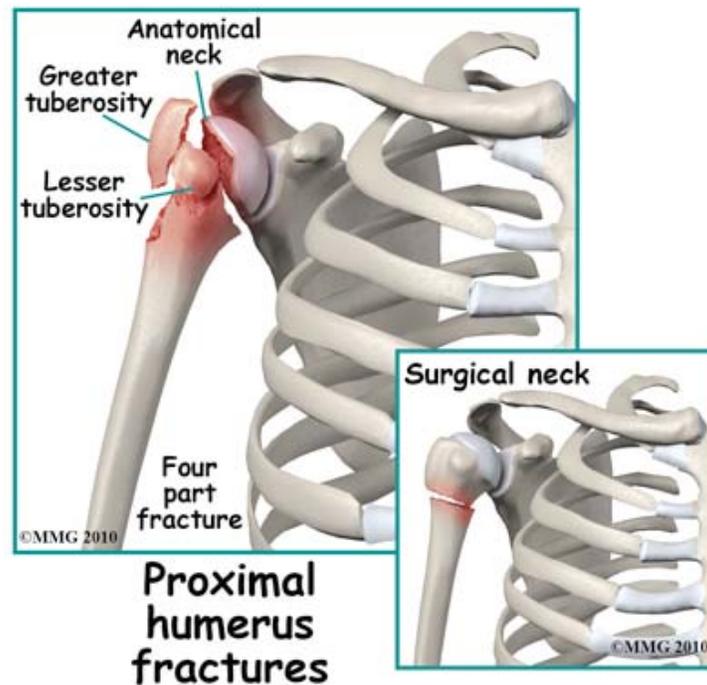


The Proximal Humerus Fracture Book



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PROXIMAL HUMERUS FRACTURES:

A proximal humerus fracture is a break in the arm bone near the shoulder, or a “broken shoulder”. Proximal means it is the end of the bone that is closest to the body. This typically happens after a fall on the affected side, followed by pain in that arm or shoulder. This is different than a dislocated shoulder, separated shoulder, broken collarbone or torn rotator cuff. About 5% of all fractures are proximal humerus fractures.

There are different types of proximal humerus fractures. Depending on the type of fracture, it may be treated with or without a surgery. 85% of proximal humerus fractures are treated without surgery. Fractures are classified based on the number of fracture pieces, displacement of the pieces, involvement of the shoulder joint surface, and dislocation of the shoulder.

2-PART FRACTURE:

This is when the proximal humerus is broken into two pieces, meaning there is one fracture line on x-ray. Commonly, this will be a fracture of the greater tuberosity, which is the part of the humerus where the rotator cuff attaches. When the humerus is forced in one direction (typically during a fall), and the rotator cuff remains intact, the greater tuberosity is broken off the humerus. Another area we see 2-part fractures is the surgical neck of the humerus. A surgical neck fracture happens when the humerus is forced in one direction, and the joint capsule and rotator cuff muscles remain intact.

3-PART FRACTURE:

This is when the proximal humerus is broken into three pieces, and there are then two fracture lines on x-ray. This most often involves the greater tuberosity and the surgical neck of the humerus.

4-PART FRACTURE:

This is when the proximal humerus is broken into four pieces. We also commonly see this fracture pattern, and it typically involves a fracture of the greater tuberosity, lesser tuberosity, and the surgical neck.

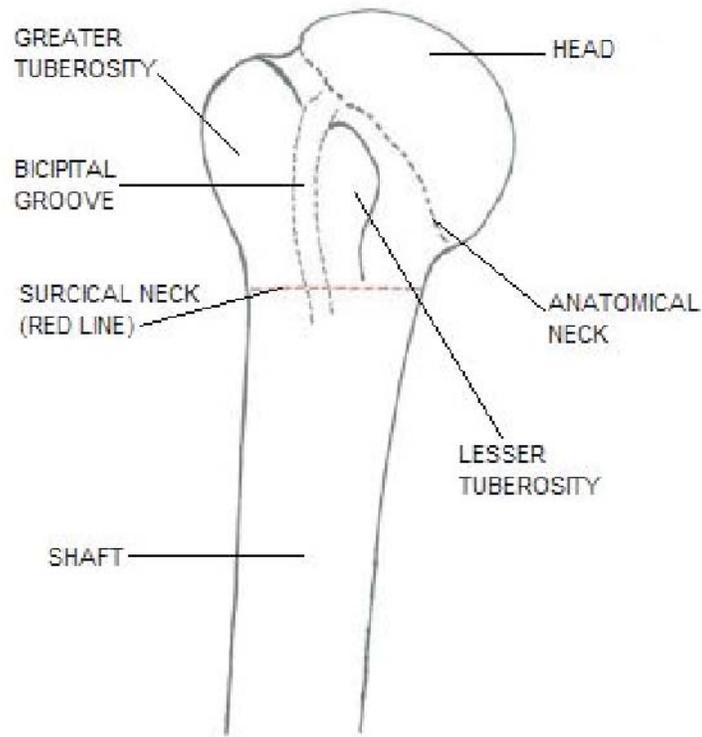
FRACTURE-DISLOCATION:

This is when the proximal humerus is fractured, and the joint surface of the ball (humeral head) and socket (glenoid) are out of their normal alignment.

