



## Case Report

## Bilateral fracture-dislocation of the shoulder following a seizure- A case report &amp; review of literature



Kalaventhnan Pathinathan<sup>a,\*</sup>, N.N. Perera<sup>a</sup>, M.M.G.S.N. Marasinghe<sup>a</sup>, S.D. Hewavitharana<sup>a</sup>, D.C.D. Mendis<sup>a</sup>, S. Parathan<sup>a</sup>, Dishanth Sivakumaran<sup>a</sup>, Nihal Fernando<sup>b</sup>

<sup>a</sup> Postgraduate Trainee in Orthopaedic Surgery, University of Colombo, Sri Lanka

<sup>b</sup> Consultant Orthopaedic Surgeon, Teaching Hospital-Kurunagala, Sri Lanka

## ARTICLE INFO

## Keywords:

Fracture-dislocation of shoulder  
Triple E syndrome  
Tuberosity avulsion fractures  
Shoulder stiffness

## ABSTRACT

**Introduction:** and Importance: Bilateral shoulder dislocations are uncommon and those are usually posterior dislocations. Bilateral anterior fracture-dislocations are rarest of their kind following seizure episodes.

**Case presentation:** We present a case of bilateral fracture-dislocations of the shoulder following a seizure episode. Bilateral dislocations were relocated to the emergency unit and managed conservatively as he refused to undergo surgery. The patient was followed up at the Orthopaedic clinic and achieved a full range of movements of the bilateral shoulder the one-year post-intervention.

**Clinical discussion:** A closed reduction is also an option on occasion like this patient.

**Conclusion:** Careful radiological assessment and follow-up with physiotherapy will help to achieve a good outcome.

## 1. Introduction

Bilateral shoulder dislocations are almost always posterior dislocations [1] following seizure episodes, electroconvulsive therapy and electrocution [1–3] due to the stronger contractions of the trapezius compared to anterior dynamic stabilizers. These three frequent causes are called “Triple E syndrome” [1,4]. Bilateral anterior dislocation following convulsion is a rare occurrence and bilateral fracture-dislocation of the shoulder following a seizure is extremely rare. Here, we present a case report of a 33-year-old patient with bilateral fracture-dislocation of the shoulder joint following seizure and literature review.

This case report has been prepared according to the SCARE guidelines [5].

## 2. Case report

A previously healthy 33-year-old male presented to the Emergency department of Teaching Hospital-Kurunagala, Sri Lanka with the inability to move both shoulder joints following a seizure episode. The

witness of the seizure described that the seizure involved all four limbs and lasted less than 2 minutes. He was conscious and haemodynamically stable on admission. Radiographs of the bilateral shoulder revealed bilateral anterior dislocation of the shoulder with greater tuberosity comminuted fracture (AO 11A1.1) on the left side and extraarticular unifocal two-part vertical fracture (AO 11A3) on the right side [Fig. 1]. He underwent closed reduction under general anaesthesia at the Emergency Department and concentric reduction has been confirmed with post-intervention radiographs. His bilateral shoulders were immobilized on two shoulder immobilizers. Our patient's Beighton score was 0/9. He underwent non-contrast computed tomography (CT) of bilateral shoulders and confirmed the concentric reduction of bilateral glenohumeral joints and fracture fragments. He refused surgeries to fix fractures on both shoulders and was willing to go ahead with conservative management with bilateral shoulder immobilizers. During follow up period, radiographs revealed radiological evidence of healing and he regained his normal shoulder functions (see Fig. 2).

\* Corresponding author.

