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Treatment of Pelvic Limb Fractures in a Hospital of 2e Reference in Mali

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Abstract

Introduction: A fracture is a solution in the continuity of a bone. Pelvic limb fractures may involve one or more of the bones. They constitute a real public health problem, which requires the identification of the factors inherent to this phenomenon for better prevention, but also for quality management of fractures and sequelae. **Objectives:** Were to describe the epidemiological, clinical and therapeutic profile of pelvic limb fractures in Timbuktu Hospital. **Patients and Method**: We conducted a prospective, descriptive study in the Surgery Department of Timbuktu Hospital, covering a period of one year from January 1 to December 31, 2017. We collected 39 patients who presented with fractures of the pelvic limbs, who were hospitalized and monitored throughout our study. **Results**: We obtained a hospital frequency of 2.86% limb fractures. Among the 39 patients included in our study, the male sex was predominant in 69.2% of cases, the average age of our patients was 20.5 years. Pupils and students were in the majority in 48.7% of cases. Road traffic accidents were the most common cause of fracture with 59.0% of cases. The tibia was the most affected segment in 38.5% of cases. Surgical treatment was predominant in 64.0% of cases. We obtained very good results in 94.87% of cases. **Conclusion**: Limb fractures remain frequent due to road traffic accidents. Osteosynthesis treatment provides a good result with fewer complications.

Keywords

Fractures, Pelvic Limb, Surgical

1. Introduction

A fracture is a break in the continuity of a bone [1].

Pelvic limb fractures may involve one or more of the following bones: pelvic bones, femur, patella, tibia, fibula and foot bones.

They constitute a real public health problem that requires the identification of the factors inherent to this phenomenon for better prevention, but also for quality management of fractures and after-effects [2].

In Mali, in 2005, Bapa found during his study at Gabriel Touré Hospital that 65.8% of road traffic accident victims had fractures of the limbs [3].

In 2008, a study conducted by Da *et al.* on limb fractures in trauma emergencies in Ouagadougou found a frequency of 17.5% [4].

The diagnosis is most often obvious by clinical and especially imaging signs.

Treatment is based on immobilization of the fracture site after reduction either by orthopedic or surgical methods.

In view of the seriousness of this phenomenon, we initiated this study on pelvic limb fractures in Timbuktu Hospital in order to determine the epidemiological, clinical and therapeutic aspects of these injuries.

2. Patients and Method

This was a prospective, descriptive study from January 1 to December 31, 2017, a one-year study that included 39 patients.

The study included all patients with a pelvic limb fracture that occurred on a healthy limb, within 3 weeks or less, treated and followed up in the surgical department during the study period.

Patients with a fracture on a pathological limb, patients discharged against medical advice, or lost to follow-up, patients with a fracture older than 3 weeks were the exclusion criteria of the study.

Study parameters were: age, sex, occupation, etiology, time of accident, time to management, clinical and paraclinical aspects, therapeutic conduct, treatment outcome.

Data were collected on an individual chart, medical records of patients hospitalized in the department, and registers of operative and outpatient reports.

3. Data Entry, Processing and Analysis

Data entry and analysis were done on Epi info 7 software. Association between variables was performed with the Chi-square test. The significance threshold was set for a p-value < 0.05. Statistical analyses were performed with a 95% confidence interval.

Word processing, tables were done with Microsoft Word 2016 software and graphics with Excel 2016 software.

4. Ethics

Participation in this study was voluntary. We used anonymous survey forms. The information given by each patient was completely confidential and would not be disclosed. It was used for research purposes only.

5. Results

5.1. Epidemiology (Table 1)

Of 2797 consultations performed in the Emergency Department from January 1 to December 31, 2017 at Timbuktu Hospital, we identified 80 cases of pelvic limb fractures, representing a hospital frequency of 2.9%.

The age group 11 - 20 years was the most represented with 13 cases or 33.3% with a male predominance of 69.2%.

92.3% of the patients were from the city of Timbuktu. Students represented 48.7%.

Road accidents were the main cause with 59.0% and occurred in 56.41% of cases between 16:00 and 23:00.

Table 1. Distribution of patients by sociodemographic characteristics.

Parameters	Workforce	Percentage
	AGE RANGE	
[0 - 10]	10	25.6
[11 - 20]	**13**	**33.3**
[21 - 30]	8	20.5
[31 - 40]	5	12.8
[51 - 60]	3	7.7
	SEX	
Male	**27**	**69.2**
Female	12	30.8
	PROFESSION	
Unemployed	6	15.4
Shepherds	2	5.1
Pupils/Students	**19**	**48.7**
Merchants	3	7.7
Households	5	12.8
Mechanics	1	2.6
Military	2	5.1
Public servant	1	2.6

5.2. Clinical (Table 2, Figure 1, Figure 2)

Patients were managed within the first 24 hours in 89.7% of cases. The left lower limb was the most affected with 64.1%. Fractures were closed in 74.4% and articular in 69.2% of cases. The tibia was the most affected bone segment with 38.5% associated with the fibula in 20.5%.

Table 2. Distribution of patients by clinical characteristics.

