

Neglected Acromion Fracture Causing Chronic Post-traumatic Shoulder Pain – A Case Report

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Learning Point of the Article:

A patient with chronic shoulder pain should not be disregarded.

Abstract

Introduction: Patient presented with persistent shoulder pain 8 months following an injury which was diagnosed to be an old non-united missed acromion fracture. The difficulties in diagnosing such fracture, the functional and radiological outcome of surgical fixation of this type of missed acromion fracture with 6-month follow-up has been discussed in this case report.

Case Report: We report a case of 48-year-old male who presented to us with chronic shoulder pain following an injury which was later diagnosed to be a missed non-united acromion fracture.

Conclusion: Acromion fractures are commonly missed. Non-united acromion fractures can cause significant chronic post-traumatic shoulder pain. Reduction and internal fixation can alleviate the pain with a good functional result.

Keywords: Acromion non-union, acromion fixation, chronic shoulder pain, acromion fracture.

Introduction

Isolated acromion fracture is an extremely rare injury and is frequently misdiagnosed or missed at the time of injury. Hence, these cases are diagnosed late and usually show delayed presentation. These fractures account for only 7–8% of scapular fractures [1]. The complex geometry, adjacent musculoskeletal structures, and infrequency of fracture all contribute to the difficulty in recognizing a scapular fracture. To complicate matters, there are significant anatomic variations that are easily confused with a scapula fracture, particularly in the young adult population who is most likely to sustain athletic or vehicular trauma. The key to making this diagnosis is to thoroughly examine the various parts of the scapula clinically by palpation and screening each of the available radiographic views [2, 3].

There are only a few published articles about missed acromion process fractures. Since this kind of fracture is extremely rare treatment recommendations are not standardized.

We report a case of 48-year-old male who presented to us with chronic shoulder pain following an injury which was later diagnosed to be a missed non-united acromion fracture.

Case Report

A 48-year-old male presented with pain over the left shoulder and difficulty in performing shoulder movements (severe pain in abduction) for 8 months. Patient had a left shoulder injury due to road traffic accident eight months back (skid and fall from 2-wheeler) and was treated conservatively elsewhere. The patient

Author's Photo Gallery



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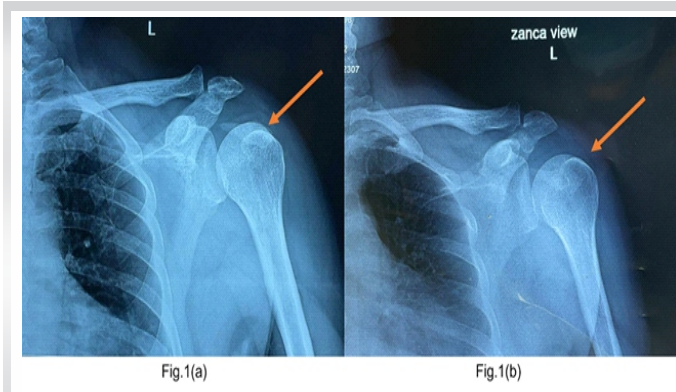


Figure 1: (a) and (b) X-ray of the left shoulder at the time of presentation showing a large radio opaque shadow is marked in the figure.

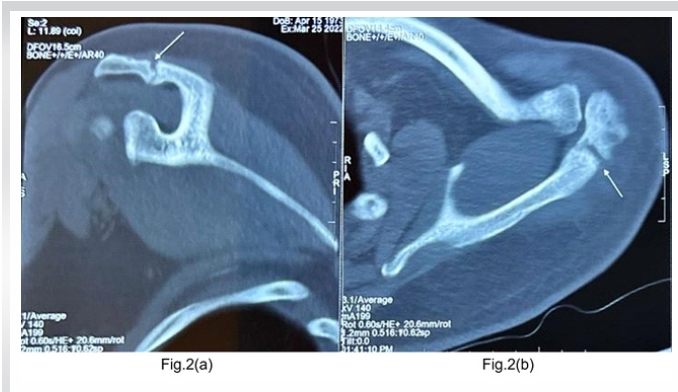


Figure 2: (a) Computed tomography (CT) coronal cut of scapula showing the fracture. (b) CT axial cut of scapula showing the fracture site.

was previously diagnosed as having rotator cuff pathology – had taken multiple sittings of physiotherapy and analgesics but had no relief of pain.

