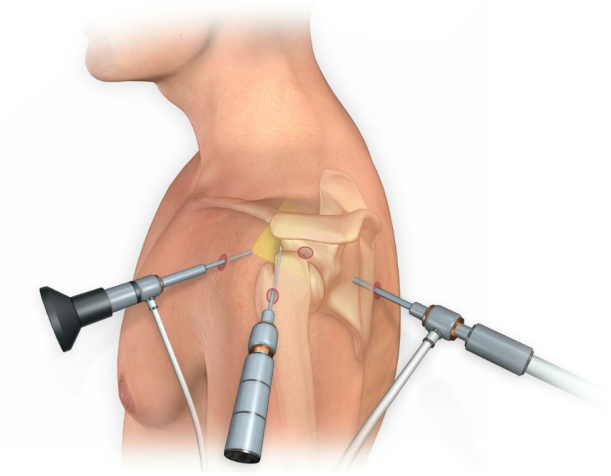

WHAT TO EXPECT WHEN YOU ARE EXPECTING SHOULDER ARTHROSCOPY

A PATIENT'S GUIDE TO SHOULDER ARTHROSCOPY

DESCRIPTION

Everything a patient needs to know before shoulder arthroscopy; including descriptions of common problems and their surgical solutions, pre-operative concerns, day of surgery expectations, post-operative course, and a helpful FAQ section.

By Robert Purchase

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Chapter 1. Introduction

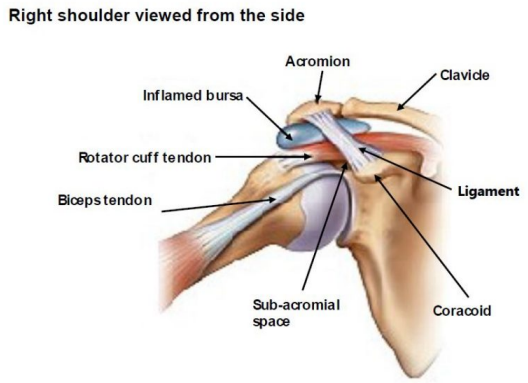
The purpose of this tool is to prepare you for your upcoming shoulder arthroscopy. After using this reference, I would ask for your feedback and suggestions so that I can improve it for future patients by sending your comments to info@purchaseorthoclinic.com.

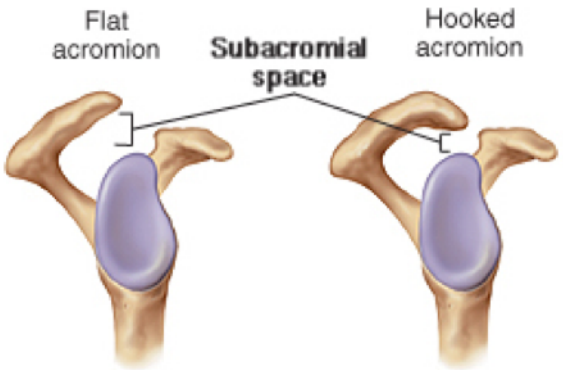
I would like to make one comment before we go too far. This resource is written for 2 separate but similar groups of people. One group represents my patients for whom I am going to be doing the surgery. The other group represents shoulder arthroscopy patients from other surgeons. Bearing in mind that there are many ways to do things, not every detail that is relevant to my patients will be true for another surgeon's patients. To that end, I have tried to make my comments as specific as possible while remaining generic enough to be widely helpful. Please direct any questions or concerns about any perceived discrepancies between your surgeon's plan and my comments back to your surgeon. I am sure he or she would be happy to discuss your concerns.

Shoulder arthroscopy is a surgical procedure where a small camera is inserted through tiny incisions, called portals, to diagnose and confirm structural problems in your shoulder that have been causing pain and/or functional problems. Nowadays, most of those structural problems can also be fixed arthroscopically, avoiding larger open incisions that cause more scarring.

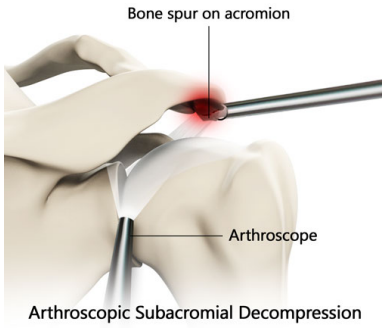
Chapter 2. Subacromial Impingement/Rotator Cuff Tendinitis/Mild Partial Rotator Cuff Tears and Subacromial Decompression

These are very common problems that sometimes require surgery. There are many reasons why someone may develop rotator cuff tendonitis or mild partial rotator cuff tears. One cause is a "spur" off the end of the acromion. The acromion is the expanse of the scapula or shoulder blade and it forms the roof of one's shoulder under which the rotator cuff tendon exits as it is about to insert into the bone. The rotator cuff tendon is more likely to rub on the undersurface of the acromion if it is curved or hooked instead of flat when one is moving their arm. Over time, this abnormal contact of the tendon on the undersurface of the bone can cause fraying of the soft tissue which can be seen at the time of arthroscopy.





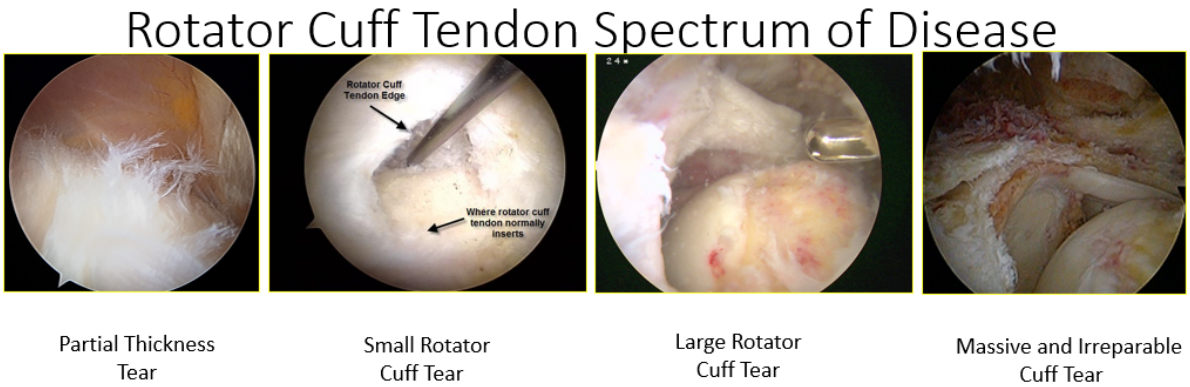
If your acromion has a spur, meaning it is curved or hooked, that spur can be removed, effectively making more room for that tendon to glide friction free. This means that the acromion can be flattened with a bone removing device called a bur. This flattening of the acromion is called a subacromial decompression.



Often times, the rotator cuff will need to be treated as well. Mild fraying of the rotator cuff tendon or partial thickness tears are commonly debrided or cleaned-up, effectively smoothing out the tendon surface. Full-thickness tears of the cuff are dealt with in an upcoming chapter.

Chapter 3. Rotator Cuff Tears and Rotator Cuff Repair

One of the most common problems treated by shoulder arthroscopy is a rotator cuff tear. Rotator cuff problems exist on a spectrum, from mild tendinitis on one end to massive full-thickness rotator cuff tears on the other. For most patients, this problem starts without an obvious injury long before they first felt pain. Generally, it begins as mild tendinitis and progresses slowly over time. As it progresses, the surface of the tendon can be frayed or partially torn. It is called a low-grade or mild partial thickness tear when only a small part of the tendon has been frayed. When a significant portion of the tendon has been frayed, we call that a high-grade or severe partial thickness tear. Once all the fibers have been worn through in a specific area of the tendon, that is called a full-thickness rotator cuff tear. These often start small but enlarge over time. As the tear enlarges over time, the tendon can also retract or pull back from the bone. At some point, the tear will get so big and retract so far from where it started that it can no longer be fixed. This is called a massive and irreparable rotator cuff tear.



