

BILATERAL POSTERIOR LUXATION OF THE SHOULDER IN A PATIENT VICTIM OF ELECTRICAL TRAUMA: A CASE REPORT

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Abstract: Posterior and bilateral dislocation of the shoulder is a relatively rare condition, mainly caused by electrical and mechanical trauma and seizures. This condition has a good prognosis if the lesions are diagnosed early and appropriate therapy is instituted. We report the case of a 53-year-old man who, after being the victim of an electrical trauma in the workplace, was diagnosed, through physical examination and imaging studies, with bilateral posterior dislocation of the shoulder. After initial stabilization, surgical treatment was indicated using the McLaughlin technique on the left shoulder and reduction and fixation of the fracture and dislocation of the humeral head with a proximal humeral locking plate. The patient continued with good recovery, receiving 28 points on the modified ULCA scale.

INTRODUCTION

EPIDEMIOLOGY

Posterior shoulder dislocation is infrequent compared to anterior shoulder dislocation, accounting for around 2.1% of all shoulder dislocations. The glenohumeral joint is the joint with the greatest range of motion in the human body, and its stability is regulated by static and dynamic mechanisms, such as ligament structures, the rotator cuff muscle group and proprioception (OLIVEIRA; GRAÇA; FANELLI, 2017).

ETIOLOGY AND CLASSIFICATION

Among the causative mechanisms that favor posterior dislocation, electrical trauma, falls and seizures stand out (PAIM; PAIM; TORRES; CASTRO, 1997). Posterior shoulder dislocations are classified as: subacromial (98%), subglenoid and subspinal (2%) (ROCKWOOD, et al., 2012).

CLINIC AND DIAGNOSIS

Clinically, it presents discreetly in the initial period, where there is no exuberant deformity in the shoulder. The patient refers to intense pain and decreased joint range of motion due to the fixation of the humeral head on the posterior glenoid edge by force of muscle contraction (COOKE; HACKNEY, 2005). The limb remains in internal rotation and the shoulder radiographs confirm the diagnosis (MONTEIRO et al., 2011).

GOAL

This report aims to report the case of a patient victim of electric shock, who evolved with posterior glenohumeral dislocation, demonstrating its clinical and radiographic aspects, as well as its therapeutic management.

REPORT OF CASE

Patient, male, 53 years old, foreman, without comorbidities, was taken to the emergency room in the municipality of Santana, state of Amapá, after suffering an electric shock. The accident occurred while working on a slab with a metal floor. The patient, accidentally came into contact with high voltage electricity, even with the use of personal protective equipment, suffered a fall, partially maintaining consciousness.

Upon arriving at the emergency care unit, he reported precordial pain, paresthesias, paresis, in addition to intense pain in the upper limbs and shoulder girdle. On physical examination, the patient was found to be in poor general condition, with upper limbs in a position of adduction and internal rotation, in addition to marked limitation in performing shoulder elevation and external rotation. It is noteworthy that the patient was monitored for 12 hours by serializing electrocardiograms and cardiac markers, however, no abnormality was observed.

Regarding upper limb injuries, X-rays of

the shoulders were taken in the corrected anteroposterior and scapular profile views, which showed bilateral fracture-dislocation (Figures 1 and 2).

Due to the radiographic alterations, the orthopedics team was called to evaluate the case. A computed tomography scan of both shoulders was requested, showing multifragmentary fracture of the humeral head with fragments of bones displaced to the anterior and inferior portions on the right, also observing impairment of the joint surface. On the left side, a reverse Hill-Sachs lesion, posterior subluxation of the humeral head and small joint effusion were observed.

After confirming the injuries, the surgical procedure was indicated as the most appropriate therapy, using the McLaughlin technique on the left shoulder, thus performing open reduction with transfer of the lesser tubercle to the defect of the humeral head, fixing it with transosseous sutures using non-absorbable sutures. On the right shoulder, reduction and fixation of the fracture and dislocation of the humeral head were performed with a proximal humerus locking plate. The postoperative X-ray showed good bilateral reduction (Figures 3 and 4).

The patient was discharged after 48 hours and referred for rehabilitation. One month after the first surgery, a new surgical approach was performed on the right shoulder to change the intra-articular screw. The patient evolved uneventfully. Finally, in the postoperative period, an instrument for the functional evaluation of the shoulder, the UCLA-MODIFIED (Modified University of California at Los Angeles – Annex 1), was used, whose score was 28, which was considered a good result.

