

Plain Language Summary

The Treatment of Clavicle Fractures



Background

This plain language summary provides an overview of the surgical and non-surgical treatment of isolated clavicle fractures in adolescents and adults. The clavicle, located between the ribcage (sternum) and shoulder blade (scapula), is the curved tubular bone connecting the shoulder to chest wall and is commonly referred to as the “collarbone”. Although the clavicle is superficial along the upper chest wall, it is an important origin of several major muscle groups that control movement of the arm. Also, critical arteries, veins, and nerves run directly under the clavicle into the upper arm and are susceptible to injury fracture and require evaluation and treatment.

What are the Risk Factors for Clavicle Fractures?

Clavicle fractures occur because of a fall onto the shoulder or an outstretched arm, but may also occur with higher energy events, such as a sports injury, skiing, motor vehicle or bike accidents. These injuries typically occur in adolescents and young adults with active lifestyles but are also seen in older adults with weaker bones more susceptible to minor trauma.

How are Clavicle Fractures Diagnosed?

The clavicle is superficial along the upper chest wall and fractures are readily noticed by the patient due to local tenderness and swelling associated with the injury. Patients usually will have significant pain with attempted arm movements and in more displaced fractures, have an obvious deformity that may rarely penetrate through the skin. Clavicle fractures warrant an orthopaedic evaluation and plain radiographs in all cases. Evidence shows that an upright x-ray, where a patient’s back is against the grid, may be preferred, as they are likely to offer a better view of the displacement of the bone (how the two or more pieces of bone are aligned), and aid with treatment decisions. With more serious injuries, CT scans are used to better define the nature and displacement of fracture fragments and plan treatment when surgery is indicated. MRI scans may be used when there is concern for associated injuries including the rotator cuff and shoulder labrum. Shoulder joint dislocations or more serious chest wall injuries involving the rib cage and lung tissues will take precedence over the initial treatment of the clavicle fracture.

How are Clavicle Fractures Treated?

The important factors in the decision making for the treatment of clavicle fracture are the 1. Location of fracture, 2. Number of bone fragments involved, and 3. Displacement or separation of the bone fragments. The majority of isolated clavicle fractures are treated without surgery and the vast majority will heal without complication or loss of function. Adolescents have a greater healing potential than older adults and are less likely to require surgical treatment.

When non-operative treatment is recommended, simple sling immobilization is preferred over other braces (such as the figure-of-eight brace) to immobilize the shoulder, as the sling may be more comfortable and less restrictive. Healing times vary with most patients regaining normal function is 6-12 weeks. With non-operative treatment there is a risk of shortening or displacement of the fragments leading to a deformity or more concerning, a non-union. Non-union implies the bone fragments fail to

unite or heal leading to pain and deformity. Smoking tobacco is a negative risk factor for healing regardless of the treatment method chosen.

When is Surgical Treatment Chosen?

Operative treatment for clavicle fractures is recommended based on the nature of the fracture and demands of the patient's activities. Strong recommendations show that if the fracture fragments are displaced, surgery is often necessary to restore anatomy and expedite healing to reduce the risk of non-union when compared to non-operative treatment. Surgical treatment is associated with better early patient reported outcomes as it can speed healing and allow for an earlier return to sports and work activities albeit with a greater risk of infection. Several techniques for surgical repair included the use of metal plates, screws, or metal nails to align and stabilize the bone fragments. Surgical treatment may require a second surgery to remove painful hardware (plates and screws) after the fracture has healed.

After the Bone has Healed?

The bone healing interval after clavicle fractures can lead to stiffness and/or weakness of the shoulder joint and some patients will require physical therapy to help restore normal function.

This summary was written by the Committee on Healthcare Safety.

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Additional resources for patients are available at **OrthoInfo.org**.