoulder still work well. Your doctor will examine your shoulder and test certain muscle groups in order to see if a standard shoulder replacement will work for you. Your doctor may order an MRI to confirm if certain muscles and tendons are intact and to confirm that your rotator cuff is in sufficient shape to support the ball and socket.

Your rotator cuff is a series of muscles and tendons around the shoulder joint that help to stabilize the joint. These muscles provide some strength with certain movements, but mainly support the shoulder joint to help the ball stay in the socket. When the rotator cuff is torn or damaged so that it is not functioning properly, the joint function is compromised and the joint becomes prone to what is called rotator cuff arthropathy.

Rotator cuff arthropathy is basically an arthritic shoulder that lacks a working rotator cuff. This specific type of arthritis occurs over time when the joint is not supported by the rotator cuff muscles. These changes in the shoulder joint can usually be seen on a standard x-ray.

The ball of the arm bone is moved up from its normal position against the socket and rubs against the acromion. The acromion is another part of the wing bone that is the square bone on the top part of your shoulder, located at the end of the collar bone.

Just like your natural shoulder does not function well without a rotator cuff, a standard total shoulder does not either. This can be compared to placing a ball on a shallow saucer. Without the rotator cuff to hold it in place, the metal ball simply slides around on the saucer. Studies have shown that if a standard total shoulder is used in a shoulder lacking a working rota-



A standard total shoulder replaces the ball of the joint with a metal ball and the socket with a plastic socket. A reverse shoulder replaces the socket with a metal ball and the ball of the joint with a plastic socket.

tor cuff, the plastic socket wears out quickly. This can lead to pain and the need to revise or redo the total shoulder.

The challenge was to find a good surgical option for someone who had shoulder arthritis without a working rotator cuff. Options in the past included performing a hemiarthroplasty, or replacing the ball and not the socket. This eliminates the problem of the plastic socket wearing out. However, the improvement in pain relief often comes at a cost of decreased shoulder range of motion. Other surgical options include doing a shoulder scope to clean out the shoulder. This is a less invasive procedure, but often leads to temporary pain relief and doesn't address the real problem.

The solution was to reverse the socket and the ball, placing the ball portion of the shoulder where the socket used to be and the socket where the ball or humeral head originally was, hence the reverse total shoulder. Reverse total shoulder arthroplasty was first described as a treatment for rotator cuff tear arthropathy in 1987. The surgery was approved for use in the United States in 2004. Even though the reverse shoulder prosthesis is a relatively new procedure, early results have been good for the appropriate patient candidate.

The reverse total shoulder results in a much more stable shoulder joint that functions without a rotator cuff. The artificial joint itself provides more stability by creating a deeper socket that prevents the ball from sliding up and down as the shoulder is raised. The large deltoid muscle that covers the shoulder is used to more effectively lift the arm, providing better function of the shoulder. The final result is a shoulder that functions better, is less painful and can last for years without loosening.

A shoulder replacement is a complicated surgery, and as with any surgery there are risks. These risks include infection, blood loss, nerve damage, continued pain, decreased range of motion, decreased strength, blood clot, complications from anesthesia, and even death. Non-operative treatments for your shoulder pain should be exhausted before considering replacement surgery. Injections in your shoulder can relieve pain and physical therapy can help to maximize function. These are the first line of defense for any patient with rotator cuff arthropathy.

The surgery is performed through an incision in the front or side of the shoulder. The hospital stay after surgery is 1 to 3 days. The length of stay will depend on your pain level and how well you can function using only one arm. Therapy will begin while you are in the hospital. Pain medication will help with any post-operative discomfort. Also you may be asked to take a blood thinner or aspirin to help prevent blood clots. You will follow up with your surgeon two weeks after surgery. The arm will be in a sling for 4 to 6 weeks after surgery. Do not expect to use the arm while it is in the sling. After that you will begin using and strengthening the shoulder. You should not expect complete recovery for up to 6 to 8 months after surgery.

Though you should expect to have less pain after a reverse total shoulder, you will likely not regain full range of motion or full strength as compared with a normal shoulder. However, compared to living with rotator cuff arthropathy, you will experience significant pain relief , increased shoulder function, and an overall improvement in your quality of life. ■

Are you an Ideal Candidate?

The ideal candidate for the reverse total shoulder is a patient with painful shoulder arthritis who does not have working rotator cuff muscles. Other applications for the reverse shoulder procedure include treatment for:

- Revision of a failed previous shoulder arthroplasty. As discussed earlier, sometimes a standard total shoulder will wear out prematurely. Simply replacing the plastic socket is not always the best answer. The shoulder muscles may have become weakened by the plastic socket wearing away in the joint. The socket itself may be worn to a point where a plastic socket will not fit right. The muscles may have become weak as they would normally over time, or they may have been weakened by the original surgery.
- Humerus fractures associated with rotator cuff deficiency. When a person fractures the ball of the shoulder joint, an option is to replace the ball rather than attempt to fix the bone. This is especially true in fractures with multiple pieces and in elderly patients. However, if the fracture is associated with a lack of a rotator cuff, and a partial replacement is performed, the patient may not recover with optimum range of motion in the shoulder.
- Shoulder reconstruction after tumor removal. Sometimes removing a tumor can result in removing muscles in the shoulder. A reverse total shoulder can be performed to overcome the loss of these muscles and may retain better function of the shoulder.
- Pseudoparalysis of the shoulder. This is a generic term used to describe the inability to move the shoulder. This could be caused by a number of reasons such as stroke, injury, or nerve dysfunction. Again, a reverse total shoulder may be used to overcome some of the muscle deficit and increase range of motion in the shoulder.