

## Traumatic Dislocations of the Hip

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### ABSTRACT

Hip dislocation is a therapeutic emergency, which results from violent trauma often associated with local or general lesions. Objective: In this study, we aimed to assess the treatment outcome of the follow-up of hip dislocation in Bamako, Mali. In our retrospective study, we recruited patients with traumatic hip dislocation from January 2012 to December 2016 and followed them up at the orthopedic and trauma department of the University Hospital (CHU) Gabriel Toure. In total, 81 patients (69 men and 12 women) with traumatic hip dislocation were included in our study with a sex-ratio of 5.7. The average age was 31.83 years old a standard deviation of 13.68 years old and extremes of 9 years old and 70 years old. Trauma was due to Public Road Accidents in 93.82% of the cases. The most frequent traumatic hip dislocation was anatomico-radiologic type I dislocation from Stewart and Milford with 62.96 %. Associated lesions were noticed in 67.90% of cases. In 97.53% of the patients underwent orthopedic treatment. Patients were followed up for at least a year. Complications were characterized by chronic pain in 48.14%. Outcomes were favorable in 51.85% of cases. Traumatic hip dislocation is common in young people in Mali. It is serious and may engage the functional prognosis of the hip, especially in case of associated lesions. The treatment has to be urgent and appropriate for a better outcome.

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### Introduction

Traumatic hip dislocation is the permanent displacement of the femoral head out of the acetabular "cavity" socket [1,2]. It requires significant trauma that explains the frequency of local and general associated lesions [1,3]. As a result of a high velocity trauma, traumatic hip dislocations represent a real traumatic emergency [1,2,3,4,5]. The treatment is more often orthopedic. The most important prognostic factors are the direction of the dislocation, seriousness of the trauma and the associated loco-regional and general lesions. The hip dislocation is characterized by a painful degenerative joint [7]. The purpose of our study was to assess the treatment outcome of this pathology in our department.

### Materials and Methods

It was a retrospective study from January 2012 to December 2016 on all patients with traumatic hip dislocation admitted and followed up in CHU Gabriel Toure. Our study included all patients who had a traumatic hip dislocation treated at CHU Gabriel Toure and followed up during at least 1 year. Neglected traumatic hip dislocations were not taken into account during this study. Pathological lesions were classified according to Stewart and Milford criteria. The results were 'evaluated' according to the functional rating of Harris.

### Results

In a 5-year period, 81 patients were recruited into our study with a male predominance with a sex-ratio of 5.7. The most represented age group was 21-40 years old with 58%. The average age was 31.83 years old with a standard deviation of 13.68 years old and the extremes of 9 years old

and 70 years old. Public road accident represented the most prevailing cause in 94%. Type I dislocation of Stewart and Milford accounted for 23.45% (19/81) followed by ipsilateral lower limb fracture with 17.28% (14/81) (fig. 2). Patients received orthopedic treatment in 96.29% (78/81) and surgical treatment in 2.71% (3/81). As a result, the treatment outcome was found excellent in 46.9%, good in 4.9%, fair in 39.5%, and bad in 8.6%. Excellent and good results were obtained with type I dislocation in 74% and 25%, respectively. Fair and bad were obtained with Type 2 dislocation in 91.7% and 25%, respectively. Type 4 dislocation results in bad outcome in 100% (Table 1). The differences in the results are statistically significant regardless the type of dislocation. Chi-square of Pearson = 92.745a; ddl = 9; P = 0.000. Orthopedic treatment permitted to obtain better results with statistically significant differences. Pearson's chi-square = 32.934; ddl = 3 and p= 0.000 (Table 2). Only a chronic pain on the movement of the hip was observed in 27.16% and in 18.51% of cases associated with limping.

