



Bilateral Scapular Fracture: A Case Report

Z. F. Zengui^{1,2*}, M. A. El Halem^{1,2}, M. Sennouni^{1,2}, M. Fargouch^{1,2},
Y. El Andaloussi^{1,2}, A. R. Haddoun^{1,2} and M. Fadili^{1,2}

¹Department of Traumatology and Orthopedics Wing 4, CHU IBN Rochd Casablanca, Morocco.

²Faculty of Medicine and Pharmacy of Casablanca, Hassan II University, Morocco.

Authors' contributions

This work was carried out in collaboration among all authors. Author ZFZ designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MAEH and MS managed the analyses of the study. Author M. Fargouch managed the literature searches. All authors read and approved the final manuscript.

Article Information

Editor(s):

(1) Dr. Asmaa Fathi Moustafa Hamouda, Jazan University, Saudi Arabia.

Reviewers:

(1) Sofoklis Mitsos, University College London Hospital, UK.

(2) Luis Gerardo Dominguez, Guanajuato University, México.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/64669>

Case Study

Received 01 November 2020

Accepted 06 January 2021

Published 27 January 2021

ABSTRACT

The simultaneous fracture of both scapulae is an unusual clinical feature. They are thought to result from a violent trauma to the upper part of the shoulder often associated with other injuries whose severity obscures the scapular injuries. Computed tomography with 3D reconstruction may be of assistance in the diagnosis of involvement of the glenoid surface and associated lesions. Often conservative in treatment, surgical procedures may find their indications in patients with involvement of the glenoid cavity or the external abutment with significant displacement as well as other associated lesions. We report the clinical case of a 50-year-old patient, presenting with bilateral comminuted fracture of the bodies of the scapula with damage to the glenoid surface on the right following a work accident due to a fall from a 6m high ladder with landing on the dorsal surface of the thorax and having undergone conservative treatment with excellent functional results and a constant score of 100 for both shoulders at 1 year of follow-up.

Keywords: Bilateral scapular fracture; functional treatment.

*Corresponding author: E-mail: zifazengui@gmail.com;

1. INTRODUCTION

Scapular fractures are a rare clinical entity, accounting for only 5% of shoulder fractures and 1% of whole skeletal injuries. Bilateral scapular fracture is an unusual clinical feature. They are said to be the consequence of a violent trauma to the upper part of the shoulder or as a result of an electrocution or seizures [1–5]. Glenoid involvement or open scapular fractures are one of the indications for operative treatment in these lesions, in other cases simple immobilization is sufficient to obtain good results [5–11]. We report a case of a bilateral scapular fracture following a work-related accident, discussing the mechanism and the outcome of conservative treatment.

2. CASE REPORT

50-year-old patient, painter by profession, received in the emergency room for a closed trauma to the shoulders following a work accident by falling from the top of a ladder with landing on the dorsal surface of the thorax,

causing bilateral shoulder pain with relative functional impotence of both thoracic limbs associated with head trauma with initial loss of consciousness. The clinical examination noted bruising on the dorsal surface of the shoulders and pain on palpation of both scapula and mobilization of the shoulders were painful without vasculo-nervous deficit, respiratory disorders, or other peripheral lesions.

The x-rays of the scapula in front (Fig. 1) of the two shoulders revealed, at the level of the left shoulder a comminutive fracture of the body of the scapula without involvement of the glenoid, and at the level of the right shoulder a comminutive fracture of the body of the scapula associated with a fracture of the scapula spine; and computed tomography with 3D reconstruction (Fig. 2) confirmed involvement of the glenoid surface at the level of its lower part of the glenoid of the right shoulder.

The brain scan was unremarkable; and without rib fractures or pulmonary parenchyma lesions nor other fracture injuries to the limbs.

