

Case Report

Floating shoulder with the lateral clavicular fragment impinging on parietal pleura: A case report

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Abstract

In ipsilateral mid-clavicular and scapular-neck fractures, the mechanical stability of the suspensory structures is disrupted and muscle forces and the weight of the arm pull the glenoid fragment distally and anteromedially. To prevent a late deformity we recommend internal fixation of the fractured clavicle.

Fractures of the scapula are high-energy injuries. Clavicle fractures are common, usually being caused by a fall on an outstretched hand or a blow to the tip of the shoulder. Conservative treatment usually produces well to excellent results in injuries of the clavicle or the scapula. But this is not so when both the bones are injured simultaneously and when there is >2cm displacement of the lateral fragment of the clavicle.

Several methods of fixation for fractures of lateral end of clavicle have been described. We treated this unusual injury of the left clavicle fracture with impingement on the parietal pleura with Intercostal drain insertion and Steinmann pin Fixation.

Keywords: Floating Shoulder, Displaced Clavicular Fracture, Steinmann pin Fixation, Parietal pleura

1. Introduction

The glenohumeral joint allows a wide range of movement in all directions, and the surrounding structure must provide stability without constraining these movements. The capsule, the glenohumeral, coracoclavicular, acromioclavicular and coracohumeral ligaments along with the deltoid, trapezius, pectoralis and rotator cuff muscles are the suspensory and stabilizing structures which help to maintain the stability in fractures involving the clavicle and the scapula^{1,2}.

When there is a fracture of both the surgical neck of the scapula and the clavicle, the scapular fracture becomes unstable and the weight of the arm and the muscles acting on the humerus pull the glenoid fragment distally and anteromedially^{3,4,5}.

In ipsilateral mid-clavicular and scapular-neck fractures, the mechanical stability of the suspensory structures is disrupted and muscle forces and the weight of the arm can pull the glenoid fragment distally and anteromedially and the pull of deltoid muscle can displace lateral fragment inferiorly⁶. But the lateral fragment injuring the parietal pleura is a rare entity^{7,8,9}. Several methods of fixation for lateral end of clavicle have been described^{10,11,12,13}. We treated this case with open reduction and internal fixation with Steinmann pin.

Fractures of the scapula are high-energy injuries. They constitute 1% of all fractures, and 5% of fractures involving the shoulder. Clavicle fractures are common, usually being caused by a fall or a blow to the tip.

Conservative treatment usually produces good or excellent results in injuries of the clavicle, but this is not so when there is >2cm displacement of lateral fragment of clavicle.

2. Case Report

A 24 year old male patient presented to our Hospital Emergency Room with history of road traffic accident, while he was travelling in a Motorcycle at around 80-90 kmph and collided with a truck. He had sustained injury to his left shoulder and left side of the chest. He was clinically diagnosed to have multiple rib fractures on the left side, left clavicle and left scapular fracture. Plain radiograph showed fracture of left clavicle at the junction of middle and distal third with displacement >2cm of lateral fragment inferiorly with fracture of neck of left scapula and fracture of 5th and 6th ribs. Patient had severe pain over clavicle fracture site even after immobilization. Emergency intercostal drainage tube was inserted. CT of thorax revealed lateral fragment of clavicle impinging parietal pleura as shown in Fig. 1.

Patient was posted for surgery with intercostal drain *in situ*. Patient was placed in a supine position with a bolster in interscapular region such that bilateral scapulae were retracted. Under general anaesthesia, an oblique incision was made over left clavicle, and soft tissue dissection was done to expose the fracture site. Displaced fragment was elevated with a towel clip and Steinmann pin was introduced through the medullary cavity of the lateral fragment in a retrograde fashion and was later passed through the medial fragment. Scapula neck fracture was managed conservatively. Shoulder was immobilized with a shoulder arm pouch. Elbow, wrist and finger mobilization exercises were started on the first post-operative day. Shoulder exercises were started on the third post-operative day. At the end of 4 weeks, check X-rays showed well aligned fracture as shown in Fig. 2. Scapular neck fractures also showed clinical signs of union. Hence pin removal was done in the Outpatient department, and patient was advised to continue shoulder arm pouch. At the end of 6 weeks callus was seen on check x-ray, shoulder arm pouch was discontinued. He was advised to start shoulder strengthening exercises. At the end of 2 months patient had full range of painless shoulder movement.

