

Intramedullary Nailing of Diaphyseal Fractures of the Femur in Adults Without Fluoroscopy. What are the Results?

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Abstract

Introduction: Diaphyseal fractures of the femur are common and mainly affect young, active people with considerable socioeconomic repercussions. Intramedullary nailing is the treatment of choice. The aim of this work was to contribute to improving the surgical management of diaphyseal fractures of the femur.

Materials and Methods: This was a retrospective, descriptive and analytical study over a 5-year period from May 2019 to April 2024 involving 50 adult patients operated on for a diaphyseal fracture of the femur and who underwent osteosynthesis by intramedullary nailing. The fractures were classified according to the AO classification. The results were assessed according to the Thoresen score.

Results: The average age of the patients was 34 years. Male gender was predominant with 80% of cases. The etiologies were dominated by road traffic accidents in 90% of cases. Fractures were closed in 76%. Simple type A fractures were predominant with 68% of cases. Nailing was locked in 76% of cases, static in 54% of cases and dynamic in 22% of cases. Consolidation was achieved in 96% of cases with an average time of 3.4 months. The overall results were good in 74% of cases and average in 26% of cases. We detected a single case of infection occurring 1 month postoperatively.

Conclusion: The treatment of diaphyseal fractures of the femur is essentially surgical. Intramedullary nailing is the best therapeutic method. Due to its biomechanical advantages, it provides good anatomic-functional results allowing early socio-professional reintegration.

Keywords: Fractures; Diaphysis; Femur; Adult; Intramedullary Nailing; Niamey

Introduction

A fracture of the femoral shaft is defined as a break in the continuity of the region between a line passing 2.5 cm below the lesser trochanter and a line passing 5 cm above the joint space of the knee [1].

Diaphyseal fractures of the femur are common, affecting mainly young, active individuals following high-energy trauma. The context of multiple trauma is common, with considerable socioeconomic repercussions.

Diaphyseal fractures of the femur are commonly classified according to AO (association for osteosynthesis) into 3 types: A simple, B with 3rd fragment and C comminuted [9].

Intramedullary nailing is currently the surgical treatment of choice for this fracture due to its biomechanical advantages [13].

In Africa In sub-Saharan Africa , in low- income countries , intramedullary nailing of the femur is mostly performed open-hearth with increased risk of complications [15].

The objective of our work is to evaluate the anatomical and functional results obtained by the treatment of diaphyseal fractures of the femur in adults by intramedullary nailing in the Orthopedics and Traumatology department of the HGR of Niamey.

Patients and Method

This was a retrospective, descriptive and analytical study over a 5-year period from May 2019 to April 2024. We analyzed 50 adult patients operated on for a diaphyseal fracture of the femur and who benefited from osteosynthesis by intramedullary nailing.

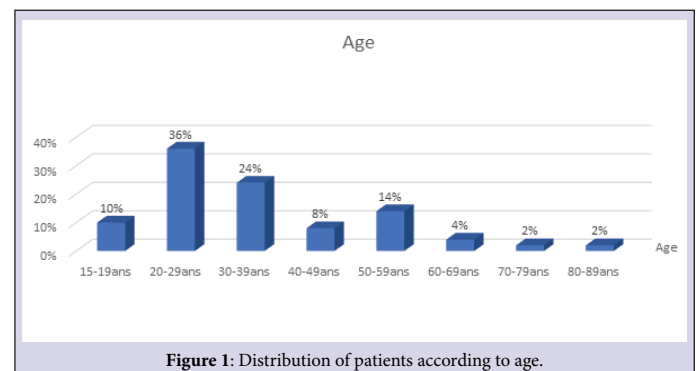
The collection of epidemiological, clinical, paraclinical, therapeutic and evolutionary data of these fractures was carried out using an operating sheet from patient files, admission registers and the operative report register.

Text and data processing was carried out using Word and Excel software.

Results

Epidemiology

The age of our patients ranged from 15 to 85 years with an average age of 34 years.



The 20 to 29 age group is the most represented (36%).

We counted 40 men for 10 women, i.e. a male predominance of 80%.

The majority of our patients were victims of road accidents (80%). Work accidents and pathological fractures represent 4% and 2% respectively.

Clinical

Analysis of the affected side found that the right side was more affected with 66%. The left side 24% and bilateral in 10%. The fracture was closed in 76% and open in 24%. All our patients benefited from X-rays (100%).