DISCUSSION

Posterior dislocation, a rare entity of trauma to the upper limb, most often evolves with bone lesions of the proximal humerus or glenoid. According to Figueiredo et al, the main factors related to posterior dislocation are electric shock, trauma and seizures (PAPAROIDAMIS et al., 2020).

Because it is rare, the diagnosis is not always so easy for the physical examination and, above all, imaging tests are of paramount importance for the identification of this type of injury. The corrected anteroposterior, scapular and axillary profile views are indispensable for the diagnosis, since, when not identified and properly treated in the emergency room, the prognosis can be dismal (ROCKWOOD, et al., 2012).

The axillary view constitutes a major factor of difficulty in carrying out the procedure, as in almost all cases, patients present with extreme pain, a fact that makes proper positioning unfeasible. Therefore, strategies need to be carried out so that the image can be captured, with an alternative being the Velpeau View, in which arm abduction is not necessary (NOGUEIRA et al., 2015).

In view of the facts, if there are still doubts or even for the best surgical planning, computed tomography is shown to be an important diagnostic tool, when associated with anamnesis and an adequate physical examination (WILLIAMS & WILKINS, 2010).

In 1952, McLaughlin proposed the transfer of the tendon of the subscapularis muscle as a treatment for filling the anteromedial defect of the humeral head, reverse Hill-Sachs. Currently, the technique is still widely used, mainly due to its practicality and wide dissemination. Its results are extremely satisfactory, as for example, in the patient under discussion (CHECCHIA et al., 2005).

As a criterion for evaluating the patient's

evolution, the UCLA scale - modified (Modified University of California at Los Angeles) was used. The UCLA Shoulder Rating Scale was originally described by Amstutz et al, in 1981, to assess patients undergoing shoulder arthroplasty. This scale is composed of three groups: pain, muscle function and strength and movement, which add up to 30 points. The higher the score, the better the results. In 1986, it was modified by Ellman and collaborators, and used for preoperative and postoperative evaluation of degenerative lesions of the rotator cuff (MARTINS et al., 2010).

The scoring systematization is classified into: pain (10 points), function (10 points), range of active anterior flexion (5 points), manual strength test for anterior flexion (5 points) and patient satisfaction (5 points), adding 35 points in total. The items pain, function (in activities of daily living) and patient satisfaction are assessed through questioning and the items range of active anterior flexion and manual strength test for anterior flexion, through routine physical examination, which makes the scale that is easy to apply and extremely viable for monitoring in clinics, offices and within the hospital environment. The score is classified as follows: 34 to 35 points correspond to excellent results; 28 to 33 points correspond to good results; 21 to 27 points correspond to reasonable results and 0 to 20 points indicate poor results (MARTINS et al., 2010).

In the case described, the patient obtained a total of 28 points, a fact that confirms once again the satisfactory evolution of the techniques employed, mainly thanks to the early diagnosis.



Figure 1 – Corrected anteroposterior radiographs of the right shoulder and scapular profile demonstrating fracture-dislocation.

