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Bilateral clavicle fracture in 38 years old male patient- A case report & Review

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Abstract
Fractures of the clavicle are very common, accounting for between 2% and 12% of all fractures. We reported a case of bilateral clavicle fracture in 38 year old male patient.

Keywords: clavicle, fractures, fixation

Introduction
Fractures of the clavicle are very common, accounting for between 2% and 12% of all fractures sustained and as many as 44% of all shoulder injuries. Based on the anatomy of the clavicle, the midshaft region is the most susceptible to fracture, accounting for more than 70% of clavicular fractures [1]. In the past, clavicle fractures have traditionally been treated non-operatively due to concerns about infection, hardware prominence, and a potential increase in the risk of nonunion. The traditional conservative protocol provides positive results in more than 90% of athletes treated with a figure-8 sling [2].
Bilateral clavicle fractures are rare and are seldom reported on. Based on the literature review the incidence of bilateral clavicle fractures is 0.43% of clavicle fractures with an overall incidence of between 0.011 and 0.017%. The common mechanism of injury is one of a compressive force across both shoulder girdles and is different from that causing unilateral clavicle fractures. Bilateral clavicle fractures are usually associated with high-energy impact injuries and are commonly associated with other severe injuries [3].
Neer's [4] classification is based on the location of the fracture in relation to the coracoclavicular ligament and their intactness. Type 1 Neer's is a fracture lateral to the coracoclavicular ligament attachment, type 2 is one which is medial to the ligament attachment. It is again divided into 2A and 2B, type 3 is one with intra-articular extension, type 4 occurs in children where a periosteal sleeve gets avulsed from the inferior cortex with the attached coracoclavicular ligament and the medial fragment gets displaced upwards and type 5 is similar to type 2 which involves an avulsion leaving behind an inferior cortical fragment attached to the coracoclavicular ligament. The management may be open or closed reduction. Closed treatment may lead to significant deficits, whereas surgical management results in an earlier and more reliable return to full function with a low complication rate [5].
We reported a case of bilateral clavicle fracture in 38 year old male patient.

Case report
A 38 year old male patient reported to the emergency department with fractured clavicles of both sides since a week. History revealed that patient had accident 1 week back. Patients was brought to local hospital for the same where first aid was given along with analgesics and anti- inflammatory.
On examination the patient was stable. Both clavicles were tender on palpation. There was bruising and bony instability bilaterally over clavicles. Shoulder movements on the right were more decreased than on the left side. Radiographs were done which showed 200% displaced left clavicle and 300% displaced right clavicle. Based on clinical and radiographic findings, a final diagnosis of bilateral clavicle fractures was given. Both clavicle fractures were type 1C Allman fractures and type 2B1 Robinson fractures according to the relevant classification systems.
Patient underwent open reduction internal fixation osteosynthesis with a plate and screws of both clavicles. Both surgeries were performed through the classic superior incision and the fragments were fixed with interfragmentary screws and held with anatomical locking plates. The patient was put on broad arm sling for the left upper limb. The patient was recalled and assessed at 2 weeks, 6 weeks and 12 weeks postoperatively. Prognosis was good.

Discussion

Clavicle fractures are common injuries. Isolated clavicle fractures have a reported incidence of 2.6% [2] to 4% of all fractures. The overall reported annual incidence ranges from 29/100 000 to 64/100 000 with the highest incidence found in young males.

Mechanisms for causing bilateral clavicle fractures include a compressive force across both shoulder girdles, direct trauma to both clavicles, direct trauma on one side and indirect violence in a subsequent fall on the other and two sequential episodes of direct trauma to the shoulder. Only one case is reported where indirect violence (fall on outstretched arms) caused bilateral clavicle fractures. Bilateral clavicle fractures are usually caused by a high energy impact incident such as a motor vehicle accidents, motorcycle accidents, pedestrian-vehicle accidents, pedestrian-cycle accident, crush type of injury, trampling by an animal, fall from a height and railway accident.

While fracture of the shaft is a clear cut diagnosis made clinically, diagnosis of the fracture of distal end of clavicle is not so straight. It can be confused with acromioclavicular (AC) joint dislocation, AC joint osteoarthritis and rarely septic arthritis. Patient usually presents with pain and swelling locally and supporting the elbow with the other hand. Tenderness and crepitus can be elicited. Sometimes spike of the medial fragment may be tenting the skin and rarely the fracture may be opened to the external environment.[6] Neurovascular injury is more common in shaft fractures. A plain anteroposterior radiograph of the involved shoulder is usually sufficient for the diagnosis but a 15 ° cephalad AP view and a stress radiograph can be obtained to get additional information about the integrity of the coracoclavicular ligament. Stress view which is more commonly used in the assessment of the coracoclavicular ligament in AC joint dislocation can also be used in distal end fractures too [7]. We reported case of bilateral clavicle fracture in 38 year old male patient.

We managed the case with open reduction internal fixation osteosynthesis with a plate and screws of both clavicles. Operative management of clavicular fractures includes external fixation, intramedullary fixation, and osteosynthesis with a plate and screws [8]. External fixation has been effective in open fractures and non-unions. Intramedullary fixation has been described as the simplest of the 3 procedures, limiting the exposure involved. However, intramedullary fixation should not be used if a plate would better maintain clavicular length. Plate osteosynthesis has the benefit of offering much more rigid fixation with more rotational control of the fracture [9].

Bonnevialle *et al*. [10] reported a case of midshaft clavicular fracture in 46 year old patient. Post-injury radiographs revealed a midshaft clavicular fracture. A surgical procedure of internal fixation with an 8-hole plate was performed.

Indications for ORIF specific to bilateral clavicle fractures are to improve ventilatory function especially in associated, severe chest injuries and to reduce the duration of functional disability associated with conservative treatment. Non-union rates of clavicle fractures depend on several factors including age, gender, fracture comminution and displacement of the fracture. Early studies reported low non-union rates for conservatively treated clavicle fractures. Nowak [11] found a non-union rate of 0.13% of those treated conservatively, compared with 4.6% in patients treated operatively.

Conclusion

Authors found that clavicle fracture is common in all age groups. Bilateral clavicle fractures should be surgically managed to limit the duration of functional disability.

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