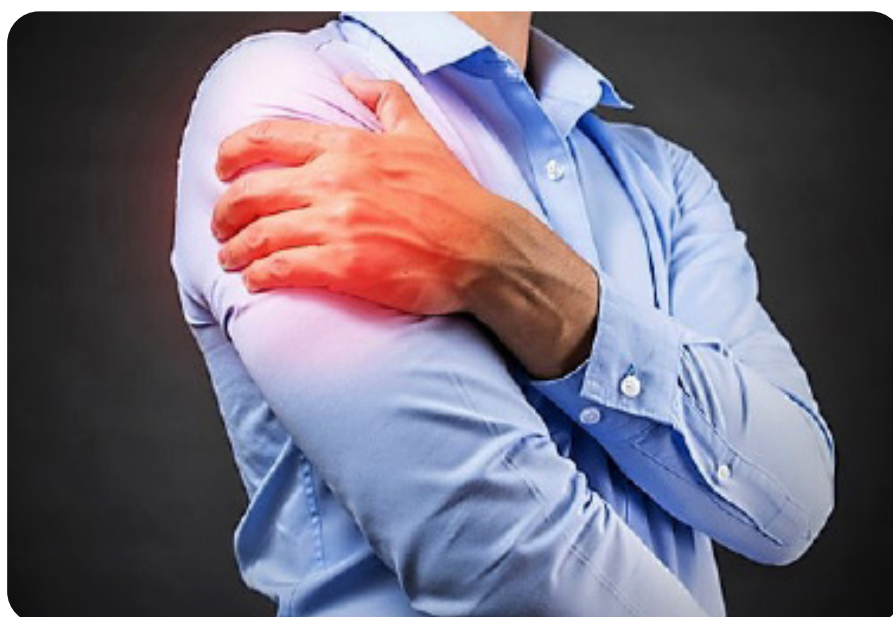




TWIN CITIES ORTHOPEDICS

SHOULDER INSTABILITY



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HOW THE SHOULDER WORKS

The shoulder is the most mobile joint in the human body providing extensive range of motion allowing you to place your arm in many different positions. With increased mobility, there is always a decrease in stability making the shoulder susceptible to injury.

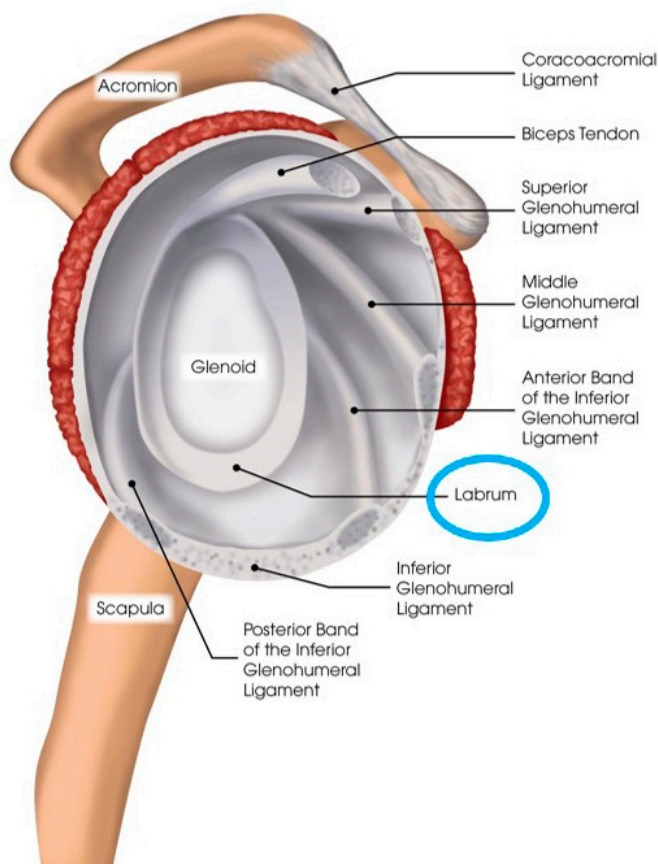
The shoulder is a ball and socket joint and is made up of three bones: the upper arm bone (humerus), shoulder blade (scapula) and collar bone (clavicle).

The ball at the top end of the arm bone fits into the small socket (glenoid) of the shoulder blade to form the shoulder joint (glenohumeral joint). A common comparison is that of a golf ball sitting on a golf tee. The socket of the glenoid is surrounded by a soft-tissue rim (labrum). The labrum increases the stability of the shoulder deepening the socket and creating negative pressure similar to a suction cup. To help with smooth articulation of the shoulder joint, there is a smooth, durable surface (articular cartilage) on the head of the arm bone along with a thin lining of the joint (synovium).

The upper part of the shoulder blade (acromion) projects over the shoulder joint. One end of the collarbone is joined with the shoulder blade by the acromioclavicular (AC) joint; the other end of the collar bone is joined with the breast bone (sternum) by the sternoclavicular joint (SC).