For the purposes of this section, I'm going to focus on the middle of the spectrum, rotator cuffs tears that can be repaired.

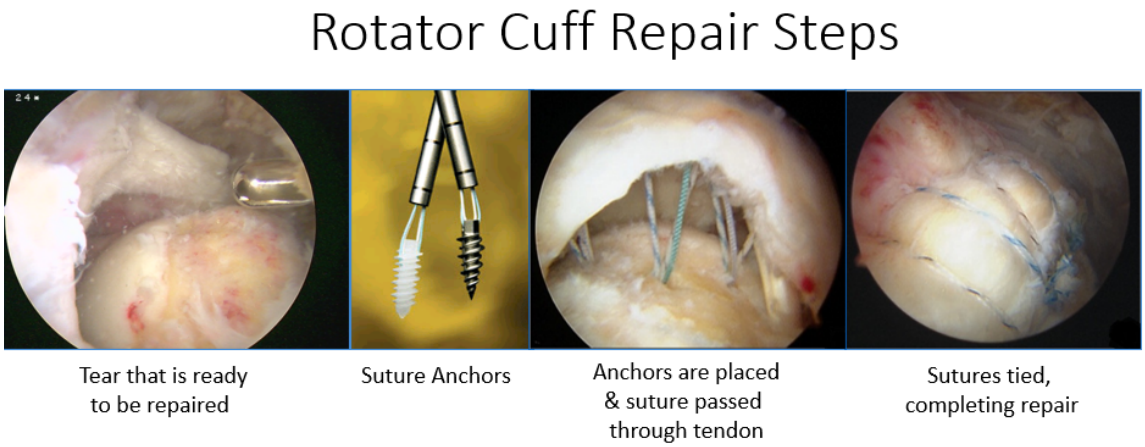
Rotator cuff tears cause dysfunction because the muscle is simply not connected to the bone and cannot function. Not only is that a problem for that torn tendon, but this also puts more load on the other parts of the rotator cuff.

Severe partial thickness rotator cuff tendon tears sometimes need to be repaired. If your orthopedic doctor determines that so much tendon has been worn through that the remaining tendon is not robust enough, the surgeon will convert it to a small full thickness tear and repair it.

A rotator cuff repair is a pretty simple idea. In theory, it involves re-attaching the tendon that was no longer attached to the bone back onto the bone with the use of suture anchors. In practice, it is a little more complicated.

First, one determines the tear pattern (since this suggests a specific repair strategy), confirming that the tendon can be returned to its original insertion site (which can be difficult if the tear has been present for a long time or if the tendon has retracted), prepping both the tendon side and the bone side to improve healing, and the use of a suture anchor to repair the tendon. The suture anchor is placed in the bone where you want the tendon to ultimately heal. The anchor has thread or sutures that go through the anchor. The sutures are passed through the tendon, and a knot is tied. As you tie that knot, the knot will go to the suture anchor. Since the knot is on top of the tendon, it brings the tendon with it.

Ultimately the tendon is delivered onto the bone and is sandwiched between the bone surface and the knot until it heals into place.



A rotator cuff repair is that simple. However, the repair needs to be protected in the early post-operative period so please review the post-operative care sections to ensure that you have success. In addition, it is common that other arthroscopic procedures are done at the same time as the rotator cuff repair so please check out those relevant sections.

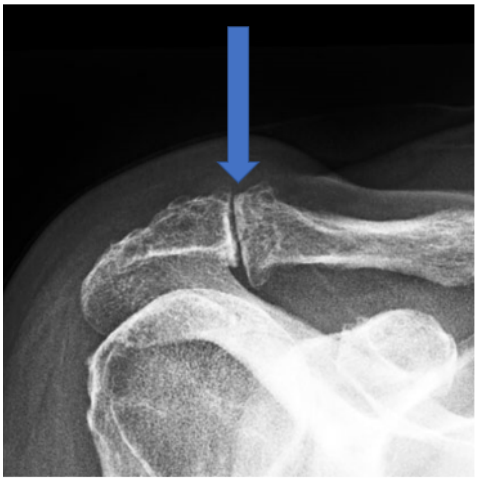
Chapter 4. AC Joint Arthritis and AC Joint Resection, AKA a Mumford Procedure

The acromioclavicular joint is a small joint at the top of the shoulder where the collarbone, or clavicle, meets the acromion, an expanse off of the shoulder blade. Most people just call it the AC joint.

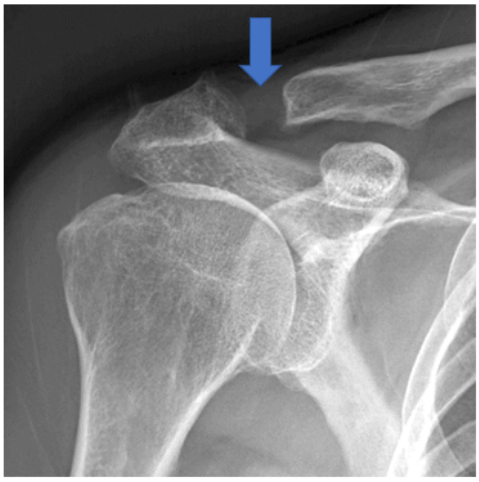
The AC joint, like any joint in the body, has cartilage on both ends to help it absorb shock, and it is subject to a lot of force because it is the only true joint between your arm and the rest of your body. Heavy manual labor, sports, and weightlifting can all put a lot of stress on that little joint. As a result, the cartilage can wear out, causing arthritis and sometimes pain.

Believe it or not, one option to treat arthritis is to cut out the painful joint, and the removal of the AC joint does NOT cause dysfunction. If you cut out 5 to 10 mm from the end of the collarbone, the pain goes away, and shoulder function can improve because the pain is gone. This removal of the AC joint is often called a Mumford procedure.

Arthritic AC Joint



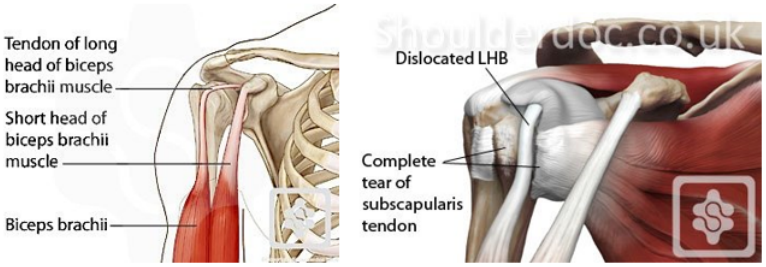
Mumford



A Mumford procedure can be done either through an open incision, especially if it is the only procedure being performed, but is commonly done arthroscopically as part of a larger shoulder procedure.

Chapter 5. Biceps tendonitis and biceps surgery

The biceps tendon at the shoulder level is a complex structure. As the name suggests, the biceps has two heads or parts. One is called the short head and the other is called the long head. The short head is a simple and elegant design and almost never breaks down. Unfortunately, the long head often causes pain when it becomes inflamed and/or starts to slip out of its groove. One of the problems is a 90 degree turn that the long head of the biceps makes as it exits the shoulder. This turn causes a lot of friction. In addition, the tendon can pop in and out of the boney groove. Not only does this cause pain, it can also cause damage to the rotator cuff tendon in the front of the shoulder, the subscapularis. If this is allowed to continue to happen, it can cause progressively more damage to the subscapularis. It can even completely detach the subscapularis.



There are two ways to fix an inflamed and/or unstable biceps tendon. One is a biceps tenotomy and the other is a biceps tenodesis. Both are equally effective at relieving pain and restoring function, but patient specific factors often lead patients to select one over the other.

