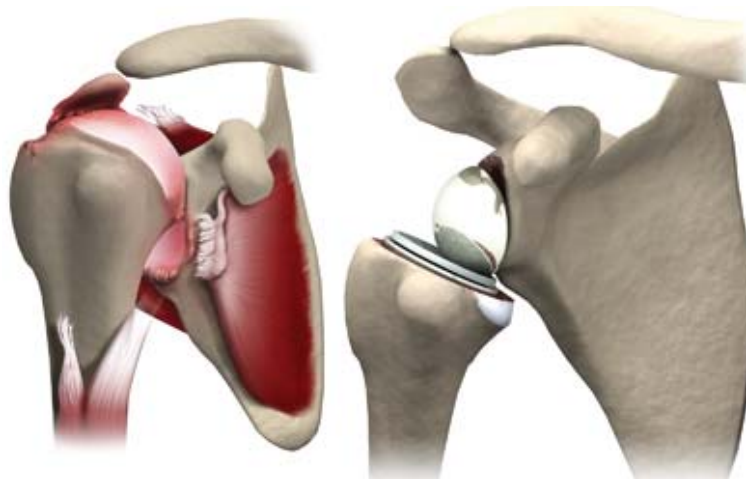


# The Reverse Shoulder Replacement Book



## Frank Norberg, MD

Edina Clinic  
4010 West 65th Street  
Edina, MN 55435  
Phone #: 952-920-0970  
Fax #: 952-920-0148

Plymouth Clinic - West Health  
2855 Campus Drive Suite 300  
Plymouth, MN 55441  
Phone #: 763-520-2961  
Fax #: 763-550-2979

Eden Prairie Clinic  
12982 Valley View Road  
Eden Prairie, MN 55344  
Phone #: 952-456-7470  
Fax #: 952-456-7471

## HOW THE NORMAL SHOULDER WORKS

Your shoulder is the most flexible joint in your body. It allows you to place and rotate your arm in many positions in front, above, to the side and behind your body. This flexibility also makes your shoulder susceptible to instability and injury.

The shoulder is a ball and socket joint. It is made up of three bones: the upper arm bone (humerus), shoulder blade (scapula) and collar bone (clavicle).

The ball at the top end of the arm bone fits into the small socket (glenoid) of the shoulder blade to form the shoulder joint (glenohumeral joint). The socket of the glenoid is surrounded by a soft-tissue rim (labrum). A smooth, durable surface (articular cartilage) on the head of the arm bone, and a thin inner lining (synovium) of the joint allows the smooth motion of the shoulder joint.

The upper part of the shoulder blade (acromion) projects over the shoulder joint. One end of the collarbone is joined with the shoulder blade by the acromioclavicular (AC) joint; the other end of the collarbone is joined with the breastbone (sternum) by the sternoclavicular joint.

The joint capsule is a thin sheet of fibers that surrounds the shoulder joint. The capsule allows a wide range of motion yet provides stability. The rotator cuff is a group of muscles and tendons that attach your upper arm to your shoulder blade. The rotator cuff covers the shoulder joint and joint capsule. The muscles attached to the rotator cuff enable you to lift your arm, reach overhead, and take part in activities such as throwing or swimming.

A sac-like membrane (bursa) between the rotator cuff and the shoulder blade cushions and helps lubricate the motion between these two structures.

**The Rotator cuff** is made up of muscles and tendons that attach your upper arm to your shoulder. The tendons attach your muscles to the bone.

