Shoulder Problems-Overview

Shoulder Replacement Surgery

Questions and Answers

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What is arthritis and how does it affect my shoulder?

The ball and socket shoulder joint is normally covered by cartilage, which is a soft yet durable substance that lines the ends of the bones. Cartilage serves to cushion the impact between two bones and provides a smooth gliding surface for movement. When the cartilage wears away, raw bone grinds on raw bone. As you know, this produces pain and limits movement and function. X-rays may show bone spurs, narrowing of the joint space, and bone erosion. The X-rays do not show the soft tissues, such as scar tissue, that may also be limiting your shoulder's movement.

Fig. 1. Anteroposterior x-ray showing osteophytes (bone spurs) and joint space narrowing that characterizes glenohumeral (shoulder) arthritis.
What is the recommended treatment?

Based on your symptoms, a physical examination and X-rays, the roughness of your shoulder joint surface can be improved by surgery, specifically by an artificial joint replacement. The surgery should be done when the arthritis causes pain that interferes with your activities of daily living, sleep, work and/or sports. In addition, surgery should be done when you have considered other options and are prepared to participate in the comprehensive physical therapy program after surgery. It is important to remember that your improvement is determined not only by your surgery, but also by your underlying condition and your rehabilitative effort.

What other treatment options are available?

Options other than surgery include no treatment - just living with the condition, as well as physical therapy exercises, medications or injections. While any of these treatment options may be successful in your situation, these methods do not always work reliably.

Very rarely, your arthritic shoulder can be made better with a surgical procedure other than an artificial shoulder replacement. These procedures include release of the tight scar tissue without joint replacement, cutting out the joint, or fusing (stiffening) the joint.

What happens if surgery is not performed?

Severe arthritis rarely improves without surgery. Usually, pain increases and movement and strength decrease slowly over time, taking several years before interfering with normal daily activities.
What is the purpose of the surgery?

The purpose of the surgery is to provide pain relief and improve comfort and function by replacing the arthritic joint with a metal and/or plastic joint. Joint replacement can improve the mechanics of the shoulder, but it cannot make the joint normal. After this procedure you should not plan on performing any activities that require heavy use of your shoulder, particularly activities involving impact (for example activities such as chopping wood, contact sports, and heavy lifting). However, gentle repetitive activities such as swimming and golf are often well tolerated.

How do I prepare for surgery?

Your general medical condition is obviously important along with any allergies, current medications and difficulties with previous surgery. Although the operation involves your shoulder, your entire body will react to the anesthesia and medicines. Shoulder replacement surgery is not an emergency so you should be in the best possible condition for this procedure.

To be in the best possible condition, smoking should be stopped before the procedure and not resumed for 3 months afterwards. Any heart, lung, kidney, bladder, tooth, or gum problems should be managed before surgery. Any infection may be a reason to delay the operation. Some medications may need to be modified or stopped. For instance, aspirin and anti-inflammatory medication may affect the way your blood clots. Before surgery, you should see your regular internist so that your medical condition can be optimized. You will also see the anesthesiologist the morning of your surgery.

Immediately after this procedure, your arm may be less useful than it is now. This will require special planning to manage aspects of your life during the period of recovery. Most patients manage quite well on their own, but some patients benefit from assistance. You should not plan on driving for six weeks after your surgery.

How is the surgery performed?

During surgery, only the diseased cartilage and underlying bone is removed from the ball portion of the joint - the head of the humerus or arm bone. The amount of bone removed is small, usually about two or three tablespoons. Shoulder joint replacement or arthroplasty replaces only the arthritic surface of the joint, not the entire shoulder. After removing the head of the humerus, the condition of the socket or glenoid bone is evaluated. If the damage is minor, no replacement of the socket is necessary. However, if the glenoid is rough or badly worn, then a 1/4-inch thick piece of strong plastic is placed on top of the bone surface. The portion of humeral head that is removed is replaced with a metal implant. This implant has a smooth round ball and a long stem that fits into the marrow canal of the humerus to fix it in place. Occasionally findings during surgery may contraindicate a joint replacement, or only the ball is replaced.

