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Shoulder Replacement Surgery (arthroplasty)

Most people are aware that hip or knee replacement surgery is an option for patients with disabling, painful joints. Like the hip and knee, the shoulder joint may become arthritic and painful as people age. Associated conditions such as rheumatoid arthritis, and events such as a traumatic injury or rotator cuff tear, may speed the degenerative process. It is also now felt that some people may be genetically predisposed to develop arthritis at an earlier age than others.



Figure 1. Total shoulder arthroplasty. **a.** This x-ray shows the degenerative changes that occur with osteoarthritis of the shoulder. The head of the humerus is no longer round, but instead has become flattened from wear. A bone spur, which is another sign of osteoarthritis, can be seen. **b.** A standard prosthetic shoulder. **c.** X-ray taken after shoulder replacement surgery. **d.** This patient regained full range of motion and had a pain free shoulder.

Fortunately, shoulder replacement surgery, also called shoulder *arthroplasty*, is a successful, pain-relieving option for many people (**Figure 1**). During the procedure, the ball (humeral head) and socket (glenoid bone) are replaced with metal and plastic components to alleviate pain and improve function. Arthroplasty is usually done only after more conservative treatments (such as physical therapy, and nonsteroidal anti-inflammatory medications) have failed. Shoulder replacement is an elective surgery, meaning that a patient is never "required" to have a shoulder replacement. Rather, the decision to proceed with shoulder arthroplasty should be agreed upon by both patient and doctor. In some cases, arthroplasty may be the only option that relieves pain and allows the patient to regain better function.

How long might a shoulder replacement last? What should a patient expect to gain?

In their series of 113 total shoulder arthroplasties with the longest published follow-up, Torchia and colleagues [3] found a 93% survivorship of the prosthesis at 10 years and 87% at 15 years. Relief from moderate or severe pain was achieved in 83% of shoulders at an average follow-up of 12.2 years. Active abduction (the ability to raise the arm to the side) improved by an average of 40 degrees to an average of 117 degrees.

Another study showed that patients with primary osteoarthritis who underwent TSA between 10 and 20 years ago expressed great satisfaction with the long-term effects of the surgery [4]. About 73 percent of the patients were enthusiastic about the procedure, rating the results as excellent. Of the remaining patients, 20 percent rated the procedure satisfactory, and about 7 percent unsatisfactory.

"All the patients were satisfied with their long-term results and would have the procedure again," says lead author Rolando Izquierdo, M.D.

Who performs shoulder replacement surgery?

According to researchers at the University of Washington [5], 75% of shoulder replacement surgeries are performed by an orthopaedic surgeon who does only one or two of these procedures per year. The authors suggest that patients may be better off seeing a [shoulder specialist](#) surgeon who sees a large volume of cases, citing that the number of times a surgical procedure is performed may have a bearing on how well it is done.

Reverse Shoulder Arthroplasty

A newer type of shoulder replacement is called reverse total shoulder arthroplasty (**Figure 2**). This surgery was developed in Europe in the 1980s, and it was approved by the Food and Drug Administration (FDA) for use in the United States in 2004. Reverse total shoulder replacement is often used for people who have shoulder arthritis coupled with an irreparable rotator cuff tear (a condition called *cuff tear arthropathy*, or *CTA*). It is also performed for patients with very complex shoulder problems, including those with failed previous surgical treatments.



Figure 2. A reverse total shoulder prosthesis. Note that the ball and socket are "reversed" or switched compared to the standard shoulder prosthesis in Figure 1.

Normally, the rotator cuff and deltoid muscles work together to allow a person to raise their arm overhead. With a large rotator cuff tear, the normal mechanics of the shoulder are disrupted, and it may be difficult or impossible for a patient to lift his or her arm. The reverse shoulder prosthesis provides a fixed fulcrum for the shoulder joint, allowing the arm to be raised overhead even when the rotator cuff muscles are absent (**Figure 3**).

