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TOTAL SHOULDER REPLACEMENT SURGERY

Arthritis of the shoulder

In a normal shoulder, the humeral head ("ball") at the top of the arm bone rotates smoothly inside the glenoid cavity ("socket"). Arthritis of the shoulder develops when the normally smooth, gliding surfaces of the ball and socket are damaged.

The most common form of shoulder arthritis, osteoarthritis, typically develops in patients after a lifetime of wear and tear. Less common forms of arthritis include posttraumatic arthritis (arthritis that occurs after a broken bone or other injury) and inflammatory arthritis (an autoimmune disease that destroys the joint). If the muscles surrounding the shoulder are severely damaged, the altered shoulder motion can wear out the gliding surfaces and lead to another form of arthritis called rotator cuff arthropathy.

In shoulder replacement surgery, the damaged joint is replaced with biocompatible devices that provide a smooth and painless range of motion. Your surgeon will make every effort to restore your shoulder to a condition that resembles its previous healthy status. You should discuss what realistic outcome to expect with your surgeon.

Normal shoulder
On an x-ray of a normal shoulder, a slight space can be seen between the humeral head (ball) and the glenoid cavity (socket). This indicates a smooth, gliding joint surface.

Arthritic shoulder
There is no space between this shoulder's ball and socket, indicating that the normal surfaces are likely destroyed. Also, the large bone spur (arrow) extending from the ball is probably causing additional pain and stiffness.

Total shoulder replacement
In a standard total shoulder replacement, the ball and socket of the joint are replaced by implants. Placement of the components insures that the smooth gliding surfaces are recreated and normal shoulder function restored.

Arthritic shoulder with damaged muscles
In some cases the ball is not even located next to the socket.This x-ray shows that the humeral head (ball) has moved up and away from its normal position. It is highly likely that the muscles surrounding the shoulder joint have been destroyed.

Reverse total shoulder replacement
In this type of total shoulder replacement surgery, the ball is placed where the socket used to be and vice versa.This reverse total shoulder replacement compensates for the loss of shoulder muscles and makes it possible for the arm to be raised.

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Risk factors and complications

- There are risks in any type of surgery, not just shoulder replacement surgery. The general risks of shoulder replacement surgery—such as a bad reaction to anesthesia, stroke, or heart attack—are no greater than in most other types of surgery.
- The following are among the possible complications following shoulder replacement surgery. While this list is not complete, it includes some of the more concerning complications that require your attention.
    - **Dislocation**. (4.9%) Any shoulder replacement can dislocate ("pop out") in the first few months after the surgery. Fortunately, this is one complication that you can do much to prevent. Most surgeons recommend wearing a sling to protect the shoulder. Even in the sling, however, the shoulder can dislocate if the arm is brought backwards. Make sure to keep your operated arm either in front of you or at your side. While lying down to sleep or rest, it will help to place a pillow under the elbow of the operated arm to maintain this position.
    - **Implant loosening and wear.** (5.3%) The typical shoulder replacement has a 90-95% probability of lasting more than 10 years. Over time, however, the implant may wear out enough to require a second replacement. To slow down this wear, avoid all strenuous or repetitive overhead activities.Your surgeon will give you general guidelines of how the shoulder can be used after the surgery. Be sure to ask your surgeon for recommendations about any specific activity.
    - **Infection.** (0.7%) Although infection in a shoulder replacement is relatively rare, it is a serious complication that requires immediate treatment. In some cases, the implants have to be removed in order to eradicate the infection. Many infections can be avoided. For example, most dental procedures, including routine cleaning, carry the risk of bacteria entering the bloodstream to infect the shoulder implants. Taking an oral antibiotic,prescribed by your dentist, an hour before your procedure can greatly reduce or even eliminate this risk.The same rule applies to other medical procedures, such as colonoscopy.
    - **Nerve or blood vessel injury.** (0.8%) Similar to other surgeries, there is a risk of damage to nerves or blood vessels during shoulder replacement surgery, although this risk is extremely low. If you experience severe numbness or weakness in your hand after the block has worn off, notify your nurse or Dr. Nelson immediately.
    - **Rotator cuff failure** (1.3%) Over time the rotator cuff can degenerate and tear.
    - **Periprosthetic fracture** (1.8%)

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Driving

- You may give you permission to drive within four weeks after the surgery. If your surgery was on the right side, driving permission may not be given until a month or six weeks following the surgery.

Work Activities

Determining the date you return to work will depend both on your surgeon and the type of work you do. Some individuals may require modifications of their job, while others may easily return to their previous activities. Lifting and pulling job-related activities might be delayed or discouraged. Those engaged in heavy manual labor may have to discuss the possibility of vocational counseling with their surgeon.

Leisure and Sport Activities

There are different risks associated with certain types of leisure and sport activities. Some activities may lead to damage of your artificial joint over time due to wear and tear of the joint. More vigorous the activities will increase the risk of damaging the implant. Increased the wear and tear on the implant will increase the risk of loosening of the implant.

