



A Rare Case of Ipsilateral Clavicle Fracture with Contralateral Acromioclavicular Joint Dislocation - Case Report

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ABSTRACT

Shoulder girdle injuries are among common cause of disability. Fractures of the clavicle and acromioclavicular joint injuries are among the commonest injuries around the shoulder. However ipsilateral clavicle fracture with contralateral acromioclavicular joint dislocation is a very rare type of injury and so far no case has been reported in the English literature. Here we present such a rare case presented to us with such injury and how we managed the patient.

Key words: *clavicle fracture, acromioclavicular (AC) joint, dislocation, shoulder girdle injuries.*

INTRODUCTION

Shoulder girdle injuries, resulting in fractures of the midclavicle are among commonest¹ accounting for 5 to 10% of all fractures and nearly 50% of all shoulder girdle injury^{7,4}.

Acromioclavicular (AC) joint dislocation is among the common shoulder problems accounting for 9% of all shoulder injuries⁹. A combination of clavicle shaft fractures with acromioclavicular joint dislocation is a rare injury as there have been

only six reports in the literature so far¹¹. Here we report about a patient who presented to us with a unique combination of ipsilateral fracture of the clavicle and contralateral type III acromioclavicular (AC) joint dislocation following a high velocity injury-road traffic accident.

CASE REPORT:

A 44 years old male, car driver by occupation was brought to our emergency department with the history of pain and swelling over both the shoulder girdle following a road traffic accident, while he was travelling in a two wheeler, had head on collision with another two wheeler and sustained injuries to both the shoulder girdle. On receiving the patient in the emergency department patient was alert and speaking normally. General examination revealed no major life threatening injuries and he was hemodynamically stable. Patient was resting both his upper limbs over the chest while lying down. Local examination of Right shoulder girdle revealed swelling tenderness and crepitus over the mid and outer third junction of clavicle. Active and passive ranges of movements were painful and restricted especially for overhead abduction. Neurovascular status of the limb was normal. Examination of the left shoulder girdle revealed localized swelling over the acromioclavicular joint with abnormal prominence of the lateral end of the clavicle. On careful palpation there was marked tenderness over the region of acromioclavicular joint and the lateral end of the clavicle was easily palpable and ballotable. Proximal humerus and scapula were

clinically normal. Shoulder range of moments were painful and significantly restricted. Neurovascular status of the left upper limb was normal.

On radiological assessment, X ray of the right shoulder revealed comminuted clavicle fracture at the junction of mid and lateral third and left shoulder revealed type III acromioclavicular joint disruption.



Figure 1 Preoperative x-ray of right shoulder showing displaced comminuted midclavicular fracture



Figure 2 Preoperative x-ray of the left shoulder showing Type III AC joint dislocation

Patient was planned for internal fixation of clavicle with Titanium Elastic Nail (TENS) on the right side and AC joint stabilization with coracoclavicular reinforcement suturing with nonabsorbable (Polyester) suture and

acromioclavicular joint capsule repair. First right side clavicle fracture was stabilized with 2.5mm TENS by open reduction and antigrade nailing from sternal end of clavicle. Then the left acromioclavicular joint was stabilized by coracoclavicular reinforcement suturing^{6,7,8,9} and AC joint capsuloligamentous repair^{6,7,8,9}. AC joint stability was assessed on table with full range of motion and was found to be satisfactory with radiographic confirmation of congruent AC joint reduction.



Figure 2 Immediate postoperative x-ray Rt shoulder AP view showing well reduced fracture clavicle fixed with TENS



Figure 3 immediate postoperative X-ray Lt Shoulder AP view showing well reduced AC joint
Postoperatively patient was given arm sling to support the left upper limb for a period of 4 weeks. Graduated ROM exercises were started to

both the shoulders from 1st postoperative day aiming for 90° of abduction and 30° of rotations to be achieved at the end of 4 weeks. Postoperative radiographs showed good reduction of the AC joint on the left side as well as the clavicle fracture on the right side. Recent follow-up at 24 months, patient showed full range of movements in both the shoulders with radiologic healing of the clavicle fracture on the right side and well reduced and maintained congruent AC joint on the left side.