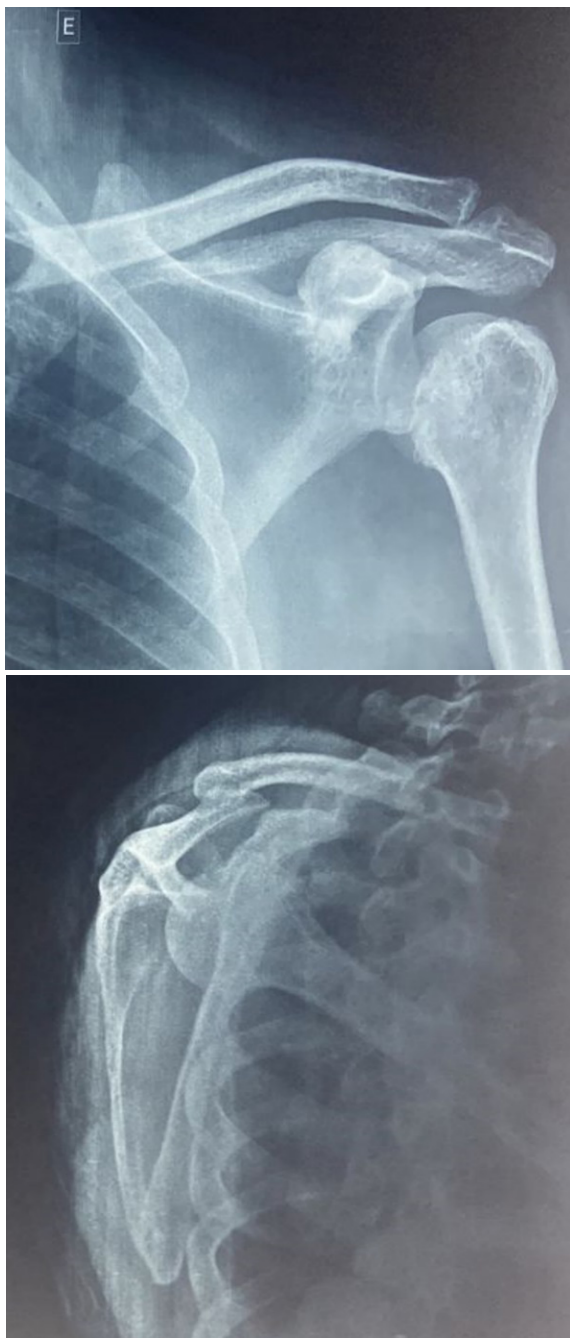


Figure 2 – Corrected anteroposterior radiographs of the left shoulder and scapular profile demonstrating fracture-dislocation.

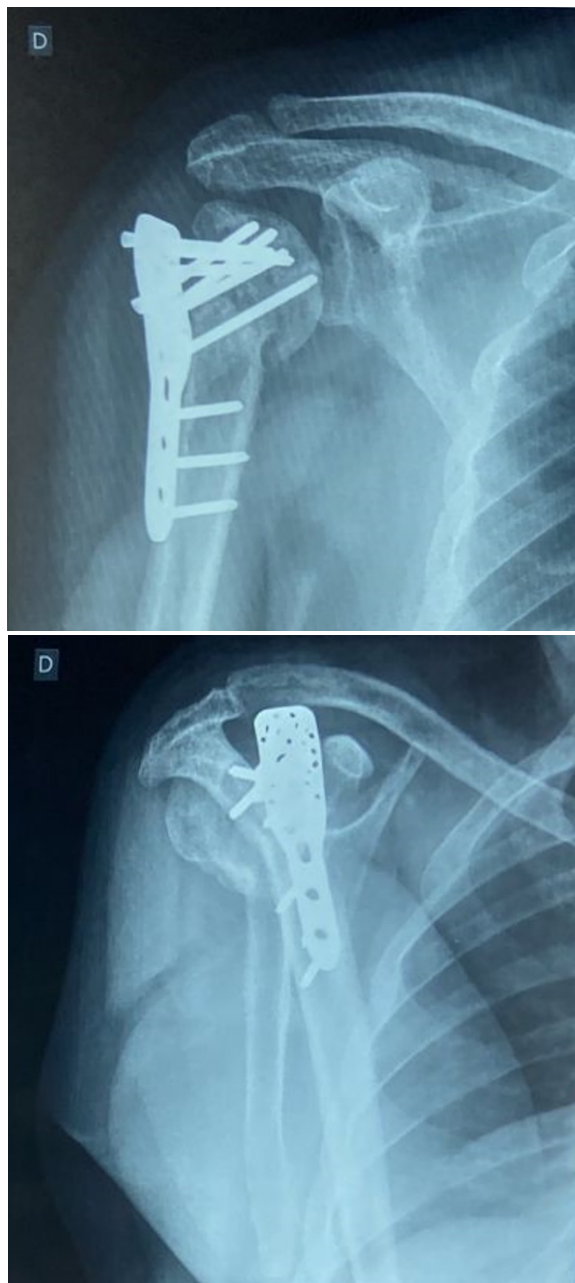


Figure 3 – Radiographs of the right shoulder in anteroposterior and scapular views after reduction and fixation of the fracture and dislocation of the humeral head with a locked plate.

ANNEX

SCALE TRANSLATED AND ADAPTED
TO THE PORTUGUESE LANGUAGE
UCLA SCORING SYSTEM (UNIVERSITY
OF CALIFORNIA – LOS ANGELES



Figure 4 – Radiographs of the left shoulder in anteroposterior and scapular views after the McLaughlin technique.