A biceps tenotomy involves cutting the long head of the biceps from within your shoulder and NOT re-attaching it. Since the short head remains attached, function is generally unaffected. There is no hardware used. The biceps muscle sometimes develops a “Popeye” appearance. Some patients report some cramping in the front of the arm after surgery that generally resolves within 6 weeks. Special rehabilitation efforts and/or activity restrictions are NOT required. Therefore, recovery can be shorter, especially if no other repair (such as a rotator cuff repair) is required. Post-operative strength, pain relief, and function are reliably good. The only exception regarding function involves people who need to do forceful pronation which is essentially screwing in screws with a hand screwdriver.

A biceps tenodesis involves cutting the long head of the biceps from within your shoulder and then re-attaching it to your arm bone using hardware. The biceps muscle rarely develops a “Popeye” appearance. Cramping is generally not experienced. A separate incision is usually required. Special

rehabilitation efforts and/or activity restrictions are required (no lifting more than 5 pounds for the first 6 weeks). Therefore, recovery can be longer. Post-operative strength, pain relief, cosmetic appearance, and function are reliably good.

Comparative studies show both the tenotomy and tenodesis have similar functional outcomes, pain relief results, arm and shoulder strength, and motion. This table is a quick reference to compare the two procedures

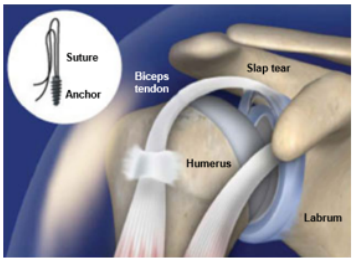
	TENOTOMY **AKA cutting the tendon**	**TENODESIS** **AKA transferring the tendon**
Pain Relief	Similar	Similar
Rehabilitation Time	Likely shorter	Likely longer
Arm Strength	Similar	Similar
Arm Range of Motion	Similar	Similar
Biceps "Popeye" Appearance	More Likely	Less Likely
Separate Incision	None	Yes
Temporary Biceps Cramping	More likely	Less likely

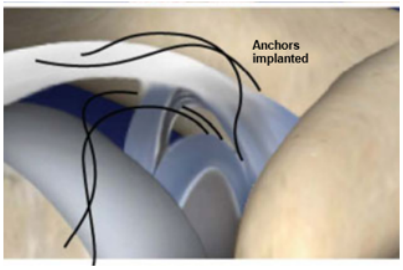
Chapter 6. SLAP Tear and SLAP Surgery

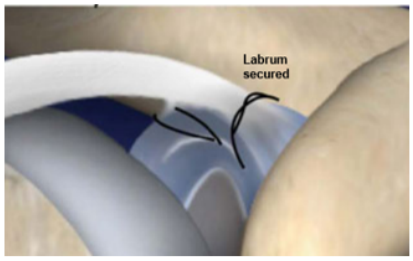
The word SLAP is a pneumonic that stands for Superior Labral Anterior Posterior. SLAP tears are a relatively rare condition involving the top of the glenoid labrum, the soft tissue structure that goes around the cup of the shoulder, near where the long head of the biceps tendon comes off.

A SLAP tear can occur as a result of an injury, such as traction type injury or dislocation event. But most SLAP tears develop over time.

Treatment of a SLAP tear depends on many factors, including how it happened, the type of tear that it is, and the age of the patient. For example, most tears that were caused by an injury, especially shoulder dislocations, will be repaired. However, those that develop over time are more amenable to debridement or even biceps surgery such as biceps tenotomy or tenodesis. A SLAP debridement is a simple arthroscopic surgery which involves using a surgical device to clean up the torn superior labrum, smoothing out the labrum that remains. Both biceps tenotomy and tenodesis are discussed in a separate chapter. Finally, patients over a certain age, approximately 40 or 45 years of age, tend to do better, i.e. faster recovery with less risk of stiffness, when a biceps tenodesis or tenotomy is performed instead of a SLAP repair.



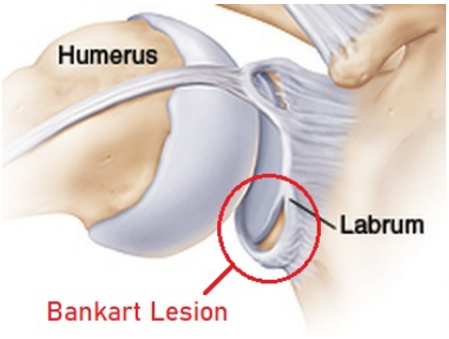


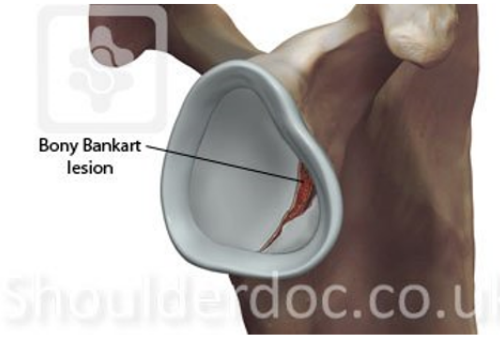


Chapter 7. Shoulder Instability and Arthroscopic Bankart Repair

Because the shoulder joint has such a wonderful range of motion, it is inherently unstable. The shoulder joint is the most commonly dislocated joint in the body. When the shoulder dislocates, the ball at the top of the arm bone, aka the humeral head, is forced out of the shallow socket of the shoulder blade, aka the glenoid. Most commonly the ball goes out the front of the socket, and this is called an anterior dislocation.

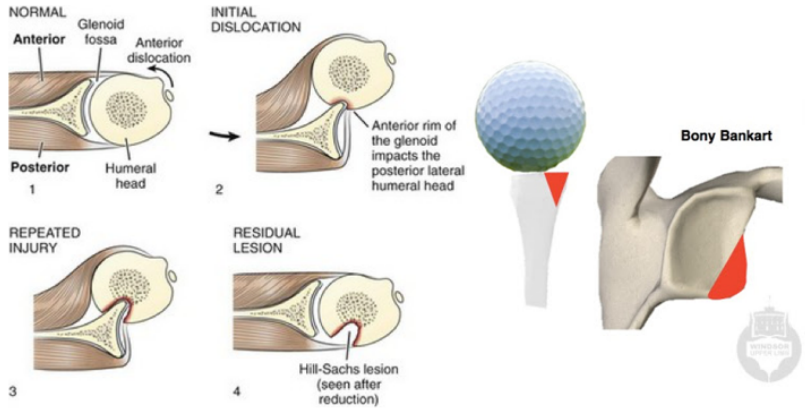
When this happens, a common injury pattern occurs. It involves tearing of the labrum, the soft tissue ring that goes around the cup, and stretching of the ligaments in the front of the shoulder. This is commonly referred to as a Bankart tear. In rare instances, the lower front corner of the boney cup can break off instead of having the labrum tear. This is creatively called a boney Bankart. As you likely understand, a shoulder dislocation is severely painful and requires immediate attention.





Over time, the labrum may heal back to the bone but it may do so in a slightly abnormal position. The stretched ligaments will heal but in a slightly lengthened position. Therefore, the acute pain will resolve and most patients can return to their normal activities after completing a course of non-operative treatment which usually involves at least some physical therapy. However, those individuals have a greater likelihood to have a second dislocation than the average person. Orthopedic surgeons do not operate on patients after their first dislocation, except in rare instances, generally reserving surgery for those who have had two or more dislocations.

