

Traumatic Hip Dislocations in Adults at the National Reference University Hospital of N'djamena (Churn)/Chad

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Abstract

Introduction: Traumatic hip dislocation, defined as the complete and permanent displacement of the femoral head from the acetabular cavity following a violent trauma, is a medical emergency. The aim of this study was to investigate the epidemic-clinical profile and report the outcomes of its management. **Patients and Methods:** This was a 6 years retrospective study, from January 2017 to December 2022, including all patient records of those admitted and treated for traumatic hip dislocation of all types in the Orthopedics and Traumatology Department of the University Hospital of Normandy (CHU-RN). Records of patients discharged against medical advice and incomplete records were excluded. The variables studied were sociodemographic, clinical, therapeutic, and outcome-related. Functional outcome was assessed using the Postel and Merle d'Aubigné score. **Results:** Our series comprised 36 cases of traumatic hip dislocations out of a total of 1996 admissions, representing a frequency of 1.8%, with a male predominance of 25 cases (69%) and a mean age of 30 years (range: 18 - 47). Road traffic accidents were the most common cause, accounting for 78% of cases. Six cases (17%) had been dislocated previously. Dislocations were of a long-standing nature: 32 were iliac (92%), 1 was sciatic (2.7%), 1 obturator (2.7%), and 2 were central (5.5%). Associated lesions were observed in 14 patients (38.8%), with 16 lesions, predominantly acetabular fractures in 9 cases (25%). Reduction was performed in the emergency department using external manipulation in 30 cases (83%). At a minimum follow-up of 18 months, our results were acceptable in 30 cases (83%). Four cases of coxarthrosis and two cases of osteonecrosis of the femoral head

were observed. **Conclusion:** Hip dislocation is a common trauma emergency. Associated fractures increase the risk of complications. Early diagnosis with urgent reduction improves the prognosis.

Keywords

Traumatic Dislocation, Hip, Treatment, Outcome, N'Djamena, Chad

1. Introduction

Traumatic hip dislocation has become increasingly common in recent decades due to the rise in road traffic accidents. It accounts for 5% of all dislocations [1], and accidents are responsible for more than 60% of hip dislocations [2] [3]. It can be accompanied by other injuries such as fractures, thoracoabdominal and spinal injuries, which are life-threatening if not treated promptly [2]. Diagnosis is most often clinical; an anteroposterior and lateral pelvic X-ray is necessary and mandatory in any suspected dislocation to confirm the diagnosis [3]. Diagnosis is sometimes difficult, especially in the context of polytrauma [4].

It is an absolute medical emergency that can compromise the functional prognosis of the hip, hence the need for rapid reduction after its occurrence [5]. Complications are not negligible and are dominated by the risk of post-traumatic osteoarthritis and necrosis of the femoral head [1].

Given the high incidence of road traffic accidents and the lack of precise data on hip dislocations in our region, we deemed it useful to conduct this study. The objective was to describe the epidemiological, clinical, therapeutic, and prognostic aspects of traumatic hip dislocations in the orthopedic and trauma surgery department of the University Hospital Center of N'Djamena (CHU-RN).

2. Patients and Methods

This was a single-center, retrospective, cross-sectional study conducted from January 2017 to December 31, 2022 (5 years) in the orthopedic and trauma surgery department of the CHU-RN in N'Djamena. This study included all patient records of those with radiographically confirmed acetabular-femoral dislocation who were treated and followed up in the department during the study period. Records of patients discharged against medical advice and incomplete records were excluded. The variables studied were epidemiological (age, sex, occupation), clinical (etiological circumstances, mechanism, functional signs, classification, associated injuries), therapeutic (reduction method, time to treatment), and outcome (functional result according to Postel and Merle d'Aubigné and complications).

