CASE REPORT

Neglected posterior dislocation of the shoulder: A systematic literature review

Wu Xu ¹, Li-Xin Huang*, Jiong Jiong Guo ¹, Ding-Hua Jiang, Yong Zhang, Hui-Lin Yang

Department of Orthopedics, The First Affiliated Hospital of Soochow University, Suzhou, China

Received 30 November 2014; received in revised form 1 February 2015; accepted 25 February 2015
Available online 18 March 2015

KEYWORDS
axillary radiographic view; posterior dislocation; shoulder

Summary  Posterior dislocation of the shoulder (PSD) is a rare injury; the diagnosis is often missed on initial examination. We present a systematic review of the current literature and discuss the key of the diagnosis of PSD. We searched the MEDLINE, PubMed, EMBASE, MD Consult, and the Cochrane Controlled Trial Register databases for the articles according to our eligibility criteria. Finally, 53 articles were included in our systematic review. There were 242 shoulders in 205 patients. In total, in the initial assessment with anteroposterior radiographs in 166 cases, only 19 (11.4%) cases confirmed the right diagnosis. When anteroposterior combined with axillary or Y view radiographs or computed tomography were present as the initial assessments in 36 cases, the diagnoses were made correctly and timely (100%). When axillary or Y view radiographs or computed tomography were taken subsequently, the diagnosis was confirmed in all 205 patients.

Copyright © 2015, The Authors. Published by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Introduction

Posterior dislocation of the shoulder is a rare injury (< 4% of all shoulder dislocations). The diagnosis of this injury is often missed (60–79%) on initial examination [1–4]. The special clinical and radiographic characteristics made McLaughlin [4] consider it as a "diagnostic trap".

Although the imaging technique is advancing and it is well known now that it is important to recognize posterior dislocations of the shoulder, many cases continue to be missed by the physicians who first see the patients and therefore appropriate treatment is delayed. Delay between injury and diagnosis has been reported to be as long as 10 years in some cases. A considerable number of patients with delay on diagnosis resulted in chronic pain, stiffness, and functional disability. The most common causes for delay include the physician’s failure to suspect the

* Corresponding author. Department of Orthopedics, The First Affiliated Hospital of Soochow University, 188 Shizhi St., Suzhou, Jiangsu 215006, China.
E-mail address: xwllz@163.com (L.-X. Huang).
¹ These two authors contributed equally to this work and share the first authorship.
diagnosis on the initial examination, late presentation by the patient, and inadequate radiographic investigation. The key to diagnosis of this injury lies in maintaining a high index of clinical suspicion and performing appropriate radiographic investigations.

Because of a relatively high incidence of delay on the recognition of PSD, this paper presents a systematic review of the current literature and discusses the key of the diagnosis of PSD.

**Systematic review of the literature**

In December 2013, a systematic search was performed in the MEDLINE, PubMed, EMBASE, MD Consult, and the Cochrane Controlled Trial Register databases by two independent reviewers. Article inclusion criteria consisted of all journal articles published from 1980 to November 2013. Search keywords included: shoulder, posterior dislocation, and reverse Hill–Sachs. Studies without full-text were not included. Articles referring to traumatic posterior instability without actual traumatic dislocation were also excluded. References of the obtained articles and relevant articles were also screened. Search results were screened according to the eligibility criteria (Table 1). Finally, a set of 53 articles [2,5–56] was included in our systematic review (Tables 2 and 3).

**Results**

Study flow is outlined in Fig. 1. Only 53 articles were retained for data extraction after evaluation. Of these articles, 15 were case series (>5 patients) and 48 were case reports (<5 patients). There were 242 shoulders in 205

