



Virtua Reconstructive Orthopedics
SPORTS MEDICINE & ARTHROSCOPY

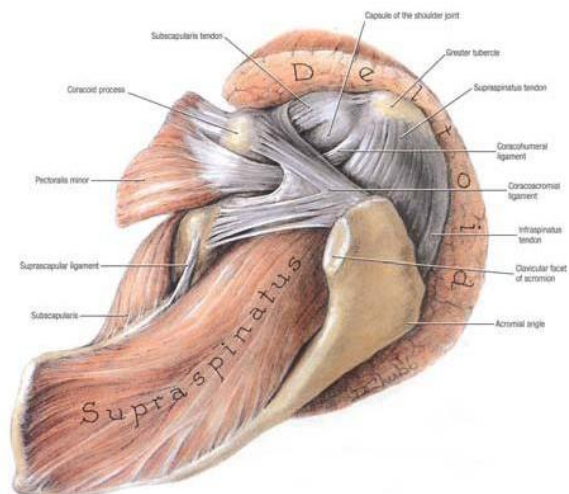
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ROTATOR CUFF TEARS

The shoulder is a ball and socket joint that enables you to raise, twist, bend and move your arms forward, to the sides and behind you. 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 (articular cartilage) and the joint has a thin, inner lining (synovium) for smooth movement. The surrounding muscles and tendons provide stability and support.

The shoulder is moved and also stabilized by the muscles of the rotator cuff. The rotator cuff is comprised of four muscles and their tendons that attach from the scapula to the humerus. The rotator cuff tendons (subscapularis, supraspinatus, infraspinatus and teres minor) are just outside the shoulder joint and capsule. These muscles help stabilize the shoulder and enable you to lift and rotate your arm as well as reach overhead and take part in activities such as swimming, throwing and tennis.



The rotator cuff can tear as an acute injury such as when lifting a heavy weight or falling onto the shoulder or elbow. The shoulder is immediately weak and there is often pain when trying to lift the arm. A torn rotator cuff due to injury is often treated by prompt surgical repair. The rotator cuff can also tear as a result of degeneration. This type of tear may or may not need to be repaired surgically, or it may not be possible to repair it surgically. However, if the tear is causing significant pain and disability, surgery may be a good way to relieve pain and improve shoulder function.

It is currently believed that:

- Rotator cuff tears that are small, tend to become larger
- Rotator cuff tears that are asymptomatic (causing no pain) tend to become symptomatic (cause pain)
- Rotator cuff tears that are straightforward to repair at one point in time can become more difficult to fix at a later point in time. This is due to degeneration of the tendon as well as atrophy of the muscle.

Rotator cuff tears that are not repaired may progress to developing painful arthritis many years later. This type of arthritis, called cuff tear arthropathy (CTA) is very difficult to treat and the longstanding tear in the rotator cuff may be irreparable.

Surgical repair of the rotator cuff is done either arthroscopically (with small incisions through which instruments are passed and the tendon is repaired) or open (with a larger incision through which the tendon is repaired). The decision to repair the rotator cuff open or arthroscopically is based on several factors and will be discussed by you and your surgeon.

The risks of the surgery include but are not limited to:

- Infection
- Nerve injury
- Failure of the repair
- Stiffness
- Pain, postoperative and/or persistent
- Arthritis
- Blood clots

Postoperative Instructions

You will wake up in the operating room with a sling and pillow in place and ice on your shoulder. You will then be brought to the recovery room for a few hours while the effects of anesthesia run their course. You will be discharged from the recovery room after a few hours and will need someone to drive you home.

If you had a nerve block placed you will likely have numbness and pain relief for 6 or more hours afterwards. It will be important to begin taking pain medicine prior to this wearing off, as it is always important to “stay ahead of the pain.” You will be prescribed oxycontin and oxycodone to help with your pain control for the first several days.