Data were collected using a pre-established individual questionnaire and the department's hospitalization and outpatient records, as well as the operative reports and nurses' on-call logs. Anatomopathological analysis was performed on radiographic and sometimes CT scans, and the lesions were classified according to Bigelow [6]. The functional outcome was assessed according to the Postel and

Merle d'Aubigné score (PMA) [7] (the outcome is said to be excellent when PMA is 18, very good PMA 17, good PMA 15 - 16, passable PMA 13 - 14, poor PMA 9 - 12 and mediocre PMA < 9) with a minimum follow-up of 18 months. Data were analyzed using Epi Info 7 software. Results were presented in tables, figures, and text. They were expressed as percentages and absolute numbers.

3. Results

During the study period, 44 hip dislocation cases were identified, including 6 cases of discharge against medical advice, 2 unusable cases, and 36 cases of traumatic hip dislocations meeting our criteria out of 1996 cases of admission to the department, representing a hospital frequency of 1.8%. Males predominated with 25 cases (69.4%), and the male-to-female ratio was 2.27. The mean age was 30 years, ranging from 18 to 47 years, with a predominance of patients in the 18 - 23 age group. **Table 1** shows the distribution of patients according to occupation and etiological circumstances, and **Table 2** shows the clinical characteristics. The dislocations were recent in 30 cases (83%) and old in 6 cases (17%). Emergency orthopedic reduction by external manipulation was performed in 30 patients (83%). Surgical treatment was performed in 10 patients (28%). These included one case of open reduction after failed orthopedic treatment, six cases of open reduction for old dislocations, and three cases of acetabular osteosynthesis for fracture-dislocations. **Table 3** summarizes the management of associated injuries. At a mean follow-up of 18 months, the outcome was favorable in 30 cases (83%). We observed 4 cases of coxarthrosis and 2 cases of osteonecrosis of the femoral head. The overall clinical and functional results according to the PMA score are summarized in **Table 4**.

Table 1. Distribution of patients according to occupation and etiological circumstances.

Occupations	n	%
Drivers and motorcycle taxi drivers	7	19
Shopkeeper	3	8
Electrician	1	3
Students	16	44
Teacher	2	5
Housekeeper	2	5
Military personnel	6	16
Total	36	100
Admission time (in days)		
<1 day	30	84
1 - 21 days	1	3
22 - 45 days	2	5
46 - 60 days	1	3
>60	2	5
Total	36	100

Continued

Mechanisms		
Road traffic accident	28	
Home accident	2	
Sports accident	6	16.5
Total	36	100

Table 2. Clinical characteristics.

Functional signs	n	%
Pain 3	36	100
Functional impairment	36	100
Deformity	26	72
Mobility	25	69.44
Side affected		
Right	6	17
Left	30	83
Total	36	100
Bigelow classification of dislocation		
Obturator	2	8
Iliac	33	89
Ischial	1	3
Total	36	100
Associated injuries		
Without injury	22	62
With injury	14	38
Total	36	100
Various associated injuries		
Femoral shaft fracture	3	9
Femoral head fracture	1	3
Acetylaris fracture	9	25
Obturator ring fracture	1	3
Tibial plateau fracture	1	3
Scalp laceration	1	3
Time to treatment		
≤6	21	58
6 - 12	6	17
12 - 24	4	11
≥24	5	14
Total	36	100

Table 3. Distribution of patients according to the treatment of associated injuries.

Associated Injury	Treatment	n	%
Femoral Fracture	Osteosynthesis	3	5.55%
Femoral Head Fracture	Functional	1	2.77%
Acetabular	Functional	6	19.44%
	Osteosynthesis	3	5.55%
Tibial Plateau	Orthopedic	1	2.77%
Scalp	Wound Debridement	1	2.77%

Table 4. Overall functional outcomes according to the PMA score.