Three major categories of activities should be avoided. These include:

• Activities causing high impact stresses on the implant
• Activities with potentially high risk of injury
• Activities that may result in falling or getting tangled with opponents risking dislocation of the joint itself or a fracture of the bone around the implant.

These types of activities include sport activities requiring a vigorous throwing motion of the arm, chopping wood, hammering, heavy lifting or pushing activities, martial arts, and rough contact sports (such as, football, soccer, lacrosse, basketball, baseball, handball, and volleyball). These activities should be avoided.

Weight lifting activities may be limited throughout your life. During your post-operative period you may be able to build up to lifting weights weighing less than five pounds. Check with your surgeon and physical therapist about lifting any heavier weights.

Lower stress activities such as hiking, walking, biking, golfing, and swimming are excellent forms of exercise for individuals with a shoulder replacement. Some patients also return to playing tennis with a shoulder replacement.

How long will I be in a sling?

Generally, 6 weeks. You should sleep in the sling as well. The sling should only be removed for hygiene and exercises. If you cannot sleep in bed due to discomfort, consider sleeping in a more upright position, such as a recliner. It is important to not externally rotate (a motion similar to reaching for the seatbelt while in a passenger seat in the car) for the first 6 weeks. A sling will prevent this motion.

How long before I am fully recovered?

By 3 months most patients are feeling about 80% and are back to daily activities. By 6 months, you should be able to return to your recreational activities (within reason) and maximal medical improvement is at one year.

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Total Shoulder Arthroplasty Rehab Protocol

Phase 0: 0-6 weeks after surgery

Goals:

1. Protect the shoulder replacement
2. Ensure wound healing
3. Prevent stiffness

Activities

1. Sling— Use your sling for the first 6 weeks. Remove for hygiene and exercises. Keep on for sleeping for the first 3-4 weeks.
2. Use of the operative arm— Please move your elbow wrist and hand after surgery to prevent stiffness. Do not rotate the arm at the shoulder. When moving keep your elbow in front of your body do not reach behind your body.
3. Bathing and Showering— You may shower after surgery and wash the incision area. To wash under the arm, bend over at the waist and let the arm swing passively away from the body. It is safe to wash under the arm in this position. **Do Not** submerge the incision under water. Do not scrub the wound.
4. Ice— 7 days a week for 4-5 times a day as needed for 15-20 minutes. Do not place directly on the skin.

Exercise Program

Passive ROM Days per week: 7 Times Per day 4-5

Pendulum exercises 1-2 sets 20-30 rotations
Supine External Rotation 1-2 sets 10-15 reps
Weeks 1-6: limit to neutral
Supine forward elevation 1-2 sets 5-10 reps
Weeks 1 and 2: limit to 90 (straight up)
Week 3 and on: as tolerated
Behind the back internal rotation 1-2 sets 5-10 reps

Shoulder stretching is divided into two phases. **Phase 1,** or passive range of motion is always performed with the uninjured arm assisting or helping the operative arm. **Phase 2,** or active range of motion is a stretching is performed by the operative arm without the assistance of the uninjured arm. In most instances, wean off passive range of motion by using the uninjured arm in isolated incidents to assist the operative arm. The other major difference between passive and active stretching is the "terminal stretch." During active stretching and upon reaching your "endpoint" of pain or movement, push the operative arm with the uninjured hand another 5-10 degrees for additional movement. Maximal motion for each person remains the goal and terminal stretching will assist in achieving that goal.

All stretching exercises should be done slowly to maximize muscle and soft connective tissue involvement. When stretching, your goal is to reach the maximum range of motion **for you.**

Since there are more than one repetition per set, allow the first one or two repetitions to be warm-up reps, with very little to no pain. Gradually work into more and more range of motion. It is also important to allow pain to be your guide. Move the arm to an "endpoint" (dictated by pain). Your goal is to increase the endpoint as often as possible until you have reached the full range of motion. As far as pain, you want to avoid excruciating pain, but "discomfort" is tolerated as long as the pain does not remain for a prolonged period of time. A basic rule, if the pain does not linger, you didn't stretch too far.

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Total Shoulder Arthroplasty Rehab Protocol

Phase 1: 6-8 weeks after surgery
Goals:
1. Protect the shoulder and avoid over stressing the replacement
2. Improve range of motion of the shoulder
3. Begin Strengthening exercises

Activities
1. Sling—No longer necessary.
2. Use of the operative arm— You may now use your arm. Avoid having the arm forcefully pulled behind you. Continue to avoid heavy weight.
3. Precautions—Do not lift heavy weights overhead with the weight going behind the head. Keep everything where you can see it.
4. Ice— 7 days a week for 4-5 times a day as needed for 15-20 minutes. Do not place directly on the skin.

