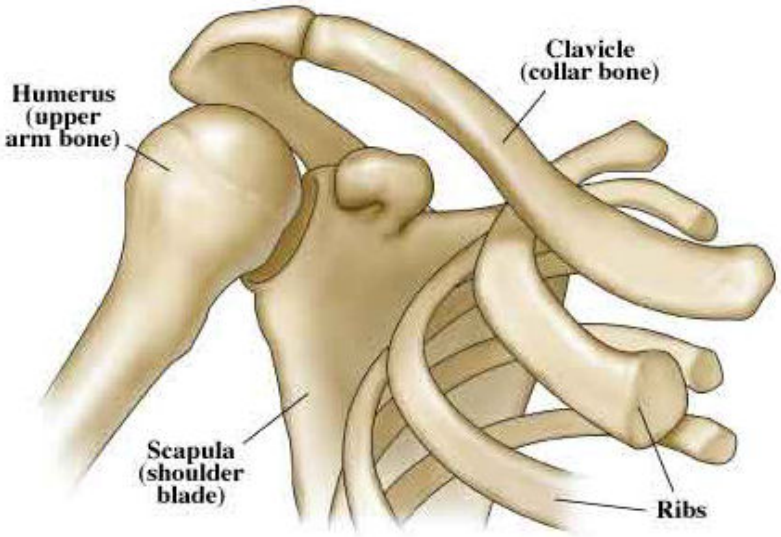
Shoulder Joint Replacement

Shoulder replacement (*arthroplasty*) is a procedure that may be recommended if joint disease makes your shoulder stiff and painful, or if the upper arm bone is badly damaged from an accident.

The shoulder is a ball-and-socket joint that allows for a wide range of motion. The head of the upper arm bone (*humerus*) is the ball, and a circular depression (*glenoid*) in the shoulder bone (*scapula*) is the socket. A soft-tissue rim (*labrum*) surrounds and deepens the socket. The head of the upper arm bone is coated with a smooth, durable covering called cartilage, and the joint has a thin, inner lining (*synovium*) for smooth movement. The surrounding muscles and tendons provide stability and support.



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IMPLANT DESIGN AND CONSTRUCTION

Shoulder replacement surgery replaces damaged surfaces with artificial parts (*prostheses*). Usually, there are two parts used to replace this joint.

- The humeral component replaces the head of the upper arm bone. It is made of metal (usually cobalt/chromium-based alloys). This is a rounded ball attached to a stem that fits into the humerus bone. This part comes in various sizes and can be a single piece or a modular unit.
- The glenoid component replaces the socket (the glenoid depression). It is made of ultrahigh density polyethelene. Some versions have a metal tray, but totally plastic versions are more common.

Depending on the damage to your shoulder, the surgeon may replace just the humeral head (a *hemiarthroplasty*) or both the humeral head and the glenoid (total shoulder replacement). The shoulder parts come in various sizes and shapes to fit the patient. They are held in place with either bone cement (cemented) or bone ingrowth (cementless).

The surrounding muscles and tendons hold the prosthesis parts in place, the same as the original shoulder. Each case is individual and your surgeon will study your situation carefully before making any decisions. Ask what type of implant will be used in you and why that choice is appropriate for you.

PROCEDURE

- Either regional (numb in the shoulder area) or general (sleep during the procedure) anesthesia may be used during shoulder replacement surgery. Your caregiver or anesthesiologist will advise you on the best type of anesthesia for you.
- The surgical cut (*incision*) is 4" to 6" (10cm to 15cm) long and is made on the front of the shoulder from the collarbone (*clavicle*) to the point where the shoulder muscle (deltoid) attaches to the upper arm bone. The surgeon will take care not to injure the nerves or blood vessels that cross the shoulder.
- The upper arm bone is dislocated from the socket to expose the ball-like end of the upper arm. Only the portion of the bone covered by cartilage is removed. Articular cartilage covers the ends of bones where they meet the ends of other bones.
- The center cavity of the humerus bone is cleaned and enlarged with reamers to create a hollow area that matches the shape of the implant stem. The top end of the bone is smoothed so the stem can be inserted flush with the bone surface.

- If the ball of the prosthesis is a separate piece, the proper size is selected and attached.
- If the socket portion of the joint is basically healthy and the surrounding muscles are intact, the surgeon may decide not to replace it. However, if the socket is arthritic, the upper arm bone is moved to the back and the surgeon will implant the glenoid component. The surgeon prepares the socket surface by removing the remaining damaged cartilage. The socket bone is then gently reamed to match the implant. Protrusions on the artifical socket part are then fitted into holes drilled in the bone surface. Once the part fits it is cemented into position.
- The arm bone, with its new artificial head, is replaced in the socket. The surgeon reattaches the supporting tendons and closes the incision.
- The arm is placed in a sling and a support pillow is placed under the elbow to protect the repair.
- Tubes are placed to remove excess drainage. These are usually removed a day or two later.

REHABILITATION FOLLOWING SURGERY

A rehabilitation program is important to the success of the operation. If the surgery is scheduled for the morning, therapy can begin later that day, and no later than the first day after the procedure. A physical therapist will start gentle range of motion exercises. In these, your arm is gently put through all its motions. Before you leave the hospital (usually two or three days after surgery), your therapist will show you in how to use a pulley device to help bend and extend your arm and will give you directions for other home exercises.

HOME CARE INSTRUCTIONS FOLLOWING SURGERY

- You may resume normal diet and activities as directed or allowed. Wear the sling every night for at least the first month, or as instructed by your surgeon.
- **Do not** use your arm to push yourself up in bed or from a chair. This requires too much force on the surgically repaired muscles..
- Follow the program of home exercises suggested. Do the exercises 4 to 5 times a day for a month or as directed.
- Try not to overuse your shoulder. It is easy to do if this is the first time you have been pain free in a long time. Early overuse of the shoulder may result in later problems.
- **Do not** lift anything heavier than a cup of coffee for the first 6 weeks after surgery.
- Ask for help at home. Your caregiver may be able to suggest an agency for this if you do not have home support.
- **Do not** participate in contact sports or do any heavy lifting (more than 10 pounds) for at least 6 months, or as directed.
- Keep ice packs (a bag of ice wrapped in a towel) on the surgical area for 20 minutes, 4 times per day, for the first 2 days following surgery.
- Change dressings if necessary or as directed. Shower and get the wound wet as directed.
- Only take over-the-counter or prescription medicines for pain, discomfort, or fever as directed by your caregiver.
- Follow the directions of your surgeon.
- Keep appointments as directed.

COMPLICATIONS

Complications after shoulder replacement surgery occur less often than with other joint replacement surgeries. However, there are risks. The most common complications are:

- Infection.
- Upper arm bone fracture that occurs during surgery (*intraoperative fracture*) or postoperative fractures.
- Postoperative instability.
- Loosening of the glenoid component over time.

Advances in surgical techniques and prosthetic devices are helping to lessen the chances of complications.

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