PMA Score	n	%
Excellent	8	22.5
Very good	14	39
Good	4	11
Fair	4	11
Mediocre	2	5.5
Poor	4	11
Total	36	100

4. Discussion

Over a 6-year period, we collected 36 cases of traumatic hip dislocations out of 1996 admissions, representing a frequency of 1.8%, with an average of 6 cases per year. This frequency is similar to that reported by Akobé [8], who found a rate of 1.7% in his study. Discharges against medical advice in favor of traditional treatment could explain this frequency, which appears to be underestimated. Our study shows that traumatic hip dislocations are more common in young males, who are more active and therefore more exposed to various types of trauma. The same observation is made in the work of several authors [8]-[11]. The socio-professional class varies from one series to another, but victims are often involved in road traffic accidents. In our series, dislocations affected several socio-professional classes, with a predominance of students followed by motorcycle taxi drivers. Akobe *et al.* [8] report the predominance of traders. All the socio-professional groups mentioned are very active and, in most cases, use two-wheeled vehicles for transportation, exposing them to road traffic accidents. Regarding the etiological circumstances, road traffic accidents were the cause of traumatic hip dislocations in 78% of cases in our study, as described in the literature [9]-[12]. The predominance of road traffic accidents in the circumstances of occurrence could be due to the growth in the number of cars and two-wheeled vehicles, and to non-compliance with vehicle inspection standards and the highway code. As for the clinical varieties, high posterior (iliac) dislocations were the most frequent, 92%, consistent with data from other authors [11] [13] [14]. This anatomical and clinical

presentation can be explained by the dashboard mechanism, often observed in road traffic accidents. Indeed, this region is characterized by a predominance of muscle mass and a weakness of the ligamentous apparatus.

Associated lesions were observed in 14 patients (38.8%), with 16 lesions, and these were dominated by acetabular fractures, occurring in 9 cases (25%). Akobe *et al.* [8] found a similar result. Since the acetabulum is the bone in direct contact with the femoral head, it is easier to understand why it is the first to fracture during violent displacement of the latter. This supports the hypothesis that traumatic hip dislocations are caused by high-energy trauma dominated by the dashboard mechanism. Dislocations were reduced in the emergency department under general anesthesia by external manipulation in 30 cases (83%). In the literature, this treatment method is more commonly used in cases of traumatic dislocation. Surgical treatment was indicated for irreducible traumatic hip dislocations and hip fracture-dislocations, as described in several series in the literature [15]. Thus, open reduction was performed on one patient after failure of orthopedic treatment and three fracture-dislocations with osteosynthesis of the acetabulum. Six old dislocations (five iliac, one obturator) also underwent open reduction with unsatisfactory results upon evaluation. The treatment of choice for neglected hip dislocations is total hip arthroplasty [16] [17], but our patients, often with a low socioeconomic status and no health insurance, cannot afford the cost of these prostheses.

At a mean follow-up of 18 months, we recorded two cases of osteonecrosis of the hip joint and four cases of coxarthrosis. Garret *et al.* [18] found 11 cases of femoral head necrosis after a follow-up period ranging from 1 to 8 years for irreducible dislocations. Other studies have shown that the number of necrosis cases increases with follow-up [19] [20].

5. Conclusion

Hip dislocation is a common trauma emergency. Its frequency is constantly increasing in our setting due to urbanization and the motorization of transportation, constituting a genuine public health problem. Iliac dislocation was the most frequent. It was most often associated with an acetabular fracture. When reduced urgently or as soon as possible, hip dislocations have good outcomes. However, osteoarthritis of the hip remains the most frequently observed complication. The only truly effective treatment lies in the prevention of road traffic accidents.

Author Contributions

Conceptualization, Andjeffa Valentin and Adendjingue Daniel Mossalbaye; methodology, Andjeffa Valentin; software, Andjeffa Valentin; validation, Andjeffa Valentin, Adoum Allamine, and Larguet Djimet Hiby Lantar1; formal analysis, Andjeffa Valentin; investigation, Minguemadji Service; resources, Medilla Moussa Ali; data curation, Andjeffa Valentin; writing—original draft preparation, Andjeffa Valentin; writing—review and editing, Andjeffa Valentin; visualization, Dingamnodji

Magloire; supervision, Daffe Mohamed; project administration, Andjeffa Valentin; funding acquisition, Adendjingue Daniel Mossalbaye. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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