Figure 5 Follow up x ray chest taken for both shoulders showing well healed fracture clavicle (Rt) and congruous AC joint (Lt) with equal coracoclavicular distance on both sides (Red line)



Figure 6 Followup clinical photograph of the patient showing full functional status of both the shoulders

DISCUSSION

Fractures of the clavicle and acromioclavicular joint dislocations are two different spectrum of injuries around the shoulder girdle of which fractures of the clavicle are the commonest^{1,2,3}. On searching for the combination of ipsilateral clavicle fracture with contralateral AC joint dislocation there has been no published English literature on this unique pattern of injury. AC joint injuries in association with clavicle fracture is a rare occurrence unless it is associated with the fractures of the distal end of the clavicle^{6,7,8}. An ipsilateral AC joint dislocation with midshaft clavicular fractures are uncommon and so far only six reports^{10,11,12} published in the literature. Fractures of the clavicle and dislocations of the AC joint are commonly caused by direct impact on the shoulder girdle^{11,12}. The direct impact to the shoulder girdle as seen with fall from bicycle/motorbikes or horse commonly results in AC joint disruption to varying degrees. Contact sports like rugby, football and hockey also associated with AC joint injuries¹³. The mechanism of injury of this combination of ipsilateral clavicle fracture with contralateral AC joint dislocation, is not known as there has been no published data on this pattern of injury. In our patient, we believe that, as he was riding a two wheeler he must have been thrown out of the vehicle landing on his shoulder and sustaining first impact then rolling on to the other shoulder immediately and sustaining the second impact. The high impact on the first shoulder would have caused clavicle fracture and the less magnitude

second impact could have resulted in AC joint disruption of type 3 grade. This mechanism of injury in our patient could possibly explain this unknown combination of ipsilateral fracture clavicle with contralateral type 3 acromioclavicular joint dislocation. Regarding the management of these type of injuries, which has involved both the shoulder girdle depends on the functional demand of the patient as these type of injuries can also be managed conservatively though the literature has no data on this very particular type of injury pattern. In our case, as the patient wanted to have early return to his job, we managed this injury successfully by a single stage surgical intervention with excellent functional outcome.

CONCLUSION

We present this case, as there has been no published data on this combination of injury. As the mechanism of injury for this pattern of injury has not been described previously, it needs biomechanical studies on cadavers to ascertain this unique combination of injury pattern. Regarding the management of such injury, early surgical intervention would yield best functional recovery and outcome. We need more number of cases to conclude whether operative or nonoperative treatment yields better functional outcome.

REFERENCES

1. Pope R. Clavicle fracture management conservative versus operative. *J Bone Joint Surg (Br)* 2002;84-B Suppl III: 214.
2. Keener JD, Dahners LE. Percutaneous Pinning of Displaced Midshaft Clavicle Fractures. *Techniques Shoulder & Elbow Surgery*. 2006; 7: 175–81.
3. Collinge C, Devinney S, Herscovici D, DiPasquale T, Sanders R. Anterior-inferior Plate Fixation of Middle-third Fractures and Nonunions of the Clavicle. *J Orthop Trauma*. 2006; 20: 680–6.
4. D.Mazzocca, R.A.Arciero.J.Bicos, “Evaluation and treatment of acromioclavicular joint injuries,” *American Journal of Sports Medicine*, 2007:vol.35,no.2,316-329
5. SpyridonA.Psarakis, Olga D. Savvidou, Sofia M.Voyaki, MichailBeltsios, John N. Kouvaras “A rare injury of ipsilateral mid-third clavicle fracture with acromioclavicular joint dislocation”. *Hand*, 2011: 6:228-232.
6. Salter EG, Nasca RJ, Shelly BS. Anatomical observations on the acromioclavicular joint and supporting ligaments. *AM J Sports Med*, 1987;15:199-206.
7. Boehm TC. The relation of the coracoclavicular ligament insertion to the acromioclavicular joint. A cadaver study of relevance to lateral clavicle resection. *ActaOrthopScand* 2003;74(6):718-721.
8. Harris RI, Vu DH, Sonnabend DH, et al. Anatomic variance of coracoclavicular ligaments. *J Shoulder Elbow Surg*. 2001;10(6):585-588.
9. Harris RI, Wallace AL, Harper GD, et al. Structural properties of intact and reconstructed coracoclavicular ligament complex. *Am J Sports Med*. 2000;28(1)103-8
10. Lancourt JE, Acromioclavicular dislocation with adjacent clavicular fracture in a horseback rider. *Am J Sports Med*. 1990;3:321-322.
11. Wisniewski TF. Posterior acromioclavicular dislocation with clavicular fracture and trapezius entrapment. *Eur J Trauma*.2004;30 (2):120-123.
12. Wurtz LD, Lyons FA, Rockwood CA. Fracture of the middle third of the clavicle and dislocation of the acromioclavicular joint. A report of four cases. *J Bone joint Am*. 1992;74:133-137.
13. Beim MG. Acromioclavicular joint injuries. *Journal of athletic training* 2000; 35 (6) : 261-26.