Exercise Program
Stretching/Active motion Days per week 7 Times per day 2-4

—Pendulum exercises	1-2 sets	20-30 rotations
—Supine External rotation	1 set	10-15 reps
—Standing External rotation	1 set	10-15 reps
—Week 6: limit to 30 degrees		
—Week 7-8: limit 45 degrees		
—Supine passive arm elevation	1 set	5-10 reps
—Standing Arm elevation	1 set	5-10 reps
—Behind the back internal rotation	1-2 sets	5-10 reps

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Total Shoulder Arthroplasty Rehab Protocol

Phase 2: 8-12 weeks after surgery
Goals:
1. Protect the shoulder
2. Regain full range of motion
3. Continue gentle Strengthening

Activities
1. Sling—No longer necessary.
2. Use of the operative arm— You may now use your arm. You may move the arm into all positions including external rotation and behind the back if it is comfortable. Avoid having the arm forcefully pulled behind you. Continue to avoid heavy weight.
3. Precautions—Do not lift heavy weights overhead with the weight going behind the head. Keep everything where you can see it.

Exercise Program

Stretching/Active motion Days per week 7 Times per day1-2

—Pendulum exercises	1-2 sets	20-30 rotations
—Standing External rotation	1 set	10-15 reps
—Wall climb stretch	1 set	5-10 reps
—Standing Arm elevation	1 set	5-10 reps
—Behind the back internal rotation	1-2 sets	5-10 reps
—Supine External rotation with abduction	1 set	5-10 reps
—Supine Cross Chest Stretch	1 set	5-10 reps
—Side-lying external rotation	1 set	10-20 reps
—Prone Horizontal Arm raises	1 set	10-20 reps

Strengthening/Theraband Days per week 7 Times per day1-2

—External rotation	1–2 sets	15-20 reps
—Internal rotation	1-2 sets	15-20 reps
—Standing forward punch	1-2 sets	15-20 reps
—Shoulder shrug	1-2 sets	15-20 reps
—Seated row	1-2 sets	15-20 reps
—Biceps curl	1-2 sets	15-20 reps

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Total Shoulder Arthroplasty Rehab Protocol

Phase 3: 12 weeks on after surgery

Goals:

1. Protect the shoulder
2. Regain full range of motion
3. Strengthening to return to normal activities

Activities

1. Use of the operative arm— You may now use your arm. You may move the arm into all positions including external rotation and behind the back if it is comfortable. Avoid having the arm forcefully pulled behind you. Continue to avoid heavy weight.
2. Precautions—Do not lift heavy weights overhead with the weight going behind the head. Keep everything where you can see it.

Exercises

—Continue previous program
—Gradually incorporate weight training, while continuing to avoid excessive or forceful extension and external rotation

Return to sport

The rates of return to sports following total shoulder arthroplasty (75%-100%) are slightly higher than those reported for hemiarthroplasty (67%-76%) and reverse total shoulder arthroplasty (75%-85%). Take a common−sense approach and think it is reasonable to perform recreational activities like tennis, golf, fishing, swimming, light weight−lifting, but I discourage ultra−high impact activities like boxing, shotgun shooting, or heavy power−lifting. Softball has been shown to be the least favorable to return to sport (20%). Most studies demonstrate, that a return to sporting activities is possible in most patients after shoulder replacement but that general health and activity level before surgery are the strongest predictors of a successful return. In other words, patients who exercise routinely before surgery commonly return to high−level sports after shoulder replacement surgery.

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Dr. Nelson's TSA Repair Rehabilitation Protocol

Diagnosis:															
Procedure date:	**S/P:**														
	WEEK											**MONTH**			
	1	2	3	4	5	6	7	8	9	10		3	4	5	6
PHASE 0 EXERCISES (week 0-6)															
Continue Shoulder immobilizer	•	•	•	•	•	•	•	•	•	•					
Pendulum	•	•	•	•	•	•	•	•	•	•					
Supine External Rotation (limit to neutral)	•	•	•	•	•	•									
Supine forward elevation (1-2 limit 90)	•	•	•	•	•	•									
Behind the back IR	•	•	•	•	•	•	•	•	•	•					
PHASE 1 EXERCISES (week 6-8)															
Supine External rotation (limit to 45 degrees)						•	•	•	•	•					
Standing External rotation (wk 6 limit 30, wk 7-8 limit 45)						•	•	•	•	•					
Supine forward elevation						•	•	•	•	•					
Standing forward elevation						•	•	•	•	•					
PHASE 2 EXERCISES (week 8-12) continue prior +															
Wall climb								•	•	•					
Supine external rotation with abduction								•	•	•					
supine cross chest stretch								•	•	•					
side-lying external rotation								•	•	•					
Prone Horizontal arm raises								•	•	•					
Theraband External rotation								•	•	•		•	•	•	
Theraband Internal rotation								•	•	•		•	•	•	
Theraband Standing forward punch									•	•		•	•	•	
Theraband Shoulder shrug								•	•	•		•	•	•	
Theraband Seated row								•	•	•		•	•	•	
Theraband Biceps curl								•	•	•		•	•	•	
PHASE 3 (weeks 12-and on) continue previous plus															
Weight training program												•	•	•	•
Initiate plyometrics												•	•	•	•
May initiate pre injury level activities with clearance by Dr. Nelson												•	•	•	•
Return to play typically 3-6 months															
Call or email Dr. Nelson with any concern															
Additional Instructions:															