

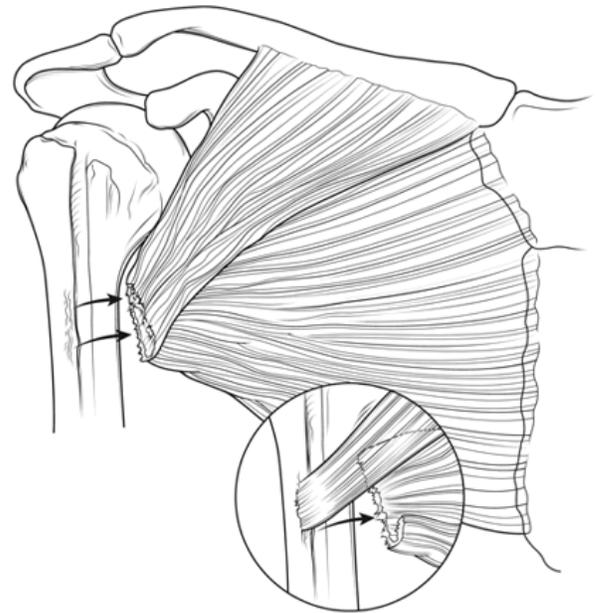
Pectoralis Major Tendon Repair

The pectoralis major muscle (the “pecs”) is a large muscle on the chest wall. It is responsible for giving power to the arm in adduction (bringing the arm toward the body), internal rotation (rotating the shoulder toward the body) and flexion of the shoulder joint when the arm is extended. The pectoralis major muscle has two portions, called heads – the clavicular head and the sternal head, which are named based on the spot from where the muscle originates.

Injury to the pectoralis major muscle is usually seen when the arm is extended or externally rotated while it is being actively contracted. This is most frequently seen during weight- lifting, such as a bench press, where the muscles are contracting and still being forced down by the weight of the bar. You may have heard or felt a pop in the chest or shoulder. This is often followed by significant pain, weakness and bruising. In order to confirm the diagnosis, Dr. Price may order an MRI of your shoulder or chest.

Partial tears of the pectoralis are common and often will do well with non-operative treatment. In addition, tears at the junction of the muscle and tendon are often not amenable to operative treatment and may be treated non-operatively as well. This will consist of rest, use of a sling, ice, compression and over the counter anti-inflammatory medication. Physical therapy may begin approximately 2 weeks after the time of injury, and will work on gradually restoring strength and motion.

In full-thickness tears, operative treatment is often recommended. Surgery is done to dissect the tendon free of the surrounding tissue and reattach it to the humerus (arm) bone, back to the original attachment site. It is best if surgery takes place within the first three months after the time of injury in order to prevent tendon retraction, although chronic repairs can be done as well. A tear older than three months may require tendon grafting, but Dr. Price will discuss this further with you should that prove necessary.



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

- Infection
- Continued pain and/or weakness
- Fracture of either humerus or glenoid bone
- Nerve injury
- Anesthesia problems
- Hematoma or blood clots

Postoperative Instructions

You will wake up in the operating room with a sling in place. If you are done as an outpatient, you will be able to go home after a short stay in the recovery area. Otherwise, you will go to the recovery room and then to a hospital room after a few hours. You can get out of bed when you wish. You should continue to apply ice to your shoulder to reduce pain and swelling.

Pain is usually controlled for the first 18-24 hours with a postoperative nerve block. The anesthesiologists will discuss this with you prior to your surgery. If you elect not to have a nerve block, intravenous medication will be used to help control your pain. Afterwards you will be transitioned to oral pain medications such as oxycodone or a similar medication.

Activities & Advice for in the hospital and while at home

1. Please call with any concerns: 617-726-6648
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 finger several times a day. Begin the pendulum exercises several times a day. Put the sling back on when you're done with these exercises.
4. After two days it is okay to shower but do not get the wound wet for at least two weeks after surgery. Do not submerge the wound as you would in a bath tub or hot tub for at least 4 weeks after surgery. 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.
5. 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.
6. It is important to look out for signs of infection following joint replacement surgery. These can include: fever (temperature $> 101.5^{\circ}$, 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. Price's office immediately.
7. You will have an office visit scheduled approximately 10-14 days after your surgery

Phase I: 0-6 weeks after surgery

Goals:

1. Protect the tendon repair
2. Ensure wound healing
3. Prevent shoulder stiffness – increase passive range of motion
4. Decrease pain

Activities:

1. Use your sling during this period. When you are at home and not moving it is okay to come out of the sling as long as you are careful and keep the shoulder safe. Your elbow should be “tucked in” to your side whenever you are out of your sling. Put the sling on when you are outside or in a crowd. Keep the sling on when sleeping at night for the first 4 weeks.
2. You may use the hand on your operated arm as long as you do not rotate your shoulder away from your body. You should bend your arm at the elbow and use your fingers and hand such as to reach up and touch your face. Keep your elbow in front of you.
3. You may shower as previously described. Do not submerge the wound under water.
4. Begin the phase one exercises. Supine exercises should be done with a small rolled towel placed behind the elbow to avoid shoulder hyperextension and anterior capsular stretch.
5. Continue to use your ice: 7 days per week, 4-5 times per day, 15-20 minutes per time
6. You will see Dr. Price at 2 weeks after surgery and again at 6 weeks after surgery.