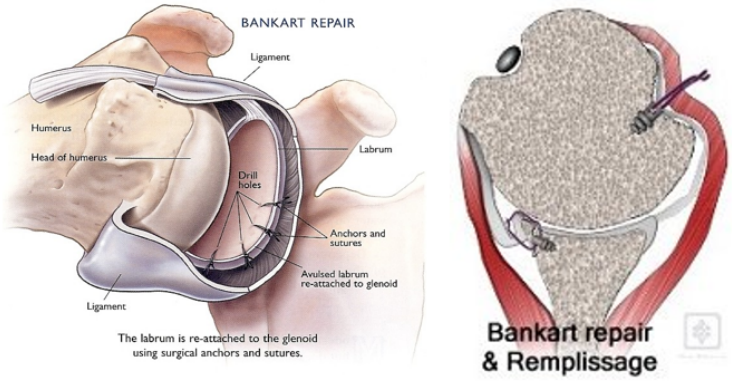
People who experience multiple dislocations are at greater risk of developing additional structural problems with their shoulder. One is called a Hill-Sachs lesion, which occurs on the back of the arm bone. The other involves the loss of the front edge of the glenoid or cup of the shoulder. When the shoulder is dislocated, the back of the arm bone sits on the front edge of the cup. The bone is not designed to be loaded in this way and is surprisingly soft in this instance. As a result, the bone in the back of the arm can be “dented”, resulting in a Hill-Sachs lesion, and the bone on the front edge of the cup can be compressed.



The problem with the Hill Sachs lesion is that it can engage with the front edge of the cup in a certain position, usually external rotation, and force the shoulder out. The problem with the loss of the front edge of the cup is that there is less cup for your ball to remain balanced upon, think of the difficulty of balancing a golf ball on a golf tee that is missing a portion.

Arthroscopic surgery can be very effective at restoring stability to a shoulder without a Hill-Sachs lesion or loss of the front edge of the cup. This is called an arthroscopic Bankart repair, aka a capsulorraphy. A Bankart repair involves prepping both the soft tissue side and the bone side to improve healing and the use of a suture anchor to repair the labrum. The anchor is placed in the bone where you want the labrum to ultimately heal. The anchor has thread or sutures that go through the anchor. The sutures are passed through the ligaments and labrum. Once that is done, you tie a knot. As you tie that knot, the knot will go to the suture anchor. Since the knot is through the ligament and labrum, it brings the soft tissue with it, holding the labrum to the bone surface until it heals into place. A typical Bankart repair generally requires 3 or 4 anchors.

A Hill-Sachs lesion can be addressed with an arthroscopic surgery that I helped pioneer called a Remplissage which is based on a French term meaning to fill. Using suture anchors in the defect with sutures passed through the tissues in the back of the arm, these soft tissues fill the boney defect so that the Hill-Sachs lesion can no longer engage on the front edge of the cup so it no longer forces the shoulder to dislocate.



At the current time, loss of bone from the front edge of the cup beyond a certain threshold is treated with an open bone grafting procedure. A bone grafting surgery can rebuild the cup and improve

stability, but the most common approach is called a Latarjet. A Latarjet takes a small chunk of bone, called the coracoid, together with the associated soft tissue and inserts it into the defect in the cup. Not only does that bone fill the defect, but the soft tissues act like a sling, adding greater stability to the shoulder.

Chapter 8. Pre-Op Clearance

A major pre-operative concern relates to medical clearance. While there are often similarities, each doctor and operating facility will have its own protocols so please contact your surgeon for specifics. The specific testing requirements depend upon your specific risk factors, such as age, medical problems, surgical history, and the nature of the surgery itself. Typical steps include seeing your primary care physician, having labs drawn, and getting an EKG and possibly a chest x-ray.

" It`s my knee, Doctor. It`s still giving me problems."

Chapter 9. Pre-op Considerations

Most commonly patients are not allowed to eat or drink after midnight on the night before the surgery. This is very important. In rare instances, patient's lungs can be damaged when stomach contents go up their throats and back down into their lungs during surgery. This is much less likely to occur if the patient's stomach is empty. Having said that, some patients, as we will soon see, have to take medications on the morning of surgery. In this instance, it is ok to take the medication with a small sip of water.

Another common pre-operative concern involves which of your regular medications to take on the day of surgery and when. General recommendations are to take cardiac medications, antiseizure medications, Parkinson's medications, acid reflux medications, psychiatric medications, and beta-blockers for high blood pressure on the morning of surgery but to hold other high blood pressure medications. People who require inhalers for asthma should use them in the morning if they regularly do so and bring them to the hospital on the day of surgery. People who use a diuretic as well as insulin or other diabetic medication should not take those medications on the morning of surgery. In addition, general recommendations are to stop taking herbal supplements 14 days before surgery. Diet drugs, aspirin, and nonsteroidal anti-inflammatories (e.g. ibuprofen or Naprosyn) should be stopped 7 days before surgery. Erectile dysfunction medications should be stopped 1 day prior to surgery. Recommendations for patients who require blood thinners such as Plavix or Coumadin vary greatly depending on the specifics of each case, and those patients should consult with their prescribing doctor specifically. It is generally appropriate to refrain from recreational drugs ahead of surgery. Specifically, cocaine and methamphetamine should not be used within 48 hours of surgery and every effort should be made to stop smoking 2 weeks before surgery. As always, check with your doctor if you have questions regarding this issue.

Chapter 10. The PRE-OP Consideration of Post-Op Pain

Many patients are understandably concerned about post-operative pain. Relieving these concerns before surgery can greatly improve the patient's experience throughout the surgical episode. Therefore, the issue of post-operative pain is a pre-operative consideration.

A pre-emptive and multi-modal pain plan is very effective at decreasing pain to tolerable levels. This is a fancy way to say that the pain plan starts before surgery and relies on many different kinds of medications and strategies. This is done to achieve the greatest amount of pain relief while minimizing side effects from any one medication.

Several medications can safely be taken on the morning of surgery to reduce pain. The specific medications that are used in each case are tailored to the patient and the surgery. In many instances, a nerve block can be performed just prior to the start of surgery. In most cases, the anesthesiologist performs a nerve block by placing local anesthetic around the nerves at the base of the neck before they travel down the arm. This will numb the entire arm and block any pain signals from reaching the brain. While you will be anesthetized and not register the pain, the research suggests that a nerve block performed before surgery stops a central pain receiving area from being primed so that patients who have the block report less pain than people who did not have a block, even long after the block has worn off. The block will generally last 18-24 hours. However, the block does have its own risks which the anesthesiologist can discuss in greater detail. In addition, it does make the arm feel wooden and numb, much like the way your mouth feels after receiving an injection of local anesthetic, for the duration of its effect.

During the surgery, the anesthesiologist will continue to give you pain medicines, and local anesthetic will be used at the surgical site itself.

As soon as surgery ends, ice or a similar cold therapy device will be applied to the shoulder in the recovery room. The surgical team will continue to manage your pain during your entire time in the hospital, and your pain will be well controlled before you are discharged from the hospital.

Upon discharge, you will continue to receive post-operative pain relief with medications such as nonsteroidal anti-inflammatories (e.g. ibuprofen or Naprosyn), Tylenol, and nerve medications. In addition, a mild narcotic, possibly combined with Tylenol, will likely be prescribed. One common medication of this type is Norco, which is hydrocodone mixed with Tylenol. A similar combination used to be called Vicodin. If a patient does not tolerate Norco, Percocet, which is oxycodone mixed with Tylenol, can be used. This is not oxycontin but sounds similar. The specifics will be tailored for each individual patient and each individual surgery.

Ever attempt will be made to anticipate side effects. For instance, patients who often become nauseous following anesthesia will get medicines to take before surgery to try to avoid feeling sick as well as medications to use afterward in case they do.

Similarly, it is safe to assume that you will become constipated. Therefore, attempts should be made to address it. First and foremost, narcotic pain medications are a major cause of post-operative constipation. You should not under-treat your pain but be aware of the fact that you will likely be more constipated if you take more narcotic pain medications. Besides using the narcotics sparingly, other constipation treatments include remaining well hydrated, trying to walk around as much as is

reasonable, and eating a high fiber diet. A high fiber diet would include whole grains, fresh fruits, vegetables, and beans. Prunes and prune juice can be very effective. Similarly, you may want to avoid certain foods that may increase the risk of constipation. This would include white bread or rice, processed foods, and dairy products After surgery, you should also plan to take a stool softener, such as docusate (Colace). A fiber laxative, such as psyllium (Metamucil), may also be helpful. If you have severe constipation, you may need stimulant laxatives, suppositories, or enemas to produce a bowel movement. If over-the-counter laxatives don't work, your doctor may prescribe prescription drugs that draw water into your intestines to stimulate a bowel movement.

