

# Recent Traumatic Dislocations of the Shoulder in Adults: Epidemiological, Therapeutic and Evolutionary Aspects

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**How to cite this paper:** Bamba, I., Akobe, A.J.-R., Kouassi, K.J.-E., Ekra, S.A., Kouassi, A.N.A., De Randolphe Akpro, S.L., Soumahoro, I., Soro, Z.M., Ble, G.Y., Krah, K.L. and Kodo, M. (2023) Recent Traumatic Dislocations of the Shoulder in Adults: Epidemiological, Therapeutic and Evolutionary Aspects. *Open Journal of Orthopedics*, 13, 267-274.

<https://doi.org/10.4236/ojo.2023.137027>

**Received:** April 20, 2023

**Accepted:** July 9, 2023

**Published:** July 12, 2023

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## Abstract

**Introduction:** Shoulder dislocations represent about 50% of all joint dislocations. The objective was to describe the epidemiological, therapeutic and evolutionary aspects of traumatic shoulder dislocations in Bouaké. **Methods:** This retrospective and descriptive study was conducted between January 2017 and December 2019. It concerned patients over 15 years of age with a recent traumatic shoulder dislocation treated and followed in the department. The variables studied were epidemiological, therapeutic and evolutionary. The severity of the trauma was assessed according to the Injury Severity Score (ISS). Functional outcome was assessed according to the Constant score. **Results:** There were 49 patients (49 dislocations) out of 22,569 patients. The prevalence was 0.2%. The mean age was 32 years (17 - 62). There were 38 men (77.5%). The sex ratio was 3.4. Students predominated (n = 10; 20.4%). The etiology was dominated by road traffic accidents (n = 19; 38.8%). Anterior dislocation was the most common (n = 45; 92%). The ISS score was minor (n = 46; 93.8%). The mean time to reduction was 7 hours (4 - 16). Orthopaedic reduction using the Kocher technique predominated (n = 44; 89.8%). The mean duration of external rotation immobilisation of the shoulder was 23 days (16 - 45). Recurrence occurred in 8 patients (21.6%). The functional outcome at a mean Constant follow-up of 15 months (8 - 20) was satisfactory (n = 44; 89.8%). **Conclusion:** Traumatic dislocation of the shoulder represented 0.2%. Treatment was mainly orthopaedic. Recurrence was rare.

## Keywords

Adult, Shoulder, Anterior Dislocation, Traumatic, Orthopaedic Treatment

## 1. Introduction

Traumatic dislocations of the shoulder are common and account for approximately 50% of all dislocations [1] [2]. They are anterior in 95% to 97% [1] [2]. Young males are the most affected [3]. The etiologies are dominated by road traffic accidents and sports accidents [4]. The diagnosis is usually obvious on clinical examination [5] [6]. Treatment is an emergency and consists of early reduction followed by immobilisation of the limb. Treatment is usually orthopaedic [7]. The long-term evolution is sometimes marked by complications (recurrence, stiffness, instability) that can lead to socio-professional disability. Recurrence occurs in 85% to 92% of cases [3]. Although frequently encountered in our daily practice, no study relating to the epidemiology and management exists in Bouaké. The management of these injuries by re-harvesters in our context is a major problem for the management of these injuries. The aim of this study was to describe the epidemiological, therapeutic and evolutionary aspects of traumatic shoulder dislocation in adults in Bouaké.

## 2. Methods

This was a retrospective and descriptive study conducted in the trauma department of the University Hospital of Bouaké between January 2017 and December 2019. It concerned patients over 15 years of age with a recent traumatic dislocation of the shoulder treated and followed up in the department. The variables studied were age, sex, occupation, laterality, etiology, diagnosis, time and type of treatment, complications and functional outcome. The severity of the injury was assessed using the Injury Severity Score (ISS) [8]. Reduction was performed in the operating room and the shoulder was immobilised in external rotation with an orthopaedic waistcoat or mayo clinic for 3 weeks. Functional rehabilitation was performed after removal of the immobilisation. Functional outcome was assessed according to the Constant score [9]. The sample was exhaustive. Data were collected from medical records using an anonymous survey form. Data analysis was done using SPSS25 software.