Other words often used to describe a proximal humerus fracture are:

- “impacted” meaning one end of the fracture is pushed into another end of the fracture which causes a loss in humerus length
- “valgus” or “varus” meaning the head of the humerus is tilted either away from the body or toward the body
- “displaced” meaning the fracture pieces have shifted away from their normal anatomical position

PROXIMAL HUMERUS ANATOMY



PARTS OF UPPER END OF HUMERUS

Head: This is the part of the humerus that articulates with the glenoid (socket). It is the “ball” in the “ball and socket” joint.

Greater tuberosity: This is where the top part of the rotator cuff attaches to the humerus, specifically the supraspinatus and infraspinatus tendons.

Lesser tuberosity: This is where the front portion of the rotator cuff attaches, which is the subscapularis tendon.

Bicipital groove: This is where the long tendon of the biceps muscle is located. The biceps has 2 tendons, a long and a short tendon, hence the “bi” in biceps.

Anatomical and Surgical necks: These are two additional areas that can fracture in a proximal humerus fracture.

DIAGNOSIS:

In order to diagnose a shoulder injury as a proximal humerus fracture, an x-ray of the affected shoulder will be taken. X-rays will identify most fractures. The x-rays will help to determine if the fracture can be treated with or without surgery. Rarely an MRI or CT scan may need to be ordered to identify non-displaced fractures, to evaluate a complex fracture for surgical planning, or to evaluate the soft tissues surrounding the humerus.

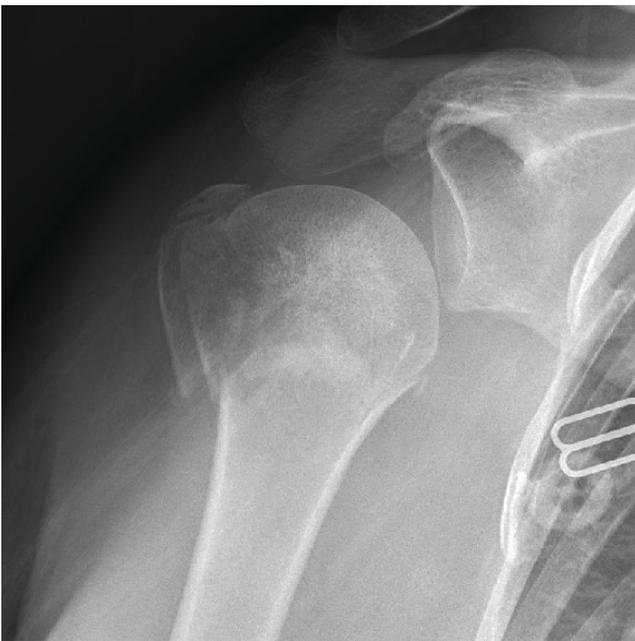
NON OPERATIVE TREATMENT:

Most proximal humerus fractures can be treated without surgery. Non-operative treatment typically consists of wearing a sling or shoulder immobilizer for one month. This will keep the shoulder in a safe position so the fracture can heal. It is very important to keep the shoulder immobilized in the first month. If the fracture shifts, it is possible that surgery will be required to fix the fracture. If surgery is then required, the timeline for healing starts over again. Prescription pain medication will be prescribed to the patient during the first several weeks after the fracture, as this can be very painful.

Follow-up appointments are typically at 2 weeks, 4 weeks, 8 weeks and 12 weeks after the date of injury, with some variation depending on a patient's progress. Repeat x-rays are taken at each visit to make sure the fracture has not changed position, and to monitor bone healing, which can first be seen at the 4 or 8 week visits. Patients typically start physical therapy after the 4 week appointment, as long as they are having a normal healing course.