Chapter 11. Day of Surgery Expectations

You will be asked to arrive at the surgical site an hour or two before the scheduled start of the surgery. There are many things that need to be done before the surgery can start. Unfortunately, operating rooms are not Japanese subway systems, so bring a book, a friend or family member, or both.

Once you check-in at the appropriate location, you will be asked to change into a surgical gown. Your belongings will either be placed in a locker or placed in a bag that travels with you. You will eventually be asked to lie on a gurney in the pre-operative area. Along the way, everyone you interact with will confirm your identity and the surgical site many times. Please don't worry, that is a part of the protocol and does not represent bad listening skills. The nurses will confirm your medical history, and an IV will likely be started. Besides the waiting, that is the worst part and let's be honest, it usually just stings for a moment.

You will likely meet with your surgeon in the pre-operative area who will confirm the surgical site, review the surgical plan, ensure that you understand the plan, and answer any last minute questions. Often times, your family member/friend can be there as well and get any of their questions or concerns addressed.

You will also meet the anesthesiologist in the pre-operative area. They will discuss the anesthetic options and formulate a plan that is right for you. If you opt for a pain block, it is often done in the pre-operative area. Once all the t's have been crossed and the i's dotted, you will go into the operating room.

The operating room is bright and cold, and the bed is small and uncomfortable. Other than that, it's great. Fortunately, the anesthesia team will get right to work and your memories of the OR will be limited.

You will wake up in the operating room although your first memories will likely be from the recovery area. It will feel like very little time has passed, but the surgery will be over. The nurses in the recovery room will take great care of you, and you will likely be ready to leave in about an hour or so. During that time, your surgeon will likely have talked to both you and your friend/family member about how the surgery went.

Once you are home, rest. You may or may not be hungry. Regarding food, start slowly and gently as you work back up to your normal diet by breakfast or lunch of the following day. Crackers, toast, bananas, soups, etc. are usually the best way to start. There is no surer way to get a recovery off to a bad start than by eating too much too soon and suffering the consequences.

Your pain should be well controlled upon discharge, and the goal is to keep it that way. It is much easier to stay ahead of your pain rather than playing catch-up. However, taking more medication than your pain requires only increases the risks of side-effects without any benefit to you. Your goal should be to strike a balance.

If you have had a block, your arm may feel numb, like a big block of wood. While not perfectly comfortable, that feeling is preferable to pain, and you may not need pain meds upon returning home. However, the block can wear off in the middle of the night, leaving you to wake up with severe pain at 3

am. Not good. If you are going to bed and have not yet had the need of pain medicine, I suggest taking a small dose of pain medicine, unless you have or are prone to nausea, just in case.

Chapter 12. General Complications

In general, shoulder arthroscopy is very safe. Not only is the complication rate very low, the satisfaction rate is also very high. That said, the complication rate is not zero, and the potential complications of a shoulder arthroscopy include bleeding, infection, nerve damage, and anesthesia related complications. Given that the arthroscopic portal incisions are very small and are relatively far from the major vessels, the risk of bleeding is very low. Similarly, infection rates following arthroscopic surgery are very low. Nerve damage secondary to shoulder arthroscopy is generally a result of a traction injury and are very uncommon. If nerve damage does occur, it tends to be mild and temporary. Anesthesia related complications run the gamut from very mild, such as a sore throat, to the extreme, such as the remote possibility of peri-operative death. If you elect to have a nerve block done by the anesthesiologist, he or she will discuss the risks associated with that procedure as well as all of the risks specific to anesthesia. This is a brief overview of the general complications associated with shoulder arthroscopy. You are encouraged to speak to your orthopedic surgeon about the details and ask them to address your questions and concerns.

Chapter 13. Rotator Cuff Repair Complications

In addition to the general complications, arthroscopic rotator cuff repairs do have their own challenges. The two most relevant complications associated with a rotator cuff repair include failure to heal and stiffness.

Unfortunately, some rotator cuff repairs will not heal or may re-tear either partially or completely. The risk of re-tear is dependent upon a handful of factors. As a result, it is very hard to assign a number to the risk of re-tear for each individual patient, but the baseline risk of re-tear is about 5%. Larger tears, tears that have retracted, and tears that have resulted in atrophy of the muscle have a greater chance of not healing, and older patients heal less readily than younger patients. Regarding age, the risk of re-tear starts to go up around the age of 65.

Inappropriate physical therapy that initiates too much motion too soon can stress the repair, risking failure of the repair. Similarly, non-compliance with an appropriate PT protocol can have the same result. Therefore, rotator cuff repair patients generally follow a slow return to motion. As a result, many patients will get stiff and will have to work hard to get their range of motion back. Commonly, this stiffness will respond to physical therapy, but every once in a while a patient needs an injection or even another surgery to address the stiffness.

You are encouraged to speak to your orthopedic surgeon about the details and ask them to address your questions and concerns.

Chapter 14. Bankart Complications

One of the biggest concerns about an arthroscopic Bankart repair is recurrence, or having another shoulder dislocation in the future. Even the most secure repair cannot guarantee that you won't ever dislocate your shoulder again, and the general risks range from 3% to more than 30% depending upon patient specific factors. These factors include age below 22 years old, male gender, the number of pre-operative dislocations, and participation in competitive sports as well as anatomic factors such as bone loss on either the cup or the ball side.

Inappropriate physical therapy that initiates too much motion too soon can stress the Bankart repair, risking failure of the repair and ultimately re-dislocation. Similarly, non-compliance with an appropriate PT protocol can have the same result. Therefore, Bankart patients generally follow a slow return to motion. In addition, these repairs purposely tighten the ligaments in the front of the shoulder which limits external rotation, at least initially. As a result, many patients will get stiff and will have to work hard to get their range of motion back. Commonly, this stiffness will respond to physical therapy, but every once in a while, a patient needs an injection or even another surgery to address the stiffness.

Hardware complications can occur following a Bankart repair. While both patients and surgeons benefit from modern implants, hardware can fail in very rare instances and cause damage to the joint.

Over time, patients who have had shoulder dislocations that require surgery can develop arthritis. While part of the risk is from the damage done to the joint surfaces during the dislocations themselves and cannot be undone, successful surgery will hopefully stop additional damage from being done in the future.

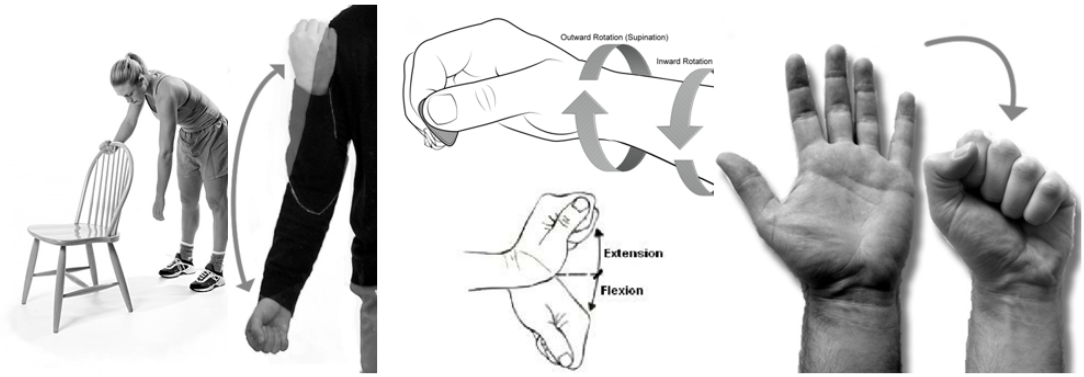
These are the most relevant complications associated with a Bankart repair. You are encouraged to speak to your orthopedic surgeon about the details and ask them to address your questions and concerns.