Figure 1: Pre-operative 3D reconstructed CT-Scan and Radiograph

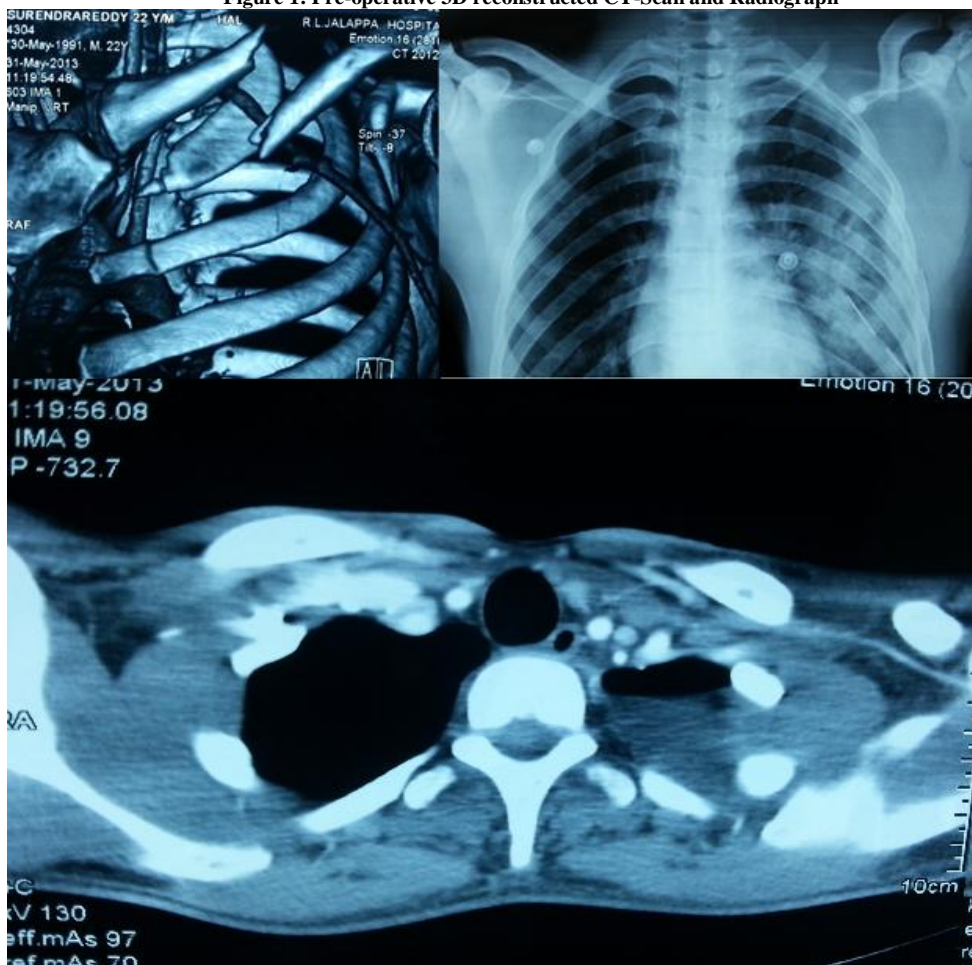
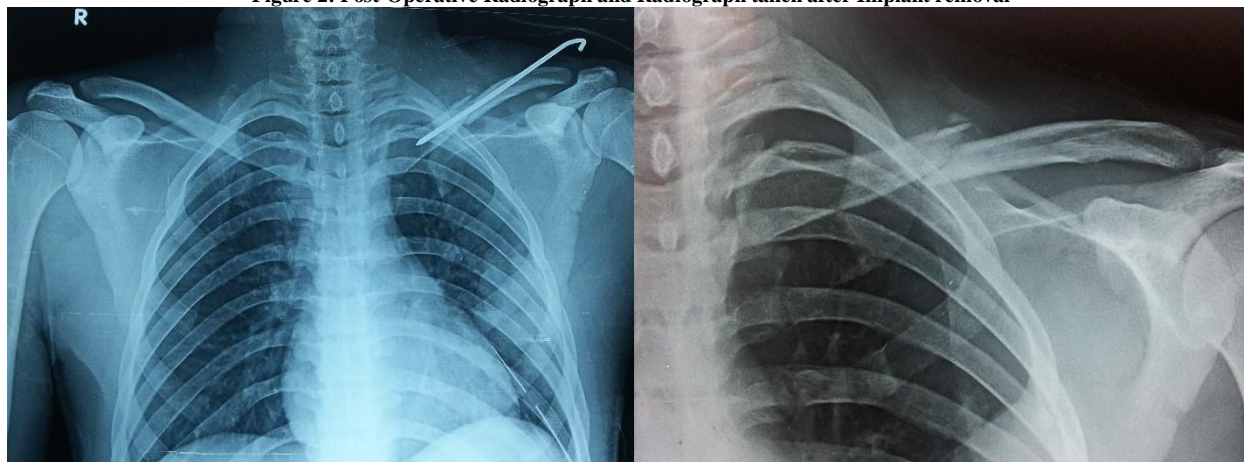


Figure 2: Post-Operative Radiograph and Radiograph taken after Implant removal



3. Discussion

Clavicle is one of the most common long bone to be fractured. But following a fracture lateral fragment impinging on pleura is very rare entity. Early diagnosis and treatment is essential to prevent injury to lung parenchyma^{14,15,16}.

Clinical examination revealed lateral fragment displaced inferiorly and decreased breath sounds on affected side associated with other clinical features of fracture. Plain radiographs are helpful in diagnosis. Computerized tomography was very helpful in our case as it clearly delineated injury to parietal pleura.

Surgical treatment is better than conservative management in such cases. Surgical fixation is the treatment of choice. After reduction of fracture fragments intramedullary fixation with Steinmann pin was done. It is relatively easy and less time consuming procedure. Surgery was not associated with any complications. Implant removal was being done as an outpatient procedure. Clinical results encourage us to perform similar procedure for such rare cases.

We conclude the case report that such a rare case need surgical treatment. To standardize treatment protocol many such case reports are essential.

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