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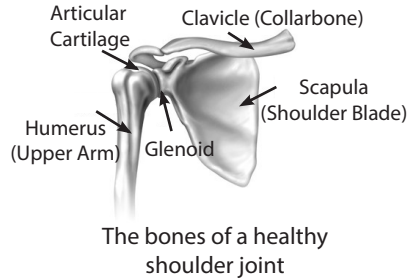
KYLE SWANSON M.D.

ANATOMY

Your shoulder is made up of three bones: your upper arm bone (humerus), your shoulder blade (scapula), and your collarbone (clavicle). The shoulder is a ball-and-socket joint: The ball, or head, of your upper arm bone fits into a shallow socket in your shoulder blade. This socket is called the glenoid.

The surfaces of the bones where they touch are covered with articular cartilage, a smooth substance that protects the bones and enables them to move easily. A thin, smooth tissue called synovial membrane covers all remaining surfaces inside the shoulder joint. In a healthy shoulder, this membrane makes a small amount of fluid that lubricates the cartilage and eliminates almost any friction in your shoulder.

The muscles and tendons that surround the shoulder provide stability and support. All of these structures allow the shoulder to rotate through a greater range of motion than any other joint in the body.



Another type of shoulder replacement is called reverse total shoulder replacement. Reverse total shoulder replacement is used for people who have:

- Completely torn rotator cuffs with severe arm weakness
- The effects of severe arthritis and rotator cuff tearing (cuff tear arthropathy)
- Had a previous shoulder replacement that failed



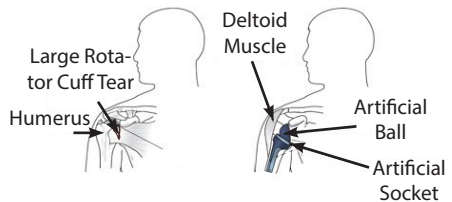
An x-ray of a reverse total shoulder replacement

For these individuals, a conventional total shoulder replacement can still leave them with pain. They may also be unable to lift their arm up past a 90-degree angle. Not being able to lift one's arm away from the side can be severely debilitating.

In reverse total shoulder replacement, the socket and metal ball are switched. That means a metal ball is attached to the shoulder bone and a plastic socket is attached to the upper arm bone. This allows the patient to use the deltoid muscle instead of the torn rotator cuff to lift the arm.

(Left) Rotator cuff arthropathy.

(Right) The reverse total shoulder replacement allows other muscles — such as the deltoid — to do the work of the damaged rotator cuff tendons.



COMPLICATIONS

Your orthopaedic surgeon will explain the potential risks and complications of shoulder joint replacement, including those related to the surgery itself and those that can occur over time after your surgery.

When complications occur, most are successfully treatable. Possible complications include the following:

INFECTON

Infection is a complication of any surgery. In shoulder joint replacement, infection may occur in the wound or deep around the prosthesis. It may happen while in the hospital or after you go home. It may even occur years later. Minor infections in the wound area are generally treated with antibiotics. Major or deep infections may require more surgery and removal of the prosthesis.

Any infection in your body can spread to your joint replacement.

PROSTHESIS PROBLEMS

Although prosthesis designs and materials, as well as surgical techniques, continue to advance, the prosthesis may wear down and the components may loosen. The components of a shoulder replacement may also dislocate. Excessive wear, loosening, or dislocation may require additional surgery (revision procedure).

NERVE INJURY

Nerves in the vicinity of the joint replacement may be damaged during surgery, although this type of injury is infrequent. Over time, these nerve injuries often improve and may completely recover.

PREPARING FOR SURGERY

MEDICAL EVALUATION

If you decide to have shoulder replacement surgery, your orthopaedic surgeon may ask you to schedule a complete physical examination with your family physician several weeks before surgery. This is needed to make sure you are healthy enough to have the surgery and complete the recovery process. Many patients with chronic medical conditions, like heart disease, must also be evaluated by a specialist, such as a cardiologist, before the surgery.

MEDICATIONS

Be sure to talk to your orthopaedic surgeon about the medications you take. Some medications may need to be stopped before surgery. For example, the following over-the-counter medicines may cause excessive bleeding and should be stopped 2 weeks before surgery:

- Non-steroidal anti-inflammatory medications, such as aspirin, ibuprofen, and naproxen sodium
- Most arthritis medications

If you take blood thinners, either your primary care doctor or cardiologist will advise you about stopping these medications before surgery.