Chapter 15. General Post-operative Plan

Following shoulder arthroscopy, you will receive printed instructions that are specific to you and your surgery. In addition, more detailed, procedure-specific details will be provided in subsequent sections

You will be wearing a sling. There are various different kinds of slings, depending on the surgery performed. While the instructions may define a specific period of time that you should wear the sling, usually it is to be worn at least until your first follow-up office visit which is generally within 10-14 days after the surgery.

Unless specifically told otherwise, you should wear the sling approximately 90% of the time, including at night while sleeping. You may remove the sling for hygiene, such as showering. You should also remove the sling 3-5 times a day for simple home-based exercises.



These exercises include a pendulum exercise as well as active range of motion at the elbow, forearm rotation, wrist flexion and extension, and opening and closing your fist. While this may seem daunting on the first morning after surgery, you can meet with success by starting slowly and gently and building from there. Simply remove the sling and allow gravity to gently hold the arm in the appropriate position. Begin doing the elbow flexion and extension slowly, building to 10 repetitions or reps. This can be followed by forearm rotation, slowly alternating between palm up and palm down, building to 10 reps. This can be followed by opening and closing your fist 10 times. To do the pendulum exercise, allow gravity to position your arm in the appropriate starting position. Gently lean forward. This will allow gravity to cause shoulder flexion. How much you bend over will determine how much passive flexion is achieved. Initially, you may lean forward just a little bit. Once you get into position, swing your hips to rotate the arm passively, meaning no muscles of the arm are actually making the arm move. Initially do 10 circles clockwise followed by 10 cycles counterclockwise.

In addition, you may use the operative hand in what is called the toes to nose region, unless specifically directed otherwise. The toes to nose region is a space in front of your body that one can position your hand with the elbow at your side. This allows you to type, write, manipulate utensils, and other simple tasks. In this context, you may find that you are not as disabled immediately following the surgery as you might think.

Regarding wound care, arthroscopic shoulder portals will heal quickly and generally allow you to shower shortly after the surgery. While your instructions will specifically lay out the details, I generally allow patients with only arthroscopic portals to remove their dressings after 2 days. You will find drainage on

the bandages and possibly some dried blood around the wounds. However, the incisions themselves should be dry. If this is the case, you may begin to shower over the wounds although you should avoid soaking, scrubbing, or submerging the wounds. Simply allow the warm soapy water to wash over the area. A light wash may be appropriate to remove any dried material. Simply pat the area dry and apply Band-Aids. This is generally all that is necessary for wound care. If you have had an open incision in addition to the arthroscopic portals, you may have to wait 4 days or longer before proceeding as above.

A word about hygiene. You can take advantage of gravity to move your shoulder gently and passively to make every day activities a little bit easier. If you lean forward and out slowly, you can pretty easily make enough space in your armpit to wash. If you are having difficulty keeping your armpit dry, applying a powder can avoid a rash. In a similar fashion, you can put on and remove shirts. While this is much easier with a button down, you can also get on other shirts by following a simple rule. When putting on a shirt, start with the bad arm. Slip the sleeve onto the bad arm and then slip it over your head. You can now place the good arm up the other side. To remove the shirt, simply reverse the process, sneaking your good arm out, getting the shirt off your head, and the shirt will just fall off the bad arm.

Chapter 16. Subacromial Decompression/Mumford/Biceps Tenodesis Post-operative Plan

If you have had only these procedures, you generally do not have additional formal restrictions to your activities. In that setting, you could begin by following the general post-operative plan as discussed in the prior section. The only exception to this is if you had a biceps tenodesis. The biceps tenodesis requires one formal limitation. You should not pick up anything more than 5 pounds, which is generally a full coffee cup, until you get 6 weeks out from surgery.

Having success with the initial exercises and with your pain under control, you could start exploring a greater range of motion. This is generally best done slowly with gentle and assisted attempts at range of motion. As you feel tension building near the end of your current range of motion, you can simply push a little bit more. You may feel discomfort but don't push past discomfort and into pain. Hold this position for a count of 10 and relax. That would be one repetition. You can do sets up to 10 or 12 gentle attempts in different planes.

Most people opt for formal physical therapy following these surgeries. Physical therapy usually is generally initiated after your first post-op follow-up visit. The physical therapist will give you range of motion exercises to focus on in the early stages while transitioning to functional strengthening as your range of motion returns. For those who prefer, there are other options besides the traditional in-person physical therapy approach.

As you move through your recovery, you may begin to return to your activities based on your symptomatic tolerance. This is a very intuitive process of starting slow and easy and building progressively by adding either more of the activity or greater intensity as long as you don't feel pain, remembering that discomfort is okay. One simple example is golf. Early on, you might try some chipping and putting for 5 minutes. Once you can do that comfortably, you may want to hit a small bucket of balls with your low irons. Over time, you can start buying larger buckets and hitting some of your bigger clubs so that you're gripping and ripping approximately 3 months later. This is just one example meant to highlight what is meant by returning to your activities based on your symptomatic tolerance.

Chapter 17. Rotator Cuff Post-Operative Plan

Early on, rotator cuff repairs need to be protected to maximize their healing while early range of motion and physical therapy will result in faster return of range of motion. The post-operative protocol or plan following a rotator cuff repair represents a balance of these competing realities. The following protocol is a typical protocol. It can be modified depending on certain tear characteristics.

The typical protocol or recovery plan can be organized into 4 phases:

Phase 1 is the first two weeks after surgery. During this time, you will be wearing the sling at all times except for bathing, dressing, doing the exercises from the general post-op plan, and using the hand in the toes-to-nose region. You should wear the sling while sleeping.

Phase 2 is from post op week 2 through week 6. The big change from phase 1 is the addition of passive range of motion exercises. These are described in a separate section. You may begin to wean out of the sling at the conclusion of week 3. However, you should remain in the toes-to-nose region while out of the sling, except for the exercises and hygiene. Weaning from the sling is a simple process. Remove the sling for a short period of time, say 10 minutes. If you feel sore before then, put it back on. If not, try a slightly longer period of time a little later. Some people are out of the sling in a week while others may take several weeks. The sling can still be used as a tool even after you are “out of it”. It can be a simple way to treat fatigue or soreness and is a great signal to other people that they need to stay away from your shoulder.

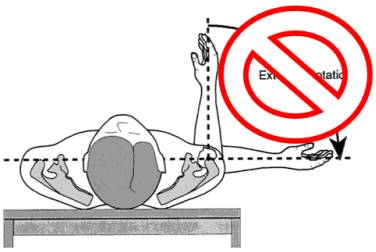
Phase 3 is from post op week 7 through week 12. While you are to remain in the toes-to-nose region in most instances, the big addition in this phase is the beginning of formal physical therapy. Initially, physical therapy will focus on the return of range of motion by focusing on passive and active assisted range of motion exercises. Active range of motion exercises are still to be avoided. Similarly, it is not time yet for traditional rotator cuff strengthening, but the therapist will start strengthening exercises for the muscles that drive your scapula or shoulder blade and gentle isometric exercises in different planes can be initiated. Isometrics involves the gentle contraction of the muscle without motion, for example gently pushing against a wall.

Phase 4 begins after the completion of week 12. At this point, the rotator cuff repair should be healed enough to allow you to begin active range of motion, and the physical therapist will initiate strengthening of the rotator cuff. As you move through this phase, you may begin to return to your activities based on your symptomatic tolerance. This is a very intuitive process of starting slow and easy and building progressively by adding either more of the activity or greater intensity as long as you don’t feel pain, remembering that discomfort is okay. One simple example is golf. Early on, you might try some chipping and putting for 5 minutes. Once you can do that comfortably, you may want to hit a small bucket of balls with your low irons. Over time, you can start buying larger buckets and hitting some of your bigger clubs so that you’re gripping and ripping by around 3 months later. This is just one example meant to highlight what I mean by returning to your activities based on your symptomatic tolerance.