| Study                              | Year | Population | Age (y) | Sex | Aetiology             | Uni/ Bilateral | Delay (mo) | Initially radiological investigation |
|------------------------------------|------|------------|---------|-----|-----------------------|----------------|------------|-------------------------------------|
| Vastamäki and Solonen [5]          | 1980 | 2          | 50.5    | F (1), M (1) | Seizures            | Uni (1), Bil (1) | 13.5       | AP                                  |
| Hawkins et al. [2]                 | 1987 | 21         | 49.2    | M   | Trauma                | Uni            | 12         | AP                                  |
| Keppler et al. [10]                | 1994 | 7          | 53      | M   | Trauma                | Uni            | 5.2        | AP                                  |
| Gerber et al. [12]                 | 1996 | 4          | 56      | F (3), M (1) | Trauma (1), seizures (3) | Uni            | 5         | AP                                  |
| Cheng et al. [15]                  | 1997 | 5          | 58      | F (3), M (2) | Seizures            | Uni (3), Bil (2) | 23        | AP                                  |
| Aparicio et al. [18]               | 2000 | 6          | 53.7    | F (2), M (4) | Trauma (2), seizures (4) | Uni (5), Bil (1) | 3.9       | AP                                  |
| Bozkurt et al. [26]                | 2004 | 1          | 41      | F   | Trauma                | Uni            | 6         | AP                                  |
| Sperling et al. [27]               | 2004 | 12         | 56      | F (6), M (6) | Trauma (6), seizures (6) | Uni            | 26        | AP                                  |
| Spencer et al. [29]                | 2005 | 2          | 45      | F (1), M (1) | Trauma              | Uni            | 1.25      | AP                                  |
| Takase et al. [30]                 | 2006 | 1          | 41      | F   | Trauma                | Uni            | 28        | AP                                  |
| Verma et al. [31]                  | 2006 | 1          | 26      | M   | Trauma                | Uni            | 1         | AP                                  |
| Duralde et al. [33]                | 2006 | 4          | 52      | M   | Seizures              | Uni            | 0.13      | AP                                  |
| Martinez et al. [35]               | 2008 | 6          | 31.6    | F (3), M (3) | Trauma (3), seizures (3) | Uni            | 2         | AP                                  |
| Agarwal et al. [36]                | 2008 | 1          | 66      | M   | Seizures              | Bil            | 0.03 None | None                                |
| Ivkovic et al. [37]                | 2007 | 1          | 52      | M   | Seizures              | Bil            | 3         | None                                |
| Chalidis et al. [38]               | 2008 | 1          | 34      | F   | Trauma                | Uni            | 3         | AP                                  |
| El Shewy et al. [39]               | 2008 | 17         | 48.5    | F (3), M (14) | Trauma (14), seizures (3) | Uni            | 0.75      | AP                                  |
| Gavriliidis et al. [41]            | 2010 | 11         | 53      | F (1), M (10) | Trauma (8), seizures (3) | Uni (10), Bil (1) | 13.9      | AP                                  |
| Singh et al. [42]                  | 2009 | 3          | 37      | M   | Trauma                | Uni            | 4.7       | AP                                  |
| Diklic et al. [43]                 | 2010 | 13         | 42      | F (3), M (10) | Trauma (10), seizures (3) | Uni            | 4         | AP                                  |
| Modi et al. [45]                   | 2009 | 1          | 64      | M   | Trauma                | Uni            | 0.6       | AP                                  |
| Toker et al. [46]                  | 2012 | 1          | 34      | M   | Trauma                | Uni            | 0.07      | AP                                  |
| Schliemann et al. [47]             | 2012 | 25         | 53      | M   | Trauma                | Uni            | 2.2       | AP                                  |
| Li et al. [48]                     | 2011 | 1          | 30      | F   | Trauma                | Uni            | 1         | AP                                  |
| Poyanli et al. [50]                | 2011 | 1          | 52      | M   | Seizures              | Bil            | 1         | None                                |
| Torrens et al. [51]                | 2012 | 1          | 45      | M   | Seizures              | Bil            | 3         | AP                                  |
| Kokkalis et al. [55]               | 2012 | 1          | 40      | M   | Seizures              | Bil            | 4         | AP                                  |

\(\text{AP} = \text{anteroposterior radiograph}; \text{F} = \text{female}; \text{M} = \text{male}\).
The average age was 47.6 years and the range was 19 to 76 years. There were 170 male (82.9%) and 35 female (17.1%) patients. In 37 patients (18%), the posterior dislocations were bilateral. The aetiology of the dislocation in the 205 patients was trauma in 121 (59%), seizure in 82 (40%), and electric shock in two (1%).