HOME PLANNING

Making simple changes in your home before surgery can make your recovery period easier. For the first several weeks after your surgery, it will be hard to reach high shelves and cupboards. Before your surgery, be sure to go through your home and place any items you may need afterwards on low shelves.

When you come home from the hospital, you will need help for a few weeks with some daily tasks like dressing, bathing, cooking, and laundry. If you will not have any support at home immediately after surgery, you may need a short stay in a rehabilitation facility until you become more independent.

YOUR SURGERY

BEFORE YOUR OPERATION

Wear loose-fitting clothes and a button-front shirt when you go to the hospital for your surgery. After surgery, you will be wearing a sling and will have limited use of your arm.

You will most likely be admitted to the hospital on the day of your surgery. After admission, you will be taken to the preoperative preparation area and will meet a doctor from the anesthesia department.

You, your anesthesiologist, and your surgeon will discuss the type of anesthesia to be used. You may be provided a general anesthetic (you are asleep for the entire operation), a regional anesthetic (you may be awake but have no feeling around the surgical area), or a combination of both types.

SURGICAL PROCEDURE

The procedure to replace your shoulder joint with an artificial device usually takes about 2 hours.

After surgery, you will be moved to the recovery room, where you will remain for several hours while your recovery from anesthesia is monitored. After you wake up, you will be taken to your hospital room.

RECOVERY

Your medical team will give you several doses of antibiotics to prevent infection. Most patients are able to eat solid food and get out of bed the day after surgery. You will most likely be able to go home on the first, second or third day after surgery.

PAIN MANAGEMENT

After surgery, you will feel some pain, but your surgeon and nurses will provide medication to make you feel as comfortable as possible. Pain management is an important part of your recovery. Physical therapy will begin soon after surgery, and when you feel less pain, you can start moving sooner and get your strength back more quickly. Talk with your surgeon if postoperative pain becomes a problem.



REHABILITATION

A careful, well-planned rehabilitation program is critical to the success of a shoulder replacement. You usually start gentle physical therapy soon after the operation. Your surgeon or physical therapist will provide you with a home exercise program to strengthen your shoulder and improve flexibility.



YOUR RECOVERY AT HOME

When you leave the hospital, your arm will be in a sling. You will need the sling to support and protect your shoulder for the first 2 to 4 weeks after surgery.

Wearing a sling will protect your shoulder after surgery.

WOUND CARE. You will have staples running along your wound or a suture beneath your skin. The staples will be removed several weeks after surgery. A suture beneath your skin will not require removal.

Avoid soaking the wound in water until it has thoroughly sealed and dried. You may continue to bandage the wound to prevent irritation from clothing.

ACTIVITY. Exercise is a critical component of home care, particularly during the first few weeks after surgery. Follow your surgeon's home exercise plan to help you regain strength. Most patients are able to perform simple activities such as eating, dressing and grooming within 2 weeks after surgery. Some pain with activity and at night is common for several weeks after surgery. Driving a car is not allowed for 2 to 4 weeks after surgery.

DO'S AND DON'TS

The success of your surgery will depend largely on how well you follow your orthopaedic surgeon's instructions at home during the first few weeks after surgery. Here are some common do's and don'ts for when you return home:

- Don't use the arm to push yourself up in bed or from a chair because this requires forceful contraction of muscles.
- Do follow the program of home exercises prescribed for you. You may need to do the exercises 2 to 3 times a day for a month or more.
- Don't overdo it! If your shoulder pain was severe before the surgery, the experience of pain-free motion may lull you into thinking that you can do more than is prescribed. Early overuse of the shoulder may result in severe limitations in motion.
- Don't lift anything heavier than a glass of water for the first 2 to 4 weeks after surgery.
- Do ask for assistance. Your physician may be able to recommend an agency or facility if you do not have home support.
- Don't participate in contact sports or do any repetitive heavy lifting after your shoulder replacement.
- Do avoid placing your arm in any extreme position, such as straight out to the side or behind your body for the first 6 weeks after surgery.

Many thousands of patients have experienced an improved quality of life after shoulder joint replacement surgery. They experience less pain, improved motion and strength, and better function.

Reference: American Academy of Orthopaedic Surgeons
Reviewed by Kyle Swanson, M.D., Orthopedic Surgeon.