Activities and advice for in the hospital and while at home:

1. Please call with any concerns: (609) 747-9200
2. Apply ice to the shoulder, as it will be quite helpful. After two days, you can change the dressing to a smaller one to allow the cold to better get to the shoulder. Be sure to leave the little pieces of tape (steri-strips) in place.
3. Remove the sling on the first day after surgery. Move your elbow, wrist, hand and fingers several times a day. Begin the pendulum exercises several times a day. Put the sling back on when you're done with these exercises. It is likely the sling will be used for 4-6 weeks.
4. If you had a purely arthroscopic procedure, it is okay to shower and get the wound wet after two days, but do not soak the wound as you would in a bath tub or hot tub. If you had an open procedure it will be necessary to keep the wound(s) dry for two weeks.
5. It is important to look out for signs of infection following surgery. These can include: fever (temperature > 101.5^o, chills, nausea, vomiting, diarrhea, redness around your incision, or yellow or green drainage from your incision. Should any of these be present please contact Dr. Mc Millan's office immediately.
6. To wash under your operated arm bend over at the waist and let the arm passively swing away from the body. It is safe to wash under the arm in this position.
7. DO NOT lift the arm or move the arm at your shoulder using your muscles. This could damage the repair.
8. After shoulder surgery there is a variable amount of pain and swelling. This will dissipate after several days. Continue to take the pain medicine you were prescribed as needed. Remember it is called pain control, not pain elimination.
9. You will have an office visit with Dr. Mc Millan scheduled approximately 10-14 days after your surgery.

REHABILITATION AFTER ROTATOR CUFF REPAIR

Phase I: Immediate post-op phase (first 5-7 days after surgery, prior to starting PT)

Goals:

1. Protect the rotator cuff repair
2. Ensure wound healing
3. Diminish pain and inflammation
4. Prevent stiffness and regain motion

Activities:

1. Sling: Use your sling all of the time except for when doing therapy. Remove the sling 4 or 5 times a day to do pendulum exercises. You will need to sleep with your sling and pillow in place. It is often more comfortable to sleep in a recliner or on several pillows.
2. Use of the affected arm: You may use your hand on the affected arm in front of your body but **DO NOT** raise your arm or elbow away from your body. It is all right for you to flex your arm at the elbow. Continue to move your elbow wrist and hand to help circulation and motion. Also:
 - a. No lifting of objects
 - b. No excessive shoulder extension
 - c. No excessive stretching of sudden movements
 - d. No supporting of body weight by hands
3. Continue to ice on a regular basis. At least 20 minutes at a time, 4-5 times per day.
4. Your first therapy appointment should be within 5-7 days after your surgery.

Exercises:

Program: 7 days per week, 4-5 times per day

Pendulum exercises	1-2 sets	20-30 reps
Supine external rotation	1-2 sets	10-15 reps
Supine passive arm elevation	1-2 sets	5-10 reps
Scapular retraction	1-2 sets	5-10 reps
Shoulder shrug	1-2 sets	10-15 reps

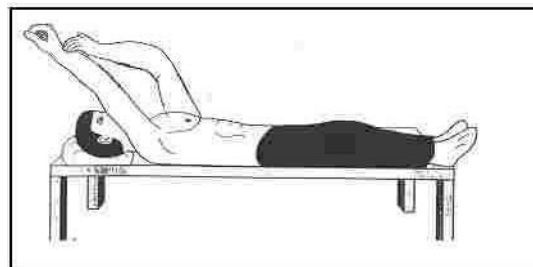


Pendulum exercise

Remove your sling, bend over at the waist and let the arm hang down. Using your body to initiate movement, swing the arm gently forward and backward and in a circular motion.

Supine passive forward elevation

Lie on your back. Hold the affected arm at the elbow with the opposite hand. Assisting with the opposite arm, lift the operated arm upward, as if to bring the arm overhead. Slowly lower the arm back to the bed.

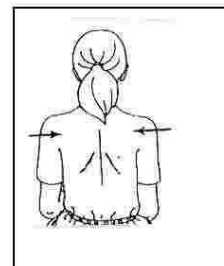


Supine external rotation

Lie on your back. Keep the elbow of the operated arm against your side with the elbow bent 90 degrees. Using a cane or a long stick in the opposite hand, push against the hand of the operated arm so that the operated arm rotates outward. Hold for 10 seconds, relax and repeat. The amount of allowed external rotation will be specified after surgery.

Shoulder blade pinches

While standing, pinch shoulder blades backward and together.



Phase II: Intermediate post-op phase (5-7 days post surgery – 2 weeks)

At this point you should begin your formal physical therapy, the instructions that follow are to aid your therapist in maximizing the results of your surgery while still protecting the repair.