On careful examination of left shoulder, there was mild tenderness over the posterior aspect in the region of acromion. Active left shoulder abduction was restricted and associated

with severe pain.

The X-ray left shoulder anteroposterior view (Fig. 1a) and left shoulder Zanca view (Fig. 1b) was taken at the time presentation. Even though there were no obvious fractures on the X-ray, an abnormal well defined relatively large radiopaque shadow was seen in the region of humeral head (marked in Fig. 1a and b). Hence, computed tomography (CT) of the left shoulder was done which showed old non-united undisplaced fracture involving the acromion process of the left scapula in coronal (Fig. 2a) axial section (Fig. 2b) and 3D reconstructed image (Fig. 3a).

A curvilinear calcific lesion 3.7×1.2 cm seen along the posterior bundle of deltoid posterior to the acromion process (Fig. 3b) which may be heterotrophic ossification (as patient had also taken massage therapy). We decided to fix the fracture surgically as fracture was non-united and associated with severe pain. He was taken up for surgery after obtaining informed consent. Based on Kuhn classification, the fracture was type IB (Table 1). Under general anesthesia, patient was in the right lateral position. A 10 cm transverse incision was made in line with the acromion process. The plane of exposure was between the

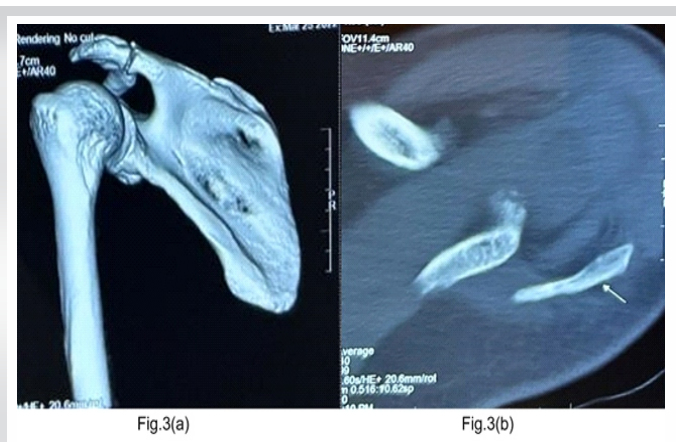


Figure 3: (a) 3D reconstructed image of scapula showing the fracture. (b) A curvilinear calcific lesion seen in the computed tomography axial cuts.

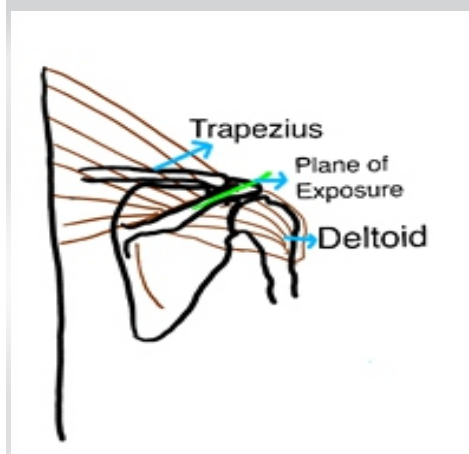


Figure 4: Diagrammatic representation showing the plane of exposure.

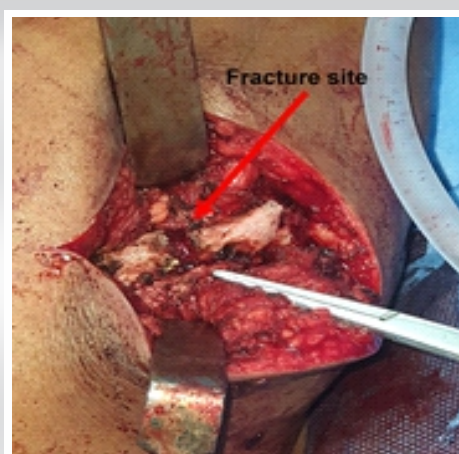


Figure 5: Intraoperative picture showing the fracture site in the acromion process.



Figure 6: Image taken postoperatively showing the incision site.