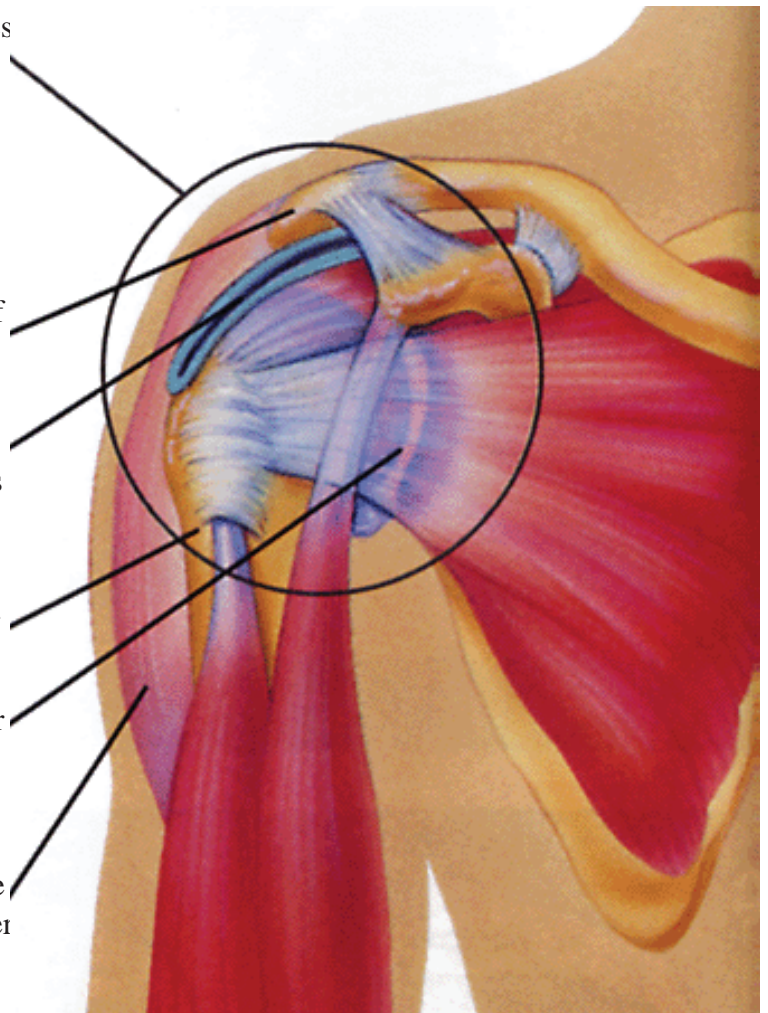
**The Acromion** is in the top part of your shoulder blade.

**The Bursa** is a lubricating sac. It helps your rotator cuff tendons slide under the acromion.

**The Humerus** is your upper arm bone.

**The Glenoid** is your shoulder socket.

**The Deltoid** muscle covers your shoulder



## INDICATIONS FOR A REVERSE TOTAL SHOULDER

A reverse total shoulder replacement allows treatment of patient's with:

- rotator cuff tear arthropathy
- instability with anterosuperior escape
- psuedoparalysis
- failure of surgery for arthritis and fracture management.

A common indication for a reverse total shoulder replacement is called rotator cuff tear arthropathy (see figures 1A and B ). This is a condition that causes significant discomfort and declined function of the affected side. These symptoms are caused by the loss of the rotator cuff tendons and deterioration of the shoulder's normal joint surface cartilage (arthritis). The instability of the joint, caused by the loss of the rotator cuff and arthritis, cause the pain and loss of movement.

Other indications for a reverse procedure are failure of a conventional shoulder replacement or failed fixation of a fracture.



FIGURE  
1 A AND B



## REVERSE SHOULDER REPLACEMENT

The reverse total shoulder replacement was first used in US in 2005, but it has been used in Europe since the 1980's and has shown to restore motion, give pain relief and increase stability.

The reverse total shoulder procedure is generally used in individuals who are 60 years old or older and who are experiencing significant pain and little to no range of motion. This procedure is not appropriate for younger or physically active individuals.

Normal shoulder anatomy allows the rotator cuff tendons to help balance the ball of the arm (humeral head) in the socket against the upward pull of the deltoid muscle. In the presence of rotator cuff arthropathy, the cuff tendons between the humeral head and the overlying bone (acromion) become progressively thinned until the humeral head moves upward and rubs against the acromion.

Individuals who have weakening and loss of function from rotator cuff arthropathy need to have their shoulder “re-aligned.” To do this, the reverse total shoulder prosthesis is designed with a socket where the ball (humeral head) is normally located and a ball where the socket (glenoid) is normally located ( figure 2 A and B). Changing the configuration of the shoulder provides more stability and a fulcrum against which the deltoid muscle can help elevate the shoulder and return some basic shoulder function.

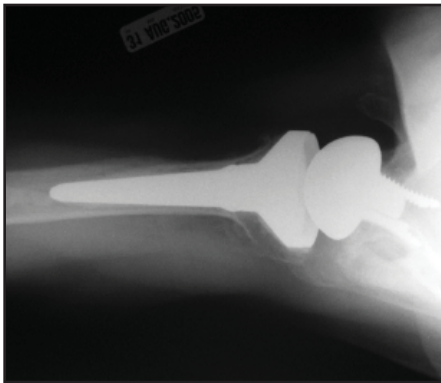
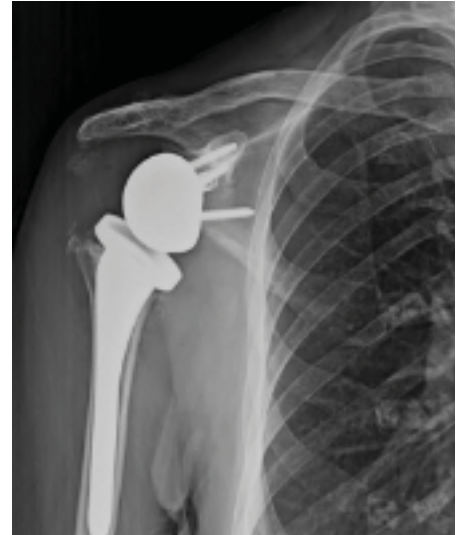


