
CASE REPORT AND REVIEW OF THE LITERATURE

Bilateral anterior glenohumeral fracture dislocation

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Abstract

Bilateral anterior dislocation of the glenohumeral (shoulder) joint is uncommon. Incidences of bilateral anterior fracture dislocation of the shoulder are relatively rare. About 16 cases are reported in the world literature. We report a case of bilateral anterior dislocation of the shoulder with bilateral avulsion fractures of the greater tuberosities of the humerus following seizure or convulsion due to electric shock.

Key words: Shoulder dislocation, anterior, bilateral, electrocution

Introduction

Shoulder joint dislocation is the most common type of dislocation¹⁻⁴ and proximal humeral fractures may accompany this dislocation.⁵⁻¹³ The most common bilateral shoulder dislocation is posterior, due to seizure or convulsion secondary to epilepsy, electric shock, drug overdose, sports injuries, hypoglycaemia, electroconvulsive therapy, neuromuscular disorders or in emotionally disturbed patients due to violent muscle contractions.^{5,14-16}

We report an unusual case of simultaneous bilateral anterior shoulder fracture dislocation in a man who was electrocuted while welding a gate.

Case report

A 50-year-old man was referred to us from a peripheral hospital. He had been electrocuted while welding a gate.

On examination he was unable to hold his hands together in front of his body (no internal rotation). There was bilateral loss of the round contour of the shoulders. Both shoulders were held in abduction. A clinical diagnosis of bilateral anterior shoulder dislocation was made. Sensation on the lateral aspect of the proximal arm (army badge area) was intact. Isometric contraction of the deltoid muscle was intact. In addition to the axillary nerve, the rest of the nerves were also intact. Brachial, radial and ulnar arteries' pulses were palpable. Anterior and lateral shoulder X-rays revealed displaced avulsion fractures of the greater tuberosities and bilateral anterior dislocations (*Figure 1*).

The most common bilateral shoulder dislocation is posterior, due to seizure or convulsion



Figure 1. AP and lateral X-ray views of the right and left shoulders demonstrating anterior fracture dislocation of both shoulders

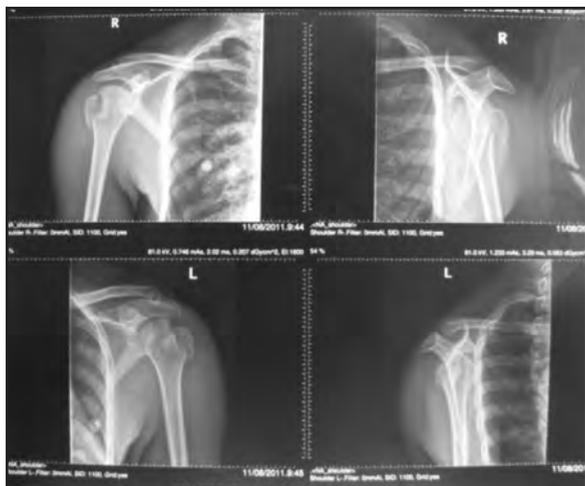


Figure 2. Post-closed reduction AP and lateral views of right and left shoulder X-rays