## 3. Results

Forty-nine patients (49 dislocations) were collected out of 22,569 patients seen for limb trauma in the surgical emergency department. The prevalence was 0.2%. The mean age of the patients was 32 years (17 - 62). The sex ratio was 3.4. The dominant side was involved in 27 cases (55.1%). The epidemiological characteristics are summarised in **Table 1**.

Five patients (10.2%) had an anterior dislocation. Most of the dislocations were inaugural. The average admission time was 8 hours [2]-[20]. The anatomical and clinical characteristics are listed in **Table 2**.

The ISS score was minor in 94% of cases (n = 46), moderate in 4% of cases (n = 2) and severe in 2% of cases (n = 1). The average time to reduction was 8

hours [4]-[16]. The type of treatment is summarised in **Table 3**.

The average duration of immobilisation was 23 days (16 - 45). Adjuvant treatment was mainly analgesic. Rehabilitation was prescribed in all cases. Rehabilitation was performed in 9 patients (18%). Recurrence occurred in 8 patients (21.6%). At a mean follow-up of 15 months [8]-[20], 37 patients were reviewed and the overall functional result according to the Constant score is summarised in **Table 4**.

**Table 1.** Epidemiological characteristics.

Characteristics	Number	Percent (%)
<b>Sex</b>		
Male	38	77.5
Female	11	22.5
Total	49	100
<b>Occupation</b>		
Students	10	20.4
Workers and craftsmen	11	22.4
Fonctionnary	9	18.4
Tradesman	7	14.3
Housewives	6	12.2
Military	2	4.1
Farmers	2	4.1
Unemployed	2	4.1
Total	49	100
<b>Affecteted side</b>		
Right	23	46.9
Left	26	53.1
Total	49	100
<b>Circumstances</b>		
Road accident	19	38.8
Sport accident	14	28.6
Domestic accident	8	16.3
Brawl	5	10.2
Work accident	3	6.1
Total	49	100

**Table 2.** Anatomical and clinical characteristics and associated injuries.

Parameters	Number	Percent (%)
<b>Anatomical variety</b>		
Anterior dislocation	45	92
Subcoracoid	43	88
Extra coracoid	2	4
Posterior dislocation	2	4
Inferior dislocation	2	4
Total	9	100
<b>Associated injuries</b>		
Soft tissue wound	14	28.6
Hematoma of the axillary fossa	1	2
Homolateral humeral head fracture	1	2
Head injury	1	2
No injury	32	65.3

**Table 3.** Distribution according to type of treatment and type of immobilisation.

Treatment	Number	Percent (%)
<b>Orthopaedic</b>		
Kocher method	44	89.8
Milch method	4	8.2
Surgical reduction	1	2
Total	49	100
<b>Immobilisation method</b>		
Mayo clinic	28	57.2
Dujarier bandage	20	40.8
Gerdy plâster cast	1	2
Total	49	100

**Table 4.** Summary according to the global constant score.

Global score	Number	Percent (%)
>80/100 (excellent)	8	21.6
[65/100 - 79/100] (good)	15	40.6
[50/100 - 64/100] (average)	9	24.3
<50/100 (poor)	5	13.5
Total	49	100

## 4. Discussion

Traumatic shoulder dislocation accounted for 0.2% and the anterior variety predominated. Male students were most affected. Road traffic accidents were the main cause. Treatment was mainly orthopaedic. Recurrence was rare. The functional result according to Constant was satisfactory.