**Table 1. Distribution of the result obtained according to the anatomico-radiological types of hip dislocation.**

Stewart and Milford's hip dislocation	Result				Total
	Excellent	Good	Fair	Poor	
<b>Type 1</b>	74,5%	3,9%	19,6%	2,0%	100,0%
<b>Type 2</b>	0,0%	4,2%	91,7%	4,2%	100,0%
<b>Type 3</b>	0,0%	25,0%	0,0%	75,0%	100,0%
<b>Type 4</b>	0,0%	0,0%	0,0%	100,0%	100,0%
<b>Total</b>	46,9%	4,9%	39,5%	8,6%	100,0%

**Table 2. Distribution of the result obtained according to the type of treatment.**

anatomoradiologic Types	Result				Total
	Excellent	Good	Fair	Poor	
Orthopedic Treatment	48,7%	5,1%	41,0%	5,1%	100,0%
Surgical Treatment	0,0%	0,0%	0,0%	100,0%	100,0%
<b>Total</b>	<b>46,9%</b>	<b>4,9%</b>	<b>39,5%</b>	<b>8,6%</b>	<b>100,0%</b>

### Discussion

Our study had some limitations. At the epidemiological level, there was a male predominance with 85% of cases which was confirmed by the literature. Our result is similar to those of Onyemaechi *et al.*, (81.30%) [10], Dwyer *et al.*, (85.75%) [11], higher than that of Meyer. A *et al.*, (75%) [2] but lower than those of Durakbasa *et al.*, [12], and Abdulaziz M [13] 90% each. The average age of our series was 31.7 years old. In the literature this average age is in the third decade: Onyemaechi *et al.*, (34.8 years) [10], Dwyer *et al.*, (39.5 years) [11], Durakbasa *et al.*, (35 years) [12], Abdulaziz M *et al.*, (29.6 years) [13]. Public road accidents accounted for 94% of traumatic dislocation. Most authors found a predominance of traffic accidents as a cause: Meyer. A *et al.*, (62%) [2], Dreinhöfer *et al.*, (70-85%) [6], Onyemaechi *et al.*, (91.6%) [10], Durakbasa *et al.*, (80%) [12]. Our result is clearly superior to those of the literature. This is explained by the upsurge of (public road accident) especially the proliferation of two-wheeled vehicles. It was noticed that 73% of patients had no particular medical record. Furthermore, we found no case referring to antecedents which, if they exist, may compromise the diagnosis of an injured person. Type I dislocation of Steward and Milford was the most common anatomico-radiological type (62.92%). Our data are close to those of Abalo A *et al.*, (60.37%) [14]; on the other hand Pascal. C *et al.*, [15] found type II dislocation to be the most frequent (43.75%). Associated lesions were observed in 67.90% of cases. The same findings were made by authors such as Dreinhofer *et al.*, (lesions are combined remotely with 37 cases of head trauma, 22 cases of chest trauma, 10 cases of abdominal trauma and 2 cases of spinal trauma). The frequency of these local and general associated lesions confirms that traumatic hip dislocation almost always occurs as a result of a high energy trauma often in a ploy-traumatic context. We performed 96% of orthopedic treatment. The reduction of dislocation under general anesthesia followed by condylar trans-osseous traction during 3 weeks for dislocation and dislocation-fractures after a reduction was performed. We performed three operations of blood reduction for irreducibility dislocation. We proceeded by Moore's posterolateral approach on an ordinary table in two cases. We extricated small fragments from the posterior wall, source of irreducibility, then to the reduction of dislocation with trans-condylar traction. In the third case (Fig. 4), we proceeded by Kocher-Langenbeck on an ordinary table in contralateral decubitus, before we discover a comminuted fracture of the posterior wall with a large fragment inside the acetabulum. (fig 4c). Abdulaziz M *et al.*, [13] and Pascal.C *et al.*, [15] performed orthopedic treatment in 98.27% and 69.6%, respectively. At the end of the treatment we noticed some complications after a follow up of at least a year such as chronic pain in 22 cases, limping in 3 cases. We did not observe aseptic necrosis of the femoral head or osteoarthritis. In the literature, according to the statistics the risk of necrosis varies between 3-15%. Its radiological image appears on average the 7<sup>th</sup> month but can be seen at the 3<sup>rd</sup> or 12<sup>th</sup> month,