A sac-like membrane (bursa), similar to an empty plastic bag, sits between the rotator cuff muscles and the upper shoulder bone (acromion) cushioning and decreasing friction between muscle and bone.

There are 4 rotator cuff muscles that attach to the shoulder blade and end on the humeral head (supraspinatus, infraspinatus, teres minor, subscapularis). These 4 muscles become tendons which form the cuff. Due to the shoulder's inherent instability, the muscles of the rotator cuff must provide stability to allow the humeral head to stay centered and articulate properly in the socket. Without the function of the rotator cuff, the humeral head moves upward in the joint increasing contact pressure/time with the acromion. In time this will lead to arthritis.



WHAT CAUSES SHOULDER INSTABILITY?

LABRAL TEARS

Types of labral tears include:

- Superior labrum (SLAP)
- Anterior (Bankart Tear)
- Posterior (Reverse Bankart)

Anterior and Posterior dislocations are sometimes associated with injury not only to the labrum but also the humeral head. These injuries are called Hill-Sachs Lesion (anterior dislocation) and Reverse Hill-Sachs Lesion (posterior dislocation)

CAPSULAR TEARS/LAXITY

Common Capsular injuries include:

- Capsular Tear
- HAGL lesion
- Laxity (hereditary)

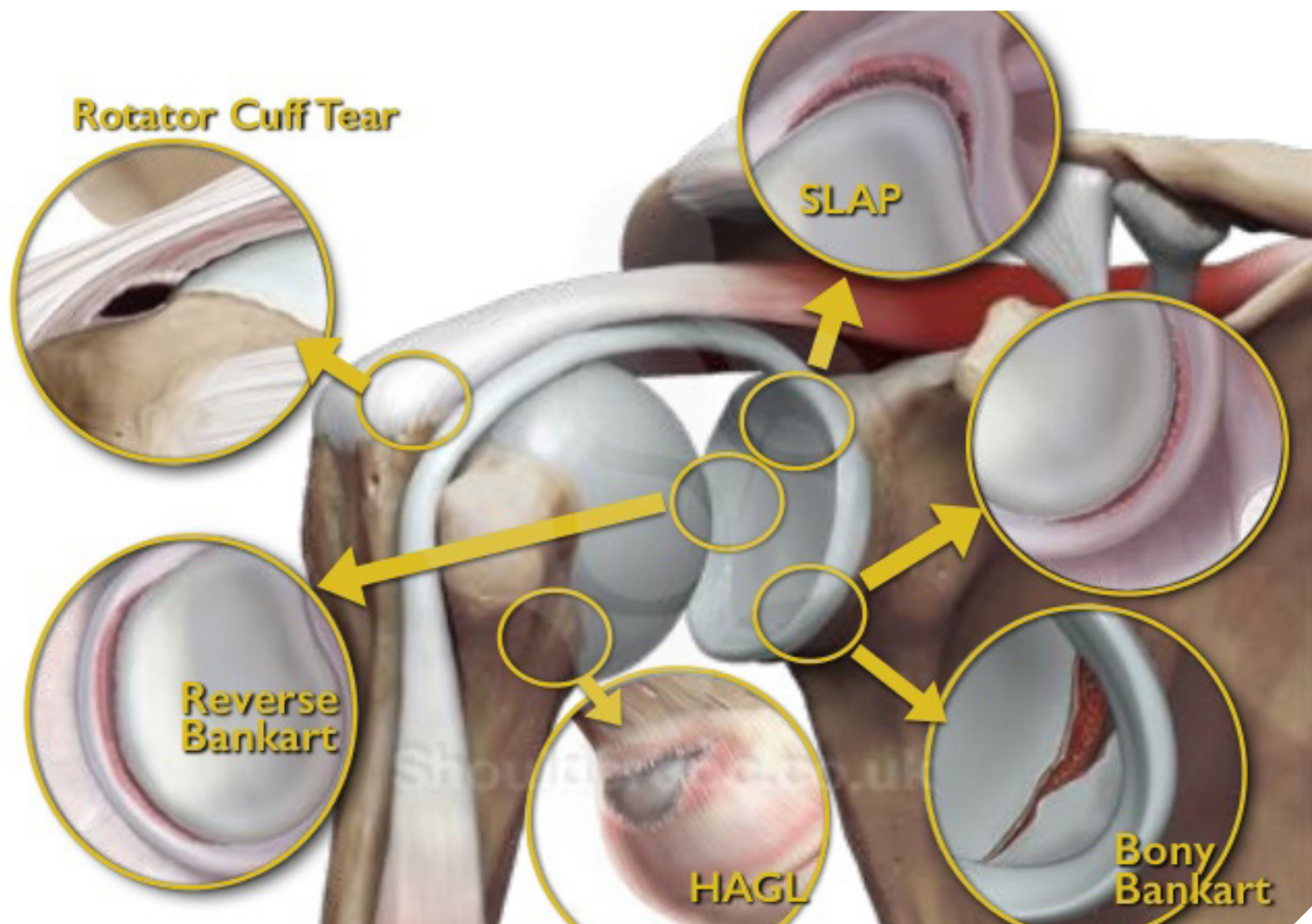
Capsular Injuries are less common and typically associated with recurrent instability. HAGL lesions are associated with avulsion of the inferior capsule and inferior glenohumeral ligament complex. Hyperlaxity is not always associated with injury. Some patients will have more laxity than others. Patient with diseases such as Ehlers-Danlos and Marfans will have hyperlaxity in all joints.