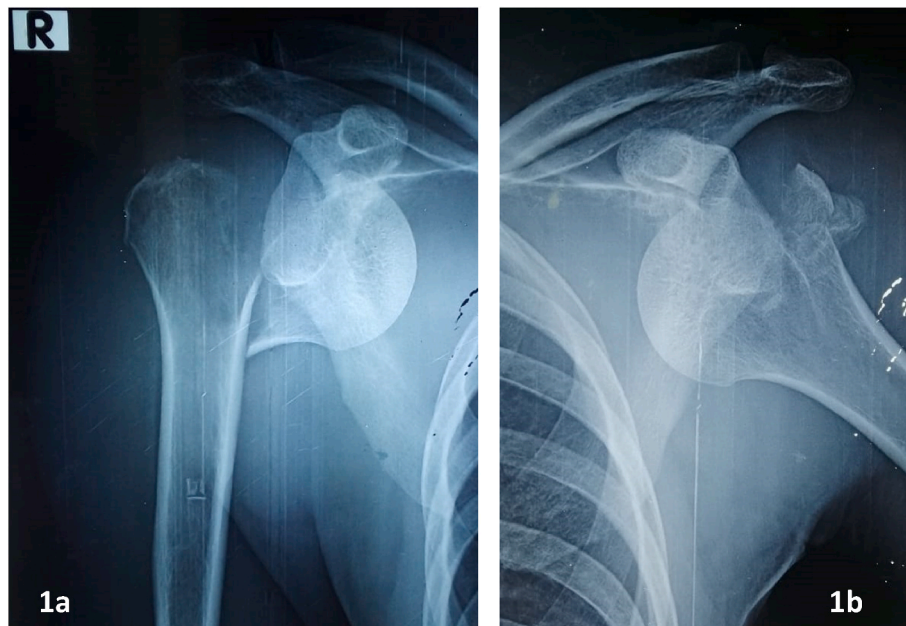
E-mail addresses: [kalaventhnanurgery@gmail.com](mailto:kalaventhnanurgery@gmail.com) (K. Pathinathan), [astronid@gmail.com](mailto:astronid@gmail.com) (N.N. Perera), [samathnera87@gmail.com](mailto:samathnera87@gmail.com) (M.M.G.S.N. Marasinghe), [shanakahewavitharana@gmail.com](mailto:shanakahewavitharana@gmail.com) (S.D. Hewavitharana), [chathuramendis3@gmail.com](mailto:chathuramendis3@gmail.com) (D.C.D. Mendis), [parathan\\_s@yahoo.com](mailto:parathan_s@yahoo.com) (S. Parathan), [dishanth2008@gmail.com](mailto:dishanth2008@gmail.com) (D. Sivakumaran), [dishanth2008@gmail.com](mailto:dishanth2008@gmail.com) (N. Fernando).

<https://doi.org/10.1016/j.amsu.2022.103646>

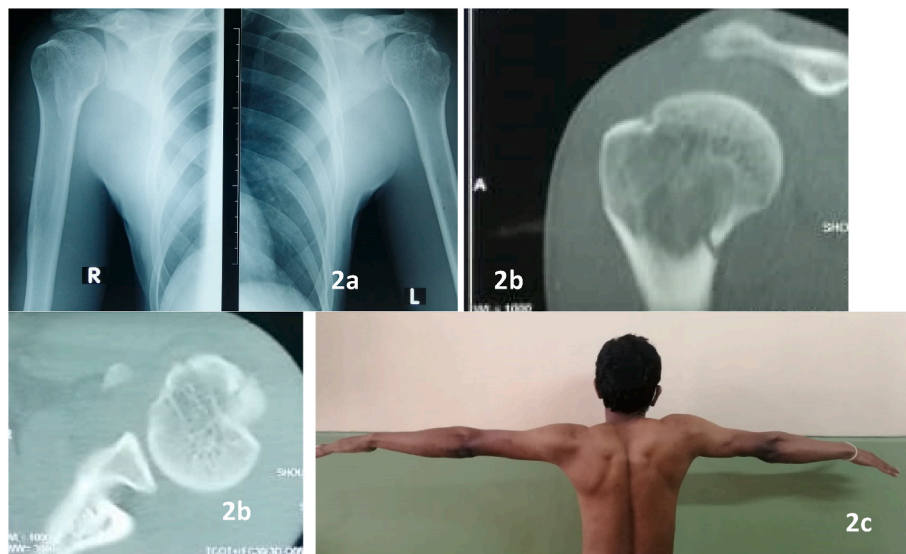
Received 6 February 2022; Received in revised form 15 April 2022; Accepted 15 April 2022

Available online 20 April 2022

2049-0801/© 2022 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Fig. 1.** Shows fracture-dislocation of bilateral shoulder joints with a two-part fracture on the right side [1a] and comminuted greater and lesser tuberosity fractures on the left side [1b].



**Fig. 2.** Shows post-reduction radiographs & CT images (2a & 2b respectively) of both shoulders that revealed minimal displacement of fragments and the Clinical image at one year follow up [2c] shows the near-normal functional outcome.

### 3. Discussion

Bilateral anterior dislocation of the shoulder joint with fractures is a rare entity. Which is caused by bilateral traction injury during a traumatic event or violent muscular contraction [4]. In most described cases, fractures were two-part fractures like our case [4] and they were fractures involving tuberosities [1,2,4]. But, in our case fractures were asymmetrical as described. Most authors believe that the flail upper limbs in unconscious patients go into the abduction and external rotation at the shoulder, leading to levering action of the humeral head, causing anterior dislocation of the joint. In addition, rotator cuffs pull the humeral head downwards and are ultimately drawn anteriorly by flexors and external rotators [2]. Fifteen per cent of anterior dislocations of the shoulder are associated with greater tuberosity avulsion fractures [2,3,6,7]. In our patient, tuberosities got avulsed on the left side and

fracture involved on the anatomical neck on the right side.

Imaging modalities should include bilateral shoulder radiographs to diagnose the condition and associated fractures. Computed tomography will give more accounts of fracture anatomy and will help in pre-operative planning.

Initial management of bilateral fracture-dislocation is closed reduction under sedation or anaesthesia. Failed closed reduction under general anaesthesia should undergo open reduction and fixation of the fracture in the same sitting. In the presence of tuberosity avulsion fracture, the risk of propagation of fracture into a neck fracture is minimal (1%) [8]. The definitive management options for this entity are surgical fixation of fractures and conservative management. Surgical fixation allows patients to allow early mobilization and there is no risk of secondary displacement. Anaesthesia risks, risks of iatrogenic neurovascular injuries, and wound and scar related complications are its

disadvantages. The mode of fixation can be varied. They can be screws (2), plates(4) and wires(3). Non-operative management carries no operative or anaesthesia risks. But, immobilizing both upper limbs for 06 weeks are cumbersome, shoulder stiffness, and risk of secondary displacement of the fragments. Secondary displacement or the malreduction of tuberosities will lead to poor outcomes [2,4,6]. Surgery was offered to our patient initially. Because he refused to undergo surgery, he managed conservatively. To obtain good results following conservative management, the patient should be followed up regularly clinically and radiologically to assess the healing and improvement of the shoulder functions. Physiotherapy to the shoulder is of utmost importance during the follow up to achieve a good functional outcome.

#### 4. Conclusion

Bilateral shoulder fracture-dislocation with asymmetrical fractures is a rare entity. Careful assessment of imaging will help to identify the condition and associated fracture. Immediate management is to achieve a concentric reduction of the glenohumeral joint. Definitive treatment can be a conservative or surgical fixation. Follow up with serial radiographs and physiotherapy will help to achieve good functional results.

#### Ethical approval

Not applicable.

#### Sources of funding

No institutional or third-party funding sources were used in treating this patient or in the preparation of this manuscript.

#### Author contribution

All authors included in this case report have contributed equally in managing this patient, assessing during follow-up, gathering data for the preparation of this manuscript and preparation of the case report.

#### Research registration

Not applicable.

#### Guarantor

Dr Nihal Fernando, Consultant Orthopaedic Surgeon, Teaching Hospital-Kurunagala, Sri Lanka.

#### 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.

#### Provenance and peer review

Not commissioned, externally peer-reviewed.

#### Declaration of competing interest

All authors involved in this case report declared there are no conflicts of interest that would have inappropriately influenced their work.

#### References

- [1] Neglected bilateral anterior fracture dislocation shoulder: a rare case report [Internet]. Available from, <https://www.researchgate.net/publication/312067292>.
- [2] A. Sharma, S. Jindal, M.S. Narula, S. Garg, A. Sethi, Bilateral asymmetrical fracture-dislocation of shoulder with rare combination of injuries after epileptic seizure: a case report, *Malays. Orthop. J.* 11 (1) (2017 Mar 1) 74–76.
- [3] Sharma L, Pankaj A, Kumar V, Malhotra R, Bhan S. Bilateral Anterior Dislocation of the Shoulders with Proximal Humeral Fractures: a Case Report.
- [4] JOCR-2-7.
- [5] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, A. Thoma, et al., The SCARE 2020 guideline: updating consensus surgical Case Report (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230 [Internet], <https://www.sciencedirect.com/science/article/pii/S1743919120307718>.
- [6] S.C. Da, S. Tinto, A.S. Korsaga, A.J.L. Ouedraogo, Z.F. Ouedraogo, C. Darga, et al., Bilateral anterior shoulder fracture-dislocation: about a case, *Open J. Orthoped.* 8 (5) (2018) 183–189.
- [7] M. Zumrut, E. Marcil, Bilateral shoulder injury caused by electric shock, *J. Acad. Emerg. Med. Case Rep.* 4 (3) (2013) 92–94 [Internet], <http://www.akatos.com/sayilar/206/buyuk/92-94.pdf>.
- [8] M. Sp, H. Rj, C. G, R. Akb, K. Jf, Closed reduction of glenohumeral dislocations with associated tuberosity fracture in the emergency department is safe [Internet], *Injury* 52 (3) (2021) 487–492. Mar 1 [cited 2021 Sep 5], <https://pubmed.ncbi.nlm.nih.gov/33755550/>.