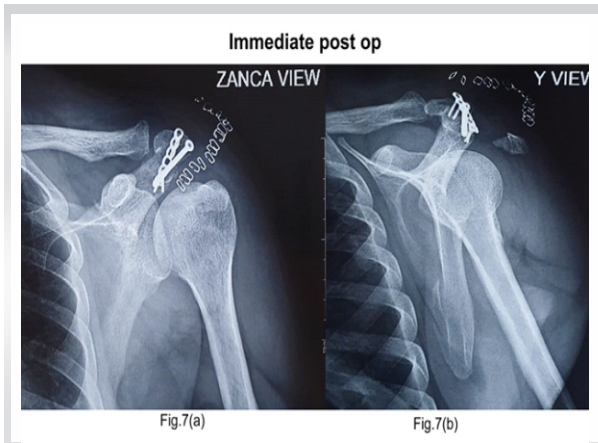


Figure 7: (a and b) Radiographs taken on the 2nd post-operative day.

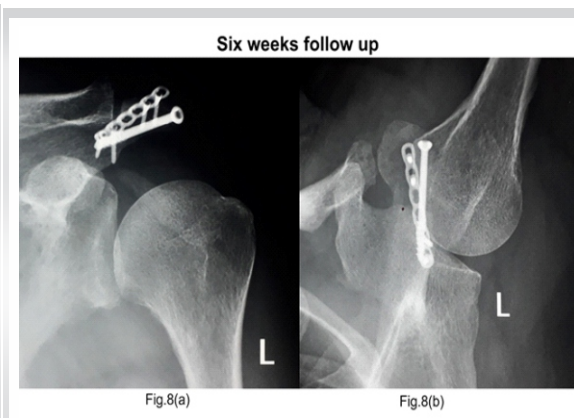


Figure 8: (a and b) Radiographs taken on 6-week follow-up.

restored (Flexion 0–100, Internal rotation 0–45, External rotation 0 – 70 , and Abduction 0–125°). He was able to perform pain free overhead abduction (Fig. 10).

Discussion

scapular attachment of trapezius and the posterior deltoid fibers (Fig. 4).

The insertion of trapezius and origin of posterior deltoid was incised from the acromion to expose the fracture site (Fig. 5) Fracture ends were freshened. 4 mm partially threaded cancellous screw was inserted from lateral to medial across the fracture site. The fracture site got compressed by the lag screw. 2 mm titanium locking compression plate was fixed over the superior surface of acromion with screws as neutralization plate. The trapezius insertion fibers and deltoid origin fibers was sutured along with fascia over the implants and acromion. Subcutaneous tissue and skin were sutured along with fascia over the implants and acromion. Subcutaneous tissue and skin were closed (Fig. 6).

On the 2nd post-operative day, the patient was started on gentle shoulder mobilization exercises and pendulum exercises. The patient was on arm sling for 6 weeks and shoulder abduction above 90° was avoided.

Radiographs were taken on 2nd post-operative day (Fig. 7a and b) and at 6 weeks postoperatively (Fig. 8a and b). Six-month follow-up (Fig. 9a and b) shows completely united fracture.

The pain that was present preoperatively completely resolved. The range of movement of the shoulder was fully

Scapula is flat triangular bone with multiple process surrounded by complex muscular and soft-tissue attachments, structurally, and bio mechanically scapular movements plays a major role in shoulder and upper limb movements. Isolated scapular process fractures are extremely rare injuries [1]. These injuries are easily missed in polytrauma victims. Although fixation of these rare fractures is not an emergency and most of these fractures heal uneventfully, early detection, and treatment of this fracture can prevent nonunion, chronic shoulder pain, and disability.

Minimally displaced acromion process fracture is easily missed as radiographs usually appear normal. In high velocity injury victims complaining of shoulder pain, the possibility of acromion or scapular process fracture should be kept in mind and early CT of the shoulder should be ordered after immobilization in an arm sling.