GLENOID FRACTURE

Common glenoid fractures

- Anterior/Inferior (Bankart)
- Posterior
- Glenoid/Scapula (trauma)

Glenoid fractures are typically associated with traumatic dislocations. If > 20% of the glenoid is broken you will likely need surgical intervention.



WHAT IS A LABRAL RECONSTRUCTION?

The previous page discusses the causes of shoulder instability such as a tear in the labrum, capsule, or fracture of the socket. During arthroscopic surgery to repair or reconstruct the labrum all suture anchors are placed in the edge of the socket and passed through the torn segment of labrum and tied down reinforcing and securing the labrum. A capsular shift is performed in situations where capsular laxity is causing shoulder instability. Dr. Norberg will discuss these findings with you before surgery.

INDICATIONS FOR SURGERY

First time anterior dislocations

Recurrent instability

Failed conservative treatment with known labrum tear

Rarely indicated for hyperlaxity (Elhers-Danlos, Marfans)

WHAT IS A REMPLISSAGE?

During an anterior dislocation back (posterior) surface of the humeral head can hit the front (anterior) face of the socket (glenoid). This area of damage on the articular surface of the humeral head is called a Hill-Sachs lesion. This in turn can decrease the surface area of articular cartilage and lead to more instability. The combination of labral damage, damage to the socket, and a Hill-Sachs puts the shoulder at greater risk for redislocating and recurrent instability. The Remplissage procedure is used to partially correct the Hill-Sachs lesion by taking the posterior capsular tissue and filling in the defect and will in turn prevent the area of the defect from contacting the glenoid.

PREDISPOSING FACTURES FOR REDISLOCATION FOLLOWING SURGERY

The possibility of redislocation following an anterior labral reconstruction has been documented from 4-19% according to literature. Factors that increase the risk of redislocation include:

Return to contact sports

Less than 30 y/o with greater than 6 months surgical delay following first time dislocation.

Number of previous pre operative dislocations

Amount of glenoid bone loss

RETURN TO SPORTS

Contact sports have the greatest risk of causing shoulder redislocation. Factors such as bone loss and capsular tears have to be considered while assessing the risk of reinjury when returning to sport. Those who have greater than 2 dislocations are at 5x greater risk of redislocation after surgery. Based on many of these studies we feel that athletes should not return to sport until a minimum of 6 months regardless of obtaining full strength and range of motion.

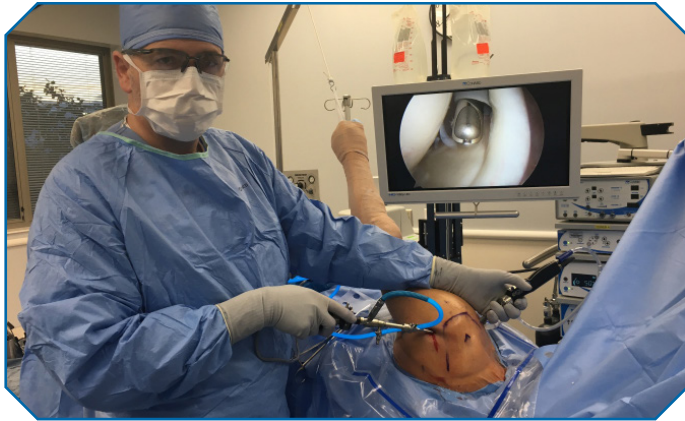
RESEARCH

Lee SH, Lim KH, Kim JW. Risk Factors for Recurrence of Anterior-Inferior Instability of the Shoulder After Arthroscopic Bankart Repair in Patients Younger Than 30 Years. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2018;34(9):2530-2536.

Liu JN, Gwond AK, Garcia GH, Cvetanovich GL, Cabarcas BC, Verma NN. Recurrence Rate of Instability After Remplissage for Treatment of traumatic Anterior Shoulder Instability: A Systematic review in Treatment of Subcritical Glenoid Bone Loss. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2018;34(10).

Brilakis E, Avramidis G, Malahias M-A, et al. Long-term outcome of arthroscopic remplissage in addition to the classic Bankart repair for the management of recurrent anterior shoulder instability with engaging Hill-Sachs lesions. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2018.

