Isolated bilateral clavicular fracture: A case report

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Abstract
Bilateral clavicle fractures are uncommon and are mostly associated with polytrauma. The presence of concurrent serious injuries diverts the doctor’s attention and causes the clavicular injury to be overlooked. Our report presents a 39-year-old male patient with bilateral clavicle fracture whom we managed surgically by open reduction and internal fixation.

Keywords
bilateral, case report, clavicular fractures, open reduction and internal fixation

1 INTRODUCTION

Bilateral clavicle fractures are rare and account for 0.43% of all clavicle fractures.1,2 Bout et. al. reported an overall incidence of between 0.011% and 0.017%.2 Bilateral clavicle fractures are usually described in the setting of polytrauma and are often missed due to other concomitant life-threatening injuries that draw all the attention.3 In high-energy trauma cases and bilateral shoulder compression injuries, proper clinical assessment and chest radiographs including both shoulder joints should be performed, and bilateral clavicle fractures should be actively sought.3

There is no general consensus on the modality of treatment of bilateral clavicle fracture. Herein, we report a case of bilateral clavicular fracture in a 39-year-old male patient whom we managed surgically, to limit the duration of functional disability, with open reduction and internal fixation using a lag screw on the left side and plate and screw on the right side.

2 CASE REPORT

Our case report presents a 39-year-old male patient from the hilly region of Eastern Nepal, who sustained injury over bilateral shoulder and head when he fell from a tractor in motion. He complained of pain over the bilateral clavicle and a restricted range of motion at the shoulder joint. He was initially managed at a local health center.

Two days after the accident, on presentation at our center, the airway with the cervical spine, breathing, circulation, and neurologic function were intact. On exposure, diffuse red swelling with ecchymotic patches was seen on the lateral third of the bilateral clavicle. Skin indentation due to the fractured bone was evident on the right side.
On the secondary survey, tenderness was present in the affected part and painful range of motion with intact distal neurovascular structure bilaterally. There was no thoracic and pelvic tenderness.

X-ray trauma series, Extended Focused Assessment with Sonography in Trauma (E-FAST), and non-contrast computed tomography (NCCT) of the head were done. There was no evidence of head injury or injury to other parts of the body. X-rays showed a bilateral displaced clavicle fracture, mild comminution in left clavicle fracture with shortening of 2.4 cm noted on the left side while a displacement of 2 cm on the right side. (Figure 1).

Pain management with analgesics, arm sling pouch application, and bed rest were advised till the swelling subsided. After a week, open reduction was done with the help of reduction forceps and the reduction was maintained using interfragmentary screws with a low-profile locking plate for the right clavicle fracture and a 3.5 mm stainless steel lag screw for the left clavicle fracture as significant comminution was observed intra-operatively, and the currently available plates did not fit the contour of the fracture pattern. (Figure 2).

There were no intraoperative complications. The patient was advised to use an arm pouch sling on both sides for the next 4 weeks.

During follow-up 1 month postoperatively, he was able to raise both his arms above his shoulders and had achieved better shoulder range of motion on the left side as compared to the right side. He was advised for active shoulder exercise. The recent radiograph showed that the fractures were uniting. (Figures 3 and 4).

3 | DISCUSSIONS

Bilateral fracture of clavicle often occurs due to compressive force across or direct blow to both shoulder girdles, direct impact on both clavicles, or subsequent trauma to two clavicles: one after another. These are generally associated with high-energy trauma.3 These are frequently observed in high energy impact incidents such as motor vehicle accidents, motorcycle accidents, pedestrian-vehicle accidents, pedestrian-cycle accidents, crush type of injury, fall from a height, and other road traffic accidents.2 In our case report, the patient had a history of falls from vehicle (tractor) sustaining injury over the bilateral shoulder joint as the tractor somersaulted. This involved high energy transfer of forces across the shoulder joint.

Bilateral clavicular fractures generally occur in cases of polytrauma. They are overlooked or ignored because the other serious concurrent chest injuries receive all of

**FIGURE 1** Chest X-ray (PA view) showing bilateral clavicular fracture

**FIGURE 2** X-Ray image after surgical management by open reduction and internal fixation using plates and screws on right fractured clavicle and lag screw on left fractured clavicle

**FIGURE 3** Recent follow-up X-ray image showing the bilateral clavicle fractures are uniting
Most unilateral clavicular fractures are managed conservatively; however, a high risk of non-union and shoulder dysfunction following conservative treatment in bilateral clavicle fracture makes surgical treatment more preferable. \[^3\] Conservative approach in the management of bilateral clavicular fractures was associated with more pain, stiffness in short term, rendering the patient incapacitated. \[^1\]

Surgical therapy for bilateral clavicular fracture includes external fixation, open reduction, and internal fixation by using either reconstruction plates, angle stable locking T-plates, dynamic compression plates, or intramedullary devices. In previously reported cases, most of the fixation was done using low-profile locking plates. \[^2,4-7\]

In our patient, we did open reduction and internal fixation (ORIF). We used a lag screw for the left clavicle fracture and it yielded better results, in terms of the range of motion and radiological healing than plates and screws, which were used for the right clavicle fracture.

While no guidelines for the management of bilateral clavicles exist, the treatment modality and the type of implant used for internal fixation is highly debatable.

**CONCLUSION**

We described a case of bilateral clavicle fracture, managed surgically with excellent clinical and radiographic outcomes. Bilateral clavicular fractures are rare and often overlooked in cases of polytrauma, especially when there are associated severe chest injuries. So, the integrity of the clavicle has to be evaluated in appropriate chest radiographs in cases of polytrauma.

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**CONFLICT OF INTEREST**

The authors declare that they have no competing interests.

**AUTHOR CONTRIBUTIONS**

Aman Mishra (AM), Krishna Timilsina (KT), Prawesh Singh Bhandari (PSB), and Suresh Uprety (SU) involved in study concept, data collection, and surgical therapy for the patient. Kshitiz Acharya (KA) and Sital Thapa (ST) involved in writing- original draft preparation. Aakarshan Timilsina (AT) and AM involved in editing and writing the manuscript. PSB and SU served as senior authors and manuscript reviewers. All the authors individually did final proofreading of the manuscript before submission.

**ETHICAL APPROVAL**

This article describes a case report. Therefore, no additional permission from our Ethics Committee was required as case reports are exempt from ethical approval in our institution.

**CONSENT**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**DATA AVAILABILITY STATEMENT**

All the data generated or analyzed during this study are included.

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**FIGURE 4** Follow-up photograph of the patient showing good outcome in terms of range of motion.
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