PAIN	
1).Present all the time and unbearable; takes medication regularly	1
2).Present all the time, but bearable; takes medication from time to time	2
3) No or little pain when the arm is stationary, occurs during light work; takes medication regularly	4
4) Occurs only during heavy work or during specific work; takes medication from time to time	6
5) Mild pain and occurs from time to time	8
6) None	10
ACTIVE ANTERIOR FLEXION STRENGTH (MANUAL STRENGTH TEST)	
1) Grade 5(normal)	5
2) Grade 4 (good)	4
3) Grade 3 (regular)	3
4) Grade 2(weak)	2
5) Grade 1 (muscle contraction)	1
6) Grade 0 (lack of hiring)	0
PATIENT SATISFACTION	
1) Satisfaction and best	5
2) Dissatisfaction and worse	0
ACTIVE ANTERIOR FLEXION	
1) 150 degrees or more	5
2) 120 to 150 degrees	4
3) 90 to 120 degrees	3
4) 45 to 90 degrees	2
5) 30 to 45 degrees	1
6) Less than 30 degrees	0
ACTIVE ANTERIOR FLEXION FORCE (MANUAL FORCE TEST)	
1) Grade 5(normal)	5
2) Grade 4(good)	4
3) Grade 3 (regular)	3
4) Grade 2 (weak)	2
5) Grade 1 (muscle contraction)	1
6) Grade 0 (lack of hiring)	0
PATIENT SATISFACTION	
1) Satisfaction and best	5
2) dissatisfaction and worse	0

REFERENCES

- BROSCO, S. **TRATAMENTO NÃO ARTROPLÁSTICO DA LUXAÇÃO POSTERIOR PERMANENTE DO OMBRO ASSOCIADA A GRANDE DEFEITO ÓSSEO.** Revista Brasileira de Ortopedia, v. 40, n. 10, p. 575–581, 2005.
- CASTRO, A. **Luxação posterior traumática do ombro: diagnóstico e tratamento precoce.** Revista Brasileira de Ortopedia, v. 32, n. 9, 1997.
- CHECCHIA, S.L. et al. **Avaliação de resultados em artroplastia total de ombro.** Rev Bras Ortop, v.41, n.5, p.173-180, 2006.
- COOKE, S. J.; HACKNEY, R. G. **Bilateral posterior four-part fracture–dislocations of the shoulders following electric shock.** Injury Extra, v. 36, n. 4, p. 90–95, abr. 2005.
- MARTINS, J. et al. **Versão Brasileira do Shoulder Pain and Disability Index: tradução, adaptação cultural e confiabilidade.** Brazilian Journal of Physical Therapy, v. 14, n. 6, p. 527–536, dez. 2010.
- MONTEIRO, G. C. et al. **Resultados do tratamento das fraturas do terço proximal do úmero com placas de bloqueio.** Acta Ortopédica Brasileira, v. 19, n. 2, p. 69–73, abr. 2011.
- NOGUEIRA GIGLIO, P. et al. **Advances in treating exposed fractures.** Revista Brasileira de Ortopedia (English Edition), v. 50, n. 2, p. 125–130, mar. 2015.
- OLIVEIRA, C. T. B. DE; GRAÇA, E. DA; FANELLI, V. A. **Fraturas-luxações posteriores do úmero proximal em quatro partes: avaliação clínico-funcional do tratamento por osteossíntese.** Revista Brasileira de Ortopedia, v. 53, n. 3, p. 350–356, maio 2018.
- OLIVEIRA, C. T. B. DE; GRAÇA, E. DA; FANELLI, V. A. **Posterior four-part fracture-dislocations of the proximal humerus: clinical and functional evaluation of osteosynthesis treatment.** Revista Brasileira de Ortopedia, v. 53, p. 350–356, 2018.
- OKU, E. C. et al. **Tradução e adaptação cultural do Modified-University of California at Los Angeles Shoulder Rating Scale para a língua portuguesa.** Revista Brasileira de Reumatologia, v. 46, n. 4, p. 246–252, ago. 2006.
- PAPAROIDAMIS, G. et al. **Posterior shoulder fracture-dislocation: A systematic review of the literature and current aspects of management.** Chinese Journal of Traumatology, v. 24, n. 1, p. 18–24, fev. 2021.
- TORNETTA, P. et al. **Rockwood and Green's Fractures in Adults.** 9th ed. Philadelphia; Lippincott Williams & Wilkins; 7 ed; 2010. 2 v. (2174 p.)