ARTHROSCOPY OVERVIEW



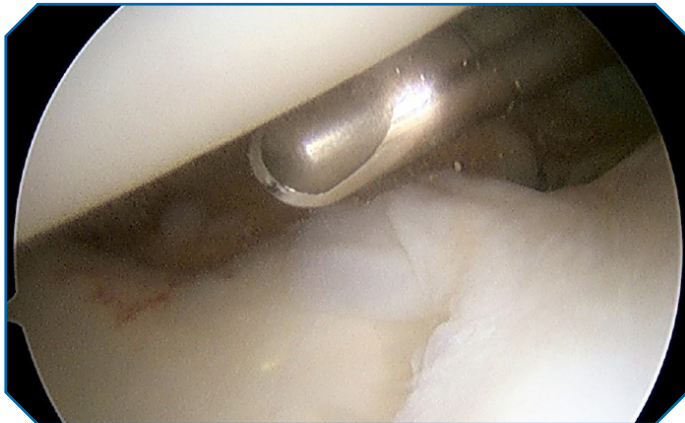
ARTHROSCOPY

Arthroscopy is a common minimally invasive surgical procedure that is used to examine and repair the inside of the shoulder. The instruments allow Dr. Norberg to use a pencil like camera to view the inside of the shoulder. The arthroscope is initially used as a diagnostic device and to detect the extent of the injury. Specialized instruments and fixation devices are then used to repair the damage found in the shoulder.



ARTHROSCOPY

This picture shows a left shoulder arthroscopy. Dr. Norberg is standing behind the patient. The patient is lying on their right side with the left arm suspended in traction.



SCOPE PICTURE

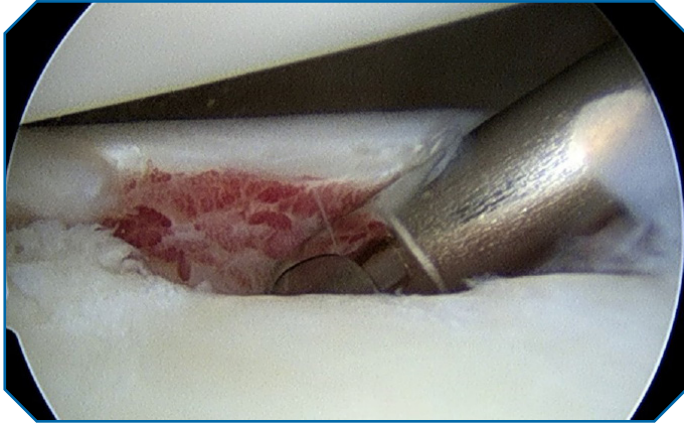
This scope picture shows a left shoulder joint with the arthroscopic shaver blade (picture to left) lifting up the anterior labrum from the front edge of the socket.



EQUIPMENT

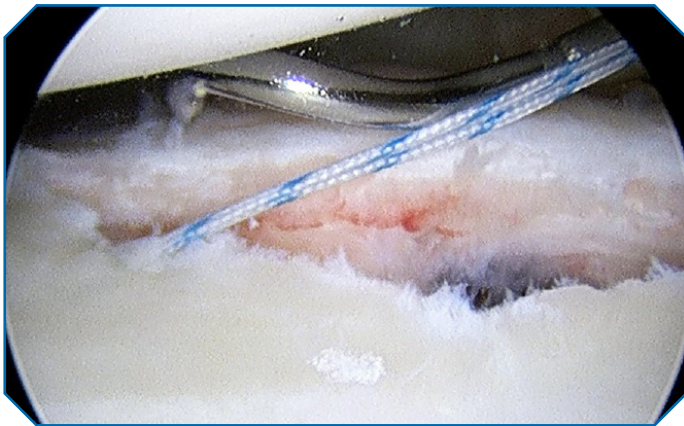
This picture shows specialized equipment used in shoulder arthroscopy of labral reconstruction. The arthroscope (scope) is 4mm in diameter. It is passed through a cannula that is inserted through a 1/4" inch incision in the skin. Arthroscopy provides much better visualization than open surgery. Additional instruments are used to perform a labral repair (seen on the left).

ANTERIOR LABRAL RECONSTRUCTION



ANTERIOR LABRAL TEAR

This picture shows an anterior labral tear being lifted on the front edge of the socket.