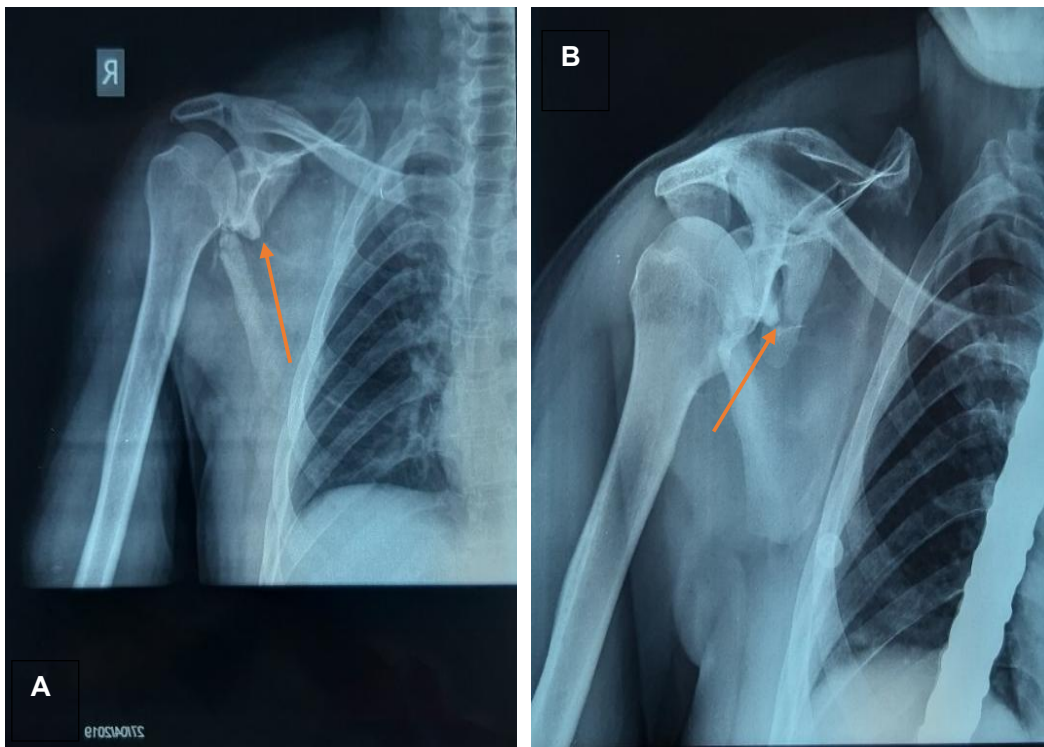


Fig. 1. Frontal x-ray, A. The arrow at the right shoulder showed a comminutive fracture of the body of the scapula associated with a fracture of the scapula spine, B. The arrow at the left shoulder showed the comminutive fracture of the body of the scapula

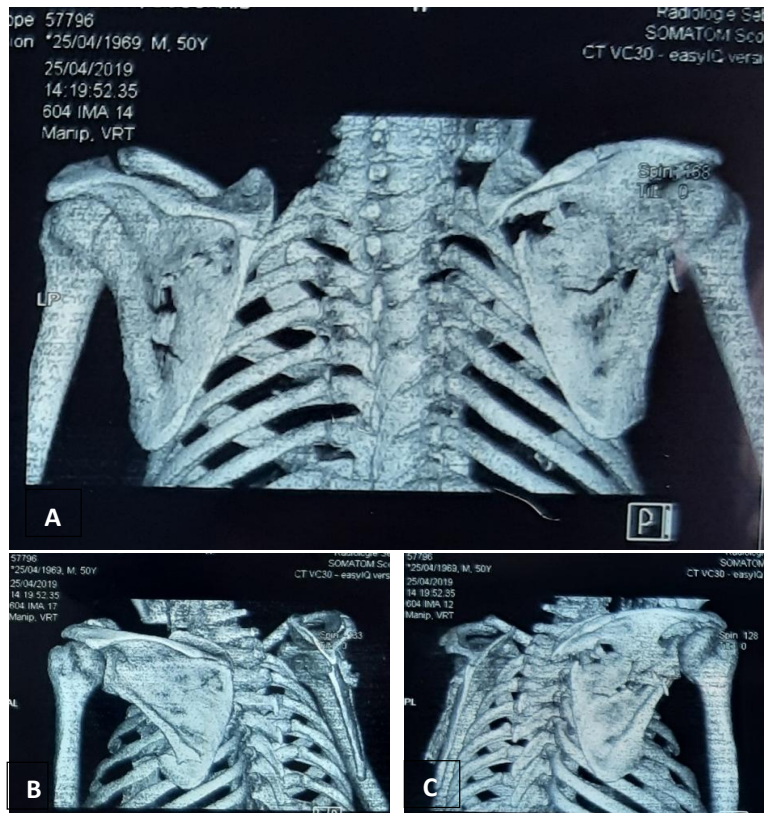


Fig. 2. A. Computed tomography with 3D reconstruction showing the 2 shoulders, B. Comminuted fracture of the body of the scapula on the left, C. Comminuted fracture on the right with involvement of the lower part of the glenoid

