

Case Report

Acute Traumatic Bilateral Anterior Shoulder Dislocation in A Geriatric Patient: A Case Report

Mitchel¹, Karina Sylvana Gani¹, Satiyo²

¹Faculty of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia

²Department of Orthopaedic and Traumatology, Jombang Pelengkap Hospital

Article Info :

Article History :

Submission: December 7, 2023

Revision: February 4, 2024

Accepted: February 22, 2024

Keywords :

Bilateral

Anterior

Shoulder dislocation

Kocher's technique

Corresponding Author :

Satiyo, MD

E-mail: satiyohadi10@gmail.com

Abstract

Shoulder dislocations are the most common major joint dislocation. However, simultaneous bilateral anterior shoulder dislocations are rare and commonly associated with traumatic events. This case report presents acute simultaneous bilateral anterior shoulder dislocation in 74-year-old female after falling backward due to slippage. A closed reduction approach with Kocher's technique under general anesthesia was performed. Post-operatively, both of the patient's shoulders were immobilized for three weeks in Velpeau's bandage and physical therapy commenced. The patient achieved a satisfactory range of motion eight weeks post-reduction.

Introduction

Shoulder dislocations are the most common major joint dislocation. However, bilateral shoulder dislocations are rare and they usually occur in a posterior direction and commonly result from indirect trauma related to seizure or convulsion due to epilepsy, electric shock, or other reasons.^{1,2} In contrast, Simultaneous bilateral anterior shoulder dislocation is very rare and mostly results from traumatic origin.¹ Dislocations are defined as acute when it is recognized within 21 days from the trauma and chronic if it is recognized thereafter.³ We reported a simultaneous bilateral symmetrical anterior shoulder dislocation (BSASD) due to trauma.

Case Presentation

A 74-year-old female was admitted to the emergency department with acute bilateral shoulder pain after falling backward due to slippage. The patient fell on her back with her shoulders striking the floor with outstretched arms behind her. This mechanism led to a symmetric flexion, abduction, and external rotation of both shoulders. The patient felt severe pain and was

unable to move her shoulders. She had no previous shoulder trauma or injuries. The physical examination revealed Glasgow Coma Scale score was 15, the patient's vital signs were within normal ranges, and radial pulses were palpable and intact bilaterally. No sensory deficit was found in her hand. Both shoulders appeared with deformity in the anterior aspect, showing squaring of the shoulder (epaulet sign), tenderness on palpation, and restricted range of motion in all aspects due to pain. There was no history of shoulder injury or shoulder dislocation.

A plain radiographic image showed bilateral anterior glenohumeral dislocation without any fracture [Figure 1]. Both dislocated shoulders were reduced using Kocher's technique under general anesthesia. Another plain radiograph was taken to see the anatomical position two hours after reduction [Figure 2]. No neurovascular deficit was observed after reduction. Both arms were immobilized for 3 weeks in a broad arm sling. After three weeks of immobilization with Velpeau's bandage, progressive mobilization on the patient's shoulders was started and the patient was referred to the physical therapy unit to restore functional shoulder movement.

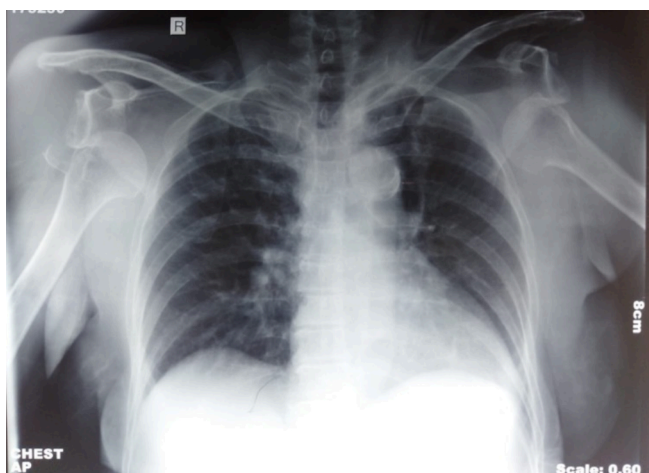


Figure 1. Shoulder radiographs showing simultaneous bilateral anterior shoulder dislocation (anterior-posterior view)