The skin incision runs across the front of the shoulder from the middle of the collarbone to the middle of the arm bone. This incision allows access to the joint without damaging important muscles that are responsible for a significant portion of your shoulder's power. During surgery, muscles and other tissues are mobilized by removing any scar tissue that may restrict motion. One of the tendons in the front of your shoulder - the subscapularis - is usually cut to gain access to the joint.
Once the joint is reached, overgrown pieces of bone are removed and the bone is shaped to fit the artificial parts. The figures below show examples of this bone preparation. The figure on the left shows how the humerus is cut. The picture on the right shows how the glenoid bone is shaped to accommodate the plastic piece. A small amount of bone cement is used to hold the artificial glenoid socket in place; however, the humeral implant is usually press fit into marrow canal without cement. The subscapularis tendon that was cut to gain access into the joint is securely repaired using sutures placed through bone to hold the tendon in place while it heals, as shown below. This repair requires protection from active internal rotation of the arm for at least 6 weeks while it is healing. Therefore, the arm should not be forcefully brought towards the stomach during this healing period.

Do the replacement parts wear out or get rejected?

Rejection, such as might occur with heart or kidney transplants, is not to be expected. The body may reject living tissue from another source, but the metal and plastics used in joint replacement have been tested extensively and used in the human body for over 30 years. It is also highly unusual for the metal or plastic to wear out. With normal arm use the shoulder replacement should last twenty years or longer so that the operation needs to be repeated very infrequently.

In addition to the arthritis, is there any muscle or tendon damage?

Usually there is no tendon tear, but in many cases the tendons and muscles about the shoulder have been weakened from prolonged disuse before the shoulder replacement. If there is a tendon tear and it can be repaired, then an attempt at repair is made at the time of surgery. However, occasionally the shoulder arthritis is a result of an old rotator cuff tendon tear, in which case the rotator cuff tissue is too thin and retracted to permit a repair. In this case, only the humeral head is replaced with a metal implant.
What kind of anesthesia is used?

General anesthesia is used because we cannot do this type of surgery with local or regional anesthesia. General anesthesia is the only reliable method that allows us to work deep inside your shoulder. In order to decrease the pain following surgery the anesthesiologist will inject a long acting (4-16 hours) novocaine medicine around the nerves that go to the shoulder and arm. Hopefully, this will improve your comfort after surgery.

What will it be like when I wake up?

When your surgery is completed, a gauze dressing will be taped to your shoulder. A drain may be placed to allow any excess fluids from around the shoulder to be removed. This will be removed once the drainage has diminished.

When you first awaken in the recovery room, your arm will be in a sling, so that it supports your arm. A special ice pack, called a "Cryo Cuff", will be placed atop your shoulder. Some, but not all, insurance companies will reimburse you for this, but often, Medicare does not. The Cryo Cuff is not absolutely necessary but patients who use it feels it diminishes their pain without the need for pain pills.

Within a few hours after surgery a Continuous Passive Motion (CPM) machine will be brought to your bedside that will move your arm in the correct manner. Early continuous passive motion helps prevent scar tissue formation after surgery. You will use the CPM machine in the hospital and at home for two weeks following the operation. As with the Cryo Cuff, some insurance companies pay for the CPM machine, while others do not. The CPM machine should be used for one hour at a time, 4 times a day. Getting out of bed after your surgery is also important; use of the CPM machine is not intended to limit your walking. Also remember that while in the hospital, you should notify the nursing staff of any difficulties associated with using the CPM machine.

During your surgery, you may have compressive stockings (TED hose) placed on your legs as well as sequential compressive devices (SCDs) that squeeze your legs and help prevent blood clots following surgery. The SCDs may be removed when you walk.

