

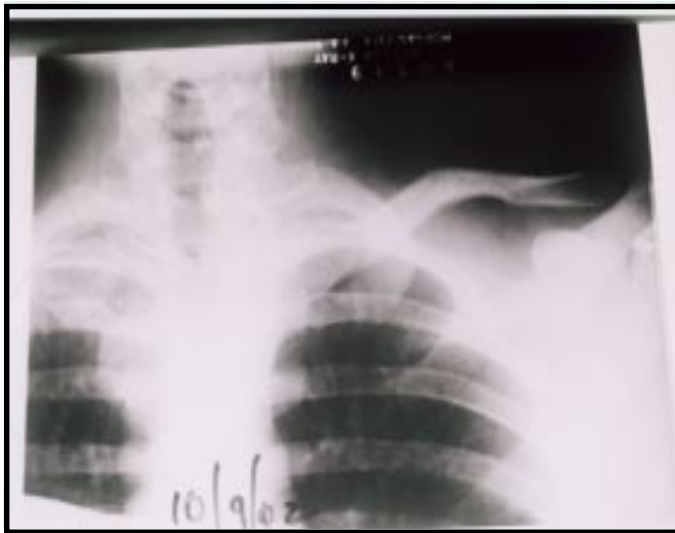


Original Contribution

Clavicle Fractures in Athletes

Phelo Keller, OTC, OT-SC, Morgan City, LA

A young athlete playing football got tackled and fell on his left shoulder injuring his left collarbone. X-rays were taken which showed a fracture of the mid shaft of the clavicle with moderate cephalic bowing at the fracture site.



X-Ray 1

This is one of the most common fractures - 85% of cases involve the middle third of the clavicle, 10% the lateral third and 5% of the medial third.

There is a bimodal distribution with high-energy injuries in young adults and less common injuries in osteoporotic elderly patients. Injuries also occur in newborns from birth trauma. It appears more commonly in males than in females.

Normal shoulder function is critical to young athletes participating in almost any sport. The need for proper upper extremity function ranges from the obvious stresses encountered during throwing or overhead sports to the very physical collision sports. Shoulder

Address correspondence to: Phelo Keller, OTC, OT-SC Morgan City Orthopaedic Clinic, 1300 Lakewood Dr. Morgan City, LA 70380 ; Tel: (985) 384-7900; email: malvenia@worldnet.att.net.

problems can be acute, indirect traumatic events or by repetitive overuse that gradually and ultimately causes tissue failure. Acute traumatic injuries can occur in any sport with the highest incidence occurring in collision sports such as football and hockey.

The four principal bones of the shoulder are the humerus (arm bone or "ball"), scapula (shoulder bone or socket), clavicle (collarbone) and the thorax (rib cage). Together these bones form four articulations (junction between two or more bones); the glenohumeral articulation, the acromioclavicular articulation, the sternoclavicular articulation and the scapulothoracic articulation. All of these articulations have little inherent bony stability and rely almost entirely on the surrounding soft tissues for support.

The fracture is classified by its location in the clavicle: proximal, middle or distal third. Lateral clavicle fractures are sub classified as follows:

Type I: Clavicle fractures are minimally displaced because coracoclavicular ligaments are not disrupted.

Type II: Fractures are associated with ligament injury and can have a large displacement of the proximal fragment.

Type III: Injuries are intra-articular and can lead to late arthritis of the acromioclavicular joint.

On Physical Examination

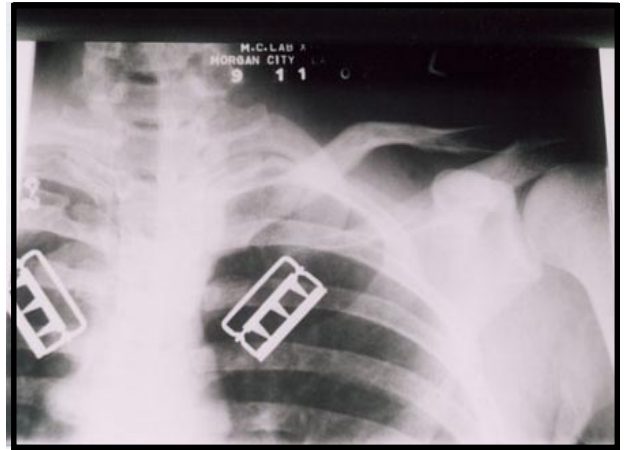
- A. Assess breathing and neurologic function
- B. Check the pulse to assess vascular status
- C. Palpate the fracture site for crepitus
- D. Determine whether there are any open wounds by examining the skin for tenting or compromise over the area of injury.
- E. Ensure that no dislocation has occurred by checking the shoulder's range of motion

Pathologic Finding

This fracture typically occurs in the middle third of the clavicle because the bone's biomechanics and struc-



X-Ray 2



X-Ray 3

ture. The middle third of the clavicle experiences the largest bending movement with applied load to the shoulder and has the smallest cross-sectional area.

General Measures

Most of these injuries can be managed non-operatively. Also, most clavicle fractures do not require reeducation maneuvers. The medial growth physis does not close for the clavicle until the patient is approximately 21 years old. Therefore medial fractures in the young athlete are typically Slater-Harris Type II fractures and eventually remodel.

Surgical Treatment

Surgery for clavicle fractures may be needed for the following:

- A. Comminuted or large displacements of fractures
- B. Open fractures over the clavicle
- C. Floating shoulders (fractures of the clavicle and scapula)

Physical Therapy

Codman's exercise should be instituted early in the course using pendulum-type movements of the shoulder with the trunk bent and supported. Passive range of motion to the overhead position increases as the pain diminishes in several weeks. Strengthening exercises are used when pain resolves.

Educating the Patient

With significant displacement, persistent deformity and occasional functional limitations may occur. The patient should avoid activities that can cause a direct blow to the shoulder. X-ray should be taken at intervals of 3 to 4 weeks to ensure healing.

Prognosis

Deformity from the fracture typically remains but decreases with time. However, functional deficits may occur with markedly displaced fractures. Full function is however expected by 6-12 weeks. If there is a Type II or III distal clavicle fracture, problems with acromioclavicular arthrosis or function may occur in the future. The prognosis is good for patients with minimally displaced fractures.

ABOUT THE AUTHOR

Phelo Keller, OTC, OT-SC was recently re-elected as Secretary of the National Association of Orthopaedic Technologists (NAOT). Keller is employed by Morgan City Orthopaedic Clinic in Morgan City, Louisiana, and his an active member of the Louisiana Chapter of OTs. A member of NAOT since 1985, several of Phelo's orthopaedic papers have been published in the The Journal of National Association of Orthopaedic Technologists. Keller lives in Centerville, LA with his family.



REFERENCES/WORKS CITED

1. American Academy of Orthopaedic Surgeons, Orthopaedic Knowledge Update: Clavicle Fracture.