OPERATIVE TREATMENT:

Operative treatment varies based on the type of fracture and age of the patient. One treatment option is an open-reduction internal fixation (ORIF). This involves reduction of the fracture under x-ray, and placement of a metal plate and screws to secure the fracture and maintain proper alignment. This typically involves an overnight stay in the hospital, however it is sometimes a same-day (outpatient) surgery in patients who are otherwise healthy. If there are other health concerns, or difficulty with pain control, the patient may be required to stay overnight. After surgery, the recovery plan is identical to non-operative treatment, with the date of surgery now considered the "date of injury".



BEFORE SURGERY



AFTER SURGERY

Another surgical treatment option is a closed reduction with intramedullary nailing. This procedure involves reduction under x-ray in the operating room, and placement of a nail inside of the humerus that extends from the head of the humerus down to the distal end, near the elbow. The rod is then fixed into place with several screws at the top and bottom of the nail in order to secure it in place. Dr. Norberg rarely uses this technique, however it is appropriate for certain patients.



Another option for surgical treatment is a hemiarthroplasty. This involves removing the humeral head, and replacing it with a new metal head. The new metal head is attached to a stem, which is inserted down the bone canal of the humerus. This treatment is for younger patients (under 65) with complex fractures. This procedure is sometimes a back-up for the ORIF, if reduction of the fracture cannot be obtained well with a plate and screws.



Another type of operative treatment is a reverse total shoulder replacement. This treatment is typically reserved for patients over the age of 65, with complicated fracture patterns, severe arthritis, or a torn rotator cuff. This procedure is sometimes a back-up for the ORIF, if reduction of the fracture cannot be obtained well with a plate and screws. We have a separate book available that is specific to reverse total shoulder replacements. The recovery from a reverse total shoulder is much different than recovery from an ORIF, intramedullary rod, or hemiarthroplasty.

It is important to consider each patient individually when making the decision to treat operatively versus non-operatively. Age, underlying health problems, pre-fracture functionality, and activity level are all important factors to consider when making treatment decisions.

RISKS OF SURGERY:

With any surgery there are potential risks involved. These include but are not limited to infection, continued pain, damage to blood

vessels or nerves, decreased motion, and anesthetic complications.

Call your doctors office if you have any signs of infection: redness, warmth, fever, discolored drainage.

QUITTING SMOKING:

Studies have shown the non-union rates (failure to heal) can be up to 6x higher in patients who smoke or use nicotine products (this included cigarettes, chewing tobacco, E-cigarettes, cigars and smoking cessation products with nicotine such as patches, gum, or lozenges).

Using any form of nicotine or tobacco products can delay your body's healing process.

Nicotine makes your blood vessels constrict (become smaller), which reduces the amount of oxygen-rich blood delivered to healing tissues. It 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. Talk with your primary care provider about non-nicotine options for smoking cessation.

BEFORE SURGERY:

Surgical fixation of proximal humerus fractures is typically a hospital procedure with an overnight stay.

You shouldn't take anti-inflammatories (i.e. Ibuprofen or Aleve) or aspirin, unless cleared by your Doctor for 4 days prior to surgery.

Arrange for a ride to and from the hospital.

Let the doctor know of any allergies you may have and medications you are taking.

Please bring a list of medications.

AFTER SURGERY:

You will be placed in a sling to be worn at all times other than showering, getting dressed, and doing post-operative exercises for your elbow, wrist and hand.

You should wear the sling to sleep.

You will be given prescription pain medication.

Your first appointment after surgery is with Dani Fitterer, a physician assistant with Dr. Norberg. That will be approximately 7 - 10 days after surgery.

If you have any questions after you get home from surgery, please call our clinic at (952) 920-0970 and Dani or Dr. Norberg will return your call.

INCISION CARE AFTER SURGERY:

- 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 until the drainage stops.
- Small tape strips (steri-strips) may be in place over the incision(s). Leave these in place until they fall off. Usually this is 10-14 days after surgery.
- Do not poke anything into your dressings.
- 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 surgery.
- Do not soak or scrub the incision(s) for two weeks.
- Watch for signs of infection, which include: redness, warmth, discolored drainage, fever or chills.
- Do not apply lotion, cream or powder to your incision.
- Wash twice a day under your affected arm and dry that area well. To do this safely, place your hand on a counter and take a small side step away to give access to your underarm without lifting your operative arm. Do not use your shoulder to raise your arm after surgery.
- 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. And when taking a shirt off, start with the arm that did not have surgery first.
- We will take out the sutures at your first follow-up appointment.