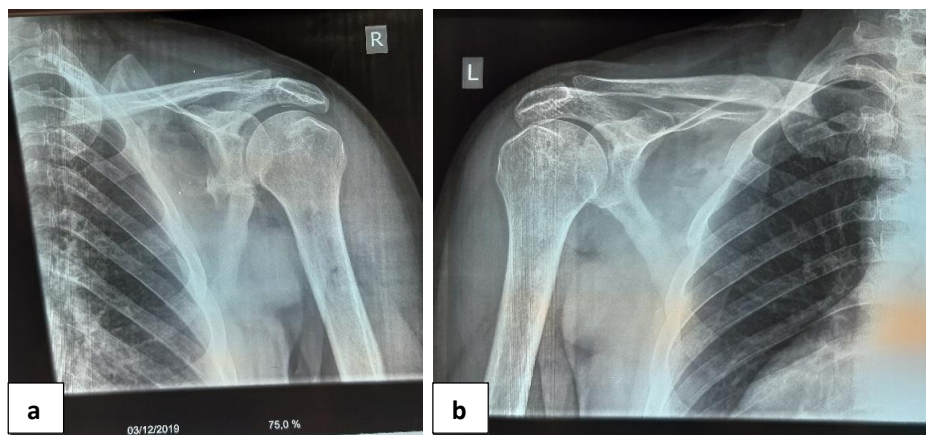


Fig. 3. a, b frontal X-ray after 8 months of follow-up showing the consolidation of the fracture of the right shoulder (a) and the left shoulder (b)

The treatment consisted of immobilization with an orthosis on the right shoulder and a simple sling, elbow to the body on the left for 3 weeks, followed by early rehabilitation at the 2 weeks by pendular movements then gradually passive and

active exercises of amplitude crossing were started at week 3.

At 12 months follow-up, there was a good clinical and radiological (Fig. 3) evolution with good

resumption of professional activities without discomfort in the shoulders. Constant's score was rated 100 for both shoulders.

3. DISCUSSION

Scapular fracture is an unusual lesion in everyday trauma. It is often associated with serious pulmonary or major vessel damage which can be life-threatening. A direct trauma to the posterior part of the thorax by road accident, work accident, fall, or in the battered was mentioned as the most frequent cause of this clinical entity [1,9,11,12].

Other mechanisms have been reported in the literature, some authors describe an indirect mode of fracture, the cause of which was strong muscle traction during convulsive seizures or during an electrocution [7,12–14]. The most frequent fractures of the scapula are those of the body, 35 to 45%, ahead of those of the neck 25%, then of the acromion 8 to 12%, of the spine 5 to 11%, of the glenoid 10% and the coracoid process 5 to 7% [4,15,16]. The diversity of scapular fractures explains the diversity of clinical forms, each with its own radiological and therapeutic specificity. Different classifications of scapular fractures are used in the literature. They are based on different and complementary criteria: descriptive anatomical, functional and even surgical. The classification used by Hardegger is topographic and global allowing a simple description of the different types of scapular fractures [17]. Computed tomography with 3D reconstruction could be of capital importance in the description of the fracture line and eliminate an articular component of the glenoid cavity compared to the standard radiography [11,18].

Glenoid involvement or open scapular fractures constitute one of the indications for operative treatment in these lesions. Some authors take into account more precise elements such as the penetration of the fragments into the chest wall, an angular deformation of thirty degrees lateral border and glenoid fossa, displacement of more than 100 percent by translation of the fragment of the lateral border, an intra-articular fragment, fracture of the glenoid cavity associated with a markedly displaced fracture of the scapular body, a glenoid fracture with dislocation of the shoulder, a coracoid fracture with acromioclavicular separation or associated neurovascular lesions, may warrant surgical treatment to reduce the risk of glenohumeral

osteoarthritis and stiffness that is often associated with these long-term lesions [11,19].

Treatment of scapular fractures involving only the body or the lateral edge of the scapula requires just simple immobilization until the acute pain is gone, followed by active rehabilitation [5,20]. Conservative treatment thus keeps an important place in the treatment of these invoices, especially in the absence of criteria that could justify surgical management. Immobilization can be provided with an orthosis or sling for 3 weeks followed by immobilization as soon as possible to reduce the risk of shoulder stiffness. It allows consolidation in the majority of cases with very few complications after a well-conducted rehabilitation and almost total recovery of the function of the shoulder [7,18].