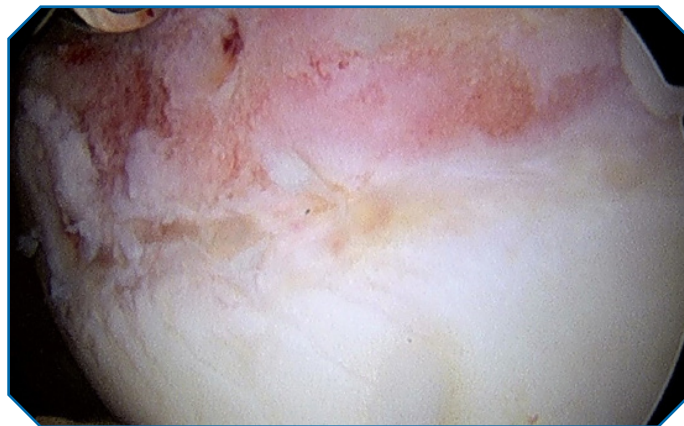
ANCHOR PLACEMENT

1.8mm all suture anchors are inserted into the front edge of the socket. Using a Spectrum suture passer the anchor sutures are retrieved through the labrum and tied down to secure the labrum in an anatomical position.



LABRAL RECONSTRUCTION

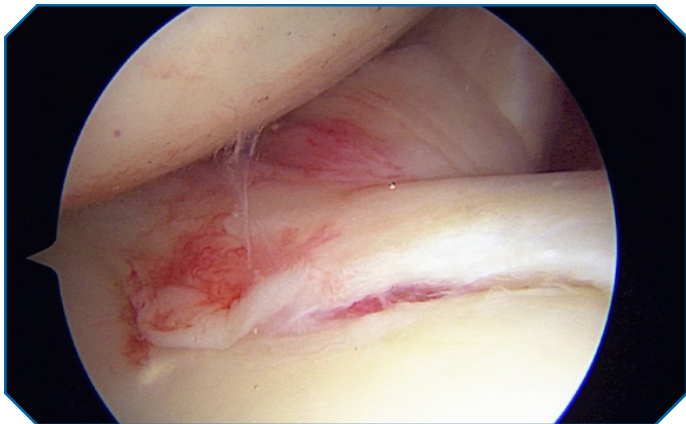
This picture shows a 4 anchor anterior labral reconstruction



REMPLISSAGE (HILL SACHS LESION)

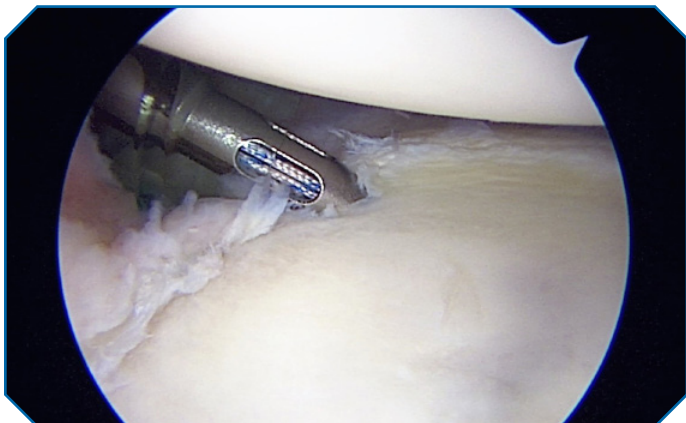
This picture demonstrates the appearance of a hillsachs lesion looking from the back of the shoulder. The tissue from the back side of the shoulder is used to fill in the "divot" (red bare area). Once the tissue is tied down visualization is not possible.

POSTERIOR LABRAL RECONSTRUCTION



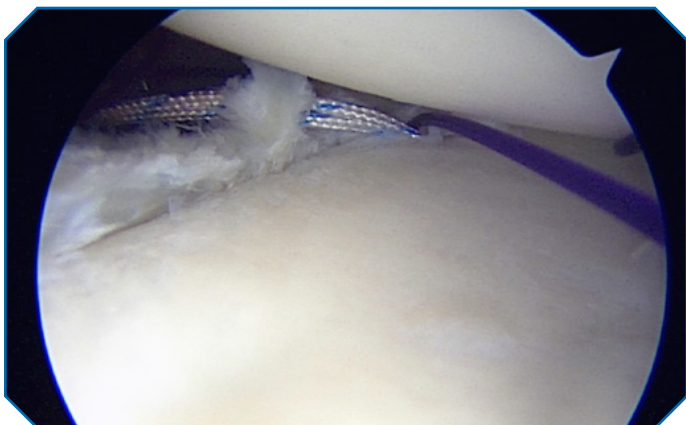
POSTERIOR LABRAL TEAR

This picture shows a posterior labral tear.



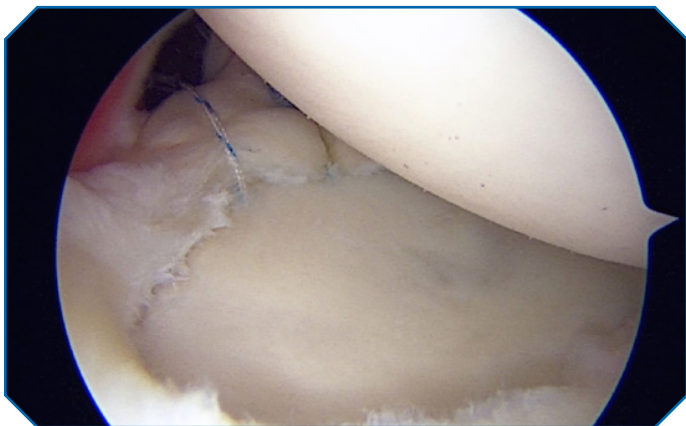
ANCHOR PLACEMENT

1.8mm all suture anchor is inserted into the posterior edge of the socket.