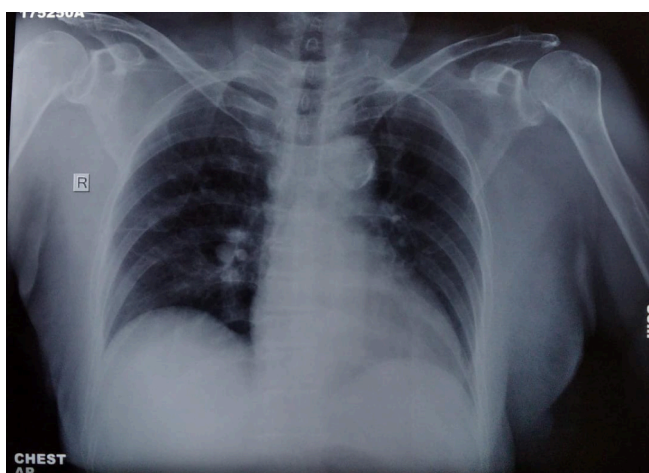


Figure 2. Shoulder radiographs showing the bilateral glenohumeral joint post-reduction.

At the six-week follow-up, there was a noticeable improvement in both shoulders. However, some stiffness persisted. Eight weeks post-reduction, there was an improvement in the movement on both shoulders with minimal pain. The patient regained nearly normal function and was able to flex both shoulders 0 to 150 degrees and abduct 0 to 150 degrees. The Disabilities of the Arm, Shoulder, and Hand (DASH) score ranged from 88.3 to 16.7 for the left shoulder and 86.7 to 13.3 for the right shoulder. At the ten-week follow-up, she returned to her daily activities without experiencing any pain.

Discussion

Unilateral shoulder dislocation is the most common joint dislocation in the human body concerning 85%.² In contrast, bilateral shoulder dislocations are rare conditions. Bilateral posterior shoulder dislocation is more common than bilateral anterior shoulder dislocation and usually caused by

seizure or convulsion due to epilepsy, electric shock, or other reasons. Bilateral anterior dislocation commonly happens as a result of trauma (>50%), seizure, and or post-ictal (30%). There were many mechanisms resulting in bilateral anterior dislocation. The indirect force mechanisms played a role. In this case, the mechanisms are posterior to anterior force on the shoulder in hyperextension, abduction, and external rotation (EXABER). It typically happens when a patient is trying to prevent falling backward from a standing position.³ Furthermore, older women have higher risk of falling due to balance issues and a decline in cross-linked collagen capsular tissue, leading to joint instability.⁴ A study showed bilateral anterior shoulder dislocation is commonly misdiagnosis due to unusual clinical presentation, approximately 15%. In cases of bilateral shoulder dislocation, the absence of clinical asymmetry can be a pitfall in diagnosis.^{5,6} Additionally, anterior bilateral shoulder dislocation is sometimes associated with trauma. Consequently, the presence of trauma and distracting injuries.⁷ This might impede timely diagnosis and result in late reduction and poorer outcomes.⁸

Many mechanisms of injury have been reported for bilateral shoulder anterior dislocation (BSASD). Malick et al. reported two cases of BSASD. The case involved a 27 and 30-year-old male patient who experienced BSASD after falling from bed due to an inaugural epileptic grand mal seizure. Involuntary muscular contraction is the most common mechanism for bilateral shoulder dislocation. This can occur during epileptic seizures, electrocution, intoxication, hypoglycemia, extreme emotional states (such as nightmares and fear of death), or even due to vibrations produced by a digging machine.³ Egemen et al. reported a case involving a 46-year-old male with bilateral anterior shoulder dislocation. The mechanism of injury was attributed to the halter violently tractioning his arms when the horse suddenly reared while he was riding.⁹