The average interval between injury and diagnosis was 5.88 months (range, 0 to 300 months). For 150 patients (73.2%), the initial diagnosis of posterior shoulder dislocation was missed. Of these initially missed patients, almost all (147/150, 98%) had anteroposterior (AP) or lateral radiographs, but none had axillary view or Y-view radiographs or computed tomography (CT) scans. For the other 55 (26.8%) initially confirmed cases, only 19 (11.4%) cases were confirmed by AP radiographs. During initial radiographic assessment, axillary or Y-view radiographs or CT confirmed the diagnosis in all 205 patients.

### Table 3: Patients diagnosed initially.

| Study                        | Year | Population | Age (y) | Sex | Aetiology                  | Uni/ Bilateral | Delay (mo) | Initially radiological investigation |
|------------------------------|------|------------|---------|-----|----------------------------|----------------|------------|--------------------------------------|
| Vastamäki and Solonen [5]    | 1980 | 4          | 35.3    | F (2), M (2) | Trauma (2), seizures (1), electric shock (1) | Uni (2), Bil (2) | 0.45       | AP + Axi                              |
| Nicola et al. [6]            | 1981 | 1          | 39      | M   | Seizures                   | Bil            | 0.13       | AP + Axi                              |
| Reckling [7]                 | 1986 | 1          | 75      | M   | Seizures                   | Uni            | 0.3        | AP + Axi                              |
| Blasier et al. [8]           | 1988 | 2          | 39      | M   | Seizures                   | Uni            | 0          | AP + Axi + CT                         |
| Goldman et al. [9]           | 1987 | 3          | 52      | M   | Seizures                   | Uni            | 0          | AP + Axi                              |
| Keppler et al. [10]          | 1994 | 3          | 53      | F   | Seizures                   | Uni            | 0.7        | AP + Axi                              |
| Page et al. [11]             | 1995 | 1          | 43      | M   | Seizures                   | Bil            | 0          | AP + Axi + CT                         |
| Naresh et al. [13]           | 1997 | 1          | 45      | M   | Trauma                     | Uni            | 0          | AP + Axi                              |
| Connor et al. [14]           | 1997 | 1          | 44      | M   | Seizures                   | Bil            | 0          | AP + Axi                              |
| Altay et al. [17]            | 1999 | 10         | 37.6    | F (3), M (7) | Trauma (7), seizures (3) | Uni (7), Bil (3) | 0          | AP + Axi                              |
| Ito et al. [19]              | 2000 | 1          | 73      | M   | Seizures                   | Uni            | 0.07       | AP                                    |
| Oakes et al. [20]            | 2001 | 1          | 35      | M   | Trauma                     | Uni            | 0          | AP + Axi + Y                          |
| Kilicoglu et al. [21]        | 2001 | 1          | 60      | M   | Seizures                   | Bil            | 0.03       | AP + CT                               |
| Brackstone et al. [22]       | 2001 | 1          | 50      | M   | Seizures                   | Bil            | 0.03       | AP + CT                               |
| Mancini and Lazzeri [23]     | 2002 | 1          | 46      | M   | Seizures                   | Bil            | 0          | AP                                    |
| Ide et al. [24]              | 2003 | 1          | 21      | M   | Trauma                     | Uni            | 0          | AP + Axi                              |
| Hayes et al. [25]            | 2003 | 1          | 28      | M   | Trauma                     | Uni            | 0          | AP                                    |
| Stone and Wright [28]        | 2005 | 1          | 30      | M   | Electric shock             | Uni            | 0          | AP                                    |
| Iosifidis et al. [32]        | 2006 | 1          | 47      | M   | Seizures                   | Bil            | 0          | AP + CT                               |
| Duralde et al. [33]          | 2006 | 3          | 52      | M   | Seizures                   | Uni            | 0.13       | AP                                    |
| Mnif et al. [40]             | 2009 | 1          | 42      | M   | Seizures                   | Bil            | 0          | AP + CT                               |
| Engel et al. [44]            | 2009 | 1          | 64      | F   | Seizures                   | Uni            | 0          | AP + Axi                              |
| Schliemann et al. [47]       | 2011 | 10         | 53      | M   | Trauma                     | Uni            | 1          | AP                                    |
| Patrizio and Sabetta [49]    | 2011 | 1          | 57      | M   | Seizures                   | Uni            | 0          | AP + CT                               |
| O’Neill et al. [52]          | 2012 | 1          | 45      | M   | Seizures                   | Bil            | 0          | AP + CT                               |
| Begin et al. [53]            | 2012 | 1          | 46      | M   | Seizures                   | Bil            | 0          | AP + Axi + CT                         |
| Banerjee et al. [54]         | 2012 | 2          | 41      | M   | Trauma (1), electric shock (1) | Uni (1), Bil (1) | 0          | AP                                    |
| Moroder et al. [56]          | 2012 | 1          | 50      | M   | Trauma                     | Uni            | 0.03       | AP + CT                               |