Kuhn et al. classified acromion process fractures broadly into three types (Table 1) Surgical intervention is advised in cases

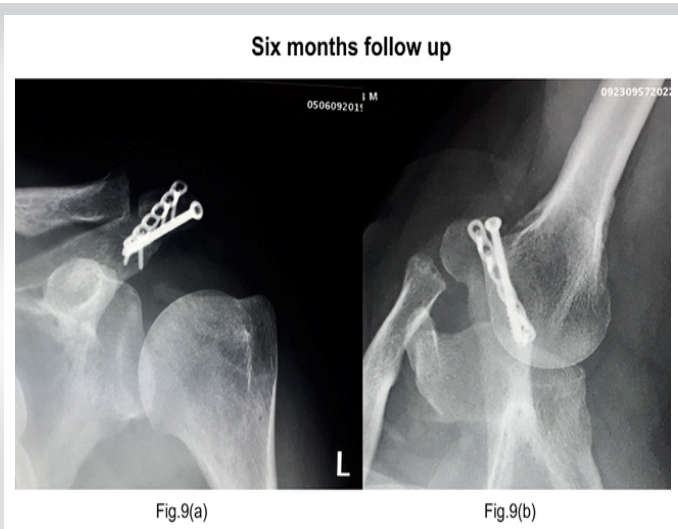


Figure 9: (a and b) Radiographs taken on 6-month follow-up.

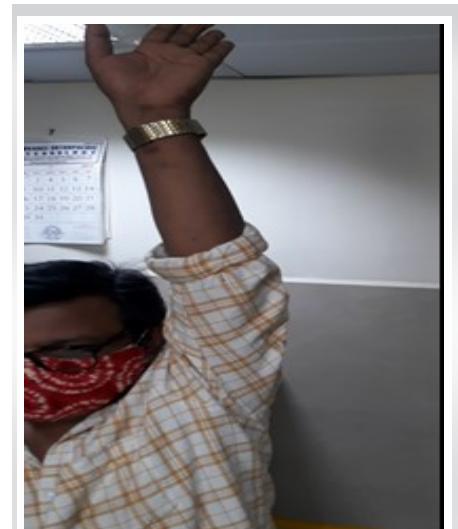


Figure 10: Clinical picture of patient performing pain free overhead abduction.







		Subtypes	Mode of injury		
TYPE 1	Minimally displaced fractures of acromion process	Type 1A	Indirect trauma	Avulsion type	
		Type 1B	Direct trauma	True fracture with displacement less than 2mm	
TYPE 2	Displaced fracture of the acromion process with no reduction in subacromial space				
TYPE 3	Displaced fracture of the acromion process with reduction in subacromial space				

Table 1: Kuhn classification for acromion fracture.

with decrease in sub acromial space, restricted shoulder movements, and non-united acromion process fracture [4].

Due to rarity and limited number of such case presentation being reported in the literature, the surgical fixation options are not standardized surgical treatment options for acromion fractures that were treated successfully are open reduction and internal fixation with plates (3.5 mm reconstruction plates, distal radius plates, locking plates, and dynamic compression plates) and screws, cancellous screw fixation [5], tension band wire, and Kirschner wires.

Osacromiale is an anatomical variant due to failure of fusion of secondary ossification center of scapula and acromion. This usually shows similar kind of presentation so it should be kept as one of the differential diagnoses in mind [6].

Tladi reported a similar case of a 2-year-old acromion fracture non-union which presented with shoulder pain was successfully

treated conservatively with non-steroidal anti-inflammatory drugs and physiotherapy [7].

We decided to treat our case surgically in view of the severe pain associated with shoulder movements. Acromion process fracture and scapular process fracture have been treated successfully using surgical techniques in some cases [8, 9, 10, 11]. However, to best of our knowledge, the acromion process fracture and scapular process fracture that are treated surgically are with either plate osteosynthesis or cannulated cancellous screw fixation and not both. Hill et al. studied functional and radiological outcome in 13 patients who were treated surgically out of which 11 (two cases were non-union) patients are treated with lag screw and plate osteosynthesis [5]. In our case, we decided to fix our fracture with 4 mm partially threaded cannulated cancellous screws and 2 mm locking compression plate in neutralization principle with excellent functional and radiological outcome and the patient is pain free till date.

Conclusion

Acromion fractures are commonly missed. Non-united acromion fractures can cause significant chronic post-traumatic shoulder pain. Reduction and internal fixation can alleviate the pain with a good functional result.

Clinical Message

Any case presenting with chronic shoulder pain and history of old injury to the shoulder where all the common pathologies are ruled out, acromion process fracture should be an important differential diagnosis and surgeons should not hesitate to take CT if plain radiographs are looking normal.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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