Your therapist will instruct you on how to perform the exercises below and give you a home exercise program. It is important that you stay within the limits demonstrated and that you perform your exercises daily. You should strive to do your home exercise program at least 3-4 times per day, every day. The success of your repair depends on your rehab.

****PT should not hurt. Do not force painful motions.****

Goals and Activities:

1. As in Phase I.
2. You will have your first follow-up appointment with Dr. Mc Millan at 2 weeks after surgery.

Exercises:

- Pendulum exercises
- Progress Passive ROM to tolerance
 - Flexion in scapular plane to at least 115 degrees
 - ER in scapular plane at 45 degrees abduction to 20-25 degrees
 - IR in scapular plane at 45 degrees abduction to 30-35 degrees
- Elbow, wrist and hand active range of motion (AROM).
 - If patient had biceps tenotomy or tenodesis, only PROM of elbow allowed.
- Scapula strengthening exercises

Phase III: Protection phase (day 15 – week 6)**Goals:**

1. Allow healing of soft tissues
2. Do Not overstress healing tissue
3. Gradually restore full Passive ROM (Week 5-6)
4. Re-establish dynamic shoulder stability
5. Decrease pain and inflammation

Activities:

1. While the repair is getting stronger you must allow time for healing. At 4 weeks after the repair, the tendon is about 20% the strength of a normal tendon. Even if the repair starts feeling good, do not stress it.
2. Sling: continue to use your sling for at least the next 4 weeks. It is permissible to now come out of your sling while at home in a controlled environment (for example, sitting at a computer or watching television). If you are out of your sling it is important that you keep your elbow tucked in to your side and do not perform any sudden movements or use your arm to lift things.
3. Showering: if you had any open procedure it is now permissible to get the wound wet. If there is any drainage from the wound, you will need to keep it dry.
4. Ice several times per day, especially after therapy.
5. Once you are no longer taking pain medications and are not using the sling it will be okay to drive.
6. Precautions:
 - a. No heavy lifting
 - b. No excessive behind the back movements
 - c. No supporting the body weight by hands and arms
 - d. No sudden jerking motions

Exercises:

- Progress Pendulum hangs to Pendulum mobility, discomfort should be the guide
- Progress PROM to tolerance (do not force painful motions)
 - Flexion to 140-155 degrees
 - ER at 90 degrees abduction to at least 45 degrees
 - IR at 90 degrees abduction to at least 45 degrees
- Supine ER and passive arm elevation
- Scapular strengthening exercises
 - Retraction
 - Shoulder shrug

- Behind the back IR

- After week 3 may do the following:
 - May begin joint mobilizations grade I & II for pain relief / relaxation as indicated for all shoulder girdle joints (GH, SC, AC, ST).
 - May allow aquatic therapy for active assisted range of motion (AAROM), if incisions well healed, no swimming strokes

Phase III: Intermediate phase (weeks 6-12)**Goals:**

1. Initiate Active ROM.
2. Maintain full Passive ROM.
3. Continue to protect the repair and allow healing of the rotator cuff tendon to the bone.

Activities:

1. Your sling is no longer necessary unless Dr. Mc Millan has told you otherwise.
2. While the repair is getting stronger you must still allow time for healing. At 8 weeks your tendon repair is 40% as strong as a normal tendon and at 12 weeks it is 60% as strong. Even if the repair starts feeling good, do not stress it.
3. You should continue to avoid lifting your arm away from your body, because this is the action of the tendon that was repaired. You can lift your arm forward in front of your body but **not** to the side. You may raise your arm to the side, if you use the good arm to assist the operated arm.
4. Unless instructed otherwise it should be okay to drive at this point.
5. You can actively use of your arm for daily living: bathing, dressing, driving typing on a computer, eating and drinking.
6. No lifting anything heavier than a cup of water.
7. You may use an elliptical machine but do not support your body weight with your operated arm. No running at this point.