SUTURE RETRIEVAL

A spectrum suture passer (shown in anterior reconstruction picture) is passed through the tissue and leaves behind a dark blue suture. The dark blue suture is used to retrieve the anchor suture through the labrum.



POSTERIOR LABRAL REPAIR.

After the suture is brought through the labrum it is tied arthroscopically.

RISKS OF SURGERY:

With any surgery there are potential risks involved. Complications are very rare but can occur. These include but are not limited to infection, continued pain, damage to blood vessels or nerves, decreased motion, failure to heal, and anesthetic complications. Call Dr. Norberg if you have any signs of infection: redness, warmth, fever, discolored drainage.

QUITTING SMOKING

Studies have shown the failure rate of labral repairs is tripled in people who smoke. Smoking or using any form of nicotine or tobacco products (including cessation products with nicotine), can delay your body's healing process. Smoking makes your blood vessels constrict (become smaller), which reduces the amount of oxygen-rich blood delivered to healing tissues. Smoking can cause your blood to clot faster, which can lead to heart and blood flow problems. If you are going to stop smoking around the time of your surgery, you should not use a nicotine based program or cessation products.

BEFORE SURGERY:

Shoulder arthroscopy is performed on a same day basis. You will return home several hours after the surgery. You shouldn't take anti-inflammatories (i.e. Ibuprofen or Aleve) or aspirin for 4-7 days prior to surgery. Arrange for a ride to and from the hospital. Let all medical providers know of any allergies you may have and medications you are taking. Please bring a list of current medications.

AFTER SURGERY:

For Anterior reconstruction you will be placed in a immobilizer/sling to be worn at all times for 4 weeks. For Posterior reconstruction you will be placed in an external rotation immobilizer to be worn at all times for 6 weeks. You may remove your sling or immobilizer for a shower or bath. You should wear the sling to sleep. You will be given pain medication. You will have 4 followup visits. All visits can be schedule prior to surgery if needed. Your first appointment after surgery will be approximately 7 - 10 days after surgery with Kayla Mork, PA-C.

Do not use NSAIDs (Ibuprofen, motrin, advil, aleve) for 1 week following surgery.

INCISION CARE:

- Keep the dressings dry and do not remove until day 2 after surgery. If you any have drainage you may replace with a new bandage. Small tape strips (steri-strips) will be placed over all incisions. Leave in place until they fall off. Usually this is 10-14 days.
- Do not poke anything into your dressings.
- Do not apply lotion, cream or powder to your incision.
- You can shower safely 3 days after surgery, without covering the incision. The incision may get wet, but should not be submerged in water for at least 2 weeks after the surgery.
- Do not soak or scrub the incisions until fully healed.
- Watch for signs of infection. Increased redness or drainage from the incisions Fever and or chills
- Wash twice a day under your affected arm and dry that area well. Do not raise your arm after surgery. Place your hand on a counter and take a small side step away to give access to your underarm without lifting your operative arm.
- Put a washcloth under your arm to help with sweating and to keep your skin from getting irritated.
- When you get dressed, put your shirt on the arm that had the surgery first.
- No sutures will need to be removed at your first post-operative visit. They will dissolve in 2-3 weeks and remain under the skin.

RECOVERY TIME:

Anterior Reconstruction: You will be in an immobilizer for 4 weeks. It will take about 3 months before you feel comfortable moving your arm to shoulder level. Patients can continue to make progress up to 6 months before reaching their end result of the surgery

Posterior Reconstruction You will be in an external rotation immobilizer for 6 weeks. It will take about 3 months before you feel comfortable moving your arm to shoulder level. Patients can continue to make progress up to 6 months before reaching their end result of the surgery.

RESTRICTIONS FOLLOWING SURGERY:

Following an anterior labral reconstruction and posterior labral reconstruction we recommend all patients take at least 2 weeks off of work to rest and manage pain efficiently. All patients will be released to work with restrictions following the 2 weeks. The restrictions will include no lifting overhead for 3 months. While in immobilizer you will only be able to lift 1-2lbs with arm at your side. If your job does not require lifting and is mainly office work (keyboard,paperwork,mouse) then it is likely you can return to work. Jobs that require lifting will determine if they have the appropriate accommodations.

LABRAL REPAIR ACTIVITY TIMELINE:

0-6 weeks- Elbow remains at side in sling/immobilizer lifting only 1-2lbs.