Parameters	Workforce	Percentage
ETIOLOGY		
Road accident	**23**	**59.0**
Sports accident	2	5.1
Domestic accident	13	33.3
Firearm	1	2.6
FRACTURED LIMB		
Right lower limb	13	33.3
Left lower limb	**25**	**64.1**
Right and left lower limb	1	2.6
TYPE OF FRACTURE		
Closed fracture	**29**	**74.4%**
Open fracture/Gustilo 1	2	5.3
Open fracture/Gustilo 2	5	12.8
Open fracture/Gustilo 3A	2	5.1
Open fracture/Gustilo 3B	1	2.6
SITE OF THE FRACTURE		
Extra-articular	12	30.8
Articular	**27**	**69.3**
BONE SEGMENT FRACTURE		
Femur	10	25.6%
Femur + tibia	2	5.2
Tibia	**15**	**38.5%**
Fibula	1	2.6%
Tibia-fibula	8	20.5%
Tarsal bones	1	2.6%
Metatarsus	1	2.6%
Toes	1	2.6%
TYPE OF TREATMENT		
Circular plaster	13	33.4%
Splint	1	2.6%
Screwed plate	7	17.9%
External fixer	9	23.0%
Pinning + splinting	7	17.9%
Screwing	2	5.1%

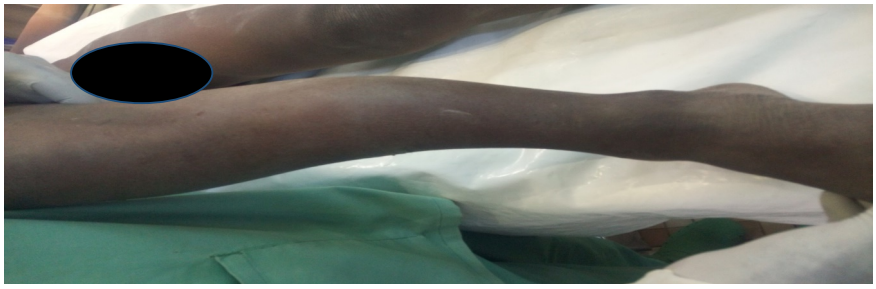

Figure 1. Fracture of the leg seen clinically.

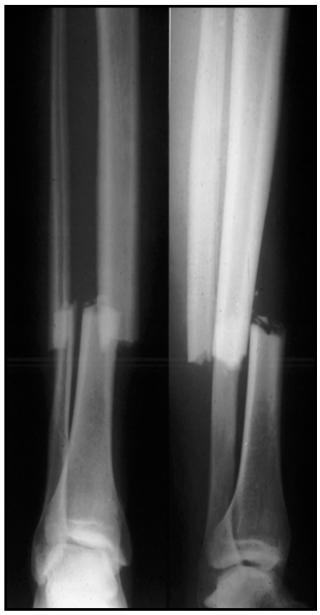

Figure 2. Radiograph of a leg fracture.

Standard radiography was the complementary examination performed in 100% of the cases associated with biology in 64.1%.

5.3. Treatment (Figure 3, Figure 4)

Treatment was surgical in 64.0% of patients. The duration of hospitalization was less than or equal to 7 days in 52.8% of cases. All patients received functional rehabilitation.

5.4. Evolution

The outcome was favorable in 37 patients (94.9%) and 2 cases (5.1%) presented with vicious calluses.

5.5. Discussion

During the realization of this work, we met enormous difficulties related to the insufficiency of the technical platform, the abandonment of the treatment by certain patients in favour of the traditional treatment due to the lack of financial means.

Figure 3. Postoperative screw plate osteosynthesis of the tibia.

Figure 4. Clinical view of the patient at 2 months.

Of 80 cases of fractures identified in the Emergency Department from January 1 to December 31, 2017 at Timbuktu Hospital, 39 cases involved pelvic limbs, a frequency of 48.8%.

The male sex (69.2%) with a majority of young people were the most affected. This result is higher than that obtained by Manou *et al.* who found 64.7% male predominance [5].

This predominance of the male sex could be explained by the fact that men use more means of locomotion and especially take much more risk with the machines, driving at high speed.

Students were the most affected professional class with 48.7% of cases. Mensah *et al.* in Benin found 24.6% of cases [6].

Road traffic accidents accounted for 59.0% of the causes of fractures.

This result corroborates that reported by Camara in whom road traffic accidents were the main etiology of fractures with 46.0% of cases [7].

These results can be explained by the high number of two-wheelers and the lack of respect for traffic regulations by users.

89.7% of patients were treated within the first 24 hours due to the availability of first aid kits and the fact that the majority of our patients came from the city of Timbuktu and were therefore closer to the hospital.

Standard radiography was the only examination performed in 100% and combined with biology usually in cases of surgically treated fractures. This would be explained by the fact that radiography is the most accessible examination for confirmation of fractures.

Fractures were closed in 74.4% of cases and the tibia was the most affected with 38.5%. This result corroborates with that of Camara [7].

This can be explained by the fact that the leg, without any protection, is quite exposed to the slightest shock.

Treatment was surgical in 64.0% of cases. This result differs from that of Da *et al.* in whom orthopedic treatment was most commonly used with 83.5% of cases [4].

This difference could be explained by the fact that many of our fracture cases met the indications for surgical treatment (open, articular, non-orthopedically reducible fracture) and by the patients' difficulty in paying for the surgical kits in the study by Da *et al.*

All the patients had benefited from functional rehabilitation, thanks to the collaboration between the Traumatology Unit and the Physiotherapy Unit.

The outcome of the treated patients was good in 94.9% and 2 cases (5.1%) showed vicious callus. This is explained by the rapid and effective management of fractured patients and their monitoring during treatment.

5.6. Conclusions

The objective of this study conducted at Timbuktu Hospital was to investigate the epidemiological, clinical and therapeutic aspects of pelvic limb fractures, with the aim of identifying the causes and improving the management of fractured patients.

It identified road traffic accidents as the dominant etiology. It was found that young people (pupils and students) were the most affected with a clear male predominance.

Fractures were mostly closed and the leg segment was the most affected.

Surgical treatment was the most commonly used therapeutic method. Rehabilitation was performed in all patients and the result after treatment was in the majority of cases good.

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This is a self-funded study.

Conflicts of Interest

The authors declare no conflict of interest in connection with the writing of this article.

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