Figure 3. Lateral view right shoulder post ORIF

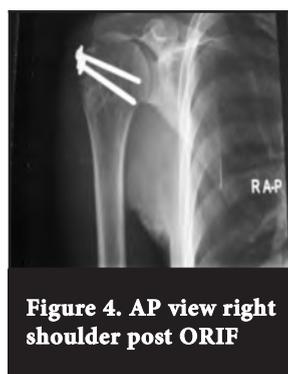


Figure 4. AP view right shoulder post ORIF

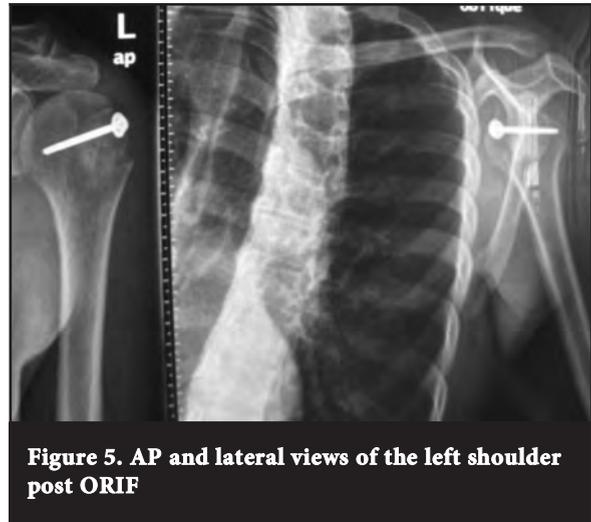


Figure 5. AP and lateral views of the left shoulder post ORIF

About seven hours after admission the patient was taken to theatre and under general anaesthesia closed reduction of the shoulders was done using the Hippocrates technique. Immobilisation was done with bilateral slings. Control X-rays showed reduced shoulder joints but the tuberosity fractures were still displaced, needing open reduction and internal fixation (ORIF) (Figure 2). Due to logistical problems the patient was taken to theatre only after three weeks for ORIF on both shoulders.

Post-operatively abduction splints were applied. Post-operative X-rays demonstrated well reduced joints and fractures (Figures 3–5). Physiotherapy with muscle strengthening exercises was started four weeks after ORIF. Tables I and II, and Figures 6 to 13, depict the patient’s progress at follow-up.

Table I: Range of movements (ROM) three months post ORIF

	Right shoulder	Left shoulder
Abduction	0°–100°	0°–90°
Extension	0°–50°	0°–45°
Internal rotation	0°–30°	0°–30°

Table II: ROM six months post ORIF

	Right shoulder	Left shoulder
Flexion	0°–120°	0°–90°
Extension	0°–50°	0°–45°
Abduction	0°–30°	0°–110°
Adduction	0°–30°	0°–30°
External rotation	0°–45°	0°–30°
Internal rotation	0°–90°	0°–80°



Figure 6. Shoulder flexion post-operatively



Figure 7. Shoulder extension post-operatively



Figure 8. Right shoulder abduction post-operatively



Figure 9. Left shoulder abduction post-operatively

The patient's progress at follow-up is clearly demonstrated



Figure 10. Right shoulder external rotation post-operatively



Figure 11. Right shoulder internal rotation post-operatively



Figure 12. Left shoulder external rotation post-operatively



Figure 13. Left shoulder internal rotation post-operatively

Discussion

Posterior shoulder dislocations account for 4% of all shoulder dislocations,^{7,10,17} anterior dislocations account for 95%.^{4,7,10,15,17-19} Inferior shoulder dislocation (luxatio erecta) occurs in only 0.5% of cases.^{7,17}

Anterior dislocation of the shoulder is caused by a combination of abduction, extension and external rotation forces applied to the arm. It is almost always secondary to trauma.^{14,15} Axial loading of the adducted, internally rotated arm may cause posterior shoulder dislocation.

The causes of posterior dislocation have been mentioned above. The combined strength of the internal rotators overpowers the external rotators.

Bilateral shoulder dislocation was first described in 1902 in a patient with camphor overdose.^{5,14,16} Simultaneous bilateral anterior dislocation of the shoulder is rare.^{5,14,17} The mechanism of injury is usually the same as unilateral shoulder dislocation secondary to trauma. Associated displaced tuberosity fracture occurs in about 15% of all anterior shoulder dislocations.^{7,8,17}

Reported mechanisms of injury resulting in bilateral simultaneous anterior shoulder dislocation include push-ups; a heavy object falling on a patient's back; domestic assault; fall/seizure; and post-traumatic stress disorder. In other settings the cause is unknown.^{17,20}

Evidence from the literature suggests that bilateral shoulder dislocations due to seizures or electrocution (with violent muscular contractions) are mostly posterior.^{1,5,9,10,12-15,17,21} Our patient was a victim of electrocution but presented with bilateral anterior shoulder fracture dislocation.

Several methods of closed reduction of anterior shoulder dislocation are used.^{3,4,19} In our patient we used the Hippocratic method. Shoulder dislocation, like all dislocations, is an emergency. Prompt and urgent treatment of these injuries could have improved the patient's recovery.

At six-months' follow-up our patient's ROM on both shoulders was comparable to that of a patient reported by Milind M Porecha *et al.*⁵ At one-year follow-up their patient was working without any functional impairment. Our patient, at six-months' follow-up, has not yet returned to his pre-morbid occupation and activities of daily living (ADL) but already has ROM comparable to their patient at their one-year follow-up.

Conclusion

Bilateral anterior shoulder fracture dislocation following electrocution is rarer than posterior fracture dislocation. Fortunately, clinical diagnosis is straightforward. Urgent closed reduction of the shoulders with ORIF of the displaced avulsion fractures of the greater tuberosities and appropriate physiotherapy intervention will optimise patient outcome.

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