1-2 months- Discontinue sling/immobilizer, no lifting overhead, working on range of motion with physical therapy

3-4 months- Can usually do personal care, light activity overhead

5-6 months- Return to baseline lifting overhead Return to sport in minimum of 6months.

PAIN RELIEF:

- Most patients will have a nerve block that will last approximately 12 hours. The block involves an injection of a local anesthetic (Ropivacaine) similar to novocaine. It is injected where the shoulder and neck meet. The block allows the surgery to be performed using much less anesthetic drugs. The block also provides excellent pain relief after surgery. You may experience a numbness, burning, tingling sensation while block is wearing off up to 18 hours after surgery. This sensation is normal.
- You should take some pain medication approximately 8-10 hours after your block is performed, even if you have no pain.
- Narcotic medications will be prescribed to help manage your pain after surgery. We only prescribe short acting narcotic medications, typically oxycodone, following surgery. Recent studies have shown poorer outcomes and increased of addiction and death with long acting narcotics. Dr. Norberg recommends taking them as written the first day and then gradually spacing them out and taking them only if needed.
- The pain medications will make your pain manageable but will not necessarily take away all of your pain.
- Tylenol (acetaminophen) can be taken with Percocet, Norco, and Vicodin. However, these medications also contain Tylenol (acetaminophen). Whether you are taking Percocet (oxycodone), Norco (hydrocodone), or Tylenol (acetaminophen), be careful not to exceed 4,000mg of acetaminophen in a 24 hour period. Dr. Norberg recommends obtaining the 650 mg extended release (8-hour), extra strength (arthritis strength) acetaminophen tablets.
- Do not take Advil, Motrin (ibuprofen) or Aleve (naproxen) for the first week after surgery. This may slow healing and weaken healing tissue. However, after 1 week (Advil, Aleve) did not show decreased healing are shown to be more effective in managing pain than narcotic medication. Do not take these medications if on blood thinners (warfarin, lovenox) or have hx of reflux disease.
- If the pain is still not controlled increase frequency of icing shoulder, squeeze stress ball that comes with sling, and do gentle ROM of elbow, wrist, hand.
- Exceeding the recommended dose or taking medication with alcohol may result in liver damage. If you see that you are

running out of pain medication, you must call the office number 952-456-7107 during regular clinic hours (8:30-4:00). Pain medications are not filled after hours or on weekends.

- Take pain medication with food. They may also cause cognitive impairment so you are not to drive or operate heavy machinery. Another common side effect is constipation. You may use over the counter stool softeners (i.e. Colace or Dulcolax) to help with this. See packages for recommended dosages.
- For the first several weeks, many patients find it more comfortable to sleep in a recliner or propped with pillows in a semi-sitting position.
- Put an ice pack on your shoulder continuously for the first 2-3 days. Use ice as much as you need to control pain and swelling. Don't sleep with ice on your shoulder. Do not put ice packs directly on the skin. However, ice cubes can be placed directly on skin.

CALL 952-456-7000 IF:

- Your temperature is 101.5 degrees Fahrenheit or more that does not go down with medication like Tylenol or Advil.
- You see a large amount of new bleeding or drainage from the incision area. Some drainage the first day after surgery is expected.
- Notice increased or unusual redness, swelling of warmth in the surgery area.
- Have a lot of discomfort that doesn't get better with pain medicine, ice and rest.
- Notice a big change in color, movement or feeling to the fingers or hand
- Have any questions or concerns

DIET:

You will need to eat healthy meals to give your body the energy, vitamins and minerals needed to recover from surgery. Return to your usual diet as soon as you are able. Drink six to eight glasses of water each day. Eat more food that has fiber (fruits, vegetables and whole grains) to avoid constipation from the pain medications. Avoid alcohol while taking prescription pain medicine.

FREQUENTLY ASKED QUESTION:

Do I have to go to physical therapy?

Yes! You will have to do the exercises that we and the physical therapist instruct you to do to get the best result of your surgery. Dr. Norberg and his staff will adjust your therapy as you continue to heal your shoulder.

How long is recovery time?

Patients continue to make progress up to 18 months after their surgery depending on the type of surgery they are having.

Work Status?

You will be off of work until your follow-up appointment in about 7-14 days and then will adjust your work restrictions accordingly.

Are there possible complications from surgery?

Yes, but they are very rare. Some include but are not limited to: your repair not healing, infection, stiffness, loss of motion, and nerve injury

What are the signs of an infection?

Fever over 101.5 degrees, the incision becomes red or swollen, or any foul drainage. If these symptoms occur, call Dr. Norberg's office right away. (952-456-7107).

Is swelling and pain normal?

