Clavicle Fracture (Broken Collarbone)
A broken collarbone is also known as a clavicle fracture. This is a very common fracture that occurs in people of all ages, often related to sporting activity such as skiing and cycling.

Anatomy
The collarbone (clavicle) is located between the ribcage (sternum) and the shoulder blade (scapula). It is the only bone connecting the arm to the body! The clavicle lies above several important nerves and blood vessels. However, these vital structures are rarely injured when the clavicle breaks, even though the bone ends can shift when they are fractured.

Description
The clavicle is a long bone and most breaks occur in the middle of it. Occasionally, the bone will break where it attaches at the ribcage or near the shoulder blade.

Cause
Clavicle fractures are often caused by a direct blow to the shoulder as can happen during a fall onto the shoulder or a collision. A fall onto an outstretched arm can also cause a clavicle fracture. In babies, these fractures can occur during the passage through the birth canal.

Symptoms
Clavicle fractures can be very painful and may make it hard to move your arm. Additional symptoms include:

- Sagging shoulder (down and forward)
- Inability to lift the arm because of pain.
- A grinding sensation if an attempt is made to raise the arm.
- A deformity or "bump" over the break.
- Bruising, swelling, and/or tenderness over the collarbone.
Treatment
If the broken ends of the bones have not shifted out of place (or displaced) and line up correctly, your fracture may not need surgery. Broken collarbones can heal without surgery. Dr. Meininger can help you determine if your fracture is likely to heal successfully. In most cases a brief 3-4 week course of immobilization in a sling with Physical Therapy is successful.

Arm Support
Patients often prefer a simple arm sling for comfort after breaking the collarbone. Wearing a sling helps to support the weight of your arm and keep it in position while it heals.

Medication
Pain is common after clavicle fractures. In addition to rest, ice and immobilization, pain medications, including acetaminophen, can help relieve pain as the fracture heals.

Ice
Ice packs are helpful both after injury and after surgery. Ice helps to reduce pain, swelling and inflammation. Generally 20 minutes each hour is prescribed. Use caution to apply ice over a T-shirt or cotton washcloth to protect the skin from frostbite injury.

Physical Therapy
Immobilizing your arm in a sling may predispose you to stiffness and/or weakness. Once your collarbone begins to heal, your pain will decrease and motion supervised by a Physical Therapist will aid in your recovery. Dr. Meininger has designed a protocol for recovery after clavicle fractures (below). Early exercises will help prevent stiffness and weakness and advance to more strenuous exercises once the fracture is completely healed.

Doctor Follow-Up
Dr. Meininger will request frequent follow-up visits to evaluate your progress during recovery and your clavicle for healing. A physical examination and x-rays will help Dr. Meininger ensure the bone is healing in good position. After the bone has healed, you will be able to gradually return to your normal activities.

Complications
Broken collarbones with normal alignment generally heal without complication. Displaced or shattered fractures, where the broken bone ends are no longer in normal alignment, also have the potential to heal successfully without surgery. However, one in four of these displaced fractures may fail to heal altogether and these fractures may require a longer period of immobilization (ie: more time in a sling). Displaced fractures left to heal on their own without surgery will never return to normal alignment. These patients will always have a bump over the collarbone, or a deformity for life. The abnormal position may cause some patients to have shoulder weakness or loss of endurance.
Surgical Treatment
Dr. Meininger frequently recommends surgery for displaced fractures of the collarbone with abnormal alignment because of a high risk of weakness and low patient satisfaction with non-operative care. In Dr. Meininger’s practice, patients treated with surgery for fractures of the collarbone are among the most satisfied Orthopaedic patients. Patients have an immediately more stable fracture, earlier pain relief, less required time in a sling and a quicker return to sports and activity.

Studies have shown that displaced fractures treated with surgery have higher patient satisfaction, are more likely to heal in a normal anatomic alignment, more likely to result in normal strength and shoulder function after healing; and less likely to go onto nonunion (or fail to heal altogether).

Plates and Screws
Multiple options exist for clavicle fracture surgery including pins, rods and plates & screws. Because of his vast experience with clavicle fractures, Dr. Meininger prefers plate and screw fixation for displaced clavicle fractures. Studies have shown a high rate of successful bone healing with a low risk of complication. Other devices, including pins and rods may be more likely to fail or require additional surgery.

During this operation, the bone fragments are first repositioned into their normal alignment, and then held in place with a plate designed especially for the collarbone and several screws.

The most common complications include decreased sensation on the chest below the incision and prominent hardware. Numbness goes away gradually with time; although in some cases it may persist.

Hardware that is bothersome enough to require repeat surgery is rare. In Dr. Meininger’s Orthopaedic practice, roughly one in ten (1/10) of patients with clavicle plates request they be removed with a second operation.