Yousef et al. reported a case involving a 19-year-old male with bilateral asymmetrical anterior shoulder dislocation, along with an avulsion fracture of the left greater tuberosity. In this case, the mechanism of injury was traumatic, resulting from a collision with other individuals during a football match.¹⁰ It's noted that greater tuberosity fractures in bilateral anterior shoulder dislocations are often associated with a traumatic mechanism of injury.³

Many techniques can be used to reduce anterior shoulder dislocation such as the Kocher technique, Boker-Billmann technique, Cunningham technique, Eskimo technique, FARES method, Hippocratic method, Legg reduction maneuver, Scapular manipulation, etc. Kocher technique is a shoulder reduction technique where the patient lies down in a supine position, the affected limb is adducted, and the elbow is flexed at a 90° angle. The shoulder then submitted

to external rotation until resistance (approximately 60-70°). The patient's arm should be flexed during the external rotation, then the arm is adducted further until reduction occurs. Then finally proceeds to internal rotation and extension, with the reduction of the shoulder.¹¹ Shoulder reduction can be performed under various anesthesia techniques, including general anesthesia, regional anesthesia, and interscalene brachial plexus block. General anesthesia offers the shortest time to achieve complete muscle relaxation, allowing the surgeon to perform shoulder reduction painlessly and safely for the patient.^{12,13,14} Total muscle relaxation is a crucial factor in the process of shoulder reduction.

The advantages of this technique are it can be performed by one clinician, is less painful, and is relatively safe.¹⁵ However, neurovascular assessment and imaging must be performed before and after a reduction due to the possibility of nerve injury or proximal humeral fracture.^{16,17} Other complications of this technique were axillary vein rupture, rotator cuff and pectoralis major rupture.¹⁸ In our study, no complication was observed after reduction.

A review study showed more than 70% of patients underwent closed reduction with general anesthesia was sufficient. Many various times of immobilization in bilateral shoulder dislocation due to different clinical situations.¹⁹ However, in most cases, immobilization is done for three weeks. This poses a significant challenge for elderly patients, as their inherent ability to compensate is already diminished.²⁰ A cohort study evaluated 67 patients older than 60 years with traumatic anterior shoulder dislocation and the average of recovering shoulder function after non-surgery treatment was 6 weeks after injury without any complication. However, it might recover and achieve normal function in more than a year.²¹

Conclusion

In our case, the patient experienced a low-impact trauma by falling backward with outstretching arms. The effect of low impact makes the head of the humerus forced throughout from the scapular glenoid fossa, commonly seen in the elderly with joint instability due to aging. As a doctor, this serves as a reminder that shoulder dislocation can result from low-impact trauma, as even minimal force applied to the shoulder joint can lead to its displacement. In clinical practice this condition is commonly misdiagnosed due to atypical clinical manifestation, we suggest performing a thorough clinical and radiological evaluation is crucial to establish a prompt diagnosis and guide appropriate management accurately. The earlier diagnosis and therapy, the better functional outcome. The non-surgical approach typically includes closed reduction, a period of immobilization, and

physical therapy are imperative for facilitating the recovery process.