PAIN RELIEF AFTER SURGERY:

- Most patients will have a nerve block with a pain catheter that will last approximately 3 days after surgery. 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 medications. The block also provides excellent pain relief after surgery. You will get specific instructions from an Anesthesiologist regarding the pain catheter. You should take some pain medication approximately 8-10 hours after your block is performed, even if you have no pain. Strong narcotic medications will be prescribed to help manage your pain after surgery. Typically a short acting (taken every four hours) medication and a longer acting (taken every 12 hours) medication is prescribed. Dr. Norberg recommends taking them as written the first day and then gradually spacing them out to see how much is needed for adequate pain relief.
- The pain medications will make your pain manageable but will not necessarily take away all of your pain.
- Do not take Tylenol (acetaminophen) if you are taking Percocet or Norco. You may take Tylenol instead of Percocet or Norco.
- Whether you are taking Percocet, Norco or Tylenol (acetaminophen), be careful not to exceed 3000mg of acetaminophen in a 24 hour period. Percocet and Norco have 325mg of acetaminophen in each tablet.
- Do not take Advil (ibuprofen) or Aleve (naproxen) for the first month after surgery, as this may delay healing and increase the risk of a non-union.
- If the pain is still not controlled, please call the clinic (952) 920-0970.
- 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 (952-920-0970) during regular clinic hours (8:30-4:00). Pain medications are not filled after hours or on weekends. Some of the pain medications cannot be called into a pharmacy, and refill prescriptions must be picked up at our clinic.
- Take pain medication with food. They may also cause functional impairment so you are not to drive or operate 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 for 20 minutes, three times a day minimum. Use ice as much as you need to control pain and swelling. Don't sleep with ice on your shoulder. Do not put ice directly on the skin.

RECOVERY TIME:

Expected outcomes also vary based on the patient's healing and the severity of the fracture. The average patient can expect to keyboard and write within a week, be able to put a glass into a cupboard around the 3 month mark, and will be back to lifting without restrictions between 3 and 6 months.

Most patients will have some permanent restrictions in their shoulder motion, regardless of treating the fracture with or without surgery. It is very important to complete physical therapy, and to do the prescribed home exercises in order to get as much motion back as possible. Getting motion back in the shoulder is the most important part of a patient's recovery.

CALL DR. NORBERG AFTER SURGERY IF:

Your temperature is 101.5 degrees Fahrenheit or more and 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.

You notice increased or unusual redness, swelling or warmth in the surgery area.

You have a lot of discomfort that doesn't get better with pain medicine, ice, rest or changing positions.

You notice a big change in color, movement or feeling to the fingers or hand.

You have any additional questions or concerns.

Our office number is (952) 920-0970. Please call and leave a message with Val, our care coordinator, and Dani or Dr. Norberg will return your call.

REHABILITATION PROGRAM:

Your pain should lessen every day. Plan to alternate activity and rest for periods throughout the day.

To keep strength and motion in your arm, you must exercise. There are some simple exercises you need to do.

Starting the day after your fracture, or if you had surgery, starting the day after surgery.

INITIAL EXERCISES (START THE DAY AFTER THE INJURY OR SURGERY):

- * Bend your wrist forward and backward as far as you can. Repeat 10 times. Do 3 sets.
- * Squeeze your hand, extend and bend your fingers for a count of 10. Do these exercises at least four times each day.
- * Take your arm out of the sling. Keep your elbow close to your body, bend and straighten your elbow 5 times. Do these exercises at least 3 to 5 times a day.
- * In about 4-6 weeks we will have you meet with a Physical Therapist to advance your shoulder range of motion and exercises.



ADDITIONAL EXERCISES (START ONE WEEK AFTER INJURY OR SURGERY):

These exercises are to be done 5 times each and approximately 3-5 times a day.



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.**

DIET:

You will need to eat healthy meals to give your body the energy, vitamins and minerals needed to recover and heal. 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 QUESTIONS:

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 or Dani 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 the injury or after surgery, depending on the type of fracture or surgery they have.

Work Status?

You will be off of work for one-two weeks. Then we will adjust your work restrictions accordingly. If you work at a job that requires heavy lifting, we will still send you back to work with strict lifting restrictions beginning a few weeks after the injury or surgery. It is up to your employer to decide if they have light duty work available for you. We will not take you out of work for greater than two weeks.

FREQUENTLY ASKED QUESTIONS FOR PATIENTS WHO HAD SURGERY:

Are there any complications from surgery?

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

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. (952-920-0970).

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. Swelling often goes from the shoulder all the way down to the hand, and this is typically normal as long as you hand has normal sensation and movement. Swelling will take several weeks to improve.

Can I shower?

Yes. You may shower 3 days after your surgery. Do not scrub your incisions.

When will my stitches come out?

Generally your stitches will need to be removed at the first visit to clinic after surgery.