

Unusual Mechanism Of Injury With Segmental Fracture Clavicle

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Abstract

Clavicular fractures represent 2.6% to 5% of all fractures, and middle third fractures account for 69% to 82% of fractures of the clavicle [4]. In fact, fractures of the clavicle may account for up to 44% of all shoulder girdle injuries [8]. The mechanisms of injury of clavicular fractures in adults have been widely reported to consist of either direct or indirect forces. It has generally been assumed that the most common mechanism is a fall on an outstretched hand [1].

Whilst segmental fracture has been reported in the literature, there are isolated case reports of this injury [6]. Among these midshaft injuries account for majority and medial injuries are uncommon [7]. Medial clavicle fractures remain a relatively uncommon injury compared with other clavicular fractures. However, they typically are accompanied by significant multisystem trauma and have a high associated mortality rate [10]. These injuries are, therefore, susceptible to being missed, due to failure to look for a second injury after the initial diagnosis, and difficult X-ray interpretation around the area of the medial clavicle. The nature of segmental fractures can pose a difficult management problem for numerous reasons, and initial operative fixation is usually indicated. Early diagnosis is therefore imperative, and as such, clinical examination is essential even if an obvious mid or lateral shaft fracture is seen on X-ray.

We hereby report rare case of medial segmental fracture of clavicle sustained by unusual mechanism of injury

CASE REPORT

A 19 year old male sustained injury while deboarding bus and was hit by mini van from left side and was compressed between van and bus (it is not uncommon in heavy traffic of Delhi to board and deboard bus while it has stopped at signal or slowly moving). On presentation the patient complaint of pain at clavicle and inability to move left arm at shoulder. On examination there was obvious swelling at medial end of clavicle. Passive shoulder movements were normal. There was no neurological/ vascular deficit. There was no other associated injury

Radiological examination as assessed by junior resident and senior resident orthopaedics on duty showed medial end clavicle fracture [illustration 1].

Figure 1



Reassessment of patient on admission by consultant on rounds showed fracture to be segmental which was miss interpreted by radiologist on duty residents. Patient was operated next day semi tubular plate 3.5 mm AO was applied [illustration2].

Figure 2



Intraoperatively costoclavicular ligaments were intact. Postoperatively pendulum exercises were started next day and full range of motion exercises started at 2 weeks. The patient reported after 6 weeks with complaint of pain and bump over clavicle x-ray [illustration 3]

Figure 3



He showed broken implant, the implant was removed but no new implant was put as bone was united intraoperatively (illustration 4)

Figure 4



The patient was put under guarded exercise regimen. Complete resolution was evident at 12 weeks.

DISCUSSION

Among clavicle fractures 69% occur in midshaft, 28% occur at lateral end and remaining 3% at medial end [7]. Segmental fractures have been reported but usually combine midshaft and lateral end clavicle injuries or clavicle fracture with proximal clavicular physis in children. [3,5]

In 94% of 122 patients with clavicular fractures, Stanley et al found the mechanism of injury to be consistent with a direct blow rather than a fall on the outstretched hand, which is widely believed to be the most common mechanism of injury. [9]

Another indirect mechanism of middle-third clavicular fractures occurs from a direct force on the top of the shoulder, which forces the clavicle against the first rib and often produces a spiral fracture of the middle third. [1] Traumatic fractures of the clavicle also have been reported in association with seizures. [2]

Even though displaced fractures of the clavicle often cannot be reduced and maintained in perfect position, cosmesis is acceptable, and functional results are uniformly excellent. Even if the ends of the fragments heal in an overlapped or bayonet position with a substantial bony prominence, this largely is resorbed with time and the mass decreases. Even the most fastidious patient usually is satisfied with the results. In our case fracture was segmental medial end fracture which was seen on x-ray resulting from sideways hit and compression. Segmental long bone fractures almost invariably results in rapid union at one site and delayed

union at other, though most of literature concerns segmental tibial fracture same principle can be applied to segmental clavicle fracture. Intermediate fracture segment is problematic due to uncertain blood supply and lack of control over its position due to multiple forces acting over it due to attached muscles. Thus segmental fracture ought to be diagnosed and fixed early.

The case has been presented here owing to unusual mechanism of injury and rarity of presentation, the diagnosis of which was missed by on duty staff and radiologist.

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