AP = anteroposterior radiograph; Axi = axillary view radiograph; CT = computed tomography; F = female; M = male; Y = Y-view radiograph.

Discussion

The shoulder is the most frequently dislocated joint in the body [57], whereas posterior dislocation is a rare injury, which only accounts for 1–5% of all shoulder dislocations [58,59]. The most common mechanism for the unilateral injuries is trauma, such as a direct blow to the humeral head, a fall on an outstretched arm, or a motor vehicle collision [60–62]. Bilateral posterior shoulder dislocations are most commonly caused by seizures. Although electrocution, drug dependency [63], and hypoglycemic episodes [64] have also been implicated as causes. Of the 205 cases included in the literature review, 168 were unilateral and 37 were bilateral. Of the 168 unilateral shoulder injury patients, 118 (70.2%) were attributed to trauma, 49 (29.2%) (100%) confirmed. When axillary or Y-view radiographs were made subsequently, the diagnosis was confirmed in all 205 patients.
and limited elevation of the arm (often external rotation with the arm in elastic internal rotation flattening of the anterior aspect, severe limitation of pain during external rotation may indicate a chronic initial misdiagnosis rate is 73.2%, ranging from 60% to 80% "light bulb sign" is absent in most cases[66]. Axillary view appear grossly normal, and the classic appearance of the after the injury hampers diagnosis. AP radiographs can contusion or rotator cuff tear. Severe swelling immediately similar to more common diagnosis, such as a shoulder misdiagnosis. These factors may contribute to the high rate of "frozen shoulder" or "shoulder sprain". Proper clinical examination is essential. The classic signs of posterior shoulder dislocation were first reported by Cooper [65], which included posterior fullness and rounding with subsequent prominence of the coracoid process, flattening of the anterior aspect, severe limitation of external rotation with the arm in elastic internal rotation and limited elevation of the arm (often < 90°). Lack of pain during external rotation may indicate a chronic dislocation.

The diagnosis of PSD is often difficult. We found that the initial misdiagnosis rate is 73.2%, ranging from 60% to 80% [2,58]. Few injuries become chronic. PSD gives rise to fewer prominent symptoms and the clinical picture may appear similar to more common diagnosis, such as a shoulder contusion or rotator cuff tear. Severe swelling immediately after the injury hampers diagnosis. AP radiographs can appear grossly normal, and the classic appearance of the "light bulb sign" is absent in most cases [66]. Axillary view or Y view radiographs or CT scans are often neglected. These factors may contribute to the high rate of misdiagnosis.

Hawkins et al. [2] found an average 1-year delay in diagnosis in a series of 40 patients with only 30% diagnosed within 6 weeks from injury. In our literature review, most of the cases were neglected initially, by an average of 5.88 months. In fact, most of these cases were misdiagnosed as "frozen shoulder" or "shoulder sprain".

To avoid misdiagnosis, a high index of suspicion, accurate examination, and an insistence on the proper initial radiographic evaluation are necessary. When a PSD is suspected, initial imaging should include full three-view radiography of the injured shoulder: AP, lateral scapular, and axillary or Y view. As the classic appearances of the "light bulb sign" and "rim sign" on the AP view are often absent and neglected, the axillary or Y view radiographs are often the key to diagnosing this injury. In our literature review, we found only a 11.4% diagnosis rate using AP views, which increased to 100% when axillary or Y view radiographs were added. It may often be difficult to take an axillary view because of the pain, but we feel that it can always be taken with proper technique; it may, however, require the presence of the doctor to supervise. Goud et al. [67] provided a brief outline of the various shoulder projections obtained at their institution and the conditions for which they are most beneficial. They state that the axillary view is classically used in evaluating dislocations of the shoulder. Thus, a scapular Y view is often easier to acquire than axillary view when the latter is difficult to be obtained because of severe pain or limited mobility. Unfortunately, many developing countries have not regarded the axillary view or Y view radiographs as a routine radiological investigation. We recommend that the axillary view or Y view radiographs should be taken as routine radiological investigation for all patients with shoulder trauma, whilst CT scans should be taken to evaluate the damage of the humeral head and the associated fractures, which determine the extent of treatment necessary for each patient. Magnetic resonance imaging scans can further detail the tissue injury of the shoulder, such as rotator cuff damage.

The treatment of PSD is multifactorial and varies from benign neglect to total shoulder arthroplasty. According to the relevant literature, the main considerations include the extent of the reverse Hill—Sachs lesions, the duration of the dislocation, the condition of the glenoid fossa, and the age and the general health of the patient. If the injury is diagnosed acutely, a closed reduction is often successful and the prognosis is usually satisfied if the reverse Hill—Sachs lesions are < 20% in size. Lesions > 20% are often unstable after closed reduction and may require operation. In patients with unstable shoulder after PSD and lesions < 30—50% of the humeral head, the gold standard is operative stabilization with a McLaughlin procedure or a modified technique. Lesions > 50% typically require arthroplasty to restore stability [2]. Humeral head replacement should be avoided in younger patients.

PSD continues to be a “diagnostic trap” for clinical physician despite the advances in imaging techniques and recognition about the risk of missed diagnosis. A thorough and accurate clinical and radiographic investigation is very important when a PSD is suspected. We suggested that the axillary or Y view radiographs should be taken as routine radiological investigation for all patients with shoulder trauma. CT scans and magnetic resonance imaging can also be acquired to evaluate the damage if necessary.

However, the majority of the articles we selected were case reports, with the rest being small case series. It is better to upgrade the strength of the evidence. Therefore, further studies with a greater number of cases are still needed to establish our conclusions.
Conflicts of interest

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

[1] Dorgan JA. Posterior dislocation of the shoulder. Am J Surg 1955;89:890–900.
[2] Hawkins RJ, Neer 2nd CS, Planta RM, Mendoza FX. Locked posterior dislocation of the shoulder. J Bone Jt Surg Am 1987;69:9–18.
[3] Heller KD, Forst J, Forst R. Differential therapy of traumatically-induced persistent posterior shoulder dislocation: a review of literature. Unfallchirurg 1995;98:6–12 [Article in German].
[4] McLaughlin HL. Posterior dislocation of the shoulder. J Bone Jt Surg Am 1952;24:584–90.
[5] Vastamäki M, Solonen KA. Posterior dislocation and fracture-dislocation of the shoulder. Acta Orthop Scand 1980;51:479–84.
[6] Nicol FG, Ellman H, Eckardt J, Finerman G. Bilateral posterior fracture-dislocation of the shoulder treated with a modification of the McLaughlin procedure. A case report. J Bone Jt Surg Am 1981;63:1175–7.
[7] Reckling FW. Posterior fracture-dislocation of the shoulder treated by a Neer hemiarthroplasty with a posterior surgical approach. Clin Orthop Relat Res 1986;207:133–7.
[8] Blasier RB, Burkus JK. Management of posterior fracture-dislocations of the shoulder. Clin Orthop Relat Res 1988;232:197–204.
[9] Goldman A, Sherman O, Price A, Minkoff J. Posterior fracture dislocation of the shoulder with biceps tendon interposition. J Trauma 1987;27:1083–6.
[10] Keppler P, Holz U, Thielemann FW, Meing R. Locked posterior dislocation of the shoulder: treatment using rotational osteotomy of the humerus. J Orthop Trauma 1994;8:286–92.
[11] Page AE, Meinhard BP, Schulz E, Toledano B. Case report: bilateral posterior fracture-dislocation of the shoulders: management by bilateral shoulder hemiarthroplasties. J Orthop Trauma 1995;9:526–9.
[12] Gerber C, Lambert SM. Allograft reconstruction of segmental defects of the humeral head for the treatment of chronic locked posterior dislocation of the shoulder. J Bone Jt Surg Am 1996;78:376–82.
[13] Naresh S, Chapman JA, Muralidharan T. Posterior dislocation of the shoulder with ipsilateral humeral shaft fracture: a very rare injury. Injury 1997;28:150–2.
[14] Connor PM, Boatright JR, D’Alessandro DF. Posterior fracture-dislocation of the shoulder: treatment with acute osteochondral grafting. J Shoulder Elb Surg 1997;6:480–5.
[15] Cheng SL, Mackay MB, Richards RR. Treatment of locked posterior fracture-dislocations of the shoulder by total shoulder arthroplasty. J Shoulder Elb Surg 1997;6:11–7.
[16] Altay T, Öztürk H, Us RM, Günal I. Four-part posterior fracture–dislocations of the shoulder. Treatment by limited open reduction and percutaneous stabilization. Arch Orthop Trauma Surg 1999;119:35–8.
[17] Aparicigo C, Calvo E, Bonilla L, Espejo L, Box R. Neglected traumatic posterior dislocations of the shoulder: controversies on indications for treatment and new CT scan findings. J Orthop Sci 2000;5:37–42.
[18] Ito H, Takayama A, Shirai Y. Posterior dislocation of the shoulder with a large fracture segment: a case report. J Shoulder Elb Surg 2000;9:238–41.
[19] Oakes DA, McAllister DR. An atypical appearance of a posterior dislocation of the shoulder with a fracture of the proximal humerus. J Shoulder Elb Surg 2001;10:182–5.
[20] Kilicoglu O, Demirhan M, Yavuzer Y, Alturfan A. Bilateral posterior fracture-dislocation of the shoulder revealing unsuspected brain tumor: case presentation. J Shoulder Elb Surg 2001;10:95–6.
[21] Brackstone M, Patterson SD, Kertesz A. Triple “E” syndrome: bilateral locked posterior fracture dislocation of the shoulders. Neurology 2001;56:1403–4.
[22] Mancini GB, Lazzere S. Bilateral posterior fracture-dislocation of the shoulder. Orthopedics 2002;25:433–4.
[23] Ide J, Honda K, Takagi K. Posterior dislocation of the shoulder associated with fracture of the humeral anatomical neck with 11-year follow-up after early open reduction and internal fixation. Arch Orthop Trauma Surg 2003;123:118–20.
[24] Hayes PRL, Klepps S, Bishop J, Cleeman E, Flatow EL. Posterior shoulder dislocation with lesser tuberosity and scapular spine fractures. J Shoulder Elb Surg 2003;12:524–7.
[25] Bozkurt M, Can F, Dogan M, Solak S, Basbozkurt M. Treatment of missed posterior dislocation of the shoulder by delayed open reduction and genoid reconstruction with cortico-cancellous iliac bone autograft. Arch Orthop Trauma Surg 2004;124:425–8.
[26] Sperling JW, Pring M, Antuna SA, Cofield RH. Shoulder arthroplasty for locked posterior dislocation of the shoulder. J Shoulder Elb Surg 2004;13:522–7.
[27] Stone JD, Wright TW. Posterior shoulder fracture dislocation in an osteogenesis imperfecta patient. Orthopedics 2005;28:1368–70.
[28] Spencer Jr EE, Brems JJ. A simple technique for management of locked posterior shoulder dislocations: report of two cases. J Shoulder Elb Surg 2005;14:650–2.
[29] Takase K, Watanabe A, Yamamoto K. Chronic posterior dislocation of the glenohumeral joint complicated by a fractured proximal humerus: a case report. J Orthop Surg 2006;14:204–7.
[30] Verma NN, Sellars RA, Romeo AA. Arthroscopic reduction and repair of a locked posterior shoulder dislocation. Arthroscopy 2006;22:1252.e1–5.
[31] Iosifidis MI, Giannoulis I, Traios S, Giantsis G. Simultaneous bilateral posterior dislocation of the shoulder: diagnostic problems and management. Knee Surg Sports Traumatol Arthrosoc 2006;14:766–70.
[32] Duralde XA, Fogle EF. The success of closed reduction in acute locked posterior fracture-dislocations of the shoulder. J Shoulder Elb Surg 2006;15:701–6.
[33] Martinez AA, Calvo A, Domingo J, Cuenca J, Herrera A, Martinez M. Allograft reconstruction of segmental defects of the humeral head associated with posterior dislocations of the shoulder. Injury 2008;39:319–22.
[34] Agarwal M, Khan WS, Trehan R, Syed AA, Giannoudis PV. Bilateral posterior fracture-dislocation of the shoulder presenting as a dissecting aneurysm of the thoracic aorta: an uncommon presentation of a rare injury. J Emerg Med 2008;35:265–8.
[35] Ikovic A, Boric I, Cicak N. One-stage operation for locked bilateral posterior dislocation of the shoulder. J Bone Jt Surg Br 2007;89:825–8.
[36] Chalidis BE, Papadopouloos PP, Dimitriou CG. Reconstruction of a missed posterior locked shoulder fracture-dislocation with bone graft and lesser tuberosity transfer. J Med Case Rep 2008;2:260.
[37] El Shewy MT, El Barbary HM, El Meligy YH, Khaled SA. Open reduction and posterior capsular shift for cases of neglected unreduced posterior shoulder dislocation. Am J Sports Med 2008;36:133–6.
[40] Mnif H, Koubaa M, Zrig M, Zrour S, Amara K, Bergaoui N, et al. Bilateral posterior fracture dislocation of the shoulder. Chir Main 2010;29:132–4.