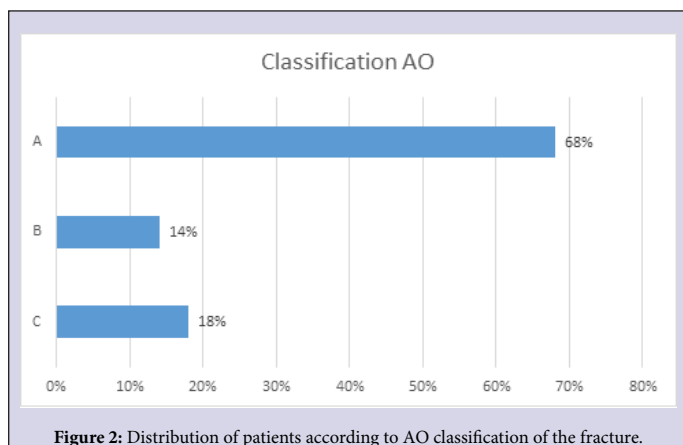


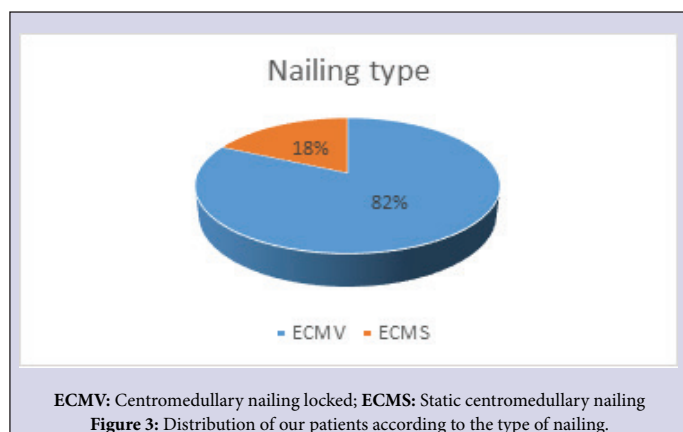
Figure 2: Distribution of patients according to AO classification of the fracture.

According to the AO classification, simple fractures (type A) were in the majority with 68% of cases (n=34). Complex fractures (type B) and communicative fractures represent 14% and 18% respectively.

The fracture is located in the middle third in 60% ; in the upper third in 26% and in the lower third in 14%.

Treatment

Cefalosporin -based antibiotic prophylaxis was administered preoperatively.



ECMV: Centromedullary nailing locked; ECMS: Static centromedullary nailing
Figure 3: Distribution of our patients according to the type of nailing.

The majority of our patients, 76% (n=38), benefited from locked intramedullary nailing, static in 54% of cases (n=27) and dynamic in 22% of cases (n=11). Simple assembly represents 24% (n=12).

Evolution

Consolidation was achieved in 96 % of cases with an average time of 3.4 months.

Functional Results

Evaluation Criteria

The criteria used to assess functional results are inspired by the Thorensen classification [14].

In our series, the overall results were good in 74% of cases (n=37), average in 26% of cases (n=13). No poor results were recorded.

We noted a single case of infection occurring 1 month postoperatively.

Discussion

Femoral shaft fractures rank 19th and represent 0.9% of all fractures. They mainly affect young males and road accidents are the major cause [2].

In our series, we noted an average age of 34 years with a male predominance of 80%. Public road accidents represent the majority of cases at 90 %.

These results are similar to those described in the literature [1,3] and those found by other authors in Morocco and Mali [4-5].

The diagnosis of femoral shaft fractures is simple. It is clinically confirmed by radiography.

All our patients underwent X-rays. The fracture line in our series was located in the middle third in 60% of cases. This predominance of fractures in the middle third is also described in the literature by other authors [3,8].

Regarding the classification, all fractures were classified according to AO (association for osteosynthesis) with simple fractures (type A) in 68% of cases, complex fractures (type B) and communicative fractures respectively 14% and 18%.

This predominance of simple type A fractures has been found by other authors [4].

All fractures of the femoral shaft in adults require surgical treatment by osteosynthesis, with intramedullary nailing being the choice due to its biomechanical properties.

The majority of our patients, 76 %, benefited from locked intramedullary nailing, either static in 81% or dynamic in 19%. Simple assembly represents 24 %. According to the literature, the use of locked reamed nails has become almost systematic in fractures of the femoral shaft [6].

In our series, consolidation was obtained in 96 % of cases within an average period of 3.4 months.

Our results are consistent with those described in the literature and those found by several authors.

In our series , the functional results were satisfactory with very few complications identified : only one case of infection occurred 1 month postoperatively. This superiority of nailing in terms of avoiding complications [5,7,10] has been found by other authors.

Conclusion:

Intramedullary nailing of the femur is a high-performance procedure that provides good stabilization of the fracture. It is the best treatment for diaphyseal fractures of the femur in adults, allowing immediate weight-bearing without functional impairment. It provides good results in the early restoration of previous function. Prevention of this fracture should primarily be based on controlling road accidents, the main cause.

The authors declare no conflict of interest.

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