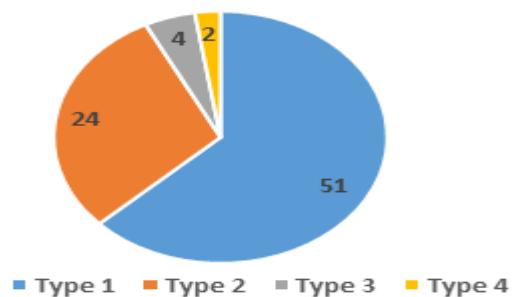
Bhandari. M *et al.*, [17] found 25.5% osteoarthritis and Yang R S *et al.*, (18) observed 70%, aseptic necrosis of the femoral head. Our short-term complications of chronic pain and lameness can be explained by the frequency of acetabular and associated osteo-articular lesions as well as early support by some parents. The non-observation of aseptic osteonecrosis on standard radiography can be explained by the lack of literature review in one hand, and the lack of investigation (successful examination to detect necrosis at a subclinical stage). Thus, according to Harris score, our results in term of percentage were as follow: 51% excellent/good, 39.5% fair and 8.64% poor. The results are generally good in the short-term but are more mixed and conditioned by the appearance of a late complication in the long term.

### Conclusion

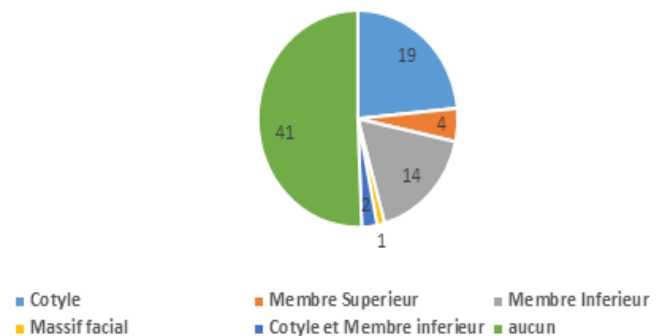
Traumatic hip dislocation is relatively less frequent but severe and can obstruct the movement of the hip, especially with the frequency of associated lesions. The treatment should be urgent and appropriate for a better functional outcome of the hip.

### Annexes

Fréquence Types anatomoradiologiques



**Figure 1. Case Distribution by Frequency of Stewart and Milford's anatomico-radiological Types of hip dislocation.**



**Figure 2. Case Distribution by Frequency of Associated Types of Lesions.**

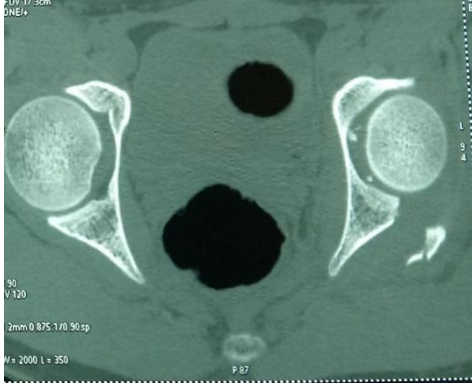
**Figure 3: Left iliac dislocation**



**3A- Figure 3. Left iliac type II dislocation of Stewart and Milford.**



**3B- Orthopedic reduction of dislocation**



**3C- Image CT after reduction: axial section: fracture of the posterior wall with incarceration “presence” of small fragments not visualized “visible” on standard radiography.**

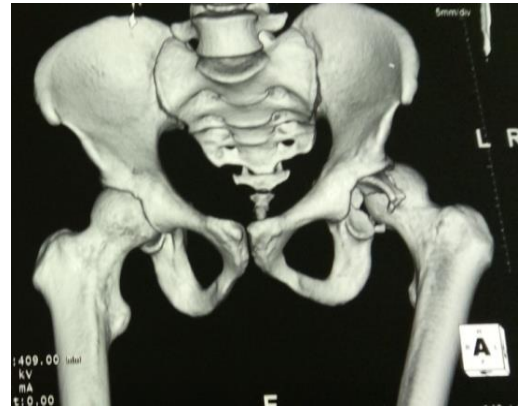


**3D -Image CT -3D: post-reduction: showing a fracture of the posterior wall not visualized “visible” on standard radiography.**

**Figure 4: irreducible left iliac dislocation**



**4A- Posterior high dislocation with comminuted posterior wall fracture (type III dislocation of Steward and Milford).**



**4B- CT image with 3D: showing fragments incarcerated in the acetabular wall (irreducible dislocation).**



**4C- Large fragment of the posterior wall (intraoperative) by the way of Kocher and Langenbeck.**



**4D - Extrication of the large fragment - reduction of dislocation by Kocher and Langenbeck - screwing of the large fragment of the posterior wall.**

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