FIGURE  
2 A AND B



Reverse total shoulder surgery continues to evolve over time. Current techniques have resulted in good to excellent outcomes in the majority of patients. Almost all patients have marked pain relief. The majority of patients will also have improvement in the function of their shoulder, but this is less predictable. The reverse total shoulder replacement is a mechanical device (figure 3 A and B) and is expected to have wear and tear with time and use. Most reverse total shoulder replacements are expected to last 10-15 years.

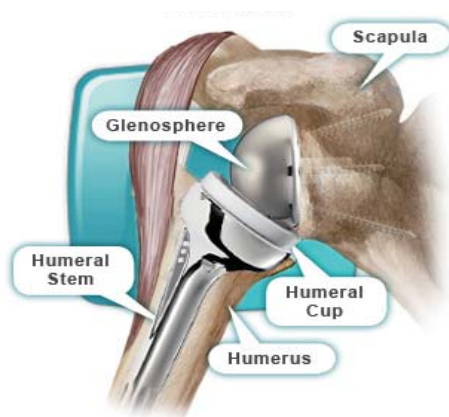


FIGURE  
3A AND B



## BEFORE SURGERY

A preoperative physical exam will be performed by your primary physician to assure that you are ready for surgery. This can be done up to 1 month prior to surgery.

You will need to stop anti-inflammatory medications (Advil, Ibuprofen, Motrin, Aleve, and aspirin) 5 days prior to surgery unless cleared with Dr. Norberg.

Plavix needs to be stopped 10 days prior to surgery. Coumadin (warfarin) use needs to be stopped as well.

Discuss this with your primary physician and Dr. Norberg. Stopping Coumadin requires the direct supervision of your primary care physician.

Take your usual medications on the morning of surgery with a small sip of water.

Bring a current list of your medications to the hospital.

A visit with your dentist is recommended. Poor dental health or cavities greatly increase the risk for infection of the reverse shoulder replacement with catastrophic results.

## AFTER SURGERY

You will be placed in a sling after surgery. This is to be worn the first 4 weeks. The sling is to be removed for dressing, bathing and exercises. It should be removed when eating, grooming and for table top activities.

Most people will be in the hospital for 2 days following their surgery. This may vary depending on your specific situation.

A dressing will be placed at the time of surgery and will be removed the second post-operative day. A new dressing can be applied if there is drainage at the incision.

You may shower beginning the 3rd post-operative day. The incision is allowed to get wet when showering, but the incision should not be submerged for a minimum of 2 weeks.

Be very careful on stairs and with activities as a fall or overuse in the early postoperative period may irreversibly damage your reverse shoulder reconstruction.

Make a follow-up appointment 7-10 days after surgery. Initial follow up visits are with Dani Hare PA-C. Dr. Norberg's physician assistant.

Small tape strips (steri-strips) will be in place over the incisions. Leave these in place until they fall off. Usually this is 10-14 days.

## PAIN RELIEF

Percocet (oxycodone/acetaminophen) and Vicodin (hydrocodone/acetaminophen) are the commonly prescribed pain medications. They should only be used as directed. Exceeding the recommended dose or taking them with alcohol may result in liver damage, serious injury or possibly death.

Pain relief can be improved with the use of anti-inflammatories (Advil, Aleve, and Ibuprofen). These can be taken in-between your prescription pain medications.

Regular icing of the shoulder for 20 minute periods can be helpful.

Do not take your pain medications unless you need them as they may cause nausea or constipation.

Many patients find it more comfortable to sleep in a recliner or propped with pillows for the first several weeks.

If you are running out of pain medications be sure to call the office between 8:30 and 4:00 PM. Pain medications are not filled after hours or on weekends.

## RISKS OF SURGERY

All surgeries have associated risks. These include but are not limited to anesthetic complications, infection, artery or nerve injury. The surgery generally resolves pain at rest and improves function, but a "normal shoulder" is not expected. Full pain relief may not be achieved. Late loosening of the prosthesis is also a risk.



## QUITTING SMOKING

Smoking or using any form of nicotine or tobacco products (including cessation products), can delay your body's healing process.

Smoking makes your blood vessels constrict (become smaller), which reduces the amount of oxygen-rich blood in your bloodstream. Smoking can cause your blood to clot faster, which can lead to heart and blood flow problems. If you are going to stop smoking around the time of your surgery, you should not use a nicotine based program or cessation products.