Chapter 18. SLAP Repair Post-operative Plan

Early on, SLAP repairs need to be protected to maximize their healing while early range of motion and physical therapy will result in faster return of range of motion. The post-operative protocol or plan following a SLAP repair represents a balance of these competing goals. The following protocol can be changed depending on certain tear characteristics. Your surgeon's specific protocol may also be slightly different and that's ok. I like to break up the protocol or recovery plan into 4 phases.

Phase 1 is the first three weeks after surgery. During this time, you will be wearing the sling at all times except for bathing, dressing, and doing the exercises from the general post-op plan. Be aware, you are not supposed to externally rotate the shoulder past neutral. This is best visualized from above. With the elbow bent 90 degrees, the neutral position is when your forearm is at a 90-degree angle with your body. Do not externally rotate, or swing your arm out, at this phase. You can use your hand in the toes-to-nose region. In fact, with the sling off, you should remain in the toes-to-nose region until you complete this phase. You should wear the sling while sleeping.



Phase 2 starts in the beginning of week 4 and runs through the end of week 5. At that point you can generally start physical therapy and begin weaning from the sling. Weaning from the sling is a simple process. Simply remove the sling for a short period of time, say 10 minutes. If you feel sore before then, put it back on. If not, try a slightly longer period of time a little later. Some people are out of the sling in a week while others may take several weeks. The sling can still be used as a tool even after you are "out of it". It can be a simple way to treat fatigue or soreness, and it is a great sign to other people that they need to stay away from your shoulder. Physical therapy will continue range of motion exercises in all planes, meaning that you no longer have to avoid external rotation. They will also begin strengthening the muscles that move the scapula or shoulder blade as well as isometric exercises. Isometrics involves the gentle contraction of the muscle without motion, for example gently pushing against a wall.

Phase 3 starts at the beginning of week 6 and runs through the end of week 11. Physical therapy will continue range of motion exercises as well as more traditional strengthening exercises for the shoulder although no biceps resistance exercises should be done before week 8.

Phase 4 is the last phase and begins at 12 weeks post-op. At this point, the SLAP repair should be healed enough to allow a slow return to your activities based on your symptomatic tolerance. This is a very intuitive process of starting slow and easy and building slowly by adding either more of the activity or greater intensity as long as you don't feel pain, remembering that discomfort is okay. One simple example is golf. Early on, you might try some chipping and putting for 5 minutes. Once you can do that comfortably, you may want to hit a small bucket of balls with your low irons. Over time, you can start buying larger buckets and hitting some of your bigger clubs so that you're gripping and ripping by

around 3 months later. This is just one example meant to highlight what I mean by returning to your activities based on your symptomatic tolerance.

Chapter 19. Bankart Repair Post-operative Plan

Early on, Bankart repairs need to be protected to maximize their healing while early range of motion and physical therapy will result in faster return of range of motion. The post-operative protocol or plan following a Bankart repair represents a balance of these competing goals. The following protocol can be changed depending upon patient specific needs. Your surgeon's specific protocol may also be slightly different and that's ok. I like to break up the protocol or recovery plan into 5 phases.

Phase 1 is the first three weeks after surgery. During this time, you will be wearing the sling at all times except for bathing, dressing, and doing the exercises from the general post-op plan. You can use your hand in the toes-to-nose region. In fact, with the sling off, you should remain in the toes-to-nose region until you complete this phase. You should wear the sling while sleeping.

Phase 2 begins with week 4 and runs until the end of week 5. This is when you wean from the sling, and physical therapy starts. Weaning from the sling is a simple process. Simply remove the sling for a short period of time, say 10 minutes. If you feel sore before then, put it back on. If not, try a slightly longer period of time a little later. Some people are out of the sling in a week while others may take several weeks. The sling can still be used as a tool even after you are "out of it". It can be a simple way to treat fatigue or soreness and it is a great sign to other people to stay away from your shoulder. Physical therapy will demonstrate your range of motion limits at this time. Those limits are no external rotation past neutral, no forward flexion past 90 degrees, and no extension past neutral. Your therapist will also start strengthening the muscles that move the scapula or shoulder blade as well as some isometric exercises. Isometrics involves the gentle contraction of the muscle without motion, for example gently pushing against a wall.

Phase 3 runs from week 6 until the end of week 11. Your therapist will demonstrate your range of motion limits at this time. Those limits are no external rotation past 35 degrees, no forward flexion past 130 degrees, and no extension past neutral. They will also continue the gentle strengthening.

Phase 4 runs from week 12 until the end of week 15. You are allowed greater range of motion during this time.

Phase 5 runs from week 16 through the end of week 19. The goal of rehab at that time is to maximize range of motion, strength, and endurance with ever more challenging exercises such as closed kinetic chain exercises and plyometric strengthening. This is in preparation of a return to all activities at week 20 or 5 months from surgery. The only exception is the return to contact sports such as football, mixed martial arts, and the like which should not happen before 6 months post surgery. Otherwise, you can return to your activities based on your symptomatic tolerance at this point. This is a very intuitive process of starting slow and easy and building slowly by adding either more of the activity or greater intensity as long as you don't feel pain, remembering that discomfort is okay. One simple example is golf. Early on, you might try some chipping and putting for 5 minutes. Once you can do that comfortably, you may want to hit a small bucket of balls with your low irons. Over time, you can start buying larger buckets and hitting some of your bigger clubs so that you're gripping and ripping by around 3 months later. This is just one example meant to highlight what I mean by returning to your activities based on your symptomatic tolerance.

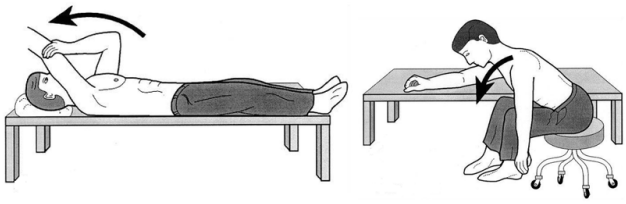
Chapter 20. Passive Range of Motion Exercises

These are passive exercises. This means that the muscles of the stiff shoulder do not move the shoulder. Usually it is the other arm that moves the stiff shoulder. Some of the modifications use other objects to provide the movement. Since the muscles of the stiff shoulder are not moving the arm, these can be safe to do relatively soon after shoulder surgery. For example, I recommend that my rotator cuff repair patients begin these as soon as 2 weeks after surgery.

Specific exercises for stretching the stiff shoulder include forward elevation, external rotation, cross-body adduction, and internal rotation behind the back. Each exercise should be performed slowly while relaxing the shoulder muscles. When the arm reaches a position where motion becomes limited, an attempt should be made to relax the muscles and gain a few more degrees of motion. At the point of maximum stretch, the arm should be held for a count of 10 while trying to relax. Often, deep breathing will help you relax.

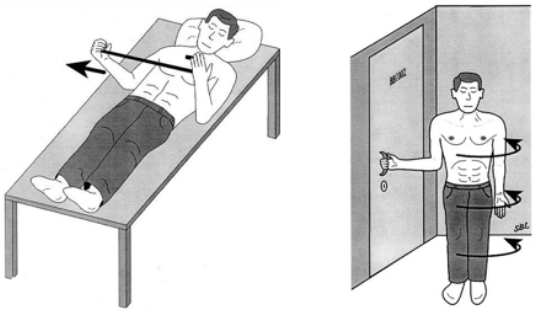
Each of the described exercises should be performed 10 times (repetitions, aka rep) each session with a goal of 3-5 sessions daily.