DR. KYLE SWANSON'S

REHAB PROTOCOL

FOR REVERSE TOTAL SHOULDER REPLACEMENT

The goal of the rehabilitation process is to provide greater joint stability to the patient, while decreasing their pain and improving their functional status. The goal of the surgery & rehab (bone loss, muscle loss) is joint stability and less joint mobility. The key to the success of the rehabilitation following shoulder replacement is compliance to your exercise program.

Precautions: Should be implemented for the first 12 weeks following surgery - unless the surgeon specifically advises the patient differently.

- No shoulder motion behind back (back pocket motion)
- No excessive shoulder horizontal abduction
- No active external rotation behind head or neck
- No shoulder extension beyond the body

PHASE 1 - IMMEDIATE PROTECTED MOTION PHASE (0-6 WEEKS)

Goals

- Allow early healing of capsule
- Restore passive range of motion
- Decrease shoulder pain
- Retard muscular atrophy
- Patient education

WEEKS 0-2

Exercises

- Sling during day and at night (worn for 4 weeks)
- Continuous Passive Motion (CPM) Passive Range of Motion
 - Flexion (0-60 degrees)
 - ER (at 30 degrees Abduction) 0 degrees
 - IR (at 30 degrees Abduction) 30 degrees
- Pendulum Exercises
- No active shoulder motion
- Elbow/Wrist AROM
- Gripping Exercises
- Isometrics
 - Abductors
 - ER/IR
- Cryotherapy for pain
- **When laying supine use pillow under arm to support glenohumeral joint**

WEEKS 3-4

- Continue sling as needed
- Continue PROM
 - Progress flexion to 90 degrees
 - ER/IR at 30 degrees ABD scapular plane
- May initiate AAROM IR/ER
- Pendulum exercise
- Rope and pulley week 3 to 4
- Continue isometric
 - Initiate rhythmic stabilization drills
- Continue use of ice

PHASE 2 - ACTIVE MOTION PHASE (6-12 WEEKS)

Goals

- Improve shoulder strength
- Gradually progress active/passive range of motion
- Decrease pain/inflammation
- Increase functional activities
- Do not over stress healing tissue

WEEKS 6-8

Exercises

- Progress PROM
 - Flexion to 90-115 degrees
 - ER/IR at 45 degrees abduction scapular plan
 - IR
- Progress AAROM ER/IR at 45 degrees ABD
- **Do not aggressively push ROM into ER**
- Continue rope and pulley to tolerance
- Pendulum exercises
- Continue isometrics

- ER/IR
- Rhythmic stabilization
- Initiate deltoid flexion/ext
- Ice as needed

WEEKS 9-12

- Progress PROM to tolerance
 - Flexion to 120-125 degrees ER/IR at 90 degrees abduction (goal is 45-50 degrees of ER motion)
 - ER/IR at 45 degrees abduction
- Progress AAROM to tolerance
 - ER/IR at 45 degrees ABD
 - Initiate flexion supine L-bar
- Initiate AROM exercises
 - Sidelying flexion
 - Supine flexion
 - Sidelying ER
- Continue strengthening and stabilization
 - Tubing ER/IR
 - Supine ER
 - Standing full can
 - Prone exercise
 - Biceps
- May perform pool exercises
- Continue rhythmic stabilization
 - Supine flex/ext
 - Supine ER/IR

PHASE 3 - MODERATE STRENGTHENING ACTIVITY PHASE (12-16 WEEKS)

Goals

- Gradually increase PROM
- Initiate active light strengthening exercises
- Gradually initiate functional activities
- Continue precautions with excessive GH joint motion

Exercises

- Continue all exercises listed above
- Initiate light active ROM exercises
- Initiate fundamental shoulder program

PHASE 4 - RETURN TO ACTIVITY PHASE (16-26 WEEKS)

Initiation of this phase begins when patient exhibits:

- PROM: Flexion 0-145 degrees
ER (at 90 degrees Abduction) 33-55 degrees
IR (at 90 degrees Abduction) 45-55 degrees
- Strength level 4/5 for ER/IR/ABD

Note: Some patients will not be able to enter this phase

Goals

- Improve strength of shoulder musculature
- Improve and gradually increase functional activities
- Gradual restoration of functional activities
- Independent home exercise program

Exercises

- Fundamental shoulder exercise program
- May continue pool exercises
- Should exercise daily
- May initiate interval sport program (golf, swim); physician must approve



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