## RECOVERY TIME

Perform the exercises of the arm as demonstrated. Do not do any heavy lifting or activities with more than 1-2 pounds in the operative hand. Keyboarding and mouse activity may be resumed with the elbow at the side when comfortable. Many people find the pain they had before surgery is markedly improved after the procedure. Incision pain will be present and is managed with the pain medications.

Most people will be able to use their arm at their side the day after surgery. Use of the arm at shoulder height will likely take 6-8 weeks. Use of the arm above shoulder height will likely take 3 months and some patients will never regain use above the shoulder height level. Limit yourself to 1-2 pounds in the operative hand for 6 weeks.

Achieving the final result of your reverse shoulder replacement commonly requires 1 year.

## REHABILITATION

Your pain should lessen everyday. Plan to alternate activity and rest periods throughout the day. To keep strength and motion in your arm, you must exercise. There are some simple exercises you need to do.

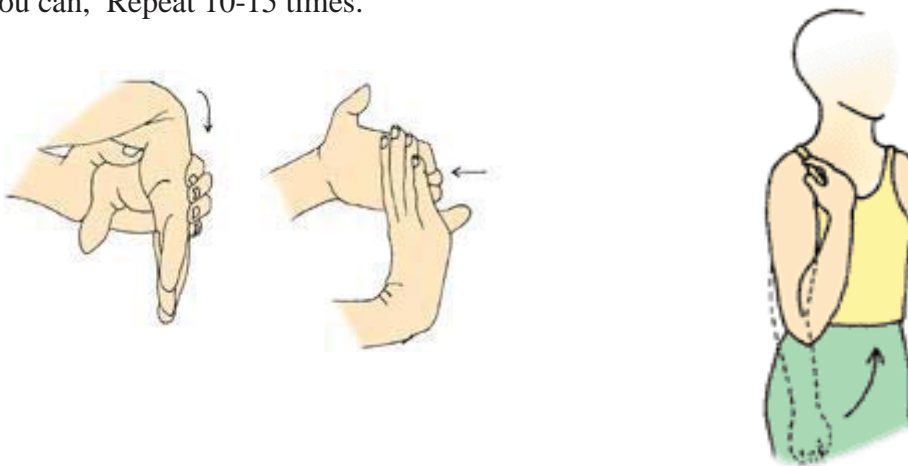
Begin these the day after surgery.

1. Wrist range of motion:

Bend your wrist forward and backward as far as you can. Repeat 10 times. Do 3 sets.

2. Elbow range of motion:

Gently bring your palm up toward your shoulder and bend your elbow as far as you can. Then straighten your elbow out as far as you can, Repeat 10-15 times.



## ADDITIONAL REHABILITATION

Begin these one week after your surgery:

You should hold each stretch for 5 seconds, repeat 5 times in row, and perform 5 times a day.



The starting position for this exercise will be with your hands resting in front of you on a counter top. Put your weight on your legs, not on your hands or upper body. Keep your hands in the same position on the counter top. While moving your feet slowly backwards, bend slightly at your waist, stick your buttocks back past the base of your feet. (see picture above) Once you feel a stretch, hold our position for 5-10 seconds. **DO NOT STRETCH TO THE POINT OF PAIN.** Always walk yourself back up.



Start this exercise in a standing position. You may be more comfortable resting against a wall. Bend your affected arm at the elbow. Place your opposite hand on your wrist and gently rotate your wrist outward while keeping your elbow at your side. If you have trouble keeping your elbow at your side, hold a rolled up sock between your elbow and waist. If the sock falls to the floor, you are not keeping your elbow close enough to your body. While gently rotating your wrist outward, continue until you feel a good stretch. Hold for 5-10 seconds. **DO NOT STRETCH TO THE POINT OF PAIN.**

Additional exercises will be given at the first post-op visit. Physical therapy is started approximately 4 weeks after your surgery. The rehab program is limited for the first 6 weeks after surgery to allow the subscapularis tendon, which was taken down at the time of surgery, to heal. Aggressive stretching or activities beyond these restrictions may result in the disruption of the repair and failure of the shoulder replacement.

## **PERMANENT RESTRICTIONS**

Reverse total shoulder replacements are mechanical devices susceptible to wear. Lifting heavy objects creates high force at the glenoid (socket) and is associated with loosening and early failure. For this reason, **NO LIFTING greater than 50lbs** floor to waist is allowed. **NO lifting greater than 25lbs** should be done at chest height or above. Inability to stay within these restrictions is likely to cause failure of your total shoulder replacement in a short period of time.