Forward Elevation: AKA overhead reach. It is performed in the supine position (lying flat on the back) or standing. Grasp the wrist or elbow of the stiff shoulder with the hand of the other arm. Push up toward the ceiling and reach overhead as high as possible. Hold for a count of thirty seconds. This is one repetition.



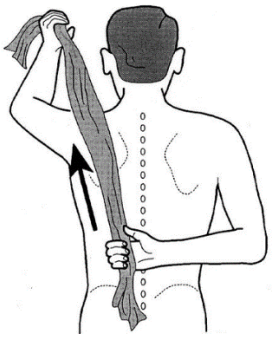
Another way to do forward elevation is done sitting next to a counter or table with the stiff arm resting on the table. Passively and gently lean forward, sliding the arm along the table, forward elevating the shoulder. Hold for a count of 10 seconds. This is one repetition.

External Rotation: AKA rotation away from the body. It is performed in the supine position (lying down on your back) or standing. The elbow of the stiff shoulder is tucked into the side of your body and held against your side. A broomstick or other similar device is held in both hands. The other arm pushes the stick to rotate the stiff shoulder away from the body while keeping the elbow tucked at your side. One repetition is holding the arm at maximum external rotation for 10 seconds.

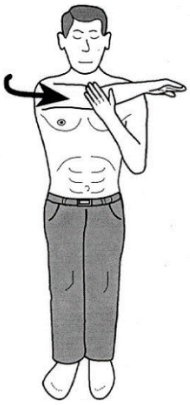


Another method for performing external rotation involves standing in an open doorway. Grasp the door handle or door frame with the hand of the stiff shoulder so that the elbow is flexed 90 degrees. Tuck the elbow in to your side. Then rotate your body away from the door so that the stiff shoulder is externally rotated passively. Hold for the count of 10 seconds for one repetition.

Internal Rotation: While standing, place the hand of the stiff shoulder behind your back. With the assistance from a towel or strap, use the other hand to pull the hand of the stiff shoulder up the back as high as possible



Crossbody Adduction: This is performed either sitting or standing. Grasp the elbow of the stiff arm with the other hand. Pull the stiff shoulder across the body at the level of the shoulder until stretch is felt



Chapter 21. Frequently Asked Questions

What is the correct position for the sling?

The appropriate use of the sling involves getting the elbow all the way into the back corner of the sling and allowing the entire forearm and wrist to be supported. Adjust the strap so that the forearm rests across your body, generally at the level of the belly button. You do not want the strap too tight so that your hand is facing up, unless you are trying to treat hand swelling, and you do not want the strap to be too loose so that your hand is facing down.

If you have a sling with a pillow, the pillow should be positioned just above the waistline so that the arm rests across the body, as above.

How do I remove and replace the sling?

You will have to remove and replace the sling regularly. You will have the sling placed in the operating room so this process begins by removing it. It is the same process whether your sling has a bump/pillow or not.

Place the arm and the sling on a horizontal surface, like your bed or table. Begin by loosening the strap that is around your neck. This will allow you to slip the strap over your head. Release the strap around your waist if you have one and make sure all the other straps are loose. At this point, you can lift your operative arm out of the sling and your arm will comfortably hang at your side.

To put the sling back on, simply place the operative arm into the sling that remains on the table, slip the strap back over your head and adjust it so that your arm rests comfortably across your body. If your sling has a waist strap, reach back, grab it, and secure it.

How do I remove and replace a shirt?

While button down shirts are easier, all shirts can be worn during your recovery. The key is to use gravity and always remember to start with the good arm first when removing the shirt but start with the bad arm first when putting on the shirt.

To put on a shirt, get the operative arm into the sleeve first. You can then get it over your head and sneak the good arm up.

To remove a shirt, reverse the process. Once your good arm is out of the sleeve and the shirt is over your head, you can simply lean forward and the shirt will fall off.

When can I shower?

You can shower when the wounds have healed sufficiently to be water tight. Check with your surgeon for their particular protocol, but I allow my patients who have had arthroscopic surgery to begin showering 2 days after surgery. If you have a small incision, such as an incision for an open biceps tenodesis, you can shower after 4 days. Patients with larger open incisions, say after a joint replacement, are often provided a water tight dressing that can remain on during showers so those patients can start showering right away.

How do I wash my armpit?

The key is to use gravity since using the muscles of the shoulder could stress a repair or just plain hurt. Lean forward and outward slightly. This is similar to doing a pendulum exercise. This will create enough space to wash, dry, and apply deodorant. It is important to dry the area thoroughly because allowing the armpit to remain moist can lead to an itchy rash. If that is a challenge, some powder can help.

When can I drive?

This is a very important question with an answer that is very specific to each individual. It is illegal to drive in many areas while wearing a sling and is definitely illegal to drive while taking any medication that affects your mental status, like post-op narcotics. Therefore, you cannot drive until you are off any medication that can affect you in that way and until you get the green light to get out of the sling.

However, you do not need to wait until your arm has recovered significantly. Many of us drive with one hand on the wheel, doing most of the work, while the other is simply resting at the bottom of the wheel, especially if you have a vehicle with an automatic transmission.

In conclusion, you can resume driving when you feel safe behind the wheel, meaning when you feel confident that you can respond appropriately to all of the scenarios that you may face while driving. If you are uncertain, go to an empty parking lot and practice. When in doubt, err on the side of safety.

Can I mix Tylenol and NSAID's?

Yes, acetaminophen or Tylenol is a completely different medication from Non-Steroidal Anti-Inflammatory Medications, such as ibuprofen and Aleve, and, the body uses completely different systems to metabolize or process those medications. Therefore, they can be safely taken together.

In fact, it is a really good idea to take them together. Taking acetaminophen along with an NSAID will help you stop the post-op narcotics sooner as well as provide the same pain relief with lower doses of both pain medications, thus minimizing side effects.

Instead of taking them together, you can also alternate between the two to get the same benefit.

Simply follow the dosing instructions on the bottle to ensure appropriate use.

Be aware that many of the post-operative narcotics have acetaminophen in them. For example, both Percocet and Norco have 325 mg of acetaminophen mixed with the narcotic so please consider this when calculating your safe dose.

How do I sleep? What is the best position?

Commonly, most people are most comfortable sleeping in a semi-seated position, similar to the position that you are in when sitting in a recliner. You can create that position in your bed with a mound of pillows.

If you prefer sleeping on your back, that can be comfortable as well. I would recommend using a pillow or two under your elbow and side to support it. This tends to make lying on your back much more comfortable.

If you are a side sleeper, you can lay on the non-operative side and use a stack of pillows to support the operative arm. I do not recommend laying on the surgical side.

When do I start PT?

The details of the post-operative protocol are specific to each procedure and each individual and represent the balance of two competing principles. While immobilization protects repaired tissue and helps with early pain control, early motion can speed the return of range of motion. Therefore, I encourage you to speak to your doctor to get the details. In general, repairs need to be protected for a period of time, and physical therapy is delayed a few weeks whereas patients who have had clean-up procedures can start physical therapy sooner.

How long will the surgery take?

The duration of surgery depends on what the actual plan is. Clean-up procedures take about an hour or so and repairs take another 30 or 45 minutes. In addition, surgery is a multi-step process involving the coordinated effort of many groups of people. Therefore, ask your surgeon for an estimate for your specific surgery.

When can I return to work?

Obviously, this will be different for different people with different occupational requirements. No matter what is done during the surgery, you will be able to use your operative hand in the toes to nose region as early as the next day. This means that you would be able to type and write. On the other hand, surgery is a stressor to the body that requires appropriate rest for healing and recovery. While you may be able to answer emails within a handful of days, be gentle and realistic with yourself for at least the first week or two. Obviously, your ability to return to more physical occupational activities are totally dependent upon the surgery performed and the specific requirements of your job. Please speak to your surgeon for specific time frames.