4. CONCLUSION

Bilateral scapular fracture is a rare injury. Treatment of the majority of scapular fractures without significant damage to the glenoid surface remains conservative by simple immobilization. These are mainly fractures at risk of joint complications or open lesions that would require surgical treatment, because of their long-term functional impact. Consolidation is regularly obtained and long-term sequelae are rare after well-conducted early rehabilitation.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Blondiaux J, Fontaine C, Demondion X, Flipo R-M, Colard T, Mitchell PD et al. Bilateral fractures of the scapula: Possible archeological examples of beatings from Europe, Africa and America. *International Journal of Paleopathology*. 2012;2(4):223-30.
2. Kotak BP, Haddo O, Iqbal M, Chissell H. Bilateral scapular fractures after electrocution. *J R Soc Med*. 2000;93(3): 143-4.

3. Heatly MD, Breck LW, Higinbotham NL. Bilateral fracture of the scapula. The American Journal of Surgery. 1946;71(2): 256-9.
4. Ideberg R, Grevsten S, Larsson S. Epidemiology of scapular fractures. Incidence and classification of 338 fractures. Acta Orthop Scand. 1995;66(5): 395-7.
5. Brown MA, Sikka RS, Guanche CA, Fischer DA. Bilateral Fractures of the Scapula in a Professional Football Player: A Case Report. Am J Sports Med. 2004; 32(1):237-42.
6. Lantry JM, Roberts CS, Giannoudis PV. Operative treatment of scapular fractures: A systematic review. Injury. 2008;39(3): 271-83.
7. Dimitroulias A, Molinero KG, Krenk DE, Muffly MT, Altman DT, Altman GT. Outcomes of nonoperatively treated displaced scapular body fractures. Clin Orthop Relat Res. 2011;469(5):1459-65.
8. Beswick DR, Morse SD, Barnes AU. Bilateral scapular fractures from low-voltage electrical injury. Annals of Emergency Medicine. 1982;11(12):676-7.
9. Matuszewski P, Konieczny R, Wydra T, Jarzyński T, Dąbrowski P, Dąbrowski P et al. Post-traumatic bilateral scapular and thoracic vertebral body fractures - A case report. Pol Merkur Lekarski. 2019;47(282): 229-31.
10. Dumas JL, Walker N. Bilateral scapular fractures secondary to electrical shock. Arch Orthop Trauma Surg. 1992;111(5): 287-8.
11. Bartoniček J, Frič V. Scapular body fractures: results of operative treatment. International Orthopaedics (SICOT). 2011; 35(5):747-53.
12. Ejnisman B, de Figueiredo EA, Terra BB, Monteiro GC, Pochini A de C, Andreoli CV. Exact moment of bilateral scapular fracture during skydiving captured on video. BMJ Case Rep. 1 avr 2011;2011.
13. Tarquinio T, Weinstein ME, Virgilio RW. Bilateral scapular fractures from accidental electric shock. J Trauma. 1979;19(2): 132-3.
14. Liaw YH, Pollack A. Bilateral scapular fractures from electrical injury. Aust N Z J Surg. 1996;66(3):189-90.
15. Favard L, Berhouet J, Bacle G. Traumatisme de la ceinture scapulaire. EMC - Appareil locomoteur. 2009;4(1): 1-18.
16. Tuček M, Bartoniček J, Novotný P, Voldřich M. Bilateral scapular fractures in adults. Int Orthop. 2013;37(4):659-65.
17. Audigé L, Kellam JF, Lambert S, Madsen JE, Babst R, Andermahr J et al. The AO foundation and orthopaedic trauma association (AO/OTA) scapula fracture classification system: Focus on body involvement. Journal of Shoulder and Elbow Surgery. 2014;23(2):189-96.
18. Armitage BM, Wijidicks CA, Tarkin IS, Schroder LK, Marek DJ, Zlowodzki M et al. Mapping of scapular fractures with three-dimensional computed tomography. The Journal of Bone and Joint Surgery-American Volume. 2009;91(9):2222-8.
19. Freche S, Juch F, Nusselt T, Delank KS, Hagel A. Arthroscopic treatment of bilateral snapping scapula syndrome: A case report and review of the literature. Acta Orthop Traumatol Turc. 2015;49(1):91-6.
20. Williamson DM, Wilson-MacDonald J. Bilateral avulsion fractures of the cranial margin of the scapula. J Trauma. 1988; 28(5):713-4.

© 2021 Zengui et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/64669>