In the hospital, pain management will consist primarily of the regional block, which should keep the shoulder sufficiently numb for the first 8 to 16 hours after surgery that only minimal pain medications are needed. Oral narcotic pain medications are started as the feeling returns. Sometimes, intravenous narcotic medications are required; these may be given on an as-needed basis or using a PCA (Patient Controlled Analgesia) or "Pain Pump" device. Nothing can eliminate the pain following surgery completely, but medication and the ice pack will control it so that you will be as comfortable as possible.

How long will I stay in the hospital?

Patients enter the hospital in the morning, have the surgery and stay in the hospital overnight. Usually patients stay for two or three nights. The main reason for this is to control the pain that occurs after surgery and to start the critical phase of the physical therapy and exercise that enables your shoulder to recover.
Will I need to wear a sling or brace?

During the first two weeks your arm should be in the CPM machine much of the time that you are awake. In between sessions in the CPM, the sling should be worn for comfort. After the first two weeks the sling is helpful to protect your arm (such as when you are out of the house), but it should not be worn regularly.

What are some of the potential complications?

Potential complications include but are not limited to the following:

- Infection
- Wound problems
- Excessive blood loss
- Injury to nerves and blood vessels
- Fracture
- Weakness
- Stiffness
- Subluxation or dislocation of the humeral head
- Implant loosening
- Requirement for additional surgery
- Anesthetic risks

Is a blood transfusion needed?

A blood transfusion may be necessary. Usually, a patient undergoing shoulder replacement donates 1 unit of their own blood several weeks before the operation. That blood can then be returned to the patient if needed. Alternatively, we can use carefully tested blood from the blood bank. In either case, we will let you know how to arrange this.

How successful is the surgery?

This surgery is successful about 90% of time. No shoulder operation is successful in every individual but the procedure is reliable and will help restore function in your shoulder. Of course, the shoulder is never “normal” after this type of surgery, but operation is very successful at pain relief. What is harder to accomplish is the return to vigorous use of the arm in work and/or sports, especially in the overhead position. Whether you can return to your previous level of function is an individual matter and depends on the damage to your shoulder, how well it heals following surgery, how well you rehabilitate, and how strenuous is your desired level of work or sports.

When can I return to routine activities?

You will be able to use your fingers, wrists, and elbow immediately after surgery. You may walk with assistance as soon as you recover sufficiently from anesthesia. You may bathe with regular soap and water 24 hours after surgery and shower 3-4 days after surgery. You may walk outdoors, write, cook, and drive a car (with an automatic shift) within a few days. Do not lift more than 1-2 pounds (a cup of coffee) with your operated arm. Do not use your operated arm to push yourself up from a chair or couch. Do not lean on your elbow.
When can I return to work?

For most sedentary jobs, you will be able to return to work in a week. When you return to work, your arm may be in a sling to protect your shoulder, but otherwise you should manage as long as you do no lifting, pushing, pulling, or carrying. We will instruct you in the proper use of your arm before you leave the hospital.

You may begin light duty work involving no lifting, pushing, or carrying more than 1-2 pounds, 6-8 weeks after surgery and work at waist level with a limit of 5-10 pounds of lifting 3-4 months after surgery. Return to heavy lifting or overhead use may require 6-12 months, and some cases may not be possible.

How is my shoulder rehabilitated?

Rehabilitation includes:

- A home exercise program instituted by a physical therapist the day following surgery

- Exercises that emphasize forward elevation and external rotation to prevent stiffness. These are performed daily for the first 6 weeks (5-10 minutes a session, 3-4 times a day).

- A CPM (continuous passive motion) machine used in the hospital and for the first two weeks after surgery (60 minutes a session, 4 times a day)

- Stretches in internal rotation and cross-body rotation. These are instituted a few weeks later.
Gentle strengthening exercises beginning 6 weeks after surgery

Walking outside and riding a stationary bicycle 1-2 weeks postoperatively

Jogging, Stairmaster, regular bicycle riding, gentle golf strokes and swimming 2-3 months postoperatively

Regular swimming, running, tennis ground strokes approximately 4-6 months postoperatively

Return to prolonged overhead work a minimum of 12 full months postoperatively