Rehabilitation
Specific exercises will help restore movement and strengthen your shoulder. Dr. Meininger recommends outpatient Physical Therapy after clavicle fracture surgery. Dr. Meininger’s advanced clavicle therapy program (below) typically start with gentle motion exercises and will gradually add strengthening exercises to your program as your fracture heals.
Outcome
Patients will clavicle fractures can expect improved symptoms, decreased pain and a return to more activities within 3-4 weeks. Most patients with clavicle fractures feel 80% better within 1 month; and return to regular activities within 3 months of their injury. Your doctor will tell you when your injury is stable enough to do so. Whether your treatment involves surgery or not, it can take several months for your collarbone to heal by X-ray. Patients with diabetes and those that abuse tobacco may take even longer. Therefore it is important to avoid another injury during your recovery. Returning to regular activities or lifting with your arm before your doctor advises may cause your fracture fragments to move or your hardware to break – definitely something better off avoided! Once your fracture has completely healed, you can safely return to sports activities.

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SURGERY TO REPAIR FRACTURED CLAVICLE

Phase I: Weeks 0-1

GOALS:
1. Control pain and swelling
2. Protect the clavicle fracture repair
3. Protect wound healing
4. Begin early shoulder motion

ACTIVITIES:

Immediately After Surgery
1. After surgery you will be taken to the recovery room, where your family can join you. You will have a sling and an ice pack on your operated arm.
2. Activity: Dr. Meininger encourages gentle activity immediately after surgery. Getting out of bed and walking in your sling can help you circulate blood, open your lungs and feel more normal after surgery. Be cautious not to use the operated arm or lift anything as instructed.
3. Difficulty sleeping is a frequent complaint. Dr. Meininger recommends a semi-reclined position to support your scapula (shoulder blade). Resting in a recliner chair or with a stack of pillows beneath your back will often suffice.
4. You will receive several prescriptions after surgery for use at home:
   • A narcotic pain pill helps control pain. Use as directed. You may gradually substitute over the counter pain relievers as your pain allows.
   • An anti-inflammatory is recommended to reduce pain, swelling and inflammation.
   • A stool softener to help prevent constipation (common while taking pain pills).
   • Aspirin tablets for use daily or another blood thinner to reduce the risk of blood clots.
5. Apply cold packs to the operated shoulder to reduce pain and swelling 20 minutes each hour with a T-shirt or cotton washcloth between the ice and your skin.
5. Regular finger, hand and elbow motion is encouraged to increase circulation.
6. Numbing medicine (ie: Novocaine) in the skin after surgery helps to control pain for 12-18 hours after surgery. Nonetheless, Dr. Meininger encourages you to use pain pills for the first 2-3 days after surgery to help control and prevent severe pain.
7. Blood clots: Blood clots are uncommon after clavicle fracture surgery; but still possible. Dr. Meininger encourages early walking and activity; as well as a blood thinner such as Aspirin.

The Next Days After Surgery
1. Your bandage is waterproof and you are safe to shower over the dressings. After 3 days you may remove the dressings cleanse the wound with soap and water. Do not scrub. Do not apply any topical lotions, ointments or gels to the wound. Re-apply clean, dry bandages as needed.
2. Apply cold packs to the shoulder 20 minutes each hour to reduce pain and swelling.
4. Remove the sling several times a day. Keeping your arm at your side, bend and straighten the the elbow, flex the wrist, hand and fingers. Bending over to perform pendulum exercises is recommended 3 to 5 times daily.
5. **DO NOT** lift your arm at the shoulder using your muscles.
6. Because of the need for your comfort and the protection of the repaired clavicle fracture, a sling is usually necessary for 3 to 4 weeks, unless otherwise instructed by your surgeon.

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Rehabilitation after Surgery to Repair Fractured Clavicle

Phase I: 0 to 6 weeks after surgery

Goals:
1. Protect the surgical repair
2. Ensure wound healing
3. Prevent shoulder stiffness
4. Regain range of motion
5. Control pain and swelling

Activities:
1. Sling
   Use your sling most of the time for the first 3 weeks. The doctor will give you additional instructions on the use of the sling at your post-operative office visit. Remove the sling 4 or 5 times a day to do pendulum exercises.
2. Use of the operated arm
   Do not elevate surgical arm above 90 degrees in any plane for the first 3 weeks post-op. Do not lift any objects over 1 or 2 pounds with the surgical arm for the first 6 weeks. Avoid excessive reaching and external/internal rotation for the first 6 weeks.
3. Showering
   You may shower or bath and wash the incision area. To wash under the operated arm, bend over at the waist and let the arm passively come away from the body. It is safe to wash under the arm in this position. This is the same position as the pendulum exercise.

Exercise Program

ICE
Days per Week: 7 as necessary 15-20 minutes
Times per Day: 4-5

STRETCHING / PASSIVE MOTION
Days per Week: 7 Times per day: 4-5

Program:
Pendulum exercises
Supine External Rotation
Supine assisted arm elevation limit to 90 degrees weeks 1 to 3
120 degrees weeks 3 to 6
Isometric exercises: internal and external rotation at neutral
Elbow and forearm exercises
Ball squeeze exercise
Scapular retraction

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References:


