

## Bilateral Recurrent Posterior Shoulder Dislocation on Bilateral Bankart Lesion: Case Report and Literature Review

Aimé Mbonda Noula<sup>1,2\*</sup>, Landry W Tchuenkam<sup>2,3</sup>, Ulrick Sidney Kanmounye<sup>4</sup> and René Essomba<sup>1,5</sup>

<sup>1</sup>Department of Surgery, National social Insurance Fond hospital, Yaounde, Cameroon

<sup>2</sup>Faculty of Medicine and Biomedical Sciences, University of Yaounde I, Cameroon

<sup>3</sup>Department of Surgery and Specialties, Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon

<sup>4</sup>Program in Global Surgery and Social Change, Harvard Medical School, Boston, MA, USA

<sup>5</sup>Higher Institute of Medical Technology, Yaounde, Cameroon

\*Corresponding Author: Aimé Mbonda Noulam, Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon.

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### Abstract

**Background:** Posterior glenohumeral dislocation is one of the rarest presentations of the shoulder dislocations. This is the displacement of the humeral head behind the humeral glenoid. It is usually due to high energy trauma such as is the case during epileptic seizures and electrocution. Due to the high energy trauma, soft tissue lesions can be associated to bone lesions like avulsions. The management of these dislocations can be conservative or surgical depending on the clinical presentation, association of bony lesions, radiological findings and the equipment available.

**Case Presentation:** A 23-year-old male porter presented to the Emergency Department with bilateral posterior dislocation of the shoulders confirmed on standard shoulder x-rays. The dislocations were initially managed conservatively but recurrence less than twenty-hours after closed reduction prompted further evaluations. A CT scan revealed bilateral bone Bankart lesions that were managed surgically under general anaesthesia by in situ screw fixation of the bone fragments. Clinical and radiological follow-up was done up to six months after surgery and results were satisfactory.

**Conclusion:** Bilateral posterior dislocation is a rare clinical entity; especially when associated to Bankart lesions. Management can be done surgically with satisfying results when arthroscopy is unavailable as it is the case in low resource settings.

**Keywords:** Shoulder Dislocation; Glenohumeral Dislocation; Posterior Shoulder Dislocation; Bankart Lesions; Recurrent Dislocation; Bilateral Dislocation

### Background

Shoulder dislocation is the most common human joint dislocation in the world, with an overall incidence ranging from 23.1 to 56.3 per 100,000 person-years [1,2]. It is the loss of contact between the articular surfaces of the humeral head and the glenoid of the scapula [3]. Dislocation of the shoulder can be anterior (more than 97%) [4], posterior (2 - 4%) [4] and inferior (0.5%) [4,5].

Posterior dislocation is described as the most under-diagnosed shoulder dislocation by Rockwood [6] with more than 60% misdiagnosis [7]. Posterior bilateral dislocations of the shoulders are rare presentations of the instabilities of the shoulders. Shoulder dislocations can be associated with several bone and soft tissue lesions. Associated bone lesions are generally identified on plain radiographs and are made up of Hill-Sachs deformities [8,9], Bankart lesions [10] and fractures of the greater tubercle [11]. The lesion is due to an anterior glenohumeral dislocation with ensuing lesion of the anterior glenoid labrum and posterior surface of the humeral head. Bankart lesion is termed bony Bankart when the aforementioned injuries are associated to a fracture of the antero-inferior glenoid cavity.

In this case report, our patient presented with bilateral recurrent posterior shoulder dislocations associated with bilateral Bankart lesions.

**Case Presentation**

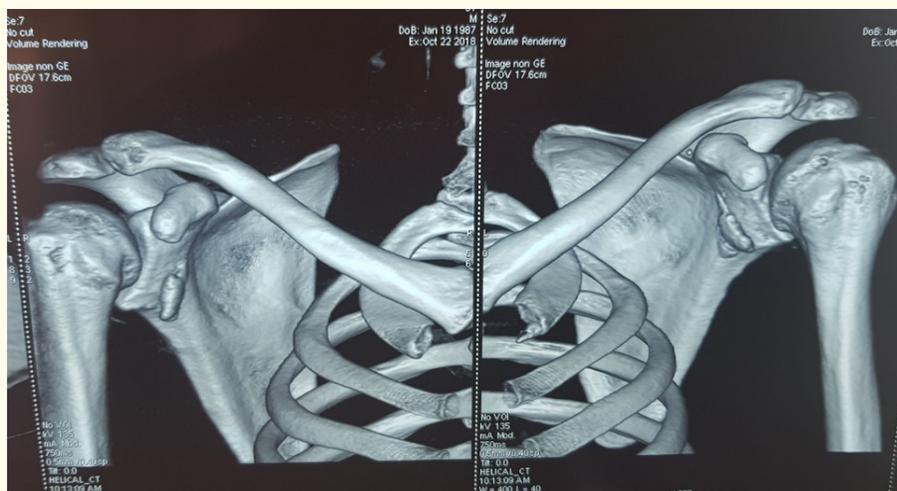
A 23-year-old black man, married, porter of semi-Bantu ethnic group was admitted to the emergency department of the Essos Hospital Centre following a fall from height. A few hours prior to admission, the patient had lost consciousness following a strong emotional event which led to him falling from height. The patient had no past history of loss of consciousness but he reported multiple low energy traumatic dislocations of the left shoulder since 9 months following a work accident. In addition, the patient reported traumatic dislocation of the right shoulder as a result of intense direct contact with another player during a football match. Both dislocations had been successfully treated orthopedically.

Physical assessment findings at admission noted a conscious patient with multiple maxillofacial abrasions, a superficial wound of the upper lip, both shoulder looked adducted and internally rotated with bilateral shoulder pain elicited by manipulation and limited in external rotation and abduction. The wound was disinfected, sutured and dressed and thereafter, the patient was sent to imaging for radiographic assessment of the shoulders. Bilateral shoulder x-ray series revealed bilateral posterior dislocation of the shoulders (Figure 1A).

Management was conservative and consisted in a closed reduction (Hippocrates) under general anaesthesia of both shoulders with immediate immobilization. Twenty-four hours later the posterior dislocation of both shoulders recurred in an atraumatic context despite immobilization. This motivated a CT Scan of both shoulders which revealed bilateral Bankart lesions that could justify the recurrent posterior glenohumeral dislocation (Figure 1B).



*A: Radiography of face*



*B: Scanner*

**Figure 1: Initial radiological assessments.**

The patient was scheduled for open reduction of both shoulders. Under general anaesthesia and antibiotic prophylaxis, the patient was positioned in semi-recumbent position. The first route was the traditional delto-pectoral route (Figure 2), the cephalic vein was identified and isolated together with the deltoid. The deltoid and pectoralis major were dissected over the entire incision to the deep plan followed by a capsulectomy which was done by means of a vertical incision. Surgical anterior dislocation of the humeral head revealed bilateral Bankart lesions. Abutment using screws was performed bilaterally with a screw on the right shoulder and two screws on the left (Figure 3).

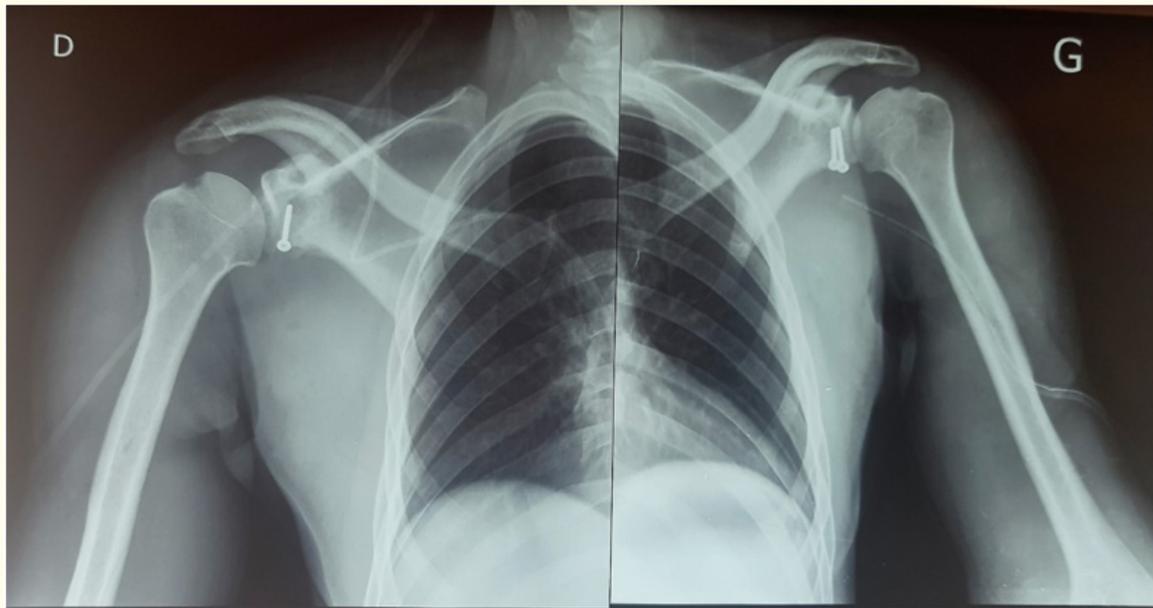


A: The screws  
1: Bankart Injury; 2: Et 3- VIS



B: Final suture

Figure 2: Surgical procedures.



A: Right shoulder

B: Left shoulder

Figure 3: Radiographies post operatories.

The postoperative suit was unremarkable. Physiotherapy using isometric movements was initiated on the fifth postoperative day and the patient was discharged on the tenth postoperative day. Check-ups were programmed monthly while the patient continued the physiotherapy exercises in our specialized physiotherapy department. The function of the shoulders was evaluated using the Constant-Murley Shoulder Outcome Score [12]. At six months we had a Constant-Murley Shoulder Outcome score of 60 for the left shoulder and 68 for the right shoulder. The patient was unable to do circumduction with both shoulders, both shoulders were stable but intermittently painful and muscle strength was effective. He started working again but had to be reassigned to the office.

**Discussion**

The shoulder is the most complex joint [13] and the most mobile [14] of the body. It offers the upper limbs a wide variety of movements such as abduction, adduction, flexion, extension, internal rotation, external rotation and 360 ° circumduction in the sagittal plane [14]. The shoulder is composed of three bones: the scapula, the clavicle and the proximal humerus. The glenohumeral joint is the main joint [6,14] of the four articular surfaces that form the shoulder (acromioclavicular joint, sternoclavicular, scapulothoracic and glenohumeral). The shoulder is reinforced by soft tissues such as ligaments, rotator cuff muscles and the joint capsule. The brachial plexus is responsible for the innervation of shoulder structures [13].

The shoulder’s anatomy makes it an unstable joint. Indeed, the glenohumeral joint is a ball joint with a shallow cup-shaped glenoid and a relatively larger spherical and humeral head. This configuration alone is inherently unstable and holds in place thanks to dynamic and static stabilizers (Table 1).

Static Stabilizers	Dynamic Stabilizers
Normal glenoid and humeral version	Rotator cuff muscles
Negative intra-articular pressure	Tendon of the long head of the biceps
The glenohumeral ligaments	Periscapular muscles
Labrum	

Table 1 : Static and dynamic stabilizers of the glenohumeral joint.

Shoulder dislocation can be considered a misnomer given that the dislocation involves glenohumeral joint and not the other shoulder joints. Glenohumeral dislocation has three presentations named after the position of the humeral head in relation to the humeral glenoid. The most frequent presentation is the anterior dislocation which represents more than 97% of cases [4]; it is usually due to high impact trauma to the externally rotated and extended upper limb [3]. Posterior dislocation of the shoulder represents 2 - 4% of glenohumeral dislocations [4]. The mechanism of injury is impact to the anterior surface of the shoulder and an axial load of the arm in internal rotation; it can also be due to violent muscular contractions (for example during seizures and electrocution). Inferior dislocation, also known as luxatio erecta, is the rarest type (less than 1%) [15]; caused by hyperabduction or axial load on the arm, it has the highest incidence of axillary nerve damage [3]. In our case report it was a recurrent bilateral posterior dislocation. This clinical entity is rare and difficult to diagnose.

The dislocated shoulder is found usually in high-energy trauma which partially or temporarily alter static and/or dynamic stabilizers. Good history taking will reveal [16]: severe pain, the impression that the shoulder slides out of the articulation during abduction and external rotation, numbness of the arm. At inspection the shoulder and the arm will be externally rotated (anterior dislocation) or adducted and internally rotated (posterior dislocation) and the shoulder will be deformed (epaulet sign) [16]. The anterior glenohumeral dislocation has the patient's arm anteriorly displaced, rotated outwards; the humeral head may be visible, felt anteriorly, and a void may be seen at the posterior surface of the shoulder [3]. In contrast, in posterior dislocations the arm is in internal rotation and adduction; the humeral head is protruding can be palpated at the back [3]. The overall fracture rate associated with dislocation of the shoulder is 29% [12] and it is due to brutal exit of the humeral head from the glenoid. Risk factors of fracture associated with dislocation include first-time dislocation, mechanism of injury [17] and patients aged 40 years or more. The most frequent bone lesion is Hill-Sachs lesion (35 - 40%) [9] in anterior dislocations of the shoulder; while upper tuberosity fractures account for 10 - 15% of humeral fractures [18] during shoulder dislocations. In 86-100% of shoulder dislocations, glenoid labrum is injured [19] and this lesion was first described by Arthur Bankart (1879 - 1951). Just 5% of Bankart lesions are associated with bone avulsions [20]. This was the case in this patient.

Independent of the type of glenohumeral dislocation there are two main options of initial care and they depend on the time of care and associated lesions (Table 2). In closed reductions there exist 23 different techniques and 17 modifications of these existing techniques [21]. A systematic review conducted in 2017 shows that scapular manipulation is the most successful (97%), fastest (1.75 min) and least painful (Visual Analogue Scale 1.47) reduction technique [22]. Conversely, the traction-countertraction technique yields more success (95%), but it is slower (6.05 min) and more painful (Visual Analogue Scale 4.75) [22].

When closed reduction techniques fail, open reduction (surgical) is strongly recommended [23]. On the other hand, open reduction techniques are recommended as the first-line in unstable fractures like those associated with a tuber fracture, a joint defect of the humeral head of more than 25% [9], a non-concentric glenohumeral reduction, a tear of the rotator cuff and an interposed tissue blocking an adequate closed reduction. It is considered non-elective and urgent in cases of irreducible dislocation [23]. However, in anterior glenohumeral dislocations there are factors to be considered for the decision between operative and non-operative treatment of the first-time anterior glenohumeral dislocation (Table 3). Open reductions are done under general anaesthesia and arthroscopy is the gold standard. Latarjet [24] was the first to describe a technique based on the transfer of the coracoid and it has since been modified several times over the years. Today, there is an arthroscopic variant of this technique [23]. In our case, we did not have the necessary equipment to do a less invasive arthroscopic approach so we opted for an open reduction with in situ bone fragment fixation with screws. This technique has been described by Saghiel, *et al.* [25] in 2013. Given our equipment and our surgical team's skill this seemed to be the appropriate and adequate surgical technique.

Classifications	Anterior dislocation	Posterior dislocation	Inferior dislocation
Closed Reduction	<ul style="list-style-type: none"> <li>Scapula manipulations</li> <li>Upright technique</li> <li>Prone technique</li> <li>Externak-rotation technique</li> <li>Milch technique</li> <li>Stimson technique</li> <li>Spaso technique</li> <li>Traction countertraction</li> <li>Farres technique</li> <li>Cunningham technique</li> <li>Davos technique</li> <li>Other methods include, the wrestling technique, chair technique, Eskimo technique, Hippocratic technique and Kocher’s method.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction involves axial traction on the adducted arm with the elbow flexed. While traction is applied, the arm is internally rotated and adducted. Sheets may be used in a similar manner to the traction-countertraction method to reduce an anterior dislocation [3].</li> <li>Direct pressure on the posterior aspect of the dislocated humeral head, directing it anteriorly, or gentle lateral traction using a sheet looped under the axilla to unlock the glenoid rim may assist reduction. If successful, the arm is immobilized in a neutral position.</li> </ul>	<p>“Traction-countertraction” in line with the abducted humerus. [6,91,92].</p>
Open reduction indications		<ul style="list-style-type: none"> <li>Delayed presentation to the emergency department (more than 6 weeks)</li> <li>Multipart or displaced fracture/ dislocations</li> </ul>	<p>“Buttonhole” deformity (humeral head is trapped in a tear of the inferior capsule) exists, in which case open surgical reduction is required [40]</p> <ul style="list-style-type: none"> <li>Humeral neck or shaft fractures should be done in a surgical setting</li> <li>Any potential of vascular injury</li> </ul>

**Table 2:** Therapeutic options according to classification.

Objective Considerations	Subjective Considerations
Age	WOSI Components
Sex	Physical symptoms of instability/pain
Contact vs. Non-contact Athlete	Limitations in work/recreation/sport
Mid-season athletic injury	Limitations to normal lifestyle activities
Overhead occupation (ex. Painter)	(ex. sleeping/fear of falling on shoulder)
	Emotional toll from instability (ex. Frustration from instability)

**Table 3:** Factors for consideration in operative versus non-operative care of the first-time anterior dislocation

Bankart soft tissue lesions are generally repaired by a good suture. When the soft tissue lesions are associated with bone avulsion (Bony Bankart), the aim of surgical treatment is to maintain the bone fragment for bone-to-bone treatment or to excise the bone if it is small.

According to a systematic review published in 2016 [26], the risk of recurrence after the first dislocation is 20%; it is higher in men than in women. Adjunct physical therapy post-surgical reduction showed a 50% decrease in glenohumeral dislocation recurrence [27]. Shoulder immobilisation seems less effective than early postoperative mobilisation in surgically treated glenohumeral dislocation [28].

### Conclusion

Bilateral posterior dislocation with associated Bankart lesions is an extremely rare clinical entity. This makes its diagnosis and management even more complex. The presentation of this case will give an insight of such a case in the literature and will draw the attention of the clinicians for a better investigation of the dislocations of the shoulder which can seem sometimes banal for the patients.

### Abbreviations

CT: Computed Tomography; MRI: Magnetic Resonance Imaging; VSA: Visual Scale Analogic

### Conflicts of Interest

The authors do not declare any conflicts of interest.

### Funding

No.

### Availability of Data and Material

'Not applicable' in this section.

### Ethical Considerations

- Written informed consent was obtained from the patient for publication of this case report and any accompanying images.
- A copy of the written consent is available for review by the Editor-in-Chief of this journal.
- Any identifying material has been removed, including the patient's name, date of entry, face or any distinctive features on the pictures taken.

### Authors 'Contributions

- AMN and LWT contributed to the design of the manuscript.
- AMN and RE operated the case.
- LWT, AMN, RE and USK contributed in critical reading.
- AMN and RE collected the pictures and obtained the guardian's consent.
- All authors have read and approved the final version of the manuscript.

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