Exercises:

- Stretching
 - Pendulum exercises
 - Supine External Rotation
 - Active-assisted Arm Elevation
 - Standing External Rotation progressing to
 - Supine passive arm elevation
 - Active-Assisted Arm Elevation
 - Behind the back internal rotation
 - Supine external Rotation with Abduction
 - External rotation @ 90° abduction
 - Supine Cross-Chest Stretch
 - Wall slide Stretch
 - Overhead pullies

- Active Motion
 - Side-lying External Rotation
 - Prone Horizontal Arm Raises “T”
 - Prone row
 - Prone extension
 - Prone scaption “Y”
 - Standing Forward Flexion (scaption) with scapulohumeral rhythm
 - Resisted forearm supination-pronation
 - Resisted wrist flexion-extension
 - Sub-maximal isometric exercises:
 - Internal and external rotation at neutral with physical therapist
 - Rhythmic stabilization and proprioceptive training drills with physical therapist
- Water (pool) therapy (if available):
 - Standing in water with float under arm, lower body into water to help stretch into flexion
 - Standing in water with float under arm, lower body to side to help with external rotation.

Phase IV: strengthening phase (weeks 12-20)**Goals:**

1. Maintain full non-painful ROM
2. Enhance functional use of upper extremity
3. Restoration muscular strength & power

Criteria for progression to Phase IV:

1. Adequate pain-free ROM in all planes.
 - a. Passive FF of 140 degrees, Active FF of 115 degrees
 - b. Normal external rotation at 0 degrees elevation
2. Adequate scapular positioning at rest and with activity
3. Minimal or no pain

Activities:

1. While the repair is getting stronger you must still allow time for healing. At 12 weeks your tendon repair is 60% as strong as a normal tendon and at 16 weeks it is 70% as strong. Even if the repair starts feeling good, do not stress it.
2. Do not perform straight arm lateral raise (long lever arm abduction) strengthening exercises as this will place too much load on the repaired tissue
3. Do not perform arm raises with your arm with your thumbs down (empty can) at any stage of rehabilitation, as this will stress the repair. Always do arm raises with your thumb up (full can).
4. No lifting heavier than 5 lbs.
5. Continue to do your home exercise program on a regular basis. As you progress through the exercises and recover more strength, you will be able to lighten these to every other day.

Exercises:

- Continue stretching/PROM as needed
 - Pendulum
 - Supine/standing ER
 - Supine passive arm elevation
 - Behind the back IR
 - Hands behind the head stretch
 - Supine cross chest stretch
 - Sidelying IR stretch
 - ER at 90 degrees abduction stretch

- Wall slide stretch

- Strengthening exercises – general principles
 - Start exercises in a position of low demand on the rotator cuff (the scapular plane)
 - Progress exercises in terms of muscle demand and intensity.
 - Focus on higher repetitions and lower resistance.
- Initial strengthening exercises:
 - Standing ER with therabands (towel under elbow)
 - Standing IR with therabands
 - Prone rows
 - Prone extension
 - Prone scapulation
- May progress to using light weights (start with 1 lb weight):
 - Sidelying ER
 - Full can scapular abduction
- May gradually add additional exercises as long as mechanics are good and patient is pain free
 - Diagonals with theraband
 - Pushups from counter height
 - Dynamic hug with theraband
 - IR at 90 degrees abduction with theraband
 - Standing forward punch with theraband
 - Sitting ER – supported at 90 degrees abduction with light weight
 - ER unsupported at 90 degrees abduction with theraband
 - Biceps curls with light weight
- Dynamic stabilization exercises
- PNF manual resistance with physical therapist
- Proprioception drills

Phase V: return to activity (approximately 18-20 weeks after surgery)

Goals:

1. Maintain full non-painful ROM
2. Enhance functional use of arm
3. Improve muscular strength and power
4. Gradual Return to functional activities

Activities:

1. Sports that involve throwing and the use of the arm in the overhead position are the most demanding on the rotator cuff. Dr. Mc Millan and/or your therapist will provide you with specific instructions on how and when to return to golf, tennis, volleyball, swimming and throwing.
2. For people who wish to return to training with weights, Dr. Mc Millan will give you guidelines and advice when returning to a weight-training program.
3. The following timetable can be considered as a minimum for return to most activities:
 - a. Skiing 6 months
 - b. Golf 6 months
 - c. Weight Training 6 months
 - d. Tennis 6 -8 months
 - e. Swimming 6-8 months
 - f. Throwing 6 months
4. Before returning safely to your activity, you must have full range of motion, full strength and no swelling or pain.
5. Dr. Mc Millan or your therapist will provide you with a specific interval-training program to follow when it is time to return the above activities.

Exercises:

- Continue ROM exercises and stretching to maintain full ROM
- Self capsular stretches
- Progress shoulder strengthening exercises