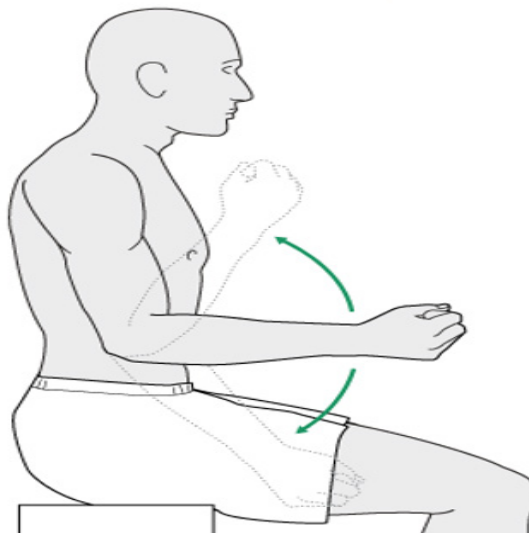
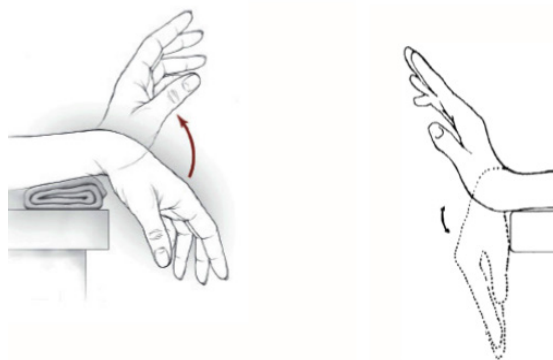
Yes. It is normal to experience some swelling and pain after your surgery. The pain should be manageable with the prescription pain medication given to you after your surgery.

Can I shower?

Yes. You may shower 3 days after your surgery. Do not scrub your incisions. Do not submerge your incision for 2 weeks..

IMMEDIATE POST OPERATIVE EXERCISES - START THE DAY AFTER SURGERY

- Wrist range of motion. Bend your wrist forward and backwards as far as your can. Repeat 10 times. Do 3 sets for 2-3 times per day.
- Elbow range of motion. Gently bring your palm up towards your shoulder and bend your elbow as far as you can. Then straighten your elbow out as far as you can. Repeat 10-15 times for 2-3 times per day.



START EXERCISES AFTER FIRST POST OPERATIVE VISIT



The starting position for this exercise will be with your hands resting in front of you on a counter top. Put your weight on your legs, not on your hands or upper body. Keep your hands in the same position on the counter top. While moving your feet slowly backwards, bend slightly at your waist, stick your buttocks back past the base of your feet. (see picture above) Once you feel a stretch, hold our position for 5-10 seconds. **DO NOT STRETCH TO THE POINT OF PAIN.** Always walk yourself back up.



Start this exercise in a standing position. You may be more comfortable resting against a wall. Bend your affected arm at the elbow. Place your opposite hand on your wrist and gently rotate your wrist outward while keeping your elbow at your side. If you have trouble keeping your elbow at your side, hold a rolled up sock between your elbow and waist. If the sock falls to the floor, you are not keeping your elbow close enough to your body. While gently rotating your wrist outward, continue until you feel a good stretch Hold for 5-10 seconds. **DO NOT STRETCH TO THE POINT OF PAIN.**

PAIN MEDICATION AGREEMENT FOR POST-OPERATIVE PAIN TREATMENT

The official policy of our practice is as follows:

1. Patients will not be provided with narcotic pain medication prior to surgery.
2. After surgery, appropriate prescription pain medications will be prescribed for adequate pain control. The amount of medication prescribed will be based on typical pain control needs for the surgery performed. This is at the discretion of Dr. Norberg.
3. We will not prescribe pain medications longer than TWO WEEKS after surgery.
4. Prescription pain medications do not help with healing after surgery. Take prescription pain medications only if pain cannot be controlled with over the counter medications such as tylenol.
5. If a patient takes prescription pain medication prior to surgery (prescribed by another provider) we will establish a specific pain mediation plan for that patient.
6. Patients should avoid NSAID's (Ibuprofen, naproxen, aspirin, etc.) for the first weeks after surgery if they have a superior capsular reconstruction, rotator cuff repair, labral repair, biceps tenodesis, or fracture. NSAID's have been associated with decreased healing rates.
7. Taking prescription Opiates/Opoids (such as oxycodone, hydrocodone, morphin, hydromorphone) are well known to cause death and addiction/dependency and should never be taken while driving. Prescription opiates/opioids are the leading cause of prescription related deaths.

Patient Name _____

Patient Signature _____

Date: _____

References:

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Dowell D, Haegerich TM, C.R. (2016). CDC Guideline for Prescribing Opioids for Chronic Pain- United States, 2016. MMWR Morb Mortal Wkly Rep, 65(1), 1-49.

O'Neill. (2014). Less is More: Limiting Narcotic Prescription Quantities for Common Orthopedic Procedures. The Physician and Sportsmedicine, 42(4), 100-105.

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