Exercises:

Weeks 0-2:

1. Elbow/wrist/hand ROM
2. Gripping exercises
3. Passive ROM and active assistive ROM (L-bar)
 - a. Flexion to tolerance 0-90 degrees (week 1)
 - b. Flexion to tolerance 0-100 degrees (week 2)
 - c. ER at 30 degrees abduction scapular plane to 0 degrees (week 1)
 - d. ER at 30 degrees abduction to 10-15 degrees (week 2)
4. Isometrics (sub-maximal, sub-painful) ER, Abduction, Flexion, Extension

Weeks 3-4:

1. Gradually progress ROM
 - a. Flexion to 115 degrees
 - b. ER at 45 degrees abduction scapular plane to 0 degrees
 - c. IR at 45 degrees abduction in scapular plane to 45-60 degrees
2. Initiate light isotonic for shoulder musculature (No IR strengthening)
3. Initiate scapular isotonic
 - a. Tubing for ER
 - b. Rhythmic stabilization drills
 - c. Active ROM, full can, abduction, prone rowing

Weeks 5-6:

1. Progress ROM as tolerance allows
 - a. Flexion to 160 degrees (tolerance)
 - b. ER/IR at 45 degrees abduction:
2. IR to 75 degrees
3. ER to 25-30 degrees
4. Joint mobilization as necessary
5. Continue self capsular stretching (light)
6. Initiate isometric IR submaximal
7. Progress all strengthening exercises
 - a. Continue isotonic strengthening
 - b. Dynamic stabilization exercises
 - c. Wall stabilization

Phase II: 6-12 weeks after surgery

(not to begin before 4 weeks post-surgery to allow for healing)

Goals:

1. Protect the shoulder and avoid overstressing the repair
2. Restore full passive range of motion
3. Gradually restore active motion
4. Re-establish dynamic shoulder stability

Activities:

1. The sling is no longer necessary. It is advisable to continue to wear it when out in public or large crowds as this may help people to avoid “slapping” you on the shoulder.
2. You may now use your operated arm. Avoid having your arm forcefully pulled.
3. Continue to avoid heavy lifting or manual labor. You should not lift anything heavier than a coffee cup. Any lifting should be done with weight in front of you.
4. Ice as needed for pain control. It is still a good idea to ice after therapy.
5. Check with Dr. Price regarding driving and getting the wound wet in a pool or bath. Both may be okay at this time.

Exercises:

Week 6-7:

1. Continue exercises as from phase I.

Week 8:

1. Progress ROM as tolerance allows
2. ER/IR @ 90 degrees abduction
3. ER @ 90 degrees abduction to 45-50 degrees
4. IR @ 90 degrees to 70 degrees

Week 9:

1. Progress ROM as tolerance allow
 - a. ER/IR @ 90 degrees abduction
 - b. ER @ 90 degrees abduction to 75-80 degrees
 - c. Flexion to 170 degrees
2. Continue all stretching exercises
 - a. Joint mobilization, capsular stretching, passive and active stretching
3. Continue strengthening exercises
 - a. Isotonic strengthening for entire shoulder complex
 - b. May begin light biceps and IR isotonic
 - c. Neuromuscular control drills
 - d. Isokinetic strengthening

Week 10:

1. Progress ER @ 90 degrees abduction to 90 degrees
2. Progress to full flexion

Week 11-14:

1. Continue all flexibility exercises
2. Continue all strengthening exercises
3. May begin to increase weight for biceps and IR
4. May initiate light isotonic machine weight training (week 16)

Phase III: Advanced Strengthening Phase (Weeks 14-26)

Criteria to initiate Phase III:

1. Full ROM
2. No pain or tenderness
3. Satisfactory stability
4. Strength 75% of contralateral side

Goals:

1. Improve strength of shoulder musculature
2. Neuromuscular control of shoulder complex
3. Improve functional activities

Exercises:

Week 14-20:

1. Continue all flexibility exercises
 - a. Self capsular stretches (anterior, posterior and inferior)
 - b. Maintain ER flexibility
2. Continue isotonic strengthening program
3. Emphasis muscular balance (ER/IR)
4. Continue PNF manual resistance
5. May continue plyometrics
6. Initiate interval sport program (physician approval necessary) week 16

Weeks 20-24:

1. Continue all exercise listed above
2. Continue and progress all interval sport program (e.g. throwing off mound)

Unrestricted return to sports may begin with:

1. Full, non-painful ROM
2. Satisfactory stability
3. Satisfactory strength
4. No pain or tenderness at surgical site