[41] Gavrilidis I, Magosch P, Lichtenberg S, Habermeyer P, Kircher J. Chronic locked posterior shoulder dislocation with severe head involvement. Int Orthop 2010;34:79–84.

[42] Singh S, Tan CK, Brownson P. Missed posterior dislocation of the shoulder after intramedullary fixation of humeral fractures: a report of three cases. J Shoulder Elb Surg 2009;18:e33–7.

[43] Diklic ID, Ganic ZD, Blagojevic ZD, Nho SJ, Romeo AA. Treatment of locked chronic posterior dislocation of the shoulder by reconstruction of the defect in the humeral head with an allograft. J Bone Jt Surg Br 2010;92:71–6.

[44] Engel T, Hepp P, Osterhoff G, Josten C. Arthroscopic reduction and subchondral support of reverse Hill–Sachs lesions with a bioabsorbable interference screw. Arch Orthop Trauma Surg 2009;129:1103–7.

[45] Modi CS, Wicks L, Srinivasan K. Reconstruction of humeral head defect for locked posterior shoulder dislocation. Orthopedics 2009;32:691.

[46] Torrens C, Santana F, Melendo E, Marlet V, Caceres E. Osteochondral autograft and hemiarthroplasty for bilateral locked posterior dislocation of the shoulder. Am J Orthop (Belle Mead NJ) 2012;41:362–4.

[47] O'Neill D, Nair JR, Binymin KA. Simultaneous bilateral posterior fracture dislocation of the shoulders in a young man with unexpected severe vitamin D deficiency. Int J Gen Med 2012;5:399–402.

[48] Begin M, Gagey O, Soubeyrand M. Acute bilateral posterior dislocation of the shoulder: one-stage reconstruction of both humeral heads with cancellous autograft and cartilage preservation. Chir Main 2012;31:34–7.

[49] Banerjee S, Singh VK, Das AK, Patel VR. Anatomical reconstruction of reverse Hill–Sachs lesions using the underpinning technique. Orthopedics 2012;35:e752–7.

[50] Kokkalis ZT, Mavrogenis AF, Ballas EG, Papagelopoulos Pj, Zoubos AB. Bilateral neglected posterior fracture-dislocation of the shoulders. Orthopedics 2012;35:e1537–41.

[51] Moroder P, Resch H, Tauber M. Failed arthroscopic repair of a large reverse hill-sachs lesion using bone allograft and cannulated screws: a case report. Arthroscopy 2012;28:138–44.

[52] Sachs lesion of the epiphyseal humeral head. ISRN Surg 2011;2011:851051.

[53] Begin M, Gagey O, Soubeyrand M. Acute bilateral posterior dislocation of the shoulder: one-stage reconstruction of both humeral heads with cancellous autograft and cartilage preservation. Chir Main 2012;31:34–7.