The results of reverse shoulder arthroplasty appear to be similar to that of total shoulder arthroplasty in some cases. In a recent paper, Boileau and associates [4] reported that at about 40 months after the procedure 78% of patients were satisfied or very satisfied with the result, and 67% had no or slight pain. Patients who had the procedure performed as a primary procedure for cuff tear arthropathy (CTA) fared better than others who had it performed for more complex shoulder problems. The surgical complication rate for patients with CTA was 5%, while it was much higher in the other group. The authors concluded that results are less predictable and complication and revision rates are higher in patients undergoing revision surgery as compared with those in patients with CTA.

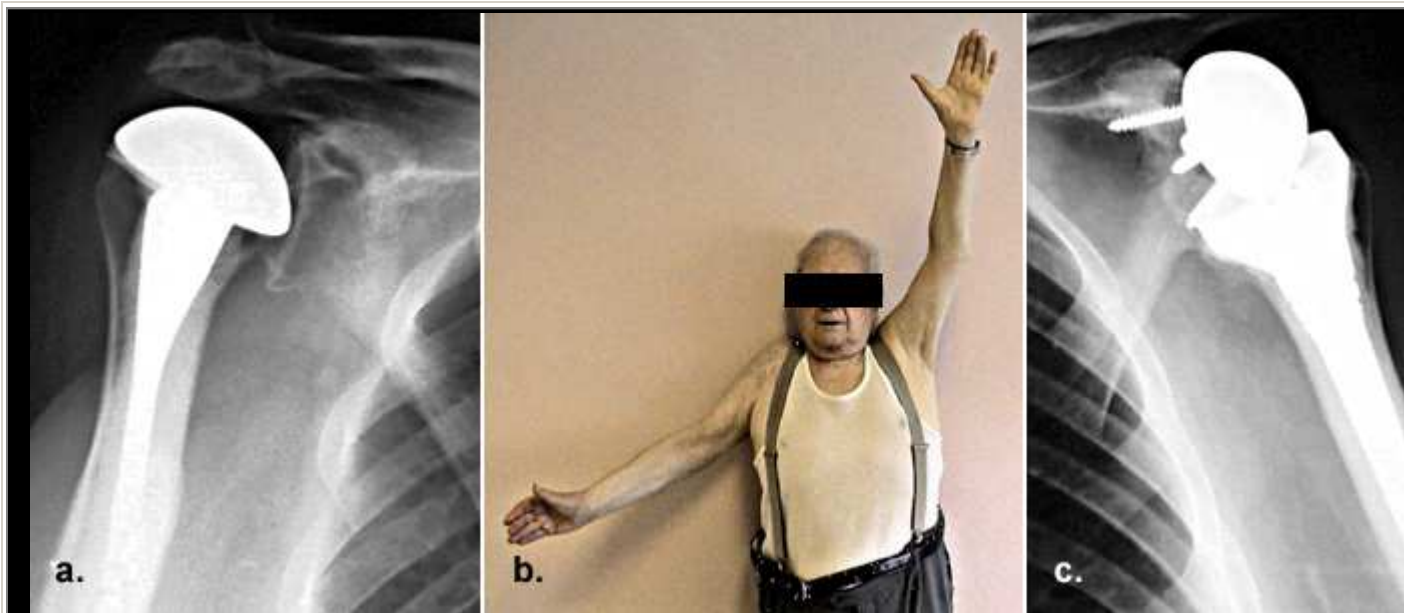


Figure 3. a. An x-ray of the right shoulder of the patient in Figure 3b shows a standard hemiarthroplasty component. b. The patient had both shoulders replaced due to arthritis coupled with massive, irreparable rotator cuff tears. Note that patient has the ability to raise his left arm over his head, but he cannot lift his right arm much. The reverse prosthesis replaced his left shoulder allows him to have better function than he has with his right shoulder. c. An x-ray of the patient's left shoulder shows the reverse prosthesis.