Traumatic dislocation of the shoulder (0.2%) was a rare reason for admission to the surgical emergency department of Bouaké University Hospital. Moreover, it is the most common traumatic dislocation in the literature [1]-[8] [10]. The age and gender observed in this study are consistent with the literature [2] [3] [4] [5]. The majority of the patients were young males who constituted the very active population. School and university students who played sports were most affected. This finding is consistent with Farber *et al.* [11] and McCarty *et al.* [12]. The dominant side was predominantly affected. It was the right side in 53%. Wei *et al.* [13] and Pavic *et al.* [14] found similar results of 57% and 66.5% respectively. This could be explained by the predominance of right-sidedness in the general population. Road traffic accidents were the main etiology. Sports accidents were the second most common. Other studies observed sports accidents as the main etiology. Owens *et al.* [15], Jan *et al.* [16] and Hovelius *et al.* [17] found 96%, 78% and 71% of cases to be sports-related respectively. Most dislocations were inaugural. The time to admission was relatively long. Unsuccessful attempts to reduce the injury by family and friends or by other peripheral health centres could explain this delay [18]. Anterior dislocation was the most frequent in accordance with the literature [1] [2] [3] [4] [5] [10]-[15]. The inferior and superior varieties are extremely rare and generally associated with severe trauma and high complication rates [19]. Dahmi *et al.* observed 8 cases of inferior dislocation over 11 years in Casablanca [19]. Associated injuries were dominated by soft tissue wounds. This is related to the low velocity of the trauma. Arthroscanner and arthro-MRI are currently the most effective techniques for assessing the extent and severity of the lesions, and for searching for associated lesions [10] [11] [12] [13] [14]. Only standard radiography was used for the assessment of our patients' injuries due to the lack of technical facilities.

Traumatic dislocation of the shoulder is a therapeutic emergency. Some authors recommended immediate surgical treatment [20] [21] [22]. Kavaja *et al.* in a meta-analysis argued that there was no obvious difference in outcome between orthopaedic treatment and surgery [23]. Treatment was mostly orthopaedic. Surgical treatment was performed in only one patient with an associated humeral head fracture. Overall, no single reduction technique has been shown to be superior, although there are many [24]. The authors advocated that a gentle, non-traumatic method should be used. Kocher's technique was the most widely used. No iatrogenic complications were noted. There was no current consensus on the position and type of shoulder immobilisation. Hovelius *et al.* [17] found no significant difference in recurrence rates between patients immobilised using the Dujarier technique and those immobilised using a sling [25]. Several studies

proposed external rotation immobilisation [23] like ours. However, it remains uncomfortable and therefore responsible for poor compliance compared to internal rotation immobilisation. In 2003, ITOI published the results of a study comparing the two immobilisation techniques, which concluded that 30% of recurrence occurred with internal rotation and 0% with external rotation [24]. Other authors, however, found no significant relationship with the recurrence rate when comparing the two types of immobilisation [23]. Immobilisation was systematic in all patients after reduction. The Mayo Clinic was most commonly used with the limb in external rotation for an average of 23 days. This technique is accessible to all, well tolerated but unstable over time. The duration of immobilisation was normal, in accordance with the recommended times [27] [28]. Rehabilitation was systematically prescribed but not regularly performed. Nine patients followed their rehabilitation sessions correctly. Complications were rare. They were recurrence. It was observed in patients who did not comply, who had too short a period of immobilisation and insufficient rehabilitation. However, the frequency of recurrent dislocation remains high according to the literature [18]. The importance of the immobilisation period necessary for the healing of the joint capsule as well as the importance of rehabilitation is unanimously accepted in the literature. The functional results according to Constant's criteria were excellent in the majority of cases [23]. This study has its limitations: it is retrospective and not comparative. The management by the re-boaters did not express the normal frequency of these dislocations because some patients were not managed in our centre.

## 5. Conclusion

Traumatic dislocation of the shoulder represented 0.2% of admissions in Bouaké. Young adult males were the most affected. Road traffic accidents were the main cause. The anterior subcoracoid variety was the most common. Treatment was mainly orthopaedic. Recurrence was rare. The functional outcome was satisfactory but could be improved.

## Conflicts of Interest

The authors declare that they have no ties of interest.

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