References

1. Meena S, Saini P, Singh V, Kumar R, Trikha V. Bilateral anterior shoulder dislocation. *J Nat Sci Biol Med.* 2013;4(2).
2. Manoharan G, Singh R, Ahmed B, Kathuria V. Acute spontaneous atraumatic bilateral anterior dislocation of the shoulder joint with hill-sachs lesions: First reported case and review of literature. *BMJ Case Rep.* 2014.
3. Diallo M, Soulama M, Kaboré DSR, Dakouré PWH, Liverneaux P. Bilateral anterior shoulder dislocations: A review of two cases and the relevant literature. *Clin Case Reports.* 2020;8(12).
4. Rudy BS, Hennrikus WL. Bilateral anterior shoulder dislocation. *J Am Acad Physician Assist.* 2017;30(7).
5. Dinopoulos HT, Giannoudis P V., Smith RM, Matthews SJ. Bilateral anterior shoulder fracture-dislocation. A case report and a review of the literature. *Int Orthop.* 1999 May;23(2):128-30.
6. Siwach R, Singh R, Rohilla R, Sangwan SS. Bilateral anterior dislocation of the shoulder—A case report and review of the literature. *Inj Extra.* 2008 Dec 1;39(12):394-7.
7. Auerbach B, Bitterman A, Mathew C, Healy W. Bilateral Shoulder Dislocation Presenting as a Unilateral Shoulder Dislocation: Case Report. *J Am Osteopath Assoc.* 2015 Aug 1;115(8):514-7.
8. Sachit M, Shekhar A, Shekhar S, Joban SH. Acute spontaneous atraumatic bilateral anterior dislocation of the shoulder joint with Hill-Sach's lesions: A rare case. *J Orthop case reports.* 2015;5(1):55-7.
9. Turhan E, Demirel M. Bilateral anterior glenohumeral dislocation in a horse rider: a case report and a review of the literature. *Arch Orthop Trauma Surg.* 2008 Jan;128(1):79-82.
10. Al-Khatib Y, Akhtar MA, Kasis A. Bilateral Simultaneous Asymmetrical Anterior Shoulder Dislocation With a Fracture. *Cureus.* 2021 Jul 31;13(7).
11. da Rocha Moreira Rezende B, de Almeida Neto JL, de Sousa UJ, de Souza Bomfim L, Ferreira MS. Glenohumeral dislocation: a prospective randomized study comparing spazo and kocher maneuvers. *Acta Ortop Bras.* 2015;23(4):192-6.
12. Lanna M, Pastore A, Policastro C, Iacovazzo C. Anesthesiological Considerations in Shoulder Surgery. *Transl Med UniSa.* 2012;3(5):42.
13. Kreutziger J, Hirschi D, Fischer S, Herzog RE, Zbinden S, Honigmann P. Comparison of interscalene block, general anesthesia, and intravenous analgesia for out-patient shoulder reduction. *J Anesth.* 2019 Apr 19;33(2):279-86.
14. Bambaren IA, Dominguez F, Elias Martin ME, Domínguez S. Anesthesia and Analgesia in the Patient with an Unstable Shoulder. *Open Orthop J.* 2017 Sep 12;11(1):848-60.

15. Gottlieb M. Shoulder Dislocations in the Emergency Department: A Comprehensive Review of Reduction Techniques. *J Emerg Med.* 2020 Apr 1;58(4):647–66.
16. Siu YC, Lui TH. Bilateral anterior shoulder dislocation. *Arch trauma Res.* 2014 Nov 18;3(4).
17. Laik JK, Kaushal R, Rajak M, David V, Kumar R, Sarkar S. A Novel Technique to Reduce Anterior Shoulder Dislocation Without Anesthesia - A Prospective Analysis. *Cureus.* 2023.
18. Dala-Ali B, Penna M, McConnell J, Vanhegan I, Cobiella C. Management of acute anterior shoulder dislocation. Vol. 48, *British Journal of Sports Medicine.* 2014.
19. Ballesteros R, Benavente P, Bonsfills N, Chacón M, García-Lázaro FJ. Bilateral anterior dislocation of the shoulder: Review of seventy cases and proposal of a new etiological-mechanical classification. *J Emerg Med.* 2013;44(1).
20. Velkes S, Lokiec F, Ganel A. Traumatic bilateral anterior dislocation of the shoulders - A case report in a geriatric patient. *Arch Orthop Trauma Surg.* 1991;110(4).
21. Shin SJ, Yun YH, Kim DJ, Yoo JD. Treatment of traumatic anterior shoulder dislocation in patients older